

Introduction

Cisco Product Quick Reference Guide

Welcome to the 2013 edition of the Cisco Product Quick Reference Guide. This guide presents an overview of many Cisco products, services, and solutions for every part of your business. Compact, portable, and easy-to-use, the Cisco Product Quick Reference Guide includes brief overviews, important features, technical specifications, part numbers, and ordering information for many Cisco products. This all-in-one time-saving guide includes the following chapters: Routing, Switching, Wireless, Collaboration, Security, Data Center, Video and Broadband Cable, Optical Networking, Network Management, and Cisco Services.

Designed for our Cisco field and partners, this guide will help you determine which Cisco product, service, or solution is right for your customer. It is also ideal for end users, networking professionals, Cisco Networking Academy members, and those who are studying for Cisco certification and need a broad, high-level overview.

This guide includes only a subset of the Cisco portfolio. Additionally, because this guide is published only once per year, there are likely to be new products and part numbers not included in this edition. For the most up-to-date information and the complete product portfolio, refer to the Cisco website at: <http://www.cisco.com>.

What's New

The 2013 edition includes many new products: they are highlighted in the "At-a-Glance" section of each chapter. This edition also includes updates to products, services, and solutions across all technologies.

For More Information

For more information about the guide, please visit <http://www.cisco.com/go/guide>. You will be notified when new editions are released.

We always look for your input and guidance to make this guide more useful. Please send your feedback to feedback_ciscoguide@cisco.com.

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Cisco Architectures and Solutions

Learn about the following Cisco architectures and solutions for your business:

Cisco Borderless Network Architecture and Solutions

- Cisco Collaboration Architecture and Solutions
- Cisco Unified and Cloud Platform and Solutions
- Cisco Smart Business Architecture (SBA)
- Cisco IP Next-Generation Network Architecture for Service Providers
- Cisco Small Business Solutions
- Industry Solutions from Cisco

Cisco Borderless Network Architecture and Solutions

A Next-Generation Architecture That Accelerates Business Innovation

We work in a world that has no boundaries and knows no borders. Cisco Borderless Networks securely, reliably, and transparently connects clouds and connects things to realize the full potential of your business while scaling IT resources with one policy, one network, and one management. Organizations are seeing drastic changes in how applications are consumed and delivered. Borderless Networks helps organizations simplify and secure access on any device and support bring-your-own-device (BYOD) policies. It also allows organizations to efficiently deliver applications and services and transparently integrates cloud services and embedded network services with integrated policy and management to deliver the borderless experience.

Cisco embedded network services and our architectural approach balance network performance with operational simplicity.

With the following Network Services, part of the Cisco Borderless Networks portfolio, Cisco allows you to increase business innovation with security, green solutions, video and multimedia, and mobility:

- **Security: Cisco TrustSec Security**—Build a Secure Borderless Network and gain the visibility and control you need to know who uses your network and what they do on it. Cisco TrustSec technology helps you secure Borderless Networks with confidence, consistency, and efficiency for better collaboration anywhere, anytime, and from any location.
- **Video and multimedia: Cisco solutions for optimizing medianet**—The intelligent, networkwide capabilities of Cisco Borderless Networks help identify video applications and endpoints, and optimize the delivery of rich media to any device, in any location.
- **Mobility: Cisco Motion**—Deliver borderless mobility, boost flexibility and productivity, and extend the enterprise by delivering highly secure, rich, and manageable network services to teleworkers and employees working outside the traditional office environment.
- **Cloud Connectors:** You can enable or enhance your cloud service with improved availability, performance, and security with connectors that provide network intelligence to support the branch office to cloud communications, using the Cisco One Platform Kit (onePK) application programming interface (API).
- **Application Visibility and Control:** Gain deep network visibility of more than 1000 applications, build reporting for capacity planning and compliance, and enforce application bandwidth to improve overall performance across your entire network: routers, switches and access points.
- **Green solutions: Cisco EnergyWise technology**—Regain control of network and facilities energy usage to help manage and reduce your company's energy costs and carbon footprint. The Cisco EnergyWise Orchestrator integrates PC power management for both LAN and WAN connected devices into your Cisco EnergyWise domain.

Cisco has an expansive product portfolio that can help you accelerate business growth by using technological innovation. You can reduce total cost of ownership (TCO), gain ease of operations, and get transparent, highly secure connectivity.

- **Switching:** Get more than connectivity with Cisco Borderless Networks in your LAN. Expect more from your network and save more on operations through innovations such as Cisco EnergyWise technology.
- **Routing:** Enhance productivity and minimize TCO with next-generation routing solutions that deliver a superior customer experience, increased architectural scalability, and investment protection.
- **Security:** Reduce costs and complexity with an architectural and systems approach to security. Use Cisco SecureX to deliver a reliable, anytime, anywhere, and highly secure experience.
- **Mobility:** Increase user productivity and business agility with an industry-leading wireless network that opens new opportunities for mobile applications and reduces reliance on IT resources.
- **Application performance:** Deliver consistent application performance regardless of location with Cisco Borderless Networks performance solutions.
- **Management:** Simplify network management, improve operations efficiency, reduce errors, and speed troubleshooting with Cisco Prime for Enterprise Management solutions.

For more information about Cisco Borderless Network Architecture and Solutions, visit <http://www.cisco.com/go/borderless>.

Cisco Collaboration Architecture and Solutions

Help Ensure Interoperability, Introduce New Capabilities, and Break Down Boundaries to Improve Collaboration

The way people work together is undergoing a significant transformation that requires a new workspace model. This new workspace model will become a platform of communications and collaboration capabilities that enables a user-centric experience delivered to any device at any location. The new workspace will be inherently:

- Mobile, so that people can work no matter where they go or when they go there
- Social in nature, so that communication moves beyond one-to-one to many-to-many to capture the power of social networking
- Visual by design, so that the richness of video enables people to communicate and tell their stories in the most personal way
- Virtual, in that applications, data, and even operating systems can be securely and reliably delivered from private or public clouds through intelligent networks that connect the many devices people use
- The Cisco Collaboration Architecture helps ensure interoperability between existing and new forms of collaboration technologies, further enabling both structured and impromptu business processes. Organizations can implement individual architecture components on site, as hosted software-as-a-service (SaaS) solutions, or in a hybrid approach. The Cisco Collaboration Architecture comprises the following layers:
 - **Network Services:** Help ensure end-user quality of experience (QoE) by providing the foundation for network-enabled collaboration.
 - **Medianet Services:** Optimize video and other rich, interactive media.
 - **Collaboration Services:** Streamline collaboration and replace application silos with open, secure, reusable capabilities.
 - **Client Services:** Provide programmatic access to collaboration services for custom development and integration with traditional environments.
 - **Collaboration Applications:** Streamline workflow and optimize decision making with software and hardware that facilitates robust communications.
 - **Devices:** Provide flexible access to tools and services by allowing people to work in the manner suits them best.
 - **Security Services:** Protect all layers of the architecture from constantly evolving threats.
 - **Management Services:** Streamline management across operations, administration, maintenance, and provisioning (QAM&P).

Founded on the Cisco Collaboration Architecture, Cisco Collaboration solutions, along with services from Cisco and our partners, can help you build more effective teams across corporate boundaries, companies, and continents. You can deploy the solutions in any order, at a pace that matches your business objectives.

With Cisco you will enjoy a new level of freedom and flexibility, while reducing cost and complexity, empowering people with the tools they need to engage and innovate.

For more information about Cisco Collaboration Architecture and Solutions, visit <http://www.cisco.com/go/collaboration>.

Cisco Unified Data Center and Cloud Platform and Solutions

Unify Your Data Center

Cisco Unified Data Center changes the economics of the data center by unifying compute, storage, networking, virtualization, and management into a single, fabric-based platform, designed to increase operating efficiencies, simplify IT operations, and provide business agility. Unlike other solutions, which add layers of management software to achieve integration, Unified Data Center is specifically designed for virtualization and automation, and enables on-demand provisioning from shared pools of infrastructure across physical and virtual environments. This approach allows IT to reach their objectives faster as they look at initiatives around application roll-out, consolidation and virtualization, cloud, desktop virtualization, and business continuance.

Together with our ecosystem partners, we give businesses the flexibility to choose solutions that meet their workload and application requirements, helping ensure predictable performance. The Cisco Unified Fabric, Cisco Unified Computing, and Cisco Unified Management solutions are the foundational pillars for the Cisco Data Center Business Advantage. Solutions for consolidation, virtualization, automation, and cloud are based on the technology innovations found in these pillars:

- **Cisco Unified Fabric:** The Cisco Unified Fabric provides the foundational connectivity to link within and across data centers so resources are highly available and scalable wherever and whenever they are needed. Cisco Unified Fabric unifies the LAN and storage area network (SAN) to deliver converged, scalable, and intelligent solutions. Cisco Unified Fabric continues to extend Cisco's strategy of embedding policy-based, intelligent services directly into the network fabric to create a service platform to deliver

services throughout the data center consistently and uniformly, Cisco Unified Fabric includes Cisco Data Center Switching, Storage Networking, Network Management, and Virtualized Networking products as well as Cisco Data Center Interconnect solutions.

- **Cisco Unified Computing:** The Cisco Unified Computing System (Cisco UCS) represents a radical simplification of traditional architectures through its simplified, converged architecture, combined with its centralized management.
- Cisco UCS simplifies IT Management by reducing the time spent on tactical, operational activities, and provides easier scaling through rapid deployment, reduced opportunity cost, and better capital resource usage and a lower cost of scale in which Cisco UCS scales incrementally with optimized density and at lower costs.
- Cisco Unified Management: Cisco Unified Management features end-to-end management software solutions. These solutions provide an intelligent, automated approach to IT management, offering speed and enterprise-grade reliability while simplifying deployment and operation of physical, virtual, bare metal, and cloud infrastructure.
- **Cisco Professional Services:** Cisco Services make networks, applications, and the people who use them work better together. With a collaborative delivery methodology that joins the strengths of Cisco, our skilled network of partners, and our customers, we achieve the best results.

For more information about Cisco Data Center and Virtualization Architecture and Solutions, visit <http://www.cisco.com/go/datacenter>.

Cisco Smart Business Architecture

Implement Solutions and Services Easier Across Cisco Borderless Networks, Data Center and Virtualization, and Collaboration

Cisco Smart Business Architecture (SBA) combines Cisco expertise and solutions into a flexible architecture—packaged for easy consumption and rapid customer adoption—in deployments of up to 10,000 users.

Networking is complicated. Cisco SBA addresses that complexity with a set of prescriptive guides that help customers design and quickly deploy end-to-end, converged, multiprotocol networks.

Cisco SBA is a tested, validated way to deploy complete Cisco networks with minimal risk. It is the fastest, most direct route to gain strategic value from technology investments and reduce management cost and complexity. Cisco SBA helps reconcile rising technology demands on network-based applications and communications with aggressive deployment timelines and shrinking IT budgets.

- **Cisco SBA Borderless Networks** comprise the essential network infrastructure for connecting up to 10,000 users to services. This architecture incorporates wired and wireless LAN (WLAN) access, WAN connectivity, WAN application optimization, and the Internet Edge security infrastructure. Together, these designs form an end-to-end platform that connects users to Cisco SBA Data Center services, Cisco SBA Collaboration services, and some of the Cisco SBA solutions.
- **Cisco SBA Data Center** is an out-of-the-box solution that is simple, easy-to-use, affordable, scalable, and flexible. The Cisco SBA Data Center architecture provides the ability for growing organizations to migrate from a server room deployment to a scalable data center design. Users connect to Data Center services through Cisco SBA Borderless Networks. The Data Center houses the server components of Collaboration services and supports certain Cisco SBA solutions such as Virtual Desktop Infrastructure (VDI).
- **Cisco SBA Collaboration** is a set of reference designs for the deployment and management of communication, collaboration, and conferencing services over Borderless Networks. The Data Center houses the central control servers. The proven, standards-based Collaboration designs help organizations enhance collaboration among distributed project teams, reduce travel time and expense, and simplify management compared to conferencing and collaboration systems that exist in “silos.”
- **Cisco SBA Solutions** are designs for specific topics found within common technology trends, such as the bring-your-own-device (BYOD) trend, teleworking, and VDI. Customers adopt new trends differently and deploy new technologies based upon their business needs. Built upon Cisco SBA Borderless Networks, Data Center, and Collaboration designs, Cisco SBA Solutions address these trends.

For more information about Cisco SBA, visit <http://www.cisco.com/go/sba>.

Cisco IP Next-Generation Network Architecture for Service Providers

Comprehensive Service Provider Platform for Delivering The Connected Life

Cisco helps service providers build flexible, scalable, and secure networks that deliver profitable services for sustainable success. The Cisco IP Next-Generation Network (IP NGN) architecture supports network infrastructure, mobile Internet transformation, data center, and cloud computing solutions.

Cisco is committed to enabling sustainable service provider success by helping our global customers effectively address four critical interlinked strategic areas:

- Deliver compelling and differentiated services to customers (residential, business, and mobile)
- Optimize network and business operations—achieve profit-line savings as well as revenue growth
- Capitalize on near- and long-term opportunities with an intelligent, flexible, and scalable network
- Take advantage of an open, standards-based IP infrastructure to build strategic alliances with application and content providers and device manufacturers, etc. to create new services and revenue streams
- Cisco provides the networking solutions, technical experience and expertise, and supporting resources to help service providers reach their goals.
- The Cisco IP NGN architecture vision encompasses a true end-to-end solution with fundamental enablers for video, mobile Internet, and data center and cloud-based services.
- **Network Infrastructure:** Cisco network infrastructure solutions let you deliver personalized, next-generation services and media experiences anywhere, anytime. The Cisco IP NGN infrastructure enables end-to-end scale, resiliency, and efficiency with solutions that provide a multiservice convergence platform so you can serve residential, business, and mobile customers with a single network infrastructure. The network infrastructure solutions are designed to scale and adapt with the evolving needs of the network. The infrastructure solutions include broadband, cable, Carrier Ethernet, carrier-grade IPv6, core networks, edge networks, Internet Protocol Television (IPTV), Telco TV, network management, optical transport, and security.
- **Videoscape:** Cisco Videoscape brings together different content sources, devices, and complex technologies to create a “better than being there” video experience. Videoscape reinvents the TV experience, simplifying access to the TV experience—delivering content from any source to any screen. The power of Cisco Videoscape rests in the combination of cloud, network, and clients working together to deliver amazing end-user experiences and transform the economics of network operations.
- Mobile Internet: Cisco delivers an integrated architecture—from the client, to the network, to the cloud—that helps service providers rapidly deploy new services, manage risk, and provide an exceptional user experience. Cisco supports all leading radio access technologies to enable networks with full mobility for faster service deployment, increased scalability, and improved and cost-effectiveness. Cisco’s mobile Internet network based on the Cisco IP NGN contains one of the industry’s most comprehensive mobile portfolios that includes an intelligent management system, next-generation Universal Mobile Telecommunications Service/High Speed Packet Access (UMTS/HSPA) solutions, Code Division Multiple Access (CDMA) solutions, carrier-grade service provider Wi-Fi infrastructure, Long Term Evolution (LTE) Evolved Packet Core, small cells, Voice and Video over LTE (VoLTE), and mobile Videoscape.
- Data center and cloud: Cisco’s data center and cloud solutions help service providers evolve their businesses and capitalize on new opportunities. Greater efficiencies are established using Cisco’s Unified Service Delivery (USD) as an infrastructure, creating a foundation for delivering cloud-based services. Cisco CloudVerse combines computing, networking, and storage resources within the data center, connects clouds, and delivers a high-quality cloud experience to the end user. In order to create the best possible experience, the Cisco Network Positioning System (NPS) identifies the underlying intelligence in the network for optimizing performance, allowing the Cisco Cloud Intelligent Network to take advantage of resources across the entire network for a transparent and reliable user experience.
- The Cisco IP NGN architecture effectively integrates each of these distinct application-oriented solutions. Beyond the proven routing and switching strengths that these solutions offer, they also provide service-specific innovations that deliver enhanced qualities for video, mobile Internet, and data center and cloud services that encompass our holistic Connected Life vision. Cisco IP NGN solutions can serve as the intelligent platform to transform the business and consumer experiences you deliver to subscribers at home, at work, and when mobile.

For more information about Cisco service provider solutions, visit <http://www.cisco.com/go/sp>.

Cisco Small Business Solutions

Technology You Can Trust to Help Your Business Succeed

Cisco Small Business technology can help you connect your business to the world, secure it, and communicate more effectively using reliable, affordable options that fit your unique needs. A local reseller, backed by Cisco support and expertise, can help make the right choice simple.

We have divided our product portfolio into three categories:

- **Connect to the World:** Small Business has everything you need to connect your business to the world—simply, reliably, and affordably—in a broad portfolio of routers, switches, VPN firewalls, and wireless access points.
- **Secure My Business:** Secure your small business with network security that combines firewall, VPN access, and intrusion prevention, along with email and web threat protection that can help keep your business operational.
- **Communicate and Collaborate:** Collaborate by bringing together your phone, email, text, conferencing, and video in complete solutions that allow your employees to communicate from anywhere, using virtually any device, on any network—enabling you to be more productive.
- **Cloud Services:** Take advantage of simple and affordable cloud-based network management services to remotely monitor, manage, and maintain small to midsize networks.

For more information about Cisco Small Business Solutions, visit <http://www.cisco.com/go/smallbusiness>.

Industry Solutions from Cisco

Whether you are in education, financial services, government, healthcare, manufacturing, or retail, industry solutions from Cisco are designed and developed around your business imperatives. We implicitly understand what you go through every day. How? Because the people behind the technology are people like you.

They have been former district managers, plant specialists, brokers, police officers, deans, and nurses. These people bridge your world and ours, making our industry solutions uniquely suited to answer your everyday and long-term challenges.

We can help you translate technology into benefits you can use. The opportunity to make things better using technology is here. Working with our partner ecosystem, we can implement solutions that help streamline business processes, improve collaboration, reduce costs, and promote innovation and growth.

Our solutions are centered on you and the industry you serve.

For more information about industry solutions from Cisco, visit:

- Industry solutions: <http://www.cisco.com/go/industry>
- Education solutions: <http://www.cisco.com/go/education>
- Financial services solutions: <http://www.cisco.com/go/financialservices>
- Government solutions: <http://www.cisco.com/go/government>
- Healthcare solutions: <http://www.cisco.com/go/healthcare>
- Manufacturing solutions: <http://www.cisco.com/go/manufacturing>
- Retail solutions: <http://www.cisco.com/go/retail>

Product Warranty Information

All Cisco hardware and software products are covered for a minimum of 90 days. Some products have longer coverage periods. Both hardware and software warranties commence from the date of shipment to customer (and in case of resale by a Cisco reseller, commencing not more than 90 days after original shipment by Cisco). All Cisco warranties apply to the Customer or Original Owner (the individual who purchased the product for personal use), also referred to as the End User, and are not transferable.

Warranties provide limited liability for Cisco or its designated representative to repair and/or replace defects in Cisco products. They are generally limited in both the duration and the support they offer. Warranties generally do not include Cisco Technical Assistance Center (TAC) support, software updates, or any of the additional benefits obtained under a support service contract. For more information about Cisco Services, refer to Chapter 10.

It is the responsibility of Cisco or Cisco's designated representative to repair and/or replace the Cisco product within the timeframe identified in the warranty card or license agreement that accompanied the originally purchased Cisco product. Cisco reserves the right to refund the purchase price as its exclusive warranty remedy.

Elements covered under a Cisco warranty follow:

- **Hardware:** The warranty guarantees that the hardware will be free of defects in material and workmanship under normal use, or it will be replaced by Cisco or Cisco's designated representative.
- **Software:** The warranty guarantees that the physical media are free from defects, or they will be replaced by Cisco. Also, the warranty guarantees that the software generally conforms to the published specifications for the product. Software is provided "as is," and in no event does Cisco warrant that the software is error-free or that customer will be able to operate the software without problems or interruptions. Warranty does not include software updates.

Some Cisco Catalyst fixed switches are covered by the Cisco Catalyst OS software update policy. Customers with Cisco Catalyst LAN Base and IP Base software licenses will be provided with lifetime bug fixes and updates with minor enhancements as long as the original end user continues to own or use the product or until Cisco announces the end of support for the product. The software policy is not a part of warranty and is subject to change without notice.

To find the warranty that applies to a specific product or product family, visit the Cisco Warranty Finder at <http://www.cisco.com/servicefinder.com/warrantyfinder.aspx>.

For more information about Cisco warranties, visit <http://www.cisco.com/go/warranty>.

Warranty	Entitlement Descriptions
Cisco Standard 90-day Limited Hardware Warranty, Software Warranty, and License Agreement	<ul style="list-style-type: none"> • Warranty duration: 90 days • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part within 10 working days after receipt of the return materials authorization (RMA) request. Actual delivery times might vary depending on customer location. • Software warranty: 90 days • Warranty allows guest access only to Cisco.com.
Cisco 90-day Limited Hardware Warranty	<ul style="list-style-type: none"> • Warranty duration: 90 days • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part within 10 working days after receipt of the RMA request. Actual delivery times might vary depending on customer location. • Warranty allows guest access only to Cisco.com.
Cisco 1-Year Limited Hardware Warranty	<ul style="list-style-type: none"> • Warranty duration: 1 year • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part within 10 working days after receipt of the RMA request. Actual delivery times might vary depending on customer location. • Warranty allows guest access only to Cisco.com.
Cisco End-User Software License Agreement and Limited Software Warranty	<ul style="list-style-type: none"> • Warranty duration: 90 days • Warranty provides that the media on which the software is furnished will be free of defects in materials and workmanship under normal use and that the software substantially conforms to its published specifications. • Software is provided "as is", and in no event does Cisco warrant that the software is error-free or that customer will be able to operate the software without problems or interruptions. • The end-user license agreement grants to customer a nonexclusive and nontransferable license to use for customer's internal business purposes the software and the documentation for which the customer has paid the required license fees. • Warranty allows guest access only to Cisco.com.

Cisco 3-Year Limited Hardware Warranty	<ul style="list-style-type: none"> • Warranty duration: 3 years • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part within 10 working days after receipt of the RMA request. Actual delivery times might vary depending on customer location. • Warranty allows guest access only to Cisco.com.
Cisco 1-Year Limited Hardware and 1-Year Limited Software Warranty	<ul style="list-style-type: none"> • Hardware warranty duration: 1 year • Software warranty duration: 1 year • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part for delivery within 10 working days after receipt of the defective product at Cisco's site. Actual delivery times of replacement products might vary depending on customer location. • Warranty allows guest access only to Cisco.com.
Cisco 5-Year Limited Hardware and 1-Year Limited Software Warranty	<ul style="list-style-type: none"> • Warranty is available on optical hardware and software products. • Hardware warranty duration: 5 years • Software warranty duration: 1 year • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part for delivery within 15 working days after receipt of the defective product at Cisco's site. Actual delivery times of replacement products might vary depending on customer location. • Warranty allows guest access only to Cisco.com.
Cisco Limited Lifetime Hardware Warranty (LLW)	<ul style="list-style-type: none"> • Warranty applies to Cisco Catalyst Express 500 Series Switches and Cisco Catalyst 2960, 2975, 3560, 3560-E, 3750, 3750-E, 4500, and 4500-E Series Switches. Some limitations apply. • Warranty duration: Warranty is valid as long as the original end user continues to own or use the product, provided that fan and power supply warranty is limited to 5 years. • In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance. • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part within 10 working days after receipt of the RMA request. Actual delivery times might vary depending on customer location. • Warranty allows guest access only to Cisco.com.
Cisco Enhanced Limited Lifetime Warranty (E-LLW)	<ul style="list-style-type: none"> • Warranty applies to Cisco Catalyst 2960-S, 3560-X, 3750-X, 2960-C, and 3560-C Series Switches. • Warranty duration: Warranty is valid as long as the original end user continues to own or use the product, provided that fan and power supply warranty is limited to 5 years. • In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance. • Hardware replacement: Where available, Cisco or its service center will use commercially reasonable efforts to ship a replacement part for next-day replacement. Where next-business-day replacement is not available, a replacement will be shipped the same business day if the RMA is received before the fulfillment warehouse cut-off time. Actual delivery times might vary depending on customer location. • Warranty includes 90 days of Cisco Technical Assistance Center (TAC) support during local business hours, 8 hours per day, 5 days per week. • Warranty allows guest access only to Cisco.com.
Cisco Small Business Pro Limited 5-Year Hardware Warranty	<ul style="list-style-type: none"> • Available for Cisco Small Business Pro Switch • Warranty duration: 5 years • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part within 10 working days after receipt of the RMA request. Actual delivery times might vary depending on customer location. • Warranty allows guest access only to Cisco.com.
Cisco Small Business Product 1-Year Limited Hardware Warranty	<ul style="list-style-type: none"> • Warranty duration: 1 year • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part for delivery upon receipt of the defective product at Cisco's site. Part will be shipped using ground shipping with shipping charges prepaid. • Warranty allows guest access only to Cisco.com.

Cisco Small Business Product 3-Year Limited Hardware Warranty	<ul style="list-style-type: none"> • Warranty duration: 3 years • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part for delivery upon receipt of the defective product at Cisco's site. Part will be shipped using ground shipping with shipping charges prepaid. • Warranty allows guest access only to Cisco.com.
Cisco Small Business Product 5-Year Limited Hardware Warranty	<ul style="list-style-type: none"> • Warranty duration: 5 years • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part for delivery upon receipt of the defective product at Cisco's site. Part will be shipped using ground shipping with shipping charges prepaid. • Warranty allows guest access only to Cisco.com.
Cisco Small Business Product Limited Lifetime Hardware Warranty	<ul style="list-style-type: none"> • Warranty duration: Warranty is valid as long as the original end user continues to own or use the product, provided that fan and power supply warranty is limited to 1 year. • In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance. • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part for delivery upon receipt of the defective product at Cisco's site. Part will be shipped using ground shipping with shipping charges prepaid. • Warranty allows guest access only to Cisco.com.
Cisco Small Business Product Enhanced Limited Lifetime Hardware Warranty	<ul style="list-style-type: none"> • Warranty duration: Warranty is valid as long as the original end user continues to own or use the product, provided that fan and power supply warranty is limited to 5 years. • In the event of discontinuance of product manufacture, Cisco warranty support is limited to 5 years from the announcement of discontinuance. • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement for next-business-day delivery, where available. Otherwise, commercially reasonable efforts will be used to ship a replacement part for delivery upon receipt of the defective product at Cisco's site. Actual delivery times may vary depending on Customer location. • Warranty allows guest access only to Cisco.com.
Cisco Unified Computing 3-Year Limited Hardware Warranty	<ul style="list-style-type: none"> • Warranty is applicable to Cisco Unified Computing System products only. • Hardware warranty duration: 3 years • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part within the next Cisco business day after receipt of the RMA request. Actual delivery times of replacement products might vary depending on customer location. • Software, including freeware operating systems and applications, is provided "as is", and in no event does Cisco warrant that the software is error-free or that the customer will be able to operate the software without problems or interruptions. • Warranty allows guest access only to Cisco.com.
Cisco Limited 1-Year Return for Repair (RFR) Hardware Warranty	<ul style="list-style-type: none"> • Warranty applies to select service provider video, transport, and access hardware only. • Warranty duration: 1 year • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to repair or replace the defective product and ship the repaired or replacement part for delivery within 30 working days. Actual delivery times might vary depending on customer location. • Warranty allows guest access only to Cisco.com.
Cisco Limited 3-Year RFR Hardware Warranty	<ul style="list-style-type: none"> • Warranty applies to select service provider video, transport, and access hardware only. • Warranty duration: 3 years • Hardware replacement: Cisco or its service center will use commercially reasonable efforts to repair or replace the defective product and ship the repaired or replacement part for delivery within 30 working days. Actual delivery times might vary depending on customer location. • Warranty allows guest access only to Cisco.com.

Cisco Limited 5-Year RFR Hardware Warranty	<ul style="list-style-type: none"> Warranty applies to select service provider video, transport, and access hardware only. Warranty duration: 5 years Hardware replacement: Cisco or its service center will use commercially reasonable efforts to repair or replace the defective product and ship the repaired or replacement part for delivery within 30 working days. Actual delivery times might vary depending on customer location. Warranty allows guest access only to Cisco.com.
Cisco Limited 5-Year Hardware and 5-Year Software Warranty for Qualified Service Providers	<ul style="list-style-type: none"> Warranty is available to qualified worldwide service providers on select optical hardware and software products only. Warranty duration: 5 years Software duration: 5 years Hardware replacement: Cisco or its service center will use commercially reasonable efforts to ship a replacement part for delivery within 15 working days after receipt of the defective product at Cisco's site. Actual delivery times of replacement products might vary depending on customer location. Warranty allows guest access only to Cisco.com.

Partner and Customer Support

Pre- and Postsales Contact Information	
Presales Partner and Reseller Helpline	800 553-6387 408 526-7208 http://www.cisco.com/web/partners/support/index.html
Postsales Technical Assistance Center (TAC)	800 553-2447 (United States) 408 526-7209 (United States) 32 2 704 5555 (Europe) 1 800 805 227 (Australia) 61 2 8446 7411 (Asia/Pacific) http://www.cisco.com/en/US/support/tsd_cisco_worldwide_contacts.html
Technical Support Email Addresses	
English and Spanish	tac@cisco.com
Hanzi (Chinese)	chinese-tac@cisco.com
Kanji (Japanese)	japan-tac@cisco.com
Hangul (Korean)	korea-tac@cisco.com
Service Support Center (SSC)	cs-support@cisco.com http://www.cisco.com/public/scc/ <ul style="list-style-type: none"> Pre- and postsales quoting assistance Contract registration and access Tool problems and navigation Service Contact Center (SCC) and Short Message Service 3 (SMS3) troubleshooting help Contract Management Assistance SCC registration and virtual registration
Distributor SMARTnet Teams	
Comstor/Westcon Group	smarntnetgroup@comstor.com 800 955 9590 ext. 5143
D&H	licensedesk@dandh.com 800 340-1001
ScanSource	ciscoservice@scansource.com 800 944-2439
Ingram Micro	myciscoteam@ingrammicro.com 800 456-8000 ext. 76471
Tech Data	teamcisco@techdata.com 800 237-8931 ext. *77776

Helpful Cisco Websites

Partner Resources	
Register with Cisco.com	Register to gain partner-level access to Cisco tools and information at: http://tools.cisco.com/RPF/register/register.do .
Partner Central	Explore the tools and resources that are available to Cisco partners at: http://www.cisco.com/web/partners/index.html .
Customized Partner Intelligence Newsletter	Subscribe to our partner newsletter featuring information that is most relevant to each partner company's particular business and technology needs at: http://www.cisco.com/web/partners/news/index.html .
Partner Self-Service	Manage company data including profile information and access privileges at: http://tools.cisco.com/WWChannels/GETLOG/login.do .
Partner Locator	Locate a qualified channel partner identified on the basis of specific criteria at: http://www.cisco.com/go/partnerlocator .
Distributor Locator	Locate a Cisco distributor in any country at: http://tools.cisco.com/WWChannels/LOCATR/jsp/distributor_locator.jsp .
Channel Account Manager (CAM) Locator	Search for a Channels Account Manager assigned to a specific partner at: http://tools.cisco.com/WWChannels/CAMLOC/jsp/cam_locator.jsp .
Partner Help Online: Direct FAQ access	Find answers to some commonly asked questions or open a case at: http://www.cisco.com/web/partners/tools/helponline/index.html
Ordering website	To place orders for Cisco products and services, visit: http://www.cisco.com/en/US/ordering/index.html .
Cisco Certified Refurbished Equipment	To learn about Cisco Certified Refurbished Equipment, check product availability, and get ordering instructions, visit: http://www.cisco.com/go/remarketing .
Services and Support Resources	
Cisco Services	Find detailed information about the services you need to protect and grow your technology investment at: http://www.cisco.com/go/services .
Cisco Support Online	Easily access online documentation, technical tools, and resources from Cisco Support Online at: http://www.cisco.com/go/support .
Cisco Service Finder	Match the right support service to the right product with the Cisco Service Finder at: http://www.cisco.com/servicefinder/ .
End-of-sale and end-of-life products	Stay up-to-date on products that are no longer being sold and might not be supported at: http://www.cisco.com/en/US/products/prod_end_of_life.html .
Return a product	Information about return policies and the RMA process is available at: http://www.cisco.com/web/ordering/cs_info/or3o32/Return_a_Product/WWWRL_HOME.html .
RMA Service Order tools	Access tools and resources to streamline your service and parts logistics inquiries at: http://tools.cisco.com/serviceordertools/svossubmit/tools.do .
Cisco Support Community	Share information and collaborate in real time with users around the globe. Find the most up-to-date information about Cisco products and services at: http://supportforums.cisco.com .
Newsletters	
Cisco Borderless Networks Monthly Update	Sign up to receive the monthly e-newsletter. This newsletter provides up-to-date security, mobility, routing, and switching news at: http://www.cisco.com/go/newsletter .
Cisco Collaboration Insights e-Newsletter	Sign up to receive the monthly e-newsletter providing the latest up-to-date Cisco Unified Communications, WebEx, and TelePresence news at: http://www.cisco.com/go/newsletter .
Cisco Data Center Insights Business Advantage	Sign up to receive the quarterly e-newsletter providing up-to-date data center news at: http://www.cisco.com/go/newsletter .
Cisco Technical Services e-Newsletter	Sign up to receive our monthly e-newsletter with current updates on technical documentation, field notices, and security alerts, as well as technical articles written by Cisco engineers and technical tips from your peers at: http://www.cisco.com/go/tsnews .
Trainings and Other Resources	
Training resources	Cisco offers training resources, career certifications, and events to help you improve your skills and keep up with new technologies. For information, visit: http://www.cisco.com/web/learning/index.html .
Cisco Networking Academy	This global e-learning program offers students an opportunity to pursue IT curricula through online instructor-led training and hands-on lab exercises. For more information, visit: http://www.cisco.com/web/learning/netacad/index.html .
Cisco Learning Network	The widely respected Cisco Career Certifications and Training programs bring valuable, measurable rewards to network professionals, their managers, and the organizations that employ them. For more information, visit: http://www.cisco.com/go/learnnetpace .

Cisco Community Central	The Cisco Community Central website is a group of communities designed to foster collaboration among Cisco employees, customers, users, and Cisco Partners. Visit the website at: http://www.myciscocommunity.com/ .
Cisco Design Zone	A consolidated resource for design guides, application deployment guides, white papers, videos, and other technical reference materials is available at: http://www.cisco.com/go/designzone .
Cisco SMB Smart Designs	Cisco Smart Designs are pretested networking solutions that enable partners to deliver the benefits of Cisco products and technologies to small and medium-sized business (SMB) customers. For more information, visit: http://www.cisco.com/go/partner/smartdesigns .
Cisco Store Online	The one-stop shop for Cisco merchandise, including Cisco collateral and product documentation, logo merchandise, Cisco Press books, and software is available at: http://www.cisco.com/go/marketplace .
Cisco Bookstore	Cisco Press Bookstore is the only authorized publisher of Cisco, giving you access to industry experts and educators. It provides networking, business, and certification titles for your unique learning needs. Find out more at: http://www.cisco.com/go/marketplace .
Product Advisor	The interactive Product Advisor tool provides a list of product recommendations based on your preference and highlights a list of products that meet your needs. It is available for the following technologies: routing, switching, wireless, and security. For more information, visit: http://www.cisco.com/en/US/products/prod_tools_index.html

Cisco Capital Financing

Cisco Capital is in a unique position to provide customers and channel partners worldwide with the most competitive and flexible financing options available for Cisco solutions. Cisco Capital can provide customers with an alternative source of affordable funds, enabling them to get the technology they need, reduce total cost of ownership (TCO), meet ongoing technology refresh requirements, and have the flexibility to use payment schedules to match cash flow and budget.

As a trusted business partner, Cisco Capital can help customers obtain and maintain the right Cisco solution with the most effective acquisition strategy for their businesses or organizations. For more information about financing with Cisco Capital, visit <http://www.ciscocapital.com>.

Cisco Certified Refurbished Equipment



Cisco Certified Refurbished Equipment is the only brand of used Cisco products in the market that is certified and authorized by Cisco. Our extensive global inventory of high-quality fully remanufactured Cisco products is an ideal complement to new products when price or availability limit customer options, or when customers need older-generation products no longer manufactured by Cisco, to extend the life of their network.

Consider Cisco Certified Refurbished Equipment for:

- Onsite spares and Cisco SMARTnet service augmentation
- Technology transition gap-fillers
- Older network expansions and end-of-life maintenance
- Test labs and training
- Network swing kits
- Disaster recovery and contingency networks
- Short-term, temporary networks
- Tight budget scenarios
- Rapid delivery and backorder scenarios

Important facts to know:

- More than 2800 current and end-of-sale models from all technology areas are available.
- Products are remanufactured, tested, and reconditioned to Cisco factory specifications.
- Products are sold with the same Cisco warranty terms and conditions as new products.
- Cisco Technical Services can be attached to refurbished equipment to provide the same features and value as provided on new equipment.
- Products are 25 to 70 percent off original list price; reseller discounts are available for Cisco partners.
- Products have the same part numbers except that they end with the suffix "-RF".
- A licensed copy of Cisco IOS Software is installed.
- Products are available through Cisco authorized channels worldwide; no special certifications or authorizations are required to resell.
- These products may not be available in certain countries.
- No returns are accepted; all sales are final.
- Inventory varies daily; products are sold on a first-come, first-served basis.

For more information about Cisco Certified Refurbished Equipment, including product availability, current promotions, and ordering instructions, visit: <http://www.cisco.com/go/remarketing>

Chapter 1: Routing

This chapter includes only a subset of Cisco products and part numbers. Also, you will see products listed multiple times because they serve multiple roles and are used differently in small, medium, and large networks.

Routing At-a-Glance

Product	Features	Page
Branch-Office Routers		
Cisco 3900 Series Integrated Services Routers	<ul style="list-style-type: none"> Ideal for high-end deployments requiring business continuity, WAN flexibility, WAN optimization, superior collaboration capabilities, and investment protection Delivers scalable rich-media services including telepresence, support for medianet, highest density of service virtualization, and lowest total cost of ownership (TCO) with energy efficiency Offers field-upgradable motherboard and circuit-speed WAN performance up to 350 Mbps with services such as security, mobility, WAN optimization, unified communications, video, and customized applications Has 3-rack-unit (3RU) modular form factor 	1-5
Cisco 2900 Series Integrated Services Routers	<ul style="list-style-type: none"> Ideal for midrange deployments requiring business agility, WAN flexibility, and secure collaboration Provides rich-media services including telepresence, support for medianet, service virtualization, and lower total cost of ownership (TCO) with energy efficiency Offers circuit-speed WAN performance up to 75 Mbps with services such as security, mobility, WAN optimization, unified communications, voice gateway, video, and customized applications Has 1-rack-unit (1RU) to 2RU modular form factor 	1-10
Cisco 1900 Series Integrated Services Routers	<ul style="list-style-type: none"> Ideal for small offices requiring modular flexibility for highly secure mobility and customizable applications Offers entry-level, highly secure solution for WAN deployments; offers service virtualization and low total cost of ownership (TCO) Offers circuit-speed performance up to 25 Mbps with concurrent services Offers factory-selectable dual radio 802.11n access point and doublewide high-speed WAN interface card (HWIC) support; has desktop form factor 	1-15
Cisco 800 Series Routers	<ul style="list-style-type: none"> Ideal for small offices and teleworkers, or for service providers to deploy as part of their managed network services Delivers data, security, wireless, third-generation wireless, Survivable Remote Site Telephony (SRST), and Cisco Unified Border Element (Cisco UBE) Provides for highly scalable true zero-touch deployments 	1-19
WAN Routers		
Cisco 7600 Series Routers	<ul style="list-style-type: none"> Ideal for service providers that deliver consumer and business services over a single converged Carrier Ethernet network As industry-leading carrier-class edge router, offers integrated, high-density Ethernet switching, IP/Multiprotocol Label Switching (IP/MPLS) routing, and 10-Gbps interfaces Offers a choice of form factors built for high availability 	1-23
Cisco ASR 1000 Series Aggregation Services Routers	<ul style="list-style-type: none"> Ideal for medium-sized to large enterprises and service providers Offers industry-leading performance, service capabilities, reliability, and efficiencies in a compact form factor supporting up to 100 Gbps Provides highly secure, high-performance and integrated hardware-based services without the need for additional hardware modules Extends network as a platform for cloud computing to help conserve resources and optimize performance Offers Cisco Unified Border Element support for Session Initiation Protocol (SIP) trunking; lowers total communications costs; optimizes network interconnections; and enables rich collaboration applications 	1-32
Cisco Catalyst 6500 Series Switches	<ul style="list-style-type: none"> Simplifies operations, reduces network costs, and increases resiliency through its Virtual Switch System 1440 technology Automates network services and energy control and minimizes total cost of ownership (TCO) with features such as Cisco Generic Online Diagnostics (GOLD), Onboard Failure Logging (OBFL), SmartCallHome, and Cisco EnergyWise technology Delivers comprehensive features for operational management, integrated services, quality of service (QoS), and high availability Integrates services through its portfolio of service modules 	See 2-5

Service Provider Core and Edge Routers		
Cisco Carrier Routing System	<ul style="list-style-type: none"> • Ideal for service providers across all market segments • Cisco CRS-3: Are powered by the Cisco QuantumFlow Array • Cisco CRS-1: Are built on the Cisco Silicon Packet Processor (SPP) • Scales easily from numerous single-chassis form factors to a massive multichassis system, up to 322 Tbps • Provides industry-leading efficiency, requiring low power, cooling, and rack-space use for intelligent, service-rich bandwidth capacity • Cisco CRS-1 and CRS-3 models: Use Cisco IOS XR Software, a unique self-healing, distributed operating system 	1-26
Cisco XR 12000 and 12000 Series Routers	<ul style="list-style-type: none"> • Ideal for large enterprises and service providers • Cisco XR 12000 Series Routers: Extend highly secure virtualization, integral service delivery, continuous system operation, and multiservice scale • Cisco 12000 Series Routers: Feature Cisco I-Flex, a portfolio of shared port adapters (SPAs) and SPA interface processors (SIPs) 	1-28
Cisco ASR 9000 Series Aggregation Services Routers	<ul style="list-style-type: none"> • Ideal for carriers offering residential and business services • Delivers nonstop video and enhanced scalability in a reduced carbon footprint, along with industry-leading levels of carrier transport • Provides carrier-class reliability for continuous service operation and high availability • Scales up to 6.4 Tbps per system and delivers comprehensive system redundancy 	1-30
Cisco ASR 1000 Series Aggregation Services Routers	<ul style="list-style-type: none"> • Ideal for medium-sized to large enterprises and service providers • Offers industry-leading performance, service capabilities, reliability, and efficiencies in a compact form factor supporting up to 100 Gbps • Provides highly secure, high-performance, and integrated hardware-based services without the need for additional hardware modules • Extends network as a platform for cloud computing to help conserve resources and optimize performance 	1-32
Cisco ASR 903 Routers	<ul style="list-style-type: none"> • Designed for the mobile wireless and wireline preaggregation and aggregation functions with flexible WAN and LAN interfaces • Delivers high availability through in-box hardware redundancy and In-Service Software Upgrade (ISSU) • Ideal for mobile backhaul deployment with compact form factor, temperature-hardened platform, modular Ethernet and time-division multiplexing (TDM) interface cards, comprehensive timing synchronization support, and hardware-assisted operations, administration, and maintenance (O&M) functions • Provides rich Carrier Ethernet features that enable the delivery of intelligent Layer 2 and 3 services 	1-35
Cisco 7600 Series Routers	<ul style="list-style-type: none"> • Ideal for service providers that deliver consumer and business services over a single converged Carrier Ethernet network • As industry-leading carrier-class edge router, offers integrated, high-density Ethernet switching, IP/Multiprotocol Label Switching (IP/MPLS) routing, and 10-Gbps interfaces • Offers a choice of form factors built for high availability 	1-23
Connected Grid Routers		
Cisco 2000 Series Connected Grid Routers	<ul style="list-style-type: none"> • Designed specifically for the harsh, rugged environments often found in the energy and utility industries • KEMA certified to meet challenging compliance standards such as IEC 61850-3 and IEEE 1613 • Offers integrated security to help address compliance with critical infrastructure protection mandates • Offers high-availability design for optimum network uptime and redundancy • Offers network and device management tools for deployments, upgrades, and remote monitoring • Offers advanced quality of service (QoS) capabilities to support mission-critical communications such as Supervisory Control and Data Acquisition (SCADA) • Provides comprehensive network security features based on open standards 	1-38
Cisco 1000 Series Connected Grid Router	<ul style="list-style-type: none"> • Offers mutual authentication and authorization of all nodes connected to the network • Offers IEEE 802.1x-based authentication and role-based access control (RBAC) • Provides certificate-based identity and strong username and passwords • Offers link-layer encryption in the Neighborhood Area Network (NAN) mesh (Advanced Encryption Standard 1 [AES-128]) • Offers network-layer encryption in the WAN (IP Security [IPsec]) • Provides scalable key management, generation, exchange, and revocation of encryption keys • Provides network segmentation of users, devices, and applications in NAN and WAN • Provides access lists on field area router to filter traffic between users and devices • Offers high-performance firewall in the control center to protect critical assets • Has tamper-resistant mechanical design; security alerts generated if compromised • Has hardware chip to store router X.509 certificate and other security credentials • Provides tamper-proof secure storage of router configuration and data 	1-39

Small Business Routers		
Cisco SRP 500 Series Services-Ready Platforms	<ul style="list-style-type: none"> • Enable service providers to deliver differentiated, converged service offers that increase bandwidth usage and average revenue per user while reducing customer turnover • Offer fixed-configuration customer premises equipment (CPE) that enables service providers to create, provision, and deploy premium revenue-generating services to small businesses • Support a variety of high-quality voice, data, security, wireless, and application services 	1-41
Cisco RV Series Small Business Routers *NEW PRODUCT*	<ul style="list-style-type: none"> • Provides highly secure network access devices, designed and built for small businesses • Offers highly secure VPN connectivity for remote workers • Provides strong security features, including an advanced stateful packet inspection (SPI) firewall, encryption, authentication, and access control • Provides Fast Ethernet ports and Gigabit Ethernet ports 	1-42

SERVICES		
<p>Cisco Routing and Switching Services use leading practices and time-tested methodologies to help you to:</p> <ul style="list-style-type: none"> • Successfully integrate new technologies and applications onto the routing and switching platform • Reduce risk, delays, and the total cost of network deployments • Keep network devices and applications secure, available, and operating reliably • Optimize your secure wired and wireless networks to meet future needs • Achieve operational excellence 		1-43

FOR MORE INFORMATION

Product Ordering
To place an order, visit: <http://www.cisco.com/en/US/ordering/index.shtml>.

End-of-Life and End-of-Sale Information
Please visit the end-of-life and end-of-sale website for a complete and up-to-date listing of products that are no longer being sold or supported, what replacement products are available, and information about product support: http://www.cisco.com/en/US/products/prod_end_of_life.html.

Cisco Services
Cisco Services can be ordered directly or through our global network of certified partners; to order, please visit: <http://www.cisco.com/web/services/order-services/index.html>

Note: This chapter provides only a subset of Cisco products and part numbers. For the most up-to-date and comprehensive information, refer to the Cisco website at <http://www.cisco.com>, the Cisco ordering website at <http://www.cisco.com/en/US/ordering/index.shtml>, or reference the URL listed in the "For More Information" section for each product.

For more Cisco routing platforms, refer to the Cisco Routing Guide at <http://www.cisco.com/go/routerguide>.

Cisco Integrated Services Routers Model Comparison

Feature	Cisco 3945E	Cisco 3925E	Cisco 3945	Cisco 3925	Cisco 2951	Cisco 2921	Cisco 2911	Cisco 2901	Cisco 1941/1941W	Cisco 1921
Form Factor	3 rack units (3RU)	3RU	3RU	3RU	2RU	2RU	2RU	1RU	2RU	1RU
Integrated WAN Ports	4 GE (2 SFP)	4 GE (2 SFP)	3 GE (2 SFP)	3 GE (2 SFP)	3 GE (1 SFP)	3 GE (1 SFP)	3 GE	2 GE	2 GE	2 GE
Interface Slots (EHWIC)	3	3	4	4	4	4	4	4	2	2
Service Module Slots	4	2	4	2	2	1	1	0	0	0
ISM Slots	0	0	1	1	1	1	1	1	1	0
PVDM3 Slots	3	3	4	4	3	3	2	2	0	0
USB Ports (v2.0)	2	2	2	2	2	2	2	2	2	1
Default/Max Flash	256MB/4GB	256MB/4GB	256 MB/4GB	256 MB/4GB	256 MB/4GB	256 MB/4GB	256 MB/4GB	256 MB/4GB	256 MB/4GB	256 MB/256 MB
Default/Max SDRAM	1 GB/4 GB ¹	1 GB/4 GB ¹	1 GB/4 GB ¹	1 GB/4 GB ¹	512 MB/2.5 GB	512 MB/2.5 GB	512 MB/2.5 GB	512 MB/2.5 GB	512 MB/2.5 GB	512 MB/2.5 GB
Modular LAN Switchports (with optional PoE)	98 ²	74 ²	98 ²	74 ²	50 ²	50 ²	24 ²	16 ²	11 ²	9
WAN Optimization	Enabled via WAAS on the SRE module or WAAS Express									

WAAS Support on SRE Service Modules 700, 710, 900, and 910	SRE 700, 710, 900, and 910 with WAAS 4.3 or later	SRE 700, 710, 900, and 910 with WAAS 4.3 or later	SRE 700, 710, 900, and 910 with WAAS 4.3 or later	SRE 700, 710, 900, and 910 with WAAS 4.3 or later	SRE 700, 710, 900, and 910 with WAAS 4.3 or later	SRE 700, 710, 900, and 910 with WAAS 4.3 or later	SRE 700, 710, 900, and 910 with WAAS 4.3 or later	No	No	No
Platform supports Cisco WAAS Express			Yes	Yes	Yes	Yes	Yes	Yes	Yes	
WAAS Express Optimized TCP Connections			500	500	500	250	250	150	150	
WAAS Express WAN Capacity			10 Mbps	10 Mbps	10 Mbps	6 Mbps	6 Mbps	6 Mbps	4 Mbps	
Advanced Security	Enabled via Security License for Universal IOS Image. FW, IPS, and Content Filtering, ScanSafe Web Security need additional subscription licenses									
Stateful Firewall	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Onboard Hardware VPN Acceleration (DES, 3DES, AES)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Intrusion prevention	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Content filtering	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
ScanSafe Web Security	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Unified Communication	Enabled via Unified Communications License for Universal IOS Image. CCME/SRST support through separate feature licenses									
Local conferencing	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	—	—
Voice and Video DSP support	PVDM3 and PVDM2	PVDM3 and PVDM2	PVDM3 and PVDM2	PVDM3 and PVDM2	PVDM3 and PVDM2	PVDM3 and PVDM2	PVDM3 and PVDM2	PVDM3 and PVDM2	—	—
Survivable Remote Site Telephony (SRST)	Up to 1500	Up to 1350	Up to 1200	Up to 730	Up to 250	Up to 100	Up to 50	Up to 35	—	—
Cisco Unified Communications Manager Express	Up to 450	Up to 400	Up to 350 ²	Up to 250 ²	Up to 150	Up to 100	Up to 50	Up to 35	—	—
Cisco Unity™ Express (network module [NM], service module [SM], or ISM)	32 ports: 300 mail-boxes	32 ports: 300 mail-boxes	32 ports: 300 mail-boxes	32 ports: 300 mail-boxes	32 ports: 300 mail-boxes	32 ports: 300 mail-boxes	32 ports: 300 mail-boxes	10 ports: 100 mail-boxes	—	—
Cisco Unified Border Element sessions	2500	2100	950	800	600	400	200	100	—	—
Cisco Unified SIP Proxy	200 CPS (with SRE-700 and SRE-900)	100 CPS (with SRE-700 and SRE-900)	200 CPS (with SRE-700 and SRE-900)	100 CPS (with SRE-700 and SRE-900)	100 CPS (with SRE-700 and SRE-900)	10 CPS (with SRE-700 and SRE-900)	10 CPS (with SRE-700 and SRE-900)	—	—	—
Digital voice support	Up to 840	Up to 600	Up to 900	Up to 720	Up to 400	Up to 240	Up to 150	Up to 100	—	—
Maximum voice support for analog and Basic Rate Interface (BRI)	FXS: 108 FXO: 60 BRI: 38	FXS: 60 FXO: 36 BRI: 22	FXS: 112 FXO: 64 BRI: 40	FXS: 64 FXO: 40 BRI: 24	FXS: 40 FXO: 28 BRI: 16	FXS: 40 FXO: 28 BRI: 16	FXS: 40 FXO: 28 BRI: 16	FXS: 16 FXO: 16 BRI: 8	—	—

Online model comparison chart: http://www.cisco.com/en/US/products/ps10536/prod_series_comparison.html

¹ Up to 2 GB available for use; upgrade to 4 GB available in future.

² LAN Switching counts for the Cisco 2911 through Cisco 3945 and Cisco 3945E routers based on latest generation of switch service module.

³ Scales to documented phone support in 15.01 build.

Branch-Office Routers

Cisco 3900 Series Integrated Services Routers

Cisco 3900 Series Integrated Services Routers (ISRs) are designed to power the next phase of branch-office evolution, providing rich-media collaboration and virtualization to the branch office while reducing operating costs.



Cisco 3900 Series Integrated Services Routers build on 25 years of Cisco innovation and product leadership. The new Cisco Integrated Services Routers Generation 2 (ISR G2) platforms are architected to enable the next phase of branch-office evolution, providing rich-media collaboration and virtualization to the branch office while maximizing operational cost savings. The new routers support new high-capacity digital signal processors (DSPs) known as PVDM3 for higher-density voice services plus basic videoconferencing capabilities, high-powered service modules with improved availability, multicore CPUs, Gigabit Ethernet switching with Cisco Enhanced Power over Ethernet (ePoE), and new energy visibility and control capabilities while enhancing overall system performance.

Additionally, a new Cisco IOS Software Universal image and Cisco Services-Ready Engine (SRE) module enable you to decouple the deployment of hardware and software, providing a flexible technology foundation that can quickly adapt to evolving network requirements. Overall, the Cisco 3900 Series offers exceptional total cost of ownership (TCO) savings and network agility through the intelligent integration of market-leading security, unified communications, wireless, and application services.

The routers include:

- **Services on demand:** The Cisco 3900 Series Integrated Services Routers reduce initial capital outlays by decoupling the delivery of software from hardware on optional service modules. In addition, you receive a Universal Cisco IOS Software image capable of enabling all of Cisco's rich Cisco IOS Software features and allowing you to quickly deploy new services.
- **Investment protection:** The Cisco 3900 Series reduces deployment costs and increases flexibility. The platform offers a modular, field-upgradable motherboard called the Services Performance Engine (SPE). SPEs allow you to invest in a Cisco 3900 Series ISR today and boost its performance later by upgrading to a higher-performance engine. Investment protection is also offered with support for most existing modules from previous-generation ISRs.
- **The Cisco Unified Border Element features on the Cisco 3900 provide additional investment protection** by allowing enterprises to gracefully transition from traditional time-division multiplexing (TDM) voice to IP-based unified communications without the need for hardware upgrades.
- **Energy efficiency:** The Cisco 3900 Series architecture includes higher-efficiency power supplies with intelligent power management, with full Cisco EnergyWise feature support in the future. Both Cisco 3925 and 3945 routers support dual power supplies for power-supply redundancy for branch-office or retail environments running mission-critical applications.
- **High performance:** The Cisco 3900 Series offers significant performance improvements over previous-generation ISRs.

Overall, the Cisco 3900 Series offers unparalleled total-cost-of-ownership (TCO) savings and network agility through the intelligent integration of security, wireless, rich media, and application services.

Ideal for Companies That Need These Features

Cisco 3945E

- Modular Services Performance Engine (SPE) 250, which can be upgraded for even higher performance as next-generation WAN environments evolve
- Four integrated 10/100/1000 Ethernet ports with 2 ports capable of RJ-45 or Small Form-Factor Pluggable (SFP) connectivity
- Four service-module slots
- Three enhanced high-speed WAN interface card (HWIC) slots
- Three onboard digital-signal-processor (DSP) slots
- Up to 2500 SIP trunk sessions
- Dual integrated power supplies
- Fully integrated power distribution to modules supporting 802.3af Power over Ethernet (PoE)

Cisco 3925E

- Modular Services Performance Engine (SPE) 200 for even higher performance as WAN environments evolve
- Four integrated 10/100/1000 Ethernet ports with two Small Form-Factor Pluggable (SFP) ports
- Two service-module slots
- Three enhanced high-speed WAN interface card (HWIC) slots
- Three onboard digital-signal-processor (DSP) slots
- Up to 2100 Session Initiation Protocol (SIP) trunk sessions
- Dual integrated power supplies
- Fully integrated power distribution to modules supporting 802.3af Power over Ethernet (PoE)

- | | |
|-------------------|--|
| Cisco 3945 | <ul style="list-style-type: none"> • Modular Services Performance Engine (SPE) 150, which can be upgraded for even higher performance as next-generation WAN environments evolve • Four integrated 10/100/1000 Ethernet ports with two ports capable of RJ-45 or SFP connectivity • Four service-module slots • Four EHWIC slots • Four onboard DSP slots • Up to 950 SIP trunk sessions • One integrated-services-module slot • Dual integrated power supplies • Fully integrated power distribution to modules supporting 802.3af PoE |
| Cisco 3925 | <ul style="list-style-type: none"> • Modular Services Performance Engine (SPE) 100 for even higher performance as WAN environments evolve • Three integrated 10/100/1000 Ethernet ports with two SFP ports • Two service-module slots • Four EHWIC slots • Four onboard DSP slots • Up to 800 SIP trunk sessions • One integrated-services-module slot • Dual integrated power supplies • Fully integrated power distribution to modules supporting 802.3af PoE |

Main Features and Benefits

- Modular platform
 - The Cisco 3900 Series routers are highly modular platforms with several types of module slots to add connectivity and services for varied branch-office network requirements.
 - The routers offer an industry-leading breadth of LAN and WAN connectivity options through modules to accommodate field upgrades to future technologies without requiring platform replacement.
 - The Cisco SPE on the Cisco 3900 offers the ability to increase the performance of the router with a field-upgradable motherboard as your network needs grow.
- Processors
 - The Cisco 3900 Series routers are powered by high-performance multicore processors that can support the growing demands of high-speed WAN connections to the branch office while also running multiple concurrent services.
- Advanced security with embedded IP Security with Secure Sockets Layer (IPsec/SSL) VPN hardware acceleration
 - Embedded hardware encryption acceleration is enhanced to provide higher scalability, which, combined with an optional Cisco IOS Software Security license, enables WAN link security and VPN services (both IPsec and SSL acceleration).
 - The onboard encryption hardware outperforms the advanced integration modules (AIMs) of previous generations.
 - The routers support Cisco Easy VPN (remote and server), Dynamic Multipoint VPN (DMVPN), Group Encrypted Transport VPN (GET VPN), and SSL VPN. The Cisco 3900 Series routers support Multiprotocol Label Switching (MPLS) VPNs. Specific provider-edge capabilities include Virtual Route Forwarding (VRF) firewall and VRF IPsec.
 - More than 3700 intrusion-prevention-system (IPS) signatures are supported in Cisco IOS Software, with the ability to load and enable selected IPS signatures. More than 4500 IPS signatures are available with the optional high-performance IPS network module.
 - Content filtering includes URL and keyword blocking and features category-based productivity and security ratings. This solution is a subscription-based hosted solution that takes advantage of Trend Micro's global TrendLabs threat database, and is closely integrated with Cisco IOS Software.
 - Cisco Configuration Professional comes standard on all Cisco 3900 Series Integrated Services Routers.
- WAN optimization with Cisco WAAS Express
 - Cisco Wide Area Application Services (WAAS) Express, based on Cisco IOS Software and integrated into the Cisco 3900 Series routers, offers bandwidth optimization and application acceleration capabilities in a cost-effective solution.
 - Cisco WAAS Express is fully integrated in Cisco IOS Software, with no additional hardware requirement (the maximum DRAM is needed in the router). This integration allows significant savings in capital expenditures (CapEx) by enabling a small-footprint branch-office deployment.
 - It increases remote user productivity, reduces WAN bandwidth costs, and offers investment protection by interoperating with existing Cisco WAAS infrastructure.
 - It uniquely provides network transparency, improving deployment flexibility with on-demand service enablement, and integrating with native Cisco IOS Software services such as security, NetFlow, and quality of service (QoS).

- It is fully interoperable with Cisco WAAS Modules for Services-Ready Engine (SRE) and Cisco WAAS appliances and can be managed by a common Cisco WAAS Central Manager.
- Cisco WAAS Express offers Context-Aware Data Redundancy Elimination (DRE) for reduced latency and increased end-user experience.
- Organizations can enable Cisco WAAS Express as an on-demand service on the router and can expand to the Cisco WAAS Modules for SRE or a dedicated Cisco WAAS appliance as business needs grow.
- WAN optimization with Cisco WAAS Software on Cisco Integrated Services Routers Generation 2 (ISR G2)
 - Cisco WAAS Software on Cisco 3900 Series provides router-integrated, on-demand WAN optimization and application acceleration for branch offices.
 - Cisco WAAS offers the option to integrate physically with first- and second-generation Cisco ISRs.
 - The Cisco Services Ready Engine (SRE) Modules on the ISR G2 platform, which decouple software services from the underlying hardware, can deliver WAN optimization as an on-demand service as required for business objectives and IT budget.
 - Cisco WAAS Software is licensed with two types of feature capability for deployment on the Cisco SRE Modules. The software licenses are common across Cisco SRE 700 SM, SRE 710 SM, SRE 900 SM, and SRE 910 SM.
 - Transport license: Supports WAN optimization features including DRE, Lempel-Ziv (LZ) compression, and Transport Flow Optimization (TFO)
 - Enterprise license: Includes Cisco WAAS Transport license functions (DRE, LZ compression, and TFO) plus application-specific accelerations for protocols including Common Internet File System (CIFS) and Messaging Application Programming Interface (MAP)
- Multigigabit fabric (MGF)
 - The Cisco 3900 Series introduces an innovative MGF that allows for efficient module-to-module communication, enabling tighter services interactions across modules while reducing the overhead on the router processor.
- TDM interconnectivity fabric
 - Unified communications services in the branch office are significantly enhanced with the use of TDM interconnectivity fabric in the router architecture, allowing for scaling of DS-0 channel capacity.
- Integrated Gigabit Ethernet ports
 - The Cisco 3900 Series provides up to four 10/100/1000 Ethernet WAN ports.
 - Two of the 10/100/1000 Ethernet WAN ports on the Cisco 3900 Series can support Small Form-Factor Pluggable (SFP)-based connectivity in lieu of RJ-45 ports, enabling fiber connectivity.
- High-capacity packet voice video digital signal processor module (PVDM3)
 - Enhanced architecture delivers a new packet-processing engine optimized for video and rich-media applications, while concurrently supporting packet voice.
 - The PCDM3 enables scaling of high-definition (HD) voice capacity and is optimized for enhanced video capabilities.
 - It supports a full suite of medianet features.
- Innovative universal-serial-bus (USB)-based console access
 - A new, innovative, mini-B USB console port supports management connectivity when traditional serial ports are not available.
 - Traditional console and auxiliary ports are also available.
- Optional integrated power supply for distribution of PoE and universal DC power supply
 - An optional upgrade to the internal power supply provides inline power (802.3af-compliant PoE, Cisco ePoE, and Cisco Inline Power) to optional integrated switch modules.
 - An optional DC power supply that extends possible deployment environments such as central offices and industrial environments will be available in the future.
- Optional integrated redundant power supply (RPS) and PoE boost
 - Power redundancy is available by installing an optional integrated RPS, thereby decreasing network downtime and protecting the network from power-supply failures.
 - When populated with dual integrated power supplies, the Cisco 3900 Series can operate in a configurable PoE boost mode in lieu of redundant power mode whereby the power capacity of the platform is increased to almost twice the normal power to support additional PoE ports.
- Designed for flexible deployments
 - The Cisco 3945 and 3925 are designed for Network Equipment Building Systems (NEBS) environments.

Specifications

Services and Slot Density	Cisco 3945E	Cisco 3925E	Cisco 3945	Cisco 3925
Embedded hardware-based cryptography acceleration (IPSec + Secure Sockets Layer [SSL])	Yes	Yes	Yes	Yes
Cisco Unified Communications Manager Express Sessions	450	400	350	250
Cisco Unified SRST sessions	1500	1350	1200	730
Cisco Unified Border Element sessions	2500	2100	950	800
Total onboard WAN or LAN 10/100/1000 ports	4	4	3	3
RJ-45-based ports	4	4	3	3
SFP-based ports	2	2	2	2
Service-module slots	4	2	4	2
Doublewide service-module slots	1	1	1	1
EHWIC slots	3	3	4	4
Doublewide EHWIC slots	1	1	2	2
ISM slots	0	0	1	1
Online insertion and removal (OIR)	Services modules	Services modules	Services modules	Services modules
Onboard DSP (PVDM3) slots	3	3	4	4
Memory DDR2 ECC DRAM: Default	1 GB	1 GB	1 GB	1 GB
Memory DDR2 ECC DRAM: Maximum	2 GB	2 GB	2 GB	2 GB
Compact Flash (external): Default	Slot 0: 256 MB Slot 1: None	Slot 0: 256 MB Slot 1: None	Slot 0: 256 MB Slot 1: None	Slot 0: 256 MB Slot 1: None
Compact Flash (external): Maximum	Slot 0: 4 GB Slot 1: 4 GB	Slot 0: 4 GB Slot 1: 4 GB	Slot 0: 4 GB Slot 1: 4 GB	Slot 0: 4 GB Slot 1: 4 GB
External USB 2.0 slots (Type A)	2	2	2	2
USB console port (Type B) (up to 115.2 kbps)	1	1	1	1
Serial console port (up to 115.2 kbps)	1	1	1	1
Serial auxiliary port (up to 115.2 kbps)	1	1	1	1
Power-supply options	Internal: AC, PoE, and DC	Internal: AC, PoE, and DC	Internal: AC, PoE, and DC	Internal: AC, PoE, and DC
Redundant power supply	Internal: AC, PoE, and DC	Internal: AC, PoE, and DC	Internal: AC, PoE, and DC	Internal: AC, PoE, and DC
WAN Optimization with WAAS Express			Yes	Yes
Optimized TCP Connections with WAAS Express			500	500
WAS Capacity with WAAS Express			10 Mbps	10 Mbps
DRAM Required for WAAS Express			4 GB	4 GB
Power Specifications				
AC input voltage	100 to 240 VAC autoranging	100 to 240 VAC autoranging	100 to 240 VAC autoranging	100 to 240 VAC autoranging
AC input frequency	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
AC input current range, AC power supply (maximum)	7i to 3.0A	7i to 3.0A	7i to 3.0A	7i to 3.0A
AC input surge current	<50A	<50A	<50A	<50A
Typical power (no modules) (watts)	105	100	105	100
Maximum power with AC power supply (watts)	540	420	540	420
Maximum power with PoE power supply (platform only) (watts)	540	420	540	420
Maximum endpoint PoE power available from PoE power supply (watts)	520	520	520	520
Maximum endpoint PoE power capacity with PoE boost (watts)	1040	1040	1040	1040
Dimensions (H x W x D)	5.25 x 17.25 x 18.75 in. (133.35 x 438.15 x 476.25 mm)	5.25 x 17.25 x 18.75 in. (133.35 x 438.15 x 476.25 mm)	5.25 x 17.25 x 18.75 in. (133.35 x 438.15 x 476.25 mm)	5.25 x 17.25 x 18.75 in. (133.35 x 438.15 x 476.25 mm)

Rack height	3 rack units (3RU)	3RU	3 RU	3RU
Rack-mount 19 in. (48.3 cm) EIA	Included	Included	Included	Included
Rack-mount 23 in. (58.4 cm) EIA	Optional	Optional	Optional	Optional
Wall-mount	No	No	No	No
Weight with AC power supply (no modules)	39 lb (17.7 kg)	39 lb (17.7 kg)	39 lb (17.7 kg)	39 lb (17.7 kg)
Weight with PoE power supply (no modules)	40 lb (18.1 kg)	40 lb (18.1 kg)	40 lb (18.1 kg)	40 lb (18.1 kg)
Typical weight (with modules)	60 lb (27.2 kg)	60 lb (27.2 kg)	60 lb (27.2 kg)	60 lb (27.2 kg)
Airflow	Back to front	Back to front	Back to front	Back to front
Optional airflow kit (includes filter)	None	None	Front to back	Front to back

Online model comparison chart: http://www.cisco.com/en/US/products/ps10536/prod_series_comparison.html

The Cisco 3900 Series supports a wide range of modules that span industry-leading breadth of services at the branch office. For a list of modules supported on the Cisco 3900 Series, visit: http://www.cisco.com/en/US/products/ps10536/products_relevant_interfaces_and_modules.html.

Selected Part Numbers and Ordering Information

Cisco 3900 Series Integrated Services Routers	
CISCO3945E/K9	Cisco 3945 w/SPE250(4GE, 3EHWIC, 3DSP,4SM, 256MBCF1GBDRAM,IPB)
CISCO3925E/K9	Cisco 3925 w/SPE200(4GE, 3EHWIC, 3DSP, 2SM, 256MBCF1GBDRAM,IPB)
CISCO3945/K9	Cisco 3925 w/SPE150(3GE,4EHWIC,4DSP,4SM, 256MBCF1GBDRAM,IPB)
CISCO3925/K9	Cisco 3945 w/SPE100(3GE,4EHWIC,4DSP, 2SM, 256MBCF1GBDRAM,IPB)
C3900-SPE250/K9=	Cisco Services Performance Engine 250 for Cisco 3945E ISR (Spare)
C3900-SPE200/K9=	Cisco Services Performance Engine 200 for Cisco 3925E ISR (Spare)
C3900-SPE150/K9=	Cisco Services Performance Engine 150 for Cisco 3945 ISR (Spare)
C3900-SPE100/K9=	Cisco Services Performance Engine 100 for Cisco 3925 ISR (Spare)
C3900-SPE100/K9=	Cisco Services Performance Engine 100 for Cisco 3925 ISR (Spare)
Cisco 3900 Series Secure Voice Bundles⁴	
C3945E-VSEC/K9	Cisco 3945E Voice Sec. Bundle, PVDM3-64, UC and SEC License PAK
C3925E-VSEC/K9	Cisco 3925E Voice Sec. Bundle, PVDM3-64, UC and SEC License PAK
C3945-VSEC/K9	Cisco 3945 Voice Sec. Bundle, PVDM3-64, UC and SEC License PAK
C3925-VSEC/K9	Cisco 3925 Voice Sec. Bundle, PVDM3-64, UC and SEC License PAK
Cisco 3900 Series Secure Voice and CUBE Bundles¹	
C3925-VSEC-CUBE/K9	Cisco 3925 Voice Sec and CUBE Bundle, PVDM3-64, UC and SEC License P, FL-CUBEE-25
C3945-VSEC-CUBE/K9	Cisco 3945 Voice Sec and CUBE Bundle, PVDM3-64, UC and SEC License P, FL-CUBEE-25
C3925E-VSEC-CUBEK9	Cisco 3925E Voice Sec and CUBE Bundle, PVDM3-64, UC and SEC License P, FL-CUBEE-25
C3945E-VSEC-CUBEK9	Cisco 3945E Voice Sec and CUBE Bundle, PVDM3-64, UC and SEC License P, FL-CUBEE-25
Cisco 3900 Series Security Bundles⁵	
CISCO3945E-SEC/K9	Cisco 3945E Security Bundle w/SEC license PAK
CISCO3925E-SEC/K9	Cisco 3925E Security Bundle w/SEC license PAK
CISCO3945-SEC/K9	Cisco 3945 Security Bundle w/SEC license PAK
CISCO3925-SEC/K9	Cisco 3925 Security Bundle w/SEC license PAK
Cisco 3900 Series Voice Bundles	
CISCO3945E-V/K9	Cisco 3945E Voice Bundle, PVDM3-64, UC License PAK
CISCO3925E-V/K9	Cisco 3925E Voice Bundle, PVDM3-64, UC License PAK
CISCO3945-V/K9	Cisco 3945 Voice Bundle, PVDM3-64, UC License PAK
CISCO3925-V/K9	Cisco 3925 Voice Bundle, PVDM3-64, UC License PAK
C3945E-CME-SRST/K9	3945E Voice Bundle w/ PVDM3-64,FL-CME-SRST-25, UC License PAK
C3925E-CME-SRST/K9	3925E Voice Bundle w/ PVDM3-64,FL-CME-SRST-25, UC License PAK
C3945-CME-SRST/K9	3945 Voice Bundle w/ PVDM3-64,FL-CME-SRST-25, UC License PAK
C3925-CME-SRST/K9	3925 Voice Bundle w/ PVDM3-64,FL-CME-SRST-25, UC License PAK
Cisco 3900 Series Service Ready Engine Bundles¹	
C3945E-VSEC-SRE/K9	Cisco 3945E SRE Bundle, SRE 900 or SRE 910, PVDM3-64, UC and SEC License PAK
C3925E-VSEC-SRE/K9	Cisco 3925E SRE Bundle, SRE 900 or SRE 910, PVDM3-64, UC and SEC License PAK
C3945-VSEC-PSRE/K9	Cisco 3945 SRE Bundle, SRE 900 or SRE 910, PVDM3-64, UC and SEC License PAK

C3925-VSEC-PSRE/K9	Cisco 3925 SRE Bundle, SRE 900 or SRE 910, PVD3M3-64, UC and SEC License PAK
C3945-VSEC-SRE/K9	Cisco 3945 SRE Bundle, SRE 700 or SRE 710, PVD3M3-64, UC and SEC License PAK
C3925-VSEC-SRE/K9	Cisco 3925 SRE Bundle, SRE 700 or SRE 710, PVD3M3-64, UC and SEC License PAK
Cisco 3900 Series UCS Express Bundles	
C3945-WAAS-UCSE/K9	Cisco 3945, 2x SRE 900 or SRE 910, WAAS Enterprise Medium License, SRE-V License, 4GB ISR RAM, 768 MB ISR CF, IMC Software
C3925-WAAS-UCSE/K9	Cisco 3925, 2x SRE 900 or SRE 910, WAAS Enterprise Medium License, SRE-V License, 4GB ISR RAM, 768 MB ISR CF, IMC Software
C3945-ES24-UCSE/K9	Cisco 3945, SRE 900 or SRE 910, 24 port L3 ESM w/ PoE, 4 GB RAM, SRE-V License, 768 MB ISR CF, IMC Software
C3925-ES24-UCSE/K9	Cisco 3925, SRE 900 or SRE 910, 24 port L2 ESM w/ PoE, 4 GB RAM, SRE-V License, 768 MB ISR CF, IMC Software
C3945-UCSE/K9	Cisco 3945, SRE 900 or SRE 910, SRE-V License, 4 GB ISR RAM, 768 MB ISR CF, IMC Software
C3925-UCSE/K9	Cisco 3925, SRE 900 or SRE 910, SRE-V License, 4 GB ISR RAM, 768 MB ISR CF, IMC Software
Cisco 3900 Series WAAS Bundles	
C3945-WAAS-SEC/K9	Cisco 3945, SRE 900 or SRE 910, SEC License PAK, WAAS Enterprise Large License
C3925-WAAS-SEC/K9	Cisco 3925, SRE 900 or SRE 910, SEC License PAK, WAAS Enterprise Large License
Select WAAS Express License Part Numbers	
FL-C3900-WAAS-X	WAAS Express Feature License for Cisco 3900 Series
Cisco 3900 Series Export Restriction Compliance License (Required by U.S. Export regulations for more than 85Mbps throughput or 225 IPsec tunnels)	
FL-39-HSEC-K9	U.S. Export Restriction Compliance license for 3900 series

¹ Additional HSEC license available for high performance/scale IPsec deployments

For More Information

<http://www.cisco.com/go/3900>

Cisco 2900 Series Integrated Services Routers

Cisco 2900 Series Integrated Services Routers (ISRs) are designed to power the next phase of branch-office evolution, providing rich-media collaboration and virtualization to the branch office while reducing operating costs.



Cisco 2900 Series Integrated Services Routers build on 25 years of Cisco innovation and product leadership. The Cisco Integrated Services Routers Generation 2 (ISR G2) platforms are protected for future generations with multicore CPUs, support for high-capacity digital signal processors (DSPs) known as PVD3M3 for higher-density voice services plus basic videoconferencing capabilities, high-powered service modules with improved availability, Gigabit Ethernet switching with enhanced Power over Ethernet (ePoE), and new energy monitoring and control capabilities while enhancing overall system performance.

Additionally, a new Cisco IOS Software Universal image and services-ready engine (SRE) module enable you to decouple the deployment of hardware and software, providing a flexible technology foundation that can quickly adapt to evolving network requirements. Overall, the Cisco 2900 Series offers unparalleled total-cost-of-ownership (TCO) savings and network agility through the intelligent integration of market-leading security, unified communications, wireless, and application services.

The routers include:

- **Services on demand:** The Cisco 2900 Series Integrated Services Routers reduce initial capital outlays by decoupling the delivery of software from hardware on optional service modules. In addition, you receive a Cisco IOS Software Universal image capable of enabling all of Cisco's rich Cisco IOS Software features and allowing you to quickly deploy new services.
- **Investment protection:** The Cisco 2900 Series reduces deployment costs and increases flexibility. The platform also offers investment protection with support for many existing ISR modules.
- The Cisco 2900 Series provides additional investment protection with Cisco Unified Border Element by allowing enterprises to gracefully transition from older time-division multiplexing (TDM) voice to IP-based unified communications without the need for hardware upgrades.
- **Energy efficiency:** The Cisco 2900 Series architecture incorporates higher-efficiency power supplies with intelligent power management, with full Cisco EnergyWise support in the future.
- **High performance:** The Cisco 2900 Series offers significant performance improvements over previous-generation ISRs.

Overall, the Cisco 2900 Series offers unparalleled TCO savings and network agility through the intelligent integration of security, wireless, unified communications, and application services.

Ideal for Companies That Need These Features

- Cisco 2900 Series**
- Highly secure data, voice, video, and application services for small offices
 - Two or 3 integrated 10/100/1000 Ethernet ports with 1 port capable of RJ-45 or Small Form-Factor Pluggable (SFP) connectivity
 - Two service-module slots
 - Four enhanced high-speed WAN interface card (EHWIC) slots
 - Two or 3 onboard digital-signal-processor (DSP) slots
 - One internal service-module slot for application services
 - Fully integrated power distribution to modules supporting 802.3af Power over Ethernet (PoE) and Cisco Enhanced PoE (ePoE)

Main Features and Benefits

The Cisco 2900 Series builds on the best-in-class offering of the existing Cisco 2800 Series Integrated Services Routers by offering four platforms: Cisco 2901, 2911, 2921, and 2951 Integrated Services Routers.

All Cisco 2900 Series Integrated Services Routers offer embedded hardware encryption acceleration, voice- and video-capable DSP slots, optional firewall, intrusion prevention, call processing, voicemail, and application services. In addition, the platforms support the industry's widest range of wired and wireless connectivity options such as T1/E1, T3/E3, xDSL, copper, and fiber Gigabit Ethernet.

Important architectural features of the Cisco 2900 Series include:

- Modular platform
 - The Cisco 2900 Series ISRs are highly modular platforms with several types of module slots to add connectivity and services for varied branch-office network requirements.
 - The ISRs offer an industry-leading breadth of LAN and WAN connectivity options through modules to accommodate field upgrades for future technologies without requiring a platform replacement.
- Processors
 - The Cisco 2900 Series routers are powered by high-performance multicore processors that can support the growing demands of high-speed WAN connections to the branch office while also running multiple concurrent services.
- Advanced security with embedded IP Security with Secure Sockets Layer (IPsec/SSL) VPN hardware acceleration
 - Embedded hardware encryption acceleration is enhanced to provide higher scalability, which combined with an optional Cisco IOS Security license enables WAN link security and VPN services (both IPsec and SSL acceleration). The onboard encryption hardware replaces and outperforms the advanced integration modules (AIMs) of previous generations.
 - The routers support Cisco Easy VPN (remote and server), Dynamic Multipoint VPN (DMVPN), Group Encrypted Transport VPN (GET VPN), and Secure Sockets Layer VPN (SSL VPN). The Cisco 3900 Series routers support Multiprotocol Label Switching (MPLS) VPNs. Specific provider-edge capabilities include Virtual Route Forwarding (VRF) firewall and VRF IPsec.
 - More than 3700 intrusion-prevention-system (IPS) signatures are supported in Cisco IOS Software, with the ability to load and enable selected IPS signatures. More than 4500 IPS signatures are available with the optional high-performance IPS network module.
 - Content Filtering includes URL and keyword blocking and features category-based productivity and security ratings. This solution is a subscription-based hosted solution that takes advantage of Trend Micro's global TrendLabs threat database, and is closely integrated with Cisco IOS Software.
 - Cisco Configuration Professional comes standard on all Cisco 2900 Series Integrated Services Routers.
- WAN optimization with Cisco Wide Area Application Services (WAAS) Express
 - Cisco WAAS Express, based on Cisco IOS® Software and integrated into the Cisco 2900 Series routers, offers bandwidth optimization and application acceleration capabilities in a cost-effective solution.
 - Cisco WAAS Express is fully integrated in Cisco IOS Software, with no additional hardware requirement (the maximum DRAM is needed in the router). This integration allows significant savings in capital expenditures (CapEx) by enabling a small-footprint branch-office deployment.
 - It increases remote user productivity, reduces WAN bandwidth costs, and offers investment protection by interoperating with existing Cisco WAAS infrastructure.
 - It uniquely provides network transparency, improving deployment flexibility with on-demand service enablement, and integrating with native Cisco IOS Software services such as security, NetFlow, and quality of service (QoS).
 - It is fully interoperable with Cisco WAAS Modules for Services-Ready Engine (SRE) and Cisco WAAS appliances and can be managed by a common Cisco WAAS Central Manager.
 - Cisco WAAS Express offers Context-Aware DRE for reduced latency and increased end-user experience.
 - Organizations can enable Cisco WAAS Express as an on-demand service on the router and can expand to the Cisco WAAS Modules for SRE or a dedicated Cisco WAAS appliance as business needs grow.

- WAN optimization with Cisco WAAS Software on Cisco Integrated Services Routers Generation 2 (ISR G2)
 - Cisco WAAS Software on the Cisco 2900 Series provides router-integrated, on-demand WAN optimization and application acceleration for branch offices.
 - The Cisco Services-Ready Engine (SRE) Modules on the ISR G2 platform, which decouple software services from the underlying hardware, can deliver WAN optimization as an on-demand service as required for business objectives and IT budget.
 - Cisco WAAS Software is licensed with two types of feature capability for deployment on the Cisco SRE Modules. The software licenses are common across Cisco SRE 700 SM, SRE 710 SM, SRE 900 SM, and SRE 910 SM.
 - Transport license: Supports WAN optimization features including Data Redundancy Elimination (DRE), Lempel-Ziv (LZ) compression, and Transport Flow Optimization (TFO)
 - Enterprise license: Includes Cisco WAAS Transport license functions (DRE, LZ compression, and TFO) plus application-specific accelerations for protocols including Common Internet File System (CIFS) and Messaging Application Programming Interface (MAPI)
- Multigigabit fabric
 - The Cisco 2900 Series introduces an innovative multigigabit fabric (MGF) that allows for efficient module-to-module communication, enabling tighter services interactions across modules while reducing the overhead on the route processor.
- TDM interconnectivity fabric
 - Unified communications services in the branch office are significantly enhanced with the use of a TDM interconnectivity fabric in the system architecture, allowing for scaling of DS-0 channel capacity.
- High-capacity, video-ready Packet Voice Video Digital Signal Processor Module (PVD3M3)
 - The enhanced architecture of the PVD3M3 delivers a new packet-processing engine optimized for video and rich-media applications, while concurrently supporting packet voice.
 - The module enables scaling of high-definition (HD) voice capacity and is optimized for enhanced video capabilities.
 - It supports a full suite of medianet features.
- Integrated Gigabit Ethernet ports
 - All onboard WAN ports are 10/100/1000 Gigabit Ethernet WAN routed ports.
 - One of the three 10/100/1000 Ethernet WAN ports on the Cisco 2921 and 2951 supports Small Form-Factor Pluggable (SFP)-based connectivity in lieu of a RJ-45 port and enabling fiber connectivity.
- Innovative USB-based console access
 - A new, innovative USB console port offers management connectivity for devices without a serial port such as modern laptop computers.
 - Traditional console and auxiliary ports are also available.
- Optional integrated power supply for distribution of PoE and universal DC power supply
 - An optional upgrade to the internal power supply provides inline power (802.3af-compliant PoE and Cisco Inline Power) to integrated switch modules.
 - On the Cisco 2911, 2921, and 2951, an optional DC power supply will be available in the future that extends deployment into central offices and industrial environments.
- Optional external redundant power supply (RPS)
 - The Cisco 2911, 2921, and 2951 allow for power redundancy through the use of an external RPS device, thereby decreasing network downtime and protecting the network from power-supply failures.
 - Redundant power on the Cisco 2900 Series is supported through the Cisco RPS 2300 Redundant Power System. You can use the Cisco RPS 2300 to provide redundant power for Cisco 2900 Series ISRs as well as Cisco Catalyst switches.
 - To use the Cisco RPS 2300, an external RPS adapter is required (configurable option) to connect the platform to the external RPS.
- PoE boost
 - When connected to an external RPS device, the Cisco 2911, 2921, and 2951 can operate in a PoE boost configuration in lieu of redundant power mode, whereby the power capacity of the platform is increased to twice the normal level to power additional PoE ports.
- Designed for flexible deployments
 - The Cisco 2911 and 2951 are designed for NEBS environments.
 - The Cisco 2911 is 12 inches deep and has an optional fan filter for deployments in a variety of environments. An assembly that provides front-to-back airflow is also available for 23-inch racks.

Specifications

Services and Slot Density	Cisco 2901	Cisco 2911	Cisco 2921	Cisco 2951
Embedded hardware-based cryptography acceleration (IPSec + SSL)	Yes	Yes	Yes	Yes
Cisco Unified SRST Sessions	35	50	100	250
Cisco Unified CCME Sessions	35	50	100	150

Total onboard WAN 10/100/1000 Ports	2	3	3	3
RJ-45-based ports	2	3	3	3
SFP-based ports (use of SFP port disables the corresponding RJ-45 port)	0	0	1	1
Service Module slots	0	1	1	2
Double-wide Service Module slots (use of a double-wide slot will occupy all single-wide service module slots in a 2900)	0	0	1	1
EHWIC slots	4	4	4	4
Double-wide EHWIC slots (use of a double-wide EHWIC slot will consume two EHWIC slots)	2	2	2	2
ISM slots	1	1	1	1
Onboard DSP (PVDM) slots	2	2	3	3
Memory DDR2 ECC DRAM - Default	512 MB	512 MB	512 MB	512 MB
Memory (DDR2 ECC DRAM) - Maximum	2 GB	2 GB	2 GB	2 GB
Compact Flash (external) - Default	slot 0: 256 MB slot 1: none	slot 0: 256 MB slot 1: none	slot 0: 256 MB slot 1: none	slot 0: 256 MB slot 1: none
Compact Flash (external) - Maximum	slot 0: 4 GB slot 1: 4 GB	slot 0: 4 GB slot 1: 4 GB	slot 0: 4 GB slot 1: 4 GB	slot 0: 4 GB slot 1: 4 GB
External USB 2.0 flash memory slots (Type A)	2	2	2	2
USB Console port (Type B) (up to 115.2 kbps)	1	1	1	1
Serial console port	1	1	1	1
Serial auxiliary port	1	1	1	1
Power-supply options	AC and PoE	AC, PoE, and DC	AC, PoE, and DC	AC, PoE, and DC
RPS support (External)	No	Cisco RPS 2300	Cisco RPS 2300	Cisco RPS 2300
WAN Optimization with WAAS Express	Yes	Yes	Yes	Yes
Optimized TCP Connections with WAAS Express	150	250	250	500
WAS Capacity with WAAS Express	6 Mbps	6 Mbps	6 Mbps	10 Mbps
DRAM Required for WAAS Express	2.5 GB	2.5 GB	2.5 GB	4 GB
Power Specifications				
AC input voltage	100 to 240 VAC auto ranging	100 to 240 VAC auto ranging	100 to 240 VAC auto ranging	100 to 240 VAC auto ranging
AC input frequency	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz	47 to 63 Hz
AC input current range AC power supply (maximum)	1.5 to 0.6A	2.2 to 1.0A	3.4 to 1.4A	3.4 to 1.4A
AC input surge current	<50A	<50A	<50A	<50A
Typical Power (no modules) (Watts)	40	50	60	70
Maximum Power with AC power supply (Watts)	150	210	320	340
Maximum Power with PoE power supply (platform only) (Watts)	175	250	370	405
Maximum end-point PoE power available from PoE power supply (Watts)	130	200	280	370
Maximum end-point PoE power capacity with PoE Boost (Watts)	N/A	750	750	750
Physical Specifications				
Dimensions (H x W x D)	1.75 x 17.25 x 17.3 in. (44.5 x 438.2 x 439.4 mm)	3.5 x 17.25 x 12 in. (88.9 x 438.2 x 304.8 mm)	3.5 x 17.25 x 18.5 in. (88.9 x 438.2 x 469.9 mm)	3.5 x 17.25 x 18.5 in. (88.9 x 438.2 x 469.9 mm)
Rack height	1RU (rack unit)	2RU	2RU	2RU
Rack-mount 19in. (48.3 cm) EIA	included	included	included	Included
Rack Mount 23in. (58.4 cm) EIA	optional	optional	optional	Optional
Wall-mount (refer to installation guide for approved orientation)	Yes	Yes	No	No
Weight with AC power supply (no modules)	13.4 lb (6.1 kg)	18 lb (8.2 kg)	29 lb (13.2 kg.)	29 lb (13.2 kg)
Weight with AC PoE power supply (no modules)	14.3 lb (6.5 kg)	19 lb (8.6 kg)	30 lb (13.6 kg)	30 lb (13.6 kg)

Typical weight fully configured	16 lb (7.3 kg)	21 lb (9.5 kg)	34 lb (15.5 kg)	34 lb (15.5 kg)
Airflow	Front to side	Side to side	Front to back	Front to back
Optional Airflow Kit	N/A	Front to back	N/A	N/A

Online model comparison chart: http://www.cisco.com/en/US/products/ps10536/prod_series_comparison.html

¹ Additional HSEC license available on 2921/2951 for high performance/scale IPsec deployments

Selected Part Numbers and Ordering Information

Cisco 2900 Series Router	
CISCO2951/K9	Cisco 2951 w/3 GE,4 EHWIC, 3 DSP, 2 SM, 256MB CF,512MB DRAM,IPB
CISCO2921/K9	Cisco 2921 w/3 GE,4 EHWIC, 3 DSP, 1 SM, 256MB CF,512MB DRAM,IPB
CISCO2911/K9	Cisco 2911 w/3 GE,4 EHWIC, 2 DSP, 1 SM, 256MB CF,512MB DRAM,IPB
CISCO2901/K9	Cisco 2901 w/2 GE,4 EHWIC, 2 DSP, 256MB CF,512MB DRAM,IPB
Cisco 2900 Series Security Bundles⁵	
CISCO2951-SEC/K9	Cisco 2951 Security Bundle w/SEC license PAK
CISCO2921-SEC/K9	Cisco 2921 Security Bundle w/SEC license PAK
CISCO2911-SEC/K9	Cisco 2911 Security Bundle w/SEC license PAK
CISCO2901-SEC/K9	Cisco 2901 Security Bundle w/SEC license PAK
Cisco 2900 Series Voice Bundles¹	
CISCO2951-V/K9	Cisco 2951 Voice Bundle, PVDM3-32, UC License PAK
CISCO2921-V/K9	Cisco 2921 Voice Bundle, PVDM3-32, UC License PAK
CISCO2911-V/K9	Cisco 2911 Voice Bundle, PVDM3-16, UC License PAK
CISCO2901-V/K9	Cisco 2901 Voice Bundle, PVDM3-16, UC License PAK
C2951-CME-SRST/K9	2951 Voice Bundle w/ PVDM3-32,FL-CME-SRST-25, UC License PAK
C2921-CME-SRST/K9	2921 Voice Bundle w/ PVDM3-32,FL-CME-SRST-25, UC License PAK
C2911-CME-SRST/K9	2921 Voice Bundle w/ PVDM3-16,FL-CME-SRST-25, UC License PAK
C2901-CME-SRST/K9	2901 Voice Bundle w/ PVDM3-16,FL-CME-SRST-25, UC License PAK
Cisco 2900 Series Secure Voice Bundles¹	
C2951-VSEC/K9	Cisco 2951 Voice Sec. Bundle, PVDM3-32, UC and SEC License PAK
C2921-VSEC/K9	Cisco 2921 Voice Sec. Bundle, PVDM3-32, UC and SEC License PAK
C2911-VSEC/K9	Cisco 2911 Voice Sec. Bundle, PVDM3-16, UC and SEC License PAK
C2901-VSEC/K9	Cisco 2901 Voice Sec. Bundle, PVDM3-16, UC and SEC License PAK
Cisco 2900 Series Secure Voice plus CUBE Bundles¹	
C2901-VSEC-CUBE/K9	Cisco 2901 Voice Sec and CUBE Bundle, PVDM3-16, UC and SEC License P, FL-CUBEE-25
C2911-VSEC-CUBE/K9	Cisco 2911 Voice Sec and CUBE Bundle, PVDM3-16, UC and SEC License P, FL-CUBEE-25
C2921-VSEC-CUBE/K9	Cisco 2921 Voice Sec and CUBE Bundle, PVDM3-32, UC and SEC License P, FL-CUBEE-25
C2951-VSEC-CUBE/K9	Cisco 2951 Voice Sec and CUBE Bundle, PVDM3-32, UC and SEC License P, FL-CUBEE-25
Cisco 2900 Services Ready Engine Bundles¹	
C2951-VSEC-PSRE/K9	Cisco 2951 SRE Bundle, SRE 910, PVDM3-32, UC and SEC License PAK
C2951-VSEC-SRE/K9	Cisco 2951 SRE Bundle, SRE 700 or SRE 710, PVDM3-32, UC and SEC License PAK
C2921-VSEC-PSRE/K9	Cisco 2921 SRE Bundle, SRE 910, PVDM3-32, UC and SEC License PAK
C2921-VSEC-SRE/K9	Cisco 2921 SRE Bundle, SRE 700 or SRE 710, PVDM3-32, UC and SEC License PAK
C2911-VSEC-PSRE/K9	Cisco 2911 SRE Bundle, SRE 910, PVDM3-16, UC and SEC License PAK
C2911-VSEC-SRE/K9	Cisco 2911 SRE Bundle, SRE 300, PVDM3-16, UC and SEC License PAK
C2901-VSEC-SRE/K9	Cisco 2901 SRE Bundle, SRE 300, PVDM3-16, UC and SEC License PAK
Cisco 2900 Series UCS Express Bundles	
C2951-WAAS-UCSE/K9	Cisco 2951, 2x SRE 900 or SRE 910, WAAS Enterprise Medium License, SRE-V License, 4GB ISR RAM, 768 MB ISR CF, IMC Software
C2951-ES24-UCSE/K9	Cisco 2951, SRE 900 or SRE 910, 24 port L2 ESM, 4 GB ISR RAM, SRE-V License, 768 MB ISR CF, IMC Software
C2951-UCSE/K9	Cisco 2951, SRE 900 or SRE 910, SRE-V License, 4 GB ISR RAM, 768 MB ISR CF, IMC Software
C2921-UCSE/K9	Cisco 2921, SRE 900 or SRE 910, SRE-V License, 2.5 GB ISR RAM, 768 MB ISR CF, IMC Software
C2911-UCSE/K9	Cisco 2911, SRE 900 or SRE 910, SRE-V License, 2.5 GB ISR RAM, 768 MB ISR CF, IMC Software
Cisco 2900 Series WAAS Bundles	
C2951-WAAS-SEC/K9	Cisco 2951, SRE 900 or SRE 910, SEC License PAK, WAAS Enterprise Large License

C2921-WAAS-SEC/K9	Cisco 2921, SRE 700 or SRE 710, SEC License PAK, WAAS Enterprise Medium License
C2911-WAAS-SEC/K9	Cisco 2911, SRE 700 or SRE 710, SEC License PAK, WAAS Enterprise Small License
Cisco 2900 Series Security and WAAS Express Bundles	
C2951-WAASX-SEC/K9	Router Bundle—C2951, WAASX F-License, Sec License, Max Mem
C2921-WAASX-SEC/K9	Router Bundle—C2921, WAASX F-License, Sec License, Max Mem
C2911-WAASX-SEC/K9	Router Bundle—C2911, WAASX F-License, Sec License, Max Mem
C2901-WAASX-SEC/K9	Router Bundle—C2901, WAASX F-License, Sec License, Max Mem
Cisco 2900 Series WAAS Express Bundles	
C2951-WAASX/K9	Router Bundle—C2951, WAASX Feature License, Max Mem
C2921-WAASX/K9	Router Bundle—C2921, WAASX Feature License, Max Mem
C2911-WAASX/K9	Router Bundle—C2911, WAASX Feature License, Max Mem
C2901-WAASX/K9	Router Bundle—C2901, WAASX Feature License, Max Mem
Cisco 2900 Series Export Restriction Compliance License (Required by U.S. Export regulations for more than 85Mbps throughput or 225 IPsec tunnels)	
FL-29-HSEC-K9	U.S. Export Restriction Compliance license for 2921/2951

For More Information

<http://www.cisco.com/go/2900>

Cisco 1900 Series Integrated Services Routers

The Cisco 1900 Series Integrated Services Router portfolio constitutes the entry-level, highly secure solution for WAN deployments, offering service virtualization and low total cost of ownership (TCO). The Cisco 1900 Series is ideal for small offices requiring modular flexibility for highly secure mobility and customizable applications with circuit-speed performance up to 25 Mbps with concurrent services.



The Cisco 1900 Series offers a factory-selectable 802.11n access point and a doublewide high-speed WAN interface. Cisco 1900 Series Integrated Services Routers build on 25 years of Cisco innovation and product leadership. The platforms are architected to enable the next phase of branch-office evolution, providing rich-media collaboration and virtualization to the branch office while maximizing operational cost savings. The Cisco Integrated Services Routers Generation 2 (ISR G2) platforms are protected for future versions with multicore CPUs, Gigabit Ethernet switching with enhanced Power over Ethernet (ePoE), and new energy monitoring and control capabilities while enhancing overall system performance.

Additionally, a new Cisco IOS Software Universal image and services-ready engine (SRE) module enable you to decouple the deployment of hardware and software, providing a stable technology foundation that can quickly adapt to evolving network requirements. Overall, the Cisco 1900 Series offers unparalleled TCO savings and network agility through the intelligent integration of market-leading security, unified communications, wireless, and application services.

The Cisco 1900 Series builds on the best-in-class offering of the existing Cisco 1841 Integrated Services Routers by offering three models—the Cisco 1941, 1941W, and 1921. In addition to the support of a wide range of wireless and wired connectivity options supported on Cisco 1941 Series, the Cisco 1941W offers integration of an IEEE 802.11n access point that is backward-compatible with IEEE 802.11a/b/g access points.

All Cisco 1900 Series Integrated Services Routers offer embedded hardware encryption acceleration, optional firewall, intrusion prevention, and application services. In addition, the platforms support the industry's widest range of wired and wireless connectivity options such as T1/E1, xDSL, third-generation (3G), and Gigabit Ethernet.

The routers offer:

- **Services on demand:** The Cisco 1900 Series Integrated Services Routers reduce initial capital outlays by decoupling the delivery of software from hardware on optional service modules. In addition, you receive a Cisco IOS Software Universal image capable of enabling all of the rich Cisco IOS Software features and allowing you to quickly deploy new services. The Cisco Services-Ready Engine (SRE) on the Cisco 1941 enables a new operational model that allows you to reduce capital expenditures (CapEx) and deploy a variety of application services such as Cisco Wide Area Application Services (WAAS) for WAN optimization as needed on a single integrated compute services module.
- **Investment protection:** The Cisco 1900 Series reduces deployment costs and increases flexibility. The platform also offers investment protection with support for many existing ISR modules.
- **Energy efficiency:** The Cisco 1900 Series architecture includes higher-efficiency power supplies with intelligent power management, with full Cisco EnergyWise feature support in the future.
- **High performance:** The Cisco 1900 Series offers significant performance improvements over previous-generation ISRs.

Overall, the Cisco 1900 Series offers unparalleled TCO savings and network agility through the intelligent integration of security, wireless, and application services.

Ideal for Companies That Need These Features

- | | |
|-----------------------------|---|
| Cisco 1900 | <ul style="list-style-type: none">• Highly secure data and application services for small offices and branch offices• Two 10/100/1000 Ethernet ports• Two enhanced high-speed WAN interface card (EHWIC) slots• One internal service-module slot for application services (Cisco 1941)• Integrated 802.11a/g/n access point (Cisco 1941W)• Fully integrated power distribution to modules supporting 802.3af Power over Ethernet (PoE) and Cisco Enhanced PoE (ePoE) |
| Cisco 1921 | <ul style="list-style-type: none">• Two integrated 10/100/1000 Ethernet ports• Two enhanced high-speed WAN interface card (EHWIC) slots that can host two singlewide or one doublewide EHWIC modules• Fully integrated power distribution to modules supporting 802.3af PoE and Cisco Enhanced PoE• Security |
| Cisco 1941W and 1941 | <ul style="list-style-type: none">• Two integrated 10/100/1000 Ethernet ports• Two EHWIC slots that can host two singlewide or one doublewide and one singlewide (E)HWIC• One integrated 802.11n Wireless Access Point and 1 internal services module slot• Fully integrated power distribution to modules supporting 802.3af PoE and Cisco Enhanced PoE |

Main Features and Benefits

The Cisco 1900 Series is architected to meet the application demands of today's branch offices with design flexibility for future applications. The modular architecture is designed to support expanding customer requirements, increased bandwidth, and fully integrated power distribution to modules supporting 802.3af Power over Ethernet (PoE) and Cisco Enhanced PoE (ePoE).

Important architectural features include:

- Modular platform
 - The Cisco 1900 Series ISRs are highly modular platforms with multiple module slots to provide connectivity and services for varied branch-office network requirements.
 - The ISRs offer an industry-leading breadth of LAN and WAN connectivity options through modules to accommodate field upgrades to future technologies without requiring replacement of the platform.
- Processors
 - The Cisco 1900 Series is powered by high-performance multicore processors that support growing demands of branch-office networks by supporting high-throughput WAN requirements.
- Multigigabit fabric
 - The Cisco 1941 model in the Cisco 1900 Series introduces an innovative multigigabit fabric (MGF) that allows for efficient module-to-module communication, enabling direct services interactions across modules while reducing the overhead on the router processor.
- Embedded IP Security with Secure Sockets Layer (IPsec/SSL) VPN hardware acceleration
 - Embedded hardware encryption acceleration is enhanced to provide higher scalability, which combined with an optional Cisco IOS Security license enables WAN link security and VPN services (Both IPsec and SSL acceleration).
 - The onboard encryption hardware outperforms the advanced integration modules of previous generations.
 - The routers support Cisco Easy VPN (remote and server), Dynamic Multipoint VPN (DMVPN), Group Encrypted Transport VPN (GET VPN), and Secure Sockets Layer VPN (SSL VPN).
 - More than 3700 intrusion-prevention-system (IPS) signatures are supported in Cisco IOS Software, with the ability to load and enable selected IPS signatures.
 - Content Filtering includes URL and keyword blocking and features category-based productivity and security ratings. This solution is a subscription-based hosted solution that takes advantage of Trend Micro's global TrendLabs threat database, and is closely integrated with Cisco IOS Software.
 - Cisco Configuration Professional comes standard on all Cisco 1900 Series Integrated Services Routers.
- Integrated Gigabit Ethernet ports
 - All onboard WAN ports are 10/100/1000 Gigabit Ethernet WAN routed ports.
- Innovative universal-serial-bus (USB)-based console access
 - A new, innovative, mini-B USB console port supports management connectivity when traditional serial ports are not available.
 - The traditional console and auxiliary ports are also available. Either the USB-based console or the RJ-45-based console port can be used to configure the router.
- Optional power supply for distribution of (PoE)
 - An optional power supply (internal in Cisco 1941 and external in Cisco 1921) provides inline power (802.3af-compliant PoE and standard Cisco Inline Power) to optional integrated switch modules.


- Integrated wireless LAN
 - The Cisco 1941W offers a secure integrated access point in a single device.
 - The integrated access point is based on the IEEE 802.11n draft 2.0 standard that uses multiple-input, multiple-output (MIMO) to improve coverage for existing 802.11a/ b/g clients and new 802.11n clients.
 - The Cisco 1941W supports dual radios—802.11 b/g/n and 802.11a/n—and is capable of operating in both autonomous and unified modes. WAN optimization with Cisco Wide Area Application Services (WAAS) Express
 - Cisco WAAS Express, based on Cisco IOS Software and integrated into the Cisco 1941 router, offers bandwidth optimization and application acceleration capabilities in a cost-effective solution.
 - Cisco WAAS Express is fully integrated in Cisco IOS Software, with no additional hardware requirement (the maximum DRAM is needed in the router). This integration allows significant savings in capital expenditures (CapEx) by enabling a small-footprint branch-office deployment.
 - Cisco WAAS Express increases remote user productivity, reduces WAN bandwidth costs, and offers investment protection by interoperating with existing Cisco WAAS infrastructure.
 - It uniquely provides network transparency, improving deployment flexibility with on-demand service enablement, and integrating with native Cisco IOS Software services such as security, NetFlow, and quality of service (QoS).
 - It is fully interoperable with Cisco WAAS Modules for Services-Ready Engine (SRE) and Cisco WAAS appliances and can be managed by a common Cisco WAAS Central Manager.
 - It offers Context-Aware Data Redundancy Elimination (DRE) for reduced latency and increased end-user experience.
 - Organizations can enable Cisco WAAS Express as an on-demand service on the router and can expand to the Cisco WAAS Modules for SRE or a dedicated Cisco WAAS appliance as business needs grow.

Specifications

Services and Slot Density	Cisco 1941, Cisco 1941W	Cisco 1921
Embedded hardware-based crypto acceleration (IPSec + SSL)	Yes	Yes
Total Onboard LAN 10/100/1000	2	2
RJ-45-Based Ports	2	2
EHWIC Slots	2	2
Double-Wide EHWIC slots (use of a double-wide EHWIC slot will consume two EHWIC slots)	1	1
ISM Slots	1 (0 on the Cisco 1941W)	0
Memory (DDR2 DRAM) - Default	512 MB	512 MB
Memory (DDR2 DRAM) - Maximum	2.0 GB	512 MB
Compact Flash—Default	External slot 0: 256 MB slot 1: none	Internal 256 MB
Compact Flash—Maximum	External slot 0: 4 GB slot 1: 4 GB	Internal 256 MB
External USB flash memory slots (Type A)	2	1
USB Console Port (Type B) (up to 115.2 kbps)	1	1
Serial Console Port (up to 115.2 kbps)	1	1
Serial Auxiliary Port (up to 115.2 kbps)	1	1
Power Supply Options	AC, PoE (Internal)	AC, PoE
Redundant Power Supply Support	No	No
WAN Optimization with WAAS Express	Yes	No
Optimized TCP Connections with WAAS Express	150	
WAS Capacity with WAAS Express	4 Mbps	
DRAM Required for WAAS Express	2.5 GB	
Power Specifications		
AC Input Voltage	100–240 V ~	100–240 V ~
AC Input Frequency	47–63 Hz	47–63 Hz
AC Input Current range AC Power Supply (Max) (Amps)	1.5–0.6	1.5–0.6
AC Input Surge Current	<50 A	<50 A

Typical Power (No Modules)	35 W	25W
Maximum Power capacity with AC power supply	110 W	60 W
Maximum Power capacity with PoE power supply (platform only)	110 W	70 W
Maximum PoE device power capacity with PoE power supply	80 W	80 W
Physical Specifications		
Dimensions (H x W x D)	3.5 in x 13.5 in x 11.5 in	1.75 in x 13.5 in x 11.5 in
Rack Height	2 RU	1 RU
Rack-mount 19in. (48.3 cm) EIA	Included	Optional
Wall-mount (refer to installation guide for approved orientation)	Yes	Yes
Weight-with AC power supply (no modules)	12 lbs	7 lb
Weight-with PoE power supply (no modules)	12.8 lbs	7 lbs (external PoE)
Maximum Weight-Fully Configured	14 lbs	8 lbs
Airflow	Front to Side	Back to side

Cisco 1941W WLAN Specifications		
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WLAN hardware	<ul style="list-style-type: none"> • IEEE 802.11n draft 2.0 standards-based access point with 802.11a/ b/g compatibility • Automatic rate selection for 802.11a/g/n • Dual radios for 802.11b/g/n and 802.11a/n modes. • RP-TNC connectors for field-replaceable external antennas • 2-dB default antenna gain • 2 x 3 multiple input, multiple output (MIMO) radio operation • Wi-Fi 802.11n Draft v2.0 certified
WLAN software features	<ul style="list-style-type: none"> • Autonomous or unified access point • Cisco WCS support for monitoring of autonomous-mode access points • Option to maximize throughput or maximize range • Software-configurable transmit power • Radio roles, including access point, root bridge, non-root bridge, and workgroup bridge • Wi-Fi Multimedia (WMM) certification • Traffic specifications (TSPEC) Call Admission Control (CAC) to ensure voice quality is maintained • Unscheduled Automatic Power Save Delivery (UAPSD) to reduce latency
Unified WLAN management	<ul style="list-style-type: none"> • Unified access point features: • Supported by wireless LAN controller and Cisco WCS • Configurable local or central switching for HREAP mode • Radio management through Cisco WCS • Transparent roaming with mobility groups
Certifications	
Service Set Identifiers (SSIDs)	16
Wireless VLANs	16
WLAN security features	<ul style="list-style-type: none"> • Standard 802.11i • Wi-Fi Protected Access (WPA) and AES (WPA2) • EAP authentication: Cisco LEAP, PEAP, Extensible Authentication Protocol Transport Layer Security (EAP-TLS), Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST), Extensible Authentication Protocol-Subscriber Information Module (EAP-SIM), Extensible Authentication Protocol-Message Digest Algorithm 5 (EAP-MD5), and Extensible Authentication Protocol-Tunneled TLS (EAP-TTLS) • Static and dynamic Wired Equivalent Privacy (WEP) • Temporal Key Integrity Protocol/Simple Security Network (TKIP/SSN) encryption • MAC authentication and filter • User database for survivable local authentication using LEAP and EAP-FAST • Configurable limit to the number of wireless clients • Configurable RADIUS accounting for wireless clients • Pre-Shared Keys (PSKs) (WPA-small office or home office [WPA-SOHO])
Encrypted wireless VLANs	16
Multiple Broadcast Service Set Identifiers (MBSSIDs)	16

Online model comparison chart: http://www.cisco.com/en/US/products/ps10536/prod_series_comparison.html

Cisco 1900 Series supports a wide range of modules that span an industry-leading breadth of services at the branch office. Please refer to the following link for the list of modules supported on the Cisco 1900: http://cisco.com/en/US/products/ps1900/products_relevant_interfaces_and_modules.html.

Selected Part Numbers and Ordering Information

Cisco 1900 Series Router	
CISCO1941/K9	Cisco 1941 w/2 GE, 2 EHWIC slots, 256MB CF512MB DRAM,IP Base
CISCO1921/K9	CISCO 1921 Modular Router, 2 GE, 2 EHWIC slots, 256F/512D, IP Base
Cisco 1900 Series Wireless Bundles	
CISCO1941W-A-N-SEC/K9	Cisco 1941 Router w/ 802.11 a/b/g/n FCC Compliant WLAN ISM, SEC Lic
CISCO1941W-E-N-SEC/K9	Cisco 1941 Router w/ 802.11 a/b/g/n ETSI WLAN ISM, SEC Lic
CISCO1941W-A/K9	Cisco 1941 Router w/ 802.11 a/b/g/n FCC Compliant WLAN ISM
CISCO1941W-C/K9	Cisco 1941 Router w/802.11 a/b/g/n China Compliant WLAN ISM
CISCO1941W-E/K9	Cisco 1941 Router w/ 802.11 a/b/g/n ETSI Compliant WLAN ISM
CISCO1941W-P/K9	Cisco 1941 Router w/ 802.11 a/b/g/n Japan Compliant WLAN ISM
CISCO1941W-N/K9	Cisco 1941 Router w/802.11 a/b/g/n Aus, NZ Compliant WLAN ISM
CISCO1941/K9	Cisco 1941 w/2 GE, 2 EHWIC slots, 256MB CF512MB DRAM,IP Base
CISCO1921/K9	CISCO 1921 Modular Router, 2 GE, 2 EHWIC slots, 256F/512D, IP Base Lic
Cisco 1900 Series Security Bundles	
CISCO1941-SEC/K9	Cisco 1941 Security Bundle w/SEC license PAK
Cisco1921-T1SEC/K9	Cisco 1921 SEC T1 Bundle incl. HWIC-1DSU-T1, 256F/512D, SEC Lic
CISCO1921-SEC/K9	CISCO 1921 Modular Router, 2 GE, 2 EHWIC slots, 256F/512D, SEC Lic
WAAS Express License for the Cisco 1941 Router	
FL-C1941-WAASX	WAAS Express Feature License for Cisco 1941
Cisco 1900 Series DSL Bundles	
C1921-4SHDSL/K9	CISCO 1921 ADSL Annex M, 3G HSPA Bundle, 256F/512D, SEC Lic
C1921-ADSL2-M/K9	Cisco 1921 ADSL2 Annex M Bundle, HWIC-1ADSL-M, 256F/512D, IP Base Lic
CISCO1921-ADSL2/K9	Cisco 1921 ADSL2+ Bundle, HWIC-1ADSL, 256F/512D, IP Base Lic
Cisco 1900 Services Ready Engine Bundles	
C1941-SEC-SRE/K9	Cisco 1941, SRE 300, SEC License PAK

For More Information

<http://www.cisco.com/go/1900>

Cisco 800 Series Integrated Services Routers

Cisco 800 Series Integrated Services Routers are fixed-configuration routers that provide collaborative business solutions for secure voice and data communication to small businesses and enterprise teleworkers. They offer concurrent broadband services over third-generation (3G), Metro Ethernet, and multiple DSL technologies to provide business continuity, Wireless 802.11n and 3G offer LAN and WAN mobility. The routers provide the performance required for concurrent services, including firewall, intrusion prevention, content filtering, and encryption for VPNs; optional 802.11g/n for mobility; and quality-of-service (QoS) features for optimizing voice and video applications. In addition, the web-based Cisco Configuration Professional configuration tool simplifies setup and deployment. Centralized management capabilities give network managers visibility and control of the network configurations at the remote site.



Ideal for Companies That Need These Features

Cisco 800

- Ethernet ports with VLAN support and Metro Ethernet support
- WAN connectivity, including Ethernet; Small Form-Factor Pluggable (SFP); multimode VDSL2, ADSL2, and ADSL2+; G.SHDSL; 3G, 3.5G, and 3.7G; ISDN Basic Rate Interface (BRI); and V.92
- Advanced security including firewall, intrusion prevention, content filtering, encryption for VPN, and Cisco ScanSafe support
- Wireless LAN (802.11 a/g/n) access points
- QoS features for optimizing voice and video applications
- Unified communications survivability (Survivable Remote Site Telephony [SRST]) and Cisco Unified Border Element (Cisco UBE) in a small form factor

Main Features and Benefits

Cisco 860 Series Integrated Services Routers offer:

- Concurrent broadband services for small offices and remote sites
- Secure connectivity with stateful inspection firewall and IP Security (IPsec) VPN support for small offices
- Security features including:
 - Stateful inspection firewall
- IPsec VPNs (Triple Data Encryption Standard [3DES] or Advanced Encryption Standard [AES])
- 4-port 10/100 Fast Ethernet managed switch with VLAN support
- CON/AUX port for console or external modem
- Secure 802.11g/n access-point option based on IEEE 802.11n draft 2.0 standard with support for autonomous wireless LAN (WLAN) architecture
- Easy setup, deployment, and remote management capabilities through web-based tools and Cisco IOS Software

Cisco 880 Series Integrated Services Routers offer:

- High performance for broadband access in small offices and small branch-office and teleworker sites
- Collaborative services with secure analog, digital voice, and data communication
- Business continuity and WAN diversity with redundant WAN links: Fast Ethernet; G.SHDSL; multimode VDSL2, ADSL2, and ADSL2+; 3G, 3.5G, and 3.7G (including embedded), and ISDN
- SRST voice continuity for enterprise small branch-office and teleworker sites
- Cisco Unified Border Element (Cisco UBE) IP-IP Voice gateway functions for connecting to Session Initiation Protocol (SIP) trunking services as a replacement for Primary Rate Interface (PRI) or foreign exchange office (FXO) voice connectivity to the service provider
- Up to 15 sessions of Cisco Unified Border Element IP-IP Voice gateway functions for connecting to SIP trunking services as a replacement for PRI or FXO voice connectivity to the service provider
- Enhanced security, including:
 - Firewall with advance application and control for email, instant messaging (IM), and HTTP traffic
 - Site-to-site remote-access and dynamic VPN services: IPsec VPNs (3DES or AES), Dynamic Multipoint VPN (DMVPN), Group Encrypted Transport VPN with onboard acceleration, and Secure Sockets Layer (SSL) VPN
 - Intrusion prevention system (IPS): An inline, deep-packet inspection feature that effectively mitigates a wide range of network attacks
 - Content filtering: A subscription-based integrated security solution that offers category-based reputation rating; keyword blocking; and protection against adware, malware, spyware, and URL blocking
- Four-port 10/100 Fast Ethernet managed switch with VLAN support; two ports support Power over Ethernet (PoE) for powering IP phones or external access points
- Secure 802.11g/n access-point option based on draft 802.11n standard with support for autonomous or Cisco Unified WLAN architectures
- CON/AUX port for console or external modem
- One USB 1.1 port for security eToken credentials, booting from USB, and loading configuration
- Easy setup, deployment, and remote-management capabilities through web-based tools and Cisco IOS Software

Cisco 890 Series Integrated Services Routers are fixed-configuration routers that provide collaborative business solutions for secure voice and data communications to enterprise small branch offices. They are designed to deliver secure broadband, Metro Ethernet, WLAN connectivity, and business continuity. The routers also come with powerful management tools, such as the web-based Cisco Configuration Professional configuration management tool, which simplifies setup and deployment. Centralized management capabilities give network managers visibility and control of the network configurations at the remote site.

Cisco 890 Series Integrated Services Routers offer:

- High performance for secure broadband and Metro Ethernet access with concurrent services for enterprise small branch offices
- Business continuity and WAN diversity with redundant WAN links: Small Form-Factor Pluggable (SFP), Fast Ethernet, V.92, and ISDN Basic Rate Interface (BRI)
- Integrated secure 802.11a/g/n access point (optional) based on the 802.11n standard; dual-band radios for mobility and support for autonomous or Cisco Unified WLAN architectures
- Enhanced security including:
 - Firewall with advance application and control for email, instant messaging (IM), and HTTP traffic
 - Site-to-site remote-access and dynamic VPN services: IPsec VPNs (3DES or AES), DMVPN, Group Encrypted Transport VPN with onboard acceleration, and SSL VPN
 - IPS: An inline, deep-packet-inspection feature that mitigates a wide range of network attacks
 - Content filtering: A subscription-based integrated security solution that offers category-based reputation rating; keyword blocking; and protection against adware, malware, spyware, and URL blocking

- WAN optimization with Cisco Wide Area Application Services (WAAS) Express
 - Cisco WAAS Express, based on Cisco IOS Software and integrated into the Cisco 880 3G, 891, and 892 routers, offers bandwidth optimization and application acceleration capabilities in a cost-effective solution.
 - Cisco WAAS Express is fully integrated in Cisco IOS Software, with no additional hardware requirement (the maximum DRAM is needed in the router). This integration allows significant savings in capital expenditures (CapEx) by enabling a small-footprint branch-office deployment.
 - It increases remote user productivity, reduces WAN bandwidth costs, and offers investment protection by interoperating with existing Cisco WAAS infrastructure.
 - It uniquely provides network transparency, improving deployment flexibility with on-demand service enablement, and integrating with native Cisco IOS Software services such as security, NetFlow, and quality of service (QoS).
 - Cisco WAAS Express is fully interoperable with Cisco WAAS Modules for Services-Ready Engine (SRE) and Cisco WAAS appliances and can be managed by a common Cisco WAAS Central Manager.
 - It offers Context-Aware DRE for reduced latency and increased end-user experience.
 - Organizations can enable Cisco WAAS Express as an on-demand service on the router and can expand to the Cisco WAAS Modules for SRE or a dedicated Cisco WAAS appliance as business needs grow.
- An 8-port 10/100 Fast Ethernet managed switch with VLAN support and 4-port support for PoE (optional) to power IP phones or external access points
- Metro Ethernet features including:
 - One 1000 BASE-T Gigabit Ethernet WAN port
 - One 10/100 BASE-T Fast Ethernet WAN port
 - Optional SFP port on Cisco 892F platform
 - Intelligent hierarchical quality of service (HQoS): Supports hierarchical queuing and shaping
 - Connectivity Fault Management (CFM), based on 802.1ag
 - 802.3ah standards-based link operations, administration, and maintenance (OA&M)
 - Ethernet Local Management Interface (E-LMI) for the customer edge
 - CFM Interworking and backward compatibility
 - Performance management based on IP service-level agreement (SLA) for Ethernet
- Dedicated console and auxiliary ports for configuration and management
- Two USB 2.0 ports for security eToken credentials, booting, and loading configuration from USB
- Easy setup, deployment, and centralized and remote-management capabilities through web-based tools and Cisco IOS Software

Specifications

Feature	Cisco 861	Cisco 881	Cisco 886A/ 887VA	Cisco 888/ 888E	Cisco 891	Cisco 892/ 892F
Fixed LAN Port Connections	4-port 10/100 Ethernet switch	4-port 10/100 Ethernet switch	4-port 10/100 Ethernet switch	4-port 10/100 Ethernet switch	8-port 10/100 Ethernet switch	8-port 10/100 Ethernet switch
PoE	No	Optional 2-port	Optional 2-port	Optional 2-port	Optional 4-port	Optional 4-port
Fixed WAN Port Connections	1-port 10/100 Ethernet	1-port 10/100 Ethernet	887VA: 1-port Multi-mode VDSL2 and ADSL2/2+, annex A 887VA-M: 1-port Multi-mode VDSL2 and ADSL2/2+, annex M 886VA: 1-port Multi-mode VDSL2 and ADSL2/2+, annex B	888: 1-port G.SHDSL (ATM mode) 888E: 1-port G.SHDSL (EFM mode)	1-port 10/100 Ethernet, 1-port GE	1-port 10/100 Ethernet, 1-port GE; Ethernet, 1-port GE or SFP (892F model only)
Wireless LAN	IEEE 802.11 b/g/n ("W" model)	IEEE 802.11 b/g/n ("W" model)	IEEE 802.11 b/g/n ("W" model)	IEEE 802.11 b/g/n ("W" model)	IEEE 802.11 a/b/g/n ("W" model)	IEEE 802.11 a/b/g/n ("W" model)
3G	No	Yes ("G" model)	Yes ("G" model)	Yes ("G" model)	No	No
ISDN BRI	No	No	886VA model only)	Yes	No	Yes
V.92 modem	No	No	No	No	Yes	No
4-port FXS	No	Yes ("SRST" model)	No	Yes ("SRST" model)	No	No

FXO	No	Yes ("SRST" model)	No	No	No	No
Voice BRI	No	No	No	Yes ("SRST" model)	No	No
SIP IP-to-IP Trunking	No	Yes ("CUBE" model)	Yes ("CUBE" model)	Yes ("CUBE" model)	No	Yes ("CUBE" model)
Maximum VPN Tunnels	5	20	20	20	50	50
Content Filtering	No	Yes	Yes	Yes	Yes	Yes
Stateful Firewall	Yes	Yes	Yes	Yes	Yes	Yes
Inline IPS	No	Yes	Yes	Yes	Yes	Yes
ScanSafe Connector	No	Yes	Yes	Yes	Yes	Yes
WAN Optimization with WAAS Express	No	No	No	No	Yes	Yes
Optimized TCP Connections with WAAS Express					75	75
WAN Capacity with WAAS Express					1.5 Mbps	2 Mbps
DRAM Required for WAAS Express					768 MB	768 MB

Online model comparison chart: http://www.cisco.com/en/US/products/hw/routers/ps380/prod_models_comparison.html

Selected Part Numbers and Ordering Information

CISCO861W-GN-A-K9, E-K9, P-K9	Cisco 861 Ethernet Security Router 80211n (Americas-A, Europe-E, Japan-P)
CISCO881-SEC-K9	Cisco 881 Ethernet Sec Router w/ Adv IP Services
CISCO881W-GN-A-K9, E-K9, P-K9	Cisco 881 Ethernet Security Router 80211n (Americas-A, Europe-E, Japan-P)
CISCO881GW-GN-A-K9, E-K9	Cisco 881 Ethernet Security Router with 3G, 80211n (Americas-A, Europe-E)
CISCO881G-A-K9	Cisco 881G FE Sec Router with Adv IP Serv, 3G N. America GSM/HSPA
CISCO881G-G-K9	Cisco 881G FE Sec Router with Adv IP Serv, 3G N. Global GSM/HSPA
CISCO881G-S-K9	Cisco 881G FE Sec Router bundle with Adv IP Serv, 3G Sprint
CISCO881G-V-K9	Cisco 881G FE Sec Router bundle with Adv IP Serv, 3G Verizon
C881G+7-K9	Secure Router with WAN FE and Embedded 3.7G HSPA+ Release 7 with SMS/GPS
C881G+7-A-K9	Secure Router with WAN FE and Embedded 3.7G HSPA+ Release 7 with SMS/GPS for AT&T networks
C881G-U-K9	Cisco 881G FE Sec Router with Adv IP Serv, 3.5G Global (non-US) GSM/HSPA
C881G-V-K9	Cisco 881G FE Sec Router with Adv IP Serv, 3G Verizon CDMA EV-DO Rev A
C881G-S-K9	Cisco 881G FE Sec Router bundle with Adv IP Serv, 3G Sprint CDMA EV-DO Rev A
C881G-V-K9	Cisco 881G FE Sec Router bundle with Adv IP Serv, 3G BSNL CDMA EV-DO Rev A
CISCO887V-SEC-K9	Cisco 887 VDSL2 over POTS Sec Router w/ ISDN B/U, Adv IP Services
CISCO886VA-K9	Cisco 886VA router with VDSL2/ADSL2+ over ISDN
C886VAG+7-K9	Secure Router with VDSL2/ADSL2+ over ISDN and Embedded 3.7G HSPA+ Release 7 with SMS/GPS
CISCO886VA-SEC-K9	Cisco 886VA Secure router with VDSL2/ADSL2+ over ISDN
CISCO887VA-K9	Cisco 887VA router with VDSL2/ADSL2+ over POTS
C887VAG+7-K9	Secure Router with VDSL2/ADSL2+ over ISDN and Embedded 3.7G HSPA+ Release 7 with SMS/GPS
C887VAG-S-K9	Secure Router with Raiders VDSL2/ADSL2+ over POTS (Annex M) and Embedded 3.7G HSPA+ Release 7 with GPS
CISCO887VA-SEC-K9	Cisco 887VA Secure router with VDSL2/ADSL2+ over POTS
CISCO887VA-M-K9	Cisco 887VA Annex M router
C887VAMG+7-K9	Secure Router with Raiders VDSL2/ADSL2+ over POTS (Annex M) and Embedded 3.7G HSPA+ Release 7 with GPS

CISCO888GW-G-AN-K9, EN-K9	Cisco 888 G.SHDSL Wireless Router with 3G: 802.11n (Americas-A, Europe-E)
CISCO888EW-GN-E-K9	Cisco 888E G.SHDSL Router with 802.11n ETSI Compliant and 802.3ah EFM Support
C888EG+7-K9	Secure Router with Ethernet over G.SHDSL (EFM) and Embedded 3.7G HSPA+ Release 7 with SMS/GPS
C881-CUBE-K9	Cisco 881 Ethernet Security Router with integrated CUBE Licenses
C886VA-CUBE-K9	Cisco 886VA Secure router with VDSL2/ADSL2+ over ISDN and integrated CUBE licenses
C887VA-CUBE-K9	Cisco 887VA router with VDSL2/ADSL2+ over ISDN and integrated CUBE licenses
C888-CUBE-K9	Cisco 888 G.SHDSL Router with integrated CUBE licenses
C888E-CUBE-K9	Cisco 888E G.SHDSL Router with 802.3ah EFM Support and integrated CUBE licenses
C892F-CUBE-K9	Cisco 892F SFP Gigabit Ethernet Security Router and integrated CUBE licenses
C881SRSTW-GN-A-K9, E-K9	Cisco 881 SRST Ethernet Security Router with FXS, FXO: 802.11n (Americas-A, Europe-E)
C888SRSTW-GN-A-K9, E-K9	Cisco 881 SRST Ethernet Security Router with FXS, BRI: 802.11n (Americas-A, Europe-E)
CISCO891W-AGN-A-K9, N-K9	Cisco 891W Gigabit Ethernet Security Router w/ 802.11n (Americas-A, Australia-N)
CISCO892W-AGN-E-K9	Cisco 892W Gigabit Ethernet Security Router w/ 802.11n ETSI Comp

For More Information

<http://www.cisco.com/go/800>

WAN Routers

Cisco 7600 Series Routers

The Cisco 7600 Series Routers combine optical WAN and metropolitan-area network (MAN) networking and high-volume Ethernet aggregation with a focus on the delivery of high-touch services for the IP and Multiprotocol Label Switching (MPLS) edge. These routers combine Layer 2 and Layer 3 networking capabilities with a high-bandwidth, high-performance architecture, including hardware-based forwarding of MPLS, IPv4, and IPv6. Cisco 7600 Series form factors include the Cisco 7603-S, 7604, 7606-S, 7609-S, and 7613 models. Each router can deliver DS-0 to OC-192 WAN and n x 10-Mbps Ethernet to n x 10-Gigabit Ethernet connectivity into service provider edge, MAN, and enterprise networks for a variety of quadruple-play (data, voice, video, and mobile) and aggregation solutions. All Cisco 7600 Series Routers comply with Network Equipment Building Standards (NEBS).



Ideal for Companies That Need These Features

Cisco 7603-S	• Three-slot (horizontal) chassis; 240-Gbps backplane bandwidth
Cisco 7604-S	• Four-slot (horizontal) chassis; 320-Gbps backplane bandwidth
Cisco 7606-S	• Six-slot (horizontal) chassis; 960-Gbps backplane bandwidth
Cisco 7609-S	• Nine-slot (vertical) chassis; 1440-Gbps backplane bandwidth
Cisco 7613-S	• Thirteen-slot (horizontal) chassis; 2-Tbps backplane bandwidth

Main Features and Benefits

- Cisco 7600 Series Routers provide up to 60-Mpps central or up to 720-Mpps distributed forwarding with hardware-accelerated IPv4, IPv6, and Multiprotocol Label Switching (MPLS). Depending on the route switch processor (RSP), the Supervisor Engine 2T (SUP2T), and the protocols, the packets-per-second (PPS) numbers will vary.
- The modular routers are scalable from 720- to 2080-Gbps switch fabric.
- These routers represent one of the widest, most complete ranges of WAN interfaces in the industry, with DS-0 to OC-192 connectivity.
- Using the Cisco 7600 Series/Catalyst 6500 Series SIP400 Module, shared port adapters (SPAs) are shared with Cisco Cisco ASR 1000 and ASR 9000 Aggregation Services Routers and Cisco Gigabit Switch Routers (GSRs), simplifying sparring and protecting customer investment in interfaces.
- Cisco 7600 Series Routers support many Cisco Catalyst 6500 LAN interfaces, offering n x 10-Mbps Ethernet to 10 Gbps.

Specifications

Feature	Cisco 7603-S	Cisco 7604	Cisco 7606-S	Cisco 7609-S	Cisco 7613-S
Fixed Ports	With RSP720 : Two Gigabit Ethernet ports (port 1 supports 1-Gbps (SFP); port 2 is configurable for either SFP or 10/100/1000BASE-T With RSP720-10GE: Two X2 based 10GE ports,2 GE SFP ports and one 10/100/1000BASE-T	Same as Cisco 7603-S	With RSP720 : Two Gigabit Ethernet ports (port 1 supports 1-Gbps (SFP); port 2 is configurable for either SFP or 10/100/1000BASE-T With RSP720-10GE: Two X2 based 10GE ports,2 GE SFP ports and one 10/100/1000BASE-T With SUP2T: Two X2 based 10GE ports ,3 GE SFP ports	With RSP720 : Two Gigabit Ethernet ports (port 1 supports 1-Gbps (SFP); port 2 is configurable for either SFP or 10/100/1000BASE-T With RSP720-10GE: Two X2 based 10GE ports,2 GE SFP ports and one 10/100/1000BASE-T With SUP2T: Two X2 based 10GE ports ,3 GE SFP ports	With RSP720 : Two Gigabit Ethernet ports (port 1 supports 1-Gbps (SFP); port 2 is configurable for either SFP or 10/100/1000BASE-T With RSP720-10GE: Two X2 based 10GE ports,2 GE SFP ports and one 10/100/1000BASE-T With SUP2T: Two X2 based 10GE ports ,3 GE SFP ports
Expansion Slots	3 (horizontal)	4 (horizontal)	6 (horizontal)	9 (vertical)	13 (horizontal)
WAN Interface Range	DS0 to OC-192	Same as Cisco 7603	Same as Cisco 7603	Same as Cisco 7603	Same as Cisco 7603
Processor	RSP720-3C RSP720-3CXL RSP720-10G-3C RSP720-10G-3CXL	RSP720-3C RSP720-3CXL RSP720-10G-3C RSP720-10G-3CXL	RSP720-3C RSP720-3CXL RSP720-10G-3C RSP720-10G-3CXL Supervisor2T Supervisor2TXL	RSP720-3C RSP720-3CXL RSP720-10G-3C RSP720-10G-3CXL Supervisor2T Supervisor2TXL	RSP720-3C RSP720-3CXL RSP720-10G-3C RSP720-10G-3CXL Supervisor2T Supervisor2TXL
Forwarding Rate	Up to 30 Mpps	Same as Cisco 7603-S	Up to 60 Mpps	Up to 60 Mpps	Up to 60 Mpps
Backplane Capacity	240 Gbps	320 Gbps	960 Gbps	1440 Gbps	2Tbps
Flash PCMCIA Memory	up to 512MB on Sup720 up to 1 G on RPS720	Same as Cisco 7603-S	Same as Cisco 7603-S	Same as Cisco 7603-S	Same as Cisco 7603-S
System DRAM Memory	1G on RSP720-3C 2G on RSP720-3CXL	1G on RSP720-3C 2G on RSP720-3CXL	1G on RSP720-3C 2G on RSP720-3CXL 2G on Supervisor2T	1G on RSP720-3C 2G on RSP720-3CXL 2G on Supervisor2T	1G on RSP720-3C 2G on RSP720-3CXL 2G on Supervisor2T
Internal Power Supply	AC or DC	Same as Cisco 7603-S	Same as Cisco 7603-S	Same as Cisco 7603-S	Same as Cisco 7603-S
Chassis Height	4 RU	5 RU	7 RU	20 RU	18 RU
Rack Mountable	Yes, up to 11 per rack	Yes, up to 10 per rack	Yes, up to 6 per rack	Yes, up to 2 per rack	Yes, up to 2 per rack
Dimensions (H x W x D)	7 x 1737 x 203 in.	7 x 1737 x 21.75 in.	12.25 x 1737 x 21.75 in.	36.75 x 172 x 20.7 in.	33.3 x 172 x 18.1 in.

Online model comparison chart: http://www.cisco.com/en/US/products/hw/routers/ps368/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Cisco 7613-S Systems	
7613-RSP720C-P	Cisco 7613 Chassis,13-slot, RSP720-3C, PS
7613-RSP720CXL-P	Cisco 7613 Chassis,13-slot, RSP720-3CXL, PS
7613-RSP720CXL-R	Cisco 7613 Chassis,13-slot, Redundant System, 2RSP720-3CXL, 2PS
7613-RSP720C-R	Cisco 7613 Chassis,13-slot, Redundant System, 2RSP720-3C, 2PS
7613-RSP7C-10G-P	Cisco 7613 Chassis,13-slot, RSP720-3C-10GE, PS
7613-RSP7XL-10G-P	Cisco 7613 Chassis,13-slot, RSP720-3CXL-10GE, PS

7613-RSP7XL10G-R	Cisco 7613 Chassis,13-slot, Red System, 2RSP720-3CXL-10GE, 2PS
7613-RSP7C-10G-R	Cisco 7613 Chassis,13-slot, Red System, 2RSP720-3C-10GE, 2PS
CISCO7613	Cisco 7613 Chassis
7613-2SUP720XL-2PS	Cisco 7613 13-slot, Redundant System, 2 SUP720-3BXL and 2 PS
7613-SUP7203B-PS	Cisco 7613 Chassis, 13-slot, SUP7203B, Power Supply
7613-SUP720XL-PS	Cisco 7613 13-slot, SUP720-3BXL and PS
Cisco 7609-S Systems	
CISCO7609-S	Cisco 7609-S Chassis including fans
7609S-RSP720C-P	Cisco 7609S Chassis, 9-slot, RSP720-3C, PS
7609S-RSP720CXL-P	Cisco 7609S Chassis, 9-slot, RSP720-3CXL, PS
7609S-RSP720CXL-R	Cisco 7609S Chassis, 9-slot, Redundant System, 2RSP720-3CXL, 2PS
7609S-RSP720C-R	Cisco 7609S Chassis, 9-slot, Redundant System, 2RSP720-3C, 2PS
7609S-RSP7XL10G-R	Cisco 7609S Chassis, 9-slot, Red System, 2RSP720-3CXL-10GE, 2PS
7609S-RSP7C-10G-P	Cisco 7609S Chassis, 9-slot, RSP720-3C-10GE, PS
7609S-RSP7XL10G-P	Cisco 7609S Chassis, 9-slot, RSP720-3CXL-10GE, PS
7609S-RSP7C-10G-R	Cisco 7609S Chassis, 9-slot, Red System, 2RSP720-3C-10GE, 2PS
Cisco 7606-S Systems	
CISCO7606-S	Cisco 7606-S Chassis
7606S-RSP720C-R	Cisco 7606S Chassis,6-slot, Redundant System, 2RSP720-3C, 2PS
7606S-RSP720CXL-P	Cisco 7606S Chassis,6-slot, RSP720-3CXL, PS
7606S-RSP720CXL-R	Cisco 7606S Chassis,6-slot, Redundant System, 2RSP720-3CXL, 2PS
7606S-RSP720C-P	Cisco 7606S Chassis,6-slot, RSP720-3C, PS
7606S-RSP7C-10G-P	Cisco 7606S Chassis,6-slot, RSP720-3C-10GE, PS
7606S-RSP7XL10G-P	Cisco 7606S Chassis,6-slot, RSP720-3CXL-10GE, PS
7606S-RSP7XL10G-R	Cisco 7606S Chassis,6-slot, Red System, 2RSP720-3CXL-10GE, 2PS
7606S-RSP7C-10G-R	Cisco 7606S Chassis,6-slot, Red System, 2RSP720-3C-10GE, 2PS
7606S-SUP2T-P	Cisco 7606S Chassis,6-slot, VS-S2T-10G,PS
7606S-SUP2T-R	Cisco 7606S Chassis,6-slot,Red System, 2VS-S2T-10G,2PS
7606S-SUP2TXL-P	Cisco 7606S Chassis,6-slot, VS-S2T-10G-XL,PS
7606S-SUP2TXL-R	Cisco 7606S Chassis,6-slot, VS-S2T-10G-XL,PS
Cisco 7604 Systems	
7604-RSP720C-P	Cisco 7604 Chassis,4-slot, RSP720-3C, PS
7604-RSP720C-R	Cisco 7604 Chassis,4-slot, Redundant System, 2RSP720-3C, 2PS
7604-RSP720CXL-P	Cisco 7604 Chassis,4-slot, RSP720-3CXL, PS
7604-RSP720CXL-R	Cisco 7604 Chassis,4-slot, Redundant System, 2RSP720-3CXL, 2PS
7604-RSP7C-10G-P	Cisco 7604 Chassis,4-slot, RSP720-3C-10GE, PS
7604-RSP7C-10G-R	Cisco 7604 Chassis,4-slot, Red System, 2RSP720-3C-10GE, 2PS
7604-RSP7XL10G-P	Cisco 7604 Chassis,4-slot, RSP720-3CXL-10GE, PS
7604-RSP7XL10G-R	Cisco 7604 Chassis,4-slot, Red System, 2RSP720-3CXL-10GE, 2PS
Cisco 7603-S Systems	
CISCO7603-S	Cisco 7603-S Chassis
7603S-RSP720C-P	Cisco 7603S Chassis, 3-slot, RSP720-3C, PS
7603S-RSP720C-R	Cisco 7603S Chassis, 3-slot, Redundant System, 2RSP720-3C, 2PS
7603S-RSP720CXL-P	Cisco 7603S Chassis, 3-slot, RSP720-3CXL, PS
7603S-RSP720CXL-R	Cisco 7603S Chassis, 3-slot, Redundant System, 2RSP720-3CXL, 2PS
7603S-RSP7C-10G-P	Cisco 7603S Chassis, 3-slot, RSP720-3C-10GE, PS
7603S-RSP7C-10G-R	Cisco 7603S Chassis, 3-slot, Red System, 2RSP720-3C-10GE, 2PS
7603S-RSP7XL10G-P	Cisco 7603S Chassis, 3-slot, RSP720-3CXL-10GE, PS
7603S-RSP7XL10G-R	Cisco 7603S Chassis, 3-slot, Red System, 2RSP720-3CXL-10GE, 2PS

For More Information

<http://www.cisco.com/go/7600>

Service Provider Core and Edge Routers

Cisco Carrier Routing System

The Cisco Carrier Routing System (CRS) provides industry-leading performance, advanced services intelligence, an environmentally-aware design, and system longevity. Each model uses Cisco IOS XR Software, a unique self-healing, distributed operating system.

Models include:

- Cisco CRS-3, powered by Cisco QuantumFlow Array, a chipset architecture engineered in multiple dimensions of scale, services, and savings
- Cisco CRS-1, built on the Cisco Silicon Packet Processor (SPP)

Packet-based data communications are being replaced by video and rich media crossing the IP Next-Generation Network (IP NGN) in multiple directions. As part of a medianet, a media-aware Cisco IP NGN, Cisco CRS eases this strain on networks. It efficiently handles the multidirectional traffic of network and data center cloud interactions.

The Cisco CRS:

- Delivers continuous operations, with high-performance single-flow line-rate forwarding
- Scales easily from numerous single-chassis form factors to a massive multichassis system, up to 322 Tbps
- Provides industry-leading efficiency, requiring low power, cooling, and rack-space use for intelligent, service-rich bandwidth capacity

Cisco CRS-3 models build on the Cisco CRS-1 backward and forward compatibility of the models, protecting your existing and future investments for decades to come.

The Cisco CRS includes two major elements, line-card shelves and fabric shelves, combinations of which allow the system to scale from four 40-Gbps or 140-Gbps slots to as many as 1152 40-Gbps or 140-Gbps slots in 72 line-card shelves interconnected using eight fabric shelves, all operating as a single system.

- Cisco CRS 16-Slot Single-Shelf System: A single, 16-slot line-card shelf with total switching capacity of 1.2 Tbps (40 Gbps/slot) or 4.48 Tbps (140 Gbps/slot); built from a 16-slot line-card chassis featuring a midplane design
- Cisco CRS 8-Slot Single-Shelf System: A single, 8-slot line-card shelf with total switching capacity of 640 Gbps (40 Gbps/slot) or 2.24 Tbps (140 Gbps/slot); built from an 8-slot line-card chassis featuring a midplane design
- Cisco CRS 4-Slot Single-Shelf System: A single, 4-slot line-card shelf with total switching capacity of 320 Gbps (40 Gbps/slot) or 1.12 Tbps (140 Gbps/slot); built from a 4-slot line-card chassis featuring a midplane design
- Cisco CRS-1 Multishelf System: Two to 72 line-card shelves and 1 to 8 fabric shelves with a total switching capacity of up to 92 Tbps (40 Gbps/slot) or 322 Tbps (140 Gbps/slot); shelves are connected only to the fabric-card shelves where stage 2 of the three-stage switching is performed

Main Features and Benefits

- Delivery of differentiated voice, video, and data with mobility and business services with better quality of service (QoS) and performance
- Flexible functions integrated in a single platform: Rich services processing, high-performance packet routing, efficient label switching, and optimized optical transport
- Multicast traffic replicated in the fabric for efficient broadcast video applications
- Optical Transport (ITU G.709) integration with IP-over-DWDM (IPoDWDM) technology
- Intelligence for Data-Center Cloud interaction with Network Positioning System (NPS) technology
- Rich IPv6 support including dual-stack and translation and tunneling techniques with Carrier-Grade IPv6 (CGv6)
- Wire-rate line-card integrated application performance monitoring, including for video
- Hardware-accelerated operations, administration, and maintenance (OA&M)
- Consolidation of multiple networks into a single platform using secure domain routers (SDRs) while maintaining hardware and software isolation
- Dedicated 8-KB ingress and egress queues on the line cards for superior performance
- Isolation of different classes of services to deliver high-quality voice, video, and premium traffic
- Granular process-level In-Service Software Upgrades (ISSUs)
- Non-service affecting online insertion and removal (OIR) of all components to reduce downtime
- Cisco Nonstop Forwarding (NSF) and Stateful Switchover (SSO) to eliminate single points of failure without service interruption; forwarding continues before, during, and after a route-processor switchover
- In-service, nondisruptive scaling from a single chassis to multiple chassis
- Shared port adapters (SPAs) and SPA interface processors (SIPs) to preserve hardware investment across Cisco platforms, including the Cisco 12000, 7600, and 7300 Series Routers
- Interchangeable interfaces between Cisco CRS and a range of other Cisco platforms



Specifications

Feature	16 slot Single-Shelf System	8 slot Single-Shelf System	4 slot Single-Shelf System	Fabric Card Chassis
Design	Midplane design	Midplane design	Midplane design	Midplane design
Slots	Line card: 16 x 40-Gbps/140-Gbps slots Switch Fabric Card: 8 dedicated slots Route Processor: 2 dedicated slots Fan Controller: 2 dedicated slots	Line card: Eight 40-Gbps/ 140-Gbps slots Switch-fabric card: 4 dedicated slots Route processor: 2 dedicated slots Fan tray: 2 fan trays	Line card: 40-Gbps/ 140-Gbps slots Switch fabric card: 4 dedicated slots Route processor: 2 dedicated slots Fans: 4 fans, 1 fan tray	Switch Fabric Card: 24 slots Shelf Controller: 2 dedicated slots
Full-Duplex Throughput	1280 Gbps (40-Gbps/slot) 4480 Gbps (140-Gbps/slot)	640 Gbps(40-Gbps/slot) 2240 Gbps (140-Gbps/slot)	320 Gbps (40-Gbps/slot) 1120 Gbps (140-Gbps/slot)	
Power	Maximum DC power needed when chassis is fully configured with line cards with traffic running: 10.92kW Chassis power supply maximum DC output: 13.2kW	Maximum DC power needed when chassis is fully configured with line cards with traffic running: 5992W Chassis power supply maximum DC output: 7.7kW	AC input = 4270VA @ 16000 BTU/HR DC input = 4326W @16200 BTU/HR	Maximum DC = 91kW @ 31,050 BTU/hr Maximum AC = 10.4kW @ 32.668 BTU/hr
Dimensions (H x W x D)	84 x 23.6 x 36 in (213.36 x 59.94 x 91.44 cm); With cable management and front cover—84 x 23.6 x 39.71 in (213.36 x 59.94 x 100.84 cm)	38.5 x 17.5 x 36.6 in (97.79 x 44.45 x 92.964 cm) with base cosmetics; With cable management and front cover—38.5 x 17.5 x 40.5 in (97.79 x 44.45 x 102.87 cm)	30 x 17.643 x 30.28 in (76.2 x 44.813 x 76.91 cm) without doors and cosmetics	Without cable management and front cover—84 x 23.6 x 35 in (213.36 x 59.94 x 88.9 cm); With cable management and front cover—84 x 23.6 x 41 in (213.36 x 59.94 x 104.2 cm)
Weight	939 lbs (425 kg) as shipped, chassis only with build in rack and fan trays installed 1008 lbs (457 kg) chassis only as shipped, including power shelves, without power modules, and with build in rack 1595 lbs (723 kg) chassis fully configured, using all card slots, power shelves, cosmetics, and with build in rack	330.8 lb (148.86 kg) chassis with fan, PDU and blanks (as shipped) 650lb (292.5 kg) chassis as shipped, including power shelves, and all line cards and route processors	260 lb (11793 kg) chassis with fan, power modules and blanks (as shipped) 380 lb (172.37 kg) chassis as shipped, including power shelf, fabric cards, and all line cards and route processors	644 lbs (292 kg) as shipped, chassis only with fan trays installed 712.8 lbs (323 kg) chassis only as shipped, including power shelves, without power modules 1559 lbs (707 kg) chassis fully configured
IP Features	Control-plane packet handling, IPv4, IPv6, (X)ACLs, QoS/class of service (CoS) using Modular QoS CLI (MQC), IP packet classification and marking, Queuing (both ingress and egress), Policing (both ingress and egress), Diagnostic and network management support			
Software Components	Cisco IOS XR			
IP over DWDM (IPoDWDM) Features	<ul style="list-style-type: none"> • GFEC: standard G.975 Reed-Salomon algorithm • EFEC: standard G.975.1 two orthogonally concatenated BCH super FEC code • Full C-band tunable laser with 50-GHz spacing • Router-to-router SONET/SDH-like operations, administration, maintenance, and provisioning (OAM&P) 			
Routing Features	Multiprotocol BGP Version 4 (MP-BGPv4), Open Shortest Path First Version 2 (OSPFv2), OSPFv3, IS-IS, Static routes, RPL, Multicast, MPLS, High availability, Security, Manageability			

Online model comparison chart: http://www.cisco.com/en/US/products/ps5763/prod_models_comparison.html

¹ With AC input power shelf or DC input power shelf, front covers installed

² Including chassis rack-mount flanges

³ Including cable-management system and front cover

⁴ Chassis only, including power shelf for 16-slot chassis

⁵ Chassis fully configured, using all card slots, AC or DC power shelf for 16-slot chassis, & AC or DC input power supplies

Selected Part Numbers and Ordering Information

CRS-16/S	Cisco CRS-1 Series 16 Slots Carrier Routing System/Single
CRS-8/S	Cisco CRS-1 Series 8 Slots Carrier Routing System/Single
CRS-4/S	Cisco CRS-1 Series 4 Slots Carrier Routing System
CRS-MC-FC2	Cisco CRS-1 Multichassis System with 24-Slot Fabric Chassis
CRS-FC24=	Cisco CRS-1 Fabric Chassis 24-Slot System (complete FCC)
CRS-FCC=	Cisco CRS-1 FCC, spare (Chassis Only)
CRS3-16/S	Cisco CRS-3 16-Slot Carrier Routing System/Single
CRS3-8/S	Cisco CRS-3 8-Slot Single-Shelf System
CRS3-4/S	Cisco CRS-3 4-Slot Single-Shelf System
CRS3-MC-FC24	Cisco CRS-3 Multichassis System with 24-Slot Fabric Chassis
CRS3-FC24=	Cisco CRS-3 Fabric Chassis 24-Slot System (complete FCC)
CRS3-FCC=	Cisco CRS-3 FCC, spare (chassis only)

For More Information

<http://www.cisco.com/go/crs>

Cisco XR 12000 and 12000 Series Routers

The Cisco XR 12000 and 12000 Series Routers comprise a portfolio of intelligent routing solutions that scale from 2.5 to n x 10 Gbps capacity per slot, facilitating carrier-class IP/Multiprotocol Label Switching (MPLS) networks and accelerating the evolution to IP Next-Generation Networks (IP NGNs).

Main Features and Benefits

- The Cisco XR 12000 and 12000 Series Routers deliver up to 1.28-Tbps switching capacity with wire-speed feature performance, scalability, and graceful hardware and software upgrade paths.
- These routers offer full forward compatibility for all line cards and the portfolio of shared port adapters (SPAs) and SPA interface processors (SIPs).
- The routers scale to the edge, supporting backbone- or edge-optimized line cards in the same chassis.
- The routers maximize the value of line-rate edge applications with 10-Gigabit Ethernet uplinks.
- IP quality of service (QoS) and congestion-control implementation facilitates real-time services such as voice over IP (VoIP) and video. The distributed architecture and class-of-service features of the routers, such as priority-based congestion control (Weighted Random Early Detection [WRED]) and dedicated Low Latency Queuing (Modified Deficit Round Robin [MDRR]), along with virtual output queuing (Virtual Output Queuing [VOQ]), eliminate head-of-line blocking (HOL) and maintain packet sequence integrity under all conditions.
- Non-service-affecting online insertion and removal (OIR) of components (including switch fabric cards) and front accessibility reduce downtime and simplify maintenance.
- Cisco Nonstop Forwarding (NSF) and Cisco Stateful Switchover (SSO) eliminate single points of failure, help maintain system performance, and prevent service interruption; packet forwarding remains uninterrupted before, during, and after a route-processor switchover.
- Performance Route Processor-3 (PRP-3) is the premium route processor for the Cisco XR 12000 Series Router. This latest generation of performance route processors (PRPs) vastly expands the processing power for control plane and management plane applications, providing up to 300-percent improvement over PRP-2 performance for such applications. The premium PRP-3 route processor greatly extends the lifetime of the Cisco XR 12000 Series platform.
- The new Service Module Daughter Card (SMDC) can be plugged on to the PRP-3 route processor to support a comprehensive suite of IPv6 features, as well as numerous service applications that help bridge the IPv6 divide and build a bridge to the future of the Internet.



Specifications

Feature	Cisco XR 12000/ 12000 16-slot Chassis	Cisco XR 12000/ 12000 Series 10- Slot Chassis	Cisco XR 12000/ 12000 Series 6-Slot Chassis	Cisco XR 12000/ 12000 Series 4-Slot Chassis
Slot Capacity	16 slots	10 slots	6 slots	4 slots
Aggregate Switching Capacity	12016: 80 Gbps; 12416: 320 Gbps; 12816: 1280 Gbps	12010: 50 Gbps; 12410: 200 Gbps; 12810: 800 Gbps	12006: 30 Gbps; 12406: 120 Gbps	12404: 80 Gbps

Full-Duplex Throughput Per	12016: 2.5 Gbps/slot 12416: 10 Gbps/slot 12816: 40 Gbps/slot	12010: 2.5 Gbps/slot 12410: 10 Gbps/slot 12810: 40 Gbps/slot	12006: 2.5 Gbps/slot 12406: 10 Gbps/slot	12404: 10 Gbps/slot
Dimensions (H x W x D)	71.5 x 17.25 x 22.0 in. (18.16 x 184.2 ⁵ x 55.9 cm); 72.5 x 18.75 x 24.0 in. ² ; (43.8 x 47.6 x 61.0 cm) ³	37.5 x 19 x 22.0 in. (95.25 x 48.26 x 55.9 cm); 24.0 in. (61.0 cm)	18.5 in. (47.0 cm) chassis width; 17.3 in. (43.9 cm); 18.9 in. (48.0 cm); chassis depth 28.0 in. (71.1 cm)	8.75 in. (22.23 cm) chassis width 17.38 in. (44.15 cm) 18.9 in. (48.01 cm) chassis depth 27.5 in. (69.85 cm)
Weight	140 lb. (64 kg) ³ , 390 lb. (177 kg) ⁰	125 lb. (57 kg) ⁴ , 275 lb. (125 kg) ⁵	18.5 in. (47.0 cm); chassis width: 17.3 in (43.9 cm) 18.9 in. (48.0 cm) chassis depth: 28.0 in. (71.1 cm)	8.75 in. (22.23 cm); chassis width: 17.38 in (44.15 cm) 18.9 in. (48.01 cm) chassis depth: 27.5 in. (69.85 cm)
Chassis Per Rack	One	Two	Four	Eight
Software Components (Per Base System)	Cisco IOS XR or Cisco IOS Software Operating System; Cisco Express Forwarding for distributed packet forwarding			
Compatibility	12800—Line cards that support 2.5-, 5-, 10-, or 20-Gbps capability; 12400—Line cards that support 2.5-, 5- or 10-Gbps capability; 12000—Line cards that support 2.5-Gbps capability			
Protocols	IPv4/v6, MPLS, BGPv4/v6, IS-IS, OSPFv2, RIPv2, IGMP, DVMRP, and PIM DX/SX			
Connectivity	Packet over SONET/SDH (POS), Ethernet, ATM, copper (DS-3/E3), Channelized (CT1, CT3, ChOC-3/CHSTM1, ChOC-12/CHSTM4, ChOC-48/CHSTM16); see Cisco IOS XR Software release notes for specific connectivity support on the Cisco XR 12000 Series			

Selected Part Numbers and Ordering Information

Cisco XR 12000 16-Slot Systems	
XR12416/320-AC	Cisco XR 12000 16-slot chassis w/ 3 AC power supplies, 320-Gbps fabric (2 CSC & 3 SFC cards)
XR12416/320-AC4	Cisco XR 12000 16-slot chassis w/ 4 AC power supplies, 320-Gbps fabric (2 CSC & 3 SFC cards)
XR12416/320-DC	Cisco XR 12000 16-slot chassis w/ 4 DC power supplies, 320-Gbps fabric (2 CSC & 3 SFC cards)
Cisco 12000 16-Slot Systems	
GSR16/80-AC-8R	Cisco 12000 16-slot chassis w/ 3 AC power supplies, 80-Gbps fabric (2 CSC & 3 SFC cards), 2 blowers
12816E/1280	Cisco 12000 16-slot chassis w/ 4 AC power supplies, 1280-Gbps Enhanced fabric (2 CSC & 3 SFC cards), 2 blowers, 2 alarms, and 1 PRP-1
12816/1280-DC	Cisco 12000 16-slot chassis w/ 4 DC power supplies, 1280-Gbps fabric (2 CSC & 3 SFC cards), 2 blowers, 2 alarms, and 1 PRP-1
Cisco XR 12000 10-Slot Systems	
XR12410/200-AC	Cisco XR 12000 10-slot chassis w/ 2 AC power supplies, 200-Gbps fabric (2 CSC & 5 SFC cards)
XR12410/200-DC	Cisco XR 12000 10-slot chassis w/ 2 DC power supplies, 200-Gbps fabric (2 CSC & 5 SFC cards)
Cisco 12000 10-Slot Systems	
12010-AC	Cisco 12000 10-slot chassis w/ 2 AC power supplies, 50-Gbps fabric (2 CSC & 5 SFC cards), 1 blower
12010-DC	Cisco 12000 10-slot chassis w/ 2 DC power supplies, 50-Gbps fabric (2 CSC & 5 SFC cards), 1 blower
12810/800-AC	Cisco 12000 10-slot chassis w/ 2 AC power supplies, 800-Gbps fabric (2 CSC & 5 SFC cards), 1 blower
12810/800-DC	Cisco 12000 10-slot chassis w/ 2 DC power supplies, 800-Gbps fabric (2 CSC & 5 SFC cards), 1 blower
Cisco XR 12000 6-Slot Systems	
XR12406/120-AC	Cisco XR 12000 6-slot chassis w/ 1 AC power supply, 120-Gbps fabric (1 CSC & 3 SFC cards), 1 blower
XR12406/120-DC	Cisco XR 12000 6-slot chassis w/ 1 DC power supply, 120-Gbps fabric (1 CSC & 3 SFC cards), 1 blower
Cisco 12000 6-Slot Systems	
12006-AC	Cisco 12000 6-slot chassis w/ 2 AC power supplies, 30-Gbps fabric (2 CSC & 3 SFC cards), 1 blower
12006-DC	Cisco 12000 6-slot chassis w/ 2 DC power supplies, 30-Gbps fabric (2 CSC & 3 SFC cards), 1 blower
Cisco XR 12000 4-Slot Systems	
XR12404/80-AC	Cisco XR 12000 4-slot chassis w/ 2 AC power supply, 80-Gbps fabric (consolidated switch fabric, clock scheduler, & alarm card), 1 blower, & 1 PRP-2
XR12404/80-DC	Cisco XR 12000 4-slot chassis w/ 2 DC power supply, 80-Gbps fabric (consolidated switch fabric, clock scheduler, & alarm card), 1 blower, & 1 PRP-2

For More Information

<http://www.cisco.com/go/12000>

Cisco ASR 9000 Series Aggregation Services Routers

The Cisco ASR 9000 Series Aggregation Services Routers represents an exciting new paradigm in the world of Carrier Ethernet transport with exceptional scalability, carrier-class reliability, environmentally conscious design, incredible flexibility, and an enticing new price-to-performance benchmark.

The Cisco ASR 9000 Series has four form factors: the Cisco ASR 9010 Router, the Cisco ASR 9006 Router, the Cisco ASR 9922 Router, and the Cisco ASR 9000v Router. Cisco ASR 9000 Series Routers are designed to provide true carrier-class reliability using the Cisco IOS XR operating system, comprehensive system redundancy, and a full complement of network resiliency schemes.

The Cisco ASR 9000 Series also offers service and application-level intelligence focused on optimized video delivery and mobile aggregation. Finally, the Cisco ASR 9000 Series is designed to simplify and enhance the operational and deployment aspects of service-delivery networks.



Main Features and Benefits

- **Cisco IOS XR modular operating system:** The Cisco ASR 9000 Series takes advantage of the Cisco IOS XR operating system made famous by the highly successful Cisco CRS Carrier Routing System platform in core deployments. The Cisco IOS XR operating system is built for distributed systems such as the Cisco ASR 9000 Series, and uses microkernel architecture to achieve true modularity. This modularity provides the path to nonstop operations during software image upgrades or module changes, without affecting normal platform operations.
- **Fully distributed system:** The Cisco ASR 9000 Series operates in a fully distributed fashion; that is, all packet-forwarding decisions and actions take place on the individual line cards. These high-density Ethernet line cards are equipped with a specialized network processor that provides a flexible programming infrastructure with high-density hierarchical quality-of-service (H-QoS) services, security, and integrated synchronous Ethernet. The distributed nature of the Cisco ASR 9000 Series improves resiliency by adding a new dimension in scale for features such as bidirectional forwarding detection (BFD) and Ethernet operations, administration, and maintenance (E-OAM).
- **Operationally efficient and redundant hardware:** The Cisco ASR 9000 Series provides an infrastructure where all common components, route switch processors (RSPs), switching fabric, fans, and power supplies are completely redundant. In addition, the platform is designed such that power is used on an as-needed basis depending on system requirements. Power has been modularized for a true pay-as-you-grow approach, reducing capital expenditures (CapEx) and again providing an operationally efficient deployment. The Cisco ASR 9000 also provides a space-optimized small-platform option that uses the common components of the routers and retains a central office deployment-ready capability using a patent-pending side-to-back airflow design.
- **Environmentally conscious design:** In today's world of increasing awareness of the human effect on the environment and the resultant fiscal implications, Cisco ASR 9000 Series routers bring a fresh new "conscious" approach to product development. From optimal thermal design to the architecture of the power infrastructure, from the placement of line card components to the pitch of each slot, every design aspect had one goal in mind: reduced environmental effect through lowered power consumption and decreased cooling requirements. Even the product packaging process was evaluated to minimize the use of packaging material and thereby reduce waste at customer locations. The Cisco ASR 9000 Series is an example of the continued Cisco commitment to efficient and future-friendly product design.
- **Network virtualization:** Using Cisco's "network virtualization" technology, the Cisco ASR 9000 Series offers exceptional pay-as-you-grow scale, carrier-class reliability, and simplified service provisioning. The Cisco ASR 9000v sets the industry benchmark as a virtualized compact carrier-class converged access and aggregation platform.
- **Integrated services capability:** The Cisco ASR 9000 Series delivers flexible and highly scalable service integration through the Integrated Service Module (ISM) allowing operational efficiency and faster time to market. A Cisco ASR 9000 system populated with ISMs becomes a platform upon which new services and applications can be layered over time and deployed much more quickly.

Specifications

Model	Cisco ASR 9006	Cisco ASR 9010	Cisco ASR 9922
Dimensions	Height—175 in. (444.5 mm) Width—175 in. (444.5 mm) Depth: • With doors—31.45 in. (798.8 mm) • Without doors—28.65 in (727.2 mm) Weight: • 110 lbs (50 kg) (Unloaded) • 230 lbs (106.8 kg) (Fully Loaded)	Height—36.75 in. (933.5 mm) Width—175 in. (444.5 mm) Depth: • With doors—31.45 in. (798.8 mm) • Without doors—28.65 in (727.2 mm) Weight: • 191 lbs (86.8 kg) (Unloaded) • 375 lb (170.5 kg) (maximum)	Height: 77 in. (44 RU chassis) Width: 1775 in. Depth: • With doors: 31.45 in. (798.8 mm) • Without doors: 28.65 in. (727.2 mm) Weight: • 420 lbs (unloaded) • 800 lbs (maximum)
Slot Orientation	Horizontal	Vertical	Vertical
Cisco ASR 9000 Series RSP	Same as Cisco ASR 9010	Dual redundant RSPs in 2 slots	Dual redundant RPs in 2 slots RSPs segregated into RP and FC
Cisco ASR 9000 Series LCs	Four line card slots	Eight line card slots	20 line card slots
“Commons” Components	Two RSPs Two fan trays One PEM (either DC or AC) One fan filter	Two RSPs Two fan trays Two PEMs (either DC or AC) One fan filter	2 RPs 7 FCs 4 fan trays 4 DC PEMs or 4 AC PEMs 1 fan filter
Reliability and Availability	Same as Cisco ASR 9010	Fabric redundancy Fan redundancy Feed redundancy Power-supply redundancy RSP redundancy Software redundancy	Fabric redundancy Fan redundancy Feed redundancy Power-supply redundancy RSP redundancy Software redundancy
Rack Mounting	Same as Cisco ASR 9010 Note: Minimum 1775-in. opening between posts is needed for proper operation.	Yes • 19-inch • 21 and 23 inch adapters available	Yes • 19-inch • 21 and 23 inch adapters available
Airflow	Side-to-back	Front-to-back	Front-to-back
Chassis Switching	Up to 3.2 Tbps	Up to 6.4 Tbps	Up to 48Tbps
Capacity			
Fabric	Same as Cisco ASR 9010	One per RSP • Active/Active non-blocking operation mode in dual RSP redundant configuration. • Fully redundant in dual RSP redundant configuration • Built-in service-intelligence and traffic-prioritization capability	7 fabric cards • Supports 6+1 redundancy • Operate in Active/Active nonblocking mode • Built-in service-intelligence and traffic-prioritization capability
Thermal	Two fan trays • Six high-efficiency fans per tray • Variable-speed fans for optimal thermal performance • No single point of failure	Two fan trays • Twelve high-efficiency fans per tray • Variable-speed fans for optimal thermal performance • No single point of failure	4 fan trays • 12 high-efficiency fans per tray • Variable-speed fans for optimal thermal performance • No single point of failure
Power			
Modularity	• Up to 3 power modules (AC or DC) for future scalability Multiple power module types • Same as Cisco ASR 9010 Note: Mixing of AC and DC modules is not supported. DC modules can be mixed and matched.	• Up to 6 power modules (AC or DC) for future scalability Multiple power module types • 3-kW AC power module • 2.1 and 1.5-kW DC power modules Note: Mixing of AC and DC modules is not supported. DC modules can be mixed and matched.	• Up to 16 power modules (AC or DC) for future scalability Multiple power module types • 3-kW AC power module • 2.1-kW DC power modules Note: Mixing of AC and DC modules is not supported. DC modules can be mixed and matched.
Redundancy	• Module redundancy: 1:N-1:1 • Feed redundancy	• Module redundancy: 1:N-1:1 • Feed redundancy • PEM redundancy	• Module redundancy: 1:N-1:1 • Feed redundancy • PEM Redundancy

Online model comparison chart: http://www.cisco.com/en/US/products/ps9853/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Cisco ASR 9000 Series Chassis	
ASR-9006-AC /ASR-9010-DC	Cisco ASR 9006 chassis
ASR-9010-AC /ASR-9010-DC	Cisco ASR 9010 chassis
ASR-9922-AC /ASR-9922-DC	Cisco ASR 9922 chassis
A9K-2X100GE-SE	Cisco ASR 9000 2-Port 100GE Service Edge Optimized Line Card
A9K-2X100GE-TR	Cisco ASR 9000 2-Port 100GE Transport Optimized Line Card
A9K-24X10GE-SE	Cisco ASR 9000 24-Port 10GE Service Edge Optimized Line Card
A9K-24X10GE-TR	Cisco ASR 9000 24-Port 10GE Transport Optimized Line Card
A9K-ISM-100	Cisco ASR 9000 Integrated Services Module

For More Information

<http://www.cisco.com/go/asr9000>

Cisco ASR 1000 Series Aggregation Services Routers

The Cisco ASR 1000 Series Aggregation Services Routers include six versions: the Cisco ASR 1001, ASR 1002, ASR 1002-X, ASR 1004, ASR 1006, and ASR 1013 Routers. All six models use the new, innovative, and powerful Cisco QuantumFlow Processor and are optimized for service provider, managed services, and enterprise deployments.



For service provider deployments, the Cisco ASR 1000 Series is designed for broadband, service provider edge, and route reflector. For enterprise deployments, the Cisco ASR 1000 Series is applicable for WAN aggregation, Internet edge, data center interconnect, and ultra-high-end branch offices.

The Cisco ASR 1000 Series delivers routing with multiple services embedded in the Cisco QuantumFlow Processor at wire speeds of up to 100 Gbps. The supported services include security services (IPsec encryption, firewall, and router security), Performance Routing, quality of service (QoS), multicast, Application Visibility and Control (AVC), broadband aggregation, and Cisco Unified Border Element (also known as session border controller), among others.

With the separation of the control and data planes in the Cisco ASR 1000 Series Router architecture, it enables software redundancy (on the Cisco ASR 1001, 1002, 1002-X, and 1004 Routers), hardware redundancy (on the Cisco ASR 1006 and ASR 1013 Routers), and distributed denial-of-service attack (DDoS) protection for all the models. Additionally, the modular Cisco IOS XE Software that is introduced with the Cisco ASR 1000 Series facilitates In-Service Software Upgrade (ISSU) on the Cisco ASR 1006 and ASR 1013. I/O connectivity is provided through shared port adapters (SPAs), which are housed in the SPA Interface Processor (SIP) card.

From a price-to-performance perspective, the Cisco ASR 1000 Series Router solution fits well between the Cisco 7200 and Cisco 7301 Series and the Cisco 7600 and Cisco Catalyst 6500 Series Switches, thus providing a comprehensive high-end and midrange routing portfolio.

All the following Cisco ASR 1000 Series Aggregation Services Routers offer Layer 3 VPN (L3VPN), route reflector, WAN services aggregation, managed customer premises equipment (CPE), and Layer 2 Tunneling Protocol access concentrator (LAC) or Layer 2 Tunneling Protocol network server (LNS).

Ideal for Companies That Need These Features

Cisco ASR 1001

- One shared-port-adaptor (SPA) slot
- One integrated SPA interface processor (SIP)
- One integrated route processor
- One integrated embedded services processor engine at 2.5 Gbps by default and 5 Gbps with the Upgrade Feature License
- Four built-in 1-Gigabit Ethernet ports
- Support of software redundancy
- One optional integrated daughter card (IDC) with one of the following choices: two OC-3 ports, four T3 ports, four Gigabit Ethernet ports, 8 Channelized T1/E1 ports, and a 160-GB hard disk drive
- Up to 10,000 Cisco Unified Border Element sessions

- Cisco ASR 1002**
 - Three SPA slots
 - One integrated 10-Gigabit Ethernet SIP (ASR1000-SIP10)
 - One integrated route processor (Cisco ASR 1000 Series Route Processor 1 [RP1])
 - One embedded services processor (Cisco ASR 1000 Series Embedded Services Processor 5 [ASR1000-ESP5] or Cisco ASR 1000 Series Embedded Services Processor 10 [ASR1000-ESP10])
 - Four built-in 1-Gigabit Ethernet ports
 - Support of software redundancy
- Cisco ASR 1002-X**
 - Three SPA slots
 - One integrated SIP40
 - One integrated router processor
 - One integrated embedded services processor engine at 5 Gbps by default and upgradable to 10, 20, or 36 Gbps through software upgrade licenses
 - Six built-in 1-Gigabit Ethernet ports
 - Support of software redundancy
 - Up to 10,000 Cisco Unified Border Element sessions
- Cisco ASR 1004**
 - Eight SPA slots
 - Two SIP cards (Cisco ASR 1000 Series SPA Interface Processor 10 [ASR1000-SIP10] or Cisco ASR 1000 Series SPA Interface Processor 40 [ASR1000-SIP40]), each with 4 SPA slots
 - One route processor (ASR1000-RP1 or ASR1000-RP2)
 - One embedded services processor (ASR1000-ESP10, ASR1000-ESP20, or ASR1000-ESP40)
 - Support of software redundancy
 - Up to 16,000 Cisco Unified Border Element sessions
- Cisco ASR 1006**
 - Twelve SPA slots
 - Three SIP cards (ASR1000-SIP10 or ASR1000-SIP40), each with 4 SPA slots
 - Up to two route processors (ASR1000-RP1 or ASR1000-RP2)
 - Up to two embedded services processors (ASR1000-ESP10, ASR1000-ESP20, ASR1000-ESP40, or ASR1000-ESP100)
 - In-box hardware redundancy (dual embedded services processors [ESPs] and dual route processor) – optional
 - Up to 16,000 Cisco Unified Border Element sessions
- Cisco ASR 1013**
 - Twenty-four SPA slots
 - Six SIP cards (ASR1000-SIP10 or ASR1000-SIP40), each with 4 SPA slots
 - Up to two route processors (ASR1000-RP2)
 - Up to two ESPs (ASR1000-ES40, or ASR1000-ESP100)
 - In-box hardware redundancy (dual ESP and dual route processor) – optional

Main Features and Benefits

- **Compact form factor:** The Cisco ASR 1000 Series offers 2.5-Gigabit throughput in a compact 1-rack-unit (1RU) chassis with fixed components, up to 36-Gigabit Ethernet throughput in compact modular 2RU form factor, up to 40-Gigabit throughput in a modular 4RU form factor, and up to 100-Gigabit throughput in a modular 6RU form factor, and modular 13RU form factors.
- **Modularity:** The Cisco ASR 1000 Series offers a choice of chassis that support from 1 up to 24 SPAs. The Cisco ASR 1004, ASR 1006, and ASR 1013 provide full flexibility to select different types of route processors for control-plane processing, embedded services processors (ESPs) for data forwarding, SPA interface processors (SIP), and SPAs based on deployment requirements. On the Cisco ASR 1002, the route processor and SIP are integrated in the chassis. On the Cisco ASR 1001 and ASR 1002-X, the route processor and ESP are integrated in the chassis. The Cisco ASR 1001 has various models that are preinstalled with a non-field-upgradable integrated daughter card (IDC) to provide additional interfaces.
- **Integrated services:** Services can be enabled either at the time of ordering or after the router is already deployed. Cisco IOS Software redundancy, encryption, firewall, and Session Border Controller functions (also known as Cisco Unified Border Element [Cisco UBE]), and Application Visibility and Control (AVC) can all be enabled by purchasing feature licenses with no need for hardware upgrades.
- **High availability:** Cisco offers in-box engine redundancy on the Cisco ASR 1006 and ASR 1013, and Cisco IOS Software redundancy on the Cisco ASR 1001, ASR 1002, ASR 1002-X, and ASR 1004 models.
- **Common SPAs:** SPAs are shared with the Cisco Catalyst 6500 and Catalyst 7600 Series, simplifying sparing and protecting customer investment in interfaces.
- **WebEx Node SPA:** This double-height SPA, supported on the Cisco ASR 1002, ASR 1004, ASR 1006, and ASR 1013 chassis, maximizes bandwidth efficiency and user experience for WebEx users in the enterprise.
- **DSP SPA:** This single-height SPA, supported on all Cisco ASR 1000 models, provides voice and video transcoding and transrating, and dual-tone multifrequency (DTMF) interworking with Cisco Unified Border Element (SP Edition) and Cisco Unified Border Element (ENT Edition).

Specifications

Feature	Cisco ASR1001	Cisco ASR1001-2XOC3POS	Cisco ASR1001-4XT3	Cisco ASR1001-HDD	Cisco ASR 1001-4X1GE
Built-in Gigabit Ethernet Ports	4	4	4	4	4
Integrated Daughter Card	No	2 x OC-3 Ports	4 x T3 Ports	1 x 160GB Hard Disk Drive	4 x GE Ports
Embedded Service Processor Slots	Integrated	Integrated	Integrated	Integrated	Integrated
Route Processor Slots	Integrated	Integrated	Integrated	Integrated	Integrated
SIP Card Slots	Integrated	Integrated	Integrated	Integrated	Integrated
Shared Port Adapter Slots	1	1	1	1	1
Bandwidth	2.5 Gbps; upgradable to 5 Gbps with Performance Upgrade License	2.5 Gbps; upgradable to 5 Gbps with Performance Upgrade License	2.5 Gbps; upgradable to 5 Gbps with Performance Upgrade License	2.5 Gbps; upgradable to 5 Gbps with Performance Upgrade License	2.5 Gbps; upgradable to 5 Gbps with Performance Upgrade License
Forwarding Rate	Up to 75 Mpps	Up to 75 Mpps	Up to 75 Mpps	Up to 75 Mpps	Up to 75 Mpps
Crypto Performance	Up to 1.8 Gbps	Up to 1.8 Gbps	Up to 1.8 Gbps	Up to 1.8 Gbps	Up to 1.8 Gbps
Route Processor Memory	4 GB (default); upgradeable to 8GB or 16GB	4 GB (default); upgradeable to 8GB or 16GB	4 GB (default); upgradeable to 8GB or 16GB	4 GB (default); upgradeable to 8GB or 16GB	4 GB (default); upgradeable to 8GB or 16GB
Minimum Cisco IOS Release	IOS XE 3.2.0S	IOS XE 3.2.0S	IOS XE 3.2.0S	IOS XE 3.3.0S	IOS XE 3.3.0S
Redundant Power Supply	Yes, Dual AC or DC by default	Yes, Dual AC or DC by default	Yes, Dual AC or DC by default	Yes, Dual AC or DC by default	Yes, Dual AC or DC by default
Chassis Height	1 RU	1 RU	1 RU	1 RU	1 RU
Rack Mountable	Yes	Yes	Yes	Yes	Yes
Dimensions (H x W x D)	1.71 x 17.3 x 18.5 in.	1.71 x 17.3 x 18.5 in.	1.71 x 17.3 x 18.5 in.	1.71 x 17.3 x 18.5 in.	1.71 x 17.3 x 18.5 in.
Airflow	Front-to-back	Front-to-back	Front-to-back	Front-to-back	Front-to-back
Feature	Cisco ASR1001-8XCHT1E1	Cisco ASR1002/ASR1002-X	Cisco ASR1004	Cisco ASR1006	Cisco ASR 1013
Built-in Gigabit Ethernet Ports	4	4/6	0	0	0
Integrated Daughter Card	8 x Channelized T1/E1 Ports	No/No	No	No	No
Embedded Service Processor Slots	Integrated	1 – ESP5 or ESP10/Integrated	1 – ESP10, ESP20, or ESP40	2 – ESP10, ESP20, ESP40, or ESP100	2 – ESP40, or ESP100
Route Processor Slots	Integrated	Integrated/Integrated	1 – RP1 or RP2	2 – RP1 or RP2	2 – RP2
SIP Card Slots	Integrated	Integrated/Integrated	2	3	6
Shared Port Adapter Slots	1	3/3	8	12	24
Bandwidth	2.5 Gbps; upgradable to 5 Gbps with Performance Upgrade License	Up to 10 Gbps with ESP-10/up to 36 Gbps	Up to 40 Gbps with ESP-40	Up to 100 Gbps with ESP-100	Up to 100 Gbps with ESP-100
Forwarding Rate	Up to 75 Mpps	Up to 8 Mpps with ESP-10/up to 30 Gbps	Up to 23 Mpps with ESP-40	Up to 59 Mpps with ESP-100	Up to 59 Mpps with ESP-100
Crypto Performance	Up to 1.8 Gbps	Up to 4 Gbps with ESP-10/up to 4 Gbps	Up to 11 Gbps with ESP-40	Up to 29 Gbps with ESP-100	Up to 29 Gbps with ESP-100
Route Processor Memory	4 GB (default); upgradeable to 8GB or 16GB	4 GB (default); 4 GB (max.) / 4 GB (default); 16 GB (max.)	RP1: 2 GB (default); 4 GB (max.) RP2: 8 GB (default); 16 GB (max.)	RP1: 2 GB (default); 4 GB (max.) RP2: 8 GB (default); 16 GB (max.)	RP1: 2 GB (default); 4 GB (max.) RP2: 8 GB (default); 16 GB (max.)
Minimum Cisco IOS Release	IOS XE 3.3.0S	IOS XE 2.1.0 / IOS XE 3.7.0S	IOS XE 2.1.0	IOS XE 2.1.0	IOS XE 31.0S
Redundant Power Supply	Yes, Dual AC or DC by default	Yes, Dual AC or DC by default	Yes, Dual AC or DC by default	Yes, Dual AC or DC by default	Yes, Dual AC or DC by default
Chassis Height	1 RU	2 RU	4 RU	6 RU	13 RU

Rack Mountable	Yes	Yes	Yes	Yes	Yes
Dimensions (H x W x D)	1.71 x 17.3 x 18.5 in.	3.5 x 17.2 x 22 in.	7.0 x 17.2 x 22 in.	10.5 x 17.2 x 22 in.	22.8 x 17.2 x 22 in.
Airflow	Front-to-back	Front-to-back	Front-to-back	Front-to-back	Front-to-back

Online model comparison chart: http://www.cisco.com/en/US/products/ps9343/prod_models_comparison.html

Selected Part Numbers and Ordering Information

ASR1001	Cisco ASR1001 System, Fixed ESP & RP, Crypto, 4 Built-in GE, Dual P/S
ASR1001-2XOC3POS	Cisco ASR1001 System, Fixed ESP & RP, Crypto, 4 Built-in GE, 2 OC-3 Integrated Daughter Card (IDC), Dual P/S
ASR1001-4XT3	Cisco ASR1001 System, Fixed ESP & RP, Crypto, 4 Built-in GE, 4 T3 Integrated Daughter Card (IDC), Dual P/S
ASR1001-HDD	Cisco ASR1001 System, Fixed ESP & RP, Crypto, 4 Built-in GE, Hard Disk Drive (HDD), Dual P/S.
ASR1001-4x1GE	Cisco ASR1001 System, Fixed ESP & RP, Crypto, 4 Built-in GE, 4 GE Integrated Daughter Card (IDC), Dual P/S
ASR1001-8xCHT1E1	Cisco ASR1001 System, Fixed ESP & RP, Crypto, 4 Built-in GE, 8 Channelized T1/E1 Integrated Daughter Card (IDC), Dual P/S
ASR1002	Cisco ASR1002 chassis, 4 built-in GE, Dual P/S, 4GB DRAM
ASR1002-X	Cisco ASR1002-X System, Crypto, 6 built-in GE, Dual P/S
ASR1004	Cisco ASR1004 chassis, Dual P/S
ASR1006	Cisco ASR1006 chassis, Dual P/S
ASR1013	Cisco ASR1013 chassis, Dual P/S

For More Information

<http://www.cisco.com/go/asr1000>

Cisco ASR 903 Series Aggregation Services Routers

The Cisco ASR 903 Series delivers on the Cisco Unified Ethernet Access vision by having a single product family with one software application and system architecture to enable service providers to offer Ethernet transport services across access and aggregation networks for business access, mobile backhaul, residential, and other deployments.



The Cisco ASR 903 Router is Cisco's first product built specifically for the pre-aggregation function in networks that targets convergence of wireless and wireline services. A natural extension to the Cisco service provider access and aggregation portfolio, the Cisco ASR 903 extends the reach of the portfolio with a small-footprint, redundant, modular, and industrial temperature-hardened device.

The Cisco ASR 903 Route Switch Processor (RSP) provides the central control and forwarding capabilities of the router with rich clocking and management interfaces. I/O connectivity is provided through hot-swappable interface module cards. These cards can deliver DS-0 to OC-12 time-division multiplexing/ATM (TDM/ATM) and n x 10-Mbps Ethernet to n x 10-Gigabit Ethernet connectivity into service provider access and aggregation networks at wire speeds of up to 55 Gbps.

The Cisco ASR 903 Routers combine Layer 2 and Layer 3 networking capabilities with a high-bandwidth, high-performance architecture, including hardware-based forwarding of circuit emulation, Ethernet Operations, Administration, and Maintenance (E-OAM) protocols, Multiprotocol Label Switching (MPLS), Multiprotocol Label Switching Transport Profile (MPLS-TP), IPv4, and IPv6.

The Cisco ASR 903 Router architecture, software redundancy, and hardware redundancy provide a high-availability platform. Additionally, the modular Cisco IOS XE Software facilitates In-Service Software Upgrade (ISSU).

Ideal for Companies that Need These Features

Cisco ASR 903

- High availability with redundant switch processor and In-Service Software Upgrade (ISSU)
- Flexible interface option with modular interface cards
- Redundant power with 2 modular power supplies; AC and DC power supplies available
- Single platform for both mobile wireless and wireline access and aggregation
- Ability to operate in extended temperature range
- Ability to deploy in tight spaces with small footprint

Main Features and Benefits

- Flexible deployment options: The Cisco ASR 903 Router is designed with a 3-rack-unit (3RU) compact form factor to accommodate deployment in small spaces. Combined with various mounting options, the Cisco ASR 903 Routers can be deployed in space-constrained places such as ETSI 300-mm cabinets. The side-to-side airflow design allows for two Cisco ASR 900 Series Routers to be mounted back-to-back in a 600-mm cabinet. The wide temperature range supported by the Cisco ASR 903 Routers allows the router to be deployed in locations with minimum environmental control. Small footprint and extended temperature range support allows service providers to extend the reach of their Carrier Ethernet networks to various types of locations and save money on air conditioning.
- High availability: The Cisco ASR 903 Router offers in-box hardware redundancy for all hardware components and supports software redundancy with In-Service Software Upgrade (ISSU) when two route switch processors (RSPs) are inserted in the chassis.
- Modularity: Cisco offers a choice of two RSPs providing different service scale and a wide range of LAN and WAN interface modules. The LAN interfaces are available in copper and fiber Ethernet interfaces with speeds ranging from 10 Mbps to 10 Gbps. The WAN interfaces are available in speeds ranging from DS-0 to OC-12. Interface modules, power supplies, and the fan tray are all modular and fully upgradable when future generations are released.
- Industry standards certifications: The Cisco ASR 903 Router is certified for both Network Equipment Buildings Standards Level 3 (NEBS3) and European Telecommunications Standards Institute (ETSI) standards.
- Timing and synchronization services: The Cisco ASR 903 Router provides the timing services required in today's converged access networks to support mobile solutions, including Radio Access Network (RAN) applications, and offers integrated support for the Building Integrated Timing Supply (BITS), 10 MHz, 1 pulse per second (PPS), and Time-of-Day (TOD) interfaces. The Cisco ASR 903 also supports synchronous Ethernet (SyncE) and IEEE-1588, and it can also act as the source for network clocking information.
- Cisco Carrier Ethernet application-specific integrated circuit (ASIC): Powered by the Cisco Carrier Ethernet ASIC, designed specifically for the needs of service providers, the Cisco ASR 903 Router delivers essential Carrier Ethernet technologies including: VLAN translation, selective QinQ, hierarchical QoS (H-QoS), Multiprotocol Label Switching (MPLS), and Hierarchical Virtual Private LAN Services (H-VPLS). The ASIC provides line-rate performance and offers advanced services including access control list (ACL) and H-QoS without affecting performance. The Carrier Ethernet ASIC incorporates innovative traffic-management capabilities while providing intelligent packet switching and routing operations.
- Service richness: With the Cisco ASR 903 Router, customers will be able to deliver services ranging from basic time-division multiplexing (TDM), ATM, and Ethernet services to advanced feature-rich and secure MPLS services, including Pseudo Wire Emulation (PWE), Carrier Ethernet, Multiprotocol Label Switching Transport Profile (MPLS-TP), MPLS Layer 2 VPNs (MPLS L2VPNs), and MPLS Layer 3 VPNs. The service offering is enhanced with rich operations, administration, and management (OAM) functions including: IEEE 802.1ag Connectivity Fault Management (CFM), IP service-level agreement (IP SLA), Y.1731 Fault Management and Performance Management, Bidirectional Forwarding Detection (BFD), and MPLS OAM.

Specifications

Model	Cisco ASR 903
Dimensions (H x W x D)	5.22 x 17.44 x 9.22 in. (132.6 x 443 x 234.2 mm)
Chassis Height	3RU
Cisco ASR 900 Series RSP	Dual redundant RSPs in 2 slots
Cisco ASR 900 Series IMs	6 Interface Module slots
"Commons" Components	<ul style="list-style-type: none"> • Two RSPs • One fan tray • Two Power Supplies (either DC or AC)
Reliability and Availability	<ul style="list-style-type: none"> • Fan redundancy • Feed redundancy • Power-supply redundancy • RSP redundancy • Software redundancy
Rack Mounting	Yes: <ul style="list-style-type: none"> • ETSI • 19 inch • 23 inch
Airflow	Side-to-Side
Capacity	
RSP	<ul style="list-style-type: none"> • 55Gbps • Active /Standby non-blocking operation mode in dual RSP redundant configuration • Fully redundant in dual RSP redundant configuration • Built-in service-intelligence and traffic- prioritization capability

Thermal	<ul style="list-style-type: none"> • Twelve high-efficiency fans per tray • Variable-speed fans for optimal thermal performance • Fully operational in single fan failure scenario
Power	<ul style="list-style-type: none"> • Maximum 550Watt input power • Up to 2 power supplies (AC or DC) <p>Note: Mixing of AC and DC modules is not supported.</p> <ul style="list-style-type: none"> • Module redundancy: 1:1 • Modules operate in load share mode.

Selected Part Numbers and Ordering Information

Cisco ASR 903 Series Aggregation Services Routers — Chassis, Fan tray, RSPs, Power supplies	
ASR-903	ASR 903 Router Chassis
A903-FAN	ASR 903 FAN Tray
A900-PWR550-A	ASR 900 550W AC Power Supply
A900-PWR550-D	ASR 900 550W DC Power Supply
A900-RSP1A-55	ASR 900 Route Switch Processor 1, Base Scale, 55Gbps
A900-RSP1B-55	ASR 900 Route Switch Processor 1, Large Scale, 55Gbps
Cisco ASR 903 Series Aggregation Services Routers — Interface Modules	
A900-IMA8T	ASR 900 8 port 10/100/1000 Ethernet Interface Module
A900-IMA8S	ASR 900 8 port SFP Gigabit Ethernet Interface Module
A900-IMA1X	ASR 900 1 port 10GE XFP Interface Module
A900-IMA16D	ASR 900 16 port T1/E1 Interface Module
A900-IMA4OS	ASR 900 4 OC3/STM1 or 1 OC12/STM4 Interface Module
Cisco ASR 903 Series License Options	
Metro Services	<p>Layer 2 feature license targeted for Layer 2 aggregation:</p> <ul style="list-style-type: none"> • Enhanced QoS, with deep buffers and Hierarchical QoS • Layer 2 features for L2 VPN including EVC framework • Ethernet OAM • Synchronous Ethernet • IPv4/IPv6 host connectivity
Metro IP Services	<p>Layer 3 feature license targeted for Layer 3 aggregation:</p> <ul style="list-style-type: none"> • IP routing protocols (OSPF, ISIS, EIGRP) • Layer 3 multicast PIM SM and SSM • Bidirectional Forwarding Detection (BFD) • Multi-VRF CE (VRF lite) with service awareness • IEEE 1588-2008 Ordinary Clock and Transparent Clock
Metro Aggregation Services	<p>MPLS feature license targeted for MPLS aggregation:</p> <ul style="list-style-type: none"> • BGP • MPLS label imposition/disposition • MPLS Traffic Engineering (TE) and Fast Reroute (FRR) • Pseudowire Emulation (EoMPLS/CESoPSN/SAToP) • MPLS VPN • VPWS/VPLS/H-VPLS • MPLS OAM • MPLS Transport Profile (MPLS-TP)
ATM License	The ATM license allows service providers to enable ATM functionality on TDM interfaces only when required. One license is required for each chassis that needs ATM functionality to be enabled in the system. This includes ATM Pseudo Wires over MPLS (ATMoMPLS), ATM local switching, ATM interworking and local ATM termination
1 OC3 port license	The OC3 port license allows service providers to enable 1 OC3 port only when required, supporting a pay-as-you-grow strategy. One license is required for each OC3 port that needs to be enabled in the system.
1 OC12 port license	The OC12 port license allows service providers to enable 1 OC12 port only when required, supporting a pay-as-you-grow strategy. One license is required for each OC12 port that needs to be enabled in the system.
1588-2008 BC/MC license	The 1588-2008 license allows service providers to enable IEEE 1588-2008 Boundary Clock (BC) and/or Master Clock (MC) only when required. One license is required for each chassis that needs IEEE 1588-2008 BC or MC functionality to be enabled in the system.

For More Information

<http://www.cisco.com/go/asr900>

<http://www.in.cisco.com/sptg/sprtg/marsbu/products/asr901/>

Connected Grid Routers

Cisco 2000 Series Connected Grid Router

The Cisco Connected Grid portfolio of solutions is designed specifically for the harsh, rugged environments often found in the energy and utility industries. These solutions include the Cisco 2010 Connected Grid Router (CGR 2010), which has been designed to support the communications infrastructure needs of the energy delivery infrastructure across the generation, transmission, and distribution sectors. This infrastructure includes utility- and customer-owned energy infrastructure such as substation applications supporting electrical transmission and distribution, renewable generation, oil and gas, water, distributed generation, co-generation, and trackside operations. The infrastructure also includes communications infrastructure for delivery applications such as transmission pipelines, distribution mains, and service lines for oil, gas, and water. Designed for highly secure, reliable, and scalable infrastructure, the Cisco CGR 2010 is an ideal platform to support the Smart Grid and other energy-delivery infrastructure needs of customers. These ruggedized products have been extensively tested and are KEMA certified to meet challenging substation compliance standards, including IEEE 1613 and IEC 61850-3.



The Cisco CGR 2010 is a rugged router optimized for use in the multitude of different communication networks found in the energy and utility industries. One example application for the Cisco CGR 2010 is for substation networks in harsh environments common in utility transmission and distribution substations. The Cisco CGR 2010 provides operators with the benefits of improved security, manageability, and network reliability. It uses Cisco IOS Software, which is the operating system that powers millions of Cisco routers deployed worldwide. Cisco IOS Software delivers the benefits of integrated security for North American Electric Reliability Corporation/Critical Infrastructure Protection (NERC/CIP) compliance, quality of service (QoS), and network management to help ensure integrity and priority of operational data communications.

Main Features and Benefits

- Rugged industrial design, featuring no fans or moving parts, and an extended operational temperature range
- Substation compliance with IEC-61850-3 and IEEE 1613 for utility substation environments
- Integrated security to help address compliance with critical infrastructure protection mandates
- High-availability design for maximum network uptime and redundancy
- Network and device management tools for deployments, upgrades, and remote monitoring
- Advanced quality-of-service (QoS) capabilities to support mission-critical communications such as substation communications such as Supervisory Control and Data Acquisition (SCADA)
- Comprehensive network security features based on open standards

Specifications

Feature	Cisco CGR 2010
Grid Router WAN Interface Card (GRWIC) Slots	4
Gigabit Ethernet density	2 (dual-purpose ports: 100/1000 fiber SFP and/or 10/100/1000 Gigabit copper)
T1/E1 WAN Module	Yes—1 or 2 port T1/E1 CSU/DSU module
Serial RS-232 Module	Yes—Up to 8 ports on a single module. 32 ports maximum with all 4 slots populated
Ethernet Switch Module	Yes—6-port or 10-port module
GRWIC-4G-LTE-V	Cisco Connected Grid 2G/3G/4G Multimode LTE Module for Verizon
GRWIC-2SHDSL	Cisco Connected Grid G.SHDSL GRWIC
GRWIC-VA-DSL-A	Cisco Connected Grid VDSL2 and ADSL2/2+ GRWIC - Annex A
GRWIC-VA-DSL-B	Cisco Connected Grid VDSL2 and ADSL2/2+ GRWIC - Annex B
GRWIC-VA-DSL-M	Cisco Connected Grid VDSL2 and ADSL2/2+ GRWIC - Annex M
GRWIC-ISDN-1B-U	Cisco Connected Grid ISDN BRI U GRWIC
GRWIC-ISDN-1B-S/T	Cisco Connected Grid ISDN BRI S/T GRWIC
Flash Memory (External)	256 MB (default) – second compact flash slot can be populated with additional flash memory
DRAM Memory	1024 MB (default)
Power Supply	External high AC/DC and low DC power supply options available for redundant power supply support
Dimensions (H x W x D)	3.5 x 17.25 x 15 in. (88.9 x 438.2 x 381 mm)

Selected Part Numbers and Ordering Information

CGR-2010/K9	Cisco CGR2010 w/2GE, 4 GRWIC slots, 256MB CF, 1GB DRAM, IPB
CGR-2010-SEC/K9	Cisco CGR2010 security bundle w/SEC license PAK

For More Information

<http://www.cisco.com/go/cgr2000>

Cisco 1000 Series Connected Grid Router

The Cisco® 1000 Series Connected Grid Routers (CGR 1000 Series) are versatile communications platforms purpose-built to meet the communication infrastructure needs of electric, gas and water utilities. The multi-service capabilities of these platforms allow customers to converge multiple applications such as Advanced Metering Infrastructure (AMI), Distribution Automation (DA), Integration of Distributed Energy Resources (DER) and Remote Workforce Automation on to a single platform.



The portfolio consists of two models - each designed to operate reliably in various types of harsh environments, ranging from indoor substations to outdoor pole-top deployments. Both models are modular and support a variety of communications interfaces, such as WiMAX, second- and third-generation (2G and 3G), 900 MHz RF Mesh, Ethernet, and Wi-Fi.

The Cisco CGR 1000 routers are powered by Connected Grid Operating System (CG-OS) that is built upon Cisco's world class networking technologies and adapted to the needs of energy utilities. This software delivers grid operators with the benefits of open standards-based, multi-service networking, strong network security, robust manageability, and high reliability. The distributed intelligence capabilities of CG-OS software allows customers to run applications such as Supervisory Control and Data Acquisition (SCADA) protocol translation on the routers directly, thereby eliminating the need for additional devices.

Features and Capabilities:



- Rugged industrial design and compliance with IEC-61850-3 and IEEE 1613 for utility substation environments
- Multi-service features including IPv6, Advanced Routing, IP Multicast, and Quality of Service
- Comprehensive security capabilities based on open standards
- Highly resilient design that optimizes communications network uptime and availability
- Network and device management tools for easy deployment, upgrades, and remote monitoring

Network management applications are critical for lowering utility operating expenses (OpEx) while improving communications network availability. These tools simplify and automate many of the day-to-day tasks associated with managing diverse network requirements. The embedded management features available in the CGR 1000 Series, along with applications like Connected Grid Network Management System (CG-NMS) and Connected Grid Device Manager (CG-DM) allow customers to effectively meet these requirements.

CG-NMS is a software platform for managing multi-service communication networks and security infrastructure using CGR 1000 Series routers. CG-NMS is a scalable, highly secure, modular open platform with pluggable architecture. It is designed to help enable an ecosystem of multi-vendor capabilities for interoperability across not only communications networks, but also legacy and next-generation power grid equipment, over time.

Connected Grid Device Manager (CG-DM) is an easy-to-use Windows application that can enable engineers and operators to quickly configure, test, and troubleshoot Cisco 1000 Series Connected Grid Routers. For example, field technicians can check and update device configurations, perform firmware upgrades, collect real-time router statistics, and use other troubleshooting features.

Specifications

	CGR 1240 (Pole Mount)	CGR 1120 (Din-Rail Mount)
		
Physical Specifications		
Dimensions (H x W x D)	28,7 cm x 24,6 cm x 21,6 cm 11,3 in. x 9,7 in. x 8,5 in. (without Antennas)	8,9 cm x 22,9 cm (W) x 20 cm 3,5 in. x 9,0 in. x 7,8 in.
Rack height	-	2 RU

Rack mount 19 in.	-	Yes, via 19-in. rack tray
Pole mount	Yes	No
Wall mount	Yes	Yes
Din-rail mount	No	Yes
Typical weight fully configured	23 lbs (10.4 kg) Unit weight includes base chassis with four communication modules, AC power supply, and 8-Amp-hr battery backup unit	8 lbs (3.6 kg) Unit weight includes base chassis with two communication modules and integrated AC/DC power supply
Operating temperature¹	-40 to 70°C (-40 to 158°F) with type test to 85°C (185°F) for 16 hours	-40 to 60°C (-25 to 140°F) with type test up to 85°C (185°F) for 16 hours
Typical Power Consumption or Dissipation	20-28 Watts depending on configuration (without battery charging) Additional power consumption for battery charging and external radios	16-23 Watts depending on configuration
Maximum Power Consumption or Dissipation	75 Watts	40 Watts
Communication Modules		
IEEE 802.15.4g WPAN	Yes	Yes
3.5G (AT&T and non-U.S. version) HSPA+/UMTS/GSM/GPRS/EDGE	Yes	Yes
CDMA EV-DO Rev A/0/1xRTT A (Sprint, Verizon, other carriers)	Yes	Yes
IEEE 802.16e- 2.3 GHz WiMAX	Yes	Yes
IEEE 802.16e- 1.8 GHz WiMAX	Yes	Yes
IEEE 802.16e- 3.6 GHz WiMAX	Yes	Yes
IEEE 802.16e- 1.4 GHz WiMAX	Yes	Yes
On-Board Interfaces		
Gigabit Ethernet combination ports (10/100/1000 copper, 100/1000 SFP)	2	2
10 /100 Fast Ethernet copper ports	4	6
Wi-Fi (IEEE 802.11 b/g/n)	Yes	Yes
Serial (RS-232/RS-485)	2	2
GPS for location	Yes	Yes
IRIG-B²	BNC connector	No
Digital alarm inputs²	2	4
Digital alarm outputs²	2	1
USB Type A host ports²	2	1
Console and AUX port (RJ-45)	1	1
SD flash slot (default memory)	1 (2 GB)	1 (2 GB)
Power Options		
Power supply	AC power supply: 100 - 240 VAC	Integrated AC/DC power supply: • 3-phase AC power supply: 100-240 VAC • 10.6-52 VDC (nominal), 9-60 VDC (max)
Battery backup options	Integrated modular battery backup unit (BBU) and smart charging and monitoring system • CGR1240 can be deployed with up to three BBU modules stacked and provide up to 12 Amp hours	-
Power options for third-party radios	The CGR 1240 provides support for powering third-party radios: • Voltage output: 12 VDC plus or minus 5 percent • Power output: 12 W (continuous)	-

¹ Operating temperature range depends of type of communication modules and battery backup options

² Built into the platform hardware, software support enabled in a future release

Selected Part Numbers and Ordering Information

CGR1240/K9	CGR1240 w/ 4 module slots,2 GE,2 serial,4 FE LAN,Wi-Fi,GPS
CGR1120/K9	CGR 1120 w/ 2 module slots,2 GE,2 serial,6 FE LAN,Wi-Fi,GPS

For More Information

For more information on the Cisco 1000 Series Connected Grid Routers visit <http://www.cisco.com/go/cgr1000>

For more information on the Cisco Field Area Network solution visit <http://www.cisco.com/go/fan>

Small Business Routers

Cisco SRP 500 Series Services-Ready Platforms

The Cisco SRP 500 Series Services-Ready Platforms are flexible, cost-effective, fixed-configuration customer premises equipment (CPE) with embedded intelligence to enable service providers to create, provision, and deploy premium revenue-generating services—a variety of high-quality IP voice, data, security, wireless, and application services—to small businesses on an as-needed basis. These platforms can enable service providers to deliver differentiated, converged services that increase bandwidth usage and average revenue per user while reducing customer turnover.



Main Features and Benefits

- Embedded intelligence to support a variety of high-quality voice, data, security, wireless, and application services
- Integrated voice ports powered by an industry-leading voice Session Initiation Protocol (SIP) stack to deliver clear, high-quality voice service
- Integrated stateful-packet-inspection (SPI) firewall and high-speed IP Security (IPsec) VPN capabilities with support for Triple Data Encryption Standard (3DES) to help keep small-business data safe
- Four-port managed Ethernet switch to connect devices in the office; one port can be designated as the network edge, while VLAN support allows for highly secure segmentation of network resources
- Integrated 802.11n wireless access point to enable employees to connect to the network while away from their desks
- Third-generation (3G) wireless data readiness with built-in USB modem drivers
- Interoperability with industry-leading DSL access multiplexers (DSLAMs), soft switches, and voice gateways to enable scalable, end-to-end multiservice network deployments
- Support for industry-standard TR-069 and XML-based provisioning for zero-touch deployments
- Easy integration with other Cisco Small Business Series products to enable adaptability as customer needs change

Specifications

Feature	Cisco SRP 521W	Cisco SRP 526W	Cisco SRP 527W	Cisco SRP 541W	Cisco SRP 546W	Cisco SRP 547W
WAN	FE	Asymmetric DSL (ADSL) 2+ Annex B(ISDN)*	ADSL 2+ Annex A(POTS)*	GE	Asymmetric DSL (ADSL) 2+ Annex B(ISDN)*	ADSL 2+ Annex A(POTS)*
Backup WAN	Mobile Data Network	Mobile Data Network	Mobile Data Network	GE/Mobile Data Network	GE/Mobile Data Network	GE/Mobile Data Network
LAN	4 ports Fast Ethernet	4 ports Fast Ethernet	4 ports Fast Ethernet	4 ports-GE	4 ports-GE	4 ports-GE
Voice Ports	2 FXS, 1 FXO (relay)	2 FXS, 1 FXO (relay)	2 FXS, 1 FXO (relay)	4 FXS, 1 FXO	4 FXS, 1 FXO	4 FXS, 1 FXO
USB 2.0 Ports	1	1	1	2	2	2

* Lan port 4 may be configured as FE WAN instead of ADSL Interface.

Selected Part Numbers and Ordering Information

Ethernet	
SRP521W-U-A-K9	SRP521W, FE WAN, 802.11n FCC, 128DRAM 64FLASH,2FXS/1FXO
SRP521W-U-E-K9	SRP521W, FE WAN, 802.11n ETSI, 128DRAM 64FLASH,2FXS/1FXO
ADSL2/2+	
SRP526W-U-E-K9	SRP526W, ADSL2+ Annex B, 802.11n ETSI, 128DR/64FL, 2FXS/1FXO
SRP527W-U-A-K9	SRP527W, ADSL2+ Annex A, 802.11n FCC, 128DR/64FL, 2FXS/1FXO
SRP527W-U-E-K9	SRP527W, ADSL2+ Annex A, 802.11n ETSI, 128DR/64FL, 2FXS/1FXO
SRP541W-A-K9	SRP541, GE WAN, 802.11n FCC, 4FXS/1FXO
SRP541W-E-K9	SRP541, GE WAN, 802.11n ETSI, 4FXS/1FXO
SRP546W-E-K9	SRP546, ADSL2+ AnnexB, 802.11n ETSI, 4FXS/1FXO
SRP547W-A-K9	SRP547, ADSL2+ AnnexA, 802.11n FCC, 4FXS/1FXO
SRP547W-E-K9	SRP547, ADSL2+ AnnexA, 802.11n ETSI, 4FXS/1FXO

For More Information

<http://www.cisco.com/go/srp500>

Cisco RV Series Small Business Routers

The Cisco RV Series Wireless-N VPN Firewall combines highly secure connectivity—to the Internet as well as from other locations and remote workers—with a high-speed, 802.11n wireless access point, a 4-port switch, an intuitive, browser-based device manager, and support for the Cisco FindIT Network Discovery Utility, all at a very affordable price. Its combination of high performance, business-class features, and top-quality user experience takes basic connectivity to a new level.



Main Features and Benefits

- High-speed, standards-based 802.11n wireless connectivity to help employees stay productive while away from their desks
- Integrated 4-port 10/100 switch with quality-of-service (QoS) support for enhanced voice, video, and data traffic
- Support for separate “virtual” networks that enables you to control access to sensitive information and to set up highly secure wireless guest access
- IP Security (IPsec) VPN support with hardware acceleration to deliver highly secure, high-performance connections to multiple locations and traveling employees
- Support for static routing, Routing Information Protocol (RIP) Versions 1 and 2, and inter-VLAN routing to enable flexible connection sharing
- Proven stateful-packet-inspection (SPI) firewall, plus advanced wireless security to help keep business assets safe
- Simplified configuration through an intuitive, browser-based device manager
- Support for the Cisco FindIT Network Discovery Utility

Specifications

Feature	Cisco RV110W	Cisco RV120W	Cisco RV215W	Cisco RV180	Cisco RV220W
WAN	10/100 Mbps Fast Ethernet	10/100 Mbps Fast Ethernet	10/100/100 Mbps Fast Ethernet	10/100/100 Mbps Fast Ethernet	10/100/1000 Mbps Gigabit Ethernet
Wireless Support	802.11n	802.11n	802.11n	802.11n	802.11a/b/g/n
LAN	4 ports 10/100 Mbps Fast Ethernet	4 ports 10/100 Mbps Fast Ethernet	4 ports 10/100 Mbps Fast Ethernet	4 ports 10/100 Mbps Fast Ethernet with managed switch	4 ports 10/100/1000 Mbps Gigabit Ethernet
VPN Connectivity	IPsec	IPsec	IPsec	IPsec	SSL and IPsec
Maximum VPN Connections	5	10	5	10	5 (SSL) 25 (IPsec)
Optional Cisco ProtectLink Gateway Security	No	No	No	No	Yes

Online model comparison chart: http://www.cisco.com/en/US/products/ps9923/prod_models_comparison.html

Selected Part Numbers and Ordering Information

RV110W	Cisco RV 110W Wireless-N VPN Firewall
RV120W	Cisco RV 120W Wireless-N VPN Firewall
RV180W	Cisco RV 180W Wireless-N VPN Firewall
RV215W	Cisco RV 215W Wireless-N VPN Firewall
RV220W	Cisco RV 220W Wireless-N VPN Firewall

For More Information

<http://www.cisco.com/go/smbroouters>

Cisco Routing Services

Cisco Routing and Switching Services use leading practices and time-tested methodologies to help you to:

- Successfully integrate new technologies and applications onto your routing and switching platform
- Reduce risk, delays, and the total cost of network deployments
- Keep network devices and applications secure, available, and operating reliably
- Optimize your secure wired and wireless networks to meet future needs
- Achieve operational excellence

Services from Cisco and our partners help you plan, build, and run a more intelligent, responsive, integrated routing and switching network. Services for routing and switching include:

- **Routing and Switching Planning Services**
Support successful integration through accurate assessment of the network and overall readiness to support proposed solutions
- **Routing and Switching Design Services**
Reduce risk, delays, and the total cost of network deployments with an implementation-ready design that you can use to engineer your network
- **Cisco Network Optimization Service**
Optimize your network for borderless business evolution and innovation using Cisco expertise and leading practices
- **Cisco Network Availability and Operations Optimization Service**
Effectively adopt, manage, and scale technologies and applications in your converged network environment by optimizing your operational processes and network management tools
- **Cisco SMARTnet Service**
Provides direct, anytime access to Cisco engineers and an extensive range of technical resources
- **Cisco Application Support Service**
Strengthen application availability, functions, and reliability
- **Cisco Focused Technical Support Service**
Offers priority, high-touch technical support for faster problem resolution
- **Cisco Foundation Technology Remote Management Service**
Comprehensive monitoring, problem resolution, and day-to-day management of network devices

For more information about Cisco Routing and Switching Services, visit

<http://www.cisco.com/go/services/routing-switching>.

Chapter 2: Switching

This chapter provides only a subset of Cisco products and part numbers. Also, you will see products listed multiple times because they have dual roles and are used differently in small, medium, and large networks.

Switching At-a-Glance		
Product	Features	Page
Campus LAN: Core and Distribution Switches		
Cisco Catalyst 6500 Series Switches	<ul style="list-style-type: none"> • Flagship Cisco Catalyst switching services platform for campus core and distribution deployments • Offers Cisco Catalyst 6500 Virtual Switching System (VSS), which bolsters availability and scales to 4-terabit capacity • Provides hardware that is capable up to 180 gigabits per slot • Scales to high-density 10-/100-/1000-megabit, 10-Gigabit Ethernet, and 40-Gigabit Ethernet connectivity; is 100-Gigabit Ethernet-ready • Offers integrated services modules that enhance security, manageability, and wireless control • Provides full Network Virtualization feature set from Virtual Route Forwarding Lite (VRF-Lite), Easy Virtual Network (EVN), Multiprotocol Label Switching (MPLS), MPLS Traffic Engineering (MPLS-TE), and Advanced Virtual Private LAN Services (VPLS) • Offers comprehensive Cisco TrustSec security features with 802.1x, Secure Group Tag (SGT), MAC Security (MACsec) encryption, and Security Group Access Control List (SGACL) policing • Offers Cisco Application Visibility and Control with rich Flexible NetFlow functions and Network Analysis Modules (NAMs) 	2-5
Cisco Catalyst 4500E Series Switches	<ul style="list-style-type: none"> • Flexible modular system that supports nonblocking 48 gigabits per slot and 848 gigabits per system with multiple media line cards and 1 and 10-Gigabit Ethernet uplinks • Provides leadership in power delivery, availability, and energy management with Universal Power over Ethernet (UPOE), Energy-Efficient Ethernet (EEE), and Cisco EnergyWise technology • Offers operational simplicity including Flexible NetFlow, Packet Sniffer, Auto Smartports, SmartInstall, and network automation with Embedded Event Manager (EEM) • Redefines high availability with complete hardware redundancy and true In-Service Software Upgrade (ISSU), Cisco Nonstop Forwarding (NSF), and Virtual Switching System (VSS) functions to maximize uptime and network resiliency • A comprehensive security suite including MACsec encryption • Provides IPv6 leadership in campus access with first-hop security and integrates simultaneous IPv4 and IPv6 support • Offers medianet capabilities to simplify video quality of service (QoS), monitoring, and security 	2-8
Cisco Catalyst 4500-X Series Switches *NEW PRODUCT*	<ul style="list-style-type: none"> • Cisco Catalyst switching platform for space-constrained distribution deployments • Offers best-in-class scalability, up to 800 Gbps switching capacity • Provides up to 40 1-Gigabit Ethernet and 10-Gigabit Ethernet ports, hot-swappable uplink module, power supplies, and fans • Offers compact, one-rack-unit (1RU) low-power form factor 	2-12
Cisco Catalyst 3750-X Series Switches	<ul style="list-style-type: none"> • Cisco Catalyst switching platform for low-density 1-Gigabit Ethernet distribution deployments • Offers 12- and 24-Gigabit Ethernet Small Form-Factor Pluggable (SFP) port models, and 1 and 10-Gigabit Ethernet uplink modules • Offers StackWise and StackPower to contribute to scalability and resiliency • Offers Flexible NetFlow with uplink Service Module <p>For more information, refer to the following section "Campus LAN: Access Switches".</p>	2-18
Campus LAN: Access Switches		
Cisco Catalyst 4500E Series Switches	<ul style="list-style-type: none"> • Flexible modular system that supports nonblocking 48 gigabits per slot and 848 gigabits per system with multiple media line cards and 1 and 10-Gigabit Ethernet uplinks • Provides leadership in power delivery, availability, and energy management with Universal Power over Ethernet (UPOE), Energy Efficient Ethernet (EEE), and Cisco EnergyWise technology • Offers operational simplicity including Flexible NetFlow, Packet Sniffer, Auto Smartports, SmartInstall, and network automation with Embedded Event Manager (EEM) • Redefines high availability with complete hardware redundancy and true In-Service Software Upgrade (ISSU), Cisco Nonstop Forwarding (NSF), and Cisco Catalyst 6500 Virtual Switching System (VSS) functions to maximize uptime and network resiliency • A comprehensive security suite including MAC Security (MACsec) encryption • Provides IPv6 leadership in campus access with first-hop security and integrates simultaneous IPv4 and IPv6 support • Offers medianet capabilities to simplify video quality of service (QoS), monitoring, and security 	2-8

Cisco Catalyst 3750 v2 Series Switches	<ul style="list-style-type: none"> • Stackable enterprise-class fixed-configuration switches for campus and branch offices • Offers 24 or 48 ports of 10-/100-Mbps Fast Ethernet or 100BASE-FX fiber connections, and Gigabit Small Form-Factor Pluggable (SFP) uplinks • Enables intelligent Layer 2–4 services including dynamic IP routing • Reduces the cost of network operations with Cisco Catalyst Smart Operations 	2-16
Cisco Catalyst 3750-X Series Switches	<ul style="list-style-type: none"> • Stackable enterprise-class fixed-configuration switches ideal for campus and branch offices • Delivers scalable in-depth security solutions with Flexible NetFlow for real-time traffic flow analysis and MAC Security (MACsec) hardware encryption • Lets you deploy video with confidence using built-in Traffic Simulator and Mediatrace technologies • Helps ensure investment protection for evolving business needs with four optional uplink network modules with 1- or 10-Gigabit Ethernet ports • Provides increased power availability and operational efficiency with Cisco StackPower and EnergyWise technologies • Supports full hardware redundancy with dual redundant, modular power supplies and fans • Provides scalability and ease of management with Cisco StackWise Plus technology • Helps ensure most efficient and comprehensive Power over Ethernet Plus (PoE+) support in the industry with 30W on every port in 1 rack unit (1RU) • Reduces operational overhead with Cisco Catalyst Smart Operations 	2-18
Cisco Catalyst 3560 v2 Series Switches	<ul style="list-style-type: none"> • Enterprise-class fixed-configuration switches for campus and branch offices • Offers 24 or 48 ports of 10-/100-Mbps Fast Ethernet and Gigabit Small Form-Factor Pluggable (SFP) uplinks • Enables intelligent Layer 2–4 services including dynamic IP routing • Reduces the cost of network operations with Cisco Catalyst Smart Operations 	2-21
Cisco Catalyst 3560-X Series Switches	<ul style="list-style-type: none"> • Standalone fixed-configuration switches ideal for campus environments and branch offices • Delivers scalable in-depth security solutions with Flexible NetFlow for real-time traffic flow analysis and MAC Security (MACsec) hardware encryption • Allows you to deploy video with confidence using built-in Traffic Simulator and Mediatrace technologies • Helps ensure investment protection for evolving business needs with four optional uplink network modules with 1- or 10-Gigabit Ethernet ports • Helps ensure most efficient and comprehensive Power over Ethernet Plus (PoE+) support in the industry with 30W on every port in 1 rack unit (1RU) • Reduces operational overhead with Cisco Catalyst Smart Operations 	2-22
Cisco Catalyst 2960-S Series Switches	<ul style="list-style-type: none"> • Offers stackable switches with 48- and 24-port Gigabit Ethernet Enhanced Power over Ethernet FlexStack technology • Delivers enhanced LAN services for midsize enterprise and branch-office networks through Cisco FlexStack technology in these stackable and standalone switches • Offers Layer 2 switching with intelligent Layer 2–4 services • Offers Enhanced Power over Ethernet Plus (PoE+) for next-generation high-power devices with 48 and 24 full PoE ports • Automates infrastructure deployment through Cisco Catalyst Smart Operations • Offers unprecedented low levels of box power consumption 	2-25
Cisco Catalyst 2960-SF Series Switches *NEW PRODUCT*	<ul style="list-style-type: none"> • Provides the features of the Cisco Catalyst 2960-S Series with 10-/100-Mbps Fast Ethernet interfaces • Available in 48- and 24-port models with Gigabit Small Form-Factor (SFP) uplinks • Offers FlexStack stacking through an optional module; Cisco Catalyst 2960-SF Switches can be stacked with Cisco Catalyst 2960-S Switches for mixed 10/100 and 10/100/1000 stacks • Supports Power over Ethernet Plus (PoE+) to deliver up to 30W per port to the advanced endpoints 	2-27
Cisco Catalyst 2960 Series Switches	<ul style="list-style-type: none"> • Provides switches with 48- and 24-port Fast Ethernet Power over Ethernet (PoE) • Offers standalone fixed-configuration switches that are ideal for midmarket and branch-office networks • Offers Layer 2 switching with intelligent Layer 2–4 services • Provides Fast Ethernet connectivity • Supports PoE including 24 full PoE ports and 24-port configurations with PoE supported on 8 ports 	2-28

Campus LAN: Compact Switches		
Cisco Catalyst 3560-C Series Switches	<ul style="list-style-type: none"> Provides 8- and 12-port Gigabit and Fast Ethernet Power over Ethernet (PoE) and non-PoE switches Provides Power to Device (PD) and Power Source Equipment (PSE) capabilities, enabling PoE power pass-through for simplified power and network cabling infrastructure Offers MAC Security (MACsec) encryption for enhanced security Offers Cisco Catalyst Smart Operations for zero-touch deployment and ongoing operational simplicity Provides PoE Plus (PoE+) for up to 30W per port Offers fanless switch for silent operation 	2-32
Cisco Catalyst 2960-C Series Switches	<ul style="list-style-type: none"> Provides 8- and 12-port Fast Ethernet Power over Ethernet (PoE) and non-PoE switches Provides 8-port Gigabit Ethernet switch Offers Power to Device (PD) and Power Source Equipment (PSE) capability enabling PoE power pass-through for simplified power and network cabling infrastructure Offers Cisco Catalyst Smart Operations for zero-touch deployment and ongoing operational simplicity Offers fanless switch for silent operation 	2-33
Campus LAN: Small Business Switches		
Cisco ESW 500 Series Switches	<ul style="list-style-type: none"> Offers Ethernet switches ideal for small business networks Provides Small Form-Factor Pluggable (SFP) expansion slots for fiber-optic or Gigabit Ethernet uplink connectivity Supports an optional redundant power supply that provides uninterrupted failover to help ensure continuous operation 	2-34
Cisco 300 Series Managed Switches *NEW PRODUCT*	<ul style="list-style-type: none"> Designed to be easy to use and manage by small businesses and the partners who serve them Rigorously tested to deliver the high availability and performance of a Cisco switch Provides a high level of security and fine-grained control to safeguard the network from unauthorized users Offers embedded quality-of-service (QoS) intelligence to prioritize delay-sensitive services such as voice and video 	2-35
Data Center Switches		
Cisco Nexus Switches	For product information, refer to "Chapter 6: Data Center".	See 6-1
Cisco Catalyst 4900M Series Switches	<ul style="list-style-type: none"> Offers ideal solution for space-constrained deployments that require high-performance wire-speed services and the modular flexibility of deploying Gigabit Ethernet and 10 Gigabit Ethernet, all in a small 2-rack-unit (2RU) form factor Data center top-of-rack switch optimized for lower latency, high throughput, and support for 10/100/1000 Ethernet as well as 10 Gigabit Ethernet <ul style="list-style-type: none"> Offers Layer 2–4 switching and intelligent services with dynamic IP routing Provides dual, hot-swappable internal AC or DC power supplies Provides hot-swappable field-replaceable fan tray with redundant fans 	2-14
Cisco Catalyst 4900 Series Switches	<ul style="list-style-type: none"> Offers ideal solution for data center top-of-rack deployments and for space-constrained branch-office core deployments that require high-performance wire-speed services in a 1-rack-unit (1RU) form factor Offers data center top-of-rack optimized switches that emphasize buffering for high-throughput and full-mesh traffic profiles <ul style="list-style-type: none"> Offers Layer 2–4 switching and intelligent services with dynamic IP routing Provides dual, hot-swappable internal AC or DC power supplies Provides hot-swappable fan trays Offers data center–optimized cooling with front-to-back or back-to-front cooling 	2-15
Service Provider: Aggregation Switches		
Cisco Catalyst 6500 Series Switches	<ul style="list-style-type: none"> Offers highly scalable system that is the foundation of the Cisco Borderless Networks (securely connect anyplace at anytime), delivers granular scalability and virtualization (anyplace), secure identity-based access with Cisco TrustSec technology (anywhere), and remotely managed operational efficiency (anytime) Simplifies operations, reduces network costs, and increases resiliency through its Cisco Catalyst 6500 Virtual Switch System (VSS) 4T technology Automates network services and energy control and minimizes total cost of ownership (TCO) with backward compatibility and features such as Cisco Generic Online Diagnostics (GOLD), Onboard Failure Logging (OBFL), and SmartCallHome Delivers comprehensive features for Smart Operations, Security, Application Visibility and Control, and Resiliency Provides WAN with Shared Port Adapter (SPA) Interface Processor (SIP) modules; provides Virtual Private LAN Services (VPLS) capability in a Cisco Catalyst 6500 Supervisor Engine 720 infrastructure Provides Network Virtualization with Multiprotocol Label Switching (MPLS) and native VPLS capabilities in a Cisco Catalyst 6500 Supervisor Engine 2T infrastructure Infrastructure-ready for IPv6 deployment—full IPv4 and IPv6 feature parity 	2-5

Cisco ME 3800X Series Ethernet Switches	<ul style="list-style-type: none"> • Offers converged, full-featured aggregation platform designed specifically for the mobile, business, and residential markets • Complements the Cisco 7600 Series Routers and Cisco ASR 9000 Series Aggregation Services Routers by providing a rich and scalable feature set of Layer 2 and Layer 3 VPN services in a compact package 	2-36
Service Provider: Ethernet Access Switches		
Cisco ME 3600X Series Ethernet Access Switches	<ul style="list-style-type: none"> • Built specifically for the convergence of wireless and wireline services • Enables service providers to initiate Multiprotocol Label Switching (MPLS)-based VPN services from within the access layer 	2-38
Cisco ME 3400 Series Ethernet Access Switches	<ul style="list-style-type: none"> • Helps reduce total cost of ownership (TCO) and operating expenses • Simplifies deployment with a compact form factor • Promotes continuous switch operation • Helps shield subscribers from malicious users and traffic 	2-40
Cisco ME 3400E Series Ethernet Access Switches	<ul style="list-style-type: none"> • Supports deployment of advanced Ethernet business services • Provides tools to deliver high service availability • Offers a path for flexible and differentiated services • Enhances network services security against malicious use 	2-42
Cisco Catalyst 3750 Metro Series *NEW PRODUCT*	<ul style="list-style-type: none"> • Enhances intelligence at the Metro Ethernet edge • Ideal for service providers seeking to deliver residential triple-play services and business services • Supports traffic shaping, tunneling, and VLAN mapping • Offers cost-effective path from current to future service requirements 	2-44
Cisco Catalyst 4500E Series Ethernet Access Switch	<ul style="list-style-type: none"> • Provides residential and business services • Supports voice, video, data, wholesale, Layer 2, and Layer 3 VPN services • Offers high-performance, scalable, and easy-to-manage solution that reduces capital expenditures (CapEx) and operating expenses (OpEx), improving quality of experience (QoE) 	2-49
Connected Grid Switches		
Cisco 2500 Series Connected Grid Switches	<ul style="list-style-type: none"> • Designed specifically for the harsh, rugged environments often found in the energy and utility industries • KEMA certified to meet challenging compliance standards such as IEC 61850-3 and IEEE 1613 • Provides tools for easy deployment, management, and replacement • Offers advanced quality-of-service (QoS) capabilities to support mission-critical substation applications such as supervisory control and data acquisition (SCADA) and IEC 61850 generic object oriented substation event (GOOSE) messaging 	2-52
Services		
<p>Cisco Routing and Switching Services use leading practices and time-tested methodologies to help you:</p> <ul style="list-style-type: none"> • Successfully integrate new technologies and applications onto the routing and switching platform • Reduce risk, delays, and the total cost of network deployments • Keep network devices and applications secure, available, and operating reliably • Optimize your secure wired and wireless networks to meet future needs • Achieve operational excellence 	2-53	
For More Information		
Product Ordering		
To place an order, visit: http://www.cisco.com/en/US/ordering/index.shtml .		
Cisco Services		
You can order Cisco Services directly or through our global network of certified partners. For more information, please visit: http://www.cisco.com/web/services/order-services/index.html .		
End-of-Life and End-of-Sale Products		
Please visit the end-of-life and end-of-sale website for a complete and up-to-date listing of products that are no longer being sold or supported, the replacement products that are available, and information about product support. http://www.cisco.com/en/US/products/prod_end_of_life.html		
Note: This chapter provides only a subset of Cisco products and part numbers. For the most up-to-date and comprehensive information, refer to the Cisco website at http://www.cisco.com , refer to the Cisco ordering website at http://www.cisco.com/en/US/ordering/index.shtml , or reference the URL listed in the "For More Information" section of each product.		
For more information about Cisco switching platforms, refer to the Cisco Catalyst Switch Guide at: http://www.cisco.com/go/switchguide .		

Campus LAN: Core and Distribution Switches

Cisco Catalyst 6500 Series Switches

Cisco Catalyst 6500 Series Switches deliver a unique combination of rich network services, performance, and scale, optimized for the campus backbone – campus distribution and core. With more than 750,000 systems sold to some 45,000 customers worldwide, the Catalyst 6500 is clearly a strategic platform for Cisco and its customers. Cisco continues to make significant investments in the platform, with a three-dimensional roadmap that will maintain platform leadership in rich network services, lead to increases in performance and scale, and apply innovative campus designs to simplify operations and lower total cost of ownership (TCO).



The Cisco Catalyst 6500 Series Supervisor Engine 2T unlocks the potential of the Catalyst 6500, enabling customers to address the emerging trends of bring your own device (BYOD), rich media collaboration, and the resulting challenges of scale, security, and management.

Main Features and Benefits

- **Platform scalability:** 2-Terabits-per-second (Tbps) switching fabric delivers 80-Gbps switching capacity per slot and scales to 4-Tbps system capacity with the Cisco Catalyst Virtual Switching System (VSS). It supports up to 88 40-Gigabit Ethernet ports, 360 10-Gigabit Ethernet ports, or 1068 1-Gigabit Ethernet ports per virtual switching system.
- **Virtual Switching System:** Cisco Virtual Switching System (VSS) effectively allows the clustering of two physical chassis together into a single, logical entity, enabling new enhancements in all areas of network design, including high availability, scalability, management, and maintenance.
- **Network virtualization:** Support for numerous network virtualization technologies, including Multiprotocol Label Switching (MPLS), Virtual Route Forwarding lite (VRF-Lite), Cisco Easy Virtual Network (EVN), and others, enables customers to deploy multiple logical networks on a single physical network, providing segmentation, path isolation, and address space isolation with shared services on a consolidated infrastructure.
- **Cisco TrustSec security:** End-to-end network security is enabled through features that identify (IEEE 802.1x support), tag (Security Group Tags), encrypt (MAC Security [MACsec] hop-by-hop encryption), and enforce (Security Group Access Control List) security policies.
- **Cisco Medianet features:** A comprehensive set of features to support rich-media collaboration helps ensure a high-quality video experience through priority queuing and multicast scale, provides centralized, real-time troubleshooting of video streams across the network, and enables granular application visibility.
- **Integrated service modules:** An integrated approach to delivering network services simplifies manageability by integrating application intelligence, traffic analysis, and performance troubleshooting into the switch. This approach can also increase scalability and lower total cost of ownership (TCO). Integrated service modules are available to support wireless (Wireless Service Module, WiSM2), network analysis and management (Network Analysis Module, NAM-3), and security (ASA-SM).
- **NetFlow application monitoring:** Supervisor Engine 2T supports enhanced application monitoring such as Flexible and Sampled NetFlow for intelligent and scalable application monitoring.

Specifications

Feature	Catalyst 6503-E	Catalyst 6504-E	Catalyst 6506-E	Catalyst 6509-E	Catalyst 6513-E	Catalyst 6509-V-E
Slots	3	4	6	9	13	9 vertical
Max 10/100/1000 ports	97	145	241	385	529	385
Max 1 GE ports¹	99	147	243	387	534	387
Max 10 GE ports¹	34	50	82	130	180	130
Max 40 GE ports	8	12	20	32	44	32
Maximum forwarding performance (IPv4)	150 Mpps	210 Mpps	330 Mpps	510 Mpps	720 Mpps	510 Mpps
Height (RU)	4	5	11	14	19	21
Weight (chassis)	33 lbs (15 kg)	40 lbs (17.8 kg)	50 lbs (22.7 kg)	60 lbs (27.3 kg)	79.1 lbs (35.9 kg)	121 lbs (54.9 kg)

¹ Assumes use of supervisor uplinks in single supervisor configuration

Catalyst Supervisor Engines							
	2T	2T-XL	720-10G	720-10G-XL	720-3B	720-3BXL	
Switch fabric	Integrated 2T	Integrated 2T	Integrated 720G	Integrated 720G	Integrated 720G	Integrated 720G	
Virtual Switching System (VSS)	Yes	Yes	Yes	Yes	No	No	
Uplinks	3 x 1 GE (SFP) 2 x 10 GE (X2) 1 management (CMP)		2 x 1 GE (SFP) 2 x 10 GE (X2) 1 x 10/100/1000 RJ-45		1 x 1 GE (SFP) 1 x 1 GE (SFP) or 10/100/1000 RJ-45		
Chassis	E-Series only	E-Series only	6503-E 6504-E 6506-E 6509-E 6509-V-E 6513-E	6503-E 6504-E 6506-E 6509-E 6509-V-E 6513-E	6503-E 6504-E 6506-E 6509-E 6509-V-E 6513-E	6503-E 6504-E 6506-E 6509-E 6509-V-E 6513-E	
Supported distributed forwarding card (DFC)	DFC4(XL)	DFC4(XL)	DFC3B(XL) DFC3C(XL)	DFC3B(XL) DFC3C(XL)	DFC3B(XL) DFC3C(XL)	DFC3B(XL) DFC3C(XL)	
Multilayer switch feature card (MSFC)	MSFC5	MSFC5	MSFC3	MSFC3	MSFC3	MSFC3	
Policy feature card (PFC)	PFC4	PFC4XL	PFC3C	PFC3CXL	PFC3B	PFC3BXL	
40G Line Cards							
	Catalyst 6900 Series						
	6904-40G						
	40 GE mode		10 GE mode		Mixed mode		
Ports	4 x 40 GE		16 x 10 GE		2 x 40 GE 8 x 10 GE		
Optics	CFP		FourX adapter, SFP+		CFP, FourX Adapter, SFP+		
Switch fabric connection	80 Gbps		80 Gbps		80 Gbps		
Over-subscription	2:1 (1:1 performance mode)		2:1 (1:1 performance mode)		2:1 (1:1 performance mode)		
Onboard memory	2 GB		2 GB		2 GB		
Forwarding engine	DFC4E(XL)		DFC4E(XL)		DFC4E(XL)		
Supported with Sup 2T	Yes		Yes		Yes		
Supported with other Sup	No		No		No		
10G Line Cards							
	Catalyst 6900 Series	Catalyst 6800 Series		Catalyst 6700 Series			
	6908-10G	6816-10G	6816-10T	6716-10G	6716-10T	6708-10G	6704-10G
Ports	8	16	16	16	16	8	4
Optics	X2, OneX adapter, SFP+	X2, OneX adapter, SFP+	None (RJ-45)	X2, OneX adapter, SFP+	None (RJ-45)	X2, OneX adapter, SFP+	XENPAK
Switch fabric connection	80 Gbps	40 Gbps	40 Gbps	40 Gbps	40 Gbps	40 Gbps	40 Gbps
Over-subscription	1:1	4:1 (1:1 performance mode)	4:1 (1:1 performance mode)	4:1 (1:1 performance mode)	4:1 (1:1 performance mode)	2:1 (1:1 performance mode)	1:1
Onboard memory	2 GB	1 GB	1 GB	1 GB	1 GB	1 GB	256 MB, upgradable to 512 MB or 1 GB

Forwarding engine	DFC4E(XL)	DFC4E(XL)	DFC4E(XL)	DFC3C(XL); upgradable to DFC4E(XL)	DFC3C(XL); upgradable to DFC4E(XL)	DFC3C(XL)	CFC, optional DFC3B(XL) / DFC3C(XL); upgradable to DFC4A(XL)
Supported with Sup 2T	Yes	Yes	Yes	Requires DFC4E(XL)	Requires DFC4E(XL)	No	Requires CFC or DFC4A(XL)
Supported with Sup 720 / Sup 720 10G	No	No	No	Yes	Yes	Yes	Yes

1G Line Cards

	Catalyst 6800 Series			Catalyst 6700 Series		
	6848-SFP	6848-TX	6824-SFP	6748-SFP	6748-TX	6724-SFP
Ports	48	48	24	48	48	24
Optics	SFP	None (RJ-45)	SFP	SFP	None (RJ-45)	SFP
Onboard memory	1 GB	1 GB	1 GB	256 MB, upgradable to 512 MB or 1 GB	256 MB, upgradable to 512 MB or 1 GB	256 MB, upgradable to 512 MB or 1 GB
Forwarding engine	DFC4A(XL)	DFC4A(XL)	DFC4A(XL)	CFC, optional DFC3B(XL) / DFC3C(XL) upgradable to DFC4A(XL)	CFC, optional DFC3B(XL) / DFC3C(XL) upgradable to DFC4A(XL)	CFC, optional DFC3B(XL) / DFC3C(XL) upgradable to DFC4A(XL)
Supported with Sup 2T	Yes	Yes	Yes	Requires CFC or DFC4A(XL)	Requires CFC or DFC4A(XL)	Requires CFC or DFC4A(XL)
Supported with Sup 720 / Sup 720 10G	No	No	No	Yes	Yes	Yes

Online model comparison chart: http://www.cisco.com/en/US/products/hw/switches/ps708/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Catalyst 6500 Chassis	
WS-C6503-E	Cisco Catalyst 6500 Enhanced 3-slot chassis,4RU,no PS, no Fan Tray
WS-C6504-E	Cisco Catalyst 6500 Enhanced 4-slot chassis,5RU,no PS, no Fan Tray
WS-C6506-E	Cisco Catalyst 6500 Enhanced 6-slot chassis,12RU,no PS, no Fan Tray
WS-C6509-E	Cisco Catalyst 6500 Enhanced 9-slot chassis,15RU,no PS, no Fan Tray
WS-C6509-V-E	Cisco Catalyst 6500 Enhanced 9-slot Chassis (Vertical), No PS, Fan
WS-C6513-E	Cisco Catalyst 6500 13-slot chassis,20RU,no PS, no Fan Tray
Virtual Switching Supervisor Engine 720-10G Bundles	
VS-C6504E-S720-10G	Cisco Catalyst Chassis+Fan Tray+Sup720-10G; IP Base ONLY; NO VSS
VS-C6506E-S720-10G	Cisco Catalyst Chassis+Fan Tray+Sup720-10G; IP Base ONLY; NO VSS
VS-C6509E-S720-10G	Cisco Catalyst Chassis+Fan Tray+Sup720-10G; IP Base ONLY; NO VSS
VS-C6509VE-S720-10G	Cisco Catalyst Chassis+Fan Tray+Sup720-10G; IP Base ONLY; NO VSS
VS-C6513-S720-10G	Cisco Catalyst Chassis+Fan Tray+Sup720-10G; IP Base ONLY; NO VSS
Virtual Switching Supervisor Engine Sup2T Bundles	
VS-C6503E-SUP2T	6503E Chassis, Sup2T, Fan Tray, IP Services Image
VS-C6504E-SUP2T	6504E Chassis, Sup2T, Fan Tray, IP Services Image
VS-C6506E-SUP2T	6506E Chassis, Sup2T, Fan Tray, IP Services Image
VS-C6509E-SUP2T	6509E Chassis, Sup2T, Fan Tray, IP Services Image
VS-C6509VE-SUP2T	6509VE Chassis, Sup2T, Fan Tray, Cable Chassis Management, IP Services Image
VS-C6513E-SUP2T	6513E Chassis, Sup2T, Fan Tray, IP Services Image

For More Information

<http://www.cisco.com/go/catalyst6500>

Campus LAN: Access and Aggregation Switches

Cisco Catalyst 4500E Series Switches

The Cisco Catalyst 4500E Series comprises medium-density modular switches that deliver robust intelligent services for unified communications deployments. The simple centralized architecture, media flexibility, and scalability of the Cisco Catalyst 4500 Series deliver maximum investment protection with backward and forward compatibility across several generations dating back to 1999, maximizing return on investment (ROI) while minimizing recurring operational expenses.



The Cisco Catalyst 4500E Series is a high-performance next-generation extension of the Cisco Catalyst 4500 Series Switches. It builds on Cisco Catalyst 4500 Series architecture offering higher services, features, flexibility, and performance while continuing to maximize investment protection across the Cisco Catalyst 4500 Series Switches.

The Cisco Catalyst 4500 Series extends intelligence and operational simplicity to the network edge (wiring closet and Fiber-to-the-Home [FTTH] access) for unified communications with intelligent network services, sophisticated quality of service (QoS), predictable performance, advanced security, up to 60 watts of Universal Power over Ethernet (UPOE), 30 watts of PoE Plus (PoE+) with IEEE 802.3at, up to 384 1-Gigabit Ethernet RJ-45 ports, up to 100 10-Gigabit Ethernet Small Form-Factor Pluggable Plus (SFP+) fiber ports, and comprehensive management features. The Cisco Catalyst 4500 Series delivers high levels of integrated resiliency in both hardware and software, minimizing costly downtime for both planned and unplanned network outages with In Service Software Upgrade (ISSU) and helping maximize workforce productivity. The Cisco Catalyst 4500E Supervisor Engine supports several critical innovative campus features for increased operational efficiency such as Virtual Switching System (VSS) and SmartInstall, next-generation security with line-rate 10-Gigabit Ethernet MAC Security (MACsec) encryption with no additional latency, and IPv6 First-Hop Ssecurity (FHS). The Cisco Catalyst 4500 enables a media-optimized network with medianet, helping ensure predictability, quality, security, and mobility.

The Cisco Catalyst 4500E Series Supervisor Engines 7-E and 7L-E are high-performance intelligent modular access switches for unified communications networks.

Main Features and Benefits

- Cisco IOS XE Software is the open service platform software for the Cisco Catalyst 4500E Supervisor Engines beginning with the Supervisor Engine 7-E, which allows running third-party applications such as Wireshark on Supervisor Engine 7-E. Cisco continues to evolve Cisco IOS Software to support next-generation switching hardware and provide increased architectural flexibility to deliver quick adoption of future Cisco Borderless Networks services, while making sure of customer investment protection in Cisco IOS Software.
- Cisco IOS Flexible NetFlow is the next generation in flow technology, allowing optimization of the network infrastructure, reducing operation costs, and improving capacity planning and security incident detection with increased flexibility and scalability. The Cisco Catalyst 4500E Supervisor Engine 7-E is the first Cisco Catalyst supervisor engine to provide optimized application visibility with Flexible NetFlow with a capability of 128,000 Flexible NetFlow entries. The Supervisor Engine 7-E, with a custom-built application-specific integrated circuit (ASIC), delivers next-generation flow technology with unprecedented flexibility and comprehensive visibility extending from Layer 2 (MAC and VLAN) to Layer 4 (TCP, User Datagram Protocol [UDP] flags, and so on).
- Investment protection: Evolutionary centralized modular architecture provides maximum backward compatibility across several generations of Cisco Catalyst 4500E Series Switches. Upgrading all system ports to higher-level functions and features is easy with a simple supervisor-engine upgrade.
- Flexible options: Modular 3- and 6-slot single supervisor chassis and 7- and 10-slot redundant supervisor chassis support numerous connectivity and service configurations with up to 48-GB per-slot capacity.
- Maximum resiliency with redundant components, Nonstop Forwarding/Stateful Switchover (NSF/SSO), In Service Software Upgrade (ISSU), and Virtual Switching System (VSS) support
- Comprehensive security: These switches support integrated Cisco Network Admission Control (NAC) and 802.1x, hardware-based Control Plane Policing (CoPP), integrated man-in-the-middle and denial-of-service (DoS) attack mitigation, NetFlow, access control lists (ACLs), Secure Shell (SSH) Protocol, and MAC Security (MACsec) encryption.
- Comprehensive management: These switches support LAN Management System (LMS), Cisco Network Assistant, Remote Switched Port Analyzer (RSPAN), Cisco IOS Embedded Event Manager (EEM), IP service-level agreement (IP SLA), Time Domain Reflectometer (TDR), Digital Optical Monitoring (DOM), and Flexible NetFlow.
- High port density: These switches offer up to 384 Fast Ethernet or 1-Gigabit Ethernet ports or 96 10-Gigabit Ethernet ports.

- Ease of use: The Cisco Catalyst 4500E supports features such as EEM, Auto Smartports, SmartInstall, and Universal images on the Supervisor Engine 7-E and 7L-E that provide simplified deployment and operational simplicity for customers.
- IP communications: The Cisco Catalyst 4500E supports up to 60 watts per port through Cisco Prestandard Universal Power over Ethernet (UPOE) and is backward compatible with IEEE up to 30W Power over Ethernet Plus (PoE+).
- Cisco EnergyWise technology: This technology on the Cisco Catalyst 4500E Series allows IT operations and facilities to measure and fine-tune power usage to realize significant cost savings. The technology focuses on reducing power usage on all devices connected to a Cisco network, ranging from PoE devices such as IP phones and wireless access points to integration with IP-enabled building and lighting controllers. For more information, visit: <http://www.cisco.com/en/US/products/ps10195/index.html>.
- Extended warranty: Cisco Catalyst 4500E Series and Cisco Catalyst 4500 Switches extend the warranty from the previously offered 90-day warranty to a limited lifetime warranty (LLW). For more information, visit: http://www.cisco.com/en/US/prod/collateral/switches/ps57118/ps4324/product_bulletin_c25-533284.html.

Specifications

4500 E-Series Chassis	Cisco 4503-E	Cisco 4506-E	Cisco 4507R+-E	Cisco 4510R+-E
Slots	3	6	7	10
Redundant Supervisor Option	No	No	Yes	Yes
Gigabit Ethernet GBIC/SFP density (including uplink)	100	244	244 with Dual Sup 7-Es	388 with Dual Sup 7-Es
10 GE Fiber port density (including uplink)	28	64	64	100
10/100/1000 density (including uplink)	100	244	244	388
100BASE-FX, LX-10, BX-D density	96	240	240	384
Rack Unit (RU)	7	10	11	14
Backplane Capacity using Supervisor 7-E	136 Gbps	560	560 Gbps	848 Gbps
Power Over Ethernet Plus (PoEP) Support (after software upgrade on premium linecard)	Up to 30W of PoE – 25 ports can be enabled @ 30W ¹	Up to 30W of PoE – 25 ports can be enabled @ 30W ¹	Up to 30W of PoE – 25 ports can be enabled @ 30W ¹	Up to 30W of PoE – 25 ports can be enabled @ 30W ¹
Universal Power Over Ethernet (UPoP) Support	Up to 60W of UPOE	Up to 60W of UPOE	Up to 60W of UPOE	Up to 60W of UPOE
1+1 Power Supply Protection	Yes	Yes	Yes	Yes
Hot-Swappable Power Supplies	Yes	Yes	Yes	Yes
Max. watt Power Supported				
AC Internal	9000W	9000W	9000W	9000W
AC External with power shelf	1,400 + power shelf = 7500	1,400 + power shelf = 7500	1,400 + power shelf = 7500	1,400 + power shelf = 7500
DC Internal	1,400 + UPS = 7500	1,400 + UPS = 7500	1,400 + UPS = 7500	1,400 + UPS = 7500
Max. number of Class 3 devices (15.4W) Max. power supplies				
AC Internal	96	240	240	289
AC External with power shelf	96	240	240	364
DC Internal	96	240	240	384
Max. number of PoE Plus devices (30W) Max. power supplies				
AC Internal	96	240	240	240
AC External with power shelf	96	240	240	240
DC Internal	96	240	240	240

Max. number of UPOE devices (60W) Max. power supplies				
AC Internal	48	120	120	120
AC External with power shelf	48	120	120	120
DC Internal	48	120	120	120
Unit weight (with Fan Tray)	32.25 lbs. (14.63 kgs.)	40.50 lbs. (18.37 kgs)	44.50 lbs. (2019 kgs)	54.50 lbs. (24.73 kgs)
Dimensions (H x W x D)	12.25 x 17.31 x 12.50 in (31.12 x 43.97 x 31.70 cm)	17.38 x 17.31 x 12.50 in (44.13 x 43.97 x 31.70 cm)	19.19 x 17.31 x 12.50 in (48.74 x 43.97 x 31.70 cm)	24.35 x 17.31 x 12.50 in. (61.84 x 43.97 x 31.70 cm)
Supervisor Engines	Supervisor 7-E (WS-X45-Sup7-E)	Supervisor 7L-E (WS-X45-Sup7L-E)	Supervisor 6-E (WS-X45-Sup6-E)	Supervisor 6L-E (WS-X45-Sup6L-E)
Chassis supported	All	All	All	All
Enhanced Layer 3 option	yes	yes	yes	yes
Total bandwidth (Gbps)	848	520	320	280
Packets per second (Mpps)	250 (IPv4) 125 (IPv6)	225 (IPv4) 110 (IPv6)	250 (IPv4) 125 (IPv6)	225 (IPv4) 110 (IPv6)
CPU MHz	Dual Core 1500	Dual Core 1500	1300	800
NetFlow	Flex NetFlow	Flex NetFlow	no	no
Onboard memory (DRAM)	2 GB upgradable to 4 GB	2 GB upgradable to 4 GB	512 MB upgradable to 1 GB	512 MB upgradable to 1 GB
On-Board Flash	1 GB	1 GB	128 MB	64 MB 128 MB
Compact Flash / SD Support	Yes, SD	Yes, SD	Yes, CF	Yes, CF
Switching Capacity & Throughput	848 Gbps, 250 Mpps	520 Gbps, 225 Mpps	320 Gbps, 250 Mpps	280 Gbps, 225 Mpps
Multilayer Switching	Enhanced L2/3/4 Services & Routing	Enhanced L2/3/4 Services & Routing	Enhanced L2/3/4 Services & Routing	Enhanced L2/3/4 Services & Routing
(E)IGRP, OSPF, IS-IS, BGP	Yes	Yes	Yes	Yes
Supervisor Redundancy	WS-C4507R+E WS-C4510R+E	WS-C4507R+E	WS-C4507R+E WS-C4510R+E	WS-C4507R+E
QoS	8Q/Port, MQC, Dynamic Tx Queue sizing, policing, shaping, congestion avoidance with DBL marking	8Q/Port, MQC, Dynamic Tx Queue sizing, policing, shaping, congestion avoidance with DBL marking	8Q/Port, MQC, Dynamic Tx Queue sizing, policing, shaping, congestion avoidance with DBL marking	8Q/Port, MQC, Dynamic Tx Queue sizing, policing, shaping, congestion avoidance with DBL marking
ISL	No	No	No	No
ACLS	Yes	Yes	Yes	Yes
IP FIB entries	256K	64k	256K	57K
MAC Addresses	55K Unicast, 32K Multicast	55K Unicast, 32K Multicast	55K Unicast, 32K Multicast	55K Unicast, 16K Multicast

Online model comparison chart:

http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Catalyst 4500 E-Series—Chassis, Supervisors	
WS-C4503-E	Cisco Catalyst 4500 E-Series 3-Slot Chassis, fan, no ps
WS-C4506-E	Cisco Catalyst 4500 E-Series 6-Slot Chassis, fan, no ps
WS-C4510R+E	Cisco Catalyst 4500 E-Series 10-Slot Chassis, fan, no ps, redundant supervisor capable
WS-C4507R+E	Cisco Catalyst 4500 E Series 7-Slot 48G/slot capable chassis, fan, no ps, redundant supervisor capable
WS-C4503E-S6L-48V+	Cisco Catalyst 4503-E PoE Bundle, WS-C4503-E WS-X45-SUP6L-E WS-X4648-RJ45V+E
WS-C4506E-S6L-96V+	Cisco Catalyst 4506-E PoE Bundle WS-C4506-E WS-X45-SUP6L-E 2xWS-X4648-RJ45V+E

WS-C4507RES6L-96V+	Cisco Catalyst 4507R-E PoE Bundle WS-C4507R-E WS-X45-SUP6L-E 2xWS-X4648-RJ45V+E
WS-C4510RES6-96V+	Cisco Catalyst 4510R-E PoE Bundle WS-C4510R-E WS-X45-SUP6-E 2xWS-X4648-RJ45V+E
WS-C4510RE-S7+96V+	Cisco Catalyst 4510R_E PoE Bundle WS-C4510R+E WS-X45-SUP7-E 2xWS-X4748-RJ45V+E
WS-C4503E-S7L+48V+	Cisco Catalyst 4503E PoE Bundle with SUP7L-E WS-C4503-E WS-X45-SUP7L-E WS-X4648-RJ45V+E
WS-C4506E-S7L+96V+	Cisco Catalyst 4506E PoE Bundle with SUP7L-E WS-C4506-E WS-X45-SUP7L-E 2 x WS-X4648-RJ45V+E
WS-C4507RE+96V+	Cisco Catalyst 4507R+E PoE Bundle with SUP7-LE WS-C4507R+E WS-X45-SUP7L-E 2 x WS-X4648-RJ45V+E
WS-X45-SUP7-E (=)	Cisco Catalyst 4500 E-Series Sup7-E, (SFP+) or 4x1G(SFP)
WS-X45-SUP7L-E (=)	Cisco Catalyst 4500 E-Series Sup7L-E, 2x10GE(SFP+) or 4x1G(SFP)
WS-X45-SUP6-E (=)	Cisco Catalyst 4500 E-Series Sup6-E, 2x10GE(X2) w/ Twin Gig
WS-X45-SUP6L-E (=)	Cisco Catalyst 4500 E-Series Sup6-E Lite, 2x10GE(X2) w/ Twin Gig
WS-X4518-10GE (=)	Cisco Catalyst 4500 Supervisor V-10GE, 2x10GE(X2), 4x1GE (SFP)
WS-C4503E-S6L-1300	Cisco Catalyst 4503-E Chassis, One WS-X4648-RJ45V+E, Sup6L-E, 1300W PS
WS-C4506E-S6L-1300	Cisco Catalyst 4506-E Chassis, Two WS-X4648-RJ45V+E, Sup6L-E, 1300W PS
WS-C4506E-S6L-2800	Cisco Catalyst 4506-E Chassis, Two 24G PoEP Line Cards, Sup6L-E, 2800W PS
WS-C4506E-S6L-4200	Cisco Catalyst 4506-E Chassis, Two 24G PoEP Line Cards, Sup6L-E, 4200W PS
Catalyst 4500 and 4500-E Series Line Cards	
WS-X4624-SFP-E (=)	Catalyst 4500 E-Series 24-Port GE (SFP)
WS-X4148-FX-MT	Cisco Catalyst 4500 FE Switching Module, 48-100FX MMF(MTRJ)
WS-X4148-FX-MT=	Cisco Catalyst 4500 FE Switching Module, 48-100FX MMF(MTRJ) (Spare)
WS-X4148-RJ	Cisco Catalyst 4500 10/100 Auto Module, 48-Ports (RJ-45)
WS-X4148-RJ=	Cisco Catalyst 4500 10/100 Auto Module, 48-Ports (RJ-45)(Spare)
WS-X4248-RJ45V	Cisco Catalyst 4500 PoE 802.3af 10/100, 48-Ports (RJ45)
WS-X4248-RJ45V=	Cisco Catalyst 4500 PoE 802.3af10/100, 48-Ports (RJ45) (Spare)
WS-X4548-RJ45V+	Cisco Catalyst 4500 PoE+ Ready10/100/
WS-X4648-RJ45V+E	Cisco Catalyst 4500 E-Series 48-Port PoE+ Ready 10/100/1000(RJ45)
WS-X4548-RJ45V+=	Cisco Catalyst 4500 PoE+ Ready10/100/1000, 48-Port(RJ45)
WS-X4648-RJ45V+E=	Cisco Catalyst 4500 E-Series 48-Port PoE+ Ready 10/100/1000(RJ45)
WS-X4748-RJ45-E	Cisco Catalyst 4500 E-series 48 port 10/100/1000 data card
WS-X4748-UPOE+E	Cisco Catalyst 4500 E-Series 48-Port 10/100/1000 UPOE
WS-X4748-RJ45V+E	Cisco Catalyst 4500 E-Series 48 port 10/100/1000 PoE+

For More Information

<http://www.cisco.com/go/catalyst4500>

Cisco Catalyst 4500-X Series Switches

Cisco Catalyst 4500-X Series Switches are 1- and 10-Gigabit Ethernet fixed-configuration switches for space-constrained campus distribution deployments with best-in-class scalability, simplified network virtualization, and integrated network services. They meet business growth objectives with unprecedented scalability and support the Cisco Virtual Switching System (VSS) to enhance resiliency, while reducing management, and simplifying network virtualization with support for Cisco Easy Virtual Network (EVN). In addition, Cisco Catalyst 4500-X Series Switches reduce total cost of ownership (TCO) by integrating network services for video (medianet), security (Cisco TrustSec technology), and application visibility (Flexible NetFlow).



The Cisco Catalyst 4500-X Series offers important innovations, including:

- **Platform scalability:** These switches deliver up to 800 Gbps of switching capacity and are capable of scaling to 1.6-Tbps capacity with the VSS technology. Your investment is protected with modular uplink and auto-detect 1- and 10-Gigabit Ethernet ports.
- **High availability:** These switches deliver the network availability demanded by business-critical enterprise applications through comprehensive high-availability capabilities, including VSS and EVN. Furthermore, innovative features such as redundant hot-swappable fans and power supplies with AC-to-DC and DC-to-AC failover remove single points of failure in network.
- **Application monitoring:** Application monitoring is enhanced through Flexible NetFlow and eight sessions of line-rate bidirectional Switched Port Analyzer (SPAN)/Remote Switched Port Analyzer (RSPAN).
- **Security:** These switches support Cisco TrustSec technology as well as robust Control Plane Policing (CoPP) to address denial-of-service (DoS) attacks.

Product Overview

Hardware Features							
	WS-C4500X-16SFP+	WS-C4500X-F-16SFP+	WS-C4500X-24X-IPB	WS-C4500X-24X-ES	WS-C4500X-32SFP+	WS-C4500X-F-32SFP+	WS-C4500X-40X-ES
Environmental							
Height	1RU	1RU	1RU	1RU	1RU	1RU	1RU
Dimension (H x W x D) Inches (cm)	1.75 (4.4) x 17.25 (43.8) x 21.875 (55.6)	1.75 (4.4) x 17.25 (43.8) x 21.875 (55.6)	1.75 (4.4) x 17.25 (43.8) x 21.875 (55.6)	1.75 (4.4) x 17.25 (43.8) x 21.875 (55.6)	1.75 (4.4) x 17.25 (43.8) x 21.875 (55.6)	1.75 (4.4) x 17.25 (43.8) x 21.875 (55.6)	1.75 (4.4) x 17.25 (43.8) x 21.875 (55.6)
Power Redundancy	1+1 AC or DC	1+1 AC or DC	1+1 AC or DC	1+1 AC or DC	1+1 AC or DC	1+1 AC or DC	1+1 AC or DC
Unit Weight Pounds (Kilograms)	23 lb (10.43 kg)	23 lb (10.43 kg)	24 lb (10.89 kg)	24 lb (10.89 kg)	24 (10.89)	24 (10.89)	24 (10.89)
Hot Swappable Fans (N+1 redundancy)	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Avg/Max Power Consumption	330/400 Watts	330/400 Watts	330/400 Watts	330/400 Watts	330/400 Watts	330/400 Watts	330/400 Watts
Airflow	Front to Back	Back to Front	Front to Back	Front to Back	Front to Back	Back to front	Front to Back
Rack Mounting Options	Front and Rear Mount	Front and Rear Mount	Front and Rear Mount	Front and Rear Mount	Front and Rear Mount	Front and Rear Mount	Front and Rear Mount
Uplink/Network Module Optic Types (All 8 ports)	SFP/SFP+ Optics	SFP/SFP+ Optics	SFP/SFP+ Optics	SFP/SFP+ Optics	SFP/SFP+ Optics	SFP/SFP+ Optics	SFP/SFP+ Optics
Optics	LR, SR, ER, LRM, ZR, DWDM, CWDM, GLC-T	LR, SR, ER, LRM, ZR*, DWDM, CWDM, GLC-T	LR, SR, ER, LRM, ZR, DWDM, CWDM, GLC-T	LR, SR, ER, LRM, ZR, DWDM, CWDM, GLC-T	LR, SR, ER, LRM, ZR, DWDM, CWDM, GLC-T	LR, SR, ER, LRM, ZR*, DWDM, CWDM, GLC-T	LR, SR, ER, LRM, ZR, DWDM, CWDM, GLC-T

Ports							
Maximum Gigabit Ethernet (Fiber) Ports¹	16	16	24	24	32	32	40
Maximum 10 Gigabit Ethernet (fiber) Ports¹	16	16	24	24	32	32	40
Performance/Scalability							
Switching Capacity	320 Gbps	320 Gbps	480 Gbps	480 Gbps	800 Gbps	800 Gbps	800 Gbps
Throughput	225 Mpps	225 Mpps	225 Mpps	225 Mpps	250 Mpps for IPv4	250 Mpps for IPv4	250 Mpps for IPv4
	110 Mpps	110 Mpps	110 Mpps	110 Mpps	125 Mpps for IPv6	125 Mpps for IPv6	125 Mpps for IPv6
Routes Supported	64K for IPv4 32K for IPv6	64K for IPv4 32K for IPv6	64K for IPv4 32K for IPv6	64K for IPv4 32K for IPv6	256K for IPv4 128K for IPv6	256K for IPv4 128K for IPv6	256K for IPv4 128K for IPv6
MAC Addresses	55K	55K	55K	55K	55K	55K	55K
Per VLAN Spanning Tree (PVST) Protocol and VLAN IDs	4094	4094	4094	4094	4094	4094	4094
Switched Virtual Interfaces (SVIs)	4094	4094	4094	4094	4094	4094	4094
Active VLANs	4094	4094	4094	4094	4094	4094	4094
Multicast Routes	24K	24K	24K	24K	32K	32K	32K
Security and Quality-of-Service (QoS) Hardware Entries	64K Ingress	64K Ingress	64K Ingress	64K Ingress	64K Ingress	64K Ingress	64K Ingress
	64K Egress	64K Egress	64K Egress	64K Egress	64K Egress	64K Egress	64K Egress
Switched Port Analyzer (SPAN)	8	8	8	8	8	8	8
	Bi-directional	Bi-directional	Bi-directional	Bi-directional	Bi-directional	Bi-directional	Bi-directional
Shared Buffer	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB	32 MB
CPU	Dual Core 1.5GHZ	Dual Core 1.5GHZ	Dual Core 1.5GHZ	Dual Core 1.5GHZ	Dual Core 1.5GHZ	Dual Core 1.5GHZ	Dual Core 1.5GHZ
Synchronous Dynamic RAM (SDRAM)	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB	4 GB
IPv6 Support	Hardware Switched	Hardware Switched	Hardware Switched	Hardware Switched	Hardware Switched	Hardware Switched	Hardware Switched
USB Port	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Optional SD Card	Yes	Yes	Yes	Yes	Yes	Yes	Yes

¹ Both the 32-port and 16-port versions can be configured with an optional expansion network module. Refer to product data sheet for details.

Catalyst 4500-X Switches	
WS-C4500X-16SFP+	Catalyst 4500-X 16 Port 10GE IP Base, Front-to-Back Cooling i.e. Port Side to Power Supply Cooling (No P/S)
WS-C4500X-F-16SFP+	Catalyst 4500-X 16 Port 10GE IP Base, Back-to-Front Cooling i.e. Power Supply Side to Port Side Cooling (No P/S)
WS-C4500X-24X-IPB	Catalyst 4500-X 24 Port 10GE IP Base, Front-to-Back Cooling i.e. Port Side to Power Supply Cooling (No P/S)
WS-C4500X-24X-ES	Catalyst 4500-X 24 Port 10GE Enterprise Services, Front-to-Back Cooling i.e. Port Side to Power Supply Cooling (No P/S)
WS-C4500X-32SFP+	Catalyst 4500-X 32 Port 10GE IP Base, Front-to-Back Cooling i.e. Port Side to Power Supply Cooling (No P/S)
WS-C4500X-F-32SFP+	Catalyst 4500-X 32 Port 10GE IP Base, Back-to-Front Cooling i.e. Power Supply Side to Port Side Cooling (No P/S)
WS-C4500X-40X-ES	Catalyst 4500-X 40 Port 10G Enterprise Services, Front-to-Back Cooling Port Side to Power Supply Cooling (No P/S)
C4KX-NM-8SFP+	Catalyst 4500-X 8 Port 10GE Network Module

Catalyst 4500-X Software	
C4500X-LIC=	Base product ID for software upgrade licenses on Catalyst 4500-X (paper delivery)
C4500X-IPB	Catalyst 4500-X IP BASE software license
C4500X-16P-IP-ES	Catalyst 4500-X 16-port IP BASE to Enterprise Services upgrade license
C4500X-IP-ES	Catalyst 4500-X 32-port IP BASE to Enterprise Services upgrade license
L-C4500X-LIC=	Catalyst 4500-X Base product ID for software upgrade licenses (electronic delivery)
L-C4500X-16P-IP-ES	Catalyst 4500-X 16-port IP BASE to Enterprise Services upgrade license (electronic delivery)
L-C4500X-IP-ES	Catalyst 4500-X 32-port IP BASE to Enterprise Services upgrade license (electronic delivery)

For More Information

<http://www.cisco.com/go/4500x>

Cisco Catalyst 4900M Series Switch

The Cisco Catalyst 4900M Series Switch is a Layer 2–4 fixed-configuration switch that offers high performance for top-of-rack server switching and for small and midsize aggregation deployments. The switch offers high performance, deterministic low latency, full IPv6 hardware forwarding, and media flexibility in a compact 2-rack-unit (2RU) form factor.



Ideal for Companies That Need These Features

- Cisco Catalyst 4900M**
- Flexibility of 1-Gigabit Ethernet and 10-Gigabit Ethernet ports in the same switch
 - Full media flexibility for Gigabit Ethernet and 10-Gigabit Ethernet fiber and copper connectivity
 - Wire-speed Layer 2 and Layer 3 switching at speeds less than 3 microseconds
 - Up to 24 ports of 10 Gigabit Ethernet and up to 40 ports of 1 Gigabit Ethernet in 2 rack units (2RU) with dual power supplies
 - Nonblocking Layer 2, 3, and 4 10/100/1000 Gigabit Ethernet, 1000BASE-X, and 10-Gigabit Ethernet performance

Main Features and Benefits

- The Cisco Catalyst 4900M Switch provides low-latency and wire-speed switching.
- The switch provides up to 40 10/100/1000 ports and up to 24 10-Gigabit Ethernet ports (X2).
- The switch has redundant hot-swappable AC or DC power supplies with a hot-swappable fan tray.
- Small Form-Factor Pluggable (SFP) or X2 flexibility on fiber port interfaces covers a wide range of cabling distances.
- Advanced IPv4 and IPv6 Unicast routing protocols (Open Shortest Path First [OSPF], Enhanced IGRP [EIGRP], Intermediate System-to-Intermediate System [IS-IS], and Border Gateway Protocol Version 4 [BGPv4]) are supported for load balancing and constructing scalable networks.
- Advanced IPv4 and IPv6 Multicast routing protocols (including Multicast Listener Discovery Versions 1 and 2 [MLDv1 and v2] snooping) are supported.
- Intelligent quality of service (QoS) and traffic management, including sharing, shaping, and strict-priority configurations, determine scheduling of egress traffic.

Specifications

Feature	Cisco 4900M
Forwarding bandwidth (Gbps)	320
Maximum stack members	0
Packets per second (Mpps)	250
MAC addresses supported	55,000
Routes supported	256,000
Onboard memory (DRAM)	512MB
10 GbE copper density	16
Gigabit Ethernet SFP density (Using Twin Gigabit)	32
10G X2 fiber port density	24

10/100/1000 density	40
10/100 density	0
AC/DC support	AC/DC
Dimensions (H x W x D)	3.5 x 17.2 x 17.9in (89 x 437 x 455 cm)
Unit weight	25 to 39 (11.3 to 17.6kgs)

Online model comparison chart: http://www.cisco.com/en/US/products/ps6021/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Cisco Catalyst 4900M Switch Series	
WS-C4900M	Cisco Catalyst 4900M 8-port wire speed 10GE base system
WS-X4904-10GE	4 port wire speed 10GE card
WS-X4908-10GE	8 port 2:1 10 GE card
WS-X4920-GB-RJ45	20 port wire speed 10/100/1000 RJ45 card
WS-X4908-10G-RJ45	8 port 2:1 10GE/1GE copper card
PWR-C49M-1000AC	4900M AC power supply, 1000 watts
PWR-C49M-1000DC	4900M DC power supply 1000 watts

For More Information

<http://www.cisco.com/go/catalyst4900>

Cisco Catalyst 4900 Series Switches

The Cisco Catalyst 4900 Series Switches are Layer 2–4 fixed-configuration switches that offer high performance for data centers and branch-office core. The Cisco Catalyst 4900 Series offers high performance, low latency in a compact 1-rack-unit (1RU) form factor.



Ideal for Companies That Need These Features

- Cisco Catalyst 4948E
- Cisco Catalyst 4948E-F
- 48 ports of 1-Gigabit Ethernet switching in 1 rack unit (1RU) with dual power supplies with four 10-Gigabit Ethernet uplinks
- Nonblocking Layer 2, 3, and 4 10/100/1000 1-Gigabit Ethernet performance with 10-Gigabit Ethernet uplinks
- Option of front-to-back or back-to-front airflow
- Application visibility through NetFlow-lite and eight line-rate bidirectional Switched Port Analyzer/Remote SPAN (SPAN/RSPAN) ports

Main Features and Benefits

- Consistent low-latency and wire-speed switching
- Redundant internal AC or DC power supplies with a hot-swappable fan tray
- Small Form-Factor Pluggable (SFP) or Small Form-Factor Pluggable Plus (SFP+) flexibility on fiber port interfaces to cover a wide range of cabling distances
- Optimized to handle microbursts with centralized buffer architecture
- Investment protection through data center design with dual-stack IPv4 and IPv6 support
- Advanced quality of service (QoS) with eight configurable queues for each port
- Data center optimization with true front-to-back and back-to-front airflow
- Enhanced manageability through bidirectional Switched Port Analyzer (SPAN) and Remote SPAN (RSPAN) sessions
- Enhanced application visibility with NetFlow-lite on Cisco Catalyst 4948E and Catalyst 4948E-F
- Packet-rate policer, control-plane and packet policer, and dynamic buffer limiting (DBL) for increased security and network control

Specifications

Feature	Cisco 4948E and 4948E-F
Forwarding bandwidth (Gbps)	176
Maximum stack members	0
Total stack bandwidth (Gbps)	0

Packets per second (Mpps)	131
MAC addresses supported	55,000
Routes supported	57000
Onboard memory (DRAM)	512MB
10 GE density	4
Gigabit Ethernet GBIC/SFP density	48
10 GE XENPAK/X2 port density	4 SFP+
10/100/1000 density	48
10/100 density	0
Max. watt power consumption	300
AC/DC support	AC/DC
Dimensions (H x W x D)	1.75 x 17.5 x 19.4 in
Unit weight	14 lbs

Online model comparison chart: http://www.cisco.com/en/US/products/ps6021/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Cisco Catalyst 4900 Switch Series	
WS-C4948E	Cisco Catalyst 4948E 48 10/100/1000(RJ45)+4 SFP+, opt sw, no p/s
WS-C4948E-S	Cisco Catalyst 4948E 48 10/100/1000(RJ45)+4 SFP+, IP Base IOS, AC p/s
WS-C4948E-E	Cisco Catalyst 4948E 48 10/100/1000(RJ45)+4 SFP+, Ent Ser IOS, AC p/s
WS-C4948E-BDL	Green Bundle 10x WS-C4948E
WS-C4948E-F	Cisco Catalyst 4948E-F 48 10/100/1000(RJ45)+4 SFP+, opt sw, no p/s
WS-C4948E-F-S	Cisco Catalyst 4948E-F 48 10/100/1000(RJ45)+4 SFP+, IP Base IOS, AC p/s
WS-C4948E-F-E	Cisco Catalyst 4948E-F 48 10/100/1000(RJ45)+4 SFP+, Ent Ser IOS, AC p/s
WS-C4948E-F-BDL	Green Bundle 10xWS-C4948E-F

For More Information

<http://www.cisco.com/go/catalyst4900>

Cisco Catalyst 3750 v2 Series Switches

The Cisco Catalyst 3750 v2 Series of Fast Ethernet switches provide Layer 2–4 switching and intelligent network services for branch-office and campus enterprise networks. The switches feature Cisco StackWise technology for simplified operations and network resiliency.



Ideal for Companies That Need These Features

- Cisco Catalyst 3750 v2** • 10-/100-Mbps performance for traditional workspaces and branch-office locations
- Enhanced business productivity, resiliency, security, and scalability
- Quick deployment and easy network management
- Deployment of IP telephony and wireless Advanced Layer 3 services such as dynamic IP routing

Main Features and Benefits

- Cisco StackWise technology: One IP address and one command-line interface (CLI) simplify management. A 32-Gbps resilient architecture speeds convergence, and 1:N stack master redundancy and Layer 3 uplink resiliency as well as cross-stack Cisco EtherChannel technology and quality of service (QoS) increase availability. Autoconfiguration and Cisco IOS Software check and update accelerate deployment, and hot add and delete of switches keep the stack running.
- Availability: These switches offer fault tolerance, load balancing, and rapid recovery; increased available bandwidth with Per-VLAN Spanning Tree Plus (PVST+) by allowing traffic on redundant links; and sub-100-millisecond convergence with Flexlink technology.
- Power over Ethernet (PoE): The switches provide 370W PoE, which simplifies IP telephony, wireless, and video-surveillance deployments; intelligent power management features; and PoE combined with Fast Ethernet or Gigabit Ethernet.
- Layer 3: The switches support advanced routing protocols such as Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), and Policy-Based Routing (PBR) to increase network scale; equal cost routing as well as multicast routing such as Protocol Independent Multicast (PIM); Virtual Route Forwarding Lite (VRF-Lite) to secure traffic; and IPv6.

- Quality of service (QoS): Traffic shaping smooths a sudden traffic flow outburst without dropping packets; Shaped Round Robin guarantees bandwidth to mission-critical applications; and Scavenger Queuing protects against worms overloading resources.
- Management: Cisco Smartports quicken and simplify configuration of advanced Cisco Catalyst intelligent capabilities. Express setup facilitates quick and easy setup through a web interface, and resource templates help tailor switch resources for the application.
- Security: Dynamic Host Configuration Protocol (DHCP) Snooping allows only trusted ports to relay DHCP messages, eliminating rogue DHCP servers. Cisco Network Admission Control (NAC) prevents the propagation of costly worms and viruses; Dynamic ARP Inspection and IP Source Guard prevent against man-in-the-middle attacks; 802.1x and Identity-Based Network Services allow only authorized persons on the network; and port security prevents MAC address flooding attacks.
- Cisco EnergyWise technology helps reduce companywide power consumption and carbon footprint.
- These switches have a limited lifetime warranty.

Specifications

Feature	Cisco 3750V2-24TS	Cisco 3750V2-48TS	Cisco 3750V2-24PS	Cisco 3750V2-48PS	Cisco 3750V2-24FS
Forwarding bandwidth (Gbps)	32	32	32	32	32
Maximum stack members	9	9	9	9	9
Total stack bandwidth (Gbps)	32	32	32	32	32
Packets per second (Mpps)	6.5	13.1	6.5	13.1	6.5
MAC addresses supported	12,000	12,000	12,000	12,000	12,000
Routes supported	11,000	11,000	11,000	11,000	11,000
10 GE density	0	0	0	0	0
Gigabit Ethernet GBIC/SFP density	2	4	2	4	2
10 GE XENPAK/X2 port density	0	0	0	0	0
10/100/1000 density	0	0	0	0	0
10/100 density	24	48	24	48	0
100BASE-FX density	0	0	0	0	24
Measured 100% Throughput power consumption (with max. 15.4 W PoE loads)	39	57	444	458	61
PoE: Max. 802.3af Class 3 devices (15.4W)	-	-	24	24	-
PoE: Max. 802.3af Class 2 devices (7.3W)	-	-	24	48	-
AC/DC support	AC only	AC only	AC only	AC only	AC only
Dimensions (H x W x D)	1.73 x 17.46 x 11.62 in. (4.4 x 44.3 x 29.5 cm.)	1.73 x 17.46 x 11.62 in. (4.4 x 44.3 x 29.5 cm.)	1.73 x 17.46 x 11.62 in. (4.4 x 44.3 x 29.5 cm.)	1.73 x 17.46 x 11.62 in. (4.4 x 44.3 x 29.5 cm.)	1.73 x 17.5 x 11.8 in. (4.4 x 44.5 x 30.1 cm.)
Unit weight	8.2 lbs. (3.7 kgs.)	9.2 lbs. (4.2 kgs.)	10 lbs. (4.6 kgs.)	11 lbs. (5.0 kgs.)	9.15 lbs. (4.15 kgs.)

Selected Part Numbers and Ordering Information

Cisco Catalyst 3750 Series 10/100 Workgroup Switches	
WS-C3750V2-24FS-S	Cisco Catalyst 3750V2-24 100BaseFX + 2 SFP Standard Multilayer Image
WS-C3750V2-24PS-S	Cisco Catalyst 3750V2-24 10/100 PoE + 2 SFP Standard Image
WS-C3750V2-24PS-E	Cisco Catalyst 3750V2-24 10/100 PoE + 2 SFP Enhanced Image
WS-C3750V2-24TS-S	Cisco Catalyst 3750V2-24 10/100 + 2 SFP Standard Multilayer Image
WS-C3750V2-24TS-E	Cisco Catalyst 3750V2-24 10/100 + 2 SFP Enhanced Multilayer Image
WS-C3750V2-48PS-S	Cisco Catalyst 3750V2-48 10/100 PoE + 4 SFP Standard Image
WS-C3750V2-48PS-E	Cisco Catalyst 3750V2-48 10/100 PoE + 4 SFP Enhanced Image
WS-C3750V2-48TS-S	Cisco Catalyst 3750V2-48 10/100 + 4 SFP Standard Multilayer Image
WS-C3750V2-48TS-E	Cisco Catalyst 3750V2-48 10/100 + 4 SFP Enhanced Multilayer Image

For More Information

<http://www.cisco.com/go/catalyst3750>

Cisco Catalyst 3750-X Series Switch

The Cisco Catalyst 3750X Series Switches are an enterprise-class line of stackable switches. These switches provide high availability, scalability, security, energy efficiency, and ease of operation with innovative features such as Cisco StackPower technology, IEEE 802.3at Power over Ethernet Plus (PoE+) configurations, optional network modules, redundant power supplies, and MAC Security (MACsec) features.



The Cisco Catalyst 3750X Series with Cisco StackWise Plus technology provides scalability, ease of management, and investment protection for evolving business needs. The Cisco Catalyst 3750X enhances productivity by enabling applications such as IP telephony, wireless, and video for the Borderless Networks experience.

Ideal for Companies That Need These Features

- | | |
|------------------------------------|---|
| Cisco Catalyst 3750-X | <ul style="list-style-type: none">• In-depth security solutions with Cisco TrustSec technology• Video with medianet• High availability with best-in-class resiliency capabilities• Most efficient and comprehensive Power over Ethernet (PoE) support in the industry• Quick deployment and easy network management |
| Cisco Catalyst 3750X-24T-L | <ul style="list-style-type: none">• Low-density access with switch stacking capability, LAN Base feature set, and optional two 10-Gigabit Ethernet Small Form-Factor Pluggable Plus (SFP+) uplinks |
| Cisco Catalyst 3750X-48T-L | <ul style="list-style-type: none">• Medium-density access with switch stacking capability, LAN Base feature set, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-24P-L | <ul style="list-style-type: none">• Low-density access with switch stacking capability, LAN Base feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-48P-L | <ul style="list-style-type: none">• Medium-density access with switch stacking capability, LAN Base feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-48PF-L | <ul style="list-style-type: none">• Medium-density access with switch stacking capability, LAN Base feature set, PoE+, two optional 10-Gigabit Ethernet SFP+ uplinks, and 1100 AC power supply |
| Cisco Catalyst 3750X-24T-S | <ul style="list-style-type: none">• Low-density access with switch stacking capability, IP Base feature set, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-48T-S | <ul style="list-style-type: none">• Medium-density access with switch stacking capability, IP Base feature set, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-24P-S | <ul style="list-style-type: none">• Low-density access with switch stacking capability, IP Base feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-48P-S | <ul style="list-style-type: none">• Medium-density access with switch stacking capability, IP Base feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-48PF-S | <ul style="list-style-type: none">• Medium-density access with switch stacking capability, IP Base feature set, PoE+, optional two 10-Gigabit Ethernet SFP+ uplinks, and 1100W AC power supply |
| Cisco Catalyst 3750X-24T-E | <ul style="list-style-type: none">• Low-density access with switch stacking capability, IP Services feature set, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-48T-E | <ul style="list-style-type: none">• Medium-density access with switch stacking capability, IP Services feature set, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-24P-E | <ul style="list-style-type: none">• Low-density access with switch stacking capability, IP Services feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-48P-E | <ul style="list-style-type: none">• Medium-density access with switch stacking capability, IP Services feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3750X-48PF-E | <ul style="list-style-type: none">• Medium-density access with switch stacking capability, IP Services feature set, PoE+, optional two 10-Gigabit Ethernet SFP+ uplinks, and 1100W AC power supply |
| Cisco Catalyst C3750X-12S-S | <ul style="list-style-type: none">• Aggregation solution for the small core, midmarket, and branch office, stackable 12-Gigabit Ethernet SFP Ethernet ports, with 350W AC power supply, 1 rack unit (1RU), and IP Base feature set |
| Cisco Catalyst C3750X-24S-S | <ul style="list-style-type: none">• Aggregation solution for the small core, midmarket, and branch office, stackable 24-Gigabit Ethernet SFP Ethernet ports, with 350W AC power supply, 1RU, and IP Base feature set |
| Cisco Catalyst C3750X-12S-E | <ul style="list-style-type: none">• Aggregation solution for the small core, midmarket, and branch office, stackable 12-Gigabit Ethernet SFP Ethernet ports, with 350W AC power supply, 1RU, and IP Services feature set |
| Cisco Catalyst C3750X-24S-E | <ul style="list-style-type: none">• Aggregation solution for the small core, midmarket, and branch office, stackable 24-Gigabit Ethernet SFP Ethernet ports, with 350W AC power supply, 1RU, and IP Services feature set |

Main Features and Benefits

- 24 and 48 10/100/1000 Power over Ethernet Plus (PoE+), non-PoE models, and 12- and 24-Gigabit Ethernet Small Form-Factor (SFP) port models

- Four optional uplink network modules with Gigabit Ethernet or 10-Gigabit Ethernet ports
- Industry-first PoE+ with 30W power on all ports in 1-rack-unit (1RU) form factor
- Dual redundant, modular power supplies and fans
- MAC Security (MACsec) hardware-based encryption
- Flexible NetFlow and switch-to-switch hardware encryption with the uplink service module and Open Shortest Path First (OSPF) for routed access in IP Base image
- IPv4 and IPv6 routing, multicast routing, advanced quality of service (QoS), and security features in hardware
- Enhanced limited lifetime warranty (LLW) with next-business-day (NBD) advance hardware replacement and 90-day access to Cisco Technical Assistance Center (TAC) support
- Enhanced Cisco EnergyWise technology for operational cost optimization by measuring actual power consumption of the PoE devices, reporting, and reducing energy consumption across the network
- USB Type-A and Type-B ports for storage and console, respectively, and an out-of-band Ethernet management port
- Cisco StackPower technology: An innovative feature and industry first for sharing power among stack members
- Cisco StackWise Plus technology for ease of use and resiliency with 64 Gbps of throughput
- Investment protection with backward compatibility with all other models of Cisco Catalyst 3750 Series Switches

Specifications

Feature	Cisco 3750X-24T	Cisco 3750X-48T	Cisco 3750X-24P	Cisco 3750X-48P	Cisco 3750X-48PF
Forwarding bandwidth (Gbps)	160	160	160	160	160
Maximum stack members	9	9	9	9	9
Total stack bandwidth (Gbps)	64	64	64	64	64
Packets per second (Mpps)	65.5	101.2	65.5	101.2	101.2
MAC addresses supported	12,000	12,000	12,000	12,000	12,000
Routes supported	11,000	11,000	11,000	11,000	11,000
10 GE density	2	2	2	2	2
10 GE SFP+	2	2	2	2	2
10/100/1000 density	24	48	24	48	48
10/100 density	24	48	24	48	48
100BASE-FX density	0	0	0	0	0
Measured 100% Throughput power consumption (without PoE loads, 1 Gps uplink module)	93.5	120.4	99.3	133.9	137.2
PoE: Max. 802.3af Class 3 devices (15.4W)	-	-	24	48	48
PoE: Max. 802.3af Class 2 devices (7.3W)	-	-	24	48	48
AC/DC support	AC and DC	AC and DC	AC and DC	AC and DC	AC and DC
Dimensions (H x W x D)	1.75 x 17.5 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 17.5 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 17.5 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 17.5 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 17.5 x 19.5 in (4.45 x 44.5 x 49.5 cm.)
Unit weight	15.6 lbs. (7.1 kgs.)	16.3 lbs. (7.4 kgs.)	15.8 lbs. (7.2 kgs.)	16.5 lbs. (7.5 kgs.)	16.7 lbs. (7.6 kgs.)

Feature	Cisco 3750X-12S-S	Cisco 3750X-24S-S	Cisco 3750X-12S-SE	Cisco 3750X-24S-E
Forwarding bandwidth (Gbps)	160	160	160	160
Maximum stack members	9	9	9	9
Total stack bandwidth (Gbps)	64	64	64	64
Packets per second (Mpps)	35.7	65.5	35.7	65.5
MAC addresses supported	12,000	12,000	12,000	12,000
Routes supported	11,000	11,000	11,000	11,000
10 GE density	2	2	2	2
10 GE SFP+	2	2	2	2
10/100/1000 density	12	24	12	24
Measured 100% Throughput power consumption (without PoE load, 1 Gbps uplink module)	871	108.9	871	108.9
AC/DC support	AC and DC	AC and DC	AC and DC	AC and DC
Dimensions (H x W x D)	1.75 x 1.75 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 1.75 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 1.75 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 1.75 x 18.0 in (4.45 x 44.5 x 46.0 cm.)
Unit weight	15. lbs. (6.8 kgs.)	15. 4 lbs. (70 kgs.)	15. lbs. (6.8kgs.)	15. 4 lbs. (70 kgs.)

Online model comparison chart:

http://www.cisco.com/en/US/products/ps10745/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Catalyst 3750-X Series 10/100/1000 Workgroup Switches ¹	
WS-C3750X-24T-L	Cisco 3750-X stackable 24 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, LAN Base feature set (Stackpower cables need to be purchased separately)
WS-C3750X-48T-L	Cisco 3750-X stackable 48 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, LAN Base feature set (Stackpower cables need to be purchased separately)
WS-C3750X-24P-L	Cisco 3750-X stackable 24 10/100/1000 Ethernet PoE+ ports, with 715W AC power supply 1 RU, LAN Base feature set (Stackpower cables need to be purchased separately)
WS-C3750X-48P-L	Cisco 3750-X stackable 48 10/100/1000 Ethernet PoE+ ports, with 715W AC power supply 1 RU, LAN Base feature set (Stackpower cables need to be purchased separately)
WS-C3750X-48PF-L	Cisco 3750-X stackable 48 10/100/1000 Ethernet PoE+ ports, with 1100W AC power supply 1 RU, LAN Base feature set (Stackpower cables need to be purchased separately)
WS-C3750X-24T-S	Cisco 3750-X stackable 24 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, IP Base feature set
WS-C3750X-48T-S	Cisco 3750-X stackable 48 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, IP Base feature set
WS-C3750X-24P-S	Cisco 3750-X stackable 24 10/100/1000 Ethernet PoE+ ports, with 715W AC Power Supply 1 RU, IP Base feature set
WS-C3750X-48P-S	Cisco 3750-X stackable 48 10/100/1000 Ethernet PoE+ ports, with 715W AC Power Supply 1 RU, IP Base feature set
WS-C3750X-48PF-S	Cisco 3750-X stackable 48 10/100/1000 Ethernet PoE+ ports, with 1100W AC power supply 1 RU, IP Base feature set
WS-C3750X-24T-E	Cisco 3750-X stackable 24 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, IP Services feature set
WS-C3750X-48T-E	Cisco 3750-X stackable 48 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, IP Services feature set
WS-C3750X-24P-E	Cisco 3750-X stackable 24 10/100/1000 Ethernet PoE+ ports, with 715W AC Power Supply 1 RU, IP Services feature set
WS-C3750X-48P-E	Cisco 3750-X stackable 48 10/100/1000 Ethernet PoE+ ports, with 715W AC Power Supply 1 RU, IP Services feature set
WS-C3750X-48PF-E	Cisco 3750-X stackable 48 10/100/1000 Ethernet PoE+ ports, with 1100W AC power supply 1 RU, IP Services feature set
WS-C3750X-12S-S	Stackable 12 GE SFP Ethernet ports, with 350W AC power supply 1 RU, IP Base feature set
WS-C3750X-24S-S	Stackable 24 GE SFP Ethernet ports, with 350W AC power supply 1 RU, IP Base feature set
WS-C3750X-12S-E	Stackable 12 GE SFP Ethernet ports, with 350W AC power supply 1 RU, IP Services feature set
WS-C3750X-24S-E	Stackable 24 GE SFP Ethernet ports, with 350W AC power supply 1 RU, IP Services feature set

¹ L=LAN Base; S=IP Base; E=IP Services

For More Information

<http://www.cisco.com/go/3750x>

Cisco Catalyst 3560 v2 Series Switches

The Cisco Catalyst 3560 v2 Series Switches are fixed-configuration switches combining Fast Ethernet connectivity and Power over Ethernet (PoE) for branch-office and campus enterprise networks.



Ideal for Companies That Need These Features

- Cisco Catalyst 3560 v2 Series** • 10-/100-Mbps performance for traditional workspaces and branch-office locations
- Enhanced business productivity, resiliency, security, and scalability
 - Quick deployment and easy network management
 - Advanced Layer 3 services such as dynamic IP routing

Main Features and Benefits

- **Availability:** The Cisco Catalyst 3560 Series Switches offer fault tolerance, load balancing, and rapid recovery; increasing available bandwidth with Per-VLAN Spanning Tree Plus (PVST+) by allowing traffic on redundant links; and sub-100-millisecond convergence with Flexlink technology.
- **Power over Ethernet (PoE):** The switches provide 370W PoE, which simplifies IP telephony, wireless, and video-surveillance deployments; intelligent power-management features; and PoE combined with Fast Ethernet or Gigabit Ethernet.
- **Layer 3:** The switches support advanced routing protocols such as Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), and Policy-Based Routing (PBR) to increase network scale; equal cost routing as well as multicast routing such as Protocol Independent Multicast (PIM); Virtual Route Forwarding Lite (VRF-Lite) to secure traffic; and IPv6.
- **Quality of service (QoS):** Traffic shaping smooths a sudden traffic flow outburst without dropping packets; Shaped Round Robin guarantees bandwidth to mission-critical applications; and Scavenger Queuing protects against worms overloading resources.
- **Management:** Cisco Smartports quicken and simplify configuration of advanced Cisco Catalyst intelligent capabilities. Express setup facilitates quick and easy setup through a web interface, and resource templates help tailor switch resources for the application.
- **Security:** Dynamic Host Configuration Protocol (DHCP) Snooping allows only trusted ports to relay DHCP messages, eliminating rogue DHCP servers. Cisco Network Admission Control (NAC) prevents the propagation of costly worms and viruses; Dynamic ARP Inspection and IP Source Guard prevent against man-in-the-middle attacks; 802.1x and Identity-Based Network Services allow only authorized persons on the network; and port security prevents MAC address flooding attacks.
- Cisco EnergyWise technology helps reduce companywide power consumption and carbon footprint.
- Cisco limited lifetime warranty.

Specifications

Feature	Cisco 3560V2-24TS	Cisco 3560V2-48TS	Cisco 3560V2-24PS	Cisco 3560V2-48PS	Cisco 3560V2-24TS-SD
Forwarding bandwidth (Gbps)	32	32	32	32	32
Packets per second (Mpps)	6.5	13.1	6.5	13.1	6.5
MAC addresses supported	12,000	12,000	12,000	12,000	12,000
Routes supported	11,000	11,000	11,000	11,000	11,000
Onboard memory (DRAM/Flash)	128/32 MB	128/32 MB	128/16 MB	128/16 MB	128/32 MB
Gigabit Ethernet GBIC/SFP density	2	4	2	4	2
10/100/1000 density	0	0	0	0	0
10/100 density	24	48	24	48	24
Measured 100% Throughput power consumption (with Max. 15.4 W PoE loads)	24	41	435	452	24
PoE: Max. 802.3af Class 3 devices (15.4W)	-	-	24	24	-
PoE: Max. 802.3af Class 2 devices (7.3W)	-	-	24	48	-

AC/DC support	AC only	AC only	AC only	AC only	DC power supply
Dimensions (H x W x D)	1.73 x 1746 x 11.62 in.; (4.4 x 44.3 x 29.5 cm.)	1.73 x 1746 x 11.62 in.; (4.4 x 44.3 x 29.5 cm.)	1.73 x 1746 x 11.62 in.; (4.4 x 44.3 x 29.5 cm.)	1.73 x 1746 x 11.62 in.; (4.4 x 44.3 x 29.5 cm.)	1.73 x 1746 x 11.62 in.; (4.4 x 44.3 x 29.5 cm.)
Unit weight	8.2 lbs. (3.7 kgs.)	9 lbs. (4 kgs.)	10 lbs. (4.6 kgs.)	11 lbs. (5 kgs.)	8 lbs. (3.7 kgs.)

Selected Part Numbers and Ordering Information

Cisco Catalyst 3560V2 Series 10/100 Workgroup Switches	
WS-C3560V2-48PS-S	Cisco Catalyst 3560G v2-48 10/100 PoE + 4 SFP Standard Image
WS-C3560V2-48PS-E	Cisco Catalyst 3560G v2-48 10/100 PoE + 4 SFP Enhanced Image
WS-C3560V2-24PS-S	Cisco Catalyst 3560G v2-24 10/100 PoE + 2 SFP Standard Image
WS-C3560V2-24PS-E	Cisco Catalyst 3560G v2-24 10/100 PoE + 2 SFP Enhanced Image
WS-C3560V2-48TS-S	Cisco Catalyst 3560G v2-48 10/100 + 4 SFP Standard Image
WS-C3560V2-48TS-E	Cisco Catalyst 3560G v2-48 10/100 + 4 SFP Enhanced Image
WS-C3560V2-24TS-S	Cisco Catalyst 3560G v2-24 10/100 + 2 SFP Standard Image
WS-C3560V2-24TS-E	Cisco Catalyst 3560G v2-24 10/100 + 2 SFP Enhanced Image
WS-C3560V2-24TS-SD	Cisco Catalyst 3560G v2-24 10/100 + 2 SFP Standard Image with DC power supply

For More Information

<http://www.cisco.com/go/catalyst3560>

Cisco Catalyst 3560-X Series Switches

The Cisco Catalyst 3560-X Series Switches are an enterprise-class line of standalone switches. These switches provide high availability, scalability, security, energy efficiency, and ease of operation with innovative features such as IEEE 802.3at Power over Ethernet Plus (PoE+) configurations, optional network modules, redundant power supplies, and MAC Security (MACsec) features. The Cisco Catalyst 3560-X enhances productivity by enabling applications such as IP telephony, wireless, and video for a Borderless Networks experience.



Ideal for Companies That Need These Features

- | | |
|-------------------------------------|---|
| Cisco Catalyst 3560-X Series | <ul style="list-style-type: none"> • In-depth security solutions with Cisco TrustSec technology • Video with medianet • High availability with best-in-class resiliency capabilities • Most efficient and comprehensive Power over Ethernet (PoE) support in the industry • Quick deployment and easy management of their network • Four optional uplink network modules with Gigabit Ethernet or 10-Gigabit Ethernet ports |
| Cisco Catalyst 3560X-24T-L | <ul style="list-style-type: none"> • Low-density access, LAN Base feature set, and optional two 10-Gigabit Ethernet Small Form-Factor Pluggable Plus (SFP+) uplinks |
| Cisco Catalyst 3560X-48T-L | <ul style="list-style-type: none"> • Medium-density access, LAN Base feature set, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3560X-24P-L | <ul style="list-style-type: none"> • Low-density access, LAN Base feature set, Power over Ethernet Plus (PoE+), and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3560X-48P-L | <ul style="list-style-type: none"> • Medium-density access, LAN Base feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3560X-48PF-L | <ul style="list-style-type: none"> • Medium-density access, LAN Base feature set, PoE+, optional two 10-Gigabit Ethernet SFP+ uplinks, and 1100-WAC power supply |
| Cisco Catalyst 3560X-24T-S | <ul style="list-style-type: none"> • Low-density access, IP Base feature set, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3560X-48T-S | <ul style="list-style-type: none"> • Medium-density access, IP Base feature set, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3560X-24P-S | <ul style="list-style-type: none"> • Low-density access, IP Base feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3560X-48P-S | <ul style="list-style-type: none"> • Medium-density access, IP Base feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks |
| Cisco Catalyst 3560X-48PF-S | <ul style="list-style-type: none"> • Medium-density access, IP Base feature set, PoE+, optional two 10-Gigabit Ethernet SFP+ uplinks, and 1100-WAC power supply |

- Cisco Catalyst 3560X-24T-E** • Low-density access, IP Services feature set, and optional two 10-Gigabit Ethernet SFP+ uplinks
- Cisco Catalyst 3560X-48T-E** • Medium-density access, IP Services feature set, and optional two 10-Gigabit Ethernet SFP+ uplinks
- Cisco Catalyst 3560X-24P-E** • Low-density access, IP Services feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks
- Cisco Catalyst 3560X-48P-E** • Medium-density access, IP Services feature set, PoE+, and optional two 10-Gigabit Ethernet SFP+ uplinks
- Cisco Catalyst 3560X-48PF-E** • Medium-density access, IP Services feature set, PoE+, optional two 10-Gigabit Ethernet SFP+ uplinks, and 1100-WAC power supply

Main Features and Benefits

- 24 and 48 10/100/1000 Power over Ethernet Plus (PoE+) and non-PoE models
- Four optional uplink network modules with Gigabit Ethernet or 10-Gigabit Ethernet ports
- Industry-first PoE+ with 30W power on all ports in 1-rack-unit (1RU) form factor
- Dual redundant, modular power supplies and fans
- MAC Security (MACsec) hardware-based encryption
- Flexible NetFlow and switch-to-switch hardware encryption with the uplink service module
- Open Shortest Path First (OSPF) for routed access in IP Base image
- IPv4 and IPv6 routing, IP Multicast routing, advanced quality of service (QoS), and security features in hardware
- Enhanced limited lifetime warranty (LLW) with next-business-day (NBD) advance hardware replacement and 90-day access to Cisco Technical Assistance Center (TAC) support
- Enhanced Cisco EnergyWise technology for operational cost optimization by measuring actual power consumption of the PoE devices, reporting, and reducing energy consumption across the network
- USB Type-A and Type-B ports for storage and console, respectively, and an out-of-band Ethernet management port

Specifications

Feature	Cisco 3560X-24T	Cisco 3560X-48T	Cisco 3560X-24P	Cisco 3560X-48P	Cisco 3560X-48PF
Forwarding bandwidth (Gbps)	160	160	160	160	160
Maximum stack members	0	0	0	0	0
Total stack bandwidth (Gbps)	-	-	-	-	-
Packets per second (Mpps)	65.5	101.2	65.5	101.2	101.2
MAC addresses supported	12,000	12,000	12,000	12,000	12,000
Routes supported	11,000	11,000	11,000	11,000	11,000
10 GE density	2	2	2	2	2
10 GE SFP+	2	2	2	2	2
10/100/1000 density	24	48	24	48	48
10/100 density	24	48	24	48	48
100BASE-FX density	0	0	0	0	0
Measured 100% Throughput power consumption (without PoE loads, 1 Gps uplink module)	93.5	120.4	99.3	133.9	137.2
PoE: Max. 802.3af Class 3 devices (15.4W)	-	-	24	48	48
PoE: Max. 802.3af Class 2 devices (7.3W)	-	-	24	48	48
AC/DC support	AC and DC	AC and DC	AC and DC	AC and DC	AC and DC

Dimensions (H x W x D)	1.75 x 1.75 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 1.75 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 1.75 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 1.75 x 18.0 in (4.45 x 44.5 x 46.0 cm.)	1.75 x 1.75 x 19.5 in (4.45 x 44.5 x 49.5 cm.)
Unit weight	15.4 lbs. (70 kgs.)	16.1 lbs. (73 kgs.)	15.7 lbs. (71 kgs.)	16.4 lbs. (74 kgs.)	16.6 lbs. (75 kgs.)

Selected Part Numbers and Ordering Information

Catalyst 3560-X Series 10/100/1000 Workgroup Switches¹	
WS-C3560X-24T-L	Cisco 3560-X standalone 24 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, LAN Base feature set
WS-C3560X-48T-L	Cisco 3560-X standalone 48 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, LAN Base feature set
WS-C3560X-24P-L	Cisco 3560-X standalone 24 10/100/1000 Ethernet PoE+ ports, with 715W AC power supply 1 RU, LAN Base feature set
WS-C3560X-48P-L	Cisco 3560-X standalone 48 10/100/1000 Ethernet PoE+ ports, with 715W AC power supply 1 RU, LAN Base feature set
WS-C3560X-48PF-L	Cisco 3560-X standalone 48 10/100/1000 Ethernet PoE+ ports, with 1100W AC power supply 1 RU, LAN Base feature set
WS-C3560X-24T-S	Cisco 3560-X standalone 24 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, IP Base feature set
WS-C3560X-48T-S	Cisco 3560-X standalone 48 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, IP Base feature set
WS-C3560X-24P-S	Cisco 3560-X standalone 24 10/100/1000 Ethernet PoE+ ports, with 715W AC power supply 1 RU, IP Base feature set
WS-C3560X-48P-S	Cisco 3560-X standalone 48 10/100/1000 Ethernet PoE+ ports, with 715W AC power supply 1 RU, IP Base feature set
WS-C3560X-48PF-S	Cisco 3560-X standalone 48 10/100/1000 Ethernet PoE+ ports, with 1100W AC power supply 1 RU, IP Base feature set
WS-C3560X-24T-E	Cisco 3560-X standalone 24 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, IP Services feature set
WS-C3560X-48T-E	Cisco 3560-X standalone 48 10/100/1000 Ethernet ports, with 350W AC power supply 1 RU, IP Services feature set
WS-C3560X-24P-E	Cisco 3560-X standalone 24 10/100/1000 Ethernet PoE+ ports, with 715W AC power supply 1 RU, IP Services feature set
WS-C3560X-48P-E	Cisco 3560-X standalone 48 10/100/1000 Ethernet PoE+ ports, with 715W AC power supply 1 RU, IP Services feature set
WS-C3560X-48PF-E	Cisco 3560-X standalone 48 10/100/1000 Ethernet PoE+ ports, with 1100W AC power supply 1 RU, IP Services feature set

¹ L=LAN Base; S=IP Base; E=IP Services

For More Information

<http://www.cisco.com/go/3560x>

Cisco Catalyst 2960-S Series Switches

The Cisco Catalyst 2960-S Series Switches are the leading Layer 2 edge switches, providing improved ease of use, highly secure business operations, improved sustainability, and a borderless network experience. These switches include new Cisco FlexStack switch stacking capability with 1- and 10-Gigabit Ethernet connectivity and Power over Ethernet Plus (PoE+).



The Cisco Catalyst 2960-S Series Switches are fixed-configuration access switches designed for enterprise, midmarket, and branch-office networks to provide lower total cost of ownership (TCO).

Ideal for Companies That Need These Features

- Cisco Catalyst 2960-S**
- Intelligent services at entry-level functions
 - Quality of service (QoS), enhanced security, and availability
 - Easy deployment and network management
 - Unprecedented low box power consumption

Main Features and Benefits

- 1- and 10-Gigabit Ethernet uplink flexibility with Small Form-Factor Pluggable Plus (SFP+), providing business continuity and fast transition to 10 Gigabit Ethernet
- 24 or 48 ports of Gigabit Ethernet desktop connectivity
- Cisco FlexStack stacking module with 20 Gbps of throughput, allowing ease of operation with single configuration and simplified switch upgrade
- Power over Ethernet Plus (PoE+) with up to 30W per port that allows you to support the latest PoE+ capable devices
- Power-supply options, with 740W or 370W fixed power supplies for PoE+ switches
- USB storage for file backup, distribution, and simplified operations
- A wide range of software features to provide ease of operation, highly secure business operations, sustainability, and a borderless network experience
- Cisco EnergyWise technology, which helps reduce companywide power consumption and carbon footprint
- Enhanced limited lifetime hardware warranty, including next-business-day replacement with 90-day service and support

Specifications

Feature	Cisco 2960S-48FPD-L	Cisco 2960S-48LPD-L	Cisco 2960S-24PD-L	Cisco 2960S-48TD-L	Cisco 2960S-24TD-L	Cisco 2960S-48FPS-L
Forwarding bandwidth (Gbps)	88	88	88	88	88	88
Maximum Stack Members	4	4	4	4	4	4
Total Bandwidth of Stack (Gbps)	20	20	20	20	20	20
Packets per second (Mpps)	101.2	101.2	65.5	101.2	65.5	77.4
MAC addresses supported	8,000	8,000	8,000	8,000	8,000	8,000
Onboard memory (DRAM)	128 MB	128 MB	128 MB	128 MB	128 MB	128 MB
10 GE SFP+ Density	2	2	2	2	2	0
Gigabit Ethernet GBIC/SFP density	-	-	-	-	-	4
10/100/1000 density	48	48	24	48	24	48
10/100 density	-	-	-	-	-	-
100BASE-FX density	-	-	-	-	-	-
PoE: Max. 802.3af Class 3 devices (15.4W)	48	24	24	0	0	48
PoE: Max. 802.3af Class 2 devices (7.3W)	48	48	24	0	0	48
Measured 100% Throughput power consumption (Watts)	81	71	55	55	39	79

AC/DC support	AC only	AC only	AC only	AC only	AC only	AC only
Dimensions (H x W x D)	1.75 x 175 x 15.2 in. (4.5 x 44.5 x 38.6 cm.)	1.75 x 175 x 15.2 in. (4.5 x 44.5 x 38.6 cm.)	1.75 x 175 x 15.2 in. (4.5 x 44.5 x 38.6 cm.)	1.75 x 175 x 11.8 in. (4.5 x 44.5 x 29.9 cm.)	1.75 x 175 x 11.8 in. (4.5 x 44.5 x 29.9 cm.)	1.75 x 175 x 15.2 in. (4.5 x 44.5 x 38.6 cm.)
Unit weight	13 lbs. (5.9 kgs.)	12.5 lbs. (5.7 kgs.)	12.5 lbs. (5.7 kgs.)	9.5 lbs. (4.3 kgs.)	9.5 lbs. (4.3 Kgs.)	13 lbs. (5.9 kgs.)
Feature	Cisco 2960S-48LPS-L	Cisco 2960S-24PS-L	Cisco 2960S-48TS-L	Cisco 2960S-24TS-L	Cisco 2960S-48TS-S	Cisco 2960S-24TS-S
Forwarding bandwidth (Gbps)	88	88	88	88	88	88
Maximum Stack Members	4	4	4	4	4	4
Total Bandwidth of Stack (Gbps)	20	20	20	20	20	20
Packets per second (Mpps)	774	41.7	774	41.7	74.4	38.7
MAC addresses supported	8,000	8,000	8,000	8,000	8,000	8000
Onboard memory (DRAM)	128 MB	128 MB	128 MB	128 MB	128 MB	128 MB
10 GE SPF+ Density	0	0	0	0	0	0
Gigabit Ethernet GBIC/SFP density	4	4	4	4	4	4
10/100/1000 density	48	24	48	24	48	24
10/100 density	-	-	-	-	-	-
100BASE-FX density	-	-	-	-	-	-
PoE: Max. 802.3af Class 3 devices (15.4W)	24	24	0	0	0	0
PoE: Max. 802.3af Class 2 devices (7.3W)	48	24	0	0	0	0
Measured 100% Throughput power consumption (Watts)	71	55	52	40	53	36
AC/DC support	AC only	AC only	AC only	AC only	AC only	AC only
Dimensions (H x W x D)	1.75 x 175 x 15.2 in. (4.5 x 44.5 x 38.6 cm.)	1.75 x 175 x 15.2 in. (4.5 x 44.5 x 38.6 cm.)	1.75 x 175 x 11.8 in. (4.5 x 44.5 x 29.9 cm.)	1.75 x 175 x 11.8 in. (4.5 x 44.5 x 29.9 cm.)	1.75 x 175 x 11.8 in. (4.5 x 44.5 x 29.9 cm.)	1.75 x 175 x 15.2 in. (4.5 x 44.5 x 38.6 cm.)
Unit weight	12.5 lbs. (5.7 kgs.)	12.5 lbs. (5.7 kgs.)	10.5 lbs. (4.8 kgs.)	10 lbs. (4.5 kgs.)	10.5 lbs. (4.8 kgs.)	10 lbs. (4.5 kgs.)

Online model comparison chart: http://www.cisco.com/en/US/products/ps6406/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Cisco Catalyst 2960-S Series LAN Base Switches	
WS-C2960S-48FPD-L	Cisco Catalyst 2960-S 48 Ethernet 10/100/1000 PoE+ ports, 740W PoE capacity, 2 10 Gigabit Ethernet or 2 1 Gigabit Ethernet SFP+ uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-48LPD-L	Cisco Catalyst 2960-S 48 Ethernet 10/100/1000 PoE+ ports, 370W PoE capacity, 2 10 Gigabit Ethernet or 2 1 Gigabit Ethernet SFP+ uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-24PD-L	Cisco Catalyst 2960-S 24 Ethernet 10/100/1000 PoE+ ports, 370W PoE capacity, 2 10 Gigabit Ethernet or 2 1 Gigabit Ethernet SFP+ uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-48TD-L	Cisco Catalyst 2960-S 48 Ethernet 10/100/1000 ports, 2 10 Gigabit Ethernet or 2 1 Gigabit Ethernet SFP+ uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-24TD-L	Cisco Catalyst 2960-S 24 Ethernet 10/100/1000 ports, 2 10 Gigabit Ethernet or 2 1 Gigabit Ethernet SFP+ uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-48FPS-L	Cisco Catalyst 2960-S 48 Ethernet 10/100/1000 PoE+ ports, 740W PoE capacity, 4 1 Gigabit Ethernet SFP uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-48LPS-L	Cisco Catalyst 2960-S 48 Ethernet 10/100/1000 PoE+ ports, 370W PoE capacity, 4 1 Gigabit Ethernet SFP uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-24PS-L	Cisco Catalyst 2960-S 24 Ethernet 10/100/1000 PoE+ ports, 370W PoE capacity, 4 1 Gigabit Ethernet SFP uplink ports, optional Cisco FlexStack stacking support, LAN Base image

WS-C2960S-48TS-L	Cisco Catalyst 2960-S 48 Ethernet 10/100/1000 ports, 4 1 Gigabit Ethernet SFP uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-24TS-L	Cisco Catalyst 2960-S 24 Ethernet 10/100/1000 ports, 4 1 Gigabit Ethernet SFP uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-2960S-48TS-S	Cisco Catalyst 2960-S 48 Ethernet 10/100/1000, 2 One Gigabit Ethernet SFP uplink ports, LAN Lite software
WS-C2960S-24TS-S	Cisco Catalyst 2960-S 24 Ethernet 10/100/1000, 2 One Gigabit Ethernet SFP uplink ports, LAN Lite software

For More Information

<http://www.cisco.com/go/catalyst2960>

Cisco Catalyst 2960-SF Series Switches

The Cisco Catalyst 2960-SF Series Fast Ethernet Switches provide enterprise-class Layer 2 switching for branch-office and midsize campus access applications. They enable reliable and secure business operations and lower total cost of ownership (TCO) through a range of innovative features including Cisco FlexStack, Power over Ethernet Plus (PoE+), and Cisco Catalyst Smart Operations.



Ideal for Companies That Need These Features

- Cisco Catalyst 2960-SF**
- 10-/100-Mbps performance for traditional workspaces and branch-office locations
 - Enterprise-class quality of service (QoS), security, and availability
 - Easy deployment and network management

Main Features and Benefits

- 24 or 48 ports of Fast Ethernet connectivity for desktops, workspace devices, and building infrastructure
- Gigabit Ethernet Small Form-Factor Pluggable Plus (SFP+) uplinks
- Cisco FlexStack technology for simplified management with 20 Gbps of stack throughput when deployed with the FlexStack stacking module
- IEEE 802.3at-compliant Power over Ethernet Plus (PoE+) for up to 30W of power per port, which allows you to support the latest PoE+ capable devices
- Models offering 370W or 740W of combined PoE/PoE+ budget
- USB storage for file transfers, backups, and simplified operations
- A wide range of software features to provide ease of operation, highly secure business operations, sustainability, and a borderless network experience
- Cisco EnergyWise technology, which helps reduce companywide power consumption and carbon footprint
- Enhanced limited lifetime hardware warranty, including next-business-day replacement with 90-day service and support

Specifications

Feature	Catalyst 2960S-F48FPS-L	Catalyst 2960S-F48LPS-L	Catalyst 2960S-F24PS-L	Catalyst 2960S-F48TS-L	Catalyst 2960S-F24TS-L	Catalyst 2960S-F48TS-S	Catalyst 2960S-F24TS-S
Forwarding bandwidth (Gbps)	88	88	88	88	88	88	88
Maximum Stack Members	4	4	4	4	4	4	4
Total Bandwidth of Stack (Gbps)	20	20	20	20	20	20	20
Packets per second (Mpps)	131	131	6.5	131	6.5	101	6.5
MAC addresses supported	8000	8,000	8,000	8,000	8,000	8,000	8000
Onboard memory (DRAM)	128 MB	128 MB	128 MB	128 MB	128 MB	128 MB	128 MB
Gigabit Ethernet SFP density	4	4	2	4	2	2	2

10/100/1000 density	-	-	-	-	-	-	-
10/100 density	48	48	24	48	24	48	24
100BASE-FX density	-	-	-	-	-	-	-
PoE: Max. 802.3af Class 3 devices (15.4W)	48	24	24	0	0	0	0
PoE: Max. 802.3af Class 2 devices (7.3W)	48	48	24	0	0	0	0
Measured 100% Throughput power consumption (Watts)	61	54	47	35	27	35	27
AC/DC support	AC only	AC only	AC only	AC only	AC only	AC only	AC only
Dimensions (H x W x D)	1.75 x 175 x 15.2 in. (4.5 x 44.5 x 38.6 cm.)	1.75 x 175 x 15.2 in. (4.5 x 44.5 x 38.6 cm.)	1.75 x 175 x 15.2 in. (4.5 x 44.5 x 38.6 cm.)	1.75 x 175 x 12.4 in. (4.5 x 44.5 x 29.9 cm.)	1.75 x 175 x 12.4 in. (4.5 x 44.5 x 29.9 cm.)	1.75 x 175 x 12.4 in. (4.5 x 44.5 x 29.9 cm.)	1.75 x 175 x 12.4 in. (4.5 x 44.5 x 29.9 cm.)
Unit weight	13 lbs. (5.9 kgs.)	12.5 lbs. (5.7 kgs.)	12.5 lbs. (5.7 kgs.)	10.5 lbs. (4.8 kgs.)	10 lbs. (4.5 kgs.)	10.5 lbs. (4.8 kgs.)	10 lbs. (4.5 kgs.)

Online model comparison chart: http://www.cisco.com/en/US/products/ps12651/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Cisco Catalyst 2960-SF Series LAN Base Switches	
WS-C2960S-F48FPS-L	Cisco Catalyst 2960-SF 48 Ethernet 10/100 PoE+ ports, 740W PoE capacity, 4 Gigabit Ethernet SFP uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-F48LPS-L	Cisco Catalyst 2960-SF 48 Ethernet 10/100 PoE+ ports, 370W PoE capacity, 4 Gigabit Ethernet SFP uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-F24PS-L	Cisco Catalyst 2960-SF 24 Ethernet 10/100 PoE+ ports, 370W PoE capacity, 4 Gigabit Ethernet SFP uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-F48TS-L	Cisco Catalyst 2960-SF 48 Ethernet 10/100 ports, 4 Gigabit Ethernet SFP uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-C2960S-F24TS-L	Cisco Catalyst 2960-SF 24 Ethernet 10/100 ports, 2 Gigabit Ethernet SFP uplink ports, optional Cisco FlexStack stacking support, LAN Base image
WS-2960S-F48TS-S	Cisco Catalyst 2960-SF 48 Ethernet 10/100 ports, 2 Gigabit Ethernet SFP uplink ports, LAN Lite software
WS-C2960S-F24TS-S	Cisco Catalyst 2960-SF 24 Ethernet 10/100 ports, 2 Gigabit Ethernet SFP uplink ports, LAN Lite software

For More Information

<http://www.cisco.com/go/cat2960sf>

Cisco Catalyst 2960 Series Switches

The Cisco Catalyst 2960 Series Switches are fixed-configuration switches that offer Fast Ethernet and Power over Ethernet (PoE) with intelligent LAN services for midmarket and branch-office networks. The Cisco Catalyst 2960 LAN Base Switches offer enhanced security, quality of service (QoS), and availability, and the Cisco Catalyst 2960 LAN Lite Switches offer entry-level features with scalable management and easy troubleshooting.



Ideal for Companies That Need These Features

Cisco Catalyst 2960 Series

- Intelligent services at entry-level functions
- Quality of service (QoS), enhanced security, and availability
- Easy deployment and network management

Main Features and Benefits

- Power over Ethernet (PoE): Cisco Catalyst 2960 Series Switches offer 370W PoE, which simplifies IP telephony, wireless, and video surveillance deployments. It also provides intelligent power-management features.
- Security: Network security is enabled through a wide range of authentication methods, data-encryption technologies, and Cisco Network Admission Control (NAC) based on users, ports, and MAC addresses.
- Availability: The 802.1S/W standard facilitates standards-based fault tolerance, load balancing, and rapid recovery. Flexlink provides sub-100-msec convergence, and Per-VLAN Spanning Tree Plus (PVST+) increases available bandwidth by allowing traffic on redundant links.
- Quality of service (QoS): Network control and bandwidth optimization are achieved through advanced QoS, granular rate limiting, access control lists (ACLs), and multicast services.
- Management: Cisco Network Assistant is a GUI-based management tool for configuration management and troubleshooting. Cisco Smartports automatically detects connected Cisco devices and recommends preset configurations for the switch port connected to the device.
- Cisco EnergyWise technology helps reduce companywide power consumption and carbon footprint.
- Cisco limited lifetime warranty.

Specifications

Feature	Cisco 2960-24TC-L	Cisco 2960-24TT-L	Cisco 2960-48TC-L	Cisco 2960-48TT-L	Cisco 2960-24-S
Forwarding bandwidth (Gbps)	16	16	16	16	16
Packets per second (Mpps)	6.6	6.6	10.1	10.1	3.6
MAC addresses supported	8,000	8,000	8,000	8,000	8,000
Onboard memory (DRAM)	64 MB	64 MB	64 MB	64 MB	64 MB
Gigabit Ethernet GBIC/SFP density	2	0	2	0	0
10/100/1000 density	2	2	2	2	0
10/100 density	24	24	48	48	24
100BASE-FX density	0	0	0	0	0
PoE: Max. 802.3af Class 3 devices (15.4W)	-	-	-	-	-
PoE: Max. 802.3af Class 2 devices (7.3W)	-	-	-	-	-
Measured 100% Throughput power consumption (with Max. PoE loads)	27	28	39	42	22
AC/DC support	AC only	AC only	AC only	AC only	AC only
Dimensions (H x W x D)	1.73 x 175 x 9.3 in. (4.4 x 44.5 x 23.6 cm.)	1.73 x 175 x 9.3 in. (4.4 x 44.5 x 23.6 cm.)	1.73 x 175 x 9.3 in. (4.4 x 44.5 x 23.6 cm.)	1.73 x 175 x 9.3 in. (4.4 x 44.5 x 23.6 cm.)	1.73 x 175 x 9.3 in. (4.4 x 44.5 x 23.6 cm.)
Unit weight	8 lbs. (3.6 kgs.)	8 lbs. (3.6 kgs.)	8 lbs. (3.6 kgs.)	8 lbs. (3.6 kgs.)	8 lbs. (3.6 kgs.)
Feature	Cisco 2960-24TC-S	Cisco 2960-48TC-S	Cisco 2960-48TT-S	Cisco 2960-48PST-L	Cisco 2960-48PST-S
Forwarding bandwidth (Gbps)	16	16	16	16	16
Packets per second (Mpps)	6.5	10.1	10.1	6.5	13.3
MAC addresses supported	8,000	8,000	8,000	8,000	8,000
Onboard memory (DRAM)	64 MB	64 MB	64 MB	64 MB	64 MB

Gigabit Ethernet GBIC/SFP density	2	2	0	2	2
10/100/1000 density	2	22	2	2	2
10/100 density	24	48	48	48	48
100BASE-FX density	0	0	0	0	0
PoE: Max. 802.3af Class 3 devices (15.4W)	-	-	-	24	24
PoE: Max. 802.3af Class 2 devices (7.3W)	-	-	-	48	48
Measured 100% Throughput power consumption (with Max. PoE loads)	27	39	42	460	460
AC/DC support	AC only	AC only	AC only	AC only	AC only
Dimensions (H x W x D)	1.73 x 175 x 9.3 in. (4.4 x 44.5 x 23.6 cm.)	1.73 x 175 x 9.3 in. (4.4 x 44.5 x 23.6 cm.)	1.73 x 175 x 9.3 in. (4.4 x 44.5 x 23.6 cm.)	1.73 x 175 x 12.9 in. (4.4 x 44.5 x 32.8 cm.)	1.73 x 175 x 13 in. (4.4 x 44.5 x 33.2 cm.)
Unit weight	8 lbs. (3.6 kgs.)	8 lbs. (3.6 kgs.)	8 lbs (3.6 kgs.)	12 lbs. (5.4 kgs.)	12 lbs. (5.4 kgs.)
Feature	Cisco 2960-8TC-S		Cisco 2960-8TC-L		Cisco 2960G-8TC-L
Forwarding bandwidth (Gbps)	16		16		32
Packets per second (Mpps)	2.7		2.7		11.9
MAC addresses supported	8,000		8,000		8,000
Onboard memory (DRAM)	64 MB		64 MB		64 MB
Gigabit Ethernet GBIC/SFP density	1		1		1
10/100/1000 density	1		1		7
10/100 density	8		8		0
100BASE-FX density	0		0		0
PoE: Max. 802.3af Class 3 devices (15.4W)	-		-		-
PoE: Max. 802.3af Class 3 devices (7.3W)	-		-		-
Measured 100% Throughput power consumption (with Max. PoE loads)	12		12		22
AC/DC support	AC only		AC only		AC only
Dimensions (H x W x D)	1.73 x 10.6 x 6.4 in. (4.4 x 27 x 16.3 cm)		1.73 x 10.6 x 6.4 in. (4.4 x 27 x 16.3 cm)		1.73 x 10.6 x 8.1 in. (4.4 x 27 x 20.5 cm)
Unit weight	3 lbs. (1.4 kgs.)		3 lbs. (1.4 kgs.)		3 lbs. (1.4 kgs.)
Feature	Cisco 2960-24LT-L	Cisco 2960-24PC-L	Cisco 2960-24LC-S	Cisco 2960-24PC-S	
Forwarding bandwidth (Gbps)	16	16	16	16	
Packets per second (Mpps)	6.5	6.5	6.5	6.5	

MAC addresses supported	8,000	8,000	8,000	8,000
Onboard memory (DRAM)	64 MB	64 MB	64 MB	64 MB
Gigabit Ethernet GBIC/SFP density	0	2	2	2
10/100/1000 density	2	2	2	2
10/100 density	24	24	24	24
100BASE-FX density	0	0	0	0
PoE: Max. 802.3af Class 3 devices (15.4W)	8	24	8	24
PoE: Max. 802.3af Class 2 devices (7.3W)	8	24	8	24
Measured 100% Throughput power consumption (with Max. PoE loads)	162	433	162	433
AC/DC support	AC only	AC only	AC only	AC only
Dimensions (H x W x D)	1.73 x 175 x 9.3 in. (4.4 x 44.5 x 23.6 cm.)	1.73 x 175 x 12.9 in. (4.4 x 44.5 x 32.8 cm.)	1.73 x 175 x 13 in (4.4 x 44.5 x 33.2 cm)	1.73 x 175 x 13 in. (4.4 x 44.5 x 33.2 cm)
Unit weight	8 lbs. (3.6 kgs.)	10 lbs. (4.5 kgs.)	10 lbs. (4.5 kgs.)	12 lbs. (5.4 kgs.)

Online model comparison chart: http://www.cisco.com/en/US/products/ps6406/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Cisco Catalyst 2960 Series LAN Base Switches

WS-C2960-24PC-L	Cisco Catalyst 2960-24 10/100 PoE + 2T/SFP LAN Base Image
WS-C2960-48PST-L	Cisco Catalyst 2960-48 10/100 PoE + 2 1000BT + 2 SFP LAN Base Image
WS-C2960-24TC-L	Cisco Catalyst 2960-24 10/100 + 2T/SFP LAN Base Image
WS-C2960-24LT-L	Cisco Catalyst 2960-24 10/100 (8 PoE) + 2 1000BT LAN Base Image
WS-C2960-24TT-L	Cisco Catalyst 2960-24 10/100 + 2 1000BT LAN Base Image
WS-C2960-48TC-L	Cisco Catalyst 2960-48 10/100 + 2 T/SFP LAN Base Image
WS-C2960-48TT-L	Cisco Catalyst 2960-48 10/100 + 2 1000BT LAN Base Image
WS-C2960PD-8TT-L	Cisco Catalyst 2960-8 10/100 + 1 1000BT (PoE input) LAN Base Image
WS-C2960-8TC-L	Cisco Catalyst 2960-8 10/100 + 1 T/SFP LAN Base Image
WS-C2960G-8TC-L	Cisco Catalyst 2960G-8 10/100/1000. 1 T/SFP LAN Base Image

Cisco Catalyst 2960 Series LAN Lite Switches

WS-C2960-24-S	Cisco Catalyst 2960-24 10/100 LAN Lite Image
WS-C2960-24TC-S	Cisco Catalyst 2960-24 10/100 + 2T/SFP LAN Lite Image
WS-C2960-48TT-S	Cisco Catalyst 2960-48 10/100 + 2 1000BT LAN Lite Image
WS-C2960-48TC-S	Cisco Catalyst 2960-48 10/100 + 2T/SFP LAN Lite Image
WS-C2960-24LC-S	Cisco Catalyst 2960-24 10/100 (8 PoE) + 2T/SFP LAN Lite Image
WS-C2960-24PC-S	Cisco Catalyst 2960-24 10/100 PoE + 2T/SFP LAN Lite Image
WS-C2960-48PST-S	Cisco Catalyst 2960-48 10/100 PoE + 2 1000BT + 2 SFP LAN Lite Image
WS-C2960-8TC-S	Cisco Catalyst 2960-8 10/100 + 1 T/SFP LAN Lite Image

For More Information

<http://www.cisco.com/go/catalyst2960>

Campus LAN: Compact Switches

Cisco Catalyst 3560-C Series Compact Switches

The Cisco Catalyst 3560-C Series Compact Switches are small-form-factor Gigabit Ethernet and Fast Ethernet switches designed for deployments outside the wiring closet. Enterprise and commercial customers can deliver advanced security services, unified communications, wireless, IP video cameras, and other applications for office workspaces, branch offices, classrooms, retail stores, cruise ships, hotels, hospitals, casinos, building management, and other wiring-constrained environments.



Highlights of the Cisco Catalyst 3560-C Series include:

- Power over Ethernet (PoE) pass-through, an innovative feature and industry first for powering the switch using PoE and passing power from the switch to end devices
- MAC Security (MACsec) hardware-based encryption
- Power over Ethernet Plus (PoE+) for up to 30W per port
- USB and console port for file backup and simplified operations
- Fanless for silent operation
- Cisco Catalyst SmartOperations and AutoSmart Ports for fast installation and deployment
- Enhanced limited lifetime hardware warranty (E-LLW) with next-business-day (NBD) advance hardware replacement and 90-day access to Cisco Technical Assistance Center (TAC) support

Specifications

Feature	WS-C3560CG-8TC-S	WS-C3560CG-8PC-S	WS-C3560CPD-8PT-S	WS-C3560C-8PC-S	WS-C3560C-12PC-S
Forwarding bandwidth (Gbps)	10	10	10	2.8	3.2
Packets per second (Mpps)	13.2	13.2	13.2	3.8	4.6
VLANS	1005	1005	1005	1005	1005
Onboard memory (DRAM)	128 MB	128 MB	128 MB	128 MB	128 MB
Gigabit Ethernet GBIC/SFP density	2	2	0	2	2
10/100/1000 density	10	10	10	2	2
10/100 density	-	-	-	8	12
PoE Budget	0W	124W	Upto 23.8W	124W	124W
Dimensions (H x W x D)	1.75x10.6x8.4 (in) 44.4x269x213 (cm)	1.75x10.6x9.4 (in) 44.4x269x238 (cm)		1.75x10.6x9.4 (in) 44.4x269x238 (cm)	1.75x10.6x9.4 (in) 44.4x269x238 (cm)
Unit weight	3.0 lbs 1.35(kg)	4.1lbs 1.86(kg)	3.3 lbs 1.5(kg)	4.1 lbs 1.86(kg)	4.25 lbs 1.92(kg)

Online model comparison chart:

http://www.cisco.com/en/US/products/ps11290/prod_models_comparison.html#3560

Selected Part Numbers and Ordering Information

WS-C3560CG-8TC-S	Cisco Catalyst 3560-C Switch 8 GE, 2 x Dual Purpose Uplink, IP Base
WS-C3560CG-8PC-S	Cisco Catalyst 3560-C Switch 8 GE PoE, 2 x Dual Purpose, IP Base
WS-C3560CPD-8PT-S	Cisco Catalyst 3560-C PD PSE Switch 8 GE PoE, 2 x 1G Copper Uplink, IP Base
WS-C3560C-8PC-S	Cisco Catalyst 3560-C Switch 8 FE PoE, 2 x Dual Purpose Uplink, IP Base
WS-C3560C-12PC-S	Cisco Catalyst 3560-C Switch 12 FE PoE, 2 x Dual Purpose Uplink, IP Base

For More Information

<http://www.cisco.com/go/compactswitches>

Cisco Catalyst 2960-C Series Compact Switches

The Cisco Catalyst 2960-C Series Compact Switches are small form-factor Gigabit Ethernet and Fast Ethernet switches designed for deployments outside the wiring closet. Enterprise and commercial customers can deliver advanced security services, unified communications, wireless, IP video cameras, and other applications for office workspaces, branch offices, classrooms, cruise ships, hotels, hospitals, casinos, building management, and other wiring-constrained environments.



Cisco Catalyst 2960-C Series highlights include:

- Power over Ethernet (PoE) pass-through, an innovative feature and industry first for powering the switch over PoE and passing power from the switch to end devices
- Power over Ethernet
- USB and console port for file backup and simplified operations
- Cisco Catalyst Smart Operations and Auto Smartports for fast installation and deployment
- Fanless for silent operation
- Enhanced limited lifetime hardware warranty (E-LLW) with next-business-day (NBD) advance hardware replacement and 90-day access to Cisco Technical Assistance Center (TAC) support

Specifications

Feature	WS-C2960CPD-8TT-L	WS-C2960CPD-8PT-L	WS-C2960CG-8TC-L	WS-C2960C-8TC-L	WS-C2960C-8TC-S	WS-C2960C-8PC-L	WS-C2960C-12PC-L
Forwarding bandwidth (Gbps)	2.8	2.8	10	2.8	2.8	2.8	3.2
Packets per second (Mpps)	3.8	3.8	13.2	3.8	3.8	3.8	4.6
VLANs	255	255	255	255	255	2552	255
Onboard memory (DRAM)	128 MB	128 MB	128 MB	128 MB	128 MB	128 MB	128 MB
Gigabit Ethernet GBIC/SFP density	0	0	2	2	2	2	2
10/100/1000 density	2	2	10	2	2	2	2
10/100 density	8	8	0	8	8	8	12
PoE Budget	0W	Upto 30.8W*	0W	0W	0W	124W	124W
Dimensions (H x W x D)	1.75 x 10.6 x 6.8(in) 44.4 x 269 x 172(cm)	1.75 x 10.6 x 6.8(in) 44.4 x 269 x 172(cm)	1.75 x 10.6 x 8.4 44.4 x 269 x 213	1.75 x 10.6 x 8.4 (in) 44.4 x 269 x 213(cm)	1.75 x 10.6 x 8.4(in) 44.4 x 269 x 213(cm)	1.75 x 10.6 x 9.4(in) 44.4 x 269 x 238(cm)	1.75 x 10.6 x 9.4 (in) 44.4 x 269 x 238(cm)
Unit weight	2.4 lbs 1.08(kg)	2.4 lbs 1.08(kg)	2.4 lbs 1.35(kg)	2.8 lbs 1.27(kg)	3.0 lbs 1.27(kg)	4.1 lbs 1.86(kg)	4.1 lbs 1.86(kg)

Selected Part Numbers and Ordering Information

WS-C2960CPD-8TT-L	Cisco Catalyst 2960-C PSE Switch 8 FE, 2 x 1G, PoE+ LAN Base
WS-C2960CPD-8PT-L	Cisco Catalyst 2960-C PD PSE Switch, 8 FE PoE, 2 x 1G, PoE+ LAN Base
WS-C2960CG-8TC-L	Cisco Catalyst 2960-C Switch 8 GE, 2 x Dual Purpose Uplink, LAN Base
WS-C2960C-8TC-L	Cisco Catalyst 2960-C Switch 8 FE, 2 x Dual Purpose Uplink, LAN Base
WS-C2960C-8TC-S	Cisco Catalyst 2960-C Switch 8 FE, 2 x Dual Purpose Uplink, LAN Lite
WS-C2960C-8PC-L	Cisco Catalyst 2960-C PoE Switch 8 FE PoE, 2 x Dual Purpose Uplink, LAN Base
WS-C2960C-12PC-L	Cisco Catalyst 2960-C PoE Switch 12 FE PoE, 2 x Dual Purpose Uplink, LAN Base

For More Information

<http://www.cisco.com/go/compactswitches>

Campus LAN: Small Business Switches

Cisco ESW 500 Series Switches

The Cisco ESW 500 Series Switches are designed to integrate easily with Cisco Small Business products and with the Cisco Smart Business Communications System to provide a complete data, voice, video, and wireless networking solution for small businesses. These switches are cost-effective and easy-to-use, and they deliver the performance and reliability needed by small businesses. They can be supported by a Cisco partner or by in-house networking support staff.



Main Features and Benefits

- Uses quality of service (QoS) to prioritize delay-sensitive and high-bandwidth network traffic, enhance network performance, and support demanding services such as real-time voice and video
- Offers enhanced security, including IEEE 802.1X port security to limit access to authorized users and applications, access control lists (ACLs) to restrict access to sensitive portions of the network and guard against attacks, and VLANs to segment traffic and workgroups
- Provides Small Form-Factor Pluggable (SFP) expansion slots for fiber-optic or Gigabit Ethernet uplink connectivity
- Supports an optional redundant power supply that provides uninterrupted failover to help ensure continuous operation
- Offers a choice of two simple GUIs for easier configuration, management, and troubleshooting (Cisco ESW 500 Series Switches include an embedded web-based configuration utility designed specifically for setting up the switch, and can also be configured with Cisco Configuration Assistant Version 2.0 or later for system deployments.)

Specifications

Product	Product Number	Copper FE ports	Copper GigE ports	SFP GigE ports	Combo SFP GigE ports ³	PoE support	PoE ports @7.5 Watts	PoE ports @15.4 Watts
Gigabit Ethernet Switches with PoE	ESW-540-8P	N/A	8	None	1	Yes	8	
	ESW-540-24P	N/A	24	None	4	Yes	24	
Gigabit Ethernet Switches without PoE	ESW-540-24	N/A	24	None	4	No	N/A	N/A
	ESW-540-48	N/A	48	None	4	No	N/A	N/A
Fast Ethernet Switches with PoE	ESW-520-8P	8	None	None	1	Yes	8	4
	ESW-520-24P	24	4	None	2	Yes	24	12
	ESW-520-48P	48	2	2	None	Yes	48	24
Fast Ethernet Switches without PoE	ESW-520-24	24	4	None	2	No	N/A	N/A
	ESW-520-48	48	2	2	None	No	N/A	N/A

Online model comparison chart: http://www.cisco.com/en/US/products/en/US/products/ps10143/prod_models_comparison.html

Selected Part Numbers and Ordering Information

ESW-520-8P-K9	Cisco ESW 500 Eight 10/100 PoE ports; 1 expansion port: One 10/100/1000BASE-T and 1 combo* SFP slot
ESW-520-24-K9	Cisco ESW 500 Twenty-four 10/100 Ethernet ports; 4 expansion ports: Two 10/100/1000BASE-T and 2 combo* SFP slots
ESW-520-24P-K9	Cisco ESW 500 24 10/100 PoE ports; 4 expansion ports: Two 10/100/1000BASE-T and 2 combo* SFP slots
ESW-520-48-K9	Cisco ESW 500 Forty-eight 10/100 Ethernet ports; 4 expansion ports: Two 10/100/1000BASE-T and 2 SFP slots

ESW-520-48P-K9	Cisco ESW 500 Forty-eight 10/100 PoE ports; 4 expansion ports: Two 10/100/1000BASE-T and 2 SFP slots
ESW-540-8P-K9	Cisco ESW 500 Eight 10/100/1000 PoE ports; 1 expansion port: One 10/100/1000BASE-T and 1 combo* SFP slot
ESW-540-24-K9	Cisco ESW 500 Twenty-four 10/100/1000 Ethernet ports; 4 expansion ports; 4 combo* SFP slots
ESW-540-24P-K9	Cisco ESW 500 Twenty-four 10/100/1000 PoE ports; 4 expansion ports; 4 combo* SFP slots
ESW-540-48-K9	Cisco ESW 500 Forty-eight 10/100/1000 Ethernet ports; 4 expansion ports; 4 combo* SFP slots

* Combo SFP slots include one 10/100/1000BASE-T Ethernet port and 1 SFP-based Gigabit Ethernet slot for fiber, 1 port active at a time

For More Information

<http://www.cisco.com/go/esw500>

Cisco 300 Series Managed Switches

The Cisco 300 Series Managed Switches constitute a broad portfolio of fixed-configuration managed Ethernet switches. Models are available with 8 to 48 ports of Fast Ethernet and 10 to 52 ports of Gigabit Ethernet connectivity, providing optimal flexibility to create exactly the right network foundation for your business. However, unlike other small business switching solutions that

provide managed network capabilities only in the costliest models, all Cisco 300 Series Switches support the advanced security management capabilities and network features you need to support business-class data, voice, security, and wireless technologies. At the same time, these switches are simple to deploy and configure, allowing you to take advantage of the managed network services your business needs.



Main Features and Benefits

- Securely connects employees with each other and all of the business resources using high-performance Fast Ethernet and Gigabit Ethernet connections
- Increases the connectivity range of switches on different floors or across the business using a mini-gigabit interface converter (mini-GBIC)
- Provides an intuitive, web-based interface to simplify the configuration and management of network devices
- Connects and powers network endpoints such as IP telephony, wireless devices, and IP surveillance with Power over Ethernet (PoE) switches to simplify the deployment of advanced technology and lower costs
- Isolates critical business services from guest traffic to improve network performance and enhance network security with VLANs
- Delivers predictable results for latency-sensitive applications such as voice or video over latency-insensitive traffic (such as bulk data transfers) with quality of service (QoS)
- Provides native support for IPv6, the newest version of the Internet Protocol, as well as for the previous IPv4 standard, to enable the migration to the next generation of networking applications and operating systems without an extensive equipment upgrade

Specifications

Category	Switch Model	SKU	Copper FE ports	Copper GigE ports	Combo mini-GBIC GigE ports*	PoE Support	PoE Ports @7.5 Watt	PoE ports @15.4 Watt
Gigabit Ethernet Switches with PoE	SG300-10P	SRW2008P-K9	-	8	2	62W	8	4
	SG300-10MP	SRW2008MP-K9	-	8	2	124W	8	8
	SG300-28P	SRW2024P-K9	-	26	2	180W	24	12
Gigabit Ethernet Switches without PoE	SG300-10	SRW2008-K9	-	8	2	-	-	-
	SG300-20	SRW2016-K9	-	18	2	-	-	-
	SG300-28	SRW2024-K9	-	26	2	-	-	-
	SG300-52	SRW2048-K9	-	50	2	-	-	-

Fast Ethernet Switches with PoE and GigE uplinks	SF302-08P	SRW208P-K9	8	0	2	62W	8	4
	SF302-08MP	SRW208MP-K9	8	0	2	124W	8	8
	SF300-24P	SRW224G4P-K9	24	2	2	180W	24	12
	SF300-48P	SRW248G4P-K9	48	2	2	375W	48	24
Fast Ethernet Switches without PoE and with GigE uplinks	SF302-08	SRW208G-K9	8	0	2	-	-	-
	SF300-24	SRW224G4-K9	24	2	2	-	-	-
	SF300-48	SRW248G4-K9	48	2	2	-	-	-
Fast Ethernet Switches without PoE and without GigE uplinks	SF300-08	SRW208-K9	8	0	0	-	-	-

Online model comparison chart: http://www.cisco.com/en/US/products/ps10898/prod_models_comparison.html

Selected Part Numbers and Ordering Information

SRW208P-K9	8-port GigE Switch with PoE + 2 combo mini-GBIC ports
SRW208MP-K9	8-port GigE Switch with maximum PoE + 2 combo mini-GBIC ports
SRW2024P-K9	26-port GigE Switch with PoE + 2 combo mini-GBIC ports
SRW2008-K9	8-port GigE Switch + 2 combo mini-GBIC ports
SRW2016-K9	18-port GigE Switch + 2 combo mini-GBIC ports
SRW2024-K9	26-port GigE Switch + 2 combo mini-GBIC ports
SRW2048-K9	50-port GigE Switch + 2 combo mini-GBIC ports
SRW208P-K9	8-port FE Switch with PoE + 2 combo mini-GBIC ports
SRW208MP-K9	8-port FE Switch with maximum PoE + 2 combo mini-GBIC ports
SRW224G4P-K9	24-port FE Switch with PoE + 2 GigE ports + 2 combo mini-GBIC ports
SRW248G4P-K9	48-port FE Switch with PoE + 2 GigE ports + 2 combo mini-GBIC ports
SRW208G-K9	8-port FE Switch + 2 combo mini-GBIC ports
SRW224G4-K9	24-port FE Switch + 2 GigE ports + 2 combo mini-GBIC ports
SRW248G4-K9	48-port FE Switch + 2 GigE ports + 2 combo mini-GBIC ports
SRW208-K9	8-port FE Switch

Each combo mini-GBIC port includes one 10/100/1000BaseT Ethernet port and 1 mini-GBIC Gigabit Ethernet port for fiber—with one port active at a time.

For More Information

www.cisco.com/go/smbswitches

Service Provider: Aggregation Switches

Cisco ME 3800X Series Carrier Ethernet Switch Router

The Cisco ME 3800X Series Carrier Ethernet Switch Router is a converged, full-featured aggregation platform designed specifically for the mobile, business, and residential markets. With low power consumption and high service scale, this 1-rack-unit (1RU) switch router is optimized for small aggregation and remote point-of-presence (POP) applications, making it a highly cost-effective option. The Cisco ME 3800X Series expands the Cisco Carrier Ethernet aggregation portfolio while complementing the Cisco 7600 Series Routers and Cisco ASR 9000 Series Aggregation Services Routers by providing a rich and scalable feature set of Layer 2 and Layer 3 VPN services in a compact package.



Ideal for Companies That Need These Features

- Cisco ME 3800X-24FS**
- 24 Gigabit Ethernet Small Form-Factor Pluggable (SFP) ports with two 10-Gigabit Ethernet SFP Plus (SFP+) uplinks
 - Modular AC and DC power supply
 - Small-footprint aggregation device

Main Features and Benefits

The Cisco ME 3800X Series helps service providers deliver advanced services for residential broadband, mobile, and Metro Ethernet applications. The highlights of this aggregation platform follow:

- Cisco Carrier Ethernet application-specific integrated circuit (ASIC): Powered by the Cisco Carrier Ethernet ASIC, designed specifically for the needs of service providers, the Cisco ME 3800X Series delivers essential Carrier Ethernet technologies including hierarchical quality of service (H-QoS), Multiprotocol Label Switching (MPLS), Virtual Private LAN Services (VPLS), and Hierarchical Virtual Private LAN Services (H-VPLS). The ASIC provides line-rate performance and enables advanced services including access control list (ACL) and H-QoS without affecting performance. This Carrier Ethernet ASIC incorporates innovative traffic-management capabilities while providing intelligent packet switching and routing operations.
- Service richness: With the Cisco ME 3800X Series, each service is assigned enhanced QoS and security attributes. The Cisco ME 3800X Series accomplishes advanced per-traffic-class metering and offers bidirectional packets and bytes statistics. The service offering is enhanced with rich operations, administration, and management (OAM) functions including Layer 2 Connectivity Fault Management (CFM), IP service-level agreement (IP SLA) for Layer 3, and MPLS OAM.
- Service scale: The Cisco ME 3800X Series delivers unmatched service scalability in a 1-rack-unit (1RU) footprint. With support for 256,000 MAC addresses and 8,000 bridge domains, this switch router delivers high performance and high scale for point-to-point and multipoint VPN services. A total buffer size of 256 MB is available to provide per-service advanced QoS capabilities. This amount of buffer is required when stringent applications such as financial or video must be protected against the effect of 10- to 1-Gbps speed mismatch. The quantity of statistical counters enables the Cisco ME 3800X Series to provide a high level of service metering and monitoring throughout its range of scale.
- High-performance hardware: The Cisco ME 3800X Series provides two slots for hot-swappable and redundant power supplies. Three fans are integrated into each power supply, providing fan redundancy. High availability is also achieved on the Cisco ME 3800X Series through proactive diagnostic tools including Generic Online Diagnostics (GOLD) and Onboard Failure Logging (OBFL). These tools help service providers avoid potential problems before they occur and troubleshoot and diagnose them after they are identified.
- Advanced SLAs: Service-aware QoS allows service providers to expand and differentiate their services portfolio with highly advanced and differentiating SLAs. The hierarchical QoS capabilities of the Cisco ME 3800X Series scale to eight queues per service, three levels of scheduling, and buffer volumes capable of accommodating today's most demanding wireline and wireless applications.
- Mobile timing and synchronization services: The Cisco ME 3800X Series provides the timing services required in today's converged access network to support mobile solutions, including Radio Access Network (RAN) applications, and offers integrated support for the Building Integrated Timing Supply (BITS) interface. The Cisco ME 3800X Series also supports synchronous Ethernet (SyncE) and can source network clocking information.

Specifications

Features	Cisco ME 3800X-24FS
Forwarding bandwidth (Gbps)	44 (full duplex)
Packets per second (Mpps)	65
MAC addresses supported	256,000
Routes supported	80,000
GE density	24
10GE density	2
AC/DC support	AC and DC modular and redundant
Dimensions (H x W x D)	1.72-in. x 17.50-in. x 20.33-in. (4.47cm x 44.45cm x 51.6cm)
Unit weight	14.50 lb (6.57 kg)

Selected Part Numbers and Ordering Information

Cisco ME 3800X Series Ethernet Access Switches	
ME-3800X-24FS-M	Cisco ME 3800X 24FS Switch Router
PWR-ME3KX-AC	AC power supply and fan module for ME-3800X-24FS-M
PWR-ME3KX-DC	DC power supply and fan module for ME-3800X-24FS-M
ME-FANTRAY	Fan tray module for ME-3800X-24FS-M. The fan tray is required in the second slot when only one power supply is in the system.

Cisco ME 3800X Series License Options

METROETHERNETSERVICES	Layer 2 feature license targeted for Layer 2 aggregation <ul style="list-style-type: none">• Enhanced QoS, with deep buffers and Hierarchical QoS• Layer 2 features for L2 VPN including EVC framework• Ethernet OAM• Synchronous Ethernet and SynchE ESMC support
METROIPSERVICES	Layer 3 feature license targeted for Layer 3 aggregation <ul style="list-style-type: none">• IPv6 and IPv4 routing (OSPF, ISIS, EIGRP/BGP)• Layer 3 multicast PIM SM and SSM• Bidirectional Forwarding Detection (BFD)• Multi-VRP CE (VRP lite) with service awareness (ARP, ping, SNMP, syslog, traceroute, FTP, TFTP)
METROAGGREGATIONSERVICES	MPLS feature license targeted for MPLS aggregation <ul style="list-style-type: none">• MPLS label imposition/disposition• MPLS Traffic Engineering (TE) and Fast Reroute (FRR)• Ethernet over MPLS (EoMPLS)• H-VPLS• VPLS• MPLS VPN• MPLS OAM
SERVICESCALABILITY	• Enables full scalability for Layer 2, IP routing, and MPLS resources

Cisco ME 3800X SFP and SFP+ Options

SFP	GLC-FE-100FX, GLC-FE-100EX, GLC-FE-100ZX, GLC-FE-100LX, GLC-FE-100BX-U, GLC-FE-100BX-D, GLC-LH-SM, GLC-SX-MM, GLC-ZX-SM, GLC-T, CWDM-SFP-1470, CWDM-SFP-1490, CWDM-SFP-1510, CWDM-SFP-1530, CWDM-SFP-1550, CWDM-SFP-1570, CWDM-SFP-1590, CWDM-SFP-1610, GLC-EX-SMD, GLC-BX-U, GLC-BX-D, SFP-GE-L, SFP-GE-S, SFP-GE-T, DWDM-SFP-xx, CAB-SFP-50CM
SFP+	SFP-10G-SR, SFP-10G-LR, SFP-10G-ER, SFP-10G-ZR, SFP-10G-LRM, SFP-H10GB-CUxM

For More Information

<http://www.cisco.com/en/US/products/ps10965/index.html>

Service Provider: Ethernet Access Switches

Cisco ME 3600X Series Ethernet Switches

The Cisco ME 3600X Series Ethernet Access Switches represent Cisco's first series of switches built specifically for the convergence of wireless and wireline services. A natural evolution to the Cisco Carrier Ethernet portfolio, the Cisco ME 3600X Series extends the transport speed of the portfolio to 10 Gbps in the access layer for business and mobile applications. It also enables service providers to initiate Multiprotocol Label Switching (MPLS)-based VPN services from within the access layer. Designed around critical Carrier Ethernet features that simplify network operation, the Cisco ME 3600X Series enables premium services with enhanced service-level agreement (SLA) capabilities. An optional "pay-as-you-grow" feature and service activation model gives service providers a flexible, cost-effective solution.



Ideal for Companies that Need These Features

Cisco ME 3600X-24TS • Twenty-four 10/100/1000 ports with two 10 Gigabit Ethernet Small Form-Factor Pluggable Plus (SFP+) uplinks
• Modular AC and DC power supply
• Multiprotocol Label Switching (MPLS) and 10 Gigabit Ethernet in 1RU platform

Cisco ME 3600X-24FS • 24 Gigabit Ethernet SFP ports with two 10-Gigabit Ethernet SFP+ uplinks
• Modular AC and DC power supply
• MPLS and 10 Gigabit Ethernet in 1-rack-unit (1RU) platform

Main Features and Benefits

- Cisco Carrier Ethernet ASIC: Powered by the Cisco Carrier Ethernet application-specific integrated circuit (ASIC)—designed specifically with service providers in mind—the Cisco ME 3600X Series delivers essential Carrier Ethernet technologies, including hierarchical quality of service (H-QoS), Multiprotocol Label Switching (MPLS), Virtual Private LAN Service (VPLS), and hierarchical VPLS (H-VPLS). This custom and advanced ASIC design provides uninterrupted line-rate performance while delivering complex and taxing services such as access control list (ACL) and H-QoS. The Carrier Ethernet ASIC integrates Cisco traffic-management innovation to deliver intelligent packet switching and routing operations.
- MPLS in the access layer: The Cisco ME 3600X Series extends MPLS into the access layer by enabling service providers to initiate MPLS-based Layer 2 and Layer 3 VPN services from within the access layer. The Cisco ME 3600X Series gives service providers the ability to expand MPLS toward their network edge to gain the advantages of a single unified MPLS control plane across their network.
- “Pay-as-you-grow” investment model: The use of licensing to activate features on the Cisco ME 3600X Series allows service providers to customize and schedule their investment in access features for a time when network growth and customer demand justify the investment. Unlike investments in the core and edge, where the physical location of network assets has minimal effect on their accessibility and usage, the return on investment (ROI) on an access element is heavily influenced by its location in the network and proximity to customers. The ability to deploy the Cisco ME 3600X Series and later activate features as demand and growth dictate, with little if any need for service calls, delivers highly measurable investment protection, allowing for flexible timing for migrating from 1 Gbps to 10 Gbps, deploying MPLS services, and boosting service capacity.
- Advanced service-level agreements: Service-aware QoS allows service providers to expand and differentiate their services portfolios with highly advanced and differentiating service-level agreements (SLAs). The H-QoS capabilities of the Cisco ME 3600X Series scale to eight queues per service, three levels of scheduling, and buffer volumes capable of accommodating today’s most demanding wireline and wireless applications.
- Mobile timing and synchronization services: The Cisco ME 3600X Series provides the timing services required in today’s converged access network to support mobile solutions, including Radio Access Network (RAN) applications, and offers integrated support for the Building Integrated Timing Supply (BITS) interface. The Cisco ME 3600X Series also supports synchronous Ethernet (SyncE) and can source network clocking information.
- Operational efficiency for Carrier Ethernet access deployments: The Cisco ME 3600X Series features important enhancements that help service providers simplify and facilitate the management of their network, resulting in diminishing operational costs. This unique feature set enables deployment of the Cisco ME 3600X Series in a variety of applications, including business service with a 10-Gigabit Ethernet User Network Interface (UNI) and Ethernet mobile backhaul. These features enhance performance awareness, facilitate troubleshooting, and simplify service turn-up and restoration, ultimately reducing operational cost. “Dying gasp” for power indicators and four external alarm inputs to detect changes in remote sites further help service providers manage the health of network elements.

Specifications

Feature	Cisco ME 3600X-24TS	Cisco ME 3600X-24FS
Forwarding bandwidth (Gbps)	44 (full duplex)	44
Packets per second (Mpps)	65	65
MAC addresses supported	16,000	16,000
Routes supported	20,000	20,000
GE density	24	24
10GE density	2	2
AC/DC support	AC and DC modular and redundant	AC and DC modular and redundant
Dimensions (H x W x D)	1.72-in. x 17.50-in. x 20.33-in. (4.47cm x 44.45cm x 51.6cm)	1.72-in. x 17.50-in. x 20.33-in. (4.47cm x 44.45cm x 51.6cm)
Unit weight	14.15 lb (6.41 kg)	14.50 lb (6.57 kg)

Selected Part Numbers and Ordering Information

Cisco ME 3600X Series Ethernet Access Switches	
ME-3600X-24TS-M	Cisco ME 3600X 24TS Switch
ME-3600X-24FS-M	Cisco ME 3600X 24FS Switch
PWR-ME3KX-AC	AC power supply and fan module for ME-3600X-24TS-M and ME-3600X-24FS-M
PWR-ME3KX-DC	DC power supply and fan module for ME-3600X-24TS-M and ME-3600X-24FS-M
ME-FANTRAY	Fan tray module for ME-3600X-24TS-M and ME-3600X-24FS-M. The fan tray is required in the second slot when only one power supply is in the system.

Cisco ME 3600X Series license Options

METROIPACCESS	<ul style="list-style-type: none">• Layer 2 and Layer 3 feature license targeted for Layer 2 and Layer 3 premium Services• Enhanced QoS, with deep buffers and Hierarchical QoS• Ethernet OAM, IP-SLA• Layer 2 features for L2 VPN including EVC framework• Layer 3 features for advanced IP routing protocols including IP Routing protocols like RIPv1/v2, EIGRP, OSFP, BGPv4, HSRP, VRRP• Layer 3 IPv4 and v6 Unicast Routing• Secured Layer 3: Multi-VRF CE• Timing: SynchE and ESMC
ADVANCEDMETROIPACCESS	<ul style="list-style-type: none">• MPLS features license targeted for MPLS deployment in the access and MPLS based VPN Services• MPLS label imposition / Disposition on all ports• MPLS Traffic engineering and Fast Reroute• Ethernet over MPLS (EoMPLS)• VPLS• H-VPLS• MPLS VPN• MPLS OAM
10GEUPGRADE	The 10GE Upgrade license allows service providers to enable 10 Gigabit Ethernet on the uplink only when required, supporting a pay-as-you-grow strategy.

Cisco ME 3600X SFP and SFP+ Options

SFP	GLC-FE-100FX, GLC-FE-100EX, GLC-FE-100ZX, GLC-FE-100LX, GLC-FE-100BX-U, GLC-FE-100BX-D, GLC-LH-SM, GLC-SX-MM, GLC-ZX-SM, GLC-T, CWDM-SFP-1470, CWDM-SFP-1490, CWDM-SFP-1510, CWDM-SFP-1530, CWDM-SFP-1550, CWDM-SFP-1570, CWDM-SFP-1590, CWDM-SFP-1610, GLC-EX-SMD, GLC-BX-U, GLC-BX-D, SFP-GE-L, SFP-GE-S, SFP-GE-T, DWDM-SFP-xx, CAB-SFP-50CM
SFP+	SFP-10G-SR, SFP-10G-LR, SFP-10G-ER, SFP-10G-ZR, SFP-10G-LRM, SFP-H10GB-CUXM

For More Information

<http://www.cisco.com/en/US/products/ps10956/index.html>

Cisco ME 3400 Series Ethernet Access Switches

The Cisco ME 3400 Series Ethernet Access Switches are a series of next-generation Layer 2 and Layer 3 customer-located devices for service providers. Both software and hardware are built to meet the requirements for residential and business Ethernet access services.



Ideal for Companies That Need These Features

- Cisco ME-3400-24TS**
 - Twenty-four 10/100 ports with two Small Form-Factor Pluggable (SFP) uplinks
 - AC and DC versions
 - Business and residential access
- Cisco ME-3400-24FS**
 - Twenty-four 100-MB SFP ports with two SFP uplinks
 - AC version only
 - Fiber-to-the-home (FTTH) application
- Cisco ME-3400G-2CS**
 - Two dual-purpose (10/100/1000 and SFP) ports with two SFP uplinks
 - AC version only
 - Single-tenant unit access
- Cisco ME-3400G-12CS**
 - Twelve dual-purpose (10/100/1000 and SFP) ports with 4 SFP uplinks
 - Redundant AC and DC versions
 - Gigabit access
 - Small Layer 2 aggregation

Main Features and Benefits

Service provider-friendly hardware:

- **Small form factor:** The Cisco ME 3400 Series Switches are designed with a compact form factor to accommodate deployment in small spaces. Combined with various mounting options, the switches can be deployed in space-constrained places.
- **Industry-standard certifications:** The Cisco ME 3400 Series is certified for both Network Equipment Buildings Standards Level 3 (NEBS3) and ETSI standards.

Metro-specific software:

- User-Network Interface (UNI), Enhanced Network Interface (ENI), and Network-Node Interface (NNI) port types: The Cisco ME 3400 Series software introduces the concepts of UNI, ENI, and NNI for Ethernet access switches. Because the software can identify the application of each port, it can provide many powerful default behaviors, thereby simplifying deployment, troubleshooting, and provisioning of the Cisco ME 3400 Series.
- Quality of service (QoS): The Cisco ME 3400 Series supports the Cisco Modular QoS CLI (MQC) to provide a modular and highly extensible framework for deploying QoS. By using an application-specific integrated circuit (ASIC)-based QoS solution, the Cisco ME 3400 Series provides policing, marking, shaping, and scheduling without affecting performance.
- Comprehensive security solution: As Metro Ethernet networks expand, it is a challenge to provide the same level of security as other access technologies. Cisco ME 3400 Series Switches provide a comprehensive security solution for Ethernet access networks by addressing their security features with respect to each of three areas: subscriber, switch, and network security.
- Ethernet operations, administration, and maintenance (Ethernet OAM): The Cisco ME 3400 Series supports industry-standard OAM and provisioning (OAM&P) tools including IEEE 802.1ag Connectivity Fault Management (CFM) and the Ethernet Local Management Interface (E-LMI) protocols. IEEE 802.1ag allows operators to monitor and troubleshoot end-to-end Ethernet networks and allows service providers to check connectivity, isolate network problems, and identify customers affected by them. The E-LMI protocol, developed by the Metro Ethernet Forum (MEF), enables service providers to automatically configure the customer-edge device to match the subscribed service. This automatic provisioning reduces not only the effort to set up the service, but also the amount of coordination required between the service provider and enterprise customer. In addition, the Cisco ME 3400 Series supports the IEEE 802.3ah Ethernet-in-the-First-Mile (EFM) standard for service providers to perform link monitoring, fault isolation and detection, and loopback on the link between the customer equipment and the service provider network.

Specifications

Feature	Cisco ME 3400-24TS	Cisco ME 3400-24FS	Cisco ME 3400G-2CS	Cisco ME 3400G-12CS
Forwarding bandwidth (Gbps)	8.8	8.8	8.8	32
Packets per second (Mpps)	6.5	6.5	6.5	26
MAC addresses supported	8,000	8,000	8,000	8,000
Routes supported	5,000	5,000	5,000	5,000
GE density	2	2	4	16
FE density	24	24	0	0
AC/DC support	AC and DC	AC power	AC	Redundant AC and DC
Dimensions (H x W x D)	1.73 x 175 x 9.52 in. (4.4 x 44.5 x 24.2 cm)	1.73 x 175 x 9.52 in. (4.4 x 44.5 x 24.2 cm)	1.73 x 10.6 x 71 in. (4.4 x 26.9 x 18.2 cm)	1.73 x 175 x 11.0 in. (4.4 x 44.5 x 27.9 cm)
Unit weight	6.9 lb (2.9 kg)	75 lb (2.9 kg)	3.5 lb (1.6 kg)	AC: 9.3 lb (4.2 kg); DC: 9.0 lb (4.1 kg)

Online model comparison chart: http://www.cisco.com/en/US/products/ps6580/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Cisco ME 3400 Series Ethernet Access Switches	
ME-3400-24TS-A	Cisco ME 3400 24 10/100 +2 SFP, AC PS
ME-3400-24TS-D	Cisco ME 3400 24 10/100 +2 SFP, DC PS
ME-3400-24FS-A	Cisco ME 3400 24 100mb SFP +2 SFP, AC PS
ME-3400G-2CS-A	Cisco ME 3400 2 dual-purpose +2 SFP, AC PS
ME-3400G-12CS-A	Cisco ME 3400 12 dual-purpose +4 SFP, redundant AC PS
ME-3400G-12CS-D	Cisco ME 3400 12 dual-purpose +4 SFP, redundant DC PS
Cisco ME 3400 Series Software Options	
METROBASE	<ul style="list-style-type: none"> • Standard Layer 2 feature image targeted for triple play services • Advanced QoS—Ingress policing, egress shaping • Robust multicast—IGMP filtering/throttling, MVR • Complete security—UNI/NNI, Control Plane Security, Configuration File Security
METROACCESS	<ul style="list-style-type: none"> • Enhanced Layer 2 feature images targeted for premium triple player services and Layer 2 VPN services • Advanced L2 tunneling—802.1q Tunneling, Layer 2 Protocol Tunneling • Enhanced scalability—Configurable Per VLAN MAC Learning • Fast convergence—Flex Link

METROIPACCESS	<ul style="list-style-type: none"> • Layer 3 feature images targeted for Layer 3 VPN services • IP routing (RIPv1/v2, EIGRP, OSPF, BGPv4) • Secured Layer 3—Multi-VRF CE • Enhanced routing—Policy-based routing (PBR)
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For More Information

<http://www.cisco.com/en/US/products/ps6580/>

Cisco ME 3400E Series Ethernet Access Switches

The Cisco ME 3400E Series Ethernet Access Switches are a series of next-generation Layer 2 and Layer 3 customer-located devices for service providers. The Cisco ME 3400E Series helps service providers deliver four important attributes that are essential to next-generation Carrier Ethernet service: availability, flexibility, manageability, and security.



Ideal for Companies that Need These Features

- | | |
|-------------------------------------|--|
| <p>Cisco ME 3400E-24TS-M</p> | <ul style="list-style-type: none"> • Twenty-four 10/100 ports with two dual-purpose (10/100/1000 and Small Form-Factor Pluggable [SFP]) uplinks • Two modular power-supply slots: AC and DC power supplies • Business and residential access |
| <p>Cisco ME 3400EG-2CS</p> | <ul style="list-style-type: none"> • Two dual-purpose (10/100/1000 and SFP) ports with two SFP uplinks • AC version only • Single-tenant unit access |
| <p>Cisco ME 3400EG-12CS</p> | <ul style="list-style-type: none"> • Twelve dual-purpose (10/100/1000 and SFP) ports with four SFP uplinks • Two modular power-supply slots: AC and DC power supplies • Gigabit access • Small Layer 2 aggregation and mobile preaggregation |

Main Features and Benefits

Service provider-friendly hardware:

- **Small form factor:** The Cisco ME 3400E Series is designed with a compact form factor to accommodate deployment in small spaces. Combined with various mounting options, these switches can be deployed in space-constrained places.
- **Industry-standard certifications:** The Cisco ME 3400E Series is certified for both Network Equipment Buildings Standards Level 3 (NEBS3) and ETSI standards.
- **Flexible power options:** The Cisco ME 3400E Series supports modular power options. Both the 24- and 12-port models (ME-3400E-24TS-M and ME-3400EG-12CS-M, respectively) support dual AC, dual DC, and a mix of AC and DC power-supply configurations. In addition, the Cisco ME 3400E Series DC power supply supports 24-VDC options needed for cell-tower deployments.
- **Remote management:** To help service providers reduce operating expenses (OpEx), the Cisco ME 3400E Series supports features such as dying gasp for loss of power, external alarm inputs, and port or VLANB-based traffic loopback. These features help reduce the necessity for expensive upgrades to the equipment site by enabling remote troubleshooting and diagnostics.
- **Extended temperature range:** The Cisco ME 3400E Series can operate at up to 65°C (149°F), depending on model type and configuration.

Metro-specific software:

- **User-Network Interface (UNI), Enhanced Network Interface (ENI), and Network-Node Interface (NNI) port types:** The Cisco ME 3400E Series software introduces the concepts of UNI, ENI, and NNI for Ethernet access switches. Because the software can identify the application of each port, it can provide many powerful default behaviors, thereby simplifying deployment, troubleshooting, and provisioning of the Cisco ME 3400E Series.
- **VLAN flexibility:** The Cisco ME 3400E Series offers 1:1 VLAN translation and selective QinQ. These features allow service providers to expand their Layer 2 service offerings, and they provide robust control of VLAN tags for both customers and service providers.
- **Quality of service (QoS):** The Cisco ME 3400E Series supports the Cisco Modular QoS CLI (MQC) to provide a modular and highly extensible framework for deploying QoS. By using an application-specific integrated circuit (ASIC)-based QoS solution, the Cisco ME 3400E Series provides policing, marking, shaping, and scheduling without affecting performance. In addition, the Cisco ME 3400E Series also supports advanced QoS features such as two-rate three-color ingress policing and class-of-service (CoS) mapping. These features enable service providers to offer more granular services.

- Comprehensive security solution: As Metro Ethernet networks expand, it is a challenge to provide the same level of security as other access technologies. Cisco ME 3400E Series Switches provide a comprehensive security solution for Ethernet access networks by addressing their security features with respect to each of three areas: subscriber, switch, and network security.
- Ethernet operations, administration, and maintenance (Ethernet OAM): The Cisco ME 3400 Series supports industry-standard OAM and provisioning (OAM&P) tools including IEEE 802.1ag Connectivity Fault Management (CFM) and the Ethernet Local Management Interface (E-LMI) protocols. IEEE 802.1ag allows operators to monitor and troubleshoot end-to-end Ethernet networks and allows service providers to check connectivity, isolate network problems, and identify customers affected by them. The E-LMI protocol, developed by the Metro Ethernet Forum (MEF), enables service providers to automatically configure the customer-edge device to match the subscribed service. This automatic provisioning reduces not only the effort to set up the service, but also the amount of coordination required between the service provider and enterprise customer. In addition, the Cisco ME 3400 Series supports the IEEE 802.3ah Ethernet-in-the-First-Mile standard for service providers to perform link monitoring, fault isolation and detection, and loopback on the link between the customer equipment and the service provider network.

Specifications

Feature	Cisco ME 3400E-24TS	Cisco ME 3400EG-2CS	Cisco ME 3400EG-12CS
Forwarding bandwidth (Gbps)	8.8	8.8	32
Packets per second (Mpps)	6.5	6.5	26
MAC addresses supported	8,000	8,000	8,000
Routes supported	5,000	5,000	5,000
GE density	2	4	16
FE density	24	0	0
AC/DC support	Redundant AC and DC	AC	Redundant AC and DC
Dimensions (H x W x D)	1.75 x 17.5 x 9.3 in. (4.45 x 44.5 x 23.6 cm)	1.73 x 10.6 x 7.2 in. (4.4 x 26.9 x 18.3 cm)	1.75 x 17.5 x 12.0 in. (4.45 x 44.5 x 30.5 cm)
Unit weight	6.4 lb (2.9 kg)	3.4 lb (1.5 kg)	8.5 lb (3.9 kg)

Online model comparison chart: http://www.cisco.com/en/US/products/en/US/products/ps9637/prod_models_comparison.html

Selected Part Numbers and Ordering Information

Cisco ME 3400E Series Ethernet Access Switches	
ME-3400E-24TS-M	Cisco ME-3400E 24 10/100 +2 dual-purpose, 2 PS slots
ME-3400EG-2CS-A	Cisco ME-3400E 2 dual-purpose +2 SFP, AC PS
ME-3400EG-12CS-M	Cisco ME-3400E 12 dual-purpose +4 SFP, 2 PS slots
ME34X-PWR-AC	AC power supply
ME34X-PWR-DC	DC power supply
Cisco ME-3400E Series Software Options	
METROACCESS	<ul style="list-style-type: none"> • Enhanced Layer 2 feature images targeted for premium triple player services and Layer 2 VPN services • Advanced L2 tunneling—802.1q Tunneling, Layer 2 Protocol Tunneling • Enhanced scalability—Configurable Per VLAN MAC Learning • Fast convergence—Flex Link
METROIPACCESS	<ul style="list-style-type: none"> • Layer 3 feature images targeted for Layer 3 VPN services • IP routing (RIPv1/v2, EIGRP, OSPF, BGPv4) • Secured Layer 3—Multi-VRF CE • Enhanced routing—Policy based routing (PBR)

For More Information

<http://www.cisco.com/en/US/products/ps9637/index.html>

Cisco Catalyst 3750 Metro Series Switches

The Cisco Catalyst 3750 Metro Series switches are a new line of premier multilayer switches that bring greater intelligence to the Metro Ethernet edge, enabling the delivery of more differentiated Metro Ethernet services. Featuring hierarchical quality of service (H-QoS) and traffic shaping, intelligent 802.1Q tunneling, VLAN mapping, Multiprotocol Label Switching (MPLS) and Ethernet over MPLS (EoMPLS) support, and redundant AC or DC power, these switches are ideal for service providers seeking to deliver profitable business services, such as Layer 2, Layer 3, and MPLS VPNs, in a variety of bandwidths and with different service-level agreements (SLAs). With flexible software options, the Cisco Catalyst 3750 Metro Series offers a cost-effective path for meeting current and future service requirements from service providers serving enterprises and commercial businesses.



With service provider-friendly hardware and mission-specific software, the Cisco Catalyst 3750 Metro Series is the first access switch optimized for both the Ethernet-to-the-home (ETTH) triple-play services and Ethernet-to-the-business (ETTB) VPN services. It provides the most complete security solution for Metro Ethernet access that covers subscriber, switch, and network protection. The Cisco Catalyst 3750 Metro Series supports multiple software images to provide a “pay-as-you-grow” deployment model. With service breadth spanning triple-play and Layer 2 and Layer 3 VPN services, reduced total cost of ownership (TCO) and operating expenses (OpEx) can be achieved from a single ETTH and ETTB access solution.

The switches feature bidirectional hierarchical quality of service (H-QoS) and traffic shaping, intelligent 802.1Q tunneling, VLAN translation, Multiprotocol Label Switching (MPLS), Ethernet over MPLS (EoMPLS), and Hierarchical Virtual Private LAN Service (H-VPLS) support and redundant AC or DC power. They are ideal for service providers seeking to deliver profitable business services, such as Layer 2, Layer 3, and MPLS VPNs, in several bandwidths and with different service-level agreements (SLAs). With flexible software options, the Cisco Catalyst 3750 Metro Series offers providers a cost-effective path for meeting current and future service requirements from enterprises and commercial businesses.

Main Features and Benefits

Purpose-Built Next-Generation Ethernet Access Switches for Metro Ethernet Market

- Compact form factor (17.5 x 14.75 in. x 1 rack unit [1RU]) allows for deployment in space-limited areas.
- Redundant AC, redundant DC, or mixed AC/DC is available.
- Software is optimized for Metro Ethernet access.
- Three software feature images enable support for breadth of services.
- Software upgrade options allow service providers to purchase only the features needed today while retaining the option to obtain other features through simple software upgrades.
- Upgrade options reduce service providers' operating expenses (OpEx) by lowering the supporting cost for different products and also reducing the number of different products needed for sparring.
- The IP Base software feature image is designed for Layer 2 switching and advanced quality of service (QoS).
- The IP Services software feature image is designed for advanced IP routing.
- The Advanced IP Services software feature image is designed for Multiprotocol Label Switching (MPLS) VPN services.

Service Breadth

Triple-Play Services

- Advanced QoS functions provide differentiated class-of-service (CoS) treatment to support triple-play service.
- Multicast VLAN Registration (MVR) reduces overall bandwidth requirement for multicast distribution in ring-based networks.
- This comprehensive security solution provides protection of subscribers, switch, and network at the network edge.
- Source Specific Multicast (SSM) reduces the need for IP Multicast address management and prevents denial-of-service (DoS) attacks against receivers.
- SSM mapping provides a mapping of source to group, which allows listeners to find and connect to multicast sources dynamically, reducing dependencies on the application.

Intelligent Ethernet Demarcation

- The industry-standard operations, administration, maintenance, and provisioning (OAM&P) 802.1ag (Connectivity Fault Management [CFM]) feature supports end-to-end network monitoring and troubleshooting. It greatly reduces OpEx for service providers by reducing the numbers of site visits needed to troubleshoot network problems.
- The Ethernet Local Management Interface (E-LMI) protocol enables the service provider to automatically configure the customer-edge and customer-premises-equipment (CPE) devices to match the subscribed service.

Layer 2 VPN Service

- Standard 802.1Q Tunneling creates a hierarchy of 802.1Q tags. This feature helps service providers use a single VLAN to support customers who have multiple VLANs, while preserving customer VLAN IDs and segregating traffic from different customers within the service provider infrastructure even when they appear to be on the same VLAN.
- Selective QinQ gives service providers more flexibility in segregating customer traffic in the network.
- Layer 2 Protocol Tunneling (L2PT) allows for transport of the customers' control protocols, thereby allowing for a true virtual-circuit service across service providers' shared infrastructure.

Layer 3 VPN Service

- Multi-Virtual Route Forwarding customer edge (Multi-VRF CE) (VRF-lite) forms virtual packet-forwarding tables by associating one or more Layer 3 interfaces with each VRF, allowing the creation of multiple Layer 3 VPNs on a single Cisco Catalyst 3750 Metro Series Switch. Interfaces in a VRF could be either physical, as in an Ethernet port, or logical, as in a VLAN switched virtual interface (SVI), requiring the METROIPACCESS Cisco IOS Software feature image.
- IP Multicast support in Multi-VRF CE allows customers to migrate to Multi-VRF CE without affecting applications and services that depend on IP Multicast.
- VRF-aware services (Address Resolution Protocol [ARP], Ping, Simple Network Management Protocol [SNMP], Hot Standby Router Protocol [HSRP], Unicast Reverse Path Forwarding [URPF], Syslog, Traceroute, FTP, and Trivial File Transfer Protocol [TFTP]).
- Support for multiple IP routing protocols (Routing Information Protocol Versions 1 and 2 [RIPv1 and v2], Enhanced IGRP [EIGRP], Open Shortest Path First [OSPF], Intermediate System-to-Intermediate System [IS-IS], and Border Gateway Protocol Version 4 [BGPv4]) offers flexible options for peering between end customers and service providers.

Availability and Scalability

Superior Redundancy for Fault Backup

- IEEE 802.1w Rapid Spanning Tree Protocol (RSTP) provides rapid spanning-tree convergence independent of spanning-tree timers and offers the benefit of distributed processing.
- Per-VLAN Rapid Spanning Tree (PVRST+) allows rapid spanning-tree reconvergence on a per-VLAN spanning-tree basis, without requiring the implementation of spanning-tree instances.
- Cisco Hot Standby Router Protocol (HSRP) is supported to create redundant, fail-safe routing topologies.
- Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD allow unidirectional links caused by incorrect fiber-optic connections or port faults to be detected and disabled on fiber-optic interfaces.
- Flex Link provides fast failover of ports without overhead of control protocols such as the Spanning Tree Protocol.
- VLAN Flex Link Load Balancing provides high availability and load balancing based on VLAN.
- Switch-port autorecovery (errdisable) automatically attempts to reactivate a link that is disabled because of a network error.
- Equal-cost routing provides for load balancing and redundancy.
- Bandwidth aggregation up to 800 Mbps through Cisco Fast EtherChannel technology enhances fault tolerance and offers higher-speed aggregated bandwidth between switches and to routers and individual servers.
- Accelerate Layer 3 reconvergence through the use of Link-State Tracking by taking down associated downstream ports when all the corresponding upstream ports are down. Customer switches that are connected to the downstream ports can then take the appropriate failover action.
- Resilient Ethernet Protocol (REP) provides fast Layer 2 reconvergence in a ring network and offers an alternative to Spanning Tree Protocol.
- Pseudowire redundancy enables service providers to configure their MPLS network to detect a failure in the network and reroute Layer 2 service to another endpoint that can continue to provide service.

High-Performance IP Routing

- MPLS Traffic Engineering (TE) Fast Reroute (FRR) guarantees fast recovery after a link or node failure. FRR protects MPLS networks from link and node failures by locally repairing the label switched path (LSP) at the point of failure, rerouting all LSP traffic crossing a failed link over backup tunnels that bypass the failed link or node.
- Cisco Express Forwarding hardware routing architecture delivers extremely high-performance IP routing.
- Basic IP Unicast routing protocols (static and RIP Versions 1 and 2) are supported for small-network routing applications.
- Advanced IP Unicast routing protocols (OSPF, EIGRP, IS-IS, and BGPv4) are supported for load balancing and constructing scalable LANs.
- IPv6 improves the scalability of IP networks by supporting the growing number of users, applications, and services. The functions supported include access control lists (ACLs), Dynamic Host Configuration Protocol (DHCP), routing (Unicast routing, RIP, OSPFv3, and static routes), Multicast Listener Discovery (MLD) snooping, stateless autoconfig, default router preference, HTTP, and Secure HTTP (HTTPS).
- HSRP provides dynamic load balancing and failover for routed links; up to 32 HSRP links are supported per unit.

- Inter-VLAN IP routing provides for full Layer 3 routing between two or more VLANs.
- Bidirectional Forwarding Detection (BFD) allows rapid detection of path and system failures by using a fast hello mechanism. BFD can provide failure detection on any kind of path between systems. Routing protocols supported include OSPF, IS-IS, BGP, HSRP, and EIGRP.
- Protocol Independent Multicast (PIM) for IP Multicast routing is supported, including PIM sparse mode (PIM-SM), PIM dense mode (PIM-DM), and PIM sparse-dense mode. The Cisco IOS Software IP Services image is required.
- Cisco recommends 128 SVIs. A maximum of 1000 are supported (depending on the number of routes and multicast entries).

Multicast

Efficient Multicast Distribution

- Multicast VLAN Registration provides efficient multicast distribution in ring networks by dedicating a single VLAN for multicast traffic, thereby removing duplicate multicast traffic in other VLANs.
- PIM-SM provides efficient routing of multicast traffic by establishing distribution trees across WANs.
- Source Specific Multicast (SSM) reduces the need for IP Multicast address management and prevents DoS attacks against receivers.
- SSM mapping provides a mapping of source to group, which allows listeners to find and connect to multicast sources dynamically, reducing dependencies on the application.

Robust Multicast Control

- Internet Group Management Protocol (IGMP) Snooping enables intelligent management of multicast traffic by examining IGMP messages.
- Multicast Listener Discovery (MLD) snooping v1 and v2 enable efficient distribution of IPv6 Multicast data. With MLD snooping, IPv6 Multicast data is selectively forwarded to a list of ports that want to receive the data, instead of being flooded to all ports in a VLAN.
- IGMP Fast Leave provides a fast channel-changing capability for Internet Protocol Television (IPTV) services.
- IGMP Filtering provides control of groups each user can access.
- IGMP Throttling controls the maximum number of multicast groups each user can access.
- IGMP Proxy allows users anywhere on a downstream network to join an upstream sourced multicast group.

QoS and Control

Advanced QoS

- Standard 802.1p CoS and differentiated services code point (DSCP) field classification are provided, using marking and reclassification on a per-packet basis by source and destination IP address, source and destination MAC address, VLAN ID, or Layer 4 TCP/User Datagram Protocol (TCP/UDP) port number.
- Cisco control-plane and data-plane QoS ACLs on all ports help ensure proper marking on a per-packet basis.
- Shaped Round Robin (SRR) scheduling helps ensure differential prioritization of packet flows by intelligently servicing the queues.
- Weighted Tail Drop (WTD) provides per-QoS class congestion avoidance at the queues before a disruption occurs.
- Priority queue rate limiting provides optional protection against lower-priority queue starvation.
- The ES ports offer the following additional functions:
 - Hierarchical QoS (H-QoS) with traffic classification, policing, queuing, shaping, and scheduling at the class, VLAN, and interface levels
 - Traffic classification based on MPLS experimental (EXP) bits
 - 2 Rate 3 Color policing
 - Weighted Random Early Detection (WRED) for congestion avoidance
 - Class-Based Weighted Fair Queuing (CBWFQ) for bandwidth management
- Low-Latency Queuing provides strict-priority queuing for delay-sensitive data.
- Configurable control-plane queue assignment allows service providers to assign control-plane traffic to a specific egress queue.
- Prioritization of control-plane traffic enables service providers to set QoS markings globally for CPU-generated traffic so these protocol packets will receive priority in the network.
- There is no performance penalty for advanced QoS functions.

Advanced Traffic Control

- Upstream and downstream traffic flows from the end station or the uplink are easily managed using ingress policing and egress shaping.
- Ingress policing provides bandwidth monitoring in increments as low as 8 kbps.
- Ingress policing is provided based on CoS, VLAN ID, DSCP, and QoS ACLs (IP ACLs or MAC ACLs), which can include source and destination IP address, source and destination MAC address, Layer 4 TCP/UDP information, or any combination of these fields.

- Egress Weighted Fair Queuing (WFQ) guarantees the Committed Information Rate (CIR) between traffic flows and queues.
- Egress shaping for each queue provides smooth traffic control of available bandwidth.
- Egress port rate limiting allows the service provider to control the traffic rate that is transmitted out of the port.

Network Security

Subscriber Security

- IEEE 802.1x allows dynamic, port-based security by providing user authentication.
- IEEE 802.1x with VLAN assignment allows a dynamic VLAN assignment for a specific user regardless of where the user is connected.
- IEEE 802.1x and port security are provided to authenticate the port and manage network access for all MAC addresses.
- IEEE 802.1x readiness check simplifies deployment by generating a report for end hosts capable of 802.1x.
- An absence of local switching behavior provides security and isolation between User-Network Interfaces (UNIs), helping ensure that users cannot monitor or access other users' traffic on the same switch.
- DHCP Snooping prevents malicious users from spoofing a DHCP server and sending out bogus addresses. This feature also prevents numerous other attacks such as ARP poisoning.
- Dynamic ARP Inspection helps ensure user integrity by preventing malicious users from exploiting the insecure nature of the ARP protocol.
- IP Source Guard prevents a malicious user from spoofing or taking over another user's IP address by creating a binding table between a client's IP and MAC address, port, and VLAN.

Switch Security

- Control Plane Security prevents DoS attacks on the CPU.
- Secure Shell (SSH) Protocol, Kerberos, and SNMPv3 provide network security by encrypting administrator traffic during Telnet and SNMP sessions. SSH, Kerberos, and the cryptographic version of SNMPv3 require a special cryptographic software image because of U.S. export restrictions.
- Port security secures the access to an access or trunk port based on MAC address. After a specific timeframe, the aging feature removes the MAC address from the switch to allow another device to connect to the same port.
- Multilevel security on the console access prevents unauthorized users from altering the switch configuration.
- TACACS+ and RADIUS authentication facilitate centralized control of the switch and restrict unauthorized users from altering the configuration.
- Configuration File Security helps ensure that only authenticated users have access to the configuration file.
- Per-VLAN MAC address learning prevents MAC address table overflow attacks.

Network Security

- Cisco security VLAN ACLs on all VLANs prevent unauthorized data flows from being bridged within VLANs.
- Cisco standard and extended IP security router ACLs define security policies on routed interfaces for control-plane and data-plane traffic.
- Port-based ACLs for Layer 2 interfaces allow for application of security policies on individual switch ports.
- MAC address notification allows administrators to be notified of users added to or removed from the network.

Network Monitoring

- Remote Switched Port Analyzer (RSPAN) allows for remote monitoring of the user interface.
- Bidirectional data support on the Switched Port Analyzer (SPAN) port allows the Cisco Intrusion Detection System (IDS) to take action when an intruder is detected.

Manageability

- The Cisco IOS Software command-line interface (CLI) provides a common user interface and command set with all Cisco routers and Cisco Catalyst desktop switches.
- Service Assurance Agent (SAA) provides service-level management throughout the network.
- IEEE 802.1ag Connectivity Fault Management (CFM) provides standard support for transport fault management. It allows for discovery and verification of path for Layer 2 services.
- Ethernet Local Management Interface (E-LMI) enables auto configuration of customer premises equipment (CPE) by customer located equipment CLE to support Metro Ethernet services.
- IEEE 802.3ah Ethernet-in-the-First-Mile provides standard support for monitoring, remote failure indication, loopback, and OAM discovery on the link between the customer equipment and service provider network.

- ITU-T Y1731 introduces the support for fault management functions, including alarm indication signal (AIS), remote defect indication (RDI) and locked signal (LCK) to detect and signal a failure in the service path.
- Switching Database Manager templates for Layer 2 and Layer 3 deployment allow the administrator to easily optimize memory allocation to the desired features based on deployment-specific requirements.
- VLAN trunks can be created from any port, using standards-based 802.1Q tagging. Up to 1005 VLANs per switch and up to 128 spanning-tree instances per switch are supported.
- Four thousand VLAN IDs are supported.
- RSPAN allows administrators to remotely monitor ports in a Layer 2 switch network from any other switch in the same network.
- For enhanced traffic management, monitoring, and analysis, the embedded Remote Monitoring (RMON) software agent supports four RMON groups (history, statistics, alarms, and events).
- Layer 2 traceroute eases troubleshooting by identifying the physical path that a packet takes from source to destination.
- MPLS OAM allows service providers to quickly troubleshoot and monitor MPLS networks.
- All nine RMON groups are supported through a Switched Port Analyzer (SPAN) port, permitting traffic monitoring of a single port, a group of ports, or the entire stack from a single network analyzer or RMON probe.
- Domain Name System (DNS) provides IP address resolution with user-defined device names.
- TFTP reduces the cost of administering software upgrades by downloading from a centralized location.
- Network Timing Protocol (NTP) provides an accurate and consistent time stamp to all intranet switches.
- The Cisco Catalyst 3750 Metro Series supports the Cisco CNS 2100 Series Intelligence Engine and SNMP for networkwide management.
- Cisco IP Solution Center (ISC) applications help reduce overall administration and management costs by providing automated resource management and rapid profile-based provisioning capabilities.
- Configuration Rollback helps in error recovery by providing the capability to replace the current running configuration with any saved Cisco IOS Software configuration file.
- Embedded Event Manager (EEM) offers the ability to monitor events and take user-defined action when the monitored events occur or a threshold is reached.
- DHCP-based autoconfiguration and image update simplifies management of a large number of switches by automatically downloading a specified configuration and image.
- Service Diagnostics automates a set of network diagnostic procedures derived from the vast troubleshooting experiences of Cisco network experts. These diagnostic tools help customers increase network uptime, reduce time to repair, and improve service levels.
- Digital optical monitoring (DOM) support provides a service provider with the capability to perform in-service transceiver monitoring and troubleshooting operations.
- DOM threshold functions allow the monitoring of real-time optical parameters on DOM Small Form-Factor Pluggable (SFP) devices and the comparison against factory-reset values, generating alarm and warning thresholds.

CiscoWorks Support

- CiscoWorks network management software provides management capabilities on a per-port and per-switch basis, providing a common management interface for Cisco routers, switches, and hubs.
- SNMP versions 1, 2c, and 3 and Telnet provide comprehensive in-band management, and a CLI-based management console provides detailed out-of-band management.
- Cisco Discovery Protocol Versions 1 and 2 enable automatic switch discovery for a CiscoWorks network management station.
- The CiscoWorks 2000 LAN Management Solution is supported.

Selected Part Numbers and Ordering Information

Cisco Catalyst 3750 Metro Series Switches	
ME-C3750-24TE-M	<ul style="list-style-type: none"> • 24 Ethernet 10/100 ports • 2 SFP-based Gigabit Ethernet ports • 2 SFP-based Enhanced GE Service Ports • 855 mpps forwarding rate • Purpose-built Gigabit Ethernet access switch for the Metro Ethernet market • 3 Cisco IOS Software feature image options (IP BASE, IP SERVICES, and ADVANCED IP SERVICES)
ME3750-ADVIP-LIC=	Cisco Catalyst 3750 Metro Advanced IP Services Feature license
ME3750-IPSVC-LIC=	Cisco Catalyst 3750 Metro IP Services Feature license
ME3750-UPGRD-LIC=	Cisco Catalyst 3750 Metro IP Services to Advanced IP Upgrade license
PWR-ME3750-AC	Cisco Catalyst 3750 Metro Switch Primary AC power supply
PWR-ME3750-DC	Cisco Catalyst 3750 Metro Switch Primary DC power supply

For More Information

<http://www.cisco.com/en/US/products/hw/switches/ps5532/index.html>

Cisco Catalyst 4500E Series Ethernet Access Switches

The Cisco Catalyst 4500E Series Ethernet Access Switches with integrated resiliency and superior service intelligence are designed to deliver residential and business services for fiber-to-the-x (FTTx) deployments. These switches offer high-density Fast Ethernet and Gigabit Ethernet for both fiber and copper combined with mechanisms for per-subscriber traffic management, security, performance, quality of service (QoS), and flexible management. The Cisco Catalyst 4500E Series also offers nonblocking switching in Layers 2 through 4 with integrated resiliency, further enhancing control of triple-play (voice, video, and data metro services) and business services.



With the superior service intelligence of the Cisco Catalyst 4500E Series, network operators can adopt a flexible, service-oriented approach for delivering profitable and differentiated residential broadband and business services. Network operators can extend control and intelligence to large and small sites in the FTTx access network. The Cisco FTTx portfolio encompasses a variety of routing, switching, and optical products and a range of technologies, including In-Service Software Upgrade (ISSU), Connectivity Fault Management (CFM), and support for short and longer-distance optics.

The Cisco Catalyst 4500E Series Supervisor Engines 7-E and 6L-E are high-performance intelligent modular access switches for unified communications networks.

Ideal for Companies that Need These Features

Supervisor Engines

Cisco Catalyst 4500E Series Supervisor Engine 7-E

- Centralized 848 Gbps per system (up to 48 Gbps per slot)
- Cisco IOS XE Software services with future support for WireShark
- High-performance IPv6 in hardware
- Optimization for simultaneous IPv4 and IPv6 deployments or migration
- Support for classic and E-Series chassis
- Simultaneous support for classic and E-Series line cards in the same chassis
- Support for dynamic quality of service (QoS), security, and IPv6 resource optimization

Cisco Catalyst 4500E Series Supervisor Engine 6L-E

- High-performance Layer 2, 3, and 4 switching
- Centralized 280-Gbps switching capacity (225-mpps throughput)
- Advanced quality-of-service (QoS) support with up to eight queues per port, dynamic queue sizing, and hierarchical policing to provide flexibility and control
- Flexibility to operate at 6 or 24 Gbps per line-card slot
- Dual 10-Gigabit Ethernet uplinks (X2 optics)
- Support for line-rate forwarding for IPv6 packets
- Dynamic hardware forwarding table allocations for ease of IPv4-to-IPv6 migration

Chassis

Cisco Catalyst 4510R+E

- High performance, port density, high availability (In-Service Software Upgrade [ISSU]) through redundant supervisor engines (when these features are crucial to customer success)
- Port density up to 384 1000BASE-BX-D or 100BASE-BX-D ports
- Support for both classic and E-Series line cards
- Up to 848-Gbps nonblocking switching fabric with Supervisor Engine 7E, up to 225-Mpps forwarding rate using the Supervisor Engine 6L-E, or up to 48-Gbps per-slot bandwidth

Cisco Catalyst 4507R+E

- Network resiliency and high availability (ISSU) through redundant supervisor engines (when these features are crucial to customer success)
- Port density up to 400 1000BASE-2BX-D, or 240 1000BASE-BX-D or 100BASE-BX-D ports
- Support for both classic and E-Series line cards
- Up to 560-Gbps, 210-Mpps, or 48-Gbps per-slot bandwidth when used with the Supervisor Engine 7-E

Cisco Catalyst 4506-E

- Port density up to 400 1000BASE-2BX-D, or 240 1000BASE-BX-D or 100BASE-BX-D
- Support for both classic and E-Series line cards
- Support for up to 280-Gbps, 210-Mpps, or 24-Gbps per-slot bandwidth when used with the Supervisor Engine 6-E and Supervisor Engine 6L-E

Cisco Catalyst 4503-E

- Port density up to 160 1000BASE-2BX-D, or 96 1000BASE-BX-D or 100Base-BX-D
- Support for both classic and E-Series line cards
- Up to 136-Gbps, 102-Mpps, or 24-Gbps per-slot bandwidth when used with the Supervisor Engine 6-E and Supervisor Engine 6L-E

Main Features and Benefits

The Cisco Catalyst 4500E Series provides advanced, high-performance solutions for service-led fiber-to-the-x (FTTx) access networks:

- Performance: The low-latency, centralized, shared-memory switching-fabric architecture of the Cisco Catalyst 4500E Series delivers leading-edge, high-performance Layer 2 and Layer 3 capabilities.

Delivering advanced switching solutions that scale bandwidth as ports are added, the Cisco Catalyst 4500E Series is powered by leading-edge, application-specific integrated circuit (ASIC) technology that offers wire-speed Layer 2 and Layer 3 10/100 or gigabit switching. Offering modular supervisor-engine flexibility with complete line-card compatibility, Layer 2 switching can scale up to 320 Gbps or 250 Mpps.

- Scalability: The Cisco Catalyst 4500E Series meets network-subscriber connectivity requirements of up to 384 fiber Fast Ethernet or 400 Gigabit Ethernet ports in a chassis. The Cisco Catalyst 4500E Series supports density requirements for both business and residential service environments. These switches offer network operators who are building next-generation access networks flexibility in fiber options by supporting all types of fiber deployments (single and dual strands). With the support of the single strand of fiber, network operators can reduce the fiber requirement by 50 percent, providing significant savings in fiber, cable management, and other installation costs as well as long-term operating expenses.
- Redundancy: The Cisco Catalyst 4500E 7- and 10-slot chassis support 1 + 1 supervisor-engine redundancy for integrated resiliency. Redundant supervisor engines help ensure that network downtime is minimized. Minimal network downtime facilitates reduced operating expenses (OpEx) and increased customer satisfaction. The Cisco Catalyst 4500E Series supports redundant power supplies in all chassis types. The Cisco Catalyst 4500E running on Cisco IOS Software supports In-Service Software Upgrade (ISSU), enabling software, line-card upgrades without affecting service for subscribers.
- Service-oriented software services: The Cisco Catalyst 4500E Series provides a wide range of software services that allow service providers to deliver residential and business services based on subscriber requirements. Important features include:
 - Advanced security: Enabling security features such as Dynamic Host Configuration Protocol (DHCP) Snooping, access control lists (ACLs), Secure Shell (SSH) Protocol, Port Security, Control Plane Policing (CoPP), Dynamic ARP Inspection (DAI), IP Source Guard, and Private VLANs (PVLANS) on the Cisco Catalyst 4500E Series enhances control and flexibility in the network. By enabling these features selectively or collectively, a network administrator can prevent unauthorized access to the network, prevent hackers from disrupting services, and prevent a deliberate or accidental broadcast storm.
 - Video services: Protocol Independent Multicast (PIM), dense and sparse mode; Internet Group Management Protocol (IGMP); IGMP Snooping; proxy reporting; Multicast Listener Discovery (MLD) v1 and v2; and Cisco Group Management Protocol provide for efficient standards-based and Cisco product-enhanced broadcast video service deployment without compromising performance. Source Specific Multicast (SSM) and SSM Mapping (mapping IGMPv2 joins to Source Specific PIM joins) provide additional scale and control of multicast.
 - Cisco IOS Software network services: The Cisco Catalyst 4500E Series takes advantage of more than 15 years of development with large-scale deployments across the entire world, to provide mature Layer 2 and Layer 3 features that allow service providers to differentiate their services and meet service-level agreements (SLAs).
- Intelligent management capability: The Cisco Catalyst 4500E Series supports a variety of management options suited for managing service provider networks, such as Cisco IOS Embedded Event Manager (EEM), Cisco Generic Online Diagnostics (GOLD), Flexible NetFlow, and Smart Call Home. With EEM and GOLD, network operators can design scripts based on their specific requirements to troubleshoot the network. With Smart Call Home, the Cisco IOS Software on the Cisco Catalyst switch automatically detects problems in the network and automatically collects the required debug information and logs a trouble ticket. With Flexible NetFlow, statistics about the network can be captured in hardware for flow- and VLAN-based statistics monitoring. This data can be exported, collected, and analyzed for network traffic accounting, usage-based network billing, network planning, network monitoring, and data-mining capabilities.
- Investment protection: Evolutionary centralized modular architecture provides maximum backward compatibility across several generations of Cisco Catalyst 4500E Series Switches. Upgrading all system ports to higher-level functions and features is easy with a simple supervisor-engine upgrade.

For more information, please visit: <http://www.cisco.com/en/US/products/ps10195/index.html>.

Cisco Catalyst 4500E Series and Cisco Catalyst 4500 Switches extend the warranty from the previously offered 90-day warranty to a limited lifetime warranty (LLW). For more information, visit: http://www.cisco.com/en/US/prod/collateral/switches/ps5718/ps4324/product_bulletin_c25-533284.html.

Specifications

4500 E-Series Chassis	Cisco 4503-E	Cisco 4506-E	Cisco 4507R+-E	Cisco 4510R+-E
Slots	3	6	7	10
Redundant Supervisor Option	No	No	Yes	Yes
Gigabit Ethernet SFP density	160 (using 2BX-D)	400 (using 2BX-D)	400 (using 2BX-D)	384(using BX-D)
100BASE-FX, LX-10, BX-D density	96	240	240	384
Rack Unit (RU)	7	10	11	14

Backplane Capacity using Supervisor 7-E	136 Gbps	560	560 Gbps	848 Gbps
Stackable	No	No	No	No
1+1 Power Supply Protection	Yes	Yes	Yes	Yes
Hot-Swappable Power Supplies	Yes	Yes	Yes	Yes
Max. watt power consumption				
AC Internal	6000W	6000W	6000W	6000W
AC External with power shelf	1,400 + power shelf = 7500	1,400 + power shelf = 7500	1,400 + power shelf = 7500	1,400 + power shelf = 7500
DC Internal	1,400 + UPS = 7500	1,400 + UPS = 7500	1,400 + UPS = 7500	1,400 + UPS = 7500
Unit weight (with Fan Tray)	32.25 lbs. (14.63 kgs.)	40.50 lbs. (18.37 kgs)	44.50 lbs. (20.19 kgs)	54.50 lbs. (24.73 kgs)
Dimensions (H x W x D)	12.25 x 17.31 x 12.50 in (31.12 x 43.97 x 31.70 cm)	17.38 x 17.31 x 12.50 in (44.13 x 43.97 x 31.70 cm)	19.19 x 17.31 x 12.50 in (48.74 x 43.97 x 31.70 cm)	24.35 x 17.31 x 12.50 in. (61.84 x 43.97 x 31.70 cm)
Supervisor Engines	Supervisor 7-E (WS-X45-Sup7-E)		Supervisor 6L-E (WS-X45-Sup6L-E)	
Chassis supported	All		All	
Enhanced Layer 3 option	yes		yes	
Total bandwidth (Gbps)	848		280	
Packets per second (Mpps)	250 (IPv4) 125 (IPv6)		225 (IPv4) 110 (IPv6)	
CPU MHz	Dual Core 1500		800	
NetFlow	Flex NetFlow		no	
Onboard memory (DRAM)	1 GB upgradable to 2 GB		512 MB upgradable to 1 GB	
On-Board Flash	128 MB		64 MB 128 MB	
Compact Flash Support	Yes		Yes	
Switching Capacity & Throughput	848 Gbps, 250 Mpps		280 Gbps, 225 Mpps	
Multilayer Switching	Enhanced L2/3/4 Services & Routing		Enhanced L2/3/4 Services & Routing	
(E)IGRP, OSPF, IS-IS, BGP	Yes		Yes	
Supervisor Redundancy	4507R+E, 4510R+E, 4507R-E, 4510R-E, WS-C4507R, WS-C4507R+E, and WS-C4510R-E		4507R, 4507R-E, WS-C4507R-E, and WS-C4507R+E	
QoS	8Q/Port, MQC, Dynamic Tx Queue sizing, policing, shaping, congestion avoidance with DBL marking		8Q/Port, MQC, Dynamic Tx Queue sizing, policing, shaping, congestion avoidance with DBL marking	
NetFlow Support	No		No	
ISL	No		No	
ACLs	Yes		No	
IP FIB entries	256K		57K	
MAC Addresses	32K Multicast		55K Unicast, 16K Multicast	

Online model comparison chart:

http://www.cisco.com/en/US/products/hw/switches/ps4324/prod_models_comparison.html#4500e

Selected Part Numbers and Ordering Information

Catalyst 4500 E-Series—Chassis, Supervisors	
WS-C4503-E	Cisco Catalyst 4500 E-Series 3-Slot Chassis, fan, no ps
WS-C4506-E	Cisco Catalyst 4500 E-Series 6-Slot Chassis, fan, no ps
WS-C4507R-E	Cisco Catalyst 4500 E-Series 7-Slot Chassis, fan, no ps, redundant supervisor capable
WS-C4510R-E	Cisco Catalyst 4500 E-Series 10-Slot Chassis, fan, no ps, redundant supervisor capable
WS-C4510R+E	Cisco Catalyst 4500 E-Series 10-Slot Chassis, fan, no ps, redundant supervisor capable
WS-C4507R+E	Cisco Catalyst 4500 E-Series 7-Slot 48G/slot capable chassis, fan, no ps, redundant supervisor capable
WS-X45-SUP7-E	Catalyst 4500 E-Series Supervisor, 848Gbps
WS-X45-SUP6-E (=)	Cisco Catalyst 4500 E-Series Sup6-E, 2x10GE(X2) w/ Twin Gig
WS-X45-SUP6L-E (=)	Cisco Catalyst 4500 E-Series Sup6-E Lite, 2x10GE(X2) w/ Twin Gig

Catalyst 4500 and 4500-E Series Line Cards	
ME-X4248-FE-BX=	ME-X4248-FE-SFP and GLC-FE-100BX-D48
ME-X4248-FE-SFP	48-port FE SFP FTTH module, GLC-FE-100BX-D48 is required
WS-X4248-FE-SFP	Cisco Catalyst 4500 48-Port 100BASE-X (SFPs Optional)
WS-X4248-FE-SFP=	Cisco Catalyst 4500 48-Port 100BASE-X (SFPs Optional)
WS-X4448-GB-SFP	Cisco Catalyst 4500 48-Port 1000Base-X (SFPs Optional)
WS-X4448-GB-SFP=	Cisco Catalyst 4500 48-Port 1000Base-X (SFPs Optional)

For More Information

<http://www.cisco.com/go/catalyst4500>

Connected Grid Switches

Cisco 2500 Series Connected Grid Switches

The Cisco 2520 Connected Grid Switches (CGS 2520) are rugged switches designed for the harsh environments often found in the energy and utility industries. The Cisco CGS 2520 is designed to support the communications infrastructure needs for the energy delivery infrastructure across the generation, transmission, and distribution sectors. This infrastructure includes utility- and customer-owned energy infrastructure, such as substation applications supporting electrical transmission and distribution, renewable generation, oil and gas, water, distributed generation, co-generation, and trackside operations. The infrastructure also includes communications infrastructure for delivery applications such as transmission pipelines, distribution mains, and service lines for oil and gas and water.



The Cisco CGS 2520 uses Cisco IOS Software, which is the operating system powering millions of Cisco switches and routers worldwide. Cisco IOS Software delivers the benefits of integrated security for North American Electric Reliability Corporation/Critical Infrastructure Protection (NERC/CIP) compliance, quality of service (QoS), ease of use, and network management to help ensure integrity and priority of operational and nonoperational data communications.

Main Features and Benefits

- Rugged industrial design and substation compliance: IEC-61850-3 and IEEE 1613 for utility substation environments
- Tools for easy deployment, management, and replacement
- Extensive instrumentation and remote diagnostic capabilities
- Advanced quality-of-service (QoS) capabilities to support mission-critical substation applications such as Supervisory Control and Data Acquisition (SCADA) and IEC 61850 Generic Object Oriented Substation Events (GOOSE) messaging
- Comprehensive network security features based on open standards
- High availability and redundancy: Advanced features such as Resilient Ethernet Protocol (REP) and Flexlink provide fast reconvergence in ring and hub-and-spoke topologies, minimizing network downtime and associated costs. In addition, field-replaceable components such as power supplies and Small Form-Factor Pluggables (SFPs) reduce redeployment time. Finally, an optional redundant, hot-swappable power supply provides additional redundancy.
- Ease of use: An intuitive GUI in Cisco Configuration Professional simplifies configuration of switches and reduces training time and costs. Utility-focused enhancements have been added to further increase ease of use. SmartPort templates provide one-touch global and port-level macros to simplify switch deployments.

Specifications

Feature	Cisco 2520-24TC	Cisco 2520-16S-8PC
Forwarding bandwidth (Gbps)	8	8
Forwarding rate (mpps)	6.5	6.5
MAC addresses supported	8,000	8,000
Onboard memory (DDR2 SDRAM)	256 MB	256 MB

Gigabit Ethernet density	2 (dual-purpose ports: 100/1000 fiber SFP and/or 10/100/1000 Gigabit copper)	2 (dual-purpose ports: 100/1000 fiber SFP and/or 10/100/1000 Gigabit copper)
10/100 density	24	8
100BASE-FX density	-	16-port fiber SFP
PoE: Max. 802.3af Class 3 devices (15.4W)	-	8 max
Power Consumption	28.6W	40.3W
Power Supply	External high AC/DC and low DC power supply options available for redundant power supply support	External high AC/DC and low DC power supply options available for redundant power supply support
Dimensions (H x W x D)	1.75 x 1.75 x 14 in. (4.45 x 44.5 x 35.6 cm)	1.75 x 1.75 x 14 in. (4.45 x 44.5 x 35.6 cm)
Unit weight	9.1 lbs. (4.1 kg)	10 lbs. (4.5 kg)

Selected Part Numbers and Ordering Information

Cisco 2500 Series Connected Grid Switches	
CGS-2520-24TC	Cisco 2520 Connected Grid Switch-24 10/100 + 2 dual purpose Gigabit Ethernet ports LAN Base Image
CGS-2520-16S-8PC	Cisco 2520 Connected Grid Switch-16 100FX SFP ports + 2 dual purpose Gigabit Ethernet ports LAN Base Image

For More Information

<http://www.cisco.com/go/cgs2500>

Cisco Switching Services

Cisco Routing and Switching Services use leading practices and time-tested methodologies to help you:

- Successfully integrate new technologies and applications onto the routing and switching platform
- Reduce risk, delays, and the total cost of network deployments
- Keep network devices and applications secure, available, and operating reliably
- Optimize your secure wired and wireless networks to meet future needs
- Achieve operational excellence

Services from Cisco and our partners help you plan, build, and run a more intelligent, responsive, integrated routing and switching network. Services for routing and switching include:

- Routing and Switching Planning Services: Support successful integration through accurate assessment of the network and overall readiness to support proposed solutions
- Routing and Switching Design Services: Reduce risk, delays, and the total cost of network deployments with an implementation-ready design that you can use to engineer your network
- Cisco Network Optimization Service: Optimizes your network for borderless business evolution and innovation using Cisco expertise and leading practices
- Cisco Network Availability and Operations Optimization Service: Effectively adopts, manages, and scales technologies and applications in your converged network environment by optimizing your operational processes and network management tools
- Cisco SMARTnet Service: Offers direct, anytime access to Cisco engineers and an extensive range of technical resources
- Cisco Application Support Service: Strengthens application availability, functions, and reliability
- Cisco Focused Technical Support Service: Provides priority, high-touch technical support for faster problem resolution
- Cisco Foundation Technology Remote Management Service: Provides comprehensive monitoring, problem resolution, and day-to-day management of network devices

For more information about Cisco Routing and Switching Services, visit

<http://www.cisco.com/go/services/routing-switching>.

Chapter 3: Wireless

This chapter provides only a subset of Cisco products and part numbers.

Routing At-a-Glance		
Product	Features	Page
Access Points and Client Devices		
Cisco Aironet 3600 Series Access Point	<ul style="list-style-type: none"> Offers enterprise-class silicon and optimized radios that deliver a robust mobility experience Offers 802.11n with 4 x 4 multiple-input multiple-output (MIMO) technology with three spatial streams, which sustains 450-Mbps rates over a greater range for more capacity and reliability than competing access points Offers Cisco ClientLink 2.0 technology to improve downlink performance to all mobile devices, including one-, two-, and three-spatial stream devices on 802.11n while improving battery life on mobile devices such as smartphones and tablets Offers Cisco CleanAir technology, which provides proactive, high-speed spectrum intelligence to combat performance problems due to wireless interference Provides modular architecture design that enables flexible add-on options in the form of separate Wireless Security and Spectrum Intelligence and IEEE 802.11ac Wave 1 Modules that tightly integrate with the wireless infrastructure and are completely field upgradable. Offers MIMO Equalization optimized uplink performance and reliability by minimizing the impact of signal fade Provides Limited Lifetime Hardware Warranty, including 10-day advance hardware replacement Offers both controller-based and standalone versions All of these features help ensure the best possible end-user experience on the wireless network. Cisco also offers the industry's broadest selection of 802.11n antennas delivering optimal coverage for a variety of deployment scenarios. 	3-5
Cisco Aironet 3500p Series Access Points	<ul style="list-style-type: none"> Uses Cisco CleanAir technology Is ideal for high-density stadium and arena deployments Offers greater wireless capacity to deliver a better fan experience and facilitate third-generation (3G) and 4G cellular offload Built with directional, narrow beamwidth external antennas for targeted coverage and minimal interference Provides power with standard IEEE 802.3af Power over Ethernet (PoE) Designed with a rugged metal housing that provides extended operating temperature Also supports: <ul style="list-style-type: none"> Cisco ClientLink technology, which improves reliability and coverage for established clients Cisco BandSelect technology, which improves 5-GHz client connections in mixed client environments Cisco VideoStream technology, which uses multicast to improve multimedia applications Available in lightweight version only 	3-10
Cisco Aironet 2600 Series Access Point	<ul style="list-style-type: none"> Offers RF excellence Based on 802.11n with 3 x 4 MIMO technology with three spatial streams to sustain 450-Mbps rates over a greater range for more capacity and reliability than competing access points Offers Cisco ClientLink 2.0 technology for better downlink performance and range for all mobile devices and better battery life on mobile devices such as smartphones and tablets Offers Cisco CleanAir technology for proactive, intelligent spectrum intelligence to combat performance problems due to RF interference Provides Limited Lifetime Hardware Warranty, including 10-day advance hardware replacement Offers both controller-based and standalone versions 	3-14
Cisco Aironet 1600 Series Access Point	<ul style="list-style-type: none"> Based on 802.11n with 3 x 3 MIMO technology with two spatial streams to sustain 300-Mbps rates over a greater range for more capacity and reliability than competing access points Offers Cisco ClientLink 2.0 technology for better downlink performance and range for all mobile devices and better battery life on mobile devices such as smartphones and tablets Offers Cisco CleanAir Express technology for proactive, intelligent spectrum intelligence to combat performance problems due to RF interference (planned for support for Q12013) Offers Limited Lifetime Hardware Warranty, including 10-day advance hardware replacement Offers both controller-based and standalone versions 	3-18

Cisco Aironet 600 Series Office Extend	<ul style="list-style-type: none"> • Designed for the teleworking environment • Delivers full IEEE 802.11n speed with simultaneous 2.4- and 5-GHz RF-band support • Increases productivity, lowers costs, and improves business continuity with smooth, reliable, and highly secure access to networked services from the home or remote office • Supports configuring local personal Service Set Identifiers (SSIDs) for concurrent personal access as well • Provides 4 local Ethernet ports that provide access for wired clients to securely access the corporate LAN as well as personal use in the home office 	3-23
Outdoor Wireless and Client Devices		
Cisco Aironet 1550 Series Lightweight Outdoor Wireless Mesh Access Points	<ul style="list-style-type: none"> • Uses Cisco CleanAir technology • Offers industry's first enterprise- and carrier-class IEEE 802.11n access point to mitigate the effect of wireless interference using application-specific integrated circuit (ASIC)-based intelligence • Supports multiple-device and multiple-network application delivery such as real-time transparent mobility, video surveillance, 3G and 4G data offload, and public and private Wi-Fi access • Offers high-performance device access through improved radio sensitivity and range with IEEE 802.11a/b/g/n MIMO technology, with two spatial streams 	3-26
Cisco Aironet Antennas and Accessories	<ul style="list-style-type: none"> • Supports Cisco's many options for antennas and accessories • Offers FCC-approved directional and omnidirectional antennas • Also offers low-loss cable, mounting hardware, and other accessories • Supports high-density deployments 	3-30
Wireless Controllers		
Cisco 8500 Series Wireless Controller	<ul style="list-style-type: none"> • Ideal for service provider and large campus deployments, delivers unmatched scalability and resiliency while reducing infrastructure complexity • Supports centralized (Cisco Local mode), Cisco FlexConnect mode and mesh deployments in a single controller • Offers consolidated configuration, management, and security in 1-rack-unit (1RU) rack space, allowing network managers to configure, manage, and troubleshoot up to 6000 access points and 64,000 clients from a single point of control • Offers multiple levels of high availability (HA) with subsecond access-point failover to standby controller, dual redundant power supplies, and redundant high-speed 10 Gigabit Ethernet connectivity • Supports 6000 branch-office locations, 2000 Cisco FlexConnect groups, and 100 access points in each Cisco FlexConnect group • Supports transparent IP mobility between cellular and Wi-Fi and secure public access with Wi-Fi Certified Passpoint (Hotspot 2.0) • Integrates Cisco Unified Communications for real-time voice and video technology (Cisco VideoStream) to optimize the delivery of voice and video applications across the wireless LAN (WLAN) 	3-35
Cisco Flex 7500 Series Cloud Controller	<ul style="list-style-type: none"> • Is ideal for data center consolidation; offers a highly scalable branch-office controller for enterprises that require multisite wireless deployments with system-level security and integrated RF management • Offers remote configuration of wireless policy, management, and security; it also offers a self-healing self-optimizing wireless network for branch offices through integration with Cisco CleanAir and local RADIUS server authentication for survivability in the rare event of WAN failure; and su-second access-point failover to a standby controller for SSID high availability • Uses the Control and Provisioning of Wireless Access Points (CAPWAP) protocol to centrally control Cisco Aironet lightweight access points for WLAN performance optimization and automated network resiliency • Supports 8000 branch-office locations and allows IT managers to configure, manage, and troubleshoot up to 6000 access points and 64,000 clients from a single location • Supports 2000 Cisco FlexConnect groups and 100 access points in each Cisco FlexConnect group • Operates in Cisco FlexConnect mode only 	3-38
Cisco 5500 Series Wireless LAN Controller	<ul style="list-style-type: none"> • Is ideal for enterprise WLAN deployments that require enhanced scalability, system-level security, integrated RF monitoring and management, and teleworking features • Supports Cisco OfficeExtend to provide corporate wireless service for mobile and remote workers with secure wired tunnels to the Cisco Aironet 1130 and Aironet 1140 Series Access Points • Uses the CAPWAP protocol to centrally control Cisco Aironet lightweight access points for WLAN performance optimization and automated network resiliency • Available with 8 Gigabit Ethernet Small Form-Factor Pluggables (SFPs) and flexible licensing to support up to 500 access points and up to 7000 clients 	3-40
Cisco Virtual Wireless Controller	<ul style="list-style-type: none"> • Ideal for small footprint, on-premises, and data center deployments • Delivered in a virtual form factor; deployed in any x86 server with VMware Hypervisor ESXi 4.0 or 5.0 • Support for advanced mobility technologies including FlexConnect, Cisco ClientLink, and Cisco CleanAir technology • Co-resides with other virtualized network services, vCPI, vMSE, and vISE • Scales up to 200 access points and 3000 clients, with one access-point address license enabling granular "pay-as-you-grow" model 	3-42

Cisco 2500 Series Wireless LAN Controller	<ul style="list-style-type: none"> • Is ideal for enterprise branch-office and small business WLAN deployments that require system-level security, scalability, and RF management • Offers enhanced uptime with Cisco CleanAir technology, and quality of service (QoS) for voice and video • Uses the Lightweight Access Point (LWAP) protocol or CAPWAP protocol to centrally control Cisco Aironet lightweight access points for WLAN performance optimization and automated network resiliency • Supports 5, 15, 25, 50, or 75 lightweight access points and up to 500 clients, making it a cost-effective solution for enterprise branch offices and small businesses 	3-44
Cisco Wireless Services Module 2 (WiSM2) for Cisco Catalyst 6500 Switches	<ul style="list-style-type: none"> • Provides a cost-effective controller option for converged networks that integrate wireless connectivity; ideal for medium-sized to large enterprises and campus environments that require enhanced scalability, system-level security, and RF management to support mission-critical wireless business communications • Supports more efficient roaming and a variety of business mobility needs, including the Cisco OfficeExtend solution for secure, mobile teleworking and enterprise wireless mesh • Uses the CAPWAP protocol to centrally control Cisco Aironet lightweight access points for WLAN performance optimization and automated network resiliency • Offers flexible licensing to support up to 1000 access points, up to 15,000 clients and 20 Gbps of throughput per WiSM blade, and up to 7000 access points and 105,000 clients per chassis • Offers sub-second access-point failover to a standby controller for Service Set Identifier (SSID) high-availability 	3-46
Cisco Wireless Controller Module for the ISR G2 *NEW PRODUCT*	<ul style="list-style-type: none"> • Is ideal for enterprise branch-office and small business WLAN deployments that require system-level security, scalability, and RF management and remote provisioning to consolidate branch-office infrastructure and deploy wireless on demand • Supports Cisco CleanAir technology, Cisco VideoStream technology, and wireless mesh and the LWAP and CAPWAP protocols to centrally control Cisco Aironet lightweight access points for WLAN performance optimization and automated network resiliency • Supports up to 10 lightweight access points for the Cisco Services-Ready Engine 300 Integrated Services Module (Cisco SRE 300 ISM) and up to 50 lightweight access points for the Cisco SRE 700, SRE 710, SRE 900, and SRE 910 Services Modules (Cisco SM 700, SM 710, and SM 900, 910) and up to 500 clients, making it a cost-effective solution for enterprise branch offices and small businesses 	3-49
Network Management		
Cisco Prime Infrastructure *NEW PRODUCT*	<ul style="list-style-type: none"> • Provides a single pane of glass solution for managing the complete lifecycle of switches, routers, wireless controllers, and access points • Enables rich application visibility, dashboards, and key performance indicators for voice, video, and other real time applications • Integrates with Cisco Identity Services Engine (ISE), enabling visibility of user attributes, posture, and profile • Supports complete lifecycle management of up to 15,000 Cisco Aironet lightweight access points managed by wireless controllers, 5000 autonomous Cisco Aironet access points, and 18,000 switches or routers • Offers third party device management including automatic discovery, basic monitoring, basic lifecycle management, device reachability, traps, and syslog collection • Offers wide range of easy-to-use tools, guides, and templates for simplified planning, deployment, monitoring, troubleshooting, and reporting on indoor and outdoor wireless networks, including the next-generation IEEE 802.11n WLAN infrastructure and client devices • Provides centralized management of Cisco Mobility Services Engine (MSE), Adaptive Wireless Intrusion Prevention System, Context-Aware Software, and Cisco CleanAir technology 	3-51
Cisco Spectrum Expert Wi-Fi	<ul style="list-style-type: none"> • Provides a spectrum analyzer tool that offers visibility into the RF layer of wireless networks so that organizations can determine the causes of interference problems and optimize network performance • Provides Active Devices view that offers comprehensive lists of all access points, temporary networks, and interferer devices (for example, microwave ovens, cordless phones, wireless security cameras, Bluetooth devices, and RF jammers) • Provides Channel Summary, Devices View, and Device Finder features that detail RF activity, effect on the wireless network, and the location of devices causing wireless interference 	3-53
Mobility Services		
Cisco Mobility Services Engine	<ul style="list-style-type: none"> • Location Services on Cisco Mobility Services Engine (MSE) that provides advanced spectrum capability and ability to detect presence and track and trace rogue devices, interferers, Wi-Fi clients, and RFID tags; also provides location analytics • Advanced Location Services on MSE that provides capability to engage customers through mobile Concierge and advanced location analytics • Adaptive Wireless Intrusion Prevention System (WIPS) Service on MSE that provides comprehensive over-the-air threat detection, location, and mitigation • Open application programming interface (API) for enterprise and Mobile app developers • SDK for Mobile app developers • Available as a physical or virtual appliance 	3-55

Cisco Wireless Intrusion Prevention System (WIPS)	<ul style="list-style-type: none"> • Cisco offers rogue detection and mitigation as part of its base wireless offering, and the Adaptive Wireless Intrusion Prevention System as an extension of this service as a complimentary service. • WIPS provides comprehensive over-the-air threat detection, location, and mitigation. • WIPS offers Layer 1 threat protection with CleanAir access points. • WIPS employs network analysis and signature-based techniques, combined with tight integration to the Cisco Unified Wireless Network, to deliver protection against rogue access points and clients, network reconnaissance, eavesdropping, authentication and encryption cracking, man-in-the-middle attacks, wireless denial-of-service (DoS) attacks, and zero-day unknown attacks. • WIPS provides proactive threat prevention through automated wireless vulnerability and performance monitoring that proactively and persistently scans the wireless network to mitigate problems before they arise. 	3-58
Cisco Physical Security	For product information about Cisco Video Surveillance products, refer to Chapter 5, Security.	See 5-1
Services		
Manage a complex wireless infrastructure and enable secure mobile access to enterprise and collaboration applications with services from Cisco and our partners. Based on leading practices, these services help you transition to a mobility architecture that optimizes performance and reliability, so you can maintain business innovation while controlling costs.		3-59
For More Information		
Product Ordering		
To place an order, visit http://www.cisco.com/en/US/ordering/index.shtml .		
Cisco Services		
Cisco Services can be ordered directly or through our global network of certified partners at: http://www.cisco.com/web/services/order-services/index.html .		
End-of-Life and End-of-Sale Information		
Please visit the end-of-life and end-of-sale website for a complete and up-to-date listing of products that are no longer being sold or supported, what replacement products are available, and information about product support: http://www.cisco.com/en/US/products/prod_end_of_life.html .		
Note: This chapter provides only a subset of Cisco products and part numbers. For the most up-to-date and comprehensive information, refer to the Cisco website at http://www.cisco.com , the Cisco ordering website at http://www.cisco.com/en/US/ordering/index.shtml , or the URL listed in the "For More Information" section for each product.		

Access Points and Client Devices

View the online model comparison chart for Cisco Aironet Access Points at:
http://www.cisco.com/en/US/products/hw/wireless/products_category_buyers_guide.html#~high-end.

Cisco Aironet 3600 Series Access Point

The Cisco Aironet 3600 Series Access Point is the industry's only 4 x 4 Multiple Input, Multiple Output (MIMO) access point. This three-spatial-stream access point delivers mission critical reliability. Current solutions struggle to scale to meet demands on the wireless networks from the influx of diverse mobile devices and mobile applications. The new Cisco Aironet 3600 Series sustains reliable connections at higher speeds further from the access point than competing solutions, resulting in up to three times more availability of 450-Mbps rates, and optimizing the performance of more mobile devices. Building on the Cisco Aironet heritage of RF excellence, the Cisco Aironet 3600 Series is a flagship access point, delivering industry-leading performance for secure and reliable wireless connections.

The Cisco Aironet 3600 Series includes Cisco ClientLink 2.0 to boost performance and range for clients and includes Cisco CleanAir spectrum intelligence for a self-healing, self-optimizing network.



Ideal for Companies That Need These Features

- Cisco Aironet 3600 Series**
- Industry-leading performance and reliability to meet the ever-increasing demand for access in mobility space
 - Flexibility to field upgrade and add either the Wireless Security and Spectrum Intelligence Module or IEEE 802.11ac Wave 1 Module
 - Faster smartphone performance
 - Faster tablet performance
 - More reliable client connection
 - Great coverage
 - Leading-edge scale and performance
 - Video and voice on wireless

Main Features and Benefits

- 802.11n with 4 x 4 multiple-input multiple-output (MIMO) technology with three spatial streams, which sustains 450-Mbps rates over a greater range for more capacity and reliability than competing access points
- Cisco ClientLink 2.0 technology to improve downlink performance to all mobile devices including one-, two-, and three-spatial-stream devices on 802.11n while improving battery life on mobile devices such as smartphones and tablets
- Cisco CleanAir technology, which provides proactive, high-speed spectrum intelligence to combat performance problems due to wireless interference
- Modular architecture design, enabling flexible add-on options in the form of separate Security Monitor and IEEE 802.11ac Wave 1 Modules that are tightly integrated with the wireless infrastructure, and are completely field-upgradable
- MIMO Equalization—optimized uplink performance and reliability by minimizing the effect of signal fade
- Limited Lifetime Hardware Warranty, including 10-day advance hardware replacement

All of these features help ensure the best possible end-user experience on the wireless network.

Cisco also offers the industry's broadest selection of 802.11n antennas to deliver optimal coverage for a variety of deployment scenarios.

Specifications

Feature	Cisco Aironet 3600 Series Access Point
Software	Cisco Unified Wireless Network Software Release 7.2 or later.
Supported Wireless LAN Controllers	• 2500 series, WLCM on SRE for ISR G2, WiSM2, 5500 Series, Flex 7500 Series
Module Options	• Wireless Security & Spectrum Intelligence Module (Available in Q1 2013) • Provides full spectrum, off channel scanning for comprehensive WIPS, CleanAir, Rogue Detection, Context Aware, and Radio Resource Management (RRM) solution Scans 2.4 and 5 GHz channels while serving data clients on the base dual band AP platform • 802.11ac Wave 1 Module (Available in Q1 2013) • Provides WFA certified 802.11ac "Wave 1" functionality with support for 3x3:3SS (Spatial Streams), 80 MHz wide channels, 256 QAM, data rates up to 1.3 Gbps

802.11n Version 2.0 (and Related) Capabilities	<ul style="list-style-type: none"> • 4x4 multiple-input multiple-output (MIMO) with three spatial streams • Maximal ratio combining (MRC) • 802.11n and 802.11a/g beamforming • 20- and 40-MHz channels • PHY data rates up to 450 Mbps (40-MHz with 5 Ghz) • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 dynamic frequency selection (DFS) • Cyclic shift diversity (CSD) support 				
Data Rates Supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps				
	802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps				
	802.11n data rates (2.4 GHz and 5 GHz):				
	MCS Index¹	GI² = 800ns		GI = 400ns	
		20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)
	0	6.5	13.5	7.2	15
	1	13	27	14.4	30
	2	19.5	40.5	21.7	45
	3	26	54	28.9	60
	4	39	81	43.3	90
	5	52	108	57.8	120
	6	58.5	121.5	65	135
	7	65	135	72.2	150
	8	13	27	14.4	30
	9	26	54	28.9	60
	10	39	81	43.3	90
	11	52	108	57.8	120
	12	78	162	86.7	180
	13	104	216	115.6	240
	14	117	243	130	270
	15	130	270	144.4	300
	16	19.5	40.5	21.7	45
	17	39	81	43.3	90
	18	58.5	121.5	65	135
	19	78	162	86.7	180
	20	117	243	130	270
	21	156	324	173.3	360
	22	175.5	364.5	195	405
	23	195	405	216.7	450
Frequency Band and 20-MHz Operating Channels	A (A regulatory domain):		N (N regulatory domain):		
	<ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels 		<ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels 		
	C (C regulatory domain):		Q (Q regulatory domain):		
	<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.825 GHz; 5 channels 		<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels 		
	E (E regulatory domain):		R (R regulatory domain):		
	<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) 		<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.660 to 5.805 GHz; 7 channels 		
	I (I regulatory domain):		S (S regulatory domain):		
	<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels 		<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 8 channels 		
	K (K regulatory domain):		T (T regulatory domain):		
	<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.620 GHz; 7 channels • 5.745 to 5.805 GHz; 4 channels 		<ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.280 to 5.320 GHz; 3 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels 		

Note: Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit: <http://www.cisco.com/go/aironet/compliance>.

Maximum Number of Nonoverlapping Channels	2.4 GHz 802.11b/g: • 20 MHz: 3 802.11n: • 20 MHz: 3	5 GHz 802.11a: • 20 MHz: 21 802.11n: • 20 MHz: 21 • 40 MHz: 9		
Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.				
Receive Sensitivity	802.11b (CCK) • -101 dBm @ 1 Mb/s • -98 dBm @ 2 Mb/s • -92 dBm @ 5.5 Mb/s • -89 dBm @ 11 Mb/s	802.11g (non HT20) • -91 dBm @ 6 Mb/s • -91 dBm @ 9 Mb/s • -91 dBm @ 12 Mb/s • -90 dBm @ 18 Mb/s • -87 dBm @ 24 Mb/s • -85 dBm @ 36 Mb/s • -80 dBm @ 48 Mb/s • -79 dBm @ 54 Mb/s	802.11a (non HT20) • -90 dBm @ 6 Mb/s • -90 dBm @ 9 Mb/s • -90 dBm @ 12 Mb/s • -89 dBm @ 18 Mb/s • -86 dBm @ 24 Mb/s • -83 dBm @ 36 Mb/s • -78 dBm @ 48 Mb/s • -77 dBm @ 54 Mb/s	
	2.4-GHz 802.11n (HT20) • -90 dBm @ MCS0 • -90 dBm @ MCS1 • -90 dBm @ MCS2 • -88 dBm @ MCS3 • -85 dBm @ MCS4 • -80 dBm @ MCS5 • -78 dBm @ MCS6 • -77 dBm @ MCS7 • -90 dBm @ MCS8 • -90 dBm @ MCS9 • -89 dBm @ MCS10 • -86 dBm @ MCS11 • -82 dBm @ MCS12 • -78 dBm @ MCS13 • -77 dBm @ MCS14 • -75 dBm @ MCS15 • -90 dBm @ MCS16 • -89 dBm @ MCS17 • -87 dBm @ MCS18 • -84 dBm @ MCS19 • -81 dBm @ MCS20 • -76 dBm @ MCS21 • -75 dBm @ MCS22 • -74 dBm @ MCS23		5-GHz 802.11n (HT20) • -91 dBm @ MCS0 • -90 dBm @ MCS1 • -89 dBm @ MCS2 • -86 dBm @ MCS3 • -83 dBm @ MCS4 • -78 dBm @ MCS5 • -77 dBm @ MCS6 • -75 dBm @ MCS7 • -91 dBm @ MCS8 • -89 dBm @ MCS9 • -87 dBm @ MCS10 • -84 dBm @ MCS11 • -80 dBm @ MCS12 • -76 dBm @ MCS13 • -75 dBm @ MCS14 • -73 dBm @ MCS15 • -90 dBm @ MCS16 • -88 dBm @ MCS17 • -85 dBm @ MCS18 • -82 dBm @ MCS19 • -79 dBm @ MCS20 • -74 dBm @ MCS21 • -73 dBm @ MCS22 • -72 dBm @ MCS23	5-GHz 802.11n (HT40) • -88 dBm @ MCS0 • -87 dBm @ MCS1 • -86 dBm @ MCS2 • -82 dBm @ MCS3 • -80 dBm @ MCS4 • -75 dBm @ MCS5 • -73 dBm @ MCS6 • -72 dBm @ MCS7 • -88 dBm @ MCS8 • -86 dBm @ MCS9 • -84 dBm @ MCS10 • -80 dBm @ MCS11 • -77 dBm @ MCS12 • -73 dBm @ MCS13 • -71 dBm @ MCS14 • -70 dBm @ MCS15 • -87 dBm @ MCS16 • -84 dBm @ MCS17 • -82 dBm @ MCS18 • -78 dBm @ MCS19 • -75 dBm @ MCS20 • -71 dBm @ MCS21 • -69 dBm @ MCS22 • -68 dBm @ MCS23
Maximum Transmit Power	2.4 GHz 802.11b • 23 dBm - 4 Antennas 802.11g • 23 dBm - 4 Antennas 802.11n (HT20) • 23 dBm - 4 Antennas		5 GHz 802.11a • 23 dBm - 4 Antennas 802.11n (HT20) • 23 dBm - 4 Antennas 802.11n (HT40) • 23 dBm - 4 Antennas	
Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.				
Available Transmit Power Settings	2.4 GHz • 23 dBm (200 mW) • 20 dBm (100 mW) • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12.5 mW) • 8 dBm (6.25 mW) • 5 dBm (3.13 mW) • 2 dBm (1.56 mW)		5 GHz • 23 dBm (200 mW) • 20 dBm (100 mW) • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12.5 mW) • 8 dBm (6.25 mW) • 5 dBm (3.13 mW) • 2 dBm (1.56 mW)	
Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.				

Integrated Antenna	<ul style="list-style-type: none"> • 2.4 GHz, Gain 2 dBi, internal Omni, horizontal beamwidth 360° • 5 GHz, Gain 5 dBi, internal Omni, horizontal beamwidth 360°
External Antenna (Sold Separately)	<ul style="list-style-type: none"> • Certified for use with antenna gains up to 6 dBi (2.4 GHz and 5 GHz). • Cisco offers the industry's broadest selection of 802.11n antennas delivering optimal coverage for a variety of deployment scenarios.
Interfaces	<ul style="list-style-type: none"> • 10/100/1000BASE-T autosensing (RJ-45) • Management console port (RJ-45)
Indicators	<ul style="list-style-type: none"> • Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors
Dimensions (W x L x H)	<ul style="list-style-type: none"> • Access point (without mounting bracket): 8.7 x 8.7 x 2.11 in. (22.1 x 22.1 x 5.4 cm)
Weight	<ul style="list-style-type: none"> • 2.5 lbs (1.13 kg)
Environmental	<p>Cisco Aironet 3600i</p> <ul style="list-style-type: none"> • Nonoperating (storage) temperature: -22 to 158°F (-30 to 70°C) • Nonoperating (storage) Altitude Test - 25°C, 15,000 ft. • Operating temperature: 32 to 104°F (0 to 40°C) • Operating humidity: 10 to 90% percent (noncondensing) • Operating Altitude Test - 40°C, 9843 ft. <p>Cisco Aironet 3600e</p> <ul style="list-style-type: none"> • Nonoperating (storage) temperature: -22 to 158°F (-30 to 70°C) • Nonoperating (storage) Altitude Test - 25°C, 15,000 ft. • Operating temperature: -4 to 131°F (-20 to 55°C) • Operating humidity: 10 to 90 percent (noncondensing) • Operating Altitude Test - 40°C, 9843 ft.
System Memory	<ul style="list-style-type: none"> • 256 MB DRAM • 32 MB flash
Input Power Requirements	<ul style="list-style-type: none"> • AP3600: 44 to 57 VDC • Power Supply and Power Injector: 100 to 240 VAC; 50 to 60 Hz
Powering Options	<ul style="list-style-type: none"> • AP3600 without a Module • 802.3af Ethernet • Cisco AP3600 Power Injectors (AIR-PWRINJ4=) • Cisco AP3600 Local Power Supply (AIR-PWR-B=) • AP3600 with a Module • Enhanced PoE, 802.3at PoE+ • Cisco AP3600 Power Injectors (AIR-PWRINJ4=) • Cisco AP3600 Local Power Supply (AIR-PWR-B=)
Power Draw	<ul style="list-style-type: none"> • AP3600: 12.95 W <p>Note: When deployed using a Power over Ethernet (PoE) specification, the power drawn from the power sourcing equipment will be higher by some amount dependent on the length of the interconnecting cable. This additional power may be as high as 2.45W, bringing the total system power draw (access point + cabling) to 15.4W with PoE 802.3af as an example AP3600 with a module: 17 W</p>
Warranty	Limited Lifetime Hardware Warranty
Compliance Standards	<ul style="list-style-type: none"> • UL 60950-1 • CAN/CSA-C22.2 No. 60950-1 • UL 2043 • IEC 60950-1 • EN 60950-1 • EN 50155 <p>Radio approvals:</p> <ul style="list-style-type: none"> • FCC Part 15.247, 15.407 • RSS-210 (Canada) • EN 300.328, EN 301.893 (Europe) • ARIB-STD 66 (Japan) • ARIB-STD T71 (Japan) • EMI and susceptibility (Class B) • FCC Part 15.107 and 15.109 • ICES-003 (Canada) • VCCI (Japan) • EN 301.489-1 and -17 (Europe) • EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC

	<p>IEEE Standard:</p> <ul style="list-style-type: none"> • IEEE 802.11a/b/g, IEEE 802.11n, IEEE 802.11h, IEEE 802.11d <p>Security:</p> <ul style="list-style-type: none"> • 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA • 802.1X • Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP) <p>EAP Type(s):</p> <ul style="list-style-type: none"> • Extensible Authentication Protocol-Transport Layer Security (EAP-TLS) • EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2) • Protected EAP (PEAP) v0 or EAP-MSCHAPv2 • Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST) • PEAPv1 or EAP-Generic Token Card (GTC) • EAP-Subscriber Identity Module (SIM) <p>Multimedia:</p> <ul style="list-style-type: none"> • Wi-Fi Multimedia (WMM™) <p>Other:</p> <ul style="list-style-type: none"> • FCC Bulletin OET-65C • RSS-102
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¹ MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.

² GI: A guard interval (GI) between symbols helps receivers overcome the effects of multipath delays.

Selected Part Numbers and Ordering Information

The Cisco Aironet 3600i Access Point: Indoor environments, with internal antennas	
AIR-CAP3602I-x-K9	Dual-band controller-based 802.11a/g/n
AIR-CAP3602I-xK910	Eco-pack (dual-band 802.11a/g/n) 10 quantity access points
The Cisco Aironet 3600e Access Point: Indoor, challenging environments, with external antennas	
AIR-CAP3602E-x-K9	Dual-band controller-based 802.11a/g/n
AIR-CAP3602E-xK910	Eco-pack (dual-band 802.11a/g/n) 10 quantity access points
Cisco SMARTnet® Services for the Cisco Aironet 3600i Access Point with internal antennas	
CON-SNT-CAP362Ix	SMARTnet 8x5xNBD 3600i access point (dual-band 802.11 a/g/n)
Qty(10) CON-SNT-CAP362Ix	SMARTnet 8x5xNBD 10 quantity eco-pack 3600i access point (dual-band 802.11a/g/n)
SMARTnet Services for the Cisco Aironet 3600e Access Point with external antennas	
CON-SNT-CAP3602x	SMARTnet 8x5xNBD 3600e access point (dual-band 802.11 a/g/n)
Qty(10) CON-SNT-CAP3602x	SMARTnet 8x5xNBD 10 quantity eco-pack 3600e access point (dual-band 802.11a/g/n)
Cisco Wireless LAN Services	
AS-WLAN-CNSLT	Cisco Wireless LAN Network Planning and Design Service
AS-WLAN-CNSLT	Cisco Wireless LAN 802.11n Migration Service
AS-WLAN-CNSLT	Cisco Wireless LAN Performance and Security Assessment Service

Regulatory domains: (x = regulatory domain)

Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit: <http://www.cisco.com/go/aironet/compliance>.

Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.

For More Information

Product Ordering

To place an order, visit: <http://www.cisco.com/en/US/products/ps11983/index.html>

<http://www.cisco.com/en/US/products/ps10981/index.html>.

Cisco Aironet 3500p Series Access Points

Enhance the fan experience in high-density stadium and arena deployments with Cisco Aironet 3500p Series Access Points. The Cisco Aironet 3500p Series model provides targeted coverage with directional antennas, complete with flexible configuration and professional installation in challenging environments.

The Cisco Audible 3500p Series is designed with custom configuration settings and narrow-bandwidth, high-gain antennas to provide targeted coverage for high-density deployments. This special system of directional antennas and power settings allows an organization to deploy more access points closer together, enabling more capacity, less co-channel interference, and a better user experience.

Because of the unique antenna and power settings, FCC regulations require that the Cisco Aironet 3500p Series Access Point be installed by a certified professional.



Ideal for Companies That Need These Features

- Cisco Aironet 3500p Series**
- Targeted coverage for high-density deployments in environments such as high-density stadium and arena deployments
 - Greater wireless capacity to deliver a better fan experience and facilitate third- and fourth-generation (3G and 4G, respectively) cellular offload
 - Purpose-built directional, narrow-beamwidth external antennas for targeted coverage and minimal interference
 - IEEE 802.11n performance powered with standard IEEE 802.3af Power over Ethernet (PoE)
 - Rugged metal housing for extended operating temperature

Main Features and Benefits

Cisco CleanAir technology that supports:

- Automatic interference mitigation for reliable and predictable wireless LAN (WLAN) coverage
- Remote troubleshooting for fast problem resolution and less downtime
- Robust security with non-Wi-Fi detection for off-channel rogue devices
- Policy enforcement with customizable alerts to prohibit devices that interfere with the network

Specifications

Feature	Cisco Aironet 3500p Series Access Points	
Software	Cisco Unified Wireless Network Software Release 7.0 or later	
Maximum Number of Nonoverlapping Channels	2.4 GHz IEEE 802.11b/g: • 20 MHz: 3 IEEE 802.11n: • 20 MHz: 3	5 GHz IEEE 802.11a: • 20 MHz: 19 IEEE 802.11n: • 20 MHz: 19 • 40 MHz: 9
Frequency Band and 20-MHz Operating Channels	A (A regulatory domain): • 2.412 to 2.462 GHz: 11 channels • 5.180 to 5.320 GHz: 8 channels • 5.500 to 5.560 GHz: 4 channels • 5.680 to 5.700 GHz: 2 channels • 5.745 to 5.825 GHz: 5 channels C (C regulatory domain): • 2.412 to 2.472 GHz: 13 channels • 5.745 to 5.825 GHz: 5 channels E (E regulatory domain): • 2.412 to 2.472 GHz: 13 channels • 5.180 to 5.320 GHz: 8 channels • 5.500 to 5.700 GHz: 8 channels (excludes 5.600 to 5.640 GHz)	N (N regulatory domain): • 2.412 to 2.462 GHz: 11 channels • 5.745 to 5.825 GHz: 5 channels Q (Q regulatory domain): • 2.412 to 2.472 GHz: 13 channels • 5.180 to 5.320 GHz: 8 channels • 5.500 to 5.700 GHz: 11 channels
Note: Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, please visit http://www.cisco.com/go/aironet/compliance .		
Maximum Transmit Power	2.4 GHz • IEEE 802.11b: 23 dBm with 2 antennas • IEEE 802.11g: 20 dBm with 2 antennas • IEEE 802.11n (non-HT duplicate mode): 20 dBm with 2 antennas • IEEE 802.11n (HT20): 20 dBm with 2 antennas	5 GHz • IEEE 802.11a: 20 dBm with 2 antennas • IEEE 802.11n non-HT duplicate mode: 20 dBm with 2 antennas • IEEE 802.11n (HT20): 20 dBm with 2 antennas • IEEE 802.11n (HT40): 20 dBm with 2 antennas

Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Data Rates Supported	IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps				
	IEEE 802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps				
	IEEE 802.11n data rates (2.4 GHz and 5 GHz)				
	MCS Index¹	GI²=800ns		GI=400ns	
		20-MHz rate (Mbps)	40-MHz rate (Mbps)	20-MHz rate (Mbps)	40-MHz rate (Mbps)
	0	6.5	13.5	7.2	15
	1	13	27	14.4	30
	2	19.5	40.5	21.7	45
	3	26	54	28.9	60
	4	39	81	43.3	90
	5	52	108	57.8	120
	6	58.5	121.5	65	135
	7	65	135	72.2	150
	8	13	27	14.4	30
	9	26	54	28.9	60
10	39	81	43.3	90	
11	52	108	57.8	120	
12	78	162	86.7	180	
13	104	216	115.6	240	
14	117	243	130	270	
15	130	270	144.4	300	
Available Transmit Power Settings	2.4 GHz		5 GHz		
	<ul style="list-style-type: none"> • 20 dBm (100 mW) • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12.5 mW) • 8 dBm (6.25 mW) • 5 dBm (3.13 mW) • 2 dBm (1.56 mW) • -1 dBm (0.78 mW) 		<ul style="list-style-type: none"> • 17 dBm (50 mW) • 14 dBm (25 mW) • 11 dBm (12.5 mW) • 8 dBm (6.25 mW) • 5 dBm (3.13 mW) • 2 dBm (1.56 mW) • -1 dBm (0.78 mW) 		
External Antenna (sold separately)	<ul style="list-style-type: none"> • Certified for use with antenna gains up to 13 dBi (2.4 GHz) and 7 dBi (5 GHz). • Cisco offers the industry's broadest selection of IEEE 802.11n antennas delivering optimal coverage for a variety of deployment scenarios. 				
Interfaces	<ul style="list-style-type: none"> • 10/100/1000BASE-T autosensing (RJ-45) • Management console port (RJ-45) 				
Receive Sensitivity	IEEE 802.11a (non HT20)		2.4-GHz: IEEE 802.11n (HT20)		
	<ul style="list-style-type: none"> • -93 dBm @ 6 Mb/s • -93 dBm @ 9 Mb/s • -92 dBm @ 12 Mb/s • -90 dBm @ 18 Mb/s • -87 dBm @ 24 Mb/s • -84 dBm @ 36 Mb/s • -79 dBm @ 48 Mb/s • -79 dBm @ 54 Mb/s 		<ul style="list-style-type: none"> • -92 dBm @ MCS0 • -90 dBm @ MCS1 • -88 dBm @ MCS2 • -85 dBm @ MCS3 • -82 dBm @ MCS4 • -77 dBm @ MCS5 • -76 dBm @ MCS6 • -74 dBm @ MCS7 • -92 dBm @ MCS8 • -90 dBm @ MCS9 • -87 dBm @ MCS10 • -85 dBm @ MCS11 • -82 dBm @ MCS12 • -77 dBm @ MCS13 • -75 dBm @ MCS14 • -74 dBm @ MCS15 		
	IEEE 802.11b (CCK)				
	<ul style="list-style-type: none"> • -101 dBm @ 1 Mb/s • -98 dBm @ 2 Mb/s • -92 dBm @ 5.5 Mb/s • -89 dBm @ 11 Mb/s 				
	IEEE 802.11g (non HT20)				
	<ul style="list-style-type: none"> • -92 dBm @ 6 Mb/s • -92 dBm @ 9 Mb/s • -92 dBm @ 12 Mb/s • -90 dBm @ 18 Mb/s • -86 dBm @ 24 Mb/s • -84 dBm @ 36 Mb/s • -79 dBm @ 48 Mb/s • -78 dBm @ 54 Mb/s 				

	<p>2.4-GHz: IEEE 802.11n (HT40)</p> <ul style="list-style-type: none"> -89 dBm @ MCS0 -87 dBm @ MCS1 -85 dBm @ MCS2 -82 dBm @ MCS3 -79 dBm @ MCS4 -73 dBm @ MCS5 -72 dBm @ MCS6 -70 dBm @ MCS7 -90 dBm @ MCS8 -87 dBm @ MCS9 -85 dBm @ MCS10 -81 dBm @ MCS11 -78 dBm @ MCS12 -74 dBm @ MCS13 -72 dBm @ MCS14 -71 dBm @ MCS15 	<p>5-GHz: IEEE 802.11n (HT20)</p> <ul style="list-style-type: none"> -93 dBm @ MCS0 -91 dBm @ MCS1 -89 dBm @ MCS2 -86 dBm @ MCS3 -83 dBm @ MCS4 -78 dBm @ MCS5 -77 dBm @ MCS6 -75 dBm @ MCS7 -87 dBm @ MCS8 -87 dBm @ MCS9 -85 dBm @ MCS10 -83 dBm @ MCS11 -79 dBm @ MCS12 -75 dBm @ MCS13 -73 dBm @ MCS14 -72 dBm @ MCS15 <p>5-GHz: IEEE 802.11n (HT40)</p> <ul style="list-style-type: none"> -91 dBm @ MCS0 -89 dBm @ MCS1 -87 dBm @ MCS2 -83 dBm @ MCS3 -80 dBm @ MCS4 -75 dBm @ MCS5 -74 dBm @ MCS6 -72 dBm @ MCS7 -86 dBm @ MCS8 -85 dBm @ MCS9 -84 dBm @ MCS10 -80 dBm @ MCS11 -77 dBm @ MCS12 -72 dBm @ MCS13 -71 dBm @ MCS14 -70 dBm @ MCS15
Indicators	<ul style="list-style-type: none"> Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors. 	
Dimensions (W x L x H)	<ul style="list-style-type: none"> Access point (without mounting bracket): 8.7 x 8.7 x 1.84 in. (22.1 x 22.1 x 4.7 cm) 	
Weight	<ul style="list-style-type: none"> 2.3 lbs (1.04 kg) 	
Environmental	<ul style="list-style-type: none"> Nonoperating (storage) temperature: -40 to 185°F (-40 to 85°C) Operating temperature: -4 to +131°F (-20 to +55°C) Operating humidity: 10 to 90 percent (noncondensing) 	
System Memory	<ul style="list-style-type: none"> 128-MB DRAM 32-MB flash 	
Input Power Requirements	<ul style="list-style-type: none"> AP3500: 44 to 57 VDC Power Supply and Power Injector: 100 to 240 VAC; 50 to 60 Hz 	
Powering Options	<ul style="list-style-type: none"> IEEE 802.3af Ethernet Switch Cisco AP3500 Power Injectors (AIR-PWRINJ4=) Cisco AP3500 Local Power Supply (AIR-PWR-B=) 	
Power Draw	<ul style="list-style-type: none"> AP3500: 12.95 W <p>Note: When deployed using Power over Ethernet (PoE), the power drawn from the power sourcing equipment will be higher by some amount dependent on the length of the interconnecting cable. This additional power may be as high as 2.45W, bringing the total system power draw (access point + cabling) to 15.4W.</p>	
Warranty	<p>Limited Lifetime Hardware Warranty</p>	
Compliance Standards	<p>Safety:</p> <ul style="list-style-type: none"> UL 60950-1 CAN/CSA-C22.2 No. 60950-1 UL 2043 IEC 60950-1 EN 60950-1 	

Radio approvals:

- FCC Part 15.247, 15.407
- RSS-210 (Canada)
- EN 300.328, EN 301.893 (Europe)
- ARIB-STD 33 (Japan)
- ARIB-STD 66 (Japan)
- ARIB-STD T71 (Japan)
- EMI and susceptibility (Class B)
- FCC Part 15.107 and 15.109
- ICES-003 (Canada)
- VCCI (Japan)
- EN 301.489-1 and -17 (Europe)
- EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC

IEEE Standard:

- IEEE 802.11a/b/g, IEEE 802.11n 2.0, IEEE 802.11h, IEEE 802.11d

Security:

- IEEE 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA
- IEEE 802.1X
- Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP)

EAP Type(s):

- Extensible Authentication Protocol-Transport Layer Security (EAP-TLS)
- EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2)
- Protected EAP (PEAP) v0 or EAP-MSCHAPv2
- Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST)
- PEAPv1 or EAP-Generic Token Card (GTC)
- EAP-Subscriber Identity Module (SIM)

Multimedia:

- Wi-Fi Multimedia (WMM)

Other:

- FCC Bulletin OET-65C
- RSS-102

¹ MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate value.

² GI: A guard interval (GI) between symbols helps receivers overcome the effects of multipath delay.

Selected Part Number and Ordering Information

Cisco Aironet 3500p Series Controller-Based Access Point	
AIR-CAP3502P-x-K9	Dual-band controller-based IEEE 802.11a/g/n
AIR-CAP3502P-xK910	Eco-pack (dual-band IEEE 802.11a/g/n) 10 quantity access points
Cisco SMARTnet® Service for the Cisco Aironet 3500p model with external antennas	
CON-SNT-CAP352Px	SMARTnet 8x5xNBD 3500p access point (dual-band IEEE 802.11 a/g/n)
CON-SNT-CAP352Px10	SMARTnet 8x5xNBD 10 quantity eco-pack 3500p access point (dual-band IEEE 802.11a/g/n)
Cisco Wireless LAN Services	
AS-WLAN-CNSLT	Cisco Wireless LAN Network Planning and Design Service
AS-WLAN-CNSLT	Cisco Wireless LAN IEEE 802.11n Migration Service
AS-WLAN-CNSLT	Cisco Wireless LAN Performance and Security Assessment Service

Regulatory domains: x = regulatory domain.

Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit: <http://www.cisco.com/go/aironet/compliance>.

Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price list

For More Information

<http://www.cisco.com/en/US/products/ps11585/index.html>

Cisco Aironet 2600 Series Access Point

Cisco Aironet 2600 Series Access Points deliver the most advanced features in their class at a great price. The 802.11n-based Cisco Aironet 2600 Series includes a 3 x 4 multiple-input multiple-output (MIMO) antenna with three spatial streams plus Cisco CleanAir, ClientLink 2.0, and VideoStream technologies to help ensure an interference-free, high-speed wireless application experience.



Ideal for Companies That Need These Features

Cisco Aironet 2600 Series

- Premium value with great performance and reliability to meet the ever-increasing demand for access in mobility space
- Faster smartphone performance
- Faster tablet performance
- More reliable client connection
- Great coverage

Main Features and Benefits

- RF excellence
- Based on 802.11n with 3 x 4 multiple-input multiple-output (MIMO) technology with three spatial streams to sustain 450-Mbps rates over a greater range for more capacity and reliability than competing access points
- Cisco ClientLink 2.0 technology for better downlink performance and range for all mobile devices and better battery life on mobile devices such as smartphones and tablets
- Cisco CleanAir technology for proactive, intelligent spectrum intelligence to combat performance problems due to RF interference
- Limited Lifetime Hardware Warranty, including 10-day advance hardware replacement
- Both controller-based and standalone versions available

Specifications

Feature	Cisco Aironet 2600 Series Access Point			
Software	Cisco Unified Wireless Network Software Release 7.3 or later.			
Supported Wireless LAN Controllers	<ul style="list-style-type: none"> • Cisco 2500 Series, Cisco Wireless LAN Controller Module (WLCM) on Cisco Services Ready Engine (SRE) for Integrated Services Router Generation 2 (ISR G2), Cisco Wireless Services Module 2 (WiSM2), Cisco 5500 Series, Cisco Flex 7500 Series 			
802.11n Version 2.0 (and Related) Capabilities	<ul style="list-style-type: none"> • 3x4 multiple-input multiple-output (MIMO) with three spatial streams • Maximal ratio combining (MRC) • 802.11n and 802.11a/g beamforming • 20- and 40-MHz channels • PHY data rates up to 450 Mbps (40-MHz with 5 GHz) • Packet aggregation: Aggregated MAC Protocol Data Unit (A-MPDU) (Tx/Rx), Aggregated MAC Protocol Service Unit (A-MSDU) (Tx/Rx) • 802.11 dynamic frequency selection (DFS) • Cyclic shift diversity (CSD) support 			
Data Rates Supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps			
	802.11bg: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps			
	802.11n data rates (2.4 GHz ¹ and 5 GHz):			
	MCS Index²	GI³ = 800ns	GI = 400ns	
		20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	40-MHz Rate (Mbps)
	0	6.5	13.5	7.2
	1	13	27	14.4
	2	19.5	40.5	21.7
	3	26	54	28.9
	4	39	81	43.3
	5	52	108	57.8
	6	58.5	121.5	65
	7	65	135	72.2
	8	13	27	14.4

9	26	54	28.9	60
10	39	81	43.3	90
11	52	108	57.8	120
12	78	162	86.7	180
13	104	216	115.6	240
14	117	243	130	270
15	130	270	144.4	300
16	19.5	40.5	21.7	45
17	39	81	43.3	90
18	58.5	121.5	65	135
19	78	162	86.7	180
20	117	243	130	270
21	156	324	173.3	360
22	175.5	364.5	195	405
23	195	405	216.7	450

Frequency Band and 20-MHz Operating Channels	<p>A (A regulatory domain - FCC):</p> <ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels <p>C (C regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.825 GHz; 5 channels <p>E (E regulatory domain - ETSI):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) <p>I (I regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels <p>K (K regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.620 GHz; 7 channels • 5.745 to 5.805 GHz; 4 channels 	<p>N (N regulatory domain - Non FCC):</p> <ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.745 to 5.825 GHz; 5 channels <p>Q (Q regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels <p>R (R regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.660 to 5.805 GHz; 7 channels <p>S (S regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 11 channels • 5.745 to 5.825 GHz; 5 channels <p>T (T regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.280 to 5.320 GHz; 3 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels <p>Z (Z regulatory domain):</p> <ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 8 channels • 5.500 to 5.700 GHz; 8 channels (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz; 5 channels
	<p>Note: Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit: http://www.cisco.com/go/aironet/compliance.</p>	

Maximum Number of Nonoverlapping Channels	<p>2.4 GHz</p> <p>802.11b/g:</p> <ul style="list-style-type: none"> • 20 MHz: 3 <p>802.11n:</p> <ul style="list-style-type: none"> • 20 MHz: 3 	<p>5 GHz</p> <p>802.11a:</p> <ul style="list-style-type: none"> • 20 MHz: 21 <p>802.11n:</p> <ul style="list-style-type: none"> • 20 MHz: 21 • 40 MHz: 9
<p>Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.</p>		

Receive Sensitivity	<p>802.11b (CCK)</p> <ul style="list-style-type: none"> • -100 dBm @ 1 Mb/s • -99 dBm @ 2 Mb/s • -92 dBm @ 5.5 Mb/s • -88 dBm @ 11 Mb/s 	<p>802.11g (non HT20)</p> <ul style="list-style-type: none"> • -91 dBm @ 6 Mb/s • -91 dBm @ 9 Mb/s • -91 dBm @ 12 Mb/s • -90 dBm @ 18 Mb/s • -87 dBm @ 24 Mb/s • -85 dBm @ 36 Mb/s • -80 dBm @ 48 Mb/s • -78 dBm @ 54 Mb/s 	<p>802.11a (non HT20)</p> <ul style="list-style-type: none"> • -92 dBm @ 6 Mb/s • -92 dBm @ 9 Mb/s • -92 dBm @ 12 Mb/s • -92 dBm @ 18 Mb/s • -89 dBm @ 24 Mb/s • -86 dBm @ 36 Mb/s • -81 dBm @ 48 Mb/s • -79 dBm @ 54 Mb/s
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	2.4-GHz 802.11n (HT20) <ul style="list-style-type: none"> -91 dBm @ MCS0 -90 dBm @ MCS1 -90 dBm @ MCS2 -88 dBm @ MCS3 -85 dBm @ MCS4 -80 dBm @ MCS5 -78 dBm @ MCS6 -75 dBm @ MCS7 -90 dBm @ MCS8 -90 dBm @ MCS9 -89 dBm @ MCS10 -86 dBm @ MCS11 -82 dBm @ MCS12 -78 dBm @ MCS13 -77 dBm @ MCS14 -75 dBm @ MCS15 -90 dBm @ MCS16 -89 dBm @ MCS17 -87 dBm @ MCS18 -84 dBm @ MCS19 -81 dBm @ MCS20 -76 dBm @ MCS21 -75 dBm @ MCS22 -74 dBm @ MCS23 		5-GHz 802.11n (HT20) <ul style="list-style-type: none"> -92 dBm @ MCS0 -91 dBm @ MCS1 -90 dBm @ MCS2 -87 dBm @ MCS3 -84 dBm @ MCS4 -80 dBm @ MCS5 -78 dBm @ MCS6 -75 dBm @ MCS7 -92 dBm @ MCS8 -90 dBm @ MCS9 -88 dBm @ MCS10 -85 dBm @ MCS11 -81 dBm @ MCS12 -77 dBm @ MCS13 -76 dBm @ MCS14 -74 dBm @ MCS15 -91 dBm @ MCS16 -89 dBm @ MCS17 -86 dBm @ MCS18 -83 dBm @ MCS19 -80 dBm @ MCS20 -75 dBm @ MCS21 -74 dBm @ MCS22 -73 dBm @ MCS23 	5-GHz 802.11n (HT40) <ul style="list-style-type: none"> -89 dBm @ MCS0 -88 dBm @ MCS1 -87 dBm @ MCS2 -84 dBm @ MCS3 -81 dBm @ MCS4 -76 dBm @ MCS5 -74 dBm @ MCS6 -73 dBm @ MCS7 -89 dBm @ MCS8 -87 dBm @ MCS9 -85 dBm @ MCS10 -81 dBm @ MCS11 -78 dBm @ MCS12 -74 dBm @ MCS13 -72 dBm @ MCS14 -71 dBm @ MCS15 -88 dBm @ MCS16 -85 dBm @ MCS17 -83 dBm @ MCS18 -79 dBm @ MCS19 -76 dBm @ MCS20 -72 dBm @ MCS21 -70 dBm @ MCS22 -69 dBm @ MCS23
Maximum Transmit Power	2.4 GHz 802.11b <ul style="list-style-type: none"> 22 dBm: 3 Antennas 802.11g <ul style="list-style-type: none"> 22 dBm: 3 Antennas 802.11n (HT20) <ul style="list-style-type: none"> 22 dBm: 3 Antennas 		5 GHz 802.11a <ul style="list-style-type: none"> 23 dBm: 4 Antennas 802.11n (HT20) <ul style="list-style-type: none"> 23 dBm: 4 Antennas 802.11n (HT40) <ul style="list-style-type: none"> 23 dBm: 4 Antennas 	
Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.				
Available Transmit Power Settings	2.4 GHz <ul style="list-style-type: none"> 22 dBm (160 mW) 19 dBm (80 mW) 16 dBm (40 mW) 13 dBm (20 mW) 10 dBm (10 mW) 7 dBm (5 mW) 4 dBm (2.5 mW) 		5 GHz <ul style="list-style-type: none"> 23 dBm (200 mW) 20 dBm (100 mW) 17 dBm (50 mW) 14 dBm (25 mW) 11 dBm (12.5 mW) 8 dBm (6.25 mW) 5 dBm (3.13 mW) 	
Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.				
Integrated Antenna	<ul style="list-style-type: none"> 2.4 GHz, Gain 4 dBi, internal omnidirectional, horizontal beamwidth 360° 5 GHz, Gain 4 dBi, internal omnidirectional, horizontal beamwidth 360° 			
External Antenna (Sold Separately)	<ul style="list-style-type: none"> Certified for use with antenna gains up to 6 dBi (2.4 GHz and 5 GHz) Cisco offers the industry's broadest selection of 802.11n antennas delivering optimal coverage for a variety of deployment scenarios 			
Interfaces	<ul style="list-style-type: none"> 10/100/1000BASE-T autosensing (RJ-45) Management console port (RJ-45) 			
Indicators	<ul style="list-style-type: none"> Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors 			
Dimensions (W x L x H)	<ul style="list-style-type: none"> Access point (without mounting bracket): 8.652 x 8.652 x 2.1 in. (22.1 x 22.1 x 4.7 cm) 			
Weight	<ul style="list-style-type: none"> 2.3 lbs (1.04 kg) (2.7 lbs for external) 			
Environmental	Cisco Aironet 2600i <ul style="list-style-type: none"> Nonoperating (storage) temperature: -22 to 158°F (-30 to 70°C) Nonoperating (storage) Altitude Test -25°C, 15,000 ft. Operating temperature: 32 to 104°F (0 to 40°C) Operating humidity: 10 to 90% percent (noncondensing) Operating Altitude Test: -40°C, 9843 ft. 			

	<p>Cisco Aironet 2600e</p> <ul style="list-style-type: none"> • Nonoperating (storage) temperature: -22 to 158°F (-30 to 70°C) • Nonoperating (storage) Altitude Test: -25°C, 15,000 ft. • Operating temperature: -4 to 131°F (-20 to 55°C) • Operating humidity: 10 to 90 % (noncondensing) • Operating Altitude Test: -40°C, 9843 ft.
System Memory	<ul style="list-style-type: none"> • 256 MB DRAM • 32 MB flash
Input Power Requirements	<ul style="list-style-type: none"> • AP2600: 44 to 57 VDC • Power Supply and Power Injector: 100 to 240 VAC; 50 to 60 Hz
Powering Options	<ul style="list-style-type: none"> • 802.3af Ethernet Switch • Cisco AP2600 Power Injectors (AIR-PWRINJ4=) • Cisco AP2600 Local Power Supply (AIR-PWR-B=)
Power Draw	<ul style="list-style-type: none"> • AP2600: 12.95 W <p>Note: When deployed using Power over Ethernet (PoE), the power drawn from the power sourcing equipment will be higher by some amount depending on the length of the interconnecting cable. This additional power may be as high as 2.45W, bringing the total system power draw (access point + cabling) to 15.4W.</p>
Warranty	Limited Lifetime Hardware Warranty
Compliance Standards	<ul style="list-style-type: none"> • UL 60950-1 • CAN/CSA-C22.2 No. 60950-1 • UL 2043 • IEC 60950-1 • EN 60950-1 • EN 50155 <p>Radio approvals:</p> <ul style="list-style-type: none"> • FCC Part 15.247, 15.407 • RSS-210 (Canada) • EN 300.328, EN 301.893 (Europe) • ARIB-STD 66 (Japan) • ARIB-STD T71 (Japan) • EMI and susceptibility (Class B) • FCC Part 15.107 and 15.109 • ICES-003 (Canada) • VCCI (Japan) • EN 301.489-1 and -17 (Europe) • EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC <p>IEEE Standard:</p> <ul style="list-style-type: none"> • IEEE 802.11a/b/g, IEEE 802.11n, IEEE 802.11h, IEEE 802.11d <p>Security:</p> <ul style="list-style-type: none"> • 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA • 802.1X • Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP) <p>EAP Type(s):</p> <ul style="list-style-type: none"> • Extensible Authentication Protocol-Transport Layer Security (EAP-TLS) • EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2) • Protected EAP (PEAP) v0 or EAP-MSCHAPv2 • Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST) • PEAPv1 or EAP-Generic Token Card (GTC) • EAP-Subscriber Identity Module (SIM) <p>Multimedia:</p> <ul style="list-style-type: none"> • Wi-Fi Multimedia (WMM™) <p>Other:</p> <ul style="list-style-type: none"> • FCC Bulletin OET-65C • RSS-102

¹ 4 GHz: 2 GHz does not support 40 MHz.

² MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.

³ GI: A guard interval (GI) between symbols helps receivers overcome the effects of multipath delays.

Selected Part Numbers and Ordering Information

The Cisco Aironet 2600i Access Point: Indoor environments with internal antennas

AIR-CAP2602I-x-K9	Dual-band controller-based 802.11a/g/n
AIR-CAP2602I-xK910	Eco-pack (dual-band 802.11a/g/n) 10 quantity access points
AIR-SAP2602I-x-K9	Dual-band autonomous 802.11a/g/n
AIR-SAP2602I-x-K95	Eco-pack (dual-band 802.11a/g/n) 5 quantity access points

The Cisco Aironet 2600e Access Point: Indoor, challenging environments with external antennas

AIR-CAP2602E-x-K9	Dual-band controller-based 802.11a/g/n
AIR-CAP2602E-xK910	Eco-pack (dual-band 802.11a/g/n) 10 quantity access points
AIR-SAP2602E-x-K9	Dual-band autonomous 802.11a/g/n
AIR-SAP2602E-x-K95	Eco-pack (dual-band 802.11a/g/n) 5 quantity access points

Cisco SMARTnet® Service for the Cisco Aironet 2600i Access Point with internal and External antennas

CON-SNT-y	SMARTnet 8x5xNBD 2600i/e access point (dual-band 802.11 a/g/n) (e.g. CON-SNT-C262IE for AP2600 internal antenna for E Domain)
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Cisco Wireless LAN Services

AS-WLAN-CNSLT	Cisco Wireless LAN Network Planning and Design Service
AS-WLAN-CNSLT	Cisco Wireless LAN 802.11n Migration Service
AS-WLAN-CNSLT	Cisco Wireless LAN Performance and Security Assessment Service

Regulatory Domains: (x = regulatory domain)

Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit: <http://www.cisco.com/go/aironet/compliance>.

Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.

For More Information

<http://www.cisco.com/en/US/products/ps12534/index.html>

Cisco Aironet 1600 Series Access Point

The Cisco Aironet 1600 Series Access Point is an enterprise-class, entry-level 802.11n-based access point designed to address the wireless connectivity needs of small and medium-sized enterprise networks. The Cisco Aironet 1600 Series offers the performance advantage of 802.11n enterprise-class performance with 3 x 3 multiple-input multiple-output (MIMO) technology with two spatial streams ideal for small and medium-sized enterprises.



Ideal for Companies That Need These Features

Cisco Aironet 1600 Series

- Value with great performance and reliability to meet the ever-increasing demand for access in mobility space
- More reliable client connection
- Great coverage

Main Features and Benefits

- Based on 802.11n with 3 x 3 multiple-input multiple-output (MIMO) technology with two spatial streams to sustain 300-Mbps rates over a greater range for more capacity and reliability than competing entry-level 802.11n access points
- Cisco ClientLink 2.0 technology for better downlink performance and range for all mobile devices and better battery life on mobile devices such as smartphones and tablets
- Cisco CleanAir Express technology for proactive, intelligent spectrum intelligence to combat performance problems due to RF interference (planned for future support)*
- Limited Lifetime Hardware Warranty, including 10-day advance hardware replacement
- Integrated antenna version and external antenna with extended operating temperature range version available
- Both controller-based and standalone versions available

* Planned for support for Q12013, **check here for updates:** <http://www.in.cisco.com/tech/products/aironet1600/>

Specifications

Feature	Cisco Aironet 1600 Series Access Point				
Software	<ul style="list-style-type: none"> • Cisco Unified Wireless Network Software • Cisco IOS® Software Release 				
Supported Wireless LAN Controllers	<ul style="list-style-type: none"> • Cisco 2500 Series, Cisco Wireless LAN Controller Module (WLCM) on Cisco Services Ready Engine (SRE) for Integrated Services Router Generation 2 (ISR G2), Cisco Wireless Services Module 2 (WISM2), Cisco 5500 Series, Cisco Flex 7500 Series 				
802.11n	<ul style="list-style-type: none"> • 3x3 multiple-input multiple-output (MIMO) with two spatial streams • Maximal ratio combining (MRC) • 20- and 40-MHz channels • PHY data rates up to 300 Mbps • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • 802.11 dynamic frequency selection (DFS) (Bin 5) • Cyclic shift diversity (CSD) support 				
Data Rates Supported	802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps				
	802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps				
	802.11n data rates (2.4 GHz¹ and 5 GHz):				
	MCS Index²	GI³ = 800ns		GI = 400ns	
		20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)
	0	6.5	13.5	7.2	15
	1	13	27	14.4	30
	2	19.5	40.5	21.7	45
	3	26	54	28.9	60
	4	39	81	43.3	90
	5	52	108	57.8	120
	6	58.5	121.5	65	135
	7	65	135	72.2	150
	8	13	27	14.4	30
	9	26	54	28.9	60
10	39	81	43.3	90	
11	52	108	57.8	120	
12	78	162	86.7	180	
13	104	216	115.6	240	
14	117	243	130	270	
15	130	270	144.4	300	
Frequency Band and 20-MHz Operating Channels	A Regulatory Domain: <ul style="list-style-type: none"> • 2.412 to 2.462 GHz: 11 channels • 5.180 to 5.320 GHz: 8 channels • 5.500 to 5.700 GHz: 8 channels • (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz: 5 channels 				
	C Regulatory Domain: <ul style="list-style-type: none"> • 2.412 to 2.472 GHz: 13 channels • 5.745 to 5.825 GHz: 5 channels 				
	E Regulatory Domain: <ul style="list-style-type: none"> • 2.412 to 2.472 GHz: 13 channels • 5.180 to 5.320 GHz: 8 channels • 5.500 to 5.700 GHz: 8 channels • (excludes 5.600 to 5.640 GHz) 				
	I Regulatory Domain: <ul style="list-style-type: none"> • 2.412 to 2.472 GHz: 13 channels • 5.180 to 5.320 GHz: 8 channels 				
	K Regulatory Domain: <ul style="list-style-type: none"> • 2.412 to 2.472 GHz: 13 channels • 5.180 to 5.320 GHz: 8 channels • 5.500 to 5.620 GHz: 7 channels • 5.745 to 5.805 GHz: 4 channels 				
	N Regulatory Domain: <ul style="list-style-type: none"> • 2.412 to 2.462 GHz: 11 channels • 5.180 to 5.320 GHz: 8 channels • 5.745 to 5.825 GHz: 5 channels 				
	Q Regulatory Domain: <ul style="list-style-type: none"> • 2.412 to 2.472 GHz: 13 channels • 5.180 to 5.320 GHz: 8 channels • 5.500 to 5.700 GHz: 11 channels 				
	R Regulatory Domain: <ul style="list-style-type: none"> • 2.412 to 2.472 GHz: 13 channels • 5.180 to 5.320 GHz: 8 channels • 5.660 to 5.700 GHz: 3 channels • 5.745 to 5.805 GHz: 4 channels 				
	S Regulatory Domain: <ul style="list-style-type: none"> • 2.412 to 2.472 GHz: 13 channels • 5.180 to 5.320 GHz: 8 channels • 5.500 to 5.700 GHz: 11 channels • 5.745 to 5.825 GHz: 5 channels 				

	T Regulatory Domain: <ul style="list-style-type: none"> • 2.412 to 2.462 GHz: 11 channels • 5.280 to 5.320 GHz: 3 channels • 5.500 to 5.700 GHz: 8 channels • (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz: 5 channels 	Z Regulator Domain: <ul style="list-style-type: none"> • 2.412 to 2.462 GHz: 11 channels • 5.180 to 5.320 GHz: 8 channels • 5.500 to 5.700 GHz: 8 channels • (excludes 5.600 to 5.640 GHz) • 5.745 to 5.825 GHz: 5 channel
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Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Maximum Number of Nonoverlapping Channels	2.4 GHz 8021 1b/g: <ul style="list-style-type: none"> • 20 MHz: 3 8021 1n: <ul style="list-style-type: none"> • 20 MHz: 3 	5 GHz 8021 1a: <ul style="list-style-type: none"> • 20 MHz: 24 8021 1n: <ul style="list-style-type: none"> • 20 MHz: 24 • 40 MHz: 11
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Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Receive Sensitivity	2.4 GHz 802.11b -101 dBm @ 1 Mb/s -99 dBm @ 2 Mb/s -92 dBm @ 5.5 Mb/s -89 dBm @ 11 Mb/s	2.4 GHz 802.11g -93 dBm @ 6 Mb/s -93 dBm @ 9 Mb/s -92 dBm @ 12 Mb/s -90 dBm @ 18 Mb/s -87 dBm @ 24 Mb/s -85 dBm @ 36 Mb/s -80 dBm @ 48 Mb/s -79 dBm @ 54 Mb/s	5 GHz 802.11a -92 dBm @ 6 Mb/s -91 dBm @ 9 Mb/s -91 dBm @ 12 Mb/s -89 dBm @ 18 Mb/s -86 dBm @ 24 Mb/s -83 dBm @ 36 Mb/s -79 dBm @ 48 Mb/s -78 dBm @ 54 Mb/s
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	2.4 GHz 802.11n (HT20) -93 dBm @ MCS0 -91 dBm @ MCS1 -89 dBm @ MCS2 -86 dBm @ MCS3 -83 dBm @ MCS4 -78 dBm @ MCS5 -77 dBm @ MCS6 -76 dBm @ MCS7 -93 dBm @ MCS8 -90 dBm @ MCS9 -88 dBm @ MCS10 -85 dBm @ MCS11 -81 dBm @ MCS12 -77 dBm @ MCS13 -76 dBm @ MCS14 -74 dBm @ MCS15	5 GHz 802.11n (HT20) -92 dBm @ MCS0 -89 dBm @ MCS1 -88 dBm @ MCS2 -85 dBm @ MCS3 -82 dBm @ MCS4 -77 dBm @ MCS5 -76 dBm @ MCS6 -75 dBm @ MCS7 -91 dBm @ MCS8 -88 dBm @ MCS9 -87 dBm @ MCS10 -84 dBm @ MCS11 -81 dBm @ MCS12 -76 dBm @ MCS13 -75 dBm @ MCS14 -73 dBm @ MCS15	5 GHz 802.11n (HT40) -88 dBm @ MCS0 -87 dBm @ MCS1 -85 dBm @ MCS2 -82 dBm @ MCS3 -79 dBm @ MCS4 -74 dBm @ MCS5 -73 dBm @ MCS6 -72 dBm @ MCS7 -88 dBm @ MCS8 -86 dBm @ MCS9 -84 dBm @ MCS10 -81 dBm @ MCS11 -78 dBm @ MCS12 -73 dBm @ MCS13 -72 dBm @ MCS14 -70 dBm @ MCS15
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Maximum Total Transmit Power	2.4GHz 8021 1b <ul style="list-style-type: none"> • 22 dBm (3 antennas enabled) 8021 1g <ul style="list-style-type: none"> • 22 dBm (3 antennas enabled) 8021 1n (HT20) <ul style="list-style-type: none"> • 22 dBm (3 antennas enabled) 	5GHz 8021 1a <ul style="list-style-type: none"> • 22 dBm (3 antennas enabled) 8021 1n non-HT duplicate mode <ul style="list-style-type: none"> • 22 dBm (3 antennas enabled) 8021 1n (HT20) <ul style="list-style-type: none"> • 22 dBm (3 antennas enabled) 8021 1n (HT40) <ul style="list-style-type: none"> • 22 dBm (3 antennas enabled)
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Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Available Total Transmit Power Settings	2.4 GHz			5 GHz		
	enabled antennas:			enabled antennas:		
	1	2	3	1	2	3
	17 dBm	20 dBm	22 dBm	17 dBm	20 dBm	22 dBm
	14 dBm	17 dBm	19 dBm	14 dBm	17 dBm	19 dBm
	11 dBm	14 dBm	16 dBm	11 dBm	14 dBm	16 dBm
	8 dBm	11 dBm	13 dBm	8 dBm	11 dBm	13 dBm
	5 dBm	8 dBm	10 dBm	5 dBm	8 dBm	10 dBm
	2 dBm	5 dBm	7 dBm	2 dBm	5 dBm	7 dBm

Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Integrated Antenna	<ul style="list-style-type: none"> • 2.4 GHz, gain 4.0 dBi, horizontal beamwidth 360° • 5 GHz, gain 4.0 dBi, horizontal beamwidth 360°
External Antenna (Sold Separately)	<ul style="list-style-type: none"> • Certified for use with antenna gains up to 6 dBi (2.4 GHz and 5 GHz) • Cisco offers the industry's broadest selection of 802.11n antennas delivering optimal coverage for a variety of deployment scenario
Interfaces	<ul style="list-style-type: none"> • 10/100/1000BASE-T autosensing (RJ-45) • Management console port (RJ-45)
Indicators	<ul style="list-style-type: none"> • Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors
Dimensions (W x L x H)	<ul style="list-style-type: none"> • Access point (without mounting bracket): 8.7 x 8.7 x 1.84 in. (22.1 x 22.1 x 4.7 cm)
Weight	<ul style="list-style-type: none"> • 2.3 lbs (1.04 kg)
Environmental	<p>Cisco Aironet 1600i</p> <ul style="list-style-type: none"> • Nonoperating (storage) temperature: -22 to 158°F (-30 to 70°C) • Nonoperating (storage) Altitude Test -25°C, 15,000 ft. • Operating temperature: 32 to 104°F (0 to 40°C) • Operating humidity: 10 to 90% percent (noncondensing) • Operating Altitude Test -40°C, 9843 ft. <p>Cisco Aironet 1600e</p> <ul style="list-style-type: none"> • Nonoperating (storage) temperature: -22 to 158°F (-30 to 70°C) • Nonoperating (storage) Altitude Test - 25°C, 15,000 ft. • Operating temperature: -4 to 122°F (-20 to 50°C) • Operating humidity: 10 to 90 percent (noncondensing) • Operating Altitude Test -40°C, 9843 ft
System Memory	<ul style="list-style-type: none"> • 256 MB DRAM • 32 MB flash
Input Power Requirements	<ul style="list-style-type: none"> • AP1600: 44 to 57 VDC • Power Supply and Power Injector: 100 to 240 VAC, 50 to 60 Hz
Powering Options	<ul style="list-style-type: none"> • 802.3af Ethernet Switch • Cisco AP1600 Power Injectors (AIR-PWRINJ4=, AIR-PWRINJ5=) • Cisco AP1600 Local Power Supply (AIR-PWR-B=)
Power Draw	<ul style="list-style-type: none"> • AP1600: 12.95 W <p>Note: When deployed using PoE, the power drawn from the power sourcing equipment will be higher by some amount dependent on the length of the interconnecting cable. This additional power may be as high as 2.45W, bringing the total system power draw (access point + cabling) to 15.4W.</p>
Warranty	Limited Lifetime Hardware Warranty
Compliance	<p>Safety:</p> <ul style="list-style-type: none"> • UL 60950-1 • CAN/CSA-C22.2 No. 60950-1 • UL 2043 • IEC 60950-1 • EN 60950-1 <p>Radio approvals:</p> <ul style="list-style-type: none"> • FCC Part 15.247, 15.407 • RSS-210 (Canada) • EN 300.328, EN 301.893 (Europe) • ARIB-STD 33 (Japan) • ARIB-STD 66 (Japan) • ARIB-STD T71 (Japan) • AS/NZS 4268.2003 (Australia and New Zealand) • EMI and susceptibility (Class B) • FCC Part 15.107 and 15.109 • ICES-003 (Canada) • VCCI (Japan) • EN 301.489-1 and -17 (Europe) • EN 60601-1-2 EMC requirements for the Medical Directive 93/42/EEC • IEEE Standard: • IEEE 802.11a/b/g, IEEE 802.11n, IEEE 802.11h, IEEE 802.11d • Security: • 802.11i, Wi-Fi Protected Access 2 (WPA2), WPA • 802.1X • Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP)

	<p>EAP Type(s):</p> <ul style="list-style-type: none"> • Extensible Authentication Protocol-Transport Layer Security (EAP-TLS) • EAP-Tunneled TLS (TLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2) • Protected EAP (PEAP) v0 or EAP-MSCHAPv2 • Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST) • PEAPv1 or EAP-Generic Token Card (GTC) • EAP-Subscriber Identity Module (SIM) <p>Multimedia:</p> <ul style="list-style-type: none"> • Wi-Fi Multimedia (WMM™) <p>Other:</p> <ul style="list-style-type: none"> • FCC Bulletin OET-65C • RSS-102
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¹ 2.4 GHz: 2 GHz does not support 40 MHz.

² MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.

³ GI: A Guard Interval (GI) between symbols helps receivers overcome the effects of multipath delays.

Selected Part Numbers and Ordering Information

The Cisco Aironet 1600i Access Point: Indoor environments, with internal antennas	
AIR-CAP1602I-x-K9	Dual-band controller-based 802.11a/g/n
AIR-CAP1602I-xK910	Eco-pack (dual-band controller-based 802.11a/g/n) 10 quantity access points
AIR-SAP1602I-x-K9	Dual-band stand-alone 802.11a/g/n
AIR-SAP1602I-xK9-5	Eco-pack (dual-band stand-alone 802.11a/g/n) 5 quantity access points
The Cisco Aironet 1600e Access Point: Indoor, challenging environments, with external antennas	
AIR-CAP1602E-x-K9	Dual-band controller-based 802.11a/g/n
AIR-CAP1602E-xK910	Eco-pack (dual-band 802.11a/g/n) 10 quantity access points
AIR-SAP1602E-x-K9	Dual-band stand-alone 802.11a/g/n
AIR-SAP1602E-xK9-5	Eco-pack (dual-band stand-alone 802.11a/g/n) 5 quantity access points

Regulatory domains:

(x = Cisco SMARTnet® Service for the Cisco Aironet 1600 Series Access Point with Internal and External antennas)

CON-SNT-C1602Ix	SMARTnet 8x5xNBD 1600i access point (dual-band 802.11 a/g/n, Controller-based), (e.g. CON-SNT-C1602IE for AP1600 internal antenna for E Domain, Controller based)
CON-SNT-C1602Ex	SMARTnet 8x5xNBD 1600e access point (dual-band 802.11 a/g/n, Controller-based), (e.g. CON-SNT-C1602EA for AP1600 external antenna for A Domain, Controller based)
CON-SNT-S1602Ix	SMARTnet 8x5xNBD 1600i access point (dual-band 802.11 a/g/n, Stand-alone), (e.g. CON-SNT-S1602IE for AP1600 internal antenna for E Domain, stand-alone)
CON-SNT-S1602Ex	SMARTnet 8x5xNBD 1600e access point (dual-band 802.11 a/g/n, Stand-alone), (e.g. CON-SNT-S1602EA for AP1600 external antenna for A Domain, Stand-alone)

Cisco Wireless LAN Services

AS-WLAN-CNSLT	Cisco Wireless LAN Network Planning and Design Service
AS-WLAN-CNSLT	Cisco Wireless LAN 802.11n Migration Service
AS-WLAN-CNSLT	Cisco Wireless LAN Performance and Security Assessment Service

Regulatory domain

Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, please visit: <http://www.cisco.com/go/aironet/compliance>.

Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.

Cisco Aironet 600 Series OfficeExtend Access Points

The Cisco Aironet 600 Series OfficeExtend Access Points provide secure enterprise wireless coverage to the home. These dual-band, IEEE 802.11n access points extend the corporate network to home teleworkers and mobile contractors. The access point connects to the home broadband Internet access and establishes a secure tunnel to the corporate network so that remote employees can access data, voice, video, and cloud services for a mobility experience consistent with that at the corporate office. The dual-band, simultaneous support for 2.4- and 5-GHz radio frequencies helps ensure that corporate devices are not affected by congestion caused by common household devices that use the 2.4-GHz band. The Cisco Aironet 600 Series OfficeExtend Access Points are designed primarily for the teleworker. They support both secure corporate data access and maintenance of connectivity for personal home devices with segmented home-traffic support.



Main Features and Benefits

Business Benefits

- Extends Cisco Borderless Networks services and policies to the home-office teleworker
- Protects the corporate environment with industry-standard control and wireless access point (Control and Provisioning of Wireless Access Points [CAPWAP] protocol) support
- Simultaneously supports corporate and personal network activity with traffic segmentation
- Increases productivity and reduces cellular cost by extending voice to the home wirelessly or through a wired Ethernet port
- Comes with a limited lifetime warranty that includes 10-day advance hardware replacement

Benefits for the Teleworker

- Offers zero-touch deployment at the home office, accelerating setup and allowing you to work right away
- Offers simultaneous dual-band support to help avoid congestion caused by home devices
- Provides backward capability, supporting IEEE 802.11a/b/g devices as well as newly deployed IEEE 802.11n devices
- Offers a sleek design for convenient desktop placement

Specifications

Feature	Cisco Aironet 600 Series OfficeExtend	
Software	Cisco Unified Wireless Network Software Release 7.0 MR1 or later	
Controllers Supported	Cisco 2500, 5500, 7500 Series Wireless Controllers and Cisco Wireless Services Module 2 (WiSM2)	
IEEE 802.11n	<ul style="list-style-type: none"> • Multiple-input multiple-output (MIMO) with two spatial streams • Maximal ratio combining (MRC) • 20- and 40-MHz channels • PHY data rates up to 300 Mbps • Packet aggregation: A-MPDU (Tx/Rx) • Cyclic shift diversity (CSD) support 	
Maximum Number of Nonoverlapping Channels	2.4 GHz IEEE 802.11b/g: <ul style="list-style-type: none"> • 20 MHz: 3 IEEE 802.11n: <ul style="list-style-type: none"> • 20 MHz: 3 	5 GHz IEEE 802.11a: <ul style="list-style-type: none"> • 20 MHz: 9 IEEE 802.11n: <ul style="list-style-type: none"> • 20 MHz: 9 • 40 MHz: 4
Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.		
Receive Sensitivity	2.4 GHz <ul style="list-style-type: none"> • IEEE 802.11b: -87dBm Typical @ 11Mbps • IEEE 802.11g: -77dBm Typical @ 54Mbps; IEEE 802.11n 20MHz: -71dBm Typical @ MCS15 • IEEE 802.11n 40MHz: -68dBm Typical @ MCS15 5 GHz <ul style="list-style-type: none"> • IEEE 802.11a: -74dBm Typical @ 54Mbps; IEEE 802.11n 20MHz: -68dBm Typical @ MCS15 • IEEE 802.11n 40MHz: -65dBm Typical @ MCS15 	
Maximum Transmit Power	2.4 GHz <ul style="list-style-type: none"> • IEEE 802.11b (CCK): 20 dBm with one antenna • IEEE 802.11g: 20 dBm with 2 antennas • IEEE 802.11n (HT20): 20 dBm with 2 antennas • IEEE 802.11n (HT40): 20 dBm with 2 antennas 	5 GHz <ul style="list-style-type: none"> • IEEE 802.11a: 20 dBm with 2 antennas • IEEE 802.11n (HT20): 20 dBm with 2 antennas • IEEE 802.11n (HT40): 20 dBm with 2 antennas

Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Frequency Band and 20-MHz Operating Channels	A Regulatory Domain:	N Regulatory Domain:
	<ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 4 channels • 5.745 to 5.825 GHz; 5 channels 	<ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.180 to 5.320 GHz; 4 channels • 5.745 to 5.825 GHz; 5 channels
	C Regulatory Domain:	P Regulatory Domain:
	<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.745 to 5.825 GHz; 5 channels 	<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 4 channels
	E Regulatory Domain:	R Regulatory Domain:
	<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 8 channels 	<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 4 channels • 5.745 to 5.825 GHz; 4 channels
I Regulatory Domain:	S Regulatory Domain:	
<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 4 channels 	<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 4 channels • 5.745 to 5.825 GHz; 5 channels 	
K Regulatory Domain:	T Regulatory Domain:	
<ul style="list-style-type: none"> • 2.412 to 2.472 GHz; 13 channels • 5.180 to 5.320 GHz; 4 channels • 5.745 to 5.805 GHz; 4 channels 	<ul style="list-style-type: none"> • 2.412 to 2.462 GHz; 11 channels • 5.745 to 5.825 GHz; 5 channels 	

Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Data Rates Supported	IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps			
	IEEE 802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps			
	IEEE 802.11n data rates (2.4 GHz and 5 GHz):			
	MCS Index¹	GI² = 800ns		GI = 400ns
	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)
0	6.5	13.5	7.2	15
1	13	27	14.4	30
2	19.5	40.5	21.7	45
3	26	54	28.9	60
4	39	81	43.3	90
5	52	108	57.8	120
6	58.5	121.5	65	135
7	65	135	72.2	150
8	13	27	14.4	30
9	26	54	28.9	60
10	39	81	43.3	90
11	52	108	57.8	120
12	78	162	86.7	180
13	104	216	115.6	240
14	117	243	130	270
15	130	270	144.4	300
Integrated Antenna	<ul style="list-style-type: none"> • 2.4 GHz, gain 3.5 dBi, horizontal beamwidth 360° • 5 GHz, gain 4.0 dBi, horizontal beamwidth 360° 			
Interfaces	<ul style="list-style-type: none"> • 4x 10/100/1000BASE-T autosensing (RJ-45) • 1x 10/100/1000BASE-T WAN port (RJ-45) • USB: Not available (future release) 			
Indicators	<ul style="list-style-type: none"> • Status LED indicates boot loader status, association status, operating status, boot loader warnings, boot loader errors [USB (future use)] 			
Dimensions (W x L x H)	<ul style="list-style-type: none"> • Access point (without cradle): 7.75 x 7 x 1.6 in. (195.3 x 176.3 x 39.65 mm) • Access point (with cradle): 8.1 x 7.0 x 2.7 in. (206.15 x 176.3 x 67 mm) 			
Weight	<ul style="list-style-type: none"> • 0.99 lbs (0.452 kg)—without cradle • 1.44 lbs (0.653 kg)—with cradle 			
Environmental	<ul style="list-style-type: none"> • Nonoperating (storage) temperature: -13 to 140°F (-25 to 60°C) • Operating temperature: 32° to 104°F (0 to 40°C) • Operating humidity: 10 to 80% percent (noncondensing) 			
System Memory	<ul style="list-style-type: none"> • 64 MB DRAM • 16 MB flash 			

Powering Options	Cisco AP600 Local Power Supply: 100 to 240 VAC; 50 to 60 Hz (AIR-PWR-ADTR-cc, where cc is country code as follows: AP=Asia Pacific; AR=Argentina/Uruguay; AU=Australia; BR=Brazil; CE=Central Europe; CH=China; DM=Denmark; IS=Israel; IT=Italy; JP=Japan; NA=North America; SA=South Africa; SW=Switzerland; UK=United Kingdom)
Power Draw	Consumption: 12W normal, 15W maximum
Warranty	Limited Lifetime Hardware Warranty
Compliance and Safety Standards	<p>Safety:</p> <ul style="list-style-type: none"> • UL 60950-1, 2nd Edition • CAN/CSA-C22.2 No. 60950-1, 2nd Edition; IEC 60950-1, 2nd Edition • EN 60950-1, 2nd Edition <p>Radio Approvals:</p> <ul style="list-style-type: none"> • FCC Part 15.247, 15.407; RSS-210 (Canada) • EN 300 328, EN 301 893 (Europe) • ARIB-STD 33 (Japan) • ARIB-STD 66 (Japan) • ARIB-STD T71 (Japan); AS/NZS 4268:2003 (Australia and New Zealand) • EMI and susceptibility (Class B) • FCC Part 15.107 and 15.109 • ICES-003 (Canada) • VCCI (Japan) • EN 301 489-1 and -17 (Europe) <p>IEEE Standard:</p> <ul style="list-style-type: none"> • IEEE 802.1 1a/b/g, IEEE 802.1 1n, IEEE 802.1 1h, IEEE 802.1 1d <p>Security:</p> <ul style="list-style-type: none"> • IEEE 802.1 1i, Wi-Fi Protected Access 2 (WPA2), WPA • IEEE 802.1X • Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP) <p>EAP Type(s):</p> <ul style="list-style-type: none"> • Extensible Authentication Protocol-Transport Layer Security (EAP-TLS) • EAP-Tunneled TLS (TTLS) or Microsoft Challenge Handshake Authentication Protocol Version 2 (MSCHAPv2) • Protected EAP (PEAP) v0 or EAP-MSCHAPv2 • Extensible Authentication Protocol-Flexible Authentication via Secure Tunneling (EAP-FAST) • PEAPv1 or EAP-Generic Token Card (GTC) • EAP-Subscriber Identity Module (SIM) <p>Multimedia:</p> <ul style="list-style-type: none"> • Wi-Fi Multimedia (WMM™) <p>Other:</p> <ul style="list-style-type: none"> • FCC Bulletin OET-65C • RSS-102

¹ MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate value.

² GI: A Guard Interval (GI) between symbols helps receivers overcome the effects of multipath delay.

Selected Part Number and Ordering Information

AIR-OEAP602I-x-K9	Dual-band Controller-based IEEE 802.1 1a/g/n
AIR-OEAP602I-xK910	Eco-pack (dual-band IEEE 802.1 1a/g/n) 10 quantity controller-based access points

Regulatory domains: x = regulatory domain.

Customers are responsible for verifying approval for use in their individual countries. To verify approval and to identify the regulatory domain that corresponds to a particular country, visit <http://www.cisco.com/go/aironet/> compliance.

Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.

For More Information

<http://www.cisco.com/en/US/products/ps11579/index.html>

Outdoor Wireless and Client Devices

Cisco Aironet 1550 Series Lightweight Outdoor Wireless Mesh Access Points

The Cisco Aironet 1550 Series Lightweight Outdoor Wireless Mesh Access Points with Cisco CleanAir technology are the industry's first enterprise- and carrier-class IEEE 802.11n access points to create a self-healing and self-optimizing wireless network that mitigates the effect of wireless interference. They offer a flexible, secure, and scalable mesh network for high-performance mobility across large metropolitan-size areas, enterprise campuses, manufacturing yards, and mining pits. The Cisco Aironet 1550 Series supports multiple-device and multiple-network application delivery such as real-time transparent mobility, video surveillance, third-generation (3G) and 4G data offload, and public and private Wi-Fi access.



Main Features and Benefits

- Flexible deployment options: Access or mesh network; extension of an Ethernet network; and Ethernet, fiber, wireless, or cable backhaul
- Service provider support: Wi-Fi for next-generation mobile data offload and personalized mobile services
- Cisco CleanAir technology: Integrated spectrum intelligence to detect, classify, and mitigate RF interference from unauthorized wireless bridges or malicious devices
- High-bandwidth video surveillance over Wi-Fi without the high cost of installing cables over long distances
- High-performance, multipurpose network with low capital expenditures (CapEx) and operating expenses (OpEx)
- Integrated wired and wireless: Cisco Borderless Networks Architecture, which provides cost savings with end-to-end network access solutions that include wireless, switching, routing, and security

The Cisco Aironet 1550 Series includes the following models:

- The Cisco Aironet 1552E and Aironet 1552EU Outdoor Access Points: These access points are the standard models: their dual-radio systems have external antenna ports that are compliant with IEEE 802.11a/n (5 GHz) and 802.11b/g/n standards (2.4 GHz). The 1552E has three external antenna connections for three dual-band antennas. The 1552EU has six external antenna connections, three for 5-GHz and three for 2.4-GHz antennas. They have Ethernet and fiber Small Form-Factor Pluggable (SFP) backhaul options, along with the option of a battery backup. These models also have a Power over Ethernet (PoE)-out port and can power a video surveillance camera. Highly flexible models, the Cisco Aironet 1552E and Aironet 1552EU are well equipped for municipal and campus deployments, video surveillance applications, mining environments, and data offload.
- Cisco Aironet 1552C and Aironet 1552CU Cable Modem Access Points: Where service providers have already invested in a broadband cable network, the Cisco next-generation outdoor wireless mesh can transparently extend network connectivity with the Cisco Aironet 1552C and Aironet 1552CU Access Points by connecting to their integrated cable modem interfaces. The Cisco Aironet 1552C and Aironet 1552CU Outdoor Mesh Access Points are dual-radio systems with DOCSIS 3.0 or EuroDOCSIS 3.0 (8 x 4 HFC) cable modems for power and backhaul. They have dual-band radios that are compliant with IEEE 802.11a/n (5 GHz) and 802.11b/g/n standards (2.4 GHz). The 1552C has an integrated, three-element, dual-band antenna and easily fits within the 30-cm height restriction for service providers. The 1552CU has six external antenna connections, three for 5-GHz and three for 2.4-GHz antennas. These models are perfect for 3G data offload applications and public Wi-Fi.
- Cisco Aironet 1552H Hazardous Location Access Point: Designed for hazardous environments such as oil and gas refineries, chemical plants, mining pits, and manufacturing factories, the Cisco Aironet 1552H Access Point is Class 1, Division 2, and Zone 2 hazardous location certified. It has options similar to those for the Cisco Aironet 1552E, with the exception of battery backup.
- Cisco Aironet 1552I Integrated Antenna Access Point: This access point is a low-profile, lighter-weight model in the Cisco Aironet 1550 Series. The smaller size and sleeker look helps it blend in with the surrounding environment. The smaller power supply also makes it a more energy-efficient product. The Cisco Aironet 1552I does not have a PoE-out or a fiber SFP port.

Specifications

Feature	Cisco Aironet 1550 Series Lightweight Outdoor Wireless Mesh Access Points				
IEEE 802.11n Version 2.0 (and Related) Capabilities	<ul style="list-style-type: none"> • 2x3 multiple-input multiple-output (MIMO) with two spatial streams • Legacy beamforming • 20- and 40-MHz channels • PHY data rates up to 300 Mbps • Packet aggregation: A-MPDU (Tx/Rx), A-MSDU (Tx/Rx) • IEEE 802.11 dynamic frequency selection (DFS) • Cyclic shift diversity (CSD) support 				
DOCSIS 3.0 Capabilities	DOCSIS 3.0 8x4 cable modem provides: <ul style="list-style-type: none"> • Eight (8) bonded channels with total throughput in excess of 300 Mbps • Designed to meet DOCSIS 3.0 specifications as well as backward compatibility with existing DOCSIS 2.0, 1.1 and 1.0 networks • Enhanced packet processing technology to maximize performance • Downstream data rates in excess of 320 Mbps • Upstream data rates up to 120 Mbps • Channel-bonded cable modems must be used in conjunction with a cable modem termination system (CMTS) that supports channel bonding per the DOCSIS 3.0 specifications. When used with a non-channel-bonded CMTS, channel-bonded cable modems function as conventional DOCSIS 2.0 cable modems. 				
Data Rates Supported	IEEE 802.11a: 6, 9, 12, 18, 24, 36, 48, and 54 Mbps IEEE 802.11g: 1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, and 54 Mbps IEEE 802.11n data rates (2.4 GHz and 5 GHz):				
	MCS Index¹	GI² = 800ns		GI = 400ns	
		20-MHz Rate (Mbps)	40-MHz Rate (Mbps)	20-MHz Rate (Mbps)	40-MHz Rate (Mbps)
	0	6.5	13.5	7.2	15
	1	13	27	14.4	30
	2	19.5	40.5	21.7	45
	3	26	54	28.9	60
	4	39	81	43.3	90
	5	52	108	57.8	120
	6	58.5	121.5	65	135
	7	65	135	72.2	150
	8	13	27	14.4	30
	9	26	54	28.9	60
	10	39	81	43.3	90
	11	52	108	57.8	120
	12	78	162	86.7	180
	13	104	216	115.6	240
	14	117	243	130	270
	15	130	270	144.4	300
Frequency Band and 20-MHz Operating Channels	A Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 11 channels • 5.280 to 5.320 GHz; 3 channels • 5.500 to 5.560 GHz; 4 channels • 5.680 to 5.700 GHz; 2 channels • 5.725 to 5.850 GHz; 5 channels C Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 13 channels • 5.725 to 5.850 GHz; 5 channels E Domain: <ul style="list-style-type: none"> • 2.401 to 2.4835 GHz; 13 channels • 5.470 to 5.725 GHz; 8 channels K Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 11 channels • 5.250 to 5.825 GHz; 14 channels 		M Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 13 channels • 5.470 to 5.850 GHz; 12 channels N Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 11 channels • 5.725 to 5.850 GHz; 5 channels Q Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 13 channels • 5.470 to 5.725 GHz; 11 channels R Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 13 channels • 5.250 to 5.725 GHz; 11 channels • S Domain: 2.400 to 2.4835 GHz; 13 channels • 5.725 to 5.850 GHz; 5 channels T Domain: <ul style="list-style-type: none"> • 2.400 to 2.4835 GHz; 11 channels • 5.470 to 5.850 GHz; 16 channels 		

Note: This varies by regulatory domain. Refer to the product documentation for specific details for each regulatory domain.

Maximum Transmit Power	2.4 GHz IEEE 802.11b (CCK) • 28 dBm with 2 antennas IEEE 802.11g (non HT duplicate mode) • 28 dBm with 2 antennas IEEE 802.11n (HT20) • 28 dBm with 2 antennas	5 GHz IEEE 802.11a • 28 dBm with 2 antennas IEEE 802.11n non-HT duplicate (IEEE 802.11a duplicate) mode • 28 dBm with 2 antennas IEEE 802.11n (HT20) • 27 dBm with 2 antennas IEEE 802.11n (HT40) • 27 dBm with 2 antennas
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Note: The maximum power setting will vary by channel and according to individual country regulations. Refer to the product documentation for specific details.

Receive Sensitivity	<ul style="list-style-type: none"> • IEEE 802.11b (Complementary Code Keying [CCK]) • -101 dBm @ 1 Mb/s; • -98 dBm @ 2 Mb/s • -92 dBm @ 5.5 Mb/s • -89 dBm @ 11 Mb/s • IEEE 802.11g (non HT20): • -94 dBm @ 6 Mb/s • -93 dBm @ 9 Mb/s • -92 dBm @ 12 Mb/s • -90 dBm @ 18 Mb/s • -86 dBm @ 24 Mb/s • -84 dBm @ 36 Mb/s • -79 dBm @ 48 Mb/s • -78 dBm @ 54 Mb/s • IEEE 802.11a (non HT20) • -92 dBm @ 6 Mb/s • -91 dBm @ 9 Mb/s; • -89 dBm @ 12 Mb/s; • -87 dBm @ 18 Mb/s; • -85 dBm @ 24 Mb/s; • -81 dBm @ 36 Mb/s • -77 dBm @ 48 Mb/s • -76 dBm @ 54 Mb/s • 2.4-GHz • IEEE 802.11n (HT20) • -93 dBm @ MCS0 • -91dBm @ MCS1 • -89dBm @ MCS2 • -86 dBm @ MCS3; • -82 dBm @ MCS4 • -78 dBm @ MCS5; • -77 dBm @ MCS6 • -75 dBm @ MCS7 • -93 dBm @ MCS8 • -91 dBm @ MCS9 • -89 dBm @ MCS10; • -86 dBm @ MCS11; • -82 dBm @ MCS12 • -78 dBm @ MCS13 • -77 dBm @ MCS14; • -75 dBm @ MCS15 	<ul style="list-style-type: none"> • 5-GHz • IEEE 802.11n (HT20): • -92 dBm @ MCS0; • -89 dBm @ MCS1 • -87 dBm @ MCS2; • -85 dBm @ MCS3 • -81 dBm @ MCS4 • -77 dBm @ MCS5 • -76 dBm @ MCS6; • -75 dBm @ MCS7; • -90 dBm @ MCS8 • -87 dBm @ MCS9 • -85 dBm @ MCS10; • -82 dBm @ MCS11; • -78 dBm @ MCS12 • -74 dBm @ MCS13; • -73 dBm @ MCS14 • -72 dBm @ MCS15 • 5-GHz: IEEE 802.11n (HT40) • -89 dBm @ MCS0 • -86 dBm @ MCS1 • -84 dBm @ MCS2; • -82 dBm @ MCS3 • -78 dBm @ MCS4; • -74 dBm @ MCS5 • -73 dBm @ MCS6 • -72 dBm @ MCS7 • -87 dBm @ MCS8 • -84 dBm @ MCS9 • -82 dBm @ MCS10 • -79 dBm @ MCS11 • -75 dBm @ MCS12 • -71 dBm @ MCS13 • -70 dBm @ MCS14 • -69 dBm @ MCS15
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Network Interface	<ul style="list-style-type: none"> • 10/100/1000BASE-T Ethernet, autosensing (RJ-45) • Fiber SFP • DOCSIS 3.0 (8x4) Cable modem interface (option available)
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Dimensions (W x L x H)	12.0 in. x 7.8 in. x 6.4 in. (30.48 cm x 19.81 cm x 16.26 cm) (including antenna mount)
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Weight	<ul style="list-style-type: none"> • 1552E/EU: 173 lbs (78 kg) • 1552C/CU: 14 lbs (6.4 kg) • 1552H: 176 lbs (8 kg) • 1552I: 14 lbs (6.4 kg) • Battery backup: 1.5 lbs (0.7kg) • Pole mounting bracket: 6.1 lbs (2.8 kg) • Cable strand mounting bracket: 1.3 lbs (0.6 kg)
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Environmental	<ul style="list-style-type: none"> • Operating temperature: -40 to 55°C (-40 to 131°F) plus Solar Loading • Storage temperature: -50 to 85°C (-58 to 185°F) • Wind resistance: <ul style="list-style-type: none"> ◦ Up to 100 MPH sustained winds ◦ Up to 165 MPH wind gusts
Environmental Ratings	<ul style="list-style-type: none"> • IP67 • NEMA Type 4X
Antenna Gain	<ul style="list-style-type: none"> • Integrated Dual Band Omnidirectional Antenna Radome (1552C / 1552I) • 2 dBi (2.4 GHz), 4 dBi (5 GHz) • External Dual-Band Omnidirectional Antennas (1552E / 1552H) • AIR-ANT2547V-N (4 dBi (2.4 GHz), 7 dBi (5 GHz)) • External Single Band Antennas (for 1552EU / 1552CU) <p>2.4 GHz</p> <ul style="list-style-type: none"> • AIR-ANT2420V-N (2 dBi, omni) • AIR-ANT2450V-N (5 dBi, omni) • AIR-ANT2480V-N (8 dBi, omni) • AIR-ANT2413P2M-N= (13 dBi, dual polarized patch) <p>5 GHz</p> <ul style="list-style-type: none"> • AIR-ANT5140V-N (4 dBi, omni) • AIR-ANT5175V-N (7.5 dBi, omni) • AIR-ANT5180V-N (8 dBi, omni) • AIR-ANT5114P-N= (14 dBi, patch) • AIR-ANT5114P2M-N= (14 dBi, dual polarized patch)
Powering Options	<ul style="list-style-type: none"> • 90-480 VAC, 47-63 Hz • 40 - 90 VAC, 47-63 Hz, quasi-square wave, Power over Cable • Power over Ethernet: 56 VDC, +/-10 percent • 12 VDC
Warranty	1 year
Compliance	<p>Safety</p> <ul style="list-style-type: none"> • UL 60950, 2nd Edition; CAN/CSA-C22.2 No. 60950, 2nd Edition • IEC 60950, 2nd Edition • EN 60950, 2nd Edition <p>Immunity</p> <ul style="list-style-type: none"> • <= 5 mJ for 6kV/3kA @ 8/20 ms waveform • ANSI/IEEE C62.41 • EN61000-4-5 Level 4 AC Surge Immunity; EN61000-4-4 Level 4 Electrical Fast Transient Burst Immunity • EN61000-4-3 Level 4 EMC Field Immunity • EN61000-4-2 Level 4 ESD Immunity • EN60950 Overvoltage Category IV <p>Radio approvals</p> <ul style="list-style-type: none"> • FCC Part 15.247, 15.407 • FCC Bulletin OET-65C; RSS-210 • RSS-102 • AS/NZS 4268.2003; • EN 300 328; EN 301 893 <p>EMI and susceptibility</p> <ul style="list-style-type: none"> • FCC part 15.107, 15.109 • ICES-003 • EN 301 489-1, -17 <p>Security</p> <ul style="list-style-type: none"> • Wireless bridging/mesh: X.509 digital certificates • MAC address authentication; Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TLIP) • Wireless access • IEEE 802.11i, Wi-Fi Protected Access (WPA2), WPA; IEEE 802.1X authentication, including Extensible Authentication Protocol and Protected EAP (EAP-PEAP), EAP Transport Layer Security (EAP-TLS), EAP-Tunneled TLS (EAP-TTLS), and Cisco LEAP • Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TLIP) • VPN pass-through • IP Security (IPsec), Layer 2 Tunneling Protocol (L2TP) • MAC address filtering <p>Other:</p> <ul style="list-style-type: none"> • ATEX (AIR-CAP1552H-X-K9 only)

¹ MCS Index: The Modulation and Coding Scheme (MCS) index determines the number of spatial streams, the modulation, the coding rate, and data rate values.

² GI: A Guard Interval (GI) between symbols helps receivers overcome the effects of multipath delays.

Selected Part Numbers and Ordering Information¹

AIR-CAP1552E-x-K9	Cisco Aironet 1552E Access Point with dual band antenna ports
AIR-CAP1552EU-x-K9	Cisco Aironet 1552EU Access Point with single band antenna ports
AIR-CAP1552C-x-K9	Cisco Aironet 1552C Access Point with DOCSIS 3.0 Cable Modem
AIR-CAP1552CU-x-K9	Cisco Aironet 1552CU Access Point with DOCSIS 3.0 Cable Modem, single band antenna ports
AIR-CAP1552H-x-K9	Cisco Aironet 1552H Hazardous Location Access Point
AIR-CAP1552I-x-K9	Cisco Aironet 1552I Integrated Antenna Access Point
Cisco SMARTnet® Services for the Cisco Aironet 1550 Series Access Points	
CON-SNT-CAP155Ex	SMARTnet 8x5xNBD 1552E Access Point
CON-SNT-CAP155EUx	SMARTnet 8x5xNBD 1552EU Access Point
CON-SNT-CAP155Cx	SMARTnet 8x5xNBD 1552C Access Point with Cable Modem
CON-SNT-CAP155CUX	SMARTnet 8x5xNBD 1552CU Access Point with Cable Modem
CON-SNT-CAP155Hx	SMARTnet 8x5xNBD 1552H Hazardous Location Access Point
CON-SNT-CAP155Ix	SMARTnet 8x5xNBD 1552I Integrated Antenna Access Point

Not all regulatory domains have been approved. As they are approved, the part numbers will be available on the Global Price List.

¹ For the specific regional part numbers, refer to the 1550 ordering guide:
http://www.cisco.com/en/US/docs/wireless/access_point/1550/quick/guide/AP1552_ORDERING_GUIDE.pdf

For More Information

<http://www.cisco.com/go/outdoorwireless>
<http://www.cisco.com/en/US/products/ps11451/index.html>

Cisco Aironet Antennas and Accessories

Cisco offers a complete range of 2.4- and 5-GHz and dual-band antennas for access-point and bridge equipment that facilitates a customized wireless solution for almost any installation. Customers can select an antenna that will increase the overall efficiency and data rates of the wireless network while accommodating specific deployment conditions, including physical layout, distance, and aesthetics.




Main Features and Benefits

- Access-point antennas are compatible with Cisco RP-TNC and N-type connector-equipped access points; they are available with different gain and range capabilities, beamwidths, and form factors.
- A low-loss cable extends the length between any Cisco Aironet access point and the antenna and provides installation flexibility without a significant sacrifice in range.




Cisco Aironet 2.4- and 5-GHz Directional Antenna for 3500p Access Points

The Cisco Aironet Six-Element Dual-Band MIMO Patch Array Antenna (AIR-ANT25137NP-R) is a six-element, dual-band, multiple-input multiple-output (MIMO) patch array antenna that operates in the 2.4- and 5-GHz frequency ranges. The antenna is designed for use in indoor and outdoor environments with Cisco Aironet 3502p Access Points for high-density deployments.




Antenna Type	MIMO Patch Array
	
Operating frequency range	2400-2500 MHz 5250-5850 MHz
VSWR bandwidth	2:1
Peak gain (dBi)	2.4-GHz band: 13 5-GHz band: 7
Polarization, 2.4 GHz	Cable A: Horizontal Cable B: Vertical Cable C: Vertical

Polarization, 5 GHz	All antennas: Vertical
E-plane 3-dB beamwidth (degrees)	2.4-GHz: 36 5-GHz: 48
H-plane 3-dB beamwidth	2.4-GHz: 36 5-GHz: 55
Cable length	36 in. (91 cm)
Connectors	RP-TNC male
Length (Radome)	18 in. (45.7 cm)
Width (Radome)	13 in. (33 cm)
Thickness (Radome)	2 in. (5 cm)
Weight (antenna and bracket)	7.75 lbs. (3.52 kg)
Environmental Ratings	Water: IP65, dust and jetting water immunity Ice: Mil-810F, Method 521.2 Wind: 100 mph operational Operating Temperature: -30 to 70 degrees C (-22 to 158 degrees F)

Cisco Aironet Dual-Band Dipole Antennas with RP-TNC Connectors

Feature	AIR-ANT2524DB-R	AIR-ANT2524DG-R	AIR-ANT2524DW-R
			
Description	Dual-band dipole, black	Dual-band dipole, gray	Dual-band dipole, white
Application	Indoor omnidirectional coverage	Indoor omnidirectional coverage	Indoor omnidirectional coverage
Gain	2 dBi (2.4 GHz) 4 dBi (5 GHz)	2 dBi (2.4 GHz) 4 dBi (5 GHz)	2 dBi (2.4 GHz) 4 dBi (5 GHz)
Frequency	2.400 – 2.500 GHz 5.150 – 5.850 GHz	2.400 – 2.500 GHz 5.150 – 5.850 GHz	2.400 – 2.500 GHz 5.150 – 5.850 GHz
Elevation Beam Width	63° (2.4 GHz) 39° (5 GHz)	63° (2.4 GHz) 39° (5 GHz)	63° (2.4 GHz) 39° (5 GHz)
Dimensions	6.6 x 0.8 in. (168.5 x 21 mm)	6.6 x 0.8 in. (168.5 x 21 mm)	6.6 x 0.8 in. (168.5 x 21 mm)
Weight	1.3 oz (0.04 kg)	1.3 oz (0.04 kg)	1.3 oz (0.04 kg)
Operating Temperature	-20° to +60° C	-20° to +60° C	-20° to +60° C

Cisco Aironet 4-port Dual band Antennas with RP-TNC Connectors

Feature	AIR-ANT2524V4C-R=	AIR-ANT2566P4W-R=	AIR-ANT2544V4M-R=
			
Description	Dual-band MIMO Ceiling-Mounted Omni Antenna	Dual-band MIMO Wall-Mounted Patch Antenna	Dual-band MIMO wall-mounted omnidirectional antenna
Application	Indoor omnidirectional coverage	Indoor/outdoor directional coverage	Indoor/outdoor omnidirectional coverage
Gain	2 dBi (2.4 GHz) 4 dBi (5 GHz)	6 dBi (2.4 GHz) 6 dBi (5 GHz)	4 dBi (2.4 GHz) 4 dBi (5 GHz)



Frequency¹	2.400 – 2.500 GHz 5.150 – 5.850 GHz	2.400 – 2.500 GHz 5.150 – 5.850 GHz	2.400 – 2.500 GHz 5.150 – 5.850 GHz
Azimuth Plane Beamwidth	omnidirectional	105° (2.4 GHz) 125° (5 GHz)	omnidirectional
Elevation Plane Beamwidth	69° (2.4 GHz) 60° (5 GHz)	70° (2.4 GHz) 60° (5 GHz)	60° (2.4 GHz) 33° (5 GHz)
Cable Length	3 ft. (91.4 cm), plenum rated	3 ft. (91.4 cm), plenum rated	3 ft. (91.4 cm), plenum rated
Dimensions	725 x 725 x 1 in. (18.4 x 18.4 x 2.5 cm)	6.3 x 11 x 1.2 in. (16 x 27.9 x 3.05 cm)	8.6 x 6.3 (dia.) in. in. 21.8 x 16 (dia.) cm)
Weight	1.3 lbs. (0.59 kg)	1.4 lbs. (0.64 kg)	1.48 lbs. (0.67 kg)
Operating Temperature	0° to +55°C	-30° to +70°C	-30° to +70°C

¹ 5-GHz antennas are denoted by either a blue dot on the radome or blue marker on the cable near the connector.

Antennas with N-Type Connectors for Cisco Aironet 1500 Series Outdoor Mesh Access Points




Dual Band Antennas with N-Type Connectors

Cisco Aironet 1550 Series Access Points are available in single-band (2.4 GHz) and dual-band (2.4 GHz and 5 GHz) versions. Check your access point for proper antenna selection before placing an order.

Feature	AIR-ANT2547V-N	AIR-ANT2588P3M-N=
		
Description	Dual band, direct mount omnidirectional antenna	Dual band 3 port directional antenna
Application	Omnidirectional antenna for outdoor mesh access points with dual band ports.	Directional antenna for outdoor mesh access points with dual band ports.
Gain	4 dBi (2.4 GHz) 7 dBi (5 GHz)	8 dBi (2.4 GHz) 8 dBi (5 GHz)
Frequency	2.400 – 2.500 GHz 5.150 – 5.875 GHz	2.400 – 2.500 GHz 5.150 – 5.900 GHz
Azimuth Beamwidth	omnidirectional	100° (2.4 GHz) 140° (5 GHz)
Elevation Beamwidth	30° (2.4 GHz) 14° (5 GHz)	40° (2.4 GHz) 30° (5 GHz)
Cable Length	None	None
Dimensions	111 in. x 1.25 dia. in. (28.2 x 3.2 dia. cm)	12 in. x 7 x 11 in. (30.5 x 17.8 x 2.8 cm)
Weight	0.38 lbs. (0.17 kg)	1 lbs. (0.45 kg)
Operating Temperature	-40° to +85° C	-40° to 55° C

2.4 GHz and 5 GHz Single Band Antennas with N-Type Connectors

Cisco Aironet 1550 Series Access Points are available in single-band (2.4 GHz) and dual-band (2.4 GHz and 5 GHz) versions. Check your access point for proper antenna selection before placing an order.

Feature	AIR-ANT2450V-N	AIR-ANT2455V-N	AIR-ANT2480V-N
			
Description	5 dBi, direct mount omnidirectional antenna for 2.4 GHz	5.5 dBi, direct mount omnidirectional antenna for 2.4 GHz	8 dBi direct mount omnidirectional antenna for 2.4 GHz
Application	Omnidirectional antenna for outdoor mesh access points.	Omnidirectional antenna suitable for use on Cisco Aironet 1500 Series Outdoor Mesh Access Points in all deployments.	Extended range omnidirectional antenna for outdoor mesh access points. Suitable for pole or roof mounting deployments.

Gain	5 dBi	5.5 dBi	8 dBi
Frequency	2.4 GHz	2.4 GHz	2.4 GHz
Beam Width	30° V	25° V	10° V
Cable Length	None	None	None
Dimensions	11 in. x 1 in. (2794 x 2.54 cm)	12.5 in. x 1 in. (31.75 x 2.54 cm)	19.5 in. x 7/8 in. diameter (49.5 cm x 2.22 cm)
Weight	0.40 lbs. (0.18 kg)	0.31 lbs. (0.14 kg)	0.45 lbs. (0.20 kg)
Operating Temperature	-30 to +70 °C	-30 to 70 °C	-30 to +70 °C

	AIR-ANT5180V-N	AIR-ANT5114P-N	AIR-ANT2413P2M-R=	AIR-ANT5114P2M-R=
				
Description	8 dBi direct mount omnidirectional antenna for 5 GHz	14 dBi wall/mast mount articulating patch antenna for 5 GHz	2-port, 13 dBi cross polarized antenna	2-port, 14 dBi cross polarized antenna
Application	Omnidirectional antenna for Cisco Aironet 1520 series mesh access points. Suitable for all deployments, including cable strand mount applications.	Recommended for medium range point to point deployments	Directional antenna for outdoor mesh access points with single band ports.	Directional antenna for outdoor mesh access points with single band ports.
Gain	8 dBi	14 dBi	14 dBi	14 dBi
Frequency	4.9-5.85 GHz	4.9-5.85 GHz	2,400 – 2,500 GHz	5150 – 5900 GHz
Azimuth Beamwidth	omnidirectional	25°	35°	26°
Elevation Beamwidth	16°	29°	35°	26°
Cable Length	None	1 ft. (0.30 m)	2.5 ft. (76.2 cm)	2.5 ft. (76.2 cm)
Dimensions	11 in. x 1 in. (2794 x 2.54 cm)	4 1/8 in. x 4 1/8 in. (10.48 cm x 10.48 cm)	78 x 78 x 1.2 in. (19.8 x 19.8 x 3 cm)	78 x 78 x 1.2 in. (19.8 x 19.8 x 3 cm)
Weight	0.4 lbs. (0.18 kg)	0.70 lbs. (0.32 kg)	1.0 lbs. (0.45 kg)	1.0 lbs. (0.45 kg)
Operating Temperature	-30° to +70 C	-30° to +70° C	-40 to 55 °C	-40 to 55 °C

Low-Loss and Ultra-Low-Loss Cables

Low-loss cables extend the length between any Cisco Aironet 2.4- and 5-GHz radio and the antenna with RP-TNC connectors. With a loss of 6.7 dB per 100 feet (30m) for the low-loss cable and 4.4 dB for the ultra-low-loss cable, these cables provide installation flexibility without a significant sacrifice in range.

Cisco Aironet Low-Loss Antenna Cable Features

Part Number	Type of Cable	Description	Loss at 2.4 GHz	Loss at 5.8 GHz
AIR-CAB005LL-N	Interconnect	5-ft low loss cable, one straight N connector, one 90-degree N connector	0.5 dB	0.8 dB
AIR-CAB005LL-R	Interconnect	5-ft low loss cable, one RP-TNC plug, one RP-TNC jack	0.5 dB	0.8 dB
AIR-CAB010LL-N	Interconnect	10-ft low loss cable, one straight N connector, one 90-degree N connector	0.9 dB	1.5 dB
AIR-CAB020LL-R	Interconnect	20-ft low loss cable, one RP-TNC plug, one RP-TNC jack	1.3 dB	2.5 dB
AIR-CAB050LL-R	Interconnect	50-ft low loss cable, one RP-TNC plug, one RP-TNC jack	3.4 dB	5.75 dB

AIR-CAB100ULL-R	Interconnect	100-ft ultra low loss cable, one RP-TNC plug, one RP-TNC jack	4.4 dB	725 dB
AIR-CAB150ULL-R	Interconnect	150-ft ultra low loss cable, one RP-TNC plug, one RP-TNC jack	6.6 dB	11 dB
AIR-ACC2537-060	Bulkhead Extender	5-ft (60 inches) RG-58 type cable with one RP-TNC plug and one RP-TNC jack	2 dB	3 dB

Accessories

To complete an installation, Cisco provides accessories that offer increased capabilities, safety, and convenience.

Cisco Aironet Antenna Accessories for Use with RP-TNC Connectors



Cisco Aironet Accessory Features

Feature	AIR-ACC2537-060	AIR-ACC245LA-R	AIR-ACC2662
Description	60 in. (152 cm) bulkhead extender	2.4 GHz and 5 GHz lightning arrester	Mount to provide articulation of Yagi and AIR-ANT5195 antennas
Application	Flexible antenna cable that extends access point cabling, typically within an enclosure	Supports both 2.4 GHz and 5 GHz applications; Helps prevent damage due to lightning-induced surges or static electricity; helps prevent damage due to lightning-induced surges or static electricity	Adds swiveling capability to mast-mounted Yagi antennas and AIR-ANT5195

Power Injector Cables for Cisco Aironet 1400 Series Wireless Bridges

Typical installations place the outdoor unit on an external mast with the power injector unit placed indoors. These cables come with a pair of F-type connectors on each end. To allow flexibility in the distance between the units, a variety of cables are available.

Cisco Aironet Power Injector Cables



Cisco Aironet 1500 Series Accessories

In addition to the antennas offered by Cisco for the 1500 Series, various accessories are available.

Product Number	Product Description
AIR-ACCPMK1500=	Pole Mount Kit
AIR-PWR-ST-LT-TAP=	Streetlight Power Tap, 105-260 VAC
AIR-PWRINJ1500=	Power Injector, In 100-240VAC, Out 48 VDC

For More Information

<http://www.cisco.com/go/antenna>

Wireless LAN Controllers

View the online model comparison chart for Cisco Wireless Controllers at:
http://www.cisco.com/en/US/products/hw/wireless/products_category_buyers_guide.html#~controllers.

Cisco 8500 Series Wireless Controller

The Cisco 8500 Series Wireless Controllers are highly scalable and flexible controllers that enable mission-critical wireless networking in large-scale service provider and large campus deployments. The Cisco 8500 Series help lower capital expenditures (CapEx) and operating expenses (OpEx) by allowing network operators to deploy fewer controllers in a data center with the consolidation of many controllers into a single small 1-rack-unit (1RU) platform that supports centralized, Cisco FlexConnect, and mesh access-point deployments. These controllers can configure, manage, and troubleshoot up to 6000 access points and 64,000 clients with a single point of touch.



Ideal for Companies with Large-Scale Deployments

Cisco 8500 Series Wireless Controller

- Economies of scale for large-scale service provider and large campus deployments
- Flexibility of deploying centralized, Cisco FlexConnect, and mesh access points on a single controller
- High resiliency with sub-second access-point failover to standby controller, dual redundant power supplies, and redundant 10 Gigabit Ethernet ports for high-speed connectivity
- Licensing flexibility with Right to Use licensing
- System-level security including Datagram Transport Layer Security (DTLS) encryption between access points and the controller
- Integrated radio resource management (RRM), with an intelligent RF control plane for self-configuration, self-healing, and self-optimization
- Cross-network access to real-time and historic RF interference information for quick troubleshooting and resolution

Main Features and Benefits

- Enhanced scalability that allows you to use a single controller to manage up to 6,000 sites, 6,000 access points, and 64,000 clients; and save on the cost for onsite visits, utility bills, and hardware support
- Flexibility to enable access points in centralized (Cisco local mode), Cisco FlexConnect, and mesh mode on the same controller to configure wireless policy, management, and security settings at any time
- High resiliency with sub-second access-point failover to standby controller, dual redundant power supplies, and redundant 10 Gigabit Ethernet ports for high-speed connectivity
- IEEE 802.11n performance for reliable video and voice
- Flexible software licensing with a Right to Use License model to add support for up to 6000 access points
- Integration of Cisco VideoStream technology as part of the Cisco technology for the medianet framework to optimize the delivery of video applications across the wireless LAN (WLAN)
- Integrated RF intelligence with Cisco CleanAir technology as part of the Cisco Unified Wireless Network for self-healing, self-optimizing, branch-office networks
- Centralized security policies with support for rogue access-point detection and denial-of-service (DoS) attacks
- Support for transparent IP mobility between cellular and Wi-Fi networks with Proxy Mobile IPv6 (PMIPv6) support
- Support for secure public access with WFA Passpoint (Hotspot 2.0) for mobile data offload
- Control and Provisioning of Wireless Access Points (CAPWAP) protocol encryption that helps ensure full-line-rate encryption between access points and controllers across remote WAN and LAN links
- Capability to deploy secure guest access across 6000 sites
- Capability to support 2000 Cisco FlexConnect groups and up to 100 access points per Cisco FlexConnect group

Specifications

Feature	Cisco 8500 Series Wireless Controller
Wireless	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11n
Wired/Switching/Routing	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T, 1000BASE-SX, 1000-BASE-LH, IEEE 802.1Q VLAN tagging

Data Request For Comments (RFC)	<ul style="list-style-type: none"> • RFC 768 UDP • RFC 791 IP • RFC 2460 IPv6 (pass through Bridging mode only) • RFC 792 ICMP • RFC 793 TCP • RFC 826 ARP • RFC 1122 Requirements for Internet Hosts • RFC 1519 CIDR • RFC 1542 BOOTP • RFC 2131 DHCP • RFC 5415 CAPWAP Protocol Specification
Security Standards	<ul style="list-style-type: none"> • Wi-Fi Protected Access (WPA) • IEEE 802.11i (WPA2, RSN) • RFC 1321 MD5 Message-Digest Algorithm • RFC 1851 The ESP Triple DES Transform • RFC 2104 HMAC: Keyed Hashing for Message Authentication • RFC 2246 TLS Protocol Version 1.0 • RFC 2401 Security Architecture for the Internet Protocol • RFC 2403 HMAC-MD5-96 within ESP and AH • RFC 2404 HMAC-SHA-1-96 within ESP and AH • RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV • RFC 2407 Interpretation for ISAKMP • RFC 2408 ISAKMP • RFC 2409 IKE • RFC 2451 ESP CBC-Mode Cipher Algorithms • RFC 3280 Internet X.509 PKI Certificate and CRL Profile • RFC 4347 Datagram Transport Layer Security • RFC 4346 TLS Protocol Version 1.1
Encryption	<ul style="list-style-type: none"> • Wired Equivalent Privacy (WEP) and Temporal Key Integrity Protocol-Message Integrity Check (TKIP-MIC); RC4 40, 104 and 128 bits (both static and shared keys) • Advanced Encryption Standard (AES): Cipher Block Chaining (CBC), Counter with CBC-MAC (CCM), Counter with Cipher Block Chaining Message Authentication Code Protocol (CCMP) • Data Encryption Standard (DES): DES-CBC, 3DES • Secure Sockets Layer (SSL) and Transport Layer Security (TLS): RC4 128-bit and RSA 1024- and 2048-bit • Datagram Transport Layer Security (DTLS): AES-CBC • IPsec: DES-CBC, 3DES, AES-CBC
Authentication, Authorization, and Accounting (AAA)	<ul style="list-style-type: none"> • IEEE 802.1X • RFC 2548 Microsoft Vendor-Specific RADIUS Attributes • RFC 2716 PPP EAP-TLS • RFC 2865 RADIUS Authentication • RFC 2866 RADIUS Accounting • RFC 2867 RADIUS Tunnel Accounting • RFC 3576 Dynamic Authorization Extensions to RADIUS • RFC 3579 RADIUS Support for EAP • RFC 3580 IEEE 802.1X RADIUS Guidelines • RFC 3748 Extensible Authentication Protocol • Web-based authentication • Terminal Access Controller Access-Control System (TACACS) support for management users
Management	<ul style="list-style-type: none"> • SNMP v1, v2c, v3 • RFC 854 Telnet • RFC 1155 Management Information for TCP/IP-Based Internets • RFC 1156 MIB • RFC 1157 SNMP • RFC 1213 SNMP MIB II • RFC 1350 TFTP • RFC 1643 Ethernet MIB • RFC 2030 SNMP • RFC 2616 HTTP • RFC 2665 Ethernet-Like Interface types MIB • RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions • RFC 2819 RMON MIB • RFC 2863 Interfaces Group MIB • RFC 3164 Syslog

	<ul style="list-style-type: none"> • RFC 3414 User-Based Security Model (USM) for SNMPv3 • RFC 3418 MIB for SNMP • RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs • Cisco private MIBs
Management Interfaces	<ul style="list-style-type: none"> • Web-based: HTTP/HTTPS • Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port • Cisco Wireless Control System (WCS)
Interfaces and Indicators	<ul style="list-style-type: none"> • 2 x 10 Gigabit Ethernet interfaces • Small Form-Factor Pluggable (SFP) options (only Cisco SFPs supported): SFP-10G-SR • LED indicators: Network Link, Diagnostics • 1x Service Port: 10/100/1000 Mbps Ethernet (RJ-45)
Physical Dimensions	<ul style="list-style-type: none"> • Dimensions (WxDxH): 1730 x 28.00 x 1.69 in. (440.0 x 711.4 x 43.0 mm) • Weight: 35.1 lbs (15.9 kg) with 2 power supplies
Environmental Conditions	<p>Air temperature:</p> <ul style="list-style-type: none"> • Appliance On: 10°C to 35°C (50°F to 95°F); altitude: 0 to 914.4 m (3000 ft), decrease system temperature by 1.0°C for every 1000-foot increase in altitude • Appliance Off: 5°C to 45°C (41°F to 113°F); maximum altitude: 3048 m (10,000 ft) • Storage: -40°C to 60°C (-40°F to 140°F); maximum altitude: 3048 m (10,000 ft) <p>Humidity:</p> <ul style="list-style-type: none"> • Appliance On: 20% to 80%; maximum dew point: 21°C; maximum rate of change: 5 °C/hr • Appliance Off: 8% to 80%; maximum dew point: 27°C <p>Electrical input:</p> <ul style="list-style-type: none"> • Sine-wave input (47 - 63 Hz) required • Input voltage range (DC) <ul style="list-style-type: none"> • Minimum: -40Vdc • Maximum: -75Vdc • Input voltage low range: <ul style="list-style-type: none"> • Minimum: 100 V ac • Maximum: 127 V ac • Input voltage high range: <ul style="list-style-type: none"> • Minimum: 200 V ac • Maximum: 240 V ac • Input kilovolt-amperes (kVA), approximately: <ul style="list-style-type: none"> • Minimum: 0.090 kVA • Maximum: 0.700 kVA • Heat output (Maximum) 2302 Btu per hour (675 watts) • Acoustical noise emissions: <ul style="list-style-type: none"> • Sound power, idling: 61 bels maximum • Sound power, operating: 61 bels maximum
Regulatory Compliance	<p>CE Mark Safety:</p> <ul style="list-style-type: none"> • UL 60950-1:2003 • EN 60950:2000 • EMI and susceptibility (Class A): • U.S.: FCC Part 15.107 and 15.109 • Canada: ICES-003 • Japan: VCCI • Europe: EN 55022, EN 55024

Selected Part Numbers and Ordering Information

Cisco 8500 Series Wireless Controller		
Part Number	Product Name	Cisco SMARTnet® Service 8x5xNBD
AIR-CT8510-300-K9	8500 Series Controller for up to 300 Cisco access points	CON-SNT-AIRCT81
AIR-CT8510-500-K9	8500 Series Controller for up to 500 Cisco access points	CON-SNT-AIRCT851
AIR-CT8510-1K-K9	8500 Series Controller for up to 1000 Cisco access points	CON-SNT-AIRCT85Z
AIR-CT8510-3K-K9	8500 Series Controller for up to 3000 Cisco access points	CON-SNT-AIRCT85X
AIR-CT8510-6K-K9	8500 Series Controller for up to 6000 Cisco access points	CON-SNT-AIRCT85C
AIR-CT8510-HA-K9	8500 Series Controller for High Availability	CON-SNT-AIRCT85
AIR-CT8510-SP-K9	8500 Series Wireless Controller with 0APs included, Dual AC PSU	CON-SNT-AIRCT85A
AIR-CT85DC-SP-K9	8500 Series Wireless Controller with 0APs included, Dual DC PSU	CON-SNT-AIRCT85B

For More Information

<http://www.cisco.com/en/US/products/ps12722/index.html>

Cisco Flex 7500 Series Controllers

The Cisco Flex 7500 Series Cloud Controllers are highly scalable branch-office controllers for multisite wireless deployments. Deployed in the private cloud, the Cisco Flex 7500 Series extends wireless services to distributed branch offices with centralized control that lowers the total cost of ownership (TCO). These controllers can manage up to 6000 branch-office locations and 6000 access points from the data center, and they support secure guest access, rogue detection for Payment Card Industry (PCI) compliance, and in-branch (locally switched) voice and video.



Ideal for Companies That Need These Features

- Cisco Flex 7500 Series**
- Economies of scale for multisite branch-office deployments
 - Centralized provisioning, management, and client troubleshooting
 - Licensing flexibility with Right to Use licensing
 - Ability to keep clients connected at the branch office in the rare case of WAN failure
 - System-level security including Datagram Transport Layer Security (DTLS) encryption between access points and the controller
 - Integrated radio resource management (RRM), which offers an intelligent RF control plane for self-configuration, self-healing, and self-optimization
 - Cross-network access to real-time and historic RF interference information for quick troubleshooting and resolution
 - Enterprise reliability for automated recovery from lightweight access point and wireless LAN (WLAN) controller failures to increase the availability of the wireless network

Main Features and Benefits

- Ideal for data center consolidation: Use a single controller to manage up to 6,000 sites, 6,000 access points, and 64,000 clients, and save on the cost for onsite visits, utility bills, and hardware support.
- Provides flexibility to remotely configure wireless policy, management, and security settings at any time
- Provides IEEE 802.11n performance for reliable video and voice
- Offers flexible software licensing with Right to Use License model to add support for up to 6000 access points
- Designed specifically for wireless branch offices with WAN survivability features and a local RADIUS server to enable new clients to get on the network and access the services
- Offers high resiliency with sub-second access-point failover to standby controller, dual redundant power supplies, and redundant 10 Gigabit Ethernet ports for high-speed connectivity
- Provides integrated RF intelligence with Cisco CleanAir technology as part of the Cisco Unified Wireless Network for self-healing, self-optimizing, branch-office networks
- Centralized security policies with support for rogue access-point detection and denial-of-service (DoS) attacks
- Control and Provisioning of Wireless Access Points (CAPWAP) protocol encryption that helps ensure full-line-rate encryption between access points and controllers across remote WAN and LAN links
- Capability to deploy secure guest access across 6000 sites
- Capability to support 2000 Cisco FlexConnect groups and up to 100 access points per Cisco FlexConnect group

Specifications

Feature	Cisco Flex 7500 Series Cloud Controller
Wireless	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11n
Wired/Switching/Routing	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T, 1000BASE-SX, 1000-BASE-LH, IEEE 802.1Q VLAN tagging.
Data Request For Comments (RFC)	<ul style="list-style-type: none"> • RFC 768 UDP; RFC 791 IP • RFC 2460 IPv6 (pass through Bridging mode only) • RFC 792 ICMP; RFC 793 TCP; RFC 826 ARP; RFC 1122 Requirements for Internet Hosts • RFC 1519 CIDR • RFC 1542 BOOTP • RFC 2131 DHCP • RFC 5415 CAPWAP Protocol Specification
Encryption	WEP and TKIP-MIC; RC4 40, 104 and 128 bits (both static and shared keys); AES: CBC, CCM, CCMP; DES: DES-CBC, 3DES <ul style="list-style-type: none"> • SSL and TLS: RC4 128-bit and RSA 1024- and 2048-bit • DTLS: AES-CBC • IPsec: DES-CBC, 3DES, AES-CBC

Security Standards	<p>WPA</p> <ul style="list-style-type: none"> • IEEE 802.11i (WPA2, RSN) • RFC 1321 MD5 Message-Digest Algorithm • RFC 1851 The ESP Triple DES Transform • RFC 2104 HMAC: Keyed Hashing for Message Authentication; RFC 2246 TLS Protocol Version 1.0 • RFC 2401 Security Architecture for the Internet Protocol • RFC 2403 HMAC-MD5-96 within ESP and AH • RFC 2404 HMAC-SHA-1-96 within ESP and AH • RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV • RFC 2407 Interpretation for ISAKMP • RFC 2408 ISAKMP; RFC 2409 IKE • RFC 2451 ESP CBC-Mode Cipher Algorithms; RFC 3280 Internet X.509 PKI Certificate and CRL Profile; RFC 4347 Datagram Transport Layer Security • RFC 4346 TLS Protocol Version 1.1
Authentication, Authorization, and Accounting (AAA)	<p>IEEE 802.1X</p> <ul style="list-style-type: none"> • RFC 2548 Microsoft Vendor-Specific RADIUS Attributes • RFC 2716 PPP EAP-TLS • RFC 2865 RADIUS Authentication • RFC 2866 RADIUS Accounting • RFC 2867 RADIUS Tunnel Accounting • RFC 3576 Dynamic Authorization Extensions to RADIUS • RFC 3579 RADIUS Support for EAP • RFC 3580 IEEE 802.1X RADIUS Guidelines • RFC 3748 Extensible Authentication Protocol • Web-based authentication • TACACS support for management users
Management	<p>SNMP v1, v2c, v3</p> <ul style="list-style-type: none"> • RFC 854 Telnet • RFC 1155 Management Information for TCP/IP-Based Internet; RFC 1156 MIB • RFC 1157 SNMP; RFC 1213 SNMP MIB II • RFC 1350 TFTP • RFC 1643 Ethernet MIB • RFC 2030 SNMP; RFC 2616 HTTP • RFC 2665 Ethernet-Like Interface types MIB • RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions • RFC 2819 RMON MIB • RFC 2863 Interfaces Group MIB • RFC 3164 Syslog; RFC 3414 User-Based Security Model (USM) for SNMPv3; RFC 3418 MIB for SNMP • RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs • Cisco private MIBs
Management Interfaces	<ul style="list-style-type: none"> • Web-based: HTTP/HTTPS • Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port • Cisco Wireless Control System (WCS)
Interfaces and Indicators	<ul style="list-style-type: none"> • 2x 10 Gigabit Ethernet interfaces • Small Form-Factor Pluggable (SFP) options (only Cisco SFPs supported): SFP-10G-SR • LED indicators: Network Link, Diagnostics • 1x Service Port: 10/100/1000 Mbps Ethernet (RJ-45)
Physical Dimensions	<ul style="list-style-type: none"> • Dimensions (WxDxH): 1730 x 28.00 x 1.69 in. (440.0 x 711.4 x 43.0 mm) • Weight: 35.1 lbs (15.9 kg) with 2 power supplies
Environmental Conditions	<p>Air temperature:</p> <ul style="list-style-type: none"> • Appliance On: 10°C to 35°C (50°F to 95°F); altitude: 0 to 914.4 m (3000 ft), decrease system temperature by 1.0°C for every 1000-foot increase in altitude • Appliance Off: 5°C to 45°C (41°F to 113°F); maximum altitude: 3048 m (10,000 ft) • Storage: -40°C to 60°C (-40°F to 140°F); maximum altitude: 3048 m (10,000 ft) <p>Humidity:</p> <ul style="list-style-type: none"> • Appliance On: 20% to 80%; maximum dew point: 21°C; maximum rate of change: 5 °C/hr • Appliance Off: 8% to 80%; maximum dew point: 27°C

	<p>Electrical input:</p> <ul style="list-style-type: none"> • Sine-wave input (47 - 63 Hz) required • Input voltage low range: <ul style="list-style-type: none"> • Minimum: 100 V ac • Maximum: 127 V ac • Input voltage high range: <ul style="list-style-type: none"> • Minimum: 200 V ac • Maximum: 240 V ac • Input kilovolt-amperes (kVA), approximately: <ul style="list-style-type: none"> • Minimum: 0.090 kVA • Maximum: 0.700 kVA • Heat output (Maximum) 2302 Btu per hour (675 watts) • Acoustical noise emissions: <ul style="list-style-type: none"> • Sound power, idling: 6.1 bels maximum • Sound power, operating: 6.1 bels maximum
Regulatory Compliance	<p>CE Mark</p> <p>Safety:</p> <ul style="list-style-type: none"> • UL 60950-1:2003 • EN 60950:2000 <p>EMI and susceptibility (Class A):</p> <ul style="list-style-type: none"> • U.S.: FCC Part 15.107 and 15.109 • Canada: ICES-003 • Japan: VCCI • Europe: EN 55022, EN 55024

Selected Part Numbers and Ordering Information

Part Number	Product Name	Cisco SMARTnet® 8x5xNBD
AIR-CT7510-300-K9	7500 Series Cloud Controller for up to 300 Cisco access points	CON-SNT-CT75300
AIR-CT7510-500-K9	7500 Series Cloud Controller for up to 500 Cisco access points	CON-SNT-CT75500
AIR-CT7510-1K-K9	7500 Series Cloud Controller for up to 1000 Cisco access points	CON-SNT-CT751K
AIR-CT7510-2K-K9	7500 Series Cloud Controller for up to 2000 Cisco access points	CON-SNT-CT752K
AIR-CT7510-3K-K9	7500 Series Cloud Controller for up to 3000 Cisco access points	CON-SNT-CT753K
AIR-CT7510-6K-K9	7500 Series Cloud Controller for up to 6000 Cisco access points	CON-SNT-CT756K
AIR-CT7510-HA-K9	7500 Series High Availability Wireless Controller	CON-SNT-ACT7510

For More Information

<http://www.cisco.com/en/US/products/ps11635/index.html>

Cisco 5500 Series Wireless LAN Controllers

The Cisco 5500 Series Wireless LAN (WLAN) Controllers provide a highly scalable and flexible platform that enables systemwide services for mission-critical wireless networks in medium-sized to large enterprises and campus environments. Designed for IEEE 802.11n performance and high scalability, these controllers offer enhanced uptime with the capability to simultaneously manage 500 access points, superior performance for reliable streaming video and toll-quality voice, and improved fault recovery for a consistent mobility experience in the most demanding environments.



Ideal for Companies That Need These Features

Cisco 5500 Series

- Enhanced enterprise scalability with a larger mobility domain that supports more access points
- Flexible licensing that allows access-point capacity to be added as the business grows
- Teleworking features for improved business continuity
- System-level security including Datagram Transport Layer Security (DTLS) encryption between access points and the controller
- Integrated radio resource management (RRM), with an intelligent RF control plane for self-configuration, self-healing, and self-optimization
- Cross-network access to real-time and historic RF interference information for quick troubleshooting and resolution
- Sub-second access-point failover to a standby controller for Service Set Identifier (SSID) high availability
- Enterprise reliability, with automated recovery from lightweight access point and wireless LAN (WLAN) controller failures to increase the availability of the wireless network

Main Features and Benefits

- Is optimized for next-generation wireless networking
- Offers nine times the performance of IEEE 802.11a/g networks
- Supports up to 500 access points and 7000 clients
- Supports a larger mobility domain for improved network scale
- Offers integrated RF intelligence with Cisco CleanAir technology as part of the Cisco Unified Wireless Network with Cisco Aironet 3500 Series Access Points
- Offers sub-second access-point failover to a standby controller for Service Set Identifier (SSID) high availability
- Offers flexible software licensing to enable you to add access points as your business needs grow
- Supports advanced features in the base software license, including the Cisco OfficeExtend solution for secure, mobile teleworking, enterprise wireless mesh that dynamically establishes wireless connections in hard-to-wire areas, and Control and Provisioning of Wireless Access Points (CAPWAP) protocol encryption that helps ensure full-line-rate encryption between access points and controllers across remote WAN and LAN links

Specifications

Feature	Cisco 5500 Series Wireless LAN Controller
Wireless	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11n
Data RFCs	RFC 768 UDP; RFC 791 IP; RFC 2460 IPv6 (pass through Bridging mode only); RFC 792 ICMP; RFC 793 TCP; RFC 826 ARP; RFC 1122 Requirements for Internet Hosts; RFC 1519 CIDR; RFC 1542 BOOTP; RFC 2131 DHCP; CAPWAP RFC
Security Standards	WPA; IEEE 802.11i (WPA2, RSN); RFC 1321 MD5 Message-Digest Algorithm; RFC 1851 The ESP Triple DES Transform; RFC 2104 HMAC: Keyed Hashing for Message Authentication; RFC 2246 TLS Protocol Version 1.0; RFC 2401 Security Architecture for the Internet Protocol; RFC 2403 HMAC-MD5-96 within ESP and AH; RFC 2404 HMAC-SHA-1-96 within ESP and AH; RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV; RFC 2406 IPsec; RFC 2407 Interpretation for ISAKMP; RFC 2408 ISAKMP; RFC 2409 IKE; RFC 2451 ESP CBC-Mode Cipher Algorithms; RFC 3280 Internet X.509 PKI Certificate and CRL Profile; RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec; RFC 3686 Using AES Counter Mode with IPsec ESP; RFC 4347 Datagram Transport Layer Security; RFC 4346 TLS Protocol Version 1.1
Encryption	WEP and TKIP-MIC; RC4 40, 104 and 128 bits (both static and shared keys); SSL and TLS; RC4 128-bit and RSA 1024- and 2048-bit; AES: CCM, CCM*, IPsec: DES-CBC, 3DES, AES-CBC
AAA	IEEE 802.1X; RFC 2548 Microsoft Vendor-Specific RADIUS Attributes; RFC 2716 PPP EAP-TLS; RFC 2865 RADIUS Authentication; RFC 2866 RADIUS Accounting; RFC 2867 RADIUS Tunnel Accounting; RFC 2869 RADIUS Extensions; RFC 3576 Dynamic Authorization Extensions to RADIUS; RFC 3579 RADIUS Support for EAP; RFC 3580 IEEE 802.1X RADIUS Guidelines; RFC 3748 Extensible Authentication Protocol; Web-based authentication; TACACS support for management users
Management	SNMP v1, v2c, v3; RFC 854 Telnet; RFC 1155 Management Information for TCP/IP-Based Internets; RFC 1156 MIB; RFC 1157 SNMP; RFC 1213 SNMP MIB II; RFC 1350 TFTP; RFC 1643 Ethernet MIB; RFC 2030 SNMP; RFC 2616 HTTP; RFC 2665 Ethernet-Like Interface types MIB; RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering and Virtual Extensions; RFC 2819 RMON MIB; RFC 2863 Interfaces Group MIB; RFC 3164 Syslog; RFC 3414 User-Based Security Model (USM) for SNMPv3; RFC 3418 MIB for SNMP; RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs; Cisco private MIBs
Management Interfaces	Web-based: HTTP/HTTPS; Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port; Cisco Wireless Control System (WCS)
Interfaces and Indicators	Uplink: 8 (5508) 1000Base-T, 1000Base-SX and 1000Base-LH transceiver slots; Small Form-Factor Pluggable (SFP) options (only Cisco SFPs supported): GLC-T, GLC-SX-MM, GLC-LH-SM; LED indicators: link; Service Port: 10/100/1000 Mbps Ethernet (RJ45); Service Port: 10/100/1000 Mbps Ethernet (RJ45) For High Availability for future use; LED indicators: link; Utility Port: 10/100/1000 Mbps Ethernet (RJ45); LED indicators: link; Expansion Slots: 1 (5508); Console Port: RS232 (DB-9 male/RJ-45 connector included), mini-USB; Other Indicators: Sys, ACT, Power Supply 1, Power Supply 2
Regulatory Compliance	CE Mark; Safety: UL 60950-1:2003; EN 60950:2000; EMI and susceptibility (Class A); U.S.: FCC Part 15.107 and 15.109; Canada: ICES-003; Japan: VCCI; Europe: EN 55022, EN 55024

Selected Part Numbers and Ordering Information

AIR-CT5508-12-K9	Cisco 5500 Series WLAN Controller with 12 Cisco Aironet access point licenses
AIR-CT5508-25-K9	Cisco 5500 Series WLAN Controller with 25 Cisco Aironet access point licenses
AIR-CT5508-50-K9	Cisco 5500 Series WLAN Controller with 50 Cisco Aironet access point licenses
AIR-CT5508-100-K9	Cisco 5500 Series WLAN Controller with 100 Cisco Aironet access point licenses
AIR-CT5508-250-K9	Cisco 5500 Series WLAN Controller with 250 Cisco Aironet access point licenses
AIR-CT5508-500-K9	Cisco 5500 Series WLAN Controller with 500 Cisco Aironet access point licenses

For More Information

<http://www.cisco.com/en/US/products/ps10315/index.html>

Cisco Virtual Wireless Controller

The Cisco Virtual Wireless Controller is a virtual form-factor controller that enables flexible and cost-effective deployment for small and medium-sized deployments. The Cisco Virtual Wireless Controller takes advantage of the virtualized infrastructure to enable IT to quickly scale and deploy new services, creating a flexible network infrastructure. Centralizing visibility and control of the network to ensure secure, optimal user experience, the Cisco Virtual Wireless Controller cost-effectively manages, secures, and optimizes the performance of local and branch-office wireless networks by providing real-time, centralized communications between Cisco Aironet Access Points.



Ideal for Small to Medium-Sized Business Deployments

- Cisco Virtual Wireless Controller**
- Ideal for small footprint on-premises and data center deployments
 - Delivered in a virtual form-factor, deployed in any x86 server with VMware Hypervisor ESXi 4.0 or 5.0
 - Support for advanced mobility technologies including Cisco FlexConnect, Cisco ClientLink, and Cisco CleanAir Technology
 - A controller that co-resides with other virtualized network services, including vCPI, vMSE, and vISE
 - Ability to scale up to 200 access points and 3000 clients, with one access-point adder license that enables a granular "pay-as-you-grow" model

Main Features and Benefits

- Ability to share existing virtualization infrastructure to achieve operational cost savings.
- Common Cisco Prime management for appliance and virtual wireless controller, in addition to the standard virtual machine (VM) tools for monitoring, troubleshooting, etc.
- Support for virtual machine infrastructure features: VMotion, cloning, snapshot, etc.
- Business agility with on-demand orchestration, and ability to quickly and simply enable new controller
- Intelligent RF control plane; centralized software update, control, and management; and troubleshooting
- With a distributed data plane, ability to deploy on-premises (locally switched) voice-, video-, and data-intensive applications over wireless
- Transparent wireless services even when the WAN link fails or a controller goes out of service
- Support for local RADIUS server for new clients to get on the network and access services
- Full Control and Provisioning of Wireless Access Points (CAPWAP) access point-to-controller encryption
- Support for detection of rogue access points and denial-of-service attacks
- Management frame protection that detects malicious users and alerts network administrators
- Ability to deploy simple and secure guest access services

Specifications

Feature	Cisco Virtual Wireless Controller
Wireless	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11n
Wired/Switching/Routing	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T, 1000BASE-SX, 1000-BASE-LH, IEEE 802.1Q VLAN tagging
Data Request For Comments (RFC)	<ul style="list-style-type: none"> • RFC 768 UDP • RFC 791 IP • RFC 2460 IPv6 (pass through Bridging mode only) • RFC 792 ICMP • RFC 793 TCP • RFC 826 ARP • RFC 1122 Requirements for Internet Hosts • RFC 1519 CIDR • RFC 1542 BOOTP • RFC 2131 DHCP • RFC 5415 CAPWAP Protocol Specification
Security Standards	<ul style="list-style-type: none"> • WPA • IEEE 802.11i (WPA2, RSN) • RFC 1321 MD5 Message-Digest Algorithm • RFC 1851 The ESP Triple DES Transform • RFC 2104 HMAC: Keyed Hashing for Message Authentication • RFC 2246 TLS Protocol Version 1.0

	<ul style="list-style-type: none"> • RFC 2401 Security Architecture for the Internet Protocol • RFC 2403 HMAC-MD5-96 within ESP and AH • RFC 2404 HMAC-SHA-1-96 within ESP and AH • RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV • RFC 2407 Interpretation for ISAKMP • RFC 2408 ISAKMP • RFC 2409 IKE • RFC 2451 ESP CBC-Mode Cipher Algorithms • RFC 3280 Internet X.509 PKI Certificate and CRL Profile • RFC 4347 Datagram Transport Layer Security • RFC 4346 TLS Protocol Version 1.1
Encryption	<ul style="list-style-type: none"> • Wired Equivalent Privacy (WEP) and Temporal Key Integrity Protocol-Message Integrity Check (TKIP-MIC): RC4 40, 104 and 128 bits (both static and shared keys) • Advanced Encryption Standard (AES): Cipher Block Chaining (CBC), Counter with CBC-MAC (CCM), Counter with Cipher Block Chaining Message Authentication Code Protocol (CCMP) • Data Encryption Standard (DES): DES-CBC, 3DES • Secure Sockets Layer (SSL) and Transport Layer Security (TLS): RC4 128-bit and RSA 1024- and 2048-bit • Datagram Transport Layer Security (DTLS): AES-CBC • IPsec: DES-CBC, 3DES, AES-CBC
Authentication, Authorization, and Accounting (AAA)	<ul style="list-style-type: none"> • IEEE 802.1X • RFC 2548 Microsoft Vendor-Specific RADIUS Attributes • RFC 2716 PPP EAP-TLS • RFC 2865 RADIUS Authentication • RFC 2866 RADIUS Accounting • RFC 2867 RADIUS Tunnel Accounting • RFC 3576 Dynamic Authorization Extensions to RADIUS • RFC 3579 RADIUS Support for EAP • RFC 3580 IEEE 802.1X RADIUS Guidelines • RFC 3748 Extensible Authentication Protocol • Web-based authentication • Terminal Access Controller Access-Control System (TACACS) support for management users
Management	<ul style="list-style-type: none"> • SNMP v1, v2c, v3 • RFC 854 Telnet • RFC 1155 Management Information for TCP/IP-Based Internets • RFC 1156 MIB • RFC 1157 SNMP • RFC 1213 SNMP MIB II • RFC 1350 TFTP • RFC 1643 Ethernet MIB • RFC 2030 SNMP • RFC 2616 HTTP • RFC 2665 Ethernet-Like Interface types MIB • RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions • RFC 2819 RMON MIB • RFC 2863 Interfaces Group MIB • RFC 3164 Syslog • RFC 3414 User-Based Security Model (USM) for SNMPv3 • RFC 3418 MIB for SNMP • RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs • Cisco private MIBs
Management Interfaces	<ul style="list-style-type: none"> • Web-based: HTTP/HTTPS • Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port • Cisco Wireless Control System (WCS)
Regulatory Compliance	<p>CE Mark Safety:</p> <ul style="list-style-type: none"> • UL 60950-1:2003 • EN 60950:2000 • EMI and susceptibility (Class A): • U.S.: FCC Part 15.107 and 15.109 • Canada: ICES-003 • Japan: VCCI • Europe: EN 55022, EN 55024

Virtual Machine Specifications	<p>Cisco Virtual Wireless Controller can run on any x86 server that supports VMware ESXi 4.x and 5.x. The resource requirements from the virtualized server hardware:</p> <ul style="list-style-type: none"> • CPU: 1 virtual CPU • Memory: 2 GB • Disk Space: 8 GB • Network Interfaces: 2 or more virtual Network Interface cards (vNICs)
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Selected Part Numbers and Ordering Information

	Part Number	Product Description	SMARTnet 8x5xNBD
e-License	L-LIC-CTVM-UPG	Primary upgrade SKU: Pick any number or combination of the following options under this SKU to upgrade one or many controllers under one product authorization key	
	L-LIC-CTVM-1A	1 Access Point Adder License for the Virtual Controller (e-Delivery)	CON-SAU-CTVM1A
	L-LIC-CTVM-5A	5 Access Point Adder License for the Virtual Controller (e-Delivery)	CON-SAU-CTVM5A
	L-LIC-CTVM-25A	25 Access Point Adder License for the Virtual Controller (e-Delivery)	CON-SAU-CTVM25A

For More Information

<http://www.cisco.com/en/US/products/ps12723/index.html>

Cisco 2500 Series Wireless LAN Controllers

The Cisco 2500 Series Wireless LAN Controllers enable systemwide wireless functions in small to medium-sized enterprises and branch offices. Designed for IEEE 802.11n performance, the Cisco 2500 Series Wireless LAN Controllers are entry-level controllers that provide real-time communication between Cisco Aironet access points to simplify the deployment and operation of wireless networks.



This controller delivers centralized security policies, wireless intrusion prevention system (wIPS) capabilities, award-winning RF management, and quality of service (QoS) for voice and video. Delivering IEEE 802.11n performance and scalability, the series provides low total cost of ownership (TCO) and flexible access-point licensing for 5, 15, 25, 50, or 75 access points.

Ideal for Companies That Need These Features

- Cisco 2500 Series**
- An enterprise scalable architecture that provides business-critical wireless services for small businesses and branch offices
 - Flexible licensing that allows access points to be added as business grows
 - Teleworking features for improved business continuity
 - Cisco VideoStream technology for enhanced video performance
 - An intelligent RF control plane for self-configuration, self-healing, and self-optimization
 - Centralized security policies to detect rogue access points, protect against denial-of-service (DoS) attacks, and provide Payment Card Industry (PCI) support
 - Support for highly secure guest access, voice, location services, and other collaboration applications

Main Features and Benefits

- IEEE 802.11n performance and scalability at an attractive entry-level price
- Support for up to 75 access points and 500 clients
- Flexible licensing and support for advanced features in the base software, including Cisco OfficeExtend for secure mobile teleworking, award-winning Cisco CleanAir technology for RF management, and comprehensive end-to-end security with Control and Provisioning of Wireless Access Points (CAPWAP) protocol access point-to-controller encryption
- Payment Card Industry (PCI) certified and well suited for retail customers who deploy transactional data
- Highly secure guest access, voice, location services, and other collaboration applications
- Simplified network deployment, operations, and management to help reduce overall operating expenses

Specifications

Feature	Cisco 2500 Series Wireless Controller
Wireless Standards	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11n.
Wired/Switching/Routing	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T, and IEEE 802.1Q VLAN tagging.
Data Request for Comments (RFCs)	<ul style="list-style-type: none"> • RFC 768 UDP • RFC 791 IP • RFC 2460 IPv6 (pass through Bridging mode only) • RFC 792 ICMP • RFC 793 TCP • RFC 826 ARP • RFC 1122 Requirements for Internet Hosts • RFC 1519 CIDR • RFC 1542 BOOTP • RFC 2131 DHCP • RFC 5415 CAPWAP Protocol Specification
Encryption	<ul style="list-style-type: none"> • WEP and Temporal Key Integrity Protocol-Message Integrity Check (TKIP-MIC): RC4 40, 104 and 128 bits (both static and shared keys) • Advanced Encryption Standard (AES): CBC, CCM, Counter Mode with Cipher Block Chaining Message Authentication Code Protocol (CCMP) • DES: DES-CBC, 3DES • Secure Sockets Layer (SSL) and Transport Layer Security (TLS): RC4 128-bit and RSA 1024- and 2048-bit • DTLS: AES-CBC
Management Interfaces	<ul style="list-style-type: none"> • Designed for use with Cisco Wireless Control System • Web-based: HTTP/HTTPS individual device manager • Command-line interface: Telnet, SSH, serial port
Interfaces and Indicators	<ul style="list-style-type: none"> • Console port: RJ-45 connector • Network: Four 1 Gbps Ethernet (RJ-45) <p>Note: Access point directly connected to the controller is not currently supported.</p> <ul style="list-style-type: none"> • LED indicators: Link Activity (each 1G port), Power, Status, Alarm
Authentication, Authorization, and Accounting (AAA)	<p>IEEE 802.1X</p> <ul style="list-style-type: none"> • RFC 2548 Microsoft Vendor-Specific RADIUS Attributes; RFC 2716 PPP EAP-TLS • RFC 2865 RADIUS Authentication • RFC 2866 RADIUS Accounting • RFC 2867 RADIUS Tunnel Accounting • RFC 3576 Dynamic Authorization Extensions to RADIUS • RFC 3579 RADIUS Support for EAP • RFC 3580 IEEE 802.1X RADIUS Guidelines; RFC 3748 Extensible Authentication Protocol: Web-based authentication • TACACS support for management users
Security Standards	<p>WiFi Protected Access (WPA)</p> <ul style="list-style-type: none"> • IEEE 802.11i (WPA2, RSN) • RFC 1321 MD5 Message-Digest Algorithm • RFC 1851 The ESP Triple DES Transform • RFC 2104 HMAC: Keyed Hashing for Message Authentication • RFC 2246 TLS Protocol Version 1.0 • RFC 2401 Security Architecture for the Internet Protocol • RFC 2403 HMAC-MD5-96 within ESP and AH • RFC 2404 HMAC-SHA-1-96 within ESP and AH • RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV • RFC 2406 IP Encapsulating Security Payload (ESP) • RFC 2407 Interpretation for ISAKMP • RFC 2408 ISAKMP • RFC 2409 IKE • RFC 2451 ESP CBC-Mode Cipher Algorithms • RFC 3280 Internet X.509 PKI Certificate and CRL Profile • RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec • RFC 3686 Using AES Counter Mode with IPsec ESP • RFC 4347 Datagram Transport Layer Security; RFC 4346 TLS Protocol Version 1.1
Management	<p>SNMP v1, v2c, v3</p> <ul style="list-style-type: none"> • RFC 854 Telnet • RFC 1155 Management Information for TCP/IP-Based Internets; RFC 1156 MIB • RFC 1157 SNMP • RFC 1213 SNMP MIB II

	<ul style="list-style-type: none"> • RFC 1350 TFTP • RFC 1643 Ethernet MIB • RFC 2030 SNMP • RFC 2616 HTTP • RFC 2665 Ethernet-Like Interface types MIB • RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions • RFC 2819 RMON MIB • RFC 2863 Interfaces Group MIB • RFC 3164 Syslog • RFC 3414 User-Based Security Model (USM) for SNMPv3 • RFC 3418 MIB for SNMP; RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs • Cisco private MIBs
Physical and Environmental	<p>Dimensions: 1.73 x 8.00 x 6.75 in. (43.9 x 203.2 x 271.5mm) Weight: 3.5 lbs (with power supply) Temperature:</p> <ul style="list-style-type: none"> • Operating: 32 to 104 °F (0 to 40°C) • Storage: -13 to 158°F (-25 to 70°C) <p>Humidity:</p> <ul style="list-style-type: none"> • Operating humidity: 10 to 95 percent, noncondensing • Storage humidity: Up to 95 percent <p>Power adapter: Input power: 100 to 240 VAC; 50/60 Hz Heat dissipation: 72 BTU/hour</p>
Regulatory Compliance	<p>Safety:</p> <ul style="list-style-type: none"> • UL 60950-1, 2nd Edition • EN 60950:2005 <p>EMI and susceptibility (Class B):</p> <ul style="list-style-type: none"> • U.S.: FCC Part 15.107 and 15.109 • Canada: ICES-003 • Japan: VCCI • Europe: EN 55022, EN 55024

Selected Part Numbers and Ordering Information

Part Number	Description	Cisco SMARTnet® 8x5xNBD
AIR-CT2504-5-K9	2500 Series Wireless Controller for up to 5 Cisco access points	CON-SNT-CT255
AIR-CT2504-15-K9	2500 Series Wireless Controller for up to 15 Cisco access points	CON-SNT-CT2515
AIR-CT2504-25-K9	2500 Series Wireless Controller for up to 25 Cisco access points	CON-SNT-CT2525
AIR-CT2504-50-K9	2500 Series Wireless Controller for up to 50 Cisco access points	CON-SNT-CT2550
AIR-CT2504-75-K9	2500 Series Wireless Controller for up to 75 Cisco access points	

For More Information

<http://www.cisco.com/en/US/products/ps11630/index.html>

Cisco Wireless Services Module 2 Controller for Cisco Catalyst 6500 Series Switches

The Cisco Wireless Services Module 2 (WiSM2) Controller for Cisco Catalyst 6500 Series Switches is a highly scalable and flexible platform that enables services with comprehensive wireless functions in medium-sized to large enterprises and campus environments.

Designed for IEEE 802.11n performance and high scalability, the Cisco WiSM2 controller supports a higher density of clients and delivers more efficient roaming, simultaneously managing up to 1,000 access points and 15,000 clients. The Cisco WiSM2 in the Cisco Catalyst 6500 Series chassis provides high performance, security, and scalability to support mission-critical wireless business communications.

The integrated wireless blade in the Cisco Catalyst chassis offers users a cost-effective wireless controller option, increasing the ROI of the Cisco Catalyst investment while reducing hardware costs.



Ideal for Companies That Need These Features

Cisco WiSM2 Controller for Cisco Catalyst 6500 Series Switches

- Enhanced enterprise scalability with a larger mobility domain that supports more access points
- Enhanced uptime, reliable streaming video and voice, and improved fault recovery for consistent mobility in demanding environments
- Flexible licensing that allows access-point capacity to be added as the business grows
- Teleworking features for improved business continuity
- Cisco VoiceStream technology for optimized video performance
- System-level security including Datagram Transport Layer Security (DTLS) encryption between access points and the controller
- Integrated radio resource management (RRM) with an intelligent RF control plane for self-configuration, self-healing, and self-optimization
- Cross-network access to real-time and historic RF interference information for quick troubleshooting and resolution
- Enterprise reliability, with automated recovery from lightweight access point and WLAN controller failures to increase the availability of the wireless network
- Sub-second access-point failover to a standby controller for Service Set Identifier (SSID) high availability
- Payment Card Industry (PCI) support for integration

Main Features and Benefits

- Enhanced scalability with support for up to 1,000 access points and 15,000 clients per blade, and support for up to 7,000 access points and 105,000 clients per switch
- Wired-network speed, nonblocking performance for IEEE 802.11n networks
- Roaming across wider geographic areas and faster performance for simultaneous applications
- Enhanced uptime with capability to simultaneously upgrade and manage 1000 access points
- Both real-time and historical information about RF interference affecting network performance across controllers, provided through systemwide Cisco CleanAir technology integration
- Integration of Cisco VideoStream technology as part of the Cisco technology for the medianet framework to optimize the delivery of video applications across the wireless LAN (WLAN)
- Flexible software licensing to add access points as your business needs grow
- Support for advanced features in the base software license, including the Cisco OfficeExtend solution for secure, mobile teleworking, an enterprise wireless mesh that dynamically establishes wireless connections in hard-to-wire areas
- Control and Provisioning of Wireless Access Points (CAPWAP) protocol encryption, which helps ensure full-line-rate encryption between access points and controllers across remote WAN and LAN links
- Sub-second access-point failover to a standby controller for Service Set Identifier (SSID) high availability
- Part of Payment Card Industry (PCI) certified architecture, and well-suited for retail customers who deploy transactional data applications such as scanners and kiosks

Specifications

Feature	Cisco Wireless Service Module 2 (WiSM 2) for Catalyst 6500 Series
Wireless	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11n
Wired/Switching/Routing	IEEE 802.3 10BASE-T, IEEE 802.3u 100BASE-TX specification, 1000BASE-T, 1000BASE-SX, 1000BASE-LH, IEEE 802.1Q Vtagging, and IEEE 802.1AX Link Aggregation
Data Request for Comments (RFC)	RFC 768 UDP • RFC 791 IP • RFC 2460 IPv6 (pass through Bridging mode only) • RFC 792 ICMP; RFC 793 TCP; RFC 826 ARP • RFC 1122 Requirements for Internet Hosts • RFC 1519 CIDR • RFC 1542 BOOTP • RFC 2131 DHCP • RFC 5415 CAPWAP Protocol Specification
Security Standards	WPA: IEEE 802.11i (WPA2, RSN) • RFC 1321 MD5 Message-Digest Algorithm; RFC 1851 The ESP Triple DES Transform • RFC 2104 HMAC: Keyed Hashing for Message Authentication • RFC 2246 TLS Protocol Version 1.0 • RFC 2401 Security Architecture for the Internet Protocol • RFC 2403 HMAC-MD5-96 within ESP and AH • RFC 2404 HMAC-SHA-1-96 within ESP and AH • RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV • RFC 2407 Interpretation for ISAKMP • RFC 2408 ISAKMP; RFC 2409 IKE • RFC 2451 ESP CBC-Mode Cipher Algorithms

	<ul style="list-style-type: none"> • RFC 3280 Internet X.509 PKI Certificate and CRL Profile; RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec • RFC 3686 Using AES Counter Mode with IPsec ESP; RFC 4347 Datagram Transport Layer Security • RFC 4346 TLS Protocol Version 1.1
Encryption	<p>WEP and TKIP-MIC; RC4 40, 104 and 128 bits (both static and shared keys)</p> <ul style="list-style-type: none"> • AES: CBC, CCM, CCMP; DES: DES-CBC, 3DES • SSL and TLS: RC4 128-bit and RSA 1024- and 2048-bit • DTLS: AES-CBC; IPsec: DES-CBC, 3DES, AES-CBC
Authentication, Authorization, and Accounting (AAA)	<p>IEEE 802.1X; RFC 2548 Microsoft Vendor-Specific RADIUS Attributes</p> <ul style="list-style-type: none"> • RFC 2716 PPP EAP-TLS • RFC 2865 RADIUS Authentication • RFC 2866 RADIUS Accounting • RFC 2867 RADIUS Tunnel Accounting • RFC 3576 Dynamic Authorization Extensions to RADIUS • RFC 3579 RADIUS Support for EAP; RFC 3580 IEEE 802.1X RADIUS Guidelines; RFC 3748 Extensible Authentication Protocol • Web-based authentication • TACACS support for management users
Regulatory Compliance	<p>CE Mark</p> <ul style="list-style-type: none"> • Safety: <ul style="list-style-type: none"> UL 60950-1:2003 EN 60950:2000 • EMI and susceptibility (Class A); U.S.: FCC Part 15.107 and 15.109 • Canada: ICES-003 • Japan: VCCI • Europe: EN 55022, EN 55024
Physical and Environmental	<ul style="list-style-type: none"> • Dimensions (W x D x H): 1.6 x 15.3 x 16.3 in. (4.0 x 37.9 x 40.3 cm) • Weight: 11 lbs (54.99 kg) • Temperature: Operating temperature: 32 to 104°F (0 to 40°C); Storage temperature: -40 to 167°F (-40 to 75°C) • Humidity: Operating humidity: 10 to 95%, noncondensing; Storage humidity: up to 95% • Input power: 225W maximum; Test conditions: 104°F (40°C), Full Traffic Most deployments and environments would use less power • Heat Dissipation: 768 Btu/h Maximum; Test Conditions: 104°F (40°C), Full Traffic
Management Interfaces	<ul style="list-style-type: none"> • Web-based: HTTP/HTTPS • Command-line interface: Telnet, Secure Shell (SSH) Protocol, serial port • Cisco Wireless Control System (WCS)
Interfaces and Indicators	<ul style="list-style-type: none"> • Service port: 1000 Mbps Ethernet Internal • Redundancy port: 1000 Mbps Ethernet Internal • Console port: RS232 (DB-9 male/RJ-45 connector included), mini-USB • Status indicators: Power, System, Alarm, Console, USB
Management	<p>SNMP v1, v2c, v3</p> <ul style="list-style-type: none"> • RFC 854 Telnet • RFC 1155 Management Information for TCP/IP-Based Internet; RFC 1156 MIB • RFC 1157 SNMP • RFC 1213 SNMP MIB II • RFC 1350 TFTP; RFC 1643 Ethernet MIB • RFC 2030 SNTP • RFC 2616 HTTP • RFC 2665 Ethernet-Like Interface types MIB • RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions • RFC 2819 RMON MIB • RFC 2863 Interfaces Group MIB • RFC 3164 Syslog; RFC 3414 User-Based Security Model (USM) for SNMPv3; RFC 3418 MIB for SNMP • RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs • Cisco private MIBs

Selected Part Numbers and Ordering Information

Part Number	Description	Cisco SMARTnet® 8x5xNBD Part Number
WS-SVC-WISM2-1-K9(=)	Wireless Services Module: WiSM-2: w/ 100 AP Support License	CON-SNT-WSM2100
WS-SVC-WISM2-3-K9(=)	Wireless Services Module: WiSM-2: w/ 300 AP Support License	CON-SNT-WSM2300
WS-SVC-WISM2-5-K9(=)	Wireless Services Module: WiSM-2: w/ 500 AP Support License	CON-SNT-WSM2500

For More Information

<http://www.cisco.com/en/US/products/ps11634/index.html>

Cisco Wireless Controller Module for the Cisco ISR G2

The Cisco Wireless Controller application on the Cisco Services-Ready Engine (SRE) enables systemwide wireless functions in small to medium-sized enterprises and branch offices. The Cisco SRE modules are router blades for the Cisco Integrated Services Routers Generation 2 (ISR G2). These routers allow remote provisioning to consolidate branch-office infrastructure, reduce operating costs, and deploy wireless service on demand. The Cisco Wireless Control Module for the Cisco ISR G2 has centralized security policies to detect rogue access points and protect against denial-of-service (DoS) attacks. Delivering IEEE 802.11n performance of up to 500 Mbps, Cisco SRE modules with the wireless controller application provide low total cost of ownership (TCO) and offer flexible licensing for scalability as network requirements grow.



Ideal for Companies That Need These Features

Cisco Wireless Controller Module for the Cisco ISR G2

- Quick deployment of wireless on demand
- Lower operating costs
- Consolidated branch-office infrastructure
- Business-critical wireless services for small to midsize businesses and branch offices
- Flexible licensing that allows access points to be added as business grows
- On-demand remote application provisioning
- Cisco VideoStream technology for enhanced video performance
- Centralized security policies to detect rogue access points, protect against denial-of-service (DoS) attacks, and provide Payment Card Industry (PCI) support
- Support for secure guest access, voice, location services, and other collaboration applications

Main Features and Benefits

- IEEE 802.11n performance with 500-Mbps throughput
- Support for up to 50 access points and 500 clients
- Capability for customers to provision the Cisco Wireless Controller either at the time of Cisco SRE installation or remotely any time thereafter
- Remote installation and activation, which eliminates the need for separate equipment upgrades, service calls, and onsite IT personnel
- Support for scanners and kiosks for PCI-certified customers, secure guest access, voice, location services, video, and wireless mesh
- One-to-one hard-drive redundancy, increasing the availability and robustness of the network
- Control and Provisioning of Wireless Access Points (CAPWAP) protocol encryption, which helps ensure full-line-rate encryption between access points and controllers across remote WAN and LAN links
- Support for rogue access-point detection and denial-of-service (DoS) attacks

Specifications

Feature	Cisco Wireless Controller Module on the ISR G2
Wireless Standards	IEEE 802.11a, 802.11b, 802.11g, 802.11d, WMM/802.11e, 802.11h, 802.11n
Wired/Switching/Routing	Several Ethernet switching modules and Power-over-Ethernet (PoE) options are supported on Cisco 1941, 2900, 3900 Series ISR G2 routers
Encryption	<ul style="list-style-type: none"> • Wired Equivalent Privacy (WEP) and Temporal Key Integrity Protocol-Message Integrity Check (TKIP-MIC): RC4 40, 104 and 128 bits (both static and shared keys) • Advanced Encryption Standard (AES): CBC, CCM, Counter Mode with Cipher Block Chaining Message Authentication Code Protocol (CCMP) • Data Encryption Standard (DES): DES Cipher Block Chaining (DES-CBC), 3DES • Secure Sockets Layer (SSL) and Transport Layer Security (TLS): RC4 128-bit and RSA 1024- and 2048-bit • IPsec: DES-CBC, 3DES, AES-CBC

Data Request for Comments (RFCs)	<p>RFC 768 UDP : RFC 791 IP</p> <ul style="list-style-type: none"> • RFC 2460 IPv6 (pass through Bridging mode only) • RFC 792 ICMP; RFC 793 TCP • RFC 826 ARP • RFC 1122 Requirements for Internet Hosts • RFC 1519 CIDR • RFC 1542 BOOTP • RFC 2131 DHCP • RFC 5415 CAPWAP Protocol Specification; RFC 5416 CAPWAP Binding for 802.11
Security Standards	<p>Wi-Fi Protected Access (WPA)</p> <ul style="list-style-type: none"> • IEEE 802.11i (WPA2, RSN) • RFC 1321 MD5 Message-Digest Algorithm • RFC 1851 The ESP Triple DES Transform • RFC 2104 HMAC: Keyed Hashing for Message Authentication • RFC 2246 TLS Protocol Version 1.0; RFC 2401 Security Architecture for the Internet Protocol • RFC 2403 HMAC-MD5-96 within ESP and AH; RFC 2404 HMAC-SHA-1-96 within ESP and AH • RFC 2405 ESP DES-CBC Cipher Algorithm with Explicit IV • RFC 2406 IP Encapsulating Security Payload (ESP) • RFC 2407 Interpretation for ISAKMP; RFC 2408 ISAKMP; RFC 2409 IKE; RFC 2451 ESP CBC-Mode Cipher Algorithms • RFC 3280 Internet X.509 PKI Certificate and CRL Profile • RFC 3602 The AES-CBC Cipher Algorithm and Its Use with IPsec • RFC 3686 Using AES Counter Mode with IPsec ESP • RFC 4346 TLS Protocol Version 1.1
Authentication, Authorization, and Accounting (AAA)	<p>IEEE 802.1X</p> <ul style="list-style-type: none"> • RFC 2548 Microsoft Vendor-Specific RADIUS Attributes • RFC 2716 PPP EAP-TLS • RFC 2865 RADIUS Authentication; RFC 2866 RADIUS Accounting • RFC 2867 RADIUS Tunnel Accounting • RFC 2869 RADIUS Extensions • RFC 3576 Dynamic Authorization Extensions to RADIUS • RFC 3579 RADIUS Support for EAP • RFC 3580 IEEE 802.1X RADIUS Guidelines • RFC 3748 Extensible Authentication Protocol (EAP) • Web-based authentication; Terminal Access Controller Access-Control System (TACACS) support for management users
Management Interfaces	<ul style="list-style-type: none"> • Designed for use with Cisco Wireless Control System • Web-based: HTTP/HTTPS individual device manager • Command-line interface: Telnet, SSH
Software Compatibility	Routers: Cisco IOS Software Release
Management	<p>SNMP v1, v2c, v3</p> <ul style="list-style-type: none"> • RFC 854 Telnet • RFC 1155 Management Information for TCP/IP-Based Internets • RFC 1156 MIB • RFC 1157 SNMP • RFC 1213 SNMP MIB II • RFC 1350 TFTP • RFC 1643 Ethernet MIB • RFC 2030 SNMP • RFC 2616 HTTP • RFC 2665 Ethernet-Like Interface types MIB • RFC 2674 Definitions of Managed Objects for Bridges with Traffic Classes, Multicast Filtering, and Virtual Extensions • RFC 2819 RMON MIB • RFC 2863 Interfaces Group MIB • RFC 3164 Syslog • RFC 3414 User-Based Security Model (USM) for SNMPv3 • RFC 3418 MIB for SNMP; RFC 3636 Definitions of Managed Objects for IEEE 802.3 MAUs • Cisco private MIBs
Product Compatibility	<ul style="list-style-type: none"> • Router: Cisco 1941, 2900 Series, and 3900 Series ISR G2 routers • Management: Cisco Wireless Control System • Location tracking: Cisco Mobility Service Engine • Wireless Controllers: Cisco 2100, 2500, 4400, 5500, Cisco Wireless Services Module (WiSM), WiSM2

Selected Part Numbers and Ordering Information

Part Number	Product Name	Cisco SMARTnet® 8x5xNBD
SRE-WLC	Wireless Controller on SRE option when sold with ISR G2 system	Requires SRE SASU
FL-SRE-WLC-5	5 AP License for Cisco Wireless Controller on SRE (when sold with ISR G2 system)	Requires SRE SASU
FL-SRE-WLC-25	25 AP License for Cisco Wireless Controller on SRE (when sold with ISR G2 system)	Requires SRE SASU

For More Information

<http://www.cisco.com/en/US/products/ps6730/index.html>

Network Management

Cisco Prime Infrastructure

Cisco Prime Infrastructure addresses IT challenges by providing a single integrated solution for comprehensive lifecycle management of wired and wireless access, campus, and branch-office networks, and rich visibility into end-user connectivity and application performance assurance problems.

Cisco Prime Infrastructure accelerates the rollout of new services and provides secure access and management of mobile devices, making bring-your-own-device (BYOD) workspaces a reality for corporate IT. Tightly coupling client awareness with application performance visibility and network control, Cisco Prime Infrastructure helps ensure uncompromised end-user quality of experience. Deep integration with the Cisco Identity Services Engine (ISE) further extends this visibility across security and policy-related problems, presenting a complete view of client access problems with a clear path to solving them.

Ideal for Companies That Need These Features

- Cisco Wireless Control System**
- Resolution of access problems across wired and wireless networks and capability to get users back online faster
- Visibility into and diagnosis of access infrastructure, including Cisco Catalyst switches, Cisco wireless controllers, and Cisco access points
- Capability for IT to design and maintain optimal RF environments
- Central management of Cisco Mobility Services Engine (MSE) and wireless services and RF interference with Cisco CleanAir technology
- Elimination of complexity, improved IT efficiency, and lower staffing requirements
- Built-in security monitoring with intrusion detection systems (IDSs) and adaptive wireless intrusion prevention systems (WIPSs)
- Cisco EnergyWise power savings

Main Features and Benefits

- Day-1 support of new Cisco devices and software releases helps ensure up-to-date coverage with no manageability gaps.
- Flexible virtual machine and physical appliance solutions provide cost-effective, easy-to-install options for small to global enterprise-class networks.
- Built-in high availability maximizes uptime for services delivery and improves operational efficiency.
- Role-based access control (RBAC) provides flexibility to segment the network into one or more virtual domains controlled by a single Cisco Prime Infrastructure platform. Virtual domains help deploy both large, multisite networks and managed services.
- Extensive discovery protocol support helps improve accuracy and completeness, including ping, Cisco Discovery Protocol, Link Layer Discovery Protocol (LLDP), Address Resolution Protocol (ARP), Border Gateway Protocol (BGP), Open Shortest Path First (OSPF), and route table lookups.
- Customizable predefined Cisco best practices and validated design configuration templates enable quick and easy device and service deployment.
- Analysis of voice, video, and Real-Time Transport Protocol (RTP) traffic in general is available at branch office or individual user level.
- Multiple data sources are provided for voice and video analysis, including network analysis module and medianet
- Monitoring of RTP conversations is available at the branch office and client levels.
- Support for new hardware and software features introduced in Cisco Wireless LAN Controller Release 7.3 is provided. This support includes the Cisco WLC 8500 controller, virtual WLC platforms, Cisco AP 2600, Cisco AP 1550 with Ethernet Passive Optical Network (EPON) interface, high availability with sub-second failover, Proxy Mobile IPv6, and other features.

- Feature configuration templates are provided for Dynamic Multipoint VPN (DMVPN), Group Encrypted Transport VPN (GETVPN), access control lists (ACLs), and Cisco ScanSafe.
- Device-level support is provided for DMVPN, Group Encrypted Transport VPN, ACLs, Enhanced Interior Gateway Routing Protocol (EIGRP), Routing Information Protocol (RIP), Open Shortest Path First (OSPF), static routes, Ethernet interfaces, Network Address Translation (NAT), and Zone-Based Firewall.

Specifications

Feature	Cisco Prime Infrastructure
VMware	VMware ESX/ESXi Version 4.1 or 5.0
Virtual appliance resource requirements	<p>Small virtual appliance</p> <ul style="list-style-type: none"> • RAM minimum: 8 GB • Hard disk minimum: 200 GB • Processors: 4 virtual CPUs (vCPUs) <p>Medium virtual appliance</p> <ul style="list-style-type: none"> • RAM minimum 12 GB • Hard disk minimum: 300 GB • Processors: 4 vCPUs <p>Large virtual appliance (VMware ESX/ESXi 5.0 only)</p> <ul style="list-style-type: none"> • RAM minimum: 16 GB • Hard disk minimum: 400 GB • Processors: 16 vCPUs <p>Extra large virtual appliance (VMware ESX/ESXi 5.0 only)</p> <ul style="list-style-type: none"> • RAM minimum: 24 GB • Hard disk minimum: 1200 GB • Processors: 16 vCPUs
Minimum client requirements	<p>Client hardware: 1 GB RAM, 2 GHz or better processor</p> <p>Browser: Internet Explorer 8.0 or 9.0 with Chrome plug-in, Mozilla Firefox 70-12.0, or Chrome 19.0</p>
Management and security	SNMPv1, v2c, v3, and Cisco TACACS+, PNG, JPEG, and AutoCAD (DXF and DWG) import file types supported
Supported device types	<ul style="list-style-type: none"> • Cisco Integrated Services Routers (ISRs) • Cisco Aggregation Services Routers (ASRs) • Cisco Catalyst® Switches • Cisco Network Analysis Modules • Cisco Wide Area Application Services (WAAS) • Cisco Nexus® Switches • Cisco MDS 9000 Series Multilayer Switches • Cisco Mobility Service Engine (MSE) • Cisco Wireless LAN Controllers • Cisco Lightweight Access Points • Cisco Autonomous Access Points

Parameter	Virtual Appliance Size (Lifecycle Assurance Lifecycle & Assurance)			
	Small	Medium	Large/Cisco Prime Appliance	Extra Large
Devices¹	2,500 - -	6,000 - -	11,000 5,000 5,000	18,000 18,000 18,000
Lightweight access points	3,000 - -	7,500 - -	15,000 - 15,000	15,000 - 15,000
Events per second²	100	300	300	1,000
Flows per second	-	-	- 16,000 16,000	- 80,000 80,000
Wired clients	10,000 - -	20,000 - -	50,000 - 25,000	50,000 - 50,000
Wireless clients	33,000 - -	75,000 - -	200,000 - 75,000	200,000 - 200,000

¹ A device constitutes a supported device type. NAM management requires the Assurance feature set and a maximum of 40 NAMs can be supported.

² Events are either syslogs or SNMP traps received from managed network devices.

Selected Part Numbers and Ordering Information

Part Number	Description
PRIME-NCS-APL-K9	Cisco Prime Appliance
L-NCS-1.0-K9	Cisco Prime NCS Device Count Licenses Family
L-NCS-1.0-50	Cisco Prime NCS Software and License for 50 Devices
L-NCS-1.0-100	Cisco Prime NCS Software and License for 100 Devices

L-NCS-10-500	Cisco Prime NCS Software and License for 500 Devices
L-NCS-10-1K	Cisco Prime NCS Software and License for 1,000 Devices
L-NCS-10-2.5K	Cisco Prime NCS Software and License for 2,500 Devices
L-NCS-10-5K	Cisco Prime NCS Software and License for 5,000 Devices
L-NCS-10-10K	Cisco Prime NCS Software and License for 10,000 Devices

For More Information

<http://www.cisco.com/en/US/products/ps11686/index.html>

Cisco Spectrum Expert Wi-Fi

The Cisco Spectrum Expert Wi-Fi integrates with the Cisco Unified Wireless Network to deliver real-time spectrum intelligence for Wi-Fi networks. This industry-leading solution detects, classifies, and locates sources of RF interference in the unlicensed 2.4- and 5-GHz bands using a PCMCIA card.

The Cisco Wireless Control System (WCS) works in conjunction with Cisco Spectrum Expert Wi-Fi to provide visibility into non-Wi-Fi interference sources that may cause wireless performance degradation. You can determine the source of the interference with Cisco Spectrum Expert Wi-Fi, allowing your business to remove, move, shield, adjust, or replace the interference source. Your organization can troubleshoot its wireless networks to determine the root causes of interference problems and optimize network performance.

Note: For integrated RF detection and mitigation using system-level intelligence, please refer to the Cisco Aironet 3500 Series access point with Cisco CleanAir technology.

Ideal for Companies That Need These Features

- Cisco Spectrum Expert Wi-Fi**
- Capability to help ensure that access points are providing reliable coverage with spectrum performance audits
 - Capability to secure a network by locating non-Wi-Fi rogue devices
 - Capability to see hacked or rogue Wi-Fi devices that other intrusion detection systems (IDSs) and intrusion protection systems (IPSs) do not detect
 - Capability to locate unauthorized devices such as Bluetooth radios and video cameras
 - Capability to determine whether neighbors are interfering with the Wi-Fi network

Main Features and Benefits

The Cisco Spectrum analysis tool monitors the airwaves in your wireless network and allows you to:

- Quickly and accurately determine Wi-Fi spectrum health and sources of interference
- Manage channel capacity and quality at the physical layer
- Quickly eliminate interference sources

Specifications

Feature	Cisco Spectrum Expert Wi-Fi Specifications
Dimensions	Unit sizes: Cardbus Type II and Express Card 54 mm; Unit weight: 1.65 oz and 1.35 oz; Shipping weight: 1 lb; Operating temperature: 32F to 131F; Storage temperature: -4F to 149F
Analyzer Specification	Displayed average noise level: -124 dBm; Reference level: -150 (min) to +10 (max) dBm; 512 MB capture limit; Frequency stability: +/-20 ppm; Max safe input level: 0 dBm; Amplitude accuracy: +/- 2.5 dBm; Public safety: 4.9 GHz; Frequency span at 2.4 GHz: 0.03 (min) to 100 (max) MHz; Frequency span at 5 GHz: 0.03 (min) to 975 (max) MHz; Center frequency resolution: 10 kHz; Resolution bandwidth: 0.01 (min) to 5 (max) MHz; Sweep time RTFFT mode: 6.4 us; Sweep time Pvt mode: 10 ms (max); Trigger delay (ms): -10 (min) to +10 (max); Power consumption: -3.3V @ 425 mA or 1.4 watts
Classifier Specification	802.11a/b/g via onboard or external Wi-Fi chipset; Bluetooth SCO, ACL; DECT cordless phones TDD cordless phones; Analog cordless phones; Analog video (NTSC, PAL, SECAM); Microwave ovens; Generic classifiers; Radar
Application	
Minimum system requirements	Microsoft Vista or Windows XP SP2; Processor: 1 GHz or equivalent; 150 MB hard drive available storage space; 800 x 600 display
Interoperability	Cisco WCS 4.2 Later
Cisco Spectrum Expert Antenna	
Frequency Range	2.4-2.5 GHz, 4.9-5.9 GHz
Gain	5 dBi
Polarization	Linear

Selected Part Numbers and Ordering Information

Cisco Spectrum Expert Wi-Fi Product and Service	
AIR-CSCO-SE-WIFI-C	Cisco Spectrum Expert Wi-Fi (CardBus)—Includes CardBus adapter, omni antenna with clip, and quick start guide with software download instructions. A single Cisco Spectrum Expert Software seat can only be used with one Cisco Spectrum Expert Sensor Wi-Fi.
CON-SNT-SEWIFICB	Cisco Spectrum Expert Wi-Fi (CardBus)—SMARTnet next business day service ¹
Cisco Spectrum Expert Wi-Fi Antenna Spare	
AIR-ANT-SE-WIFI-D=	2.4-2.5 and 4.9-5.9 GHz Directional Antenna, Spare—Spare Directional antenna for Cisco Spectrum Expert Wi-Fi
AIR-ANT-SE-WIFI-O=	2.4-2.5 and 4.9-5.9 GHz Omni Antenna, Spare—Spare Omni antenna for Cisco Spectrum Expert Wi-Fi
A Cisco WCS Spectrum Intelligence license is required to operate Cisco Spectrum Expert Wi-Fi with Cisco WCS. The following table provides the part numbers for the Cisco WCS Spectrum Intelligence license for Cisco Spectrum Expert Wi-Fi.	
WCS-ADV-K9	Family SKU for WCS Advance License Products—Top-level SKU for Cisco WCS advance feature licenses
WCS-ADV-SI-SE-10	Cisco WCS Spectrum Intelligence License for 10 Sensors—License option compatible with Cisco WCS 4.2 or later configured with Base and/or Location license.
WCS-ADV-SI-SE-10=	Cisco WCS Spectrum Intelligence License for 10 Sensors, Spare—Spare license compatible with Cisco WCS 4.2 or later configured with Base and/or Location license.

¹ Includes advanced replacements next business day, 24-hour Cisco Technical Assistance Center (TAC) access, and software download

License Pack Guidelines

Customers can purchase the Cisco Spectrum Intelligence license for Cisco Spectrum Expert Wi-Fi in two ways. Customers who want to purchase all Cisco WCS advanced feature licenses, including the Cisco Spectrum Intelligence license, for use on a single Cisco WCS host should purchase the Cisco WCS advanced feature pack (WCS-ADV-K9) and then specify the option for the Cisco Spectrum Intelligence license (WCS-ADV-SI-SE-10). Customers who want to purchase licenses that can be used across multiple Cisco WCS hosts should purchase Cisco Spectrum Intelligence license spares (WCS-ADV-SI-SE-10).

- **WCS-ADV-K9:** The Cisco WCS advanced feature license pack includes license keys for advanced features, including Cisco Spectrum Intelligence. The license pack can be used only on a single Cisco WCS host.
- **WCS-ADV-SI-SE-10:** This part number represents the option for the Cisco Spectrum Intelligence advanced feature license as part of the Cisco WCS advanced feature license pack (WCS-ADV-K9). Customers must specify this part number when ordering Cisco Spectrum Intelligence as part of the combined Cisco WCS advanced feature license pack.
- **WCS-ADV-SI-SE-10=:** Users who want to purchase multiple licenses to be deployed across numerous Coscp WCS hosts should purchase the Cisco Spectrum Intelligence license as a spare unit (WCS-ADV-SI-SE-10=). If a customer orders more than one spare, the system will generate a license pack for each spare ordered. In other words, the number of license packs equals the number of spares ordered.

Cisco customers can contact their local Cisco representatives for questions related to Cisco WCS licensing. Cisco employees or partners can contact wcs-customer-license@cisco.com.

For More Information

<http://www.cisco.com/en/US/products/ps9393/index.html>

Mobility Services

Cisco Mobility Services Engine

The Cisco Mobility Services Engine (MSE) delivers centralized and scalable mobility services. A combination of hardware and software, the Cisco MSE is an appliance-based or virtual solution that transforms the wireless LAN (WLAN) into a mobility network by abstracting the application layer from the network layer, effectively allowing the delivery of mobile applications and services across wired and wireless networks.



To deliver true business mobility, IT must unify wired and wireless networks, manage mobile devices, and enable mobile application development. The Cisco MSE is at the center of this mobility architecture evolution. It provides an open application programming interface (API) that enables a broad ecosystem of partners to access network intelligence and develop industry-relevant mobility solutions. Cisco MSE is part of the Cisco Unified Wireless Network, delivering a comprehensive approach to business mobility, an approach that extends applications to the right device at the right time, no matter what network is being used.

Ideal for Companies That Need:

Cisco 3300 Series MSE

- Rapid delivery of new mobile services and applications
- Unification of multiple access networks to help ensure more transparent mobile application delivery
- Central management, scalability, and flexible services delivery
- Investment protection for the existing Cisco Unified Wireless Network

Main Features and Benefits

- Extensible platform for rapid delivery of mobile services and applications:
 - Allows the abstraction of mobile services and applications from control planes and the network so that each can evolve independently
 - Provides a common framework for hosting multiple mobility services
 - Provides open application programming interface (API) to support third-party and partner application development
- Growing ecosystem of application partners to deliver mobility solutions targeted at various industries such as healthcare, retail, education, and manufacturing
- Scalability; multiple services can be deployed on a single Cisco MSE, or a single service can span multiple Cisco MSEs
- Manageability
 - The Cisco MSE serves as a single point of integration for multiple mobile, value-added services.
 - All mobility services are managed centrally through the integration with the Cisco Wireless Control System
- Flexibility
 - The Cisco Mobility Services Engine is an extensible platform capable of supporting a variety of services configurations based on business requirements.
 - Platform architecture enables the inclusion of evolving technology standards.
- Return on investment
 - The Cisco Mobility Services Engine integrates with the Cisco Unified Wireless Network to provide network intelligence, including contextual information, to optimize business applications.
 - This architecture builds on the existing investment in Cisco wireless and mobility solutions and provides a platform that is both flexible and scalable to meet evolving business mobility requirements.

Specifications

Feature	Cisco 3355 Mobility Services Engine
Supported Services	<ul style="list-style-type: none">• Cisco Context-Aware Software to track up to 18000 devices• Cisco Adaptive Wireless Intrusion Prevention System software to support up to 3000 monitor mode or enhanced local mode (ELM) access points
Evaluation Support	Customers who purchase a mobility service have the option to try other mobility services on their MSE at the following scale: <ul style="list-style-type: none">• Context-aware client tracking: 100 clients• Context-aware tag tracking: 100 tags• Adaptive wireless intrusion prevention: 20 monitor mode or enhanced local mode access points

Processor	(2) Quad-Core Intel Nehalem Processor 2.0 GHz, 4-MB cache
Memory	16-GB DDR3 (2 x 8 GB)
Hard Disk	Four hot-swappable 146-GB SAS drives with up to 6-Gbps transfer rate
Removable Media	DVD-RO drive
Ports	<ul style="list-style-type: none"> • Four USB ports: two in front, two in back • Two VGA ports: one in front and one in back • One RJ-45 management port for out-of-band management • RJ-45: Two rear RJ-45 connectors for connection to two Gigabit Network Adapters
Connectivity	Network: Two embedded Multifunction Gigabit Network Adapters with TCP/IP offload engine
Management	SNMP v1, v2c, and v3
Management Interface	Cisco WCS Mobility Services Version 71 or later running Internet Explorer 6.0/Service Pack 1 or later
Network Devices	<ul style="list-style-type: none"> • Cisco 2500 and 5500 Series Wireless LAN Controllers • Cisco Catalyst® 6500 Series Wireless Services Module 2 • Cisco Wireless Controller on Cisco Services-Ready Engine (SRE) • Cisco Flex 7500 Series Cloud Controller • Cisco Aironet® Lightweight Access Points
System Specifications	<ul style="list-style-type: none"> • Number of MSEs per NCS: 10 • Number of Endpoints per Wireless LAN Controller: <ul style="list-style-type: none"> • WLC 2500: 500 • WLC on SRE for ISR G2: 500 • WLC 5500: 5,000 • WiSM2: 5,000 • Flex7500: 5,000
Programming Interfaces	SOAP/XML APIs
Form Factor	1RU
Physical Dimensions	<ul style="list-style-type: none"> • Height: 1.69" (43mm) • Width: 17.3" (440mm) • Depth: 28.0" (711.4mm) • Weight: 28 (minimum) - 35.1 lb (maximum) (12.7 - 15.9 kg)
Power	<ul style="list-style-type: none"> • AC power supply wattage: 625W • AC power supply voltage: 100-120V at 50-60 Hz; 200-240V at 50-60 Hz • 92% efficient • Auto switching, hot-swappable • Redundant power supplies
Cooling Fans	Total of six fans, 3+3 redundant configuration
Environmental	<ul style="list-style-type: none"> • Operating temperature: <ul style="list-style-type: none"> • 50 to 95°F (10 to 35°C) up to 3000 ft/914.4m • 50 to 90°F (10 to 32°C) 3000 ft to 7000 ft/914.4m to 2133m • Nonoperating temperature: <ul style="list-style-type: none"> • -40 to 140°F (-40 to 60°C) • Maximum rate of change is 20°C/hr (36°F/hr) • v Air temperature - Server on: <ul style="list-style-type: none"> • 10°C to 35°C (50°F to 95°F) • Altitude: 0 to 914.4 m (3000 ft), Decrease system temperature by 1.0°C for every 1000-foot increase in altitude • v Air temperature - Server off: <ul style="list-style-type: none"> • 5°C to 45°C (41°F to 113°F) • Maximum altitude: 3048m (10000 ft) • Shipment: <ul style="list-style-type: none"> • -40°C to 60°C (-40°F to 140°F) • Maximum altitude: 3048m (10000 ft) • v Humidity - Server on: <ul style="list-style-type: none"> • 20% to 80% • Maximum dew point: 21°C • Maximum rate of change: 5°C/hr • v Humidity - Server off: <ul style="list-style-type: none"> • 8% to 80% • Maximum dew point: 27°C

Approvals and Compliance	<ul style="list-style-type: none"> • Safety UL 60950 • CAN/CSA -C22.2 No. 60950 • EN60950 • IEC 60950: EMC FCC Part 15 (CFR 47) Class A • ICES-003 Class A • EN 55022 Class A • CISPR22 Class A • AS/NZS 3548 Class A • VCCI Class A • EN 55024 • EN 50082-1 • Energy Star compliant
Software Compatibility	<ul style="list-style-type: none"> • Available with Cisco Mobility Services Engine (MSE) Software Release 6.0 or later • Requires Cisco Wireless LAN Controller (WLC) Software Version 4.2.130 or later and Cisco Wireless Control System (WCS) Version 6.0 or later • Multiple mobility services can run con-currently on the same MSE using WLC and MSE Software Release 6.0 or later • Supported services may have different software requirements

Cisco Mobility Services Engine Virtual Appliance Product Specifications

VMWare ESXi Version (Virtual Appliance on a Customer-Supplied Server)	VMWare ESX & ESXi version 4.1
Minimum Server Requirements	<p>Cisco MSE High-End Virtual Appliance</p> <ul style="list-style-type: none"> • 50,000 Context-Aware License • 10,000 aWIPS License • Minimum RAM: 20GB • Minimum Hard disk space allocation: 500GB • Disk System Throughput: Minimum of 1600 IOPS with a bandwidth of 6000 Kbytes/sec • Physical cores: 16 at 2.13GHz or better (2x Intel Xeon E7-L8867) <p>Cisco MSE Standard Virtual Appliance</p> <ul style="list-style-type: none"> • 18,000 Context-Aware License • 5,000 aWIPS License • Minimum RAM: 11GB • Minimum Hard disk space allocation: 500GB • Disk System Throughput: Minimum of 1000 IOPS with a bandwidth of 3500 Kbytes/sec • Physical cores: 8 at 2.93GHz or better (2x Intel Xeon X5570) <p>Cisco MSE Low-End Virtual Appliance</p> <ul style="list-style-type: none"> • 2,000 Context-Aware License • 2,000 aWIPS License • Minimum RAM: 6GB • Minimum Hard disk space allocation: 500GB • Disk System Throughput: Minimum of 900 IOPS with a bandwidth of 3000 Kbytes/sec • Physical cores: 2 at 2.93GHz or better (2x Intel Xeon X5570)

Selected Part Numbers and Ordering Information

AIR-MSE-3355-K9	Cisco 3355 Mobility Services Engine
AIR-CAS-1KC-K9 (=)	Cisco Context-Aware Engine for Clients License for 1K Clients
AIR-CAS-3KC-K9 (=)	Cisco Context-Aware Engine for Clients License for 3K Clients
AIR-CAS-6KC-K9 (=)	Cisco Context-Aware Engine for Clients License for 6K Clients
AIR-CAS-12KC-K9 (=)	Cisco Context-Aware Engine for Clients License for 12K Clients
AIR-WIPS-AP-25 (=)	License for Access Points (supports 25,100, 500, and 2000 APs) for Monitor and ELM mode
AIR-WIPS-AP-100 (=)	
AIR-WIPS-AP-500 (=)	
AIR-WIPS-AP-2000 (=)	
AIR-LM-WIPS-5 (=)	
AIR-LM-WIPS-100 (=)	
AIR-LM-WIPS-500 (=)	
AIR-LM-WIPS-2000 (=)	

For More Information

<http://www.cisco.com/go/mse>

Cisco Wireless Intrusion Prevention System

The Cisco Adaptive Wireless Intrusion Prevention System (IPS) solution protects against attacks and proactively prevents threats. It scales to meet the robust demands of even the largest networks, and delivers visibility and control across the network without the need for additional scanning equipment.

Ideal for Companies That Need

Cisco Adaptive Wireless IPS (Monitor Mode and Enhanced Local Mode)

- A system to identify rogue access points and mitigate unauthorized wireless access and attacks against the wireless network
- A system to assist with regulatory compliance, particularly Payment Card Industry (PCI) compliance
- Integration with Cisco wired security infrastructure
- Investment protection of existing Cisco Unified Wireless Network

Main Features and Benefits

- Detects, analyzes, and mitigates RF-based attacks using signature- and network-based methods for protection against known and unknown wireless threats
- Integrates into the Cisco Unified Wireless Network infrastructure using the same access points and wireless LAN (WLAN) controllers for simplified administration and lower capital expenditures (CapEx) and total cost of ownership (TCO)
- Offers advanced reporting for increased regulatory compliance and forensic analysis
- Provides increased visibility and ease of administration through wired and wireless network security integration
- Uses the Cisco Mobility Services Engine (MSE) for performance and centralized processing of wireless network threat analysis

Specifications

Feature	Cisco Adaptive Wireless IPS Software
Hardware requirements	Cisco Mobility Services Engine 3355
Number of Supported Monitor Mode APs and Enhanced Local Mode Aps	Support for up to 3000 monitor mode APs on MSE 3355
Management Interface	Cisco Wireless Control System version 5.2 or later

Selected Part Numbers and Ordering Information

AIR-WIPS-AP-25 (=) AIR-WIPS-AP-100 (=) AIR-WIPS-AP-500 (=) AIR-WIPS-AP-2000 (=) AIR-LM-WIPS-5 (=) AIR-LM-WIPS-100 (=) AIR-LM-WIPS-500 (=) AIR-LM-WIPS-2000 (=)	License for Access Points (supports 25,100, 500, and 2000 APs) for Monitor and ELM mode
AIR-MSE-3355-K9	Cisco 3355 Mobility Services Engine

Ordering Multiple Services on the Mobility Services Engine

The following are possible combinations when ordering multiple services (Cisco Context-Aware Software licensees and Adaptive Wireless Intrusion Prevention licensees for Monitor Mode Access Points).

Context-Aware	18,000	17,000	16,000	15,000	14,000	13,000	12,000	11,000	10,000	9,000
WIPS (Monitor Mode or ELM Mode)	0	165	330	500	665	830	1,000	1,165	1,330	1,500
Context-Aware	8,000	7,000	6,000	5,000	4,000	3,000	2,000	1,000	0	
WIPS (Monitor Mode or ELM Mode)	1,665	1,830	2,000	2,165	2,330	2,500	2,665	2,830	3,000	

For More Information

<http://www.cisco.com/go/wips>

Cisco Wireless Services

Manage a complex wireless infrastructure and enable secure mobile access to enterprise and collaboration applications with services from Cisco and our partners. Based on leading practices, these services help you transition to a mobility architecture that optimizes performance and reliability, so you can maintain business innovation while controlling costs. We can support you throughout your journey of planning, building, and managing your fully integrated network.

Services from Cisco and our partners can help you:

- Scale connectivity to numerous mobile devices
- Get the most out of your wireless LAN (WLAN) environment by optimizing your network
- Address new business challenges with next-generation wireless technology
- Increase employee productivity with freedom to work their way, anywhere, on any device

For more information

Visit www.cisco.com/go/wirelesservices.

Chapter 4: Collaboration

This chapter provides only a subset of Cisco products and part numbers.

Collaboration At-a-Glance		
Product	Features	Page
Cloud Collaboration		
Cisco Hosted Collaboration Solution (HCS)	<ul style="list-style-type: none"> The Cisco Hosted Collaboration Solution (HCS) enables Cisco partners to host Cisco applications and services and deliver a unified collaboration experience with all the advantages of a cloud-based model, workload by workload. Cisco HCS delivers "Cisco Powered" Collaboration as a Service (CaaS), founded on the Cisco Collaboration Architecture. It is a "whole offer", a productized architectural solution with a commercial model and joint go-to-market partnership approach for Cisco HCS partners. Cisco HCS includes all the workloads within the Cisco Collaboration portfolio, including Cisco Unified Communications, Cisco Mobility, Cisco TelePresence conferencing, and Cisco Customer Collaboration, through partners and in a cloud deployment model. 	4-9
Cisco Hosted Collaboration Solution (HCS) for Unified Communications and Mobility	Overall the applications and services offered by Cisco HCS partners are as described within the Unified Communications section of this document. These services cover the entire Cisco Unified Communications and Mobility portfolio, and Cisco HCS enables Cisco partners to extend these services through a cloud deployment model for our customers.	4-10
Cisco Hosted Collaboration Solution (HCS) for Contact Center	Cisco HCS for Contact Center allows you to run your contact center completely in the cloud, and take advantage of the derived advantages. Cisco HCS for Contact Center is designed for companies with up to 1,000 knowledge workers or agents	4-11
Cisco Hosted Collaboration Solution (HCS) for TelePresence	Cisco HCS for TelePresence enables TelePresence as a Service (TPaaS). Cisco HCS partners are able to offer Cisco TelePresence conferencing in a hosted environment through Cisco TelePresence Exchange.	4-11
Conferencing		
Cisco WebEx Meetings Server	<ul style="list-style-type: none"> This is a highly secure, fully virtualized, private cloud (on-premises) conferencing solution that combines audio, video, and web conferencing in a single solution It provides the same great WebEx user experience found in the hosted version of WebEx, including WebEx clients for PC, Mac, iPhone, and iPad; high quality video; sharing, annotation, and collaboration tools; recording and playback etc It integrates with the Cisco UC suite, extending Cisco Unified Communications Manager to conferencing 	4-11
Cisco Unified MeetingPlace conferencing	<ul style="list-style-type: none"> This on-premises virtual meeting solution within Cisco Unified Communications delivers integrated voice, video, and web conferencing and interfaces that make it simple to set up, attend, and manage meetings. It extends the value of Cisco WebEx meeting applications with on-premises voice and video, and is integrated with hosted WebEx web conferencing. 	4-12
Cisco Unified Video Advantage	<ul style="list-style-type: none"> This solution provides video telephony functions to Cisco Unified IP Phones (including select models from the Cisco Unified IP Phone 6900 and 7900 Series models and the Cisco IP Communicator softphone application). It is compatible with Cisco VT Camera III or other third-party USB cameras. Optional Cisco SMARTnet Services are available. 	4-13
Cisco WebEx Meetings	<ul style="list-style-type: none"> This solution provides a people-centric meeting platform for collaborating anytime, anywhere, even over mobile devices. It offers cloud-based web conferencing with audio, high-definition video, and real-time content sharing. Additionally, it offers centralized meeting spaces for sharing meeting-related information to help teams easily organize, prepare, and follow-up for every meeting. 	4-13
Cisco WebEx Meeting Center	<ul style="list-style-type: none"> This solution allows business professionals to easily and reliably meet online anywhere, anytime, on any device to present information, share applications, and collaborate on projects with customers and co-workers worldwide. It offers cloud-based web conferencing with audio, high-definition video, and real-time content sharing. 	4-14
Cisco WebEx Training Center	This online classroom solution delivers engaging, effective, and interactive instructor-led training to employees, customers, and partners.	4-16
Cisco WebEx Event Center	This solution allows you to stage large-scale online events and web seminars to generate leads and train employees, customers, and partners.	4-16
Cisco WebEx Support Center	This solution enables organizations to provide instant, personalized customer or IT support worldwide by allowing support staff to diagnose and fix problems remotely in real time online.	4-17

Cisco WebEx Cloud Connected Audio	<ul style="list-style-type: none"> This solution reduces the audio conferencing costs associated with WebEx web conferencing for enterprise customers It eliminates transport and termination costs for all on-net audio conferencing via a direct IP link from the customer's data center to one of the Cisco WebEx Cloud data centers. It is a hybrid solution that integrates with Cisco Unified Communications Manager and WebEx web conferencing applications. 	4-18
Cisco WebEx Advanced Services	<ul style="list-style-type: none"> This solution helps customers reach and exceed their collaboration goals with a wide range of services that can be tailored to their organization. Online collaboration experts assess organizational requirements and develop a plan to reach important goals. The main service portfolio offers are Event Collaboration Services; Planning, Design, and Implementation Services; and Learning Services. 	4-18
Customer Care		
Cisco Unified Contact Center Enterprise	<ul style="list-style-type: none"> This solution delivers multisite, intelligent contact routing, network-to-desktop computer telephony integration (CTI), and multichannel contact management to contact center agents over an all-IP infrastructure or mixed IP and time-division multiplexing (TDM) infrastructure. The solution can also be deployed with third-party automatic call distributors (ACDs). It supports a variety of deployment models from premises-based to hosted installations. Essential Operate Service (ESW) is required for most features. 	4-19
Cisco Unified Contact Center Express	<ul style="list-style-type: none"> This software-based automatic-call-distributor (ACD), interactive-voice-response (IVR), and computer-telephony-integration (CTI) application is designed for small and medium-sized companies, enterprise branch offices, or corporate departments with Cisco IP Telephony networks. It supports up to 300 agents and is available in three versions: Standard, Enhanced, and Premium, to better match product functions with your customer contact interaction management requirements. Essential Operate Service (ESW) is required for agents only. 	4-20
Cisco Unified Intelligence Center	<ul style="list-style-type: none"> This solution offers customers a powerful web-based reporting platform that is as flexible as it is intuitive. Customers can report on the details of every contact across all channels from a single interface, regardless of the resources involved. Essential Operate Service (ESW) is required for most features. 	4-21
Cisco Unified Customer Voice Portal	<ul style="list-style-type: none"> This multichannel contact center solution allows customers to use the Salesforce.com Service Cloud as their primary agent desktop while having full Cisco Unified Contact Center capabilities and salesforce.com customer-relationship-management (CRM) capabilities to operate a customer care or support center in any industry from North America. Designed specifically for small and medium-sized businesses, it supports 30 to 300 agents or knowledge workers; this joint solution follows a cloud-computing or software-as-a-service (SaaS) model, resulting in faster deployment times, no capital investments, and higher agent productivity. 	4-22
Cisco Customer Care Services	<ul style="list-style-type: none"> This award-winning product provides IP-based self-service and call routing. It combines open-standards support for speech with intelligent application development and industry-best call control to deliver personalized self-service to callers, either as a standalone interactive-voice-response (IVR) system or transparently integrated with a contact center. The solution offers a prompt collect, queuing, and call-control service using standard IP technologies, and provides sophisticated speech-enabled voice self-service with the ability to quickly and easily escalate to agent-assisted service if necessary. Essential Operate Service (ESW) is strongly recommended. 	4-22
Cisco SocialMiner social media customer care solution	<ul style="list-style-type: none"> These services, delivered by Cisco and our partners, help contact centers maximize customer relationships, enable richer collaboration, and accelerate technology innovations to gain and sustain competitive advantage. 	4-22
Cisco Finesse agent desktop software	<ul style="list-style-type: none"> This social media customer care solution enables your company to proactively respond to customers and prospects communicating through public social media networks such as Twitter and Facebook or other public forum or blogging sites. It provides social-media monitoring, queuing, and workflow to organize customer posts on social-media networks and deliver them to your customer care team; your company can respond to customers in real time through the same social network they use to communicate. 	4-23
Cisco MediaSense *NEW PRODUCT*	<ul style="list-style-type: none"> This next-generation agent and supervisor desktop for Cisco Unified Contact Center Enterprise provides benefits across a variety of communities that interact with your customer service organization. It is designed to provide a collaborative experience that improves the customer experience by enhancing the customer service representative experience. 	4-24

Enterprise Social Software		
Cisco WebEx Social	<ul style="list-style-type: none"> This social collaboration solution (formerly known as Cisco Quad social software) combines the power of social networking, content creation, and real-time communications. It enables employees to securely share content, collaborate on projects, and connect with the people and resources they need to get work done. This solution is available as both an on-premises and cloud solution. 	4-25
IP Communications		
Cisco Unified Communications Manager	<ul style="list-style-type: none"> This solution delivers consistent communication services to all employee workspaces, including voice, video, mobility, and presence services. It is now available on virtualized Cisco UCS servers, select third-party servers, as well as Cisco Media Convergence Servers. Essential Operate Service (ESW) is required, based on server platform. 	4-26
Cisco Unified Communications Manager Assistant	<ul style="list-style-type: none"> A component of the Cisco Unified Communications Manager, this PC and phone application provides productivity tools that enhance communications between manager and administrative assistant. No separate services are required. 	4-27
Cisco Unified Communications Manager Express	<ul style="list-style-type: none"> Cisco IOS Software-based call control is supported on Cisco Integrated Services Routers; it converges voice, video, and data with full-featured call processing and is ideal for branch-office applications with up to 450 users. It is included in the Cisco SMARTnet Services when the router is originally purchased. 	4-28
Cisco Business Edition 6000	<ul style="list-style-type: none"> This solution is designed for midsize businesses, supporting 1000 users, 1200 devices, and 50 sites. This single-server solution is based on VMware server virtualization technology and contains voice, video, mobility, conferencing, messaging, instant messaging and presence, and contact center (up to 100 agents) capabilities. This solution is also compatible with the full portfolio of Cisco Unified IP Phones and Cisco TelePresence endpoints (selected models). 	4-28
Cisco Business Edition 3000	<ul style="list-style-type: none"> This solution is designed for small and medium-sized businesses with the capacity to support up to 300 employees, 400 devices, and 10 sites. This single-server solution includes call processing, messaging, point-to-point video, and Auto-Attendant capabilities. Additionally, it uses cloud-based services for conferencing with WebEx meeting applications, and instant messaging and presence with Jabber messaging. This solution supports PC soft-phone client applications and a wide range of Cisco Unified IP Phones. 	4-30
Cisco Unified Communications Manager Session Management Edition	<ul style="list-style-type: none"> Session management is a service embedded in Cisco Unified Communications Manager. It unifies multivendor environments by centralizing network control. It unifies dial plans and routing, aggregates multivendor private branch exchange (PBX) environments, and centralizes and extends applications to users across the network. Cisco Unified Communications Manager Session Management cuts administrative overhead, and supports easier migration to a full IP telephony environment. 	4-31
Cisco IP Communicator	<ul style="list-style-type: none"> This software application acts as an IP endpoint to deliver voice and video calling through a Windows PC, enabling remote users to take their office extension with them. Essential Operate Service (ESW) is required for the User license. 	4-32
Cisco Unified IP Phone 6900 Series	<ul style="list-style-type: none"> This affordable portfolio of endpoints supports business-grade voice and adjunct video communications to branch-office, midmarket, and enterprise customers in a user- and eco-friendly design. It includes a range of offerings spanning occasional-use settings, such as lobbies, to highly active communications environments, such as for managers and administrative staff. Cisco SMARTnet Services are available. 	4-33
Cisco Unified IP Phone 7900 Series	<ul style="list-style-type: none"> This diverse endpoint portfolio for advanced business communications supports high-quality voice adjunct video and data communications. It supports extensible markup language (XML). Selected models support both XML and MIDlet -based services to let users access a variety of information, such as stock quotes, employee directories, and web content. It offers a choice of wired and wireless LAN and specialty endpoint solutions, addressing both horizontal and industry market-specific needs. Cisco SMARTnet Services are available. 	4-35
Cisco Unified IP Phone 8900 Series	<ul style="list-style-type: none"> This portfolio of advanced professional multimedia endpoints delivers a robust suite of unified communications and multimedia applications in a design that is elegant, easy-to-use, and ecofriendly. Selected models support both XML and MIDlet applications that improve business processes and transform user experiences. Cisco SMARTnet Services are available. 	4-36

Cisco Unified IP Phone 9900 Series	<ul style="list-style-type: none"> This portfolio of advanced collaborative multimedia endpoints delivers interactive, high-performance voice, video, and data communications. It supports the breadth of Cisco Unified Communications Services and multimedia applications, including video communications as simple as a telephone call and XML or MIDlet-based data application services directly from the IP phone, in a design that is intuitive, clutter-free, and earth-friendly. Cisco SMARtNet Services are available. 	4-38
Cisco SPA500 Series IP Phones	<ul style="list-style-type: none"> This solution offers small businesses robust features that support the Cisco Unified Communications 500 Series, Cisco SPA9000 Voice System, and hosted IP telephony. 	4-40
Cisco Virtualization Experience Client (VXC) *NEW PRODUCT*	<ul style="list-style-type: none"> This portfolio offers zero clients, thin clients, and software appliances that combine virtual desktops with voice and video capabilities. Cisco VXC is part of the Cisco VXI Smart Solution, which delivers an uncompromised desktop and application virtualization experience that is collaborative, mobile, and secure. 	4-41
Cisco Unified Attendant Console Portfolio	<ul style="list-style-type: none"> This solution comprises four full-featured software-based attendant-console solutions designed specifically for use with Cisco Unified Communications Manager. There are four offerings to support customer needs: <ul style="list-style-type: none"> Cisco Unified Enterprise Attendant Console Department Edition for departmental use Cisco Unified Enterprise Attendant Console Business Edition for large enterprises (NEW) - The Cisco Unified Attendant Console Premium Edition for customers seeking server redundancy in addition to Enterprise Edition features Essential Operate Service (ESW) is required for software. 	4-41
Cisco Emergency Responder	<ul style="list-style-type: none"> This solution works with Cisco Unified Communications Manager to automatically provide E9-11 features in North America; intra-enterprise features are also compatible with any internal or external emergency number. It now works with Cisco EnergyWise technology. Essential Operate Service (ESW) is required for the software license and per seat. 	4-43
Cisco Intercompany Media Engine	<ul style="list-style-type: none"> This solution enables true boundary-less communications among organizations, including business partners and customers. It makes communications among separate companies and organizations as effortless and transparent as it is within an individual company. It is included with Cisco Unified Communications Manager 8.0 and later, as well as Cisco Unified Communications Manager Session Management Edition 8.0 and later. 	4-44
Cisco Unified Survivable Remote Site Telephony (SRST) and Cisco Unified Enhanced SRST (E-SRST)	<ul style="list-style-type: none"> These Cisco IOS software-based feature sets automatically provide critical backup telephony functions for centralized Cisco call-processing deployments during WAN link failures. During a WAN outage, the Cisco Unified SRST-enabled router provides robust telephony services (including off-net calls to 911). E-SRST provides all functions of Cisco Unified SRST and: <ul style="list-style-type: none"> Enhanced user experience in failover mode by maintaining phone displays and providing full call control GUI interface to provision, monitor, report on, and troubleshoot remote sites Automatic sync-up with Cisco call control for additions, deletions, and modifications of users and phones including transparent dial-plan synchronization Centralized management and control for all sites Calling rule restrictions continued in failover mode Cisco Unified SRST works with Cisco Unified Communications Manager, Cisco Business Edition 6000, and the Cisco Hosted Collaboration Solution. Cisco Unified E-SRST works with Cisco Unified Communications Manager and Cisco Business Edition 6000. 	4-45
Cisco Unified Communications Services	<ul style="list-style-type: none"> These services, delivered by Cisco and our partners, help organizations deploy a secure, resilient Cisco Unified Communications Solution, enabling powerful ways to collaborate with co-workers, partners, and customers across any workspace. 	4-46
Messaging		
Cisco Jabber for Mac *NEW PRODUCT*	<ul style="list-style-type: none"> This solution provides a unified communications client for Mac OS X. It delivers presence, instant messaging (IM), voice, desktop sharing, and conferencing capabilities through a single client on your desktop. It can be deployed as an on-premises or on-demand solution. 	4-46
Cisco WebEx Connect	<ul style="list-style-type: none"> This enterprise-class, on-demand unified communications client delivers instant messaging (IM), rich presence, audio, video, and integrated web conferencing and soft-phone capabilities to streamline communications and enhance productivity. 	4-47
Cisco Unified Personal Communicator	<ul style="list-style-type: none"> This solution integrates frequently used communications applications and services into a single, unified client. From an easy-to-use interface on a PC or Mac, it provides quick and easy access to powerful communications tools—soft phone, presence, instant messaging (IM), visual voicemail, click to call, employee directory, communication history, video and audio conferencing, and web conferencing—to help you communicate effectively and work more productively. 	4-47

Cisco Unified Presence	<ul style="list-style-type: none"> This standards-based platform collects information from multiple sources about user availability and communications capabilities to provide rich presence status and facilitate presence-enabled communications with Cisco Unified Communications and other critical business applications. Cisco Unified Presence is tightly integrated with Cisco and a range of third-party compatible desktop and mobile presence and instant messaging (IM) clients and applications and facilitates the ability to expose presence in corporate web directories, point-of-sale applications, or customer-relationship-management (CRM) systems through standards-based application programming interfaces (APIs). Essential Operate Service (ESW) is required for most features. 	4-48
Cisco Unity Connection	<ul style="list-style-type: none"> This enterprise-class voice and unified messaging solution delivers speech recognition and call-routing rules on a Linux appliance. Essential Operate Service (ESW) is required for Voice Mail Boxes. 	4-49
Speech Connect for Cisco Unity Connection	<ul style="list-style-type: none"> Internal or external callers can say the name of an employee into the phone and instantly be connected. This new feature is included with Cisco Unity Connection. 	4-49
Cisco SpeechView	<ul style="list-style-type: none"> This solution converts voice messages to text and delivers them to you by email, allowing you to read your voice messages and take immediate action. Cisco SpeechView is a feature of Cisco Unity Connection. 	4-49
Cisco Unity Express	<ul style="list-style-type: none"> Integrated voicemail, Automated-Attendant, and interactive-voice-response (IVR) are delivered locally for small businesses or branch offices. This solution takes advantage of the data infrastructure; it is supported on a broad range of Cisco Integrated Services Routers (ISRs). Cisco SMARTnet services are available. 	4-50
Cisco Unified Survivable Remote Site Telephony Voicemail	<ul style="list-style-type: none"> This cost-effective solution supports survivable voicemail service for your organization's remote sites, such as branch offices or small sites. It provides centralized configuration and management for Cisco Unified Communications Manager and Cisco Unity Connection-based deployments. 	4-50
Cisco Unified Messaging Gateway	<ul style="list-style-type: none"> This gateway offers an open and secure method of intelligently routing messages and exchanging subscriber and directory information within a unified messaging network. It acts as the central hub in a network of voice and unified messaging solutions. It includes Software Application Support (SAS) and Software Applications Support with Upgrades (SASU). In a centralized call-control network with Cisco Unified Communications Manager, it automatically provisions remote-site telephony (Cisco Unified E-SRST) on branch-office Cisco Integrated Services Routers (ISRs). 	4-51
Cisco Unity Unified Messaging	<ul style="list-style-type: none"> This unified messaging system delivers voice, email, and fax messages into a single inbox for access through phone, email, and many other clients and devices. Essential Operate Service (ESW) is required for Voice Mail Boxes. 	4-51
Speech Connect for Cisco Unity	<ul style="list-style-type: none"> Internal or external callers can say the name of an employee into the phone and instantly be connected. The solution is for use with Cisco Unity unified messaging systems. 	4-52
Mobile Applications		
Cisco Jabber messaging integration platform	<ul style="list-style-type: none"> You can place, receive, and manage calls over a Wi-Fi network. The application delivers IP telephony features to your Apple or Android mobile device. Cisco Jabber IM for smartphones lets you stay connected when mobile with enterprise-class IM and presence. 	4-52
Cisco WebEx Meeting Center on Mobile Devices	<ul style="list-style-type: none"> This solution is a free Cisco WebEx Meeting Center application for Apple, Android, and BlackBerry mobile devices. You can join WebEx meetings from your mobile device to view shared presentations, applications, and desktops; view attendee list; and chat with attendees. You can participate in a two-way, multiparty videoconference on the Apple iPad and iPhone as well as certain Android tablets. 	4-53
Cisco Mobile Supervisor	<ul style="list-style-type: none"> This free application is available from the Apple App Store. It provides an extension to the Cisco Supervisor Desktop on a mobile device. It provides an extension to your Cisco Unified Contact Center Express (Unified CCX) product; contact center supervisors can receive real-time performance metrics on their iPhone third-generation (3G) and iPod touch devices. 	4-53
Cisco TelePresence Conferencing		
Endpoints		
Immersive Endpoints		
Cisco TelePresence System 3010	To deliver an immersive collaborative environment with an in-person experience, the Cisco TelePresence System 3010 allows 6 people to connect with up to 48 locations. It is ideal for customer engagements with small or large groups, supply-chain optimizations, press and media briefings, or regular team meetings.	4-55

Cisco TelePresence System TX1300 Series *NEW PRODUCT*	This system provides the flexibility that you need to deploy Cisco TelePresence systems throughout your organization. You can use almost any conference room and its existing table. Optimally designed for various environments and room sizes, this series delivers a high-quality experience for remote or branch offices with limited space or bandwidth.	4-55
Multipurpose Endpoints		
Cisco TelePresence Profile Series	The Cisco TelePresence Profile Series offers a lifelike high-definition (HD) video collaboration experience for teams of all sizes. This integrated telepresence solution brings you an easy-to-use and consistent video experience. The Cisco TelePresence Profile Series has several options powered by the C Series Codec, depending on the size of your meeting room and your requirements for collaboration and content sharing: <ul style="list-style-type: none"> • Cisco TelePresence Profile 42-inch • Cisco TelePresence Profile 52-inch and 52-inch Dual • Cisco TelePresence Profile 65-inch and 65-inch Dual 	4-56
Cisco TelePresence MX Series *NEW PRODUCT*	In approximately 15 minutes, you can turn a conference room into a telepresence room and call team members to a meeting on a brilliant 42-inch screen. The Cisco TelePresence MX200 brings colleagues from around the world face-to-face as if they were in the same room—in a simple, cost-effective way.	4-56
Personal Endpoints		
Cisco TelePresence System EX Series *NEW PRODUCT*	This family of personal telepresence for the desktop lets you and your colleagues instantly collaborate face-to-face, whether you are separated by a hallway, a street, or several time zones. Access the features you need right from your desktop, with the touch of a finger. The EX Series includes the Cisco TelePresence touch-screen interface, so you can make and manage telepresence calls with a simple glide of the finger. New enhancements bring even greater usability and simplicity to connecting and sharing content over telepresence.	4-57
Cisco Jabber Video for TelePresence	Cisco TelePresence Movi software extends the benefits of face-to-face video collaboration to remote workers. Using an existing PC or Mac and a USB camera, team members at every level of an organization can stay visually connected in a highly secure and reliable, enterprise-wide telepresence solution. At a moment's notice, workers can connect from home or on the road, whenever they need to collaborate.	4-58
Cisco TelePresence System 500 Series *NEW PRODUCT*	Cisco TelePresence System 500 Series offers the same experience of three-screen meeting room solutions, but with a smaller footprint, giving individuals the flexibility to join large, multilocation group meetings or host intimate, remote one-on-one meetings from the personal office.	4-58
Solutions Platform		
Cisco TelePresence System Integrator C Series	Designed for integrators who specialize in telepresence installations, the Cisco TelePresence System Integrator C Series delivers a total telepresence engine. With an excellent level of video and audio across the product range, these codecs offer advanced application programming interfaces (APIs) and industry-standard connectors for exceptional integration flexibility. Products include: <ul style="list-style-type: none"> • Cisco TelePresence Codec C40 • Cisco TelePresence Codec C60 • Cisco TelePresence Codec C90 	4-59
Infrastructure		
Call Control		
Cisco TelePresence Video Communication Server (VCS)	The Cisco TelePresence Video Communication Server (VCS) extends the benefits of face-to-face video collaboration across networks and organizations by supporting any-to-any video and telepresence communications. The solution includes tools for large-scale installations and video network management, making deployment and management easier and cost-efficient. As organizations adopt telepresence for desktops and enable mobile workers with video, the Cisco TelePresence Video Communication Server supports highly scalable deployments.	4-60
Conferencing		
Cisco TelePresence MSE 8000 Series	Meet the mission-critical collaboration needs of large enterprises with the Cisco TelePresence MSE 8000 Series, an all-in-one multipoint control unit, ISDN and IP gateway, and recording solution. This highly scalable chassis-based platform is well suited for service providers seeking to offer their clients high-definition (HD) videoconferencing services. The Cisco MSE 8000 Series is a high-density, high-capacity video bridge that supports large videoconferences.	4-60
Cisco TelePresence Server 7010	Bring together participants with high-definition (HD), standard-definition (SD), and telepresence endpoints with the Cisco TelePresence Server 7010. To facilitate the best possible user experience, the server intelligently recognizes system types. You can connect to up to 9 screens or upgrade the system to support 16 screens. Increase the large-scale telepresence experience with a full-screen, immersive view of the primary speakers and an overlay of the other participants.	4-61
Cisco TelePresence MCU 4500 Series	The Cisco TelePresence MCU 4500 Series is the industry's leading full high-definition (HD) multimedia conferencing bridge. It delivers superior video and voice with an easy-to-use, versatile management interface. Compatible with all major vendors' endpoints, each model maintains its capacity and performance in every configuration, providing an optimal experience for each participant, every time.	4-61

Cisco TelePresence Content Server	<ul style="list-style-type: none"> This network appliance enables organizations to record and stream meetings and multimedia presentations. Organizations can share knowledge and enhance communication through high-quality, user-generated video content. 	See 7-19
Media Services		
Cisco TelePresence ISDN Gateway	Organizations that use ISDN can now enjoy the benefits of high-definition video with the Cisco TelePresence ISDN Gateway. This high-capacity and scalable gateway grows with your business demands and provides transparent communication between all features of IP and ISDN video networks and devices. This gateway also offers transparent communication with the Cisco TelePresence Video Communication Server for call control and firewall traversal.	4-62
Cisco TelePresence Advanced Media Gateway Series	The Cisco TelePresence Advanced Media Gateway Series are unified communications products that help increase the value of your existing video and collaboration infrastructure. They connect to all standards-based video devices, including endpoints, multipoint control units, recording and streaming servers, and telepresence servers. Combined with the Cisco TelePresence Video Communication Server, this series provides an innovative unified communications solution. This combination is the first network-centric solution to facilitate true high-definition communication between Microsoft Office Communications Server 2007 R2 users and standards-based telepresence and videoconferencing devices.	4-62
Management		
Cisco TelePresence Management Suite (TMS)	Cisco TelePresence Management Suite (TMS) is a scalable, easy-to-use, and reliable system that provides complete visibility and control for administrators while providing a simplified telepresence experience for end users. The Cisco TelePresence Management Suite provides one management platform for all your visual communication needs.	4-63
Cisco TelePresence Manager	Cisco TelePresence Manager software makes it easy to schedule, initiate, and manage Cisco TelePresence experiences. As an integral part of the Cisco TelePresence solution, this software facilitates call scheduling and setup from common enterprise groupware such as Microsoft Exchange and Lotus Notes so that starting meetings is as simple as pushing a single button.	4-64
Exchange System Cloud Services		
Cisco TelePresence Exchange System *NEW PRODUCT*	The Cisco TelePresence Exchange System is a flexible telepresence and business video services-creation platform that enables service providers to develop and deliver a broad portfolio of cloud-based managed and hosted telepresence services for next-generation cloud-based business telepresence solutions. Using the Cisco TelePresence Exchange architecture, service providers can expand their revenue streams by extending their network and conferencing services portfolio with a range of advanced media services such as multimedia conferencing, interoperability services, recording and streaming, and new high-touch services such as personalized concierge and white-label wholesale services.	4-65
Cloud Services		
Cisco WebEx TelePresence *NEW PRODUCT*	Cisco WebEx Telepresence is a powerful cloud service that that helps small and medium-sized businesses get started with telepresence so they can get closer to customers, colleagues, and partners without having to make extensive IT resource investments.	4-67
Peripherals		
Cisco TelePresence Touch *NEW PRODUCT*	Experience the innovative unified user interface that enables you to access Cisco TelePresence solutions intuitively. Make and manage video calls, share content, and access advanced features—all with the simple touch of a finger. The interface comes in three models, optimally designed for Cisco endpoints. The models come in 8-, 12-, or 23-inch sizes.	4-67
Cisco TelePresence Industry Solutions		
Healthcare		
Cisco TelePresence System Clinical Presence	Designed by medical professionals, the Cisco TelePresence System Clinical Presence is a telemedicine solution that is ideal for a variety of clinical video applications. Clinical Presence connects clinicians with patients, staff, and each other using powerful telepresence technology integrated with features and functions optimized for a healthcare setting. Clinical Presence helps maximize quality, mobility, and ease of use for a telemedicine environment. It can be customized to your requirements with a wide variety of options.	4-68
Cisco TelePresence System Intern MXP	The Cisco TelePresence System Intern MXP provides interactive video communication that you can move to wherever it is needed. It is ideal for applications such as healthcare, emergency response, homeland security, and manufacturing. The compact IV-stand unit includes a shelf and a basket that make it easy to connect a laptop, medical imaging equipment, and other peripherals.	4-68
Education		
Cisco TelePresence Synch	This revolutionary technology transparently integrates supported interactive whiteboards with speakers and Cisco TelePresence C Series or MXP endpoints. Synch effectively converts a standard interactive whiteboard into a powerful multifunction collaboration tool that brings together "live" remote experts and classrooms.	4-69

Cisco TelePresence System Educator MXP	If your room includes monitors, carts, and peripherals, the Cisco TelePresence System Educator MXP is an ideal solution that can integrate with your existing configuration. Instructors can use the intuitive 12-inch color video touch panel to control video calls and multiple peripherals such as cameras, PCs, and DVDs.	4-69
Cisco TelePresence Services		
Cisco TelePresence Services	<ul style="list-style-type: none"> Realize the full business value of your Cisco TelePresence investments faster with smart, personalized services from Cisco and our partners: http://www.cisco.com/go/services/telepresence. 	4-70
Infrastructure and Other Products		
Cisco Unified Application Environment *NEW PRODUCT*	<ul style="list-style-type: none"> This solution offers a rich portfolio of applications and development tools that extend the Cisco Unified Communications platform. Broad support for development tools, including Eclipse and Microsoft Visual Studio, allows unified communications and network services to be quickly and easily integrated into business applications or to be used to develop entirely new applications. 	4-70
Cisco UC Integration for Microsoft Office Communicator *NEW PRODUCT*	<ul style="list-style-type: none"> Cisco UC Integration for Microsoft Lync is a desktop integration that provides access to Cisco Unified Communications from Microsoft Lync and Microsoft Office Communicator. The solution extends the presence and instant messaging (IM) capabilities of Microsoft Lync and Microsoft Office Communicator (MOC) by providing access to a broad set of Cisco Unified Communications capabilities, including soft-phone standards-based video; unified messaging; audio, video, and web conferencing; desk-phone control; and phone presence. You can instantly access enhanced Cisco Unified Communications directly from Microsoft Lync or Microsoft Office Communicator on a PC client. With easy-to-deploy desktop integration, you can extend proven Cisco Unified Communications Services to your workspace and benefit from the investment protection and reduced complexity delivered by a single call-control solution. 	4-71
Cisco Unified Communications 500 Series for Small Business	<ul style="list-style-type: none"> This affordable unified communications appliance for small businesses provides voice, data, voicemail, Automated-Attendant, video, security, and wireless capabilities while integrating with existing desktop applications such as calendar, email, and customer-relationship-management (CRM) programs. Cisco SMARTnet Services are available. 	4-71
Cisco Unified Communications on the Cisco Unified Computing System	<ul style="list-style-type: none"> This solution is composed of Cisco Unified Communications applications running in a virtualized environment consisting of VMware software, Cisco Unified Computing System servers, and Fibre Channel storage area network (SAN) storage. 	4-73
Cisco Unified Border Element (Cisco UBE)	The Cisco Unified Border Element (Cisco UBE) is Cisco's enterprise-focused session border controller (SBC), providing voice and video connectivity from the enterprise IP network to service provider Session Initiation Protocol (SIP) trunks. Cisco UBE performs the four critical functions of an SBC: session control, security, interworking, and demarcation. Using Cisco UBE with SIP trunking, enterprises can lower costs, simplify their voice network, and extend rich collaboration services. Cisco SMARTnet Services are available.	4-73
Cisco TDM Gateways	<p>Cisco TDM Gateways comprise a variety of different voice network modules to enable any-to-any collaboration. Cisco TDM Gateways allow IP voice networks to connect with the public switched telephone network (PSTN) or a private branch exchange (PBX) or to provide toll-bypass services within the enterprise network and even connect analog devices. Cisco TDM Gateway modules are deployed on the Cisco 2900 and 3900 Integrated Services Routers (ISRs). The Cisco TDM Gateway Family includes:</p> <ul style="list-style-type: none"> Analog and digital voice and fax interface cards and modules T1, E1, and G.703 Multiflex trunk voice and WAN interface cards Digital signal processors for voice and video Cisco Unified Communications gateway services application programming interface (API) 	4-74
Cisco Unified SIP Proxy	<ul style="list-style-type: none"> The Cisco Unified SIP Proxy (USP) is a high-performance, highly available Session Initiation Protocol (SIP) server for centralized routing and SIP signaling normalization. By forwarding requests between call-control domains, Cisco USP provides the means for routing sessions within enterprise and service provider networks. Cisco Unified SIP Proxy is deployed on Cisco Integrated Services Routers (ISRs). 	4-74
Cisco VG Series of Analog Gateways	<ul style="list-style-type: none"> Dedicated Cisco VG202, VG204, VG224, and VG350 gateways provide low, medium, or high-density connectivity between IP networks and traditional analog devices such as phones and faxes. Cisco SMARTnet Services are available. 	4-75
Cisco AS5400XM Universal Gateway	<ul style="list-style-type: none"> This high-performance, universal 2-rack-unit (2RU) gateway is ideal for deployments requiring Signaling System 7 (SS7) interconnection or for those deployments requiring a T3 interface. Cisco SMARTnet Services are available. 	4-75
Cisco ATA 187 Analog Telephone Adaptor	<ul style="list-style-type: none"> This adaptor turns any analog telephone into an IP telephone. Each of the two voice ports supports independent telephone numbers, providing two separate lines. Cisco SMARTnet Services are available. 	4-77

Cisco Media Experience Engine	For product information, please refer to "Chapter 7: Video and Broadband Cable".	See 7-17
Cisco Unified Workspace Licensing	<ul style="list-style-type: none"> This licensing allows organizations to cost-effectively access a wide range of Cisco Collaboration applications and services in a cost-effective, simple package. It includes client and server software, licensing, service and support, and software subscription on a per-user basis. 	4-78
Cisco Unified Communications Software Subscription	<ul style="list-style-type: none"> This subscription increases business value by providing an economical and timely approach to upgrading to new Cisco technology. It offers major software releases at no additional charge for the duration of the activated subscription term, which can be for 1, 2, 3, or 5 years. 	4-80

For More Information

Product Ordering

To place an order, visit: <http://www.cisco.com/en/US/ordering/index.shtml>.

End-of-Life and End-of-Sale Products

Please visit the end-of-life and end-of-sale website for a complete and up-to-date listing of products that are no longer being sold or supported, what replacement products are available, and information about product support: http://www.cisco.com/en/US/products/prod_end_of_life.html.

Note: This chapter provides only a subset of Cisco products and part numbers. For the most up-to-date and comprehensive information, refer to the Cisco website at <http://www.cisco.com> or the Cisco ordering website at <http://www.cisco.com/en/US/ordering/index.shtml>, or reference the URL listed in the "For More Information" section of each product.

Cloud Collaboration

Cisco Hosted Collaboration Solution

- Cisco Hosted Collaboration Solution (HCS) enables partners to host Cisco applications and services and deliver a unified collaboration experience with all the advantages of a cloud-based model, workload by workload.
- HCS delivers "Cisco Powered" Collaboration as a Service (CaaS), founded on the Cisco Collaboration Architecture. It is a "whole offer", a productized architectural solution with a commercial model and joint go-to-market partnership approach.
- Cisco HCS enables partners to offer Cisco Collaboration applications and services within a cloud-ready virtualization platform, on a scalable, resilient network supported by a comprehensive management suite.
- Cisco HCS includes all the workload within the Cisco Collaboration portfolio, but through partners and in a cloud deployment model.

Main Features and Benefits

Partners

Partners can increase revenue opportunities as they prepare themselves to lead the cloud market transition and deliver the most up-to-date services, everywhere. They are able to differentiate in their chosen markets by building upon the Cisco HCS foundation with your own products and services. This scenario will lead to increased opportunities by offering high-quality, faster deployment times and services to more customers.

In summary, with Cisco HCS Cisco offers:

- Productized solution with a series of critical system utilities
- Roadmap and strategy influenced by partners and customers
- Professional services (design, build, support, maintenance, and operations)
- Tailored commercial model and licensing terms (business relationship)
- Joint go-to-market (branded partner designation and joint selling) model

Customers

In addition to the value collaboration brings to customers, such as closer teamwork, faster decision making, and the ability to work from anywhere, the Cisco Hosted Collaboration Solution helps partners enable customers to deliver a unified user experience - the same one across a wide variety of devices and environments. It enables customers to optimize resources and shift the IT spend from a capital expenditures (CapEx) model to an operating expenses (OpEx) one. Improved IT and business agility means the ability to focus more resources on core competencies and business priorities, while maintaining control and the ability to manage service levels and reliability.

In summary, with the Cisco HCS solution an organization can:

- Accelerate transition to Collaboration (customer journey)

- Optimize resources and capital (predictability- and annuity-based)
- Enable IT agility (standardized and consolidated services and management)
- Deliver evergreen applications and services (features and functions)
- Ramp service up or down (flexibility)

In summary, following are the advantages that Cisco Cloud Collaboration solutions offer an organization:

- Create a unified experience:
 - Deliver people-centric collaboration applications and services
 - Satisfy user and business demands by offering a broad service catalogue
 - Enable a consistent user experience across all deployment models and devices
- Optimize resources:
 - Improve total cost of ownership (TCO) (OpEx) and preserve capital and core resources
 - Consolidate, unify, and automate IT infrastructure and operations
 - Manage investment protection and extension while maintaining interoperability
- Enable IT and business agility:
 - Take advantage of the latest technology and remain evergreen
 - Experience a flexible IT model and integrate with business applications
 - Align IT resources to business needs and gain rapid and full user adoption
- Maintain control and management:
 - Improve pace and consistency of application deployments and upgrades
 - Reduce risk of technology obsolescence
 - Maintain full visibility and control
 - Gain peace of mind and retain telephony reliability in the cloud through Cisco Unified Survivable Remote Site Telephony (SRST)

For More Information

<http://www.cisco.com/go/hcs>

Cisco HCS Solution Areas

Cisco HCS for Unified Communications and Mobility

Overall the applications and services offered by Cisco HCS partners are as described within the Unified Communications section of this document. These services cover the entire Cisco Unified Communications and Mobility portfolio, and Cisco HCS enables Cisco partners to extend these services through a cloud deployment model for our customers.

In addition, many HCS partners who offer mobile network services are able to take advantage of the IP Multimedia Subsystem (IMS) integration capability within Cisco HCS to extend mobility to include Fixed Mobile Convergence (FMC) services. Cisco HCS enables mobile service providers to connect enterprise networks with mobile networks to offer transparent services between the two (e.g., one voice mail box) and also functional connections that allow features to transcend both networks (e.g., single number reach).

IMS is the accepted standard for next-generation mobile voice and video communications.

Main Features and Benefits

By integrating Cisco HCS with this next-generation IP Multimedia Subsystem (IMS) architecture, Cisco and our partners are able to extend enterprise collaboration services to the mobile device natively without necessarily requiring any special client. Services we can enable include (but are not limited to):

- Enterprise dial plan on any mobile (extension, intersite, or full E164) device
- Enterprise policy (e.g., no international call, ethical wall, and recording)
- Single number reach through both fixed and mobile [[pls spell out and delete acronym]] DN (e.g., when someone dials your mobile device, your fixed phone also rings)
- Integration with enterprise presence (e.g., on a call)
- Integration with a shared line (e.g., shared-desk phone or boss and administrator, and call barge from fixed)
- Enterprise mid-call features through native voice and video over LTE (VoLTE) soft key (Music on Hold, conference, transfer, and call forwarding)
- Unified enterprise voicemail and messaging-waiting indicator (MWI)
- Transparent session handoff between mobile and fixed devices
- Ability to hide mobile identity (replace with enterprise ID)

In summary, Cisco HCS IMS integration capabilities enable fixed and wireless networks to be united by a service provider to provide transparent mobility.

Cisco HCS for Contact Center

Cisco HCS for Contact Center allows you to run your contact center completely in the cloud, and take advantage of the derived advantages. Cisco HCS for Contact Center is designed for companies with up to 1,000 knowledge workers or agents. It is integrated with Cisco Hosted Collaboration Solution (HCS) so you can tap into multiple applications and services on a single platform. This solution delivers the advanced capabilities of Cisco Unified Contact Center Enterprise and a range of other Cisco Contact Center applications and services, including interactive voice response (IVR), Precision Routing, and Cisco Finesse Agent Desktop, with all the benefits of a cloud deployment model.

Main Features and Benefits

Contact Center as a Service (CCaaS) helps improve Contact Center efficiency and security. The benefits of running a contact center in the cloud include faster deployment times; increased cost-effectiveness; improved flexibility and operational efficiency; consistent user experiences for agents; and high security, availability, and management control.

Cisco HCS for TelePresence

Cisco HCS for TelePresence enables TelePresence as a Service (TPaaS). Cisco HCS partners are able to offer Cisco TelePresence conferencing in a hosted environment through Cisco TelePresence Exchange, meaning customers can connect and collaborate multiple sites internally, or externally, with partners and suppliers, at the same time. With the hosted model, customers simply buy or lease the endpoints, and the partner provides much of the back-end infrastructure required to make the connections.

Main Features and Benefits

TelePresence as a Service (TPaaS) enables the rapid and flexible introduction of video into an organization's collaboration environment. Video provides context to collaboration and is fast becoming an essential business tool as it eliminates geographic and cultural barriers and helps stimulate innovation and growth.

Conferencing

Cisco WebEx Meetings Server

Now you can bring Cisco WebEx® conferencing into your company's private cloud, for a cost-effective, secure, and flexible collaboration and communications solution. Meet your organization's requirements for highly secure on-premises conferencing, and deliver the same user experience that has made Cisco® WebEx the market-leading, software-as-a-service (SaaS) conferencing solution.

Cisco WebEx Meetings Server is a highly secure, fully virtualized, behind-the-firewall conferencing solution that combines audio, video, and web conferencing in a single solution. With Cisco WebEx Meetings Server, you can respond to organizational requirements for higher productivity and employee-led innovation, as well as support more dynamic collaboration and flexible work styles.

Cisco WebEx Meetings Server also helps you comply with strict security or data privacy requirements, and support locations where Internet access is regulated or restricted. It also allows you to manage your conferencing solution as a capital expenditure instead of an operational expenditure.

Key Benefits for Your Organization

- Cisco WebEx Meetings Server is designed to meet stringent security requirements
 - It is installed in your data center, behind your corporate firewall for physical security
 - End-user sessions are 100 percent encrypted using industry standard SSL 3.0, TLS 1.0, and TLS 1.2
 - All communications between the Cisco WebEx Meetings Server virtual servers are 100 percent encrypted
 - And FIPS encryption, providing U.S. Department of Defense-level security, can be turned on with a single policy setting
- Cisco WebEx Meetings Server lets you protect and build on your existing Cisco Unified Communications investments
 - It is designed for deployment on top of Cisco Unified Communications Manager, letting you extend the investment you have already made in IP telephony to online meetings.
 - It connects to your existing CUCM 7.1, 8.6 and 9.0 based Cisco UC / IP Telephony infrastructure via SIP trunking to give your end-users the benefit of integrated teleconferencing that works seamless as part of the WebEx meeting.

- Cisco WebEx Meetings Server lets you align your conferencing capabilities with business and user expectations
 - It Delivers the same productive, fulfilling user experience as the SaaS-based version of WebEx conferencing, including:
 - Document, applications, and desktop sharing
 - Annotation and collaboration tools
 - Integrated, high-quality audio, including a unified participant list, active talker, call-in, call-me, or voice over IP (VoIP, web-based audio), hybrid audio (VoIP and PSTN in the same meeting), mute, unmute, eject, and restrict access
 - High-quality video with 360p screen resolution; full-screen video; up to seven simultaneous webcam video feeds and voice-activated video switching
 - Recording and playback of your meetings
 - A Consistent cross-platform experience on Windows, Mac, smartphones, and tablets
 - Calendaring integrations that give Hosts the ability to schedule meetings directly from their Microsoft Outlook 2007 or 2010 calendars
- Cisco WebEx Meetings Server allows team members on the move to collaborate easily using their mobile devices. In addition to PC and Mac clients, this solution also supports Meeting clients for mobile devices, including iPhone and iPad. These mobile clients let you:
 - Start, join, schedule, and attend online meetings from mobile devices
 - View meeting content, chat, calendar, and pass presenter control
 - Connect audio via call in, call me, or, on the iPad, even voice over Wi-Fi
 - Use two-way video on iPad 2.0 and beyond
- In addition, Cisco WebEx Meetings Server is optimized for “bring your own device” (BYOD) enterprises, designed so that users can securely sign in, host, and join meetings from mobile devices or Internet-connected PCs without requiring VPN access to the corporate network
- Cisco WebEx Meetings Server lets you easily manage your entire conferencing environment from a web-based administrative dashboard
 - This dashboard allows you to manage user accounts, get real time information on system processes, and run management reports on usage and more.

For More Information

<http://www.cisco.com/go/cwms>

Cisco Unified MeetingPlace Conferencing

Cisco Unified MeetingPlace conferencing is an on-premises virtual meeting solution within Cisco Unified Communications. It delivers an exceptional user experience with integrated voice, video, and web conferencing and interfaces that make it simple to set up, attend, and manage meetings. Cisco Unified MeetingPlace conferencing extends the value of Cisco WebEx meeting applications with voice and video, and is fully integrated to hosted WebEx web conferencing.

Main Features and Benefits

- **Cost savings:** Cisco Unified MeetingPlace conferencing is deployed on-premises on an organization's converged IP network, a scenario that can reduce costs by virtually eliminating conferencing telephony and service fees paid to service providers.
- **Deployment flexibility:** The Cisco Unified MeetingPlace application enables on-premises voice conferencing for Cisco WebEx meeting applications. You can deploy the Cisco Unified MeetingPlace solution an on-premises voice and video conferencing solution and integrate it with Cisco WebEx hosted web conferencing services. These solutions together combine the cost savings advantages of on-premises voice conferencing with the productivity benefits of on-demand web conferencing. The Cisco WebEx Node for MCS is a software component that is deployed with Cisco Unified MeetingPlace 8.0 to provide on-premises data options and improved performance for Cisco WebEx meetings.
- **Simple rich-media conference setup, attendance, and management:** Cisco Unified MeetingPlace conferencing is integrated with multiple applications and devices to enable you to better integrate conferencing into your business processes. Intuitive interfaces make setting up, attending, and managing meetings easy. Industry-standard protocols are supported to enable meeting attendance from virtually any phone and video application or endpoint.
- **Security:**
 - The solution offers a dedicated on-network system; each customer is provided with a dedicated Cisco Unified MeetingPlace solution integrated with the private network.
 - The solution offers Internet lockout controls; meetings can be set up as internal-only meetings and held entirely behind the corporate firewall, or as external meetings that are accessible to Internet and internal participants. Administrators and meeting organizers have complete control.
 - The solution offers access authentication, encryption, and in-session meeting controls.

For More Information

<http://www.cisco.com/go/meetingplace>

Cisco Unified Video Advantage

Cisco Unified Video Advantage (formerly Cisco VT Advantage) adds video to your communications experience by providing video telephony functions to Cisco Unified IP Phones (select Cisco Unified IP Phone 6900 Series and 7900 Series and Cisco IP Communicator softphone application). With Cisco Unified Video Advantage, video telephony is now just a phone call.

This solution comprises Cisco Unified Video Advantage software and Cisco VT Camera III, a video telephony USB camera. With Cisco Unified Video Advantage, you can use the familiar phone interface to make and receive video calls on your Cisco Unified IP Phone with the video component displayed on your PC. Enterprise organizations can take advantage of their existing IP networks to extend video to everyone in their organization.

Ideal for Companies That Need These Features

- Cisco Unified Video Advantage**
- Desktop video calling
 - High-quality video with rich telephony features on their Windows PCs
 - Transparent integration with desktop IP phone or Cisco IP Communicator for familiar phone interface

Main Features and Benefits

- Consistent voice and video user experience: Cisco Unified Video Advantage offers easy, low-cost, high-quality video calling. Familiar call features such as call forward, transfer, conference, hold, and mute are initiated through the phone, and available video is viewed through the PC.
- Easy to manage: Unified administration is possible with Cisco Unified IP Phones and automatic software upgrades.

For More Information

<http://www.cisco.com/go/cuva>

Cisco WebEx Meetings

Cisco WebEx Meetings incorporates audio, high-definition (HD) video, and real-time content sharing. It helps organizers and participants streamline the entire meeting process with highly secure online spaces for storing, accessing, and updating activities and information related to each meeting.

Ideal for Companies That Need These Features:

- Cisco WebEx Meetings**
- Interactive meetings with integrated voice conferencing; high-definition video; and file, application, and desktop sharing
 - Easy management of time-intensive meeting tasks
 - Ability to meet online with mobile devices and multiple platforms
 - Integration with existing tools and processes
 - Tight security and policy controls without complex administration

Main Features and Benefits

- Rich, Interactive Meetings
 - File, application, and desktop sharing: Easily collaborate on any project by sharing content online in real time.
 - Video: View the exceptionally crisp and clear high-definition (HD) video of the Active Speaker with up to 720p screen resolution. See up to seven simultaneous webcam video feeds with voice-activated switching.
 - Comprehensive multimedia experience: Share video files in real time and incorporate multimedia into presentations.
 - Integrated voice conferencing: Choose toll or toll-free with call-in or call-back or voice-over-IP (VoIP) calling.
- Streamline the Entire Meeting Process with Meeting Spaces
 - Persistent, centralized meeting spaces: Share agendas, documents, meeting notes, action items, and recordings before, during, and after the meeting.
 - Document library and file sharing: Manage files in folders, with version control, comments, and indexed searches for all content.
 - Access a full array of WebEx collaboration solutions: Easily link to Cisco WebEx Training Center, Cisco WebEx Event Center, and Cisco WebEx Support Center.
- Meet Online on Any Device

- Mobile meetings: Attend meetings on an iPhone, Android, iPad, and other wireless or third- and fourth-generation (3G and 4G, respectively) mobile phone and tablet devices.
- Cross-platform support for Windows, Macintosh, and Linux
- Network-based recording: Record meetings with session content and audio.
- Map to Everyday Processes and Protect Investments
 - Desktop integration: Initiate meetings instantly from Microsoft Office, Microsoft Outlook, and a variety of integrated instant messaging solutions.
 - Ease of administration and maintenance: Manage users and enforce corporate policy controls with a single identity across services for each user.
 - Application-programming-interface (API) integrations: Easily integrate existing applications with WebEx Meetings using open APIs.
- Highly Secure, Reliable Access Anywhere, Anytime
 - Data privacy and security safeguards: WebEx Meetings offers a variety of security options—from meeting password protection through single-sign on (SSO), end-to-end data encryption, and strict network and data center security—to ensure the highest levels of privacy and data integrity.
 - Reliability and performance: Cisco WebEx cloud uses highly secure data centers located strategically near major Internet access points worldwide, routing data, audio, and video on dedicated, high-bandwidth fiber to eliminate lag time and interruptions.

Business Benefits of Web Conferencing

- Cost-efficient: Reduce the overall cost of business with software-as-a-service (SaaS)-based efficiencies both within IT and throughout the organization:
 - Reduce travel costs: Save time and money without the need for travel.
 - No large initial investment
 - No hardware, software, or maintenance costs
 - No implementation costs
 - Scalable operational expense
 - No additional resources needed to maintain
- Increase productivity:
 - Meet anywhere, anytime on any device worldwide.
 - Meet on the road with mobile apps.
 - Keep projects on track even when important individuals cannot attend in person.
 - Eliminate the need for lengthy review cycles over email.
 - Keep all of your employees within instant reach of easy communications that optimize productivity.
- Improve business process efficiencies and accelerate growth:
 - Make faster, better-informed decisions.
 - Increase speed to market of new products and ideas.
 - Accelerate projects, new product development, and release cycles
 - Build tighter relationships.
 - Take advantage of and integrate existing investments for a smooth collaboration experience.
 - Collaborate with customers, partners, and suppliers regardless of location.

For More Information

<http://www.cisco.com/en/US/products/ps12584/index.html>

Cisco WebEx Meeting Center

Cisco WebEx Meeting Center allows business professionals to meet online to present information, share applications, and collaborate on projects with customers, partners, and colleagues, worldwide, just as if you were face-to-face. Schedule meetings in advance or start an instant online meeting and invite people to join you by email or instant messaging (IM). Cisco WebEx Meeting Center enables companies to extend their business models over the web in a high-touch yet low-cost manner anywhere, on any device.

Ideal for Companies That Need These Features

- **Cisco WebEx Meeting Center**
 - Ability to meet with remote colleagues, customers, and partners online to share presentations and collaborate through a rich, real-time meeting experience
 - Anywhere, anytime meeting access through multiple platforms and mobile devices
 - Enterprise integration of existing Cisco investments such as Cisco Jabber, Cisco WebEx Social, Cisco Unified MeetingPlace, Cisco TelePresence, and more
 - Software as a Service (SaaS) delivery model that allows IT to deploy a global web conferencing solution quickly, eliminating the need for a large initial investment in hardware or additional resources to maintain the infrastructure
 - A secure and reliable method to collaborate both inside and outside the firewall

Main Features and Benefits

- **Integrated live audio, high-definition (HD) video, and data:** Offer a rich meeting experience with integrated audio and high-quality video that enables participants to focus on the content being presented while also easily identifying who is speaking.
- **Multimedia presentations:** Create dynamic multimedia presentations using powerful presentation techniques such as animations, Macromedia Flash, audio, and video to deliver a true presentation experience.
- **High-definition video:** See up to six participants at a time in HD (up to 720p), full-screen video mode with Active Speaker switching that focuses on the person talking.
- **Powerful presentation and annotation tools:** Presenters and participants can show documents, applications, or their desktops in real time. Control can be passed to participants so that they can share their desktops or annotate yours.
- **Mobility:** Join WebEx meetings on mobile devices such as the Android, BlackBerry, iPhone, and iPad.
- **Desktop integration:** Initiate meetings instantly from Microsoft Office, Microsoft Outlook, Lotus Notes, and a variety of instant messaging solutions, including Cisco WebEx Connect and the Cisco Jabber messaging integration platform.
- **Enterprise integration:** Use single sign-on to access WebEx Meeting Center and other enterprise applications integrated with WebEx meeting applications.
- **Cisco WebEx Network-Based Recording (NBR):** Record meetings for future reference, training, or demos.
- **Enterprise policy management:** Cisco WebEx Site Administration allows IT to enforce security policy at all levels: enterprise, group, or individual.
- **Meeting platform you can trust:** Cisco WebEx meeting applications run on the Cisco WebEx Cloud—a high-performance, global network that gives you the fast, reliable, highly secure performance you need.
- **Integration with existing Cisco investments:** Cisco Jabber, Cisco WebEx Social, Cisco Unified MeetingPlace, and Cisco TelePresence solutions; Cisco solutions for optimizing connections; and Cisco WebEx Node for the Cisco ASR 1000

Business Benefits of Web Conferencing

- **Cost-efficient:** Reduce the overall cost of business with Software-as-a-Service (SaaS)-based efficiencies both within IT and throughout the organization:
 - Reduced travel costs: Save time and money without the need for travel.
 - No large initial investment
 - No hardware, software, or maintenance costs
 - No implementation costs
 - Scalable, operational expense
 - No additional resources required to maintain
- **Increase productivity:**
 - Meet anywhere, anytime on any device worldwide.
 - Meet on the road with mobile apps.
 - Keep projects on track even when important individuals cannot attend in person.
 - Eliminate the need for lengthy review cycles over email.
 - Keep all of your employees within instant reach of easy communications that optimize productivity.
- **Improve business process efficiencies and accelerate growth:**
 - Make faster, better-informed decisions.
 - Increase speed to market of new products and ideas.
 - Accelerate projects, new product development, and release cycles
 - Build tighter relationships.
 - Use and integrate existing investments for a smooth collaboration experience.
 - Collaborate with customers, partners, and suppliers regardless of location.

For More Information

<http://www.cisco.com/en/US/products/ps10409/index.html>

Cisco WebEx Training Center

Cisco WebEx Training Center is a virtual online classroom solution. This hosted online training solution enables you to deliver dynamic, interactive instruction to anyone with web access. You get flexible, easy-to-use tools that encourage interaction, engage learners, and enhance information retention. With Training Center, you can significantly decrease the cost of delivering live training while extending the frequency and reach of your training initiatives.

Ideal for Companies That Need These Features

- **Cisco WebEx Training Center**
- Online classroom for interactive training and e-learning
- High-definition video
- Integrated polls, tests, and quizzes
- Virtual breakout sessions and hands-on lab
- Threaded Q&A and chat
- Advanced registration management and rich reporting
- Small and large capacity training (up to 1,000 participants)

Main Features and Benefits

- Use new high-definition (up to 720p) video to enhance instructor-audience interaction and provide live demonstrations. Self-adjusting video quality adapts to individual equipment and bandwidth conditions.
- Promote collaborative learning with virtual breakout sessions that allow students to break into small groups to work on projects, role-play, or develop case studies. Instructors can roam from group to group to provide guidance and support.
- Track questions and document associated responses with a threaded Q&A session. The instructor can assign panelists to answer questions while the session continues. Panelists can prioritize questions, display answers publicly or privately, or assign questions to a colleague.
- Keep learners engaged and involved with Quick Response tools that make it easy for instructors and learners to communicate. These tools allow students to interact with instructors and other students with the click of an icon.
- Accelerate the rollout of new software applications and tools by providing learners with access to remote lab computers for hands-on technical training. Hands-on Lab sessions may be conducted during live training sessions or on-demand.
- Gauge individual and overall group attentiveness at any point with a visual attention indicator visible only to instructors or panelists. Postsession attendee reports indicate the ratio of attendee attention to session duration and the duration that an attendee was in the session.
- Assess the understanding and ability of your learners to apply your training with the integrated Testing Engine. Deliver tests before, after, or during live training sessions, and integrate with CiscoWorks LAN Management Solution (LMS) systems.
- Take full advantage of Cisco WebEx Integrated Audio to simplify the scheduling and management of audio sessions for your live online training programs. Innovative features such as Active Talker allow instructors and students to see who is speaking, promoting personal interactions and enabling instructors to “spot” audio distractions (hold music) and mute the line to minimize interruptions.
- Deliver live interactive training to learners regardless of their computing platform, with multiplatform support for Windows, Mac, Linux, and UNIX.

For More Information

<http://www.cisco.com/en/US/products/ps10410/index.html>

Cisco WebEx Event Center

Cisco WebEx Event Center is an online event-management application for staging large-scale online events and web seminars. Cisco WebEx Event Center allows you to manage the entire online event lifecycle from planning, promoting, and presenting to follow-up and analysis. Whether you need to increase your lead numbers, launch a new product, or hold all-hands company meetings, Cisco WebEx Event Center can help you cost-effectively target the right people—worldwide.

Ideal for Companies That Need These Features

- **Cisco WebEx Event Center**
- Ability to deliver marketing events and corporate events to a large audience over the web
- Comprehensive online event management with registrations, promotions, and follow-ups
- Robust online event session features for high-quality, professional event production
- Software-as-a-service (SaaS) delivery model that allows them to deploy web-based event management over the web, eliminating the need for hardware and resources to maintain the infrastructure
- Secure and reliable method to conduct events both inside and outside the firewall

Main Features and Benefits

- Sophisticated event management features: From customizable HTML templates and event registration forms to automated lead management and lead scoring, Cisco WebEx Event Center has the features you need for a successful webcast that delivers the results you want and allows you to integrate to your customer-relationship-management (CRM) application, such as Salesforce.com.
- Higher return on investment (ROI): Extend the life of your events with Cisco WebEx Network Based Recording (NBR). With a simple click, you can record all your events, which are then available for replay. Choose from multiple options such as requiring registration or destination URL, or even posting surveys.
- Webcast platform you can trust: When the technology fails there is no makeup session. Rest assured; all Cisco WebEx events run on the Cisco WebEx Collaboration Cloud, helping ensure security, reliability, and performance.
- Audio broadcast: Cisco WebEx Event Center offers multiple audio options to meet your event needs and budget. Audio broadcast allows presenters to deliver over a regular telephone while the event participants listen through their computers.
- Multiplatform: Let your prospects join your event on the platform of their choice: Windows, Mac, Linux, or UNIX.

For More Information

<http://www.cisco.com/en/US/products/ps10411/index.html>

Cisco WebEx Support Center

Cisco WebEx Support Center helps quickly resolve support problems for remote users. Cisco WebEx Support Center provides real-time technical support to employees and customers anywhere in the world, decreasing downtime and increasing productivity. Tech support representatives can perform fast fixes, quickly resolve remote support problems, manage remote devices, and accelerate diagnosis and problem solving from anywhere in the world—without costly onsite service visits. Cisco WebEx Support Center delivers more personalized service and technical support with high-quality video.

Ideal for Companies That Need These Features

- Cisco WebEx Support Center**
- Ability to remotely deliver technical support
 - Reduced support time and cost with the ability to escalate a problem instantaneously for on-demand personalized support
 - Software-as-a-service (SaaS) delivery model that allows deployment of a remote support solution over the web, eliminating the need for hardware and resources to maintain the infrastructure
 - Secure and reliable method to deliver technical support both inside and outside the firewall

Main Features and Benefits

- Remotely access and manage computers: With Cisco WebEx Remote Support and Cisco WebEx Remote Access, you can remotely support and access computers anywhere in the world through the Internet, without the need to access firewalls and open ports on the customer site.
- Cross-platform compatibility: Customers are supported on multiple platforms: Windows, Mac, Linux, and UNIX.
- Inbound request management: Customers can initiate a session with a button on your website, product, or email signature. The session automatically routes to a technical support representative's (TSRs) queue or a customized request form.
- File transfer: You can drag and drop files to and from a customer's system to patch or update.
- You can sign on to a customer's machine as an administrator.
- Integrated voice over IP (VoIP) and high-quality video: You can speak with customers in a teleconference or by integrated VoIP. This feature provides more personalized support using live high-quality video.
- Chat: You can chat with several TSRs and customers at once.
- Multisession client: You can easily support multiple customers at once from a tabbed client interface.
- System information: You can collect system information with one click. Then you can print and save the information for future reference.
- Reboot and reconnect: You can maintain the same session even after reboot and in safe mode.
- You can bring in subject-matter experts easily and transfer the session or add others to the conference.
- Cisco WebEx Network Based Recording (NBR): All support interactions can be recorded for auditing, tracking, and security purposes. Both audio and visual support session details are recorded.
- You can measure and improve a support organization's performance with detailed reporting.

For More Information

<http://www.cisco.com/en/US/products/ps10412/index.html>

Cisco WebEx Cloud Connected Audio

Whether you are a current WebEx customer, or in the process of moving to one or more WebEx conferencing applications to deliver the type of dynamic, multimedia meeting experience that your users expect, adding Cisco® WebEx Cloud Connected Audio can save you money. Designed for enterprise organizations that are seeing a minimum of 1.5 million minutes of audio conferencing per month, WebEx Cloud Connected Audio manages the audio conferencing traffic for your WebEx conferencing over a direct connection between your data center and ours. As a result, this WebEx solution can deliver audio conferencing services more cost effectively.

With Cisco WebEx Cloud Connected Audio, you can:

- Reduce transport costs with direct connection from your IP telephony infrastructure to the Cisco Collaboration Cloud
- Budget for audio costs on a more predictable basis by changing from per-minute usage to port-based pricing
- Utilize your existing investment in IP telephony infrastructure and Cisco Unified Communications Manager (CUCM)

Benefits for Your Organization

- Confidently predict and budget audio conferencing costs with per-port pricing
 - For the first time, using per-port pricing you can predict and budget your monthly audio conferencing costs
 - Eliminate PSTN transport and termination charges for all on-net calling
- Reduce administration and management overhead
 - Eliminate the ongoing administration overhead associated with traditional on-premise audio conferencing—management of audio bridging equipment is handled by Cisco in our data center
- Gain greater scalability and fast access to the latest technology
 - Easily scale audio conferencing capacity to your actual needs, even as those needs change over time, rather than the over-provisioning or under-provisioning required with full on-premise models
 - Take advantage of future enhancements and upgrades without any additional deployments
- Protect and build on existing Unified Communications investments
 - Extend your investment in CUCM and your IP telephony infrastructure to add audio conferencing capabilities
- Native integration delivers the full conferencing experience to users
 - Cisco WebEx Cloud Connected Audio is natively integrated with Cisco WebEx web conferencing applications, including WebEx Meetings, WebEx Meeting Center, WebEx Training Center, and WebEx Support Center
 - Native integration provides the same powerful user experience that has made Cisco WebEx the market-leading conferencing solution

For More Information

<http://www.cisco.com/go/cwcca>

Cisco WebEx Advanced Services

Customers get more from their WebEx investment with help from WebEx Advanced Services. Cisco WebEx Advanced Services are a comprehensive suite of offerings specifically designed to help customers achieve organizational objectives and maximize the return on their WebEx investment. The top priority is to help customers use WebEx meetings more successfully. The WebEx Advanced Services team has deep domain expertise and extensive industry experience. WebEx Advanced Services offers valuable assistance with WebEx deployment, collaboration adoption, and integration with your business processes, technologies, and culture.

- Planning, design, and implementation offers include collaboration readiness assessment, technical implementation services, adoption management services, integration services, and optimization services.
- Event collaboration services offers include virtual events, video streaming, and conferencing services.
- Learning offers include product training courses, product mastery programs, and virtual classroom instruction courses.

Main Features and Benefits

- Scalable collaboration design details and targeted communication activities that promote enterprise adoption
- Solutions to complex deployment and configuration requirements to support business goals and enhance productivity
- Ability to deliver marketing events and corporate events to a large audience over the web

- Comprehensive online event management with registrations, promotions, and follow-ups
- Robust online event session features for high-quality, professional event production

For more information about Cisco WebEx Advanced Services, visit:

http://cisco.com/en/US/prod/ps10352/advanced_services.html.

Customer Care

Cisco Unified Contact Center Enterprise

Cisco Unified Contact Center Enterprise segments customers, monitors resource availability, and delivers each contact to the most appropriate resource in the enterprise. The software profiles each customer contact using 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 database lookup. Simultaneously, the system monitors the resources available in the contact center to meet customer needs, including agent skills and availability, interactive-voice-response (IVR) status, and queue lengths.

This combination of customer and contact center data is processed through user-defined routing scripts that graphically reflect your company's business rules, enabling Cisco Unified Contact Center Enterprise to route each contact to the right place. Wherever an agent is based, the system delivers a rich set of call-event and customer-provided data as a contact arrives, personalizing service and increasing efficiency. Throughout the process, distributed fault tolerance helps ensure uninterrupted operation, and rich reporting provides the business intelligence necessary to effectively run your contact center.

Ideal for Companies That Need these Features

Cisco Unified Contact Center Enterprise

- Single contact center solution to support agents located in multiple locations, including formal contact centers, branch offices, and home agents
- Single contact center solution to support inbound, outbound, email, and web collaboration channels
- A fully redundant solution

Cisco Packaged Contact Center Enterprise (Packaged CCE)

- A redesigned, bounded deployment model of Cisco Unified Contact Center Enterprise
- A fully redundant solution

Main Features and Benefits

- Cisco Unified Contact Center Enterprise offers full scalability from less than a hundred to thousands of seats; it supports multisite contact centers and customer-relationship-management (CRM) integration.
- Carrier-class, distributed fault tolerance helps ensure uninterrupted operation.
- Multichannel interaction is possible, including web collaboration with chat and callback, email, voicemail, and fax routing.
- Universal queue coordinates enables agents to work on multiple tasks from various channels while allowing the agent to be interrupted with high-priority tasks as required.
- The solution provides continuous-contact call detail records.
- The solution provides common agent and supervisor desktops across all Cisco customer-interaction-management products.
- The solution provides real-time and historical data necessary for mission-critical contact center reporting across all media types. Standard reporting is offered by the Cisco Unified Intelligence Center, and with the availability of the underlying data model and schema, custom reports can easily be developed.
- Support for custom call treatment for calls in queue includes support for music in queue and custom messaging; a standard screen pop allows any caller-entered information to be forwarded to the agent.
- Cisco Unified Contact Center Enterprise supports agent-supervisor interaction through chat; agent-supervisor messages are predefined.
- The solution offers enterprise presence integration through Cisco Unified Expert Advisor and Cisco Agent Desktop to tie in or extend intelligently routed calls to knowledge workers or informal agents.
- The solution provides integration into a broader unified communications management infrastructure, Cisco Unified Analysis Manager, which helps analyze the condition and health of every component in the solution and assists in call-path analysis, trace setting, and log collection.

Packaged CCE

- The Packaged CCE solution provides a simplified management interface, smaller hardware footprint, and reduced time to install, while benefiting from the rich features of Cisco Unified Contact Center Enterprise and Cisco Unified Customer Voice Portal. The solution comes packaged with Cisco Unified Intelligence Center for comprehensive reporting and Cisco Finesse desktop software for an enhanced, next-generation desktop experience.

Selected Part Numbers and Ordering Information

IPCE-BUNDLE	Requires the purchase of one CCE Server license. This license entitles the user to deploy the following necessary components: (redundant) Router; (redundant) Logger; (redundant) Communications Manager Peripheral Gateway(s); (redundant) IVR Peripheral Gateway(s) for connection to Cisco Self-Service and Queuing (IVR) systems. CVP and IP-IVR (non-Cisco IVRs require third-party IVR port licenses); Administrative workstation(s); Historical database server(s); WebView Reporting server and reporting user connections; Internet Script Editor (ISE) server and ISE user connections; application gateways; (redundant) CTI server for third-party CTI connections (only for non-agent desktop application)
IPCE-SVR	Contact Center Enterprise server license
CCE-PAC-BUNDLE	Packaged CCE Bundle SKU

For More Information

Cisco Unified Contact Center Enterprise <http://www.cisco.com/go/ipccc>

Cisco Packaged Contact Center Enterprise <http://www.cisco.com/en/US/products/ps12586/index.html>

Cisco Unified Contact Center Express

Cisco Unified Contact Center Express provides easy-to-deploy, easy-to-use, highly available, and sophisticated customer interaction management for 1 to 400 agents by supporting a highly available virtual contact center with integrated self-service applications across multiple sites secured with Cisco Security Agent. All Cisco Unified Contact Center Express solutions are tightly integrated with Cisco Unified Communications Manager.

Ideal for Companies That Need these Features

Cisco Unified Contact Center Express

- Contact-center-in-a-box that delivers intelligent routing, call treatment, network-to-desktop and computer telephony integration (CTI), and integrated self-service for customer contact management over an IP infrastructure
- Ability to handle email-based contacts and provide outbound dialing support
- Sophisticated workforce management, quality management, and compliance recording
- Ability to integrate multiple Cisco Unified Contact Center Express systems in the cloud under the control of Cisco Unified Intelligent Contact Management, including pre- and postrouting and centralized reporting
- Redundancy with high availability

Cisco Unified Contact Center Express is a virtual contact center that is easy to deploy, configure, and manage. It is available in three different packages (Standard, Enhanced, and Premium) to help ensure the right match with your business requirements. This interactive-voice-response (IVR) self-service solution is fully integrated with contact center operations, including the ability to deploy advanced self-service technologies such as Automatic Speech Recognition (ASR) and Text to Speech (TTS).

Main Features and Benefits

- Cisco Unified Contact Center Express reduces business costs while improving customer response by providing sophisticated and distributed automatic-call-distributor (ACD), interactive-voice-response (IVR), computer-telephony-integration (CTI), and agent and desktop services.
- The solution offers numerous sophisticated options traditionally associated with enterprise contact centers, including the ability to handle email-based contacts, presence integration, outbound preview dialing, and a complete workforce-management solution.
- Administration is browser-based, integrating with Cisco Unified Communications Manager browser-based administration.
- The solution provides ongoing contact call detail records.
- The standard screen allows any caller-entered information to be forwarded (through a screen pop) to the agent.
- The solution provides predefined or custom historical reports; real-time reports are provided within the agent and supervisor desktops.
- High-availability redundancy for dual server cluster deployments is supported, including support for automatic failover of inbound voice ACD, IVR, and desktop services, as well as database replication and failover and load-balanced redundancy for historical reporting and on-demand recording.
- High availability over the WAN (HAoWAN) and switching between Cisco Unified Contact Center Express 8.0 HAoWAN and high availability over the LAN (HAoLAN) are supported.
- This complete, enterprisewide, scalable unified contact center solution works in the Cisco Customer Interaction Network.
- Cisco Unified Contact Center Express 8.0 and later versions support deployment in an appliance model on Linux-based operating systems. The appliance model is a secure, resilient, and robust model that is less complex and provides for faster installs, easier upgrades, and less-frequent patching.

- Cisco Unified Contact Center Express fully supports agent-supervisor interaction through chat and predefined messages.
- The solution offers full IP call queue points and prompts; it collects voice interaction capabilities.
- Optional Automatic Speech Recognition (ASR) and Text-to-Speech (TTS) capabilities are available.
- The solution supports custom call treatment such as music for calls in queue.
- The Cisco Mobile Supervisor feature enables mobile supervisors to receive real-time reports on their Apple iPhone or iPod Touch.

Selected Part Numbers and Ordering Information

CCX-90-SRVRS-MEDIA	CCX 9.0 NEW Deployment-Appliances, Servers, Media Kits
L-CCX-90-NEW	CCX 9.0 NEW Deployment-Product, UCSSeDelivery LICENSES ONLY
L-CCX-90-ADDON	CCX 8.5 ADDON Deployment-Product, UCSSeDelivery LICENSES ONLY

For More Information

<http://www.cisco.com/go/ipccexpress>

Cisco Unified Intelligence Center

Cisco Unified Intelligence Center is a web-based GUI that provides real-time and historical reporting in an easy-to-use, wizard-based application for Cisco Unified Contact Center Enterprise. It allows contact center supervisors and business users to report on the details of every contact across all channels in the contact center from a single interface.

Built on a robust and extensible Web 2.0 framework, Cisco Unified Intelligence Center allows customers to extend the boundaries of traditional contact center reporting to an information portal where data can be easily integrated and shared throughout the organization.

Two versions of Cisco Unified Intelligence Center are available: Cisco Unified Intelligence Center Standard and Premium. Cisco Unified Intelligence Center Standard software is included as part of the Cisco Unified Contact Center Enterprise software kit. Cisco Unified Intelligence Center Premium includes advanced features and the ability to create new reporting queries and access other external databases and data sources.

Ideal for Companies That Need these Features

- Cisco Unified Intelligence Suite**
- Powerful web-based reporting platform that is as flexible as it is intuitive
 - The ability to report on the details of every contact across all channels from a single interface, regardless of the resources involved

Main Features and Benefits

- Cisco Unified Intelligence Center offers real-time and historical reporting in an easy-to-use, wizard-based interface.
- The solution offers a variety of presentation formats such as interactive grids, charts, webpages, and RSS feeds.
- Administrators can control access to features, reports, and data by granting privileges to individual users or groups of users.
- The solution offers integrated reporting for any data source, including third-party automatic call distributors (ACDs), Cisco Unified Workforce Management, customer relationship management (CRM), and Quality Management products.
- The solution offers the ability to move between reports through hyperlinks providing comprehensive navigation capabilities.
- Advanced navigation capabilities allow customers to link multiple reports, including the ability find more details across data sources for maximum flexibility.

Selected Part Numbers and Ordering Information

IPCE-SVR-ADDON CCEH-CUIC8-PREM CCEH-CUIC8-STD	Cisco Unified Intelligence Center Standard and Premium licenses
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For More Information

<http://www.cisco.com/go/ccreports>

Cisco Unified Customer Voice Portal

The Cisco Unified Customer Voice Portal (Unified CVP) integrates with both traditional time-division multiplexing (TDM) and IP-based networks to provide an unparalleled call-management and call-treatment solution with speech-enabled interactive voice response (IVR) that can use information available on the corporate web server. With support for Automatic Speech Recognition (ASR) and Text-to-Speech (TTS) capabilities, callers can obtain personalized answers to complex questions and can conduct business in new and innovative ways—with or without a live agent. The Cisco Unified CVP solution offers a unique capability of providing the voice processing on Cisco Integrated Services Routers and access servers, allowing the same self-service application to be deployed at a retail office or at large customer call centers, thus significantly reducing customers' bandwidth usage.

Ideal for Companies That Need These Features

- **Cisco Unified Customer Voice Portal** Offset high costs associated with assisted-service contact center agents by directing more customer interactions to automated self-service
- Improved effectiveness of automated self-service at lower cost by treating calls at the most effective location
- A consistent customer experience across self-service (web and phone) and assisted-service environments

Main Features and Benefits

- Cisco Unified Customer Voice Portal (Unified CVP) can play prerecorded announcements and prompts to callers, supporting a wide variety of informational and self-service applications. Streaming audio is also supported (with Real-Time Streaming Protocol [RTSP]), allowing play of live audio sources.
- Cisco Unified CVP supports web services interfaces such as Web Services Description Language (WSDL) and Simple Object Access Protocol (SOAP), enabling real-time integration with web-enabled business applications.
- In addition to its self-service and queuing capabilities, Cisco Unified CVP possesses powerful Session Initiation Protocol (SIP)-based call control to instruct the IP network where to route the call. This control can include call transfer to an agent, interactive voice response (IVR), automatic call distributor (ACD), private branch exchange (PBX), or a carrier network, providing a wealth of customer service options.

Selected Part Numbers and Ordering Information

CVP-90-SERVER-SW	CVP9.0 Server Software
CVP-STU-90=	CVP Studio 9.0
CVP-9X-PTS	CVP9.X Self-Service Port License

For More Information

<http://www.cisco.com/go/cvp>

Cisco Customer Care Services

Services delivered by Cisco and our partners can help you create unique customer experiences. Designed to help transform your customer relationships, our solutions complement your in-house skills and help achieve operational efficiency. Our services can help contact centers maximize customer relationships, enable richer collaboration, and accelerate technology innovations to gain and sustain competitive advantage.

For more information, visit

<http://www.cisco.com/go/uccservices>.

Cisco SocialMiner Social Media Customer Care Solution

Consider first the explosion of the social web. From Twitter to Facebook, people worldwide are engaging in an ever-increasing number of online conversations and interactions. Part of that conversation is consumers talking about the companies with which they do business. Sometimes they say good things, and sometimes they complain. The question is: are companies listening? And can enterprises react to both the good and the not-so-good information coming from customers in social media?

The Cisco SocialMiner social media customer care solution enables all companies to incorporate the ability to listen to and respond to customer conversations originating in the social web. This proactive response can benefit your company in numerous ways, from delighting customers with responses to concerns or questions

to managing a complaint or product problem that could potentially damage your brand. In addition, the social media web is full of potential customers asking for advice about a product or service. With Cisco SocialMiner software, your company can offer advice and product information to aid in decision making, create brand recognition, and possibly gain a new customer.

The Cisco SocialMiner solution can help your company enhance customer service, improve customer loyalty, add new customers, and protect your brand.

Ideal for Companies That Need These Features

- Cisco SocialMiner social media customer care solution**
- Ability to proactively respond to customers and prospects communicating through public social media networks such as Twitter and Facebook or other public forum or blogging sites
 - A solution that provides social media monitoring, queuing, and workflow to organize customer posts on social media networks and deliver them to your customer care team
 - Ability to respond to customers in real time through the same social network they are using to communicate

Main Features and Benefits

- Social here feeds:
 - Feeds are configurable sources to capture public social contacts that contain specific words, terms, or phrases.
 - Feeds enable you to search for information on the public social web about your company's products, services, or area of expertise.
 - Cisco SocialMiner software supports the following types of feeds: Really Simple Syndication (RSS), Facebook, and Twitter.
- Campaign management:
 - Groups feeds into campaigns to organize all posting activity related to a product category or business objective
 - Produces metrics on campaign activity
 - Provides the ability to configure multiple campaigns to search for customer postings about specific products or services
 - Groups social contacts for handling by the social media customer care team
 - Enables filtering of social contacts based on preconfigured campaign filters to focus campaign searches
- Route and queue social contacts:
 - Enables routing of social contacts to skilled customer care representatives in the contact center
 - Draws on expertise in the enterprise by allowing multiple people in the enterprise to work together to handle responses to customer postings through shared work queues
 - Enables automated distribution of work to improve efficiency and effectiveness of social media engagement

Selected Part Numbers and Ordering Information

CCEH-CCP-SVR-LIC	SocialMiner Server
CCEH-SMMEDIA90-K9=	CCX 9.0 Qty 1 SocialMiner Media Kit - NO LICENSES
CCEH-SMMEDIA90-K9	Media Kit for SocialMiner 9.0

For More Information

<http://www.cisco.com/go/socialminer>

Cisco Finesse Agent Desktop

The customer service group in your business or organization can handle thousands of inquiries from customers and prospects every day. It is up to your customer service representatives to quickly and efficiently respond with the information requested to meet the needs of the person looking for information.

To operate efficiently and effectively, customer service representatives in your organization need to employ numerous different applications and have immediate access to a wealth of information. In the course of responding to your customers, representatives constantly switch between applications when searching for information. This process takes time—time that your customers spend waiting.

The Cisco Finesse Agent Desktop meets this challenge by creating a personalized desktop work environment using a web-based interface. The Cisco Finesse desktop provides a single, customizable cockpit that enables the customer care representatives to take advantage of multiple assets and information sources to assist customers.

Fast, efficient, accurate service results in happy, satisfied, and loyal customers who will return to do business with you again—and it saves operational costs for your business.

Ideal for Companies That Need These Features

- Cisco Finesse Agent Desktop**
 - A next-generation agent and supervisor desktop designed to provide a collaborative experience that improves the customer experience by enhancing customer service representative experience
 - Standards-compliant, low-cost agent and supervisor desktops that smoothly integrate with the Cisco Collaboration portfolio

Main Features and Benefits

- Thin-client desktop:
 - Enables desktop development using industry standards, providing an easily customizable desktop user interface for Cisco Unified Contact Center Enterprise agents and supervisors
 - Offers contact center agents and supervisors access to the functions they need through Cisco Pulse OpenSocial gadgets, enabling enterprises to implement a completely thin contact center desktop with all the power and customization capabilities of traditional thick-client applications
- Web 2.0 Software Development Kit:
 - Allows customers to create next-generation applications or integrations to Cisco Unified Contact Center Enterprise
 - Offers a powerful, broadly applicable Web 2.0-based application programming interface (API) for use with gadget-based applications provided by Cisco with the SDK; custom-built gadget-based applications; third-party desktop applications; and wallboard and workforce management products
- Open Web 2.0 application programming interfaces (APIs):
 - Simplify the development and integration of value-add applications by Cisco partners
 - Open the traditionally closed or proprietary world of desktop applications
 - Minimize the need for detailed desktop development expertise using APIs that hide the complexity of the underlying architecture and functions
 - Enable Cisco partners to take advantage of pervasive web developer talent to create new and modify existing desktop gadget applications

For More Information

<http://www.cisco.com/go/finesse>

Cisco MediaSense

Contact centers handle thousands of customer conversations a day, but unfortunately much of the enterprise intelligence that could be gleaned from those conversations is never used—because it is either too expensive to capture or too difficult to mine for useful information. Cisco MediaSense solves these challenges by recording conversations on the network, rather than a device, simplifying the architecture, lowering costs, and providing optimum scalability.

Just as important, the MediaSense network-based recording approach allows the captured media to be quickly available to different applications, regardless of location, through simple application programming interfaces (APIs). These interfaces implement open web standards, enabling a new ecosystem of applications from Cisco technology partners that can gather useful information from conversations, either in real time or afterward. Such information can provide insights into caller concerns, guiding customer service agents toward speedy first-call resolution, thereby improving agent productivity while increasing customer satisfaction.

Ideal for Companies That Need These Features

- Cisco MediaSense**
 - Highly efficient, cost-effective platform to record a variety of media to comply with regulatory requirements
 - Support for optional third-party analytics applications that analyze conversations and provide guidance to customer care agents in real time to improve handling of caller concerns

Main Features and Benefits

- Cisco MediaSense performs dual audio stream recording of conversations (that is, it records both sides of the conversation as separate but correlated entities), facilitating speech analytics.
- Audio recording is lossless (that is, no data is thrown out), helping ensure that each recording is of the highest quality.
- Application programming interfaces (APIs) simplify the development and integration of value-added applications by Cisco partners.

- APIs are at a high or conceptual level, in effect hiding the complexity of the underlying architecture and functions and minimizing the need for detailed telephony or recording expertise, thereby allowing Cisco partners to take advantage of pervasive web developer talent to create speech and video search, playback, analytics, and live monitoring applications.

Selected Part Numbers and Ordering Information

MCP-SVR-SW-K9	MediaSense Server Software
MCP-BASE-LIC	MediaSense Base License
MCP-CORE-AUD-LIC	MediaSense Audio recording port

Enterprise Social Software

Services that Support Enterprise Social Software

Deploying an enterprise social software platform across an organization requires unique considerations from multiple perspectives: technology, business process, and social technology adoption. Cisco Services provide guiding principles to help you improve productivity and strengthen customer relationships.

For more information

visit <http://www.cisco.com/go/collaborationservices>.

Cisco WebEx Social

Cisco WebEx Social is a people-centric collaboration platform that combines the power of social networking, content creation, and real-time communications. WebEx Social breaks down organizational silos with easier collaboration across departments and geographies. It helps organizations streamline a multitude of business processes, such as team collaboration, project management, proposal development, ideation, and employee onboarding. WebEx Social enables valuable knowledge to be shared across the organization and captured in one secure, centralized location.

Ideal for Companies That Need These Features

- Cisco WebEx Social**
- Securely share content with colleagues and communities
 - Quickly find experts and relevant content
 - Create, capture, and retain intellectual capital and project history in one secure, centralized location
 - Transition to integrated real-time collaboration, including IM, web conferencing, and voice calling
 - Empower mobile workers with anywhere access to resources and information
 - Flexible deployment model (on-premises and cloud)

Main Features and Benefits

- Unified post: Easily create and share a post with colleagues and communities. Share virtually any type of content (files, links, videos, etc.) and set permissions for commenting, forwarding, and editing.
- Integrated bidirectional email: Create and reply to a post from email. Receive email notifications of updates, comments, and newly shared posts in WebEx Social.
- Enterprise social networking: Locate experts and relevant documents, join discussions, and source tribal knowledge. Features include communities, profiles, suggestions, tagging, search, and Expert Q&A.
- Unified communications integration: Get one-click access to real-time collaboration tools without leaving the WebEx Social application.
- Microsoft Office integration: Simplify collaborative co-authoring and group editing of Microsoft documents. Update documents and publish to WebEx Social from Word, Excel, or PowerPoint.
- Native mobile support: Connect to the content of your colleagues via mobile devices
- Content integration: Protect investments and break down information silos through built-in Microsoft SharePoint and EMC Documentum integration.
- Video integration: Share video through prebuilt integration with the Cisco Show and Share video sharing application.

For more information

visit <http://www.cisco.com/go/webexsocial>.

IP Communications

Cisco Unified Communications Manager

Cisco Unified Communications Manager is the powerful call-processing component of the Cisco Unified Communications Solution. It is a scalable, distributable, and highly available enterprise IP telephony call-processing solution that focuses on lowering the total cost of ownership (TCO) for customers and improving the user experience of end users and system administrators. Major highlights include:

- Improves mobility, through extension mobility cross-cluster, plus Secure HTTP (HTTPS) for encrypted username and personal-identification-number (PIN) transmission
- Reduces deployment time, realizes quicker return on investment (ROI), lowers ongoing operational costs, and improves business continuity
- Provides a dynamic, flexible, network-based Call Admission Control (CAC) engine for voice and video
- Improves cost savings and collaboration by extending unified communications capabilities outside the organization

Main Features and Benefits

- Cisco Unified Communications Manager is available on the Cisco Unified Computing System as well as on Cisco 7800 Series Media Convergence Server platforms and selected third-party servers.
- Multiple Cisco Unified Communications Manager servers can be clustered and managed as a single entity. The application offers scalability from 1 to 40,000 IP phones per cluster, with load-balancing and call-processing service redundancy. Interlinking allows system capacity to reach 1 million users in a system of more than 100 sites. The solution aggregates the power of multiple, distributed installations, enhancing the scalability and accessibility of the servers to phones, gateways, and applications, and triple call-processing server redundancy improves overall system availability.
- CAC helps ensure that voice quality of service (QoS) is maintained across constricted WAN links, and automatically diverts calls to alternate public-switched-telephone-network (PSTN) routes when WAN bandwidth is not available.
- Devices can automatically update location information as they move from location to location to improve CAC and emergency service performance.
- This solution effectively supports IP phone activities; Cisco Unified Communications Manager Assistant has been ported to an XML service that can be run on the phone, allowing assistants that handle executive and manager phones to have increased features without having to rely on a PC to provide the user interface.
- Cisco Unified Communications Manager integrates with a Lightweight Directory Access Protocol (LDAP) directory such as Active Directory to provide required security features.
- Cisco Unified Communications Manager provides improved call routing to remote phones connected over a WAN. It allows alternate routing when the WAN is out of bandwidth or out of service. It provides routing to the originally called phone number through the PSTN or can call an alternate phone such as a mobile phone during a WAN failure or an out-of-bandwidth situation.
- Access through a full GUI and a command-line interface facilitates diagnostics. The solution supports all system management activities such as disk-space monitoring, system monitoring, and upgrades, which are either automated or controlled. The solution supports basic systems management features such as starting or stopping services and rebooting the appliance.
- The solution is preloaded with Cisco Security Agent.
- An expanded Session Initiation Protocol (SIP) trunk interface conforms to RFC 3261, allowing support of video calls over the SIP trunk. Cisco Unified Communications Manager supports line-side devices, including IETF RFC 3261-compliant devices available from Cisco and other manufacturers.
- The Resource Reservation Protocol (RSVP) agent on a Cisco router extends CAC capability beyond a hub-and-spoke topology within a cluster.
- Simple Network Management Protocol (SNMP) support allows managers to set and report traps on conditions that could affect service and send them to the remote-monitoring systems.

Specifications

Feature	Cisco Unified Communications Manager ¹
Pre-installed Software	Cisco Unified Communications Manager, configuration database, administrative software, CDR Analysis and Reporting Tool, Bulk Administration Tool (BAT), Real-Time Monitoring Tool (RTMT), Cisco Conference Bridge, Locale Installer, JTAPI, Telephony Service Provider, Cisco Unified Communications Manager Assistant, Cisco Unified Mobility, Cisco Unified IP Phone Address Book Synchronizer, Cisco Dialed Number Analyzer
Platforms	Cisco Unified Computing System, Cisco Media Convergence Server (MCS); Selected third-party servers

New and Enhanced Capabilities	<ul style="list-style-type: none"> • Video—Continuing the theme of doing for video what Cisco's done for voice, Cisco Unified communications Manager (Unified CM) 8.6 adds native support within Unified CM for many additional video endpoints, including the EX60 and EX90 as well as C20, C40, C60, and C90). Unified CM 8.6 also builds in better interoperability with TelePresence systems (CTS). Native Interoperability among UC, TP and 3rd Party video EP and additional native TAA EP are key advancements here. Also, greater flexibility in wideband audio codecs (G.722.1), SIP based encryption and presentation sharing (BFCP). • Mobility—Greatly simplifying access and administrative overhead, Unified CM 8.6 now has a single client for VoIP and cellular, so there's now a consistent user experience across different networks. • Deployment Flexibility—Unified CM 8.6 includes a couple of key improvements that expand deployment flexibility; one relates to the Cisco Hosted Collaboration Solution (HCS) and the other relates to additional UC server options. • Within HCS, Unified CM 8.6 improves upon the integration with the Service Provider's IMS, which is framework for better service delivery on cellular networks. By having this integration on Unified CM 8.6, it allows for better feature interaction between the mobile network and the enterprise voice network (fixed mobile convergence). With regard to UC server options, Cisco's first entry into supporting virtualized UC server implementations within a data center environment was Cisco's Unified Computing System. Cisco UCS is the industry's only fully unified and virtualization-aware computing platform, and is ideal for deployments of applications such as Cisco Unified Communications. Cisco also understands the importance of customer choice in the modern, heterogeneous data center. Now, with UC system release 8.6, Cisco's strategy for Cisco Unified Communications deployments on virtualized server platforms includes support for additional Cisco UCS server options as well as support for alternate vendor's systems. These new options come via a new spec-based VMware support policy, where tested reference configurations are published and may be used for hardware design guidance. This opens up more Cisco UCS servers that meet UC specifications as well as certain third-party servers, provided they can meet the support policy requirements. • Cisco Unified Communications Manager Session Management Edition—Cisco Unified Communications Manager added Session Management support in Version 7(3). Cisco Unified Communications Session Management Edition support is continued and enhanced in Version 8.0 with features such as Cisco Intercompany Media Engine and Resource Reservation Protocol (RSVP). Cisco Unified Communications Manager Session Management Edition allows for centralized SIP trunking and routing to help simplify complex networks and reduce costs by consolidating trunking. Cisco Unified Communications Manager Session Management Edition can also aggregate voice applications and policy control.
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¹ Additional RAM may be required in Media Convergence Servers to support existing and enhanced services in Cisco Unified Communications Manager.

Selected Part Numbers and Ordering Information

CUCM-USR-LIC	Cisco Unified CM 8.0 Top Level Part Number
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For More Information

<http://www.cisco.com/go/unifiedcm>

Cisco Unified Communications Manager Assistant

Included with Cisco Unified Communications Manager, Cisco Unified Communications Manager Assistant provides the call-routing and call-management capabilities required in a manager or administrative assistant business environment while giving users a choice of phone devices that better fit their needs. By combining a PC-based console application with various softkeys and display panes on Cisco Unified IP Phones, it can present users job-specific tools, such as directories with click-to-dial and drag-and-drop functions, to more efficiently manage calls.

Cisco Unified Communications Manager Assistant is configured in either proxy-line mode or shared-line mode. In proxy-line mode, managers and assistants have different directory numbers or lines on their phones, but calls to managers are usually diverted to the assistant's line based on customizable dynamic filters. In shared-line mode, both managers and assistants share the same directory number, but assistants can handle calls without disturbing managers. Either mode can be used in conjunction with the PC-based console application or a new XML-based phone service that does not require a PC.

Ideal for Companies That Need These Features

- | | |
|---|---|
| Cisco Unified Communications Manager Assistant | <ul style="list-style-type: none"> • For administrative assistants: An efficient way to monitor and manage calls for multiple managers • For managers: Efficient system for assistants who regularly answer their calls |
|---|---|

For More Information

<http://www.cisco.com/go/ipma>

Cisco Unified Communications Manager Express

Cisco Unified Communications Manager Express provides call processing for Cisco Unified IP Phones in branch-office environments. This solution converges voice, video, and data with full-featured call processing powered by a Cisco router. It is available on Cisco Integrated Services Routers Generation 2 (ISR G2) routers.

Main Features and Benefits

- **Low cost:** This full-featured call-processing solution is integrated into Cisco Integrated Services Routers that deliver a small footprint and are simple to deploy, administer, and maintain.
- **Comprehensive feature set:** Innovative key system and small private-branch-exchange (PBX) capabilities are available within feature-rich Cisco IOS Software.
- **Business-process transformation:** Integration with existing business-process applications, such as customer relationship management (CRM), is delivered in combination with Cisco Unified CallConnector applications.
- **Increased employee productivity:** Users have call control, location, and status of other users with Cisco Unified CallConnector for Microsoft Windows, a presence-based Windows application.
- **User-specified call handling:** Users can take advantage of single number reach by extending incoming business calls to mobile or home phones based on rules they specify with Cisco Unified CallConnector Mobility.
- **Easy installation and changes:** An intuitive management interface makes moves, adds, and changes easy.
- **Industry-leading investment protection:** The solution, designed to support up to 450 users, can interoperate with Cisco Unified Communications Manager, and it enables planned migration strategies in support of future growth requirements.

Specifications

Feature	Cisco Unified Communications Manager Express
Platform	Cisco 1861E, 2900, 3900, and 3900E Integrated Services Routers.
Maximum total users	450
Phones Supported	All Cisco Unified IP Phones 6900 Series, 7900 Series, Cisco Unified SIP Phones 3900 Series, and Cisco Unified IP Phone 8900 and 9900 Series
IOS Images	http://www.cisco.com/en/US/partner/docs/voice_ip_comm/cucme/requirements/guide/33matrix.htm CME and IOS version compatibility matrix. IOS 15.1(4)M CME version 8.6 is the recommended release.

Selected Part Numbers and Ordering Information

C3945E-CME-SRST/K9	3945VoiceBundlew/PVDM3-64,FL-CME-SRST-25, UCLicensePAK
C3925E-CME-SRST/K9	3925VoiceBundlew/PVDM3-64,FL-CME-SRST-25, UCLicensePAK
C3945-CME-SRST/K9	3945VoiceBundlew/ PVDM3-64,FL-CME-SRST-25,UC LicensePAK
C3925-CME-SRST/K9	3925VoiceBundlew/ PVDM3-64,FL-CME-SRST-25,UC LicensePAK
C2951-CME-SRST/K9	2951VoiceBundlew/ PVDM3-32,FL-CME-SRST-25,UC LicensePAK
C2921-CME-SRST/K9	2921VoiceBundlew/ PVDM3-32,FL-CME-SRST-25,UC LicensePAK
C2911-CME-SRST/K9	2921VoiceBundlew/ PVDM3-32,FL-CME-SRST-25,UC LicensePAK

For More Information

<http://www.cisco.com/go/ccme>

Cisco Business Edition 6000

Cisco Business Edition 6000 (formerly Cisco Unified Communications Manager Business Edition 6000) is designed for organizations with up to 1000 employees. The solution offers premium voice, video, mobility, messaging, conferencing, instant messaging and presence, and contact center features on a single, integrated platform. The solution provides highly available core communication capabilities that midsize businesses need for improved collaboration across their value chain.

Enabled by virtualization technology, Cisco Business Edition 6000 consolidates multiple collaboration applications in a highly available solution that enables midsize businesses to reduce their total cost of ownership (TCO) and increase their return on investment (ROI) through its flexible architecture that grows with business needs.

Main Features and Benefits

Cisco Business Edition 6000 delivers full-featured, enterprise-class communications and collaboration services that successful midsize businesses rely on today. Built on Cisco's world-leading unified communications architecture, the Business Edition 6000 boasts both foundational and additional collaboration options, and support for all Cisco Unified IP Phones and video-enabled endpoints, providing customers the flexibility to build an exact solution to meet their specific needs.

Foundation components for Cisco Business Edition 6000 follow:

- Cisco Unified Communications Manager software is the media-processing engine of Cisco Business Edition 6000, extending telephony features and capabilities to packet telephony network devices such as IP phones, media-processing devices, voice-over-IP (VoIP) gateways, and multimedia applications. Additional services such as multimedia conferencing, collaborative contact centers, and interactive multimedia response systems are made possible through Cisco Unified Communications Manager open telephony application programming interfaces (APIs).
- Cisco Prime Unified Provisioning Manager Business Edition provides automated processes for initial deployment and day-2 additions and changes. It significantly speeds deployments, reducing the ongoing costs and expertise required to manage the changes that occur after the network is operational. An administrator can configure policy at various levels that enforces Role-Based Access Control (RBAC) and enables delegation of management tasks. Through the use of simplified workflows and automated processes, it simplifies provisioning and activation of subscribers, significantly reduces time to dial tone, and practically eliminates errors.
- Instant Messaging and Presence with the Cisco Jabber (Cisco Unified Presence) delivers highly secure, reliable, and high-quality communications that provide a consistent experience.
- Cisco Unity Connection transparently integrates messaging and voice-recognition functions to provide continuous global access to calls and messages.
- Cisco Licensing (including Cisco Enterprise Licensing Manager (ELM)) makes usage and reporting simple. Cisco ELM provides a centralized, at-a-glance view of compliance and allows for redistribution of licensing among supported products. User licensing—based on user profiles—aligns with Cisco User Connect Licenses (UCL) and Cisco Unified Workspace Licensing (UWL) purchasing models.
- Cisco UCS C220 M3 Rack Server is designed for performance and density over a wide range of business workloads, from web serving to distributed database. With the addition of the Intel Xeon processor E5-2600 product family, the server delivers significant performance and efficiency gains in a compact package.

Collaboration options with the Cisco Business Edition 6000 follow:

- Advanced video with Cisco TelePresence conferencing solutions enables simple session management and control of telepresence conferences, and provides flexible and extensible conferencing applications that can help organizations benefit from increased employee productivity and enhanced communication with partners and customers. The Cisco Business Edition 6000 Advanced Video offer includes co-resident Cisco TelePresence Video Communication Server (VCS-Control) software and a license for 5 traversal and 10 nontraversal calls.
- Cisco Unified Contact Center Express supports up to 100 call center agents with agent-based service as well as fully integrated self-service applications by providing sophisticated and distributed automatic call distributor (ACD), interactive voice response (IVR), computer telephony integration (CTI), and agent and desktop services on a single server. The Business Edition 6000 offers 5, 10, and 25 low-priced agent seat license bundles.
- Cisco Unified Attendant Consoles provide the human attendant console operator with the tools to quickly accept and effectively dispatch incoming calls to individuals across the organization.
- Cisco WebEx web conferencing accelerates business results by making your web meetings more productive. This people-centric collaboration solution can enable team members to easily share information through any computer or mobile device. WebEx Meetings allows people to attend meetings any time, from anywhere, inside and outside corporate firewalls.
- Cisco Emergency Responder helps assure that Cisco Unified Communications Manager will send emergency calls to the appropriate Public Safety Answering Point (PSAP) for the caller's location, and that the PSAP can identify the caller's location and return the call if necessary. The system automatically tracks and updates equipment moves and changes, helping ensure more effective compliance with legal or regulatory obligations, reducing the risk of liability related to emergency calls as a result.

Cisco Business Edition 6000 supports a maximum of five virtual machines (four core applications with Cisco Prime Unified Provisioning Manager Business Edition as the fifth) running co-resident on the Cisco UCS C220 M3 Rack Server. It supports full-featured redundancy for all the core applications over a WAN or LAN environment.

Customer Benefits

- Lowers total cost of ownership (TCO): Multiple collaboration applications integrated on a single server quickly reduce your capital and operations costs.
- Consumes fewer IT resources: Centralized architecture makes your solution simple to install, deploy, use, manage, and maintain.

- Increases company productivity: Full-featured, enterprise-class collaboration helps your users more securely collaborate anytime, anywhere, and on any device.
- Offers immediate investment protection: Flexible architecture helps you deploy collaborative services at your own pace.

Specifications

Feature	Cisco Manager Business Edition
Platform	Cisco UCS® C220 M3 Rack-mount Server
Maximum total users	1000
Mailboxes and voicemail ports	1000 mailboxes and 24 voicemail ports
Number of remote sites	50 with SRST or high-availability for all collaboration applications with second Business Edition 6000 server)
Telephony and voicemail feature limitations	<ul style="list-style-type: none"> • Business Edition 6000 supports all telephony features of Cisco Unified Communications Manager and voice-messaging features of Cisco Unity Connection.
User and Administrator Features	<ul style="list-style-type: none"> • For a summary of user and administrator features, please refer to the Cisco Business Edition 6000 9.0 and Cisco Unity Connection 9.0 data sheets. • Supports 14 core languages for user locales, the voicemail telephone user interface, and the GUI. • In addition to the core languages, supports an additional 13 user localizations.

Selected Part Numbers and Ordering Information

Cisco Business Edition 6000 can be ordered with Cisco User Connect Licensing or with Cisco Unified Workspace Licensing in a choice of starter bundles.

Product Number	Description	UCSS Product Number (1 year)
CBE6K-NEW-K9	Cisco Business Edition 6000 – Top Level part number	
BE6K-UCL-50USR	BE 6000 Bundle with Cisco UCS C Series, Prime UPM BE, Hypervisor, 50 Basic UCL, 50 Adv Voicemail licenses	UCSS-6K-VM-1-UCSS-6K-BAS-11
BE6K-UCL-100USR	BE 6000 Bundle with Cisco UCS C Series, Prime UPM BE, Hypervisor, 100 Basic UCL, 100 Adv Voicemail licenses	UCSS-6K-VM-1-UCSS-6K-BAS-11
BE6K-UWL-50USR	BE 6000 Bundle with Cisco UCS C Series, Prime UPM BE, Hypervisor, 50 Cisco UWL BE licenses	UCSS-6K-UWLBE-11
BE6K-UWL-100USR	BE 6000 Bundle with Cisco UCS C Series, Prime UPM BE, Hypervisor, 100 Cisco UWL BE licenses	UCSS-6K-UWLBE-11

For More Information:

www.cisco.com/go/be6000

Cisco Business Edition 3000

- Cisco Business Edition 3000 is an easy-to-manage solution that integrates the benefits of voice, video, mobility, messaging, applications, and voice gateway services on a single appliance. Consolidating these capabilities on a single server creates a cost-effective solution that is simple to set up, manage, and use, lowering total cost of ownership (TCO) and providing a smooth transition from older, outdated telephony systems to unified communications.
- Cisco Business Edition 3000 is designed to deliver a unified communications experience, ranging from basic telephony services to advanced features that meet the requirements of employees and customers, and helps achieve long-term business goals. Designed for small and medium-sized organizations with smaller IT staffs, the solution provides investment protection with the capacity to support up to 300 employees and 10 sites.

Main Features and Benefits

The software is preinstalled on the Linux appliance and consists of a single firmware image that includes the underlying server operating system and the unified communications application. The core elements follow:

- Cisco MCS 7890-C1 Business Edition 3000 Appliance with two built-in T1/E1 ports: The Cisco MCS 7890-C1 is a two-rack-unit (2RU) Cisco media convergence server that serves as the central platform running call-processing and voicemail applications. It also includes a gateway with dual T1/E1 ports for public-switched-telephone-network (PSTN) access capability. The built-in T1/E1 gateway eliminates costs for an additional T1/E1 interface.

- Cisco Business Edition 3000 call-processing software: The call-processing software is included and preinstalled on the appliance to provide the core call-processing capabilities and other unified communications applications.
- Simple intuitive administration interface for provisioning and management: The application is managed by a web-based, easy-to-navigate administration interface that simplifies initial setup, ongoing operation, and maintenance of the system. The first-time-setup wizard helps to perform initial setup of the system in a matter of minutes. The moves, adds, and changes administration interface allows administrators to provision and manage the system in simple flow. Messaging is powered by the Cisco Unity Connection application with select feature sets. Cisco Unity Connection is also preinstalled to serve as the voice messaging application for foundational unified communications features such as voicemail and Auto-Attendant.
- Video capability: The application provides point-to-point video call capability with Cisco video-enabled endpoints. The combination of the Business Edition 3000 and the video endpoints makes it as easy to make video calls as it is to make phone calls.
- Application for unified communications and collaboration: Multiple applications are supported to deliver unified communications and collaboration experiences. Various desktop applications are supported, such as Cisco Jabber IM Client (cloud-based with Cisco WebEx Connect service) Cisco Jabber for Windows, Mac, iPhone, and Android; and Cisco Unified Integration for Tencent Real-Time eXchange (CUCI-RTX) (China only). It also integrates with Cisco WebEx Meeting Center.
- Mobility: The application includes features for single-business voice mailbox and reach-me-anywhere (also refer to single-number-reach), which intelligently manages, filters, routes, and connects calls between an employee's IP desk phone and mobile cellular or home phone. Extension mobility is supported to allow users to log into phones in an office other than a home office, and enjoy a consistent user experience with a desk phone.
- Trunking: The application supports multiple types of trunks to meet different requirements for PSTN accessibility, including Primary Rate Interface (PRI), R2 signaling (E1 R2), Session Initiation Protocol (SIP) trunking, and analog trunks. Trunks can be deployed on a central site as well as on remote sites using gateways at remote sites. The built-in E1 gateway on Cisco Business Edition 3000 provides dual E1 R2 interfaces for PSTN access.

Specifications

Feature	Cisco Business Edition 3000
Platform	Cisco Business Edition 3000
Maximum number of users and devices	300 users and 400 devices
Voicemail ports	12
Total number of sites	10
IP endpoints	Cisco Unified IP Phone models 3905, 6901, 6911, 6921, 6941, 6945, 6961, 7925G, 7942G, 7945G, 7962G, 7965G, 7975G, 8941, 8945, and 8961 (with KEM) models Cisco Unified IP Conference Station 7937 Cisco Jabber for Windows and Mac (cloud-based with WebEx Connect® service) Cisco Jabber for iPhone and Android Unified communications integration for RTX (China) Cisco IP Communicator WebEx Connect with unified communications integration (CUCI-Connect)

Selected Part Numbers and Ordering Information

UNIFIED-CMBE3K	Cisco Business Manager 3000—Top Level SKU
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For More Information:

www.cisco.com/go/be3000

Cisco Unified Communications Manager Session Management Edition

Cisco Unified Communications Manager Session Management Edition (SME) is a session management service embedded in Cisco Unified Communications Manager. Session management unifies multivendor environments by centralizing network control. It unifies dial plans and routing, aggregates multivendor private branch exchanges (PBXs), and centralizes and extends applications to users across the network.

Session management helps enterprises create a centralized architecture to more easily and efficiently manage and evolve their networks as collaboration needs change. Cisco Session Management helps enterprises:

- **Save:** Lower costs and improve efficiency by using Session Initiation Protocol (SIP) trunking to interconnect networks using Cisco Unified Border Element (Cisco UBE).
- **Simplify:** Reduce complexity by aggregating third-party PBXs, and easing migration to an all-IP environment. By providing interconnection among PBXs, enterprises can reduce system administrative overhead and ease migration to an all-IP environment. Session management greatly simplifies dial-plan management. Instead of developing complex routing within and among each individual PBX, the PBXs can now point to the central Cisco Unified Communications Manager core with session management capabilities, enabling all routing to be managed at the session management layer. Also, SIP headers within various PBXs are normalized and become transparent to the other PBXs, enabling interoperability. This interoperability provides an elegant path to evolve the architecture without need to replace or upgrade older PBX or IP-based systems.
- **Extend:** Deploy collaboration applications at the network core and extend them to users, even those on third-party PBXs. These applications include rich collaborative applications such as unified messaging, mobility, telepresence, social networking, and web applications (using Web 2.0 interfaces).

Other benefits include:

- Easier deployment without forced architectural change
- Investment protection, making it easy to repurpose Cisco clusters as needs change: add phones to a session management cluster or add session management to a Cisco Unified Communications Manager cluster
- Flexibility to evolve your network at your pace through industry-leading interoperability
- Architectural choice and migration control for an intelligent path to SIP trunking
- Extension of collaboration to any phone, including your home phone, using Cisco Extend and Connect and Cisco Jabber

Selected Part Numbers and Ordering Information

SME-SESSION-LIC	Cisco Unified CM SME Top Level Part Number
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For More Information

<http://www.cisco.com/go/unifiedcmsme>

Cisco IP Communicator

Cisco IP Communicator—a software-based application that delivers enhanced telephony support through the PC—is designed to meet diverse customer needs by serving as a supplemental telephone when traveling, a telecommuting device, or a primary desktop telephone. With Cisco IP Communicator, remote users do not just take their office extension with them; they also enjoy access to the same familiar phone services that they have in the office.

This advantage boosts business collaboration and responsiveness and helps organizations keep pace with today's mobile business environment.

Ideal for Companies That Need These Features

- Cisco IP Communicator**
- A softphone that provides high-quality voice calls and extensive telephony features
 - A supplemental telephone that provides access to phone extensions and services outside the office

Main Features and Benefits

- **Works with Cisco Unified Video Advantage:** Cisco IP Communicator brings video telephony to the telecommuter's and mobile worker's communication experience. Available video is automatically displayed.
- **Easy to use:** Cisco IP Communicator 7.0 offers many of the features supported with Cisco Unified IP Phones, including support for XML applications, and call recording and silent monitoring capabilities for efficient recording of calls and monitoring of contact center agents. The application provides auto-detection of Cisco VPN Clients.
- **Offers premium voice quality:** Cisco IP Communicator has an Audio Tuning wizard for setting audio levels properly, advanced-jitter-buffer and packet-loss-concealment algorithms, and echo suppression and noise cancellation.
- **Easy to manage:** Administration is unified with Cisco Unified IP Phones and automatic software upgrades; system administrators can provision Cisco IP Communicator as they would any other Cisco Unified IP Phone.

For More Information

<http://www.cisco.com/go/ipcommunicator>

Cisco Unified IP Phone 6900 Series

The Cisco Unified IP Phone 6900 Series of business communication endpoints deliver an enhanced user experience for customers seeking cost-effective, robust voice communication services, and adjunct support for video communications services on selected models, in a user-and ecofriendly design.

The Cisco Unified IP Phone 6900 Series is an ideal fit for customers who have invested in analog or digital communications systems today and are interested in an IP communications solution but seek a traditional telephony-like user experience.



The portfolio offers a range of endpoint solutions, ranging from occasional-use settings, such as lobbies and hallways with the 6901 model and schoolrooms with the 6911 model, to moderate-use settings for knowledge workers with the 6921 model, to more active users, such as managers and administrative staff as delivered by the 6941, 6945, and 6961 models. The portfolio can be deployed in enterprise campuses, enterprise branch offices, satellite offices, and locations for teleworkers.

Video communications are supported on the Cisco Unified IP Phone 6900 Series with adoption on Cisco Unified Video Advantage 2.2 and the VT Camera III. The Cisco Unified IP Phone 6900 Series delivers the high-quality audio communications while an adjoining PC monitor supports the Cisco VT Camera III and Cisco Unified Video Advantage application for video communication services in this solution architecture. Video communications is available on selected Cisco Unified IP Phone 6900 Series endpoints.

The Cisco Unified IP Phone 6900 Series also brings earth-friendly enhancements to reduce power consumption and increase energy savings for customers. These endpoints take advantage of recyclable and reground plastics and, in those models with displays, offer a deep-sleep mode option, which reduces power consumption in off-work hours, making them a great fit for customers with green initiatives.

The Cisco Unified IP Phone 6900 Series comes in the choice of two colors, charcoal and arctic white, and two handset styles for increased comfort and flexibility.

Main Features and Benefits

- Backlit, antiglare, pixel-based, graphical monochrome displays offer readability and scrollable access to calling features and text-based XML applications on selected models.
- Tri-color illuminated line and feature keys provide quick call status indication.
- Four dynamic soft-label keys and a scroll toggle-bar present calling and navigation options on selected models.
- The solution offers fixed keys for common telephony functions such as mute, hold, conference, transfer, messaging, directories, redial, and call waiting (fixed keys vary by endpoint model).
- Rounded ergonomic keys increase tactile feel and accuracy.
- Integrated 10/100 and 10/100/1000 Ethernet switches for co-location of a multimedia PC, which reduce cabling infrastructure costs (selected models).
- A full-duplex speakerphone and integrated headset ports are available on selected models.
- Endpoint models with displays offer a deep-sleep power option for savings in power consumption during off-work hours.
- The solution supports the Cisco Skinny Client Control Protocol (SCCP).
- G.711a, G.711, G.729a, G.729b, and G.729ab audio-compression codecs are supported.
- Software upgrade support (IP phone firmware) is provided through a Trivial File Transfer Protocol (TFTP) server.

Specifications

Feature	Cisco 6901	Cisco 6911	Cisco 6921
Integral Switch	Not applicable	10/100	10/100
Display	Not applicable	Not applicable	396 x 81 pixel backlit antiglare monochrome
Programmable (line) keys	1	1	2
Programmable (soft) keys	Not applicable	Not applicable	4
Speakerphone	Full-duplex	Full-duplex	Full-duplex
Headset port	No	No	Yes
Unified Video Advantage	No	Yes	Yes
Wideband audio	No	No	No
iLBC support	Yes (91(1) IP Phone firmware required)	Yes (91(1) IP Phone firmware required)	Yes (91(1) IP Phone firmware required)
2-way Rocker with Select Key	No	No	Yes

XML application	No	Yes - limited	Yes - limited
MIDlet-enabled applications	No	No	No
Extension mobility	Yes	Yes	Yes
Signaling protocol	SCCP /SIP	SCCP/ SIP	SCCP /SIP
Feature	Cisco 6941	Cisco 694569456945	Cisco 6961
Integral Switch	10/100	10/100/1000	10/100
Display	396 x 162 pixel backlit anti-glare monochrome	396 x 162x162 pixel backlit anti-glare monochrome	396 x 81 pixel backlit anti-glare monochrome
Programmable (line) keys	4	444	12
Programmable (soft) keys	4	4	4
Speakerphone	Full-duplex	Full-duplex	Full-duplex
Headset port	Yes	Yes	Yes
Wideband audio	No	No	No
Unified Video Advantage	Yes	Yes	Yes
iLBC support	Yes (9.1(1) firmware required)	Yes (9.1(1) firmware required)	Yes (9.1(1) firmware required)
2-way Rocker with Select Key	Yes	Yes	Yes
XML application	Yes - limited	Yes - limited	Yes - limited
MIDlet-enabled applications	No	No	No
Extension mobility	Yes	Yes	Yes
Signaling protocol	SCCP /SIP	SCCP/SIP	SCCP /SIP

Selected Part Numbers and Ordering Information

CP-6901-C-K9=	Cisco Unified IP Phone 6901, Charcoal, Standard Handset
CP-6901-W-K9=	Cisco Unified IP Phone 6901, Arctic White, Standard Handset
CP-6901-CL-K9=	Cisco Unified IP Phone 6901, Charcoal, Slimline Handset
CP-6911-WL-K9=	Cisco Unified IP Phone 6901, Arctic White, Slimline Handset
CP-6911-C-K9=	Cisco Unified IP Phone 6911, Charcoal, Standard Handset
CP-6911-W-K9=	Cisco Unified IP Phone 6911, Arctic White, Standard Handset
CP-6911-CL-K9=	Cisco Unified IP Phone 6911, Charcoal, Slimline Handset
CP-6911-WL-K9=	Cisco Unified IP Phone 6911, Arctic White, Slimline Handset
CP-6921-C-K9=	Cisco Unified IP Phone 6921, Charcoal, Standard Handset
CP-6921-W-K9=	Cisco Unified IP Phone 6921, Arctic White, Standard Handset
CP-6921-CL-K9=	Cisco Unified IP Phone 6921, Charcoal, Slimline Handset
CP-6921-WL-K9=	Cisco Unified IP Phone 6921, Arctic White, Slimline Handset
CP-6941-C-K9=	Cisco Unified IP Phone 6941, Charcoal, Standard Handset
CP-6941-W-K9=	Cisco Unified IP Phone 6941, Arctic White, Standard Handset
CP-6941-CL-K9=	Cisco Unified IP Phone 6941, Charcoal, Slimline Handset
CP-6941-WL-K9=	Cisco Unified IP Phone 6941, Arctic White, Slimline Handset
CP-6945-C-K9=	Cisco Unified IP Phone 6945, Charcoal, Standard Handset
CP-6945-W-K9=	Cisco Unified IP Phone 6945, Arctic White, Standard Handset
CP-6945-CL-K9=	Cisco Unified IP Phone 6945, Charcoal, Slimline Handset
CP-6945-WL-K9=	Cisco Unified IP Phone 6945, Arctic White, Slimline Handset
CP-6961-C-K9=	Cisco Unified IP Phone 6961, Charcoal, Standard Handset
CP-6961-W-K9=	Cisco Unified IP Phone 6961, Arctic White, Standard Handset
CP-6961-CL-K9=	Cisco Unified IP Phone 6961, Charcoal, Slimline Handset
CP-6961-WL-K9=	Cisco Unified IP Phone 6961, Arctic White, Slimline Handset

For More Information

<http://www.cisco.com/go/ipphones/6900>

Cisco Unified IP Phone 7900 Series

The Cisco Unified IP Phone 7900 Series is a portfolio of advanced business communications endpoints that enable organizations to increase their employee productivity by taking full advantage of collaborative services, including support for voice, video, and data applications.

The Cisco Unified IP Phone 7900 Series portfolio offers a wide range of solutions to meet the varying needs of users within an organization. From the corporate campus to the branch office to remote teleworkers, the portfolio supports wired, wireless, and small-to-midsized conference room solutions.

The Cisco Unified IP Phone 7911G endpoints address the communication needs for less frequent communications environments. The Cisco Unified IP Phone 7942G and 7945G endpoints address the communication needs for moderate levels of communication requirements. The Cisco Unified IP Phone 7962G, 7965G, and 7975G endpoints are designed to address the communication needs for more active communication requirements.

The Cisco Unified Wireless IP Phone 7925G, 7925G-EX, 76926G, and 76926G endpoints are 802.11a/b/g Wi-Fi phones that are designed for mobile communications within a campus or when at home with VPN network access.

The Cisco Unified IP Phone 7900 Series portfolio supports multiple call appearances per line, empowering users to have multiple call sessions, navigated through the use of the rocker or navigation cluster on a single line appearance on the Cisco Unified IP Phone 7900 Series phone.



Main Features and Benefits

- Touchscreen support on Cisco Unified IP Phone 7975G
- VGA-resolution color displays on Cisco Unified IP Phone 7945G, 7965G, and 7975G models; the 7925G, 7925G-EX, and 7926G Wi-Fi models include a 2-inch diagonal color display.
- Dynamic softkeys for call features and functions
- Support for endpoint applications including XML, MIDlets, Cisco Unified Communications Widgets, and Cisco Unified Application Environment on selected models
- Video communications support on selected models with Cisco Unified Video Advantage and the Cisco VT Camera III
- Automatic phone discovery, VLAN configuration, and registration
- Quality of service (QoS) through support of 802.1Q/p, in addition to configurable Differentiated Services (DiffServ) and type of service (ToS)
- Voice Activity Detection (VAD), silence suppression, comfort-noise generation, and error concealment
- G.711a, G.711u, and G.729ab audio-compression codec support; selected models also support the G.722 wideband codec and the Internet Low Bit-Rate Codec (iLBC)
- IP phone software (firmware) upgrade support through a Trivial File Transfer Protocol (TFTP) server
- Integrated inline power support, which allows the phone to receive power over the LAN

Specifications

Feature	Cisco 7911G	Cisco 7931G	Cisco Conf. Station 7937G
Integral Switch	10/100	10/100	No
Display	192x64 monochrome	192x64 graphical, monochrome, backlit	Pixel-based
Programmable (line) keys	0	24	0
Programmable (soft) keys	4	4	4
Speakerphone	Yes (listen only)	Yes	Yes
Headset port	No	Yes	No
Wideband audio	Limited	Limited	Yes
iLBC support	Yes	Yes	No
“5-way” navigation cluster	No	No	No
XML applications	Yes	Yes	Yes
MIDlet applications	No	No	No
Extension mobility	Yes	Yes	Yes
Unified Video Advantage	Yes	Yes	No
Signaling protocol	SCCP/SIP	SCCP/SIP	SCCP

Feature	Cisco 7942G	Cisco 7945G	Cisco 7962G
Integral Switch	10/100	10/100/1000	10/100
Display	4-bit grayscale, 5"	Digital, 16-bit graphical backlit TFT Color, 5"	4-bit grayscale, 5"
Programmable (line) keys	2-lighted	2-lighted	6-lighted
Programmable (soft) keys	4	4	4
Speakerphone	Yes	Yes	Yes
Headset port	Yes, wideband support	Yes, wideband support	Yes, wideband support
Wideband audio	Yes	Yes	Yes
iLBC support	Yes	Yes	Yes
"5-way" navigation cluster	No	Yes	No
XML applications	Yes	Yes	Yes
MIDlet applications	Yes	Yes	Yes
Extension mobility	Yes	Yes	Yes
Unified Video Advantage	Yes	Yes	Yes
Signaling protocol	SCCP/SIP	SCCP/SIP	SCCP/SIP
Feature	Cisco 7965G	Cisco 7975G	Cisco 7925G/7925G-EX/7926G
Integral Switch	10/100/1000	10/100/1000	N/A
Display	Digital, 16-bit graphical backlit TFT Color, 5"	Digital, 16-bit graphical backlit TFT Color, 5.6"	Digital, 16-bit graphical backlit TFT Color, 2"
Programmable (line) keys	6-lighted	8-lighted	N/A
Programmable (soft) keys	4	5	2
Speakerphone	Yes	Yes	Yes
Headset port	Yes, wideband support	Yes, wideband support	Yes
Wideband audio	Yes	Yes	Yes
iLBC support	Yes	Yes	Yes
"5-way" navigation cluster	Yes	Yes	Yes
XML applications	Yes	Yes	Yes
MIDlet applications	Yes	Yes	Yes/Yes/Yes
Extension mobility	Yes	Yes	Yes
Unified Video Advantage	Yes	Yes	No
Signaling protocol	SCCP/SIP	SCCP/SIP	SCCP

Selected Part Numbers and Ordering Information

CP-7942G	Cisco Unified IP Phone 7942G
CP-7945G	Cisco Unified IP Phone 7945G
CP-7962G	Cisco Unified IP Phone 7962G
CP-7965G	Cisco Unified IP Phone 7965G
CP-7975G/7975G/7975G	Cisco Unified IP Phone 7975G/7975G/7975G

For More Information

<http://www.cisco.com/go/ipphones/7900>

Cisco Unified IP Phone 8900 Series

If you are looking for ways to encourage collaboration and improve company efficiency and productivity while reducing operating costs, the Cisco Unified IP Phone 8900 Series can help you do it all. These advanced professional media endpoints are ideal for knowledge professionals, managers, and executives who seek a superior multimedia experience.

The Cisco Unified IP Phone 8900 Series accelerates business success by delivering a high-performance, rich multimedia communications experience. This series supports both XML and MIDlet applications on selected models that can help your company transform business processes, reduce operating and administration costs, and boost personal productivity.

Main Features and Benefits

- High-quality multimedia communications: Two selected models (8941 and 8945 models) support integrated VGA-quality video cameras; the third model supports video communications with Cisco Unified Video Advantage and the Cisco VT Camera III application, which displays VGA quality video on an adjacent LCD monitor. Thus, with the Cisco Unified IP Phone 8900 Series, you have the choice to deploy video immediately or selectively add video when and where you need it.
- Energy cost savings: In off hours, a deep-sleep power option reduces power consumption compared to the endpoint in active state during the work day. Selected models are also IEEE Power over Ethernet (PoE) Power Class 1 devices. These features reduce power consumption, contributing to your profitability and the planet.
- Clean, uncluttered communications: An elegant user-friendly design includes rounded ergonomic keys for an enhanced tactile feel, resulting in easier navigation and improved accuracy in interaction.
- Bluetooth communications: Selected models support the Bluetooth hands-free profile to support your choice of third-party Bluetooth headsets along with speakerphones, keyboards, and mice, so you can untether workers and enhance their productivity.
- Support for multiple sessions per line: Tri-color illuminated LED line, feature, and session keys provide at-a-glance indication of caller session status, increasing productivity.
- Enhanced viewing: A large, backlit, vibrant high-resolution, fully adjustable color display enhances the user experience for easy viewing at a variety of angles and under a variety of lighting conditions.

Specifications

Feature	Cisco 8941	Cisco 8945	Cisco 8961
Integral Switch	10/100	10/100/1000	10/100/1000
Display	VGA video calling, and applications, 5-inch graphical TFT color display, 24-bit color depth, 640 x 480 pixel resolution	VGA video calling, and applications, 5-inch graphical TFT color display, 24-bit color depth, 640 x 480 pixel resolution	VGA video calling, and applications, 5-inch graphical TFT color display, 24-bit color depth, 640 x 480 pixel resolution
Programmable (line) keys	4	4	5
Programmable (soft) keys	4	4	4
Speakerphone	Yes	Yes	Yes
Headset port	Yes	Yes	Yes
Wideband audio	Yes	Yes	Yes
iLBC support	Yes	Yes	Yes
"5-way" navigation cluster	No	No	No
XML applications	Yes	Yes	Yes
MIDlet applications	No	No	Yes
Extension mobility	Yes	Yes	Yes
Unified Video Advantage	No	No	Yes
Signaling protocol	SCCP/SIP	SCCP/SIP	SIP

Selected Part Numbers and Ordering Information

CP-8941-C-K9=	Cisco Unified IP Phone 8941, Charcoal, Standard Handset
CP-8941-CL-K9=	Cisco Unified IP Phone 8941, Charcoal, Slimline Handset
CP-8945-C-K9=	Cisco Unified IP Phone 8945, Charcoal, Standard Handset
CP-8945-CL-K9=	Cisco Unified IP Phone 8945, Charcoal, Slimline Handset
CP-8961-C-K9=	Cisco Unified IP Phone 8961, Charcoal, Standard Handset
CP-8961-W-K9=	Cisco Unified IP Phone 8961, Arctic White, Standard Handset
CP-8961-CL-K9=	Cisco Unified IP Phone 8961, Charcoal, Slimline Handset
CP-8961-WL-K9=	Cisco Unified IP Phone 8961, Arctic White, Slimline Handset

For More Information

<http://www.cisco.com/go/ipphones/8900>

<http://www.cisco.com/go/ipphones/accessories>

Cisco Unified IP Phone 9900 Series

With the Cisco Unified IP Phone 9900 Series, an advanced collaborative media endpoint portfolio, your employees can take advantage of a full suite of multimedia features and capabilities, including video delivered directly to and from your IP phone, in a design that is elegant and user- and eco-friendly.



The Cisco Unified IP Phone 9900 Series supports interactive, high-performance personal video communications with a USB powered Cisco Unified Video Camera that provides full-screen, two- and multiparty H.264 standard video (up to 30 frames per second).

The advanced multimedia communications capabilities of the Cisco Unified IP Phone 9900 Series make these phones ideal solutions for knowledge professionals, managers, and executives. With the Cisco Unified IP Phone 9900 Series, you can:

- Elevate and personalize communications, improving the quality and accelerating the speed of decisions
- Enhance collaboration between geographically dispersed teams and workgroups to accelerate team performance
- Deliver personalized training on demand, condensing sales cycles
- Enable busy executives to meet “face-to-face” without ever leaving their offices
- Scale compelling, integrated collaboration experiences across your organization, quickly and cost-effectively
- Collaborate securely within and between businesses.

The Cisco Unified IP Phone 9900 Series introduces the Cisco Unified IP Phone 9971 and 9951 endpoints to the Cisco Unified IP Phone portfolio. Both endpoints deliver a high-performance multimedia communications experience, with support for high-definition (HD) voice, high-resolution graphics, backlit color displays, and Bluetooth 2.0 profiles for added convenience and flexibility. A portfolio of XML and MIDlet applications that deliver business value by helping transform business processes, reduce costs, and boost employee productivity are also supported. Standard USB 2.0 ports on both models enhance the user experience by supporting off-the-shelf 2.0 USB peripherals, such as USB wired headsets.

The Cisco Unified IP Phone 9971 adds full touchscreen capability for advanced user interaction along with 802.11a/b/g Wi-Fi integration, which delivers greater return on investment (ROI) for customers who have a Cisco Unified Wireless Network.

Both Cisco Unified IP Phone 9900 Series endpoints support multiple call appearances per line. The Cisco Unified IP Phone 9971 supports six line keys with tri-color LEDs, and the Cisco Unified IP Phone 9951 supports five line keys with tri-color LEDs. Session keys provide call details about each session in progress and assist users in navigating between sessions.

With the Cisco Unified IP Phone 9900 Series, Cisco continues its ongoing commitment to green solutions. Reground and recyclable plastics are used in manufacture of the Cisco Unified IP Phone 9900 Series endpoints, and the portfolio reduces power consumption in off-hours vs. active use during the workday with a deep-sleep administrative option.

The Cisco Unified IP Phone 9900 Series comes with the choice of two colors, charcoal and arctic white, and two handset styles that increase comfort.

Main Features and Benefits

- Large, backlit, vibrant high-resolution, graphical, fully backlit, and adjustable color displays enhance viewing under a variety of lighting conditions.
- The Cisco Unified Video Camera, a USB-powered peripheral that provides H.264 two-way and multiparty video communications up to 30 frames per second, is supported (multiparty video requires support from a multipoint control unit [MCU]).
- USB 2.0 ports support USB peripherals, including the Cisco Unified Video Camera and USB headsets for greater choice and convenience.
- Bluetooth 2.0 profiles support standard Bluetooth headsets for added convenience and flexibility at the workspace.
- 802.11a/b/g Wi-Fi integration is supported for greater return on investment (ROI) and reduced cabling infrastructure in Cisco Unified Wireless Networks (Cisco Unified IP Phone 9971 only).
- Crisper, clearer audio performance: High-definition (HD) voice delivers superior audio performance with HD voice headset, handset, and speaker support.
- Support of up to three IP color key expansion modules offers additional scalability and cost-effectiveness with an additional 36 line and feature key appearances per module (actual number of modules is endpoint model-dependent).
- An elegant user-friendly design makes feature access easy.
- Support for multiple sessions per line: Tri-color illuminated LED line, feature, and session keys provide at-a-glance indication of caller session status, increasing productivity.

- Energy cost savings: In off-hours, a deep-sleep power option reduces power consumption compared to the endpoint in active state during the work day.
- Reduced infrastructure costs: Integrated switch ports support a IEEE 10/100/1000 high-speed network connection and co-location of a multimedia PC, so PC traffic can run through the switch port of the phone and only one cable drop is required back to the wiring closet.
- Rounded keys deliver an enhanced tactile feel that improves accuracy in interaction.
- Streamlined user experience: The phone has fixed keys for commonly used telephony functions such as conference, transfer, and hold.

Specifications

Feature	Cisco 9971	Cisco 9951
Integral Switch	10/100/1000	10/100/1000
Display	5.6" diagonal, 640 x 480, VGA, graphical, anti-glare, backlit, high-resolution touchscreen color display	5" diagonal, 640 x 480, VGA, graphical, anti-glare, backlit, high-resolution color display
Programmable (line) keys	6	5
Session keys	6	5
Programmable (soft) keys	4 (touchscreen based)	4
Video Communications	Yes with Cisco Unified Video Camera (H.264 standard, 24fps VGA, 30fps CIF, SIF formats)	Yes with Cisco Unified Video Camera (H.264 standard, 24fps VGA, 30fps CIF, SIF formats)
Speakerphone	Yes (full duplex)	Yes (full duplex)
USB 2.0 ports	2 (supports wired and wireless headsets, Unified Video Camera)	2 (supports wired and wireless headsets, Unified Video Camera)
Bluetooth 2.0	Yes (standard headset profiles)	Yes (standard headset profiles)
Headset port	Yes	Yes
High-definition audio	Yes (Speaker, handset and headset)	Yes (Speaker, handset and headset)
802.11a/b/g radio	Yes	No
iLBC support	Yes	Yes
"5-way" navigation cluster	Yes	Yes
XML applications	Yes	Yes
MIDlet applications	Yes	Yes
Extension mobility	Yes	Yes
Signaling protocol	SIP	SIP

Selected Part Numbers and Ordering Information

CP-9971-C-CAM-K9=	Cisco Unified IP Phone 9971, Cisco Unified Video Camera, Charcoal, Standard Handset
CP-9971-W-CAM-K9=	Cisco Unified IP Phone 9971, Cisco Unified Video Camera, Arctic White, Standard Handset
CP-9951-C-CAM-K9=	Cisco Unified IP Phone 9951, Cisco Unified Video Camera, Charcoal, Standard Handset
CP-9951-W-CAM-K9=	Cisco Unified IP Phone 9951, Cisco Unified Video Camera, Arctic White Standard Handset
CP-9971-CL-CAM-K9=	Cisco Unified IP Phone 9971, Cisco Unified Video Camera, Charcoal, Slimline Handset
CP-9971-WL-CAM-K9=	Cisco Unified IP Phone 9971, Cisco Unified Video Camera, Arctic White, Slimline Handset
CP-9951-CL-CAM-K9=	Cisco Unified IP Phone 9951, Cisco Unified Video Camera, Charcoal, Slimline Handset
CP-9951-WL-CAM-K9=	Cisco Unified IP Phone 9951, Cisco Unified Video Camera, Arctic White Slimline Handset

For More Information

<http://www.cisco.com/go/ipphones/9900>

Cisco SPA500 Series IP Phones

The Cisco SPA500 Series IP Phones are a complete portfolio of IP phones for small businesses with robust features that support the Cisco Unified Communications 500 Series for Small Business, Cisco SPA9000 Voice System, and hosted IP telephony. The phones provide an intuitive, rich user experience with wideband audio to connect employees and offices, support for applications that enhance productivity, and encryption for enhanced security.



Main Features and Benefits

- Full-featured business-class IP phone supporting Power over Ethernet (PoE)
- Monochrome or color* backlit display for ease of use, aesthetics, and onscreen applications
- Ability to connect directly to a hosted IP telephony service or an IP private branch exchange (PBX)
- Wideband audio for unsurpassed voice clarity and enhanced speaker quality
- Easy installation and highly secure remote provisioning, as well as menu-based and web-based configuration
- Support for up to two Cisco SPA500S 32-Button Attendant Consoles, adding up to 64 additional buttons or up to two Cisco SPA500DS 30-button Attendant Consoles, adding up to 60 additional buttons
- Support for both Session Initiation Protocol (SIP) for Cisco SPA9000, open source, and hosted telephony solutions and Smart Phone Control Protocol (SPCP) for Cisco Unified Communications 500 Series for Small Business
- Support for Bluetooth and Wi-Fi*
- Ability to play back and view personal MP3 files and photos through an on-phone application (supported on the SPA525G model only)

Specifications

Feature	Cisco SPA501G 8-line	Cisco SPA502G 1-line	Cisco SPA504G 4-line	Cisco SPA508G 8-line	Cisco SPA509G 12-line	Cisco SPA525G2
Lines	8	1	4	8	12	5
Programmable Buttons	8	0	4	8	12	5
Connection for Computer on IP Phone	Yes	Yes	Yes	Yes	Yes	Yes
PoE	Yes	Yes	Yes	Yes	Yes	Yes
Display	Paper insert	Backlit monochrome	Backlit monochrome	Backlit monochrome	Backlit monochrome	High resolution color display
Bluetooth Capable	No	No	No	No	No	Yes

Selected Part Numbers and Ordering Information

SPA501G	Cisco SPA 501G-8-line IP Phone
SPA502G	Cisco SPA 502G 1-line IP Phone
SPA504G	Cisco SPA 504G-4-line IP Phone
SPA508G	Cisco SPA 508G-8-line IP Phone
SPA509G	Cisco SPA 509G-12-line IP Phone
SPA525G2	Cisco SPA 525G2 IP Phone

For More Information

<http://www.cisco.com/go/500phones>

Cisco Virtualization Experience Client (VXC)

The graphic displays the Cisco VXC Portfolio with four main categories: Zero Clients, Thin Client, and Software Appliance. Below these are icons for a printer, two server racks, and a laptop. A screenshot of the VXC Manager interface is shown at the bottom center.

Category	Model
Zero Clients	VXC 2111/2112
Zero Clients	VXC 2211/2212
Thin Client	VXC 6215
Software Appliance	VXC 4000

Management
VXC Manager

Cisco offers a new class of desktop virtualization endpoints, the Cisco Virtualization Experience Client (VXC), that combine virtual desktops with voice and video capabilities. Cisco VXC is part of the Cisco VXi Smart Solution that delivers an uncompromised desktop and application virtualization experience that is collaborative, mobile, and secure.

The Cisco VXC portfolio includes:

- CiscoVXC2111andVXC2112, "zero-client" devices that integrate with select Cisco Unified IP Phones
- CiscoVXC2211andVXC2212, standalone "zero-client" devices
- CiscoVXC4000, a software appliance that supports high-quality, real-time interactive voice on virtualized Windows PCs
- Cisco VXC 6215, a thin client that unifies voice, video, and virtual desktop in one device that supports high-quality and highly scalable voice and video
- Cisco VXC Manager, desktop management software for the Cisco VXC 2000 Series and the Cisco VXC 6215

All VXC endpoints support VMware and Citrix.

For more information about the Cisco VXC portfolio,

visit: <http://www.cisco.com/go/vxc>

Cisco Unified Attendant Console Portfolio

The Cisco Unified Attendant Console Portfolio comprises four full-featured software-based solutions, associated with a Cisco Unified IP Phone, which are designed to enable attendant operators to accept calls, easily look up busy status, and dispatch incoming calls through either blind or consultative transfers to users. The applications support the ability to prioritize call queues, such that operator attendants can address the most important queues to the business (that is, sales, service, etc.). The Cisco Unified Attendant Console Department Edition supports up to 150 directory entries and up to two operator clients per department. The Cisco Unified Attendant Console Business Edition supports up to 500 directory entries and up to 12 operator clients. The Cisco Unified Attendant Console Enterprise Edition supports up to the full Cisco Unified Communications Manager directory of Cisco Unified IP Phones and up to 40 operator clients per attendant console system. The Cisco Unified Attendant Console Premium Edition builds upon the Enterprise Edition, adding server redundancy and directory support up to 100,000 entries.

Main Features and Benefits

Cisco Unified Attendant Console Department Edition

- Maximum of 150 directory entries and two operator clients per department
- Call queuing engine, busy status, as well as directory search capabilities that are integrated into the Cisco Unified Communications Manager directory
- One call queue and three directory search options that allow the department attendant to quickly find call destinations and effectively dispatch calls; search options include last name, first name, and extension

- Support for Music in Queue (that is, ability to play music to callers before they are greeted by the attendant)
- Support for Cisco Unified IP Phone 6900 (multiline mode only), 8900, and 9900 Series as operator endpoints
- Support for Cisco Unified Attendant Console Department Edition server running in a VMware server environment
- Windows 7 support for Cisco Unified Attendant Console Department Edition client
- Support for integration with Cisco Unified Presence Server to provide rules-based presence in support of multiple devices and weighting per device (that is, desk-based workers can weight their desk phone high and their mobile phone low)
- Microsoft OCS 2007 presence status support from the Cisco Unified Attendant Console Department Edition client
- Accessibility support with third-party applications JAWS and ZoomText
- Wait-time overflow: Boosts service levels with calls being directed to a defined number after the call has been in queue for a specified period of time
- For the operator who needs in-depth presence information, support for Cisco Unified Presence integration with the Cisco Unified Attendant Console Department Edition
- Emergency mode that enables redirection of calls if an emergency occurs

Cisco Unified Attendant Console Business Edition

- Support for maximum of 500 directory entries and up to 12 operator clients per attendant console system
- Four directory search options that allow the operator to quickly find call destinations and quickly dispatch calls
- Four directory search fields that allow the operator to quickly find call destinations and quickly dispatch calls
- Support for Music in Queue (that is, ability to play music to callers before they are greeted by the attendant)
- Support for Cisco Unified IP Phone 6900 (multiline mode), 8900, and 9900 Series as operator endpoints
- Support for Cisco Unified Attendant Console Business Edition server running in a VMware environment
- Support for integration with Cisco Unified Presence Server to provide rules-based presence in support of multiple devices and weighting per device (that is, desk-based workers can weight their desk phone high and their mobile phone low)
- Microsoft OCS 2007 and Microsoft Lync presence status support from the Cisco Unified Attendant Console Business Edition client
- Windows 7 support for Cisco Unified Attendant Console Business Edition client
- Accessibility support with third-party applications JAWS and ZoomText
- Emergency mode that enables redirection of calls if an emergency occurs
- Wait-time overflow: Boosts service levels with calls being directed to a defined number after the call has been in queue for a specified period of time
- For the operator who needs in-depth presence information, support for Cisco Unified Presence integration with the Cisco Unified Attendant Console Business Edition

Cisco Unified Attendant Console Enterprise Edition

- Support for the full Cisco Unified Communications directory and up to 40 operator clients per attendant console system
- Six directory search fields that allow the operator to quickly find call destinations and quickly dispatch calls
- Utilities for installing, configuring, and synchronizing the directory database to simplify administration
- Support for Music in Queue (that is, ability to play music to callers before they are greeted by the attendant)
- Support for Cisco Unified IP Phone 6900 (multiline mode), 8900, and 9900 Series as operator endpoints
- Support for Cisco Unified Attendant Console Enterprise Edition server running in a VMware environment
- Microsoft OCS 2007 and Microsoft Lync presence status support from the Cisco Unified Attendant Console Enterprise Edition client
- Windows 7 support for Cisco Unified Attendant Console Enterprise Edition client
- Accessibility support with third-party applications JAWS and ZoomText
- Emergency mode that enables redirection of calls if an emergency occurs
- Wait-time overflow: Boosts service levels with calls being directed to a defined number after the call has been in queue for a specified period of time
- Support for integration with Cisco Unified Presence Server to provide rules-based presence in support of multiple devices and weighting per device (that is, desk-based workers can weight their desk phone high and their mobile phone low)
- Emergency mode switch that enables redirection of calls in an emergency
- Night mode service based on time and day
- Support for both zoom text and JAWS screen reader for enhanced accessibility

Selected Part Numbers and Ordering Information

CUB-ATT-CON (8.6 and prior), CUACB9X-ATT-CON (9.0 – paper), L-CUACB9X-ATT-CON (9.0 – electronic)	The Cisco Unified Attendant Console Business Edition is ordered on a per-operator client basis. Ordering the Cisco Unified Attendant Console Business Edition requires the use of the Cisco Dynamic Configuration Tool. Input the top level product number to begin the configuration in the Dynamic Configuration Tool and follow the remaining instructions.
CUE-ATT-CON (8.6 and prior), CUACE9X-ATT-CON (9.0 – paper), L-CUACE9X-ATT-CON (9.0 – electronic)	The Cisco Unified Attendant Console Enterprise Edition is ordered on a per-operator client basis. Ordering the Cisco Unified Attendant Console Enterprise Edition requires the use of the Cisco Dynamic Configuration Tool. Input the top level product number to begin the configuration in the Dynamic Configuration Tool and follow the remaining instructions.
CUD-ATT-CON (8.6 and prior), CUACD9X-ATT-CON (9.0 – paper), L-CUACD9X-ATT-CON (9.0 – electronic)	The Cisco Unified Attendant Console Department Edition is ordered on a per-department administrator (operator client) basis. A maximum of two department administrators are supported per department with 150 IP phones. When ordering, the first client includes the software license for the Cisco Unified Attendant Console Department Edition server. Ordering the Cisco Unified Attendant Console Department Edition requires the use of the Cisco Dynamic Configuration Tool. Input the top level code to begin the configuration, and then follow the remaining instructions
CUACP9X-ATT-CON (9.0 – paper), L-CUACP9X-ATT-CON (9.0 – electronic)	To order, access the Cisco Dynamic Configuration Tool via Cisco.com and input the top-level product number to begin the configuration and then follow the remaining instructions.

For More Information

<http://www.cisco.com/go/ac>

Cisco Emergency Responder

Cisco Emergency Responder enhances emergency calling from Cisco Unified Communications Manager. It helps ensure that Cisco Unified Communications Manager sends emergency calls to the appropriate Public Safety Answering Point (PSAP) and then helps the PSAP identify the caller's location and, if necessary, return the call.

Main Features and Benefits

- Automatically tracks IP phone locations by their MAC or IP addresses, eliminating the need for administrators to update location when an IP phone is relocated
- Provides instructions to Cisco Unified Communications Manager to route emergency calls to a public-switched-telephone-network (PSTN) gateway capable of reaching the responsible Public Safety Answering Point (PSAP) for the caller's location
- Identifies the caller's location to local exchange carriers (LECs) and PSAPs, replacing the calling-party number associated with an emergency call with one that corresponds to the caller's location, eliminating the need to update the Automatic Location Information (ALI) database when an IP phone is relocated
- Keeps track of IP phones powered down by Cisco EnergyWise technology; even when phones are powered down by this technology, Cisco Emergency Responder can track them; the application will not lose track of phones discovered while powered up, but it cannot discover them for the first time while powered down
- Locates IP phones connected to the latest model LAN access and compact switches
- Integrates with Intrado V9-1-1 service, centralizing and automating the initial administration of Emergency Location Identification Numbers (ELINs) and Emergency Response Locations (ERLs) for on-premises users, and facilitating emergency call completion with user-entered location information for off-premises users
- Facilitates PSAP callback to reach the most recent callers from each location, including callers from stations without direct-inward-dialing (DID) numbers
- Provides voice, web, and email alerts to customer security personnel, enabling them to assist emergency callers immediately, and to direct fire, police, or ambulance services when they arrive
- Simplifies software installation and upgrade and enhances system security and stability

Specifications

Feature	Cisco Emergency Responder
Supported Platform	Cisco 7800 Series Media Convergence Servers
Software Compatibility	Cisco Unified Communications Manager Cisco Unified Operations Manager More information about specific models and releases supported is available at: http://www.cisco.com/en/US/products/sw/voicews/ps842/prod_release_notes_list.html .

Product Compatibility	Cisco Unified IP Phones 7902G, 7905G, 7910G, 7910G+SW, 7911G, 7912G, 7940G, 7941G, 7941G-GE, 7942G, 7945G, 7960G, 7961G, 7961G-GE, 7962G, 7965G, 7970G, 7971G-GE, 7975G, 7985G; Cisco Unified Wireless IP Phones 7920, 7921 (IP-subnet-based tracking only); Cisco Unified IP Conference Stations 7935, 7936; Cisco Unified SIP Phone 3911, Cisco Unified Personal Communicator; Cisco IP Communicator; Cisco IP Softphone (IP-subnet-based tracking only); Cisco ATA 180 Series analog telephone adaptors (manual configuration only); Cisco VG 200 Series analog phone gateways (manual configuration only); Cisco Catalyst Express 500, Express 520, 2900 XL, 2940, 2950, 2960, 2970, 3500XL, 3550, 3560, 3560-E, 4000, 4500, 4500-E, 4900, 5000, 5500, 6000, 6500 and 6500-E Series LAN switches; Cisco Ethernet Switching Network Modules in Cisco 3700 Series Multiservice Access Routers, 2800 and 3800 Series Integrated Services Routers. More information about specific models and releases supported is available at: http://www.cisco.com/en/US/products/sw/voicesw/ps842/prod_release_notes_list.html .			
System Capacity	Cisco MCS 7816	Cisco MCS 7825	Cisco MCS 7835	Cisco MCS 7845
Automatically Tracked Phones	6000	12,000	20,000	30,000
Manually Configured Phones	1000	2500	5000	10,000
Roaming Phones (per Cisco Emergency Responder Cluster)	600	1200	2000	3000
Switches	200	500	1000	2000
Switch Ports	12,000	30,000	60,000	120,000

For More Information

<http://www.cisco.com/go/cei>

Cisco Intercompany Media Engine

Cisco Intercompany Media Engine (IME) is a revolutionary product that enables true boundaryless communications among business partners and customers. The idea is to make communications among separate companies and organizations as effortless and smooth as it is within an individual company. So, whether you and your customer or partner are located within the same company or in separate companies, the ease, efficiency, and overall experience of communicating with each other will be exactly the same. Our approach works with the phones you are already using, the numbers you are already dialing, the contact lists you have already entered, and the speed dials you are used to.

One of the most exciting capabilities available immediately is communication through rich media. High-definition (HD) audio and video have proven to greatly enhance the effectiveness of human collaboration, and Cisco has been on the forefront of delivering solutions for these media. Yet today, it can be extremely cumbersome, or impossible, for companies to communicate outside of their organizations through high-definition audio or video. Now, with Cisco IME, these experiences can be shared among business partners across company lines, all with security, quality, reliability, and ease of use.

With respect to ease of use, Cisco Intercompany Media Engine was developed with the dual objective of requiring minimal effort to administer as well as zero effort to use. The self-learning feature is a good example. You learn new routes simply by calling your business partner who has Cisco Intercompany Media Engine. Neither the administrator nor you must enter this route. You simply dial your business partners as you normally would. And, from that point on, you dial your partner as you would normally dial a co-worker at your own company. No administrator help is required, and you are not required to do anything more than your usual process. And, from the first call and after, the process is easier, because Cisco Intercompany Media Engine has learned the route and has now integrated the partner into the Cisco Intercompany Media Engine Network, where everyone is connected and interaction is transparent and consistent, as though everyone is in the same company.

Although easily collaborating with customers and partners through rich media is compelling, it is just the start. The possibilities for using Cisco Intercompany Media Engine to best advantage to deliver innovative capabilities, experiences, and applications to be shared among partners are limitless. Intercompany capabilities such as directory access; one-click collaboration through Cisco WebEx meeting applications; instant availability status; instant virtual business card exchange; and application interactive prompts, such as interactive voice response (IVR)-delivered softkeys, are just a few of the array of Cisco Intercompany Media Engine capabilities to come.

To ensure an enterprise-grade solution, Cisco Intercompany Media Engine has security, efficiency, and quality built in. The security plus spam blocking of Cisco Intercompany Media Engine address multiple security concerns, whereas Cisco IME uses both Session Initiation Protocol (SIP) and the public switched telephone network (PSTN) to provide network efficiencies and cost savings, as well call-quality assurance.

Main Features and Benefits

- Lets partners use calling features that are available between clusters (except extension mobility)
- Learns new routes, through calls to any business partner who participates in the Cisco Intercompany Media Network
- Offers encrypted signaling and media for all Cisco Intercompany Media Engine calls between partners
- Provides a high level of security, plus spam blocking, to help prevent mining for callable numbers belonging to your enterprise
- Reduces gateways and overhead by moving calls from the public switched telephone network (PSTN) to direct Session Initiation Protocol (SIP) trunks over the Internet or an extranet

Selected Part Numbers and Ordering Information

IME-7825-80	Cisco Intercompany Media Engine 8.0 7825 Part Number
IME-7845-80	Cisco Intercompany Media Engine 8.0 7845 Part Number

For More Information

<http://www.cisco.com/go/b2buc>

Cisco Unified Survivable Remote Site Telephony and Cisco Unified Enhanced SRST

Providing reliable communications to branch offices and teleworkers is important to help ensure business continuity and customer satisfaction. Cisco Unified Survivable Remote Site Telephony (SRST) and its enhanced version, Cisco Unified Enhanced Survivable Remote Site Telephony (E-SRST), are designed to meet this need.

Both products take advantage of the existing network at the remote office to provide multi-feature redundancy for centralized Cisco call-processing deployments during WAN link failures. Cisco Unified Survivable Remote Site Telephony works in conjunction with Cisco Unified Communications Manager, Cisco Business Edition 6000, and Cisco Hosted Collaboration Solution. The enhanced version works with Cisco Unified Communications Manager and Cisco Business Edition 6000. Both are available on Cisco Integrated Services Routers (ISRs).

Cisco Unified SRST provides:

- Business resiliency through redundant, localized call processing
- Intelligent and automatic failover configuration without manual IT or telecom intervention
- Cost-effective operations through a converged voice and data network
- Centralized IP telephony configuration and management
- Investment protection and ease of migration

The enhanced version provides all the functions of Cisco Unified SRST and also delivers:

- Enhanced user experience in failover mode by maintaining phone displays and providing full call control
- GUI interface to provision, monitor, report on, and troubleshoot remote sites
- Automatic sync-up with Cisco call control for additions, deletions, and modifications of users and phones including transparent dial-plan synchronization
- Centralized management and control for all sites
- Calling rule restrictions continued in failover mode

The enhanced version is enabled through Cisco Unified SRST and the Cisco Unified Messaging SRST Manager.

Selected Part Numbers and Ordering Information

Cisco Unified SRST and Unified E-SRST ISR Platform Density and Feature License Part Numbers

Platform	SRST Number of Phones Supported ¹	E-SRST Number of Phones Supported	Part Number (Spare)
Cisco 800 Integrated Services Router	Up to 54 phones	Up to 54 phones	-
Cisco 1861E Integrated Services Router	Up to 15 phones	Up to 15 phones	-
Cisco 2901 Integrated Services Router	Up to 35 phones	Up to 35 phones	FL-CME-SRST-5=, FL-CME-SRST-25=, FL-CME-SRST-100=
Cisco 2911 Integrated Services Router	Up to 50 phones	Up to 50 phones	FL-CME-SRST-5=, FL-CME-SRST-25=, FL-CME-SRST-100=

Cisco 2921 Integrated Services Router	Up to 100 phones	Up to 100 phones	FL-CME-SRST-5=, FL-CME-SRST-25=, FL-CME-SRST-100=
Cisco 2951 Integrated Services Router	Up to 250 phones	Up to 150 phones	FL-CME-SRST-5=, FL-CME-SRST-25=, FL-CME-SRST-100=
Cisco 3925 Integrated Services Router	Up to 730 phones	Up to 250 phones	FL-CME-SRST-5=, FL-CME-SRST-25=, FL-CME-SRST-100=
Cisco 3945 Integrated Services Router	Up to 1200 phones	Up to 350 phones	FL-CME-SRST-5=, FL-CME-SRST-25=, FL-CME-SRST-100=
Cisco 3925E Integrated Services Router	Up to 1350 phones	Up to 400 phones	FL-CME-SRST-5=, FL-CME-SRST-25=, FL-CME-SRST-100=
Cisco 3945E Integrated Services Router	Up to 1500 phones	Up to 450 phones	FL-CME-SRST-5=, FL-CME-SRST-25=, FL-CME-SRST-100=

¹ The numbers of phones supported by SRST have been changed to multiples of 5 starting with Cisco IOS Software Release 12.4(15)T

For More Information

<http://www.cisco.com/go/srst>

Cisco Unified Communications Services

Cisco Unified Communications Services delivered by Cisco and our partners offer a comprehensive portfolio of services to help prepare, maintain, and optimize your Cisco Unified Communications Solution.

Cisco SMARTnet support is available for all your hardware products. Cisco Essential Operate Service (ESW) is available for all your Cisco software products. The combination of hardware and software services is critical to optimizing product performance.

For more information about Cisco Unified Communications Services,

visit <http://www.cisco.com/go/ucservices>.

Messaging

Cisco Jabber for Mac

Collaborate more securely and effectively from anywhere with colleagues, business partners, and customers using Cisco Jabber for Mac. Empower employees to work together efficiently from anywhere by bringing together presence, instant messaging (IM), audio and web conferencing, enterprise voice, and visual voicemail into one client on your desktop.

Ideal for Companies That Need These Features

- **Cisco Jabber for Mac** • A unified client that transparently integrates presence, voice, video, instant messaging (IM), and web conferencing
- Communications capabilities integrated with the personal computer, including integrated contact lists, click-to-call, voicemail playback, inbound call notification, and media escalation

Main Features and Benefits

Cisco Jabber for Mac offers best-in-class unified communications and is built on open standards. With an intuitive interface built for the Mac platform, you can:

- Make faster, more informed decisions by using presence information to access experts as soon as they are available
- Accelerate team performance by sharing documents and collaborating with audio and web conferencing
- Maximize your reach by communicating with business contacts faster, more often, and with greater effectiveness
- Limit the costs of business travel and phone charges by using a single tool for all modes of electronic communications

- Choose the best provisioning model for your business by deploying Cisco Jabber for Mac either on-premises or on demand as a cloud-based service

For More Information

<http://www.cisco.com/go/jabber>

Cisco WebEx Connect Service

Cisco WebEx Connect service is an on-demand unified communications solution that delivers enterprise instant messaging (IM); rich presence; audio, video, and web conferencing; and enterprise telephony through a single client on your desktop. WebEx Connect service delivers these services through Software-as-a-Service (SaaS), meaning no hardware to deploy, no capital expenditures, and a much lower cost of maintenance and administration.

Ideal for Companies That Need These Features

- Cisco WebEx Connect**
- Unified communications and collaboration
 - Rich presence and enterprise instant messaging (IM)
 - Soft-phone capabilities

Main Features and Benefits

- One unified interface for business collaboration: WebEx Connect service integrates the critical collaboration capabilities of presence, enterprise instant messaging (IM), audio and videoconferencing, voice over IP (VoIP), soft-phone capabilities, and visual voicemail into a single client on your desktop.
- Dynamic end-user collaboration without giving up control: Administrators can add, update, or deactivate users easily with batch functions and manage enterprise usage by creating any number of domains and subdomains.
- Avoidance of added infrastructure: Speed deployment and reduce maintenance costs by taking advantage of the Cisco WebEx Collaboration Cloud, a private global network that provides security, reliability, and scalability on demand. There is no hardware to purchase, no maintenance or upgrade costs, and no long software deployment cycles.
- Security and accreditation: The Cisco WebEx Collaboration Cloud delivers data content security and uses Secure Sockets Layer (SSL) and Advanced Encryption Standard (AES) encryption; the application is audited against Sas 70-Type II.

For More Information

<http://www.cisco.com/go/webexconnect>

Cisco Unified Personal Communicator

An integral component of the Cisco Unified Communications Family of products, Cisco Unified Personal Communicator integrates your most frequently used communications applications and services into a single, unified client. From an easy-to-use interface on a PC or Mac, it provides quick and easy access to powerful communications tools—soft phone, presence, instant messaging (IM), visual voicemail, click-to-call, employee directory, communication history, multiparty video and audio conferencing, and web conferencing—to help you communicate effectively and work more productively.

Ideal for Companies That Need These Features

- Cisco Unified Personal Communicator**
- A unified client that transparently integrates presence, voice, video, instant messaging (IM), and web conferencing
 - Communications capabilities integrated with the personal computer, including integrated contact lists, click-to-call, voicemail playback, inbound call notification, and media escalation
 - A supplemental telephone that provides access to phone extensions and services outside the office

Main Features and Benefits

- Communication integration: Take advantage of a single, intuitive interface for voice and video calls, instant messaging (IM), voicemail playback, web conferencing, and integrated directories.
- Presence: View real-time availability of co-workers and colleagues within and outside the enterprise network. Exchange and display presence availability information with desktop users of Cisco WebEx Connect service, Jabber XCP clients, Cisco Unified IP Phones, Microsoft Office Communicator and Lync, IBM Lotus Sametime, AOL, GoogleTalk, and many other Extensible Messaging and Presence Protocol (XMPP)-compatible clients.

- Microsoft Office application and browser integration: See user availability and click to initiate voice and video calls and chat sessions, or launch web collaboration sessions directly from Microsoft Office applications.
- Contact list: Search your corporate directory from one easy-to-use interface to locate contacts quickly and simply click to call. Add your most frequently contacted personal contacts, co-workers, and federated business contacts.
- Integrated voice and video telephony: Exchange ideas face-to-face with a coordinated video display on the PC screen and voice conversation with a soft phone or Cisco Unified IP Phone desk phone. Business-quality communication is supported in a variety of video resolutions up to and including high-definition (720p) and high-fidelity wideband audio.
- Instant messaging: Chat in real time to save time and reduce phone tag. It also supports group chat and persistent chat rooms.
- Conferencing: Create voice or videoconferencing sessions by simply merging conversation sessions. There is no need to call into a separate conference bridge.
- Web conferencing: Launch a Cisco Unified MeetingPlace or WebEx web conferencing session at a moment's notice to share content, such as a presentation, with others.
- Voice messages: Access secure Cisco Unity or Cisco Unity Connection encrypted voicemail messages—view, play back, sort, and delete messages—all from within the application.

For More Information

<http://www.cisco.com/go/unifiedpersonalcom>

Cisco Unified Presence

Cisco Unified Presence lays the foundation to deliver enterprise instant messaging (IM)- and presence-enabled collaboration capabilities. View the presence status or availability of the people with whom you want to communicate, exchange instant messages with these individuals, and escalate to a voice call or rich collaborative session.

Ideal for Companies That Need These Features

- Cisco Unified Presence**
- Looking to increase productivity by providing the ability to connect with colleagues on the first try by knowing their availability in advance on either Cisco Unified Personal Communicator or Cisco Unified IP Phone
 - Seeking to enhance collaboration by sharing availability information and instant messages with co-workers within your business or between businesses with Cisco Unified Personal Communicator
 - Exposing presence information and user communications capabilities in corporate web directories, point-of-sales applications, or customer-relationship-management systems through Cisco Unified Application Environment and standards-based application programming interfaces (APIs) on Cisco Unified Presence
 - Allowing subject-matter experts anywhere in your enterprise to handle incoming customer calls with presence capabilities delivered with Cisco Unified Expert Advisor, Cisco Unified Presence, and Cisco Unified Personal Communicator

Main Features and Benefits

- Cisco Unified Presence provides enterprise-class scalability, redundancy, and high availability desired by large businesses and organizations.
- Cisco Unified Presence natively supports standards-based Extensible Messaging and Presence Protocol (XMPP) and SIP for Instant Messaging and Presence Leveraging Extensions (SIP/SIMPLE). With this dual protocol capability, Cisco Unified Presence offers customers a choice of either rich featured Cisco Unified Communications clients or any third-party XMPP-compliant instant messaging (IM) and presence client.
- Cisco Unified Presence supports business-to-business and business-to-consumer federation between organizations that are both running Cisco Unified Presence, or when one organization is using a third-party XMPP or SIP/SIMPLE platform.
- Visit Cisco.com for a listing of currently supported third-party federations.
- Cisco Unified Presence provides personal chat, group chat, and persistent chat capabilities so you can quickly connect with individuals and groups and conduct ongoing conversations.
- Cisco Unified Presence provides the Session Initiation Protocol (SIP) proxy services needed to support large Cisco Customer Voice Portal 4.0 (and later) deployments.

For More Information

<http://www.cisco.com/en/US/products/ps6837/index.html>

Cisco Unity Connection

Cisco Unity Connection provides voicemail and unified messaging with speech recognition and call routing rules on an easy-to-manage Linux platform.

Main Features and Benefits

- Access voice messages anytime from a variety of clients and devices: Email inbox, web browser, desk phone, instant messaging (IM) client, and mobile phones, including natural language-based speech access on phones.
- The flexible platform allows for configuration as voicemail or unified messaging on a Linux appliance.
- The system is scalable to 250 ports and 20,000 users per server, or 500 ports when using active-active redundancy.
- Speech recognition allows you to use voice commands to navigate phone menus and to manage messages. Cisco SpeechView allows you to read voicemail transcripts in your email inbox, and Speech Connect for Cisco Unity Connection allows you to dial colleagues by saying their names.
- The solution supports Voice Profile for Internet Mail (VPIM) to facilitate interoperability with older voicemail systems.
- The solution offers robust Automated-Attendant functions that include intelligent routing and easily customizable call-screening and message-notification options.

Specifications

Feature	Cisco Unity Connection 8.0
Unity Voice Mail (VM) and Unified Messaging (UM) possible configurations	<ul style="list-style-type: none"> • 20,000 users and 250 ports maximum, 100,000 VPIM networked users with 20 nodes • Configured for Cisco Unified Communications Manager or configured for legacy PBX/dual integration
Options	Voicemail, IMAP client messaging, single inbox unified messaging, text-to-speech, Cisco Unity Connection Web Inbox, voice commands, speech-to-text

For More Information

<http://www.cisco.com/go/unityconnection>

Speech Connect for Cisco Unity Connection

Speech Connect for Cisco Unity Connection is a speech-enabled Automated Attendant for the enterprise. Internal or external callers can say the name of an employee into the phone and instantly be connected to that employee.

Main Features and Benefits

- Advanced speech attendant for the numberless enterprise
- Industry-leading speech recognition performance combined with the powerful Cisco Unity Connection messaging solution
- Speech Connect for Cisco Unity Connection included in the base user license for Cisco Unity Connection

For More Information

<http://www.cisco.com/en/US/products/ps10670/index.html>

Cisco SpeechView

Cisco SpeechView converts voice messages to text and delivers them to you by email, allowing you to read your voice messages and take immediate action. Cisco SpeechView is a feature of the Cisco Unity Connection voice and unified messaging solution, so the original audio version of each voice message remains available to you anywhere, anytime with Cisco Unity Connection.

Main Features and Benefits

- Speech-to-text transcription is usually delivered in 5 minutes or less.
- Approximately the first 30 seconds of the voice message are transcribed.
- There is no limit on the number of messages transcribed.

For More Information

<http://www.cisco.com/go/speechview>

Cisco Unity Express

Cisco Unity Express provides integrated messaging, voicemail, Automated-Attendant services, and optional interactive voice response (IVR) specifically for the small- and medium-sized office or branch office. The application is delivered on either a network module or advanced integration module, both of which are supported on a variety of voice-enabled integrated services routers.

Ideal for Companies That Need these Features

- Cisco Unity Express** • Integrated messaging, voicemail, Automated Attendant, or interactive-voice-response (IVR) at the branch or small office to support local users
- Up to 500 users per site

Main Features and Benefits

- The solution offers affordable messaging and greeting services for increased customer service and rich employee communications.
- Intuitive telephone prompts and a web-based interface provide fast, convenient voicemail and Automated-Attendant administration.
- Cisco Unity Express can view, sort, search, and play back voice messages using the display of a Cisco Unified IP Phone or your email client.
- The solution offers scalability up to 32 ports and 500 mailboxes.
- The solution is deployable with Cisco Unified Communications Manager Express, Cisco Unified Communications Manager, Cisco Unity, and Cisco Unity Connection systems.

Specifications

Feature	Cisco Unity Express
Hardware	NME-CUE, AIM-CUE, AIM2-CUE-K9, ISM-SRE-300-K9, or SM-SRE-700-K9, fully self-contained modules with onboard storage, memory, and processing supporting a variety of mailbox densities, storage capacities, and concurrent sessions to meet the needs of every small-to-medium office or branch
Platform Supported	Cisco 1861, 2900 Series, 3900 Series, and 3900E Series Integrated Services Routers

For More Information

<http://www.cisco.com/go/cue>

Cisco Unified Survivable Remote Site Voicemail

Cisco Unified Survivable Remote Site Voicemail (SRSV) provides a cost-effective solution for supporting redundant voicemail service for your organization's remote sites, such as branch offices or small sites.

When a remote site does not have access to your central voicemail system, for example during a network service interruption, Cisco Unified SRSV provides voicemail backup services to help ensure your remote site continues to have voicemail service. This solution also provides Automated-Attendant or call-handler services while in survivability mode.

The components include:

- Cisco Unified Communications Manager: Advanced call processing at the central site
- Cisco Unity Connection: Powerful integrated and voice messaging at the central site
- Cisco Unity Express: Voicemail redundancy at the remote site
- Cisco Unified Messaging Gateway: Voicemail provisioning between the central and remote sites as well as voicemail upload from the remote site to the central location after the network service is restored

Specifications

Hardware	NME-CUE or AIM2-CUE-K9 for Cisco Unity Express; NME-UMG or NMG-UMG-EC for Cisco Unified Messaging Gateway
Software	Cisco Unity Express version 8.0 or higher, Cisco Unity Connection version 8.0 or higher, Cisco Unified Communications Manager version 8.0 or higher
Platform Supported	Cisco 2800 Series, 2900 Series, 3800 Series, 3900 Series, and 3900E Series Integrated Services Routers

For More Information

<http://www.cisco.com/go/srsv>

Cisco Unified Messaging Gateway

The Cisco Unified Messaging Gateway provides an open and secure method of intelligently routing messages and exchanging subscriber and directory information within a unified messaging network. It acts as the central hub in a network of Cisco unified messaging solutions and third-party gateways that interface with older voicemail systems.

Ideal for Companies That Need these Features

- Scale the unified messaging network as required for branch-office customers and larger distributed enterprises
- Simplify configuration tasks and centralize voicemail system management
- Transparently integrate Cisco Unified Communications Solutions into existing voicemail installations

Main Features and Benefits

- Integrate small to large-scale unified messaging deployments that consist of more than five Cisco Unity Express systems.
- Integrate up to 10,000 mixed Cisco Unity Express, Cisco Unity, and Cisco Unity Connection systems.

Specifications

Feature	Cisco Unified Messaging Gateway
Hardware	NME-UMG or NME-UMG-EC
Platform Supported	Cisco 2900, 3900, and 3900E Series Integrated Services Routers (with NM-SM-ADPTR)

For More Information

<http://www.cisco.com/go/umg>

Cisco Unity Unified Messaging

Cisco Unity unified messaging is a reliable, secure, scalable, and full-featured unified messaging platform.

Main Features and Benefits

- Access voice messages anytime from a variety of clients and devices: Email inbox, web browser, desk phone, instant messaging (IM) client, and mobile phones, including speech access on phones.
- The flexible platform allows for configuration as voicemail or unified messaging, with a single message store on a Microsoft Exchange or Lotus Domino email server or a separate message store for voice messages.
- The system is scalable to 200 ports and 15,000 users per server; it offers server options with multiple processors, redundant fans, redundant power supplies, and Redundant Array of Independent Disks (RAID) hard disk drives.
- The solution supports Audio Messaging Interchange Specification analog (AMIS-A), Voice Profile for Internet Mail (VPIM), and Cisco Unity Bridge for Octel to facilitate interoperability with older voicemail systems.
- Integration with the Cisco Fax Server allows you to send and receive fax messages from your email inbox.

Specifications

Feature	Cisco Unity Unified Messaging
Unity Voice Mail (VM) and Unified Messaging (UM) Possible Configurations	15,000 users and 200 ports maximum, 250,000 networked users Configured for Cisco Unified Communications Manager or configured for legacy PBX/dual integration
Options	Voice Mail; Unified Messaging; Microsoft Exchange or Lotus Domino message store; Failover for Exchange; Cisco Unity Bridge for Exchange

For More Information

<http://www.cisco.com/go/unity>

Speech Connect for Cisco Unity

Speech Connect for Cisco Unity is a speech-enabled Automated Attendant for the enterprise. Internal or external callers can speak the name of an employee into the phone and instantly be connected to that employee. Enhanced software fine-tunes pronunciation, improving accuracy over time for superior voice-recognition performance.

Main Features and Benefits

- Speech Connect for Cisco Unity offers unmatched performance in speech recognition because of advanced disambiguation, the names-tuning service, and a dynamic names dictionary.

For More Information

<http://www.cisco.com/en/US/products/ps9676/index.html>

Mobile Applications

Cisco Jabber Messaging Integration Platform



Cisco Jabber for iPad is a complete unified communications application that lets you access presence, instant messaging (IM), voice, video, voice messaging, and conferencing. Find the right people, see if and how they are available, and collaborate using your preferred method.

The Cisco Jabber Family of smartphone applications lets you place, receive, and manage calls over a Wi-Fi network. Sometimes referred to as dual-mode, the Cisco Jabber messaging integration platform turns your smartphone into an IP phone, while also providing corporate directory lookup and enterprise telephony calling features.

The Cisco Jabber IM application, available on Apple iPhone and BlackBerry smartphones, lets you stay connected when mobile. A single click lets you send an instant message, call, email, or text any of your contacts. You can also join an instant WebEx meeting. The app securely connects your mobile device to Cisco Unified Presence, Cisco WebEx Connect, or Cisco WebEx Messenger service.

Main Features and Benefits

Cisco Jabber for iPad

- Maximize your reach by communicating with business contacts faster. Start a voice or video call, an IM chat, or WebEx conference with a single touch.
- See your colleagues face-to-face with high-quality video when you join a telepresence meeting from your iPad.
- Make faster, more informed decisions by using presence information to access experts as soon as they are available.
- With the tap of a button, escalate conversations to a Cisco WebEx meeting with voice, video, and web conferencing.
- Choose the best provisioning model for your business by deploying Cisco Jabber for iPad either on premises or on demand as a cloud-based service.

Cisco Jabber for Android and Cisco Jabber for iPhone

- Lower costs by placing and receiving calls over wireless LAN (WLAN) and Wi-Fi networks.
- Use your business phone number for outgoing and incoming calls, hiding your personal phone number.
- Move calls from a Wi-Fi to a cellular network and back, keeping calls live without disconnecting.

- Move calls to your Cisco Unified IP Phone and back, so you can roam while continuing calls.
- Receive alerts for, view, and listen to your office voice messages with a single tap.

Cisco Jabber IM for iPhone and Cisco Jabber IM for BlackBerry

- Take immediate action from your contact list with features such as click to IM, click to call, click to email, and click to text.
- Start or join an instant WebEx meeting from an IM chat to share documents and meet with additional participants.
- Search for colleagues in your corporate directory.
- Strengthen the security of your chats using Secure Sockets Layer (SSL) or Advanced Encryption Standard (AES) encryption, and by connecting your smartphone directly to the Cisco IM infrastructure—Cisco Unified Presence, Cisco WebEx Connect, or Cisco WebEx Messenger.

For More Information

<http://www.cisco.com/go/jabber>

Cisco WebEx Meetings on Mobile Devices



Collaboration

Cisco WebEx Meetings on Mobile Devices is a free downloadable application available for Cisco WebEx Meeting Center on Android, Apple iPhone and iPad, and RIM BlackBerry mobile devices.

Main Features and Benefits

- Schedule WebEx Meeting Center meetings and invite attendees.
- Start or cancel a scheduled WebEx meeting.
- Give presentation control to other meeting participants.
- Attend scheduled meetings with integrated audio and data with WebEx voice over IP (VoIP)
- View shared presentations, applications, and desktops with live annotations.
- Experience two-way multiparty videoconferencing from your Apple iPad and iPhone and certain Android tablets.
- View the meeting attendee list and chat with meeting participants.

For More Information

<http://www.webex.com/overview/mobile-meetings.html>

Cisco Mobile Supervisor

Cisco Mobile Supervisor is a free application available from the Apple Inc. App Store that extends the Cisco Supervisor Desktop of Cisco Unified Contact Center Express to the iPhone 3G and iPod Touch.

Main Features and Benefits

- A list of Contact Service Queues (CSQs) belonging to a selected team:
 - The Voice CSQ Summary report for a selected CSQ
 - The list of agents (along with their states) belonging to the selected CSQ
- A list of agents (along with their states) belonging to a selected team
- Color-coded indicators to identify whether the Call in queue of a CSQ, or the Oldest Call in a Queue field have exceeded user-configured thresholds. You can specify or change these threshold values at any time.

For More Information

http://www.cisco.com/en/US/prod/collateral/voicesw/custcosw/ps5693/ps1846/ciscomobile_vds.html

Cisco TelePresence Conferencing

Welcome to your future at work, in class, on the road, in your community, and at home. As a critical part of Cisco Collaboration, Cisco TelePresence technology powers the new way of working, where everyone, everywhere can be more productive through face-to-face collaboration. Cisco TelePresence solutions meet your needs—from team to personal use to specific applications for your business, and even public access, allowing you to:

- Connect face-to-face with customers, partners, and co-workers, building trust, understanding, and relationships
- Scale executives and subject-matter experts like never before, transforming your business model and creating competitive differentiation
- Increase productivity through more interactions and less travel
- Speed time to market and make decisions faster with the right resource available at the right time
- Free IT resources with ease of use and operational simplicity to focus on strategic projects instead of operational maintenance

Cisco TelePresence endpoints deliver an unmatched experience in quality and simplicity. We can help you find the right Cisco TelePresence endpoint for every individual and team for natural and effective communication. Our innovative portfolio includes the following attributes:

- Immersive: Optimized or adaptive Cisco TelePresence rooms for the best-quality face-to-face communications and collaboration
- Multipurpose: Cisco TelePresence media and collaboration solutions for the widest range of multipurpose rooms and collaboration environments
- Personal: Streamlined products fit for private offices at home for telecommuting or remote locations for mobile workers
- Solution platforms: Core Cisco TelePresence components for customized applications from partners for your business

With a range of applications including meetings, high-definition video recordings and broadcasting, intimate customer experiences, and remote professional services such as healthcare, the Cisco TelePresence portfolio takes interaction, communications, and collaboration to a new level.

Cisco TelePresence Infrastructure

The Cisco TelePresence portfolio offers the most comprehensive infrastructure centered on an integrated architecture, unified communications, and any-to-any interoperability between Cisco and third-party video products and collaboration technologies. Cisco TelePresence systems deliver a networked multipoint transcoding and switching architecture for scalability and adaptive, on-demand media services—and integration with digital media and collaboration solutions from Cisco and other companies. Critical components of the Cisco TelePresence infrastructure portfolio include:

- Management: Comprehensive management software with integrated scheduling, network management, and reporting capabilities, including usage measurement and return-on-investment (ROI) tools
- Conferencing: Industry-leading transcoding and switching capabilities for large, high-performance, and scalable multipoint meetings
- Media services: Any-to-any interoperability with virtually all video technologies and on-demand media services such as recording, streaming, transcoding, and translation
- Call and session control: Robust Cisco TelePresence session control through a comprehensive set of signaling and call-control capabilities

Cisco TelePresence as a Service

Cisco TelePresence cloud-based solutions and services enable telepresence-as-a-service options for conferencing, secure intercompany collaboration, advanced media services, and flexible access plans for any size organization. Businesses look to scalable cloud-based Cisco TelePresence capabilities so they can effortlessly and securely communicate face-to-face with their colleagues, customers, and partners in other Cisco TelePresence locations, including options to use more than 40 public Cisco TelePresence Suites available globally.

Endpoints

Immersive Endpoints

Cisco TelePresence System 3010

To deliver an immersive collaborative environment with an in-person experience, the Cisco TelePresence System 3010 allows 6 people to connect with up to 48 locations.

The Cisco TelePresence System 3010 is ideal for customer engagements with small or large groups, supply-chain optimizations, press and media briefings, or regular team meetings.

The Cisco TelePresence System 3010 system includes:

- Three 65-inch plasma screens and a specially designed physical table that seats 6 participants on each side of the virtual table
- Additional LCD display for sharing rich-media content and other data using simple auto-collaborate functions
- Integrated cameras, lights, microphones, and speakers that optimize the experience and use less power than a Cisco TelePresence System 3000
- Smooth integration with all Cisco TelePresence products and solutions to lower total cost of ownership (TCO), increase return on investment (ROI), and ease deployment



Specifications

Specification	Description
Video standards	H.264
Audio standards	G711 and AAC-LD (22kHz)
Protocols	Cisco Discovery Protocol, SIP, IP, Dynamic Host Configuration Protocol (DHCP), Secure Shell (SSH) Protocol, 802.1p/q, and Real-Time Transport Protocol (RTP)

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
<http://www.cisco.com/en/US/products/ps10753/index.html>.

For More Information

<http://www.cisco.com/en/US/products/ps10753/index.html>

Cisco TelePresence TX1300 Series

The Cisco TelePresence System 1300 Series (1300 Series) extends the experience pioneered by Cisco's fully immersive three-screen solutions to smaller multipurpose conferencing spaces. The 1300 Series delivers an immersive experience that enhances team collaboration across the table and around the globe.

With crisp 1080p30 video, premium audio quality, and the convenience of features such as "one-button-to-push" calling, the 1300 Series delivers the high-quality experience expected of Cisco immersive telepresence rooms. With an innovative combination of triple-camera cluster and voice-activated switching technology, the 1300 Series enables up to six participants to have a face-forward seat at the virtual table through a single video stream. Integrated audio conferencing and presentation-sharing capabilities make this solution a powerful team telepresence solution that enhances collaboration in many ways. Cisco TelePresence System 1300-65 (1300-65) and System 1300-47 (1300-47) fit small and medium-sized conference rooms using the existing table in the room. The 1300-65 is designed for medium and large-size conference rooms. The 1300-47 is ideal for small conference rooms, supporting a wide variety of table configurations and sizes commonly deployed such as bullet, round, and square tables.



Specifications

Specification	Description
Video standards	H.264, Telepresence Interoperability Protocol (TIP)
Audio standards	G.711, G.722, and AAC-LD (22 kHz)
Protocols	Cisco Discovery Protocol, Session Initiation Protocol (SIP), IP, Dynamic Host Configuration Protocol (DHCP), Secure Shell (SSH) Protocol, 802.1p/q, and Real-Time Transport Protocol (RTP)

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
<http://www.cisco.com/en/US/products/ps10340/index.html>

For More Information

<http://www.cisco.com/en/US/products/ps10340/index.html>

Multipurpose Endpoints

Cisco TelePresence System Profile Series

The Cisco TelePresence Profile Series offers a lifelike high-definition (HD) video collaboration experience for teams of all sizes. This integrated telepresence solution brings you an easy-to-use and consistent video experience.

The Cisco TelePresence Profile Series has several options powered by the C Series Codec depending on the size of your meeting room and your requirements for collaboration and content sharing:

- Cisco TelePresence Profile 42-inch
- Cisco TelePresence Profile 52-inch and 52-inch Dual
- Cisco TelePresence Profile 65-inch and 65-inch Dual



In addition, the Cisco TelePresence Profile 52-inch with 6000 MXP Codec is ideal when applications require multiple network interfaces directly from the codec and users want definition up to 720p.

Specifications

Specification	Description
Video standards	H.261, H.263, H.263+, H.264
Audio standards	G.711, G.722, G.722.1, 64 bit & 128 bit MPEG4 AAC-LD, AAC-LD Stereo
Protocols	<ul style="list-style-type: none">• H.323• SIP

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
<http://www.cisco.com/en/US/products/ps11326/index.html>

For More Information

<http://www.cisco.com/en/US/products/ps10753/index.html>

Cisco TelePresence MX Series

In about 15 minutes, you can turn a conference room into a telepresence room and call team members to a meeting on a brilliant 42-inch screen. The Cisco TelePresence MX200 brings colleagues from around the world face-to-face as if they were in the same room—in a simple, cost-effective way.

The MX200 is designed and priced to bring the benefits of telepresence to more teams and meeting rooms. It is an ideal way to broadly deploy the Cisco TelePresence experience throughout your organization or make your first move into lifelike video communications.



Auto-provisioning and the intelligent self-configuration of the system help your IT department set up the MX200 on the network. It is as easy to install as a TV set: place it where you want it, plug it in, type in user credentials, and make your video call.

An intuitive interface simplifies the user experience, and users can initiate calls with the push of a single button.

Cisco manages service globally to provide a reliable experience and consistent support in more than 120 countries—and to make large-scale global deployment of the MX200 a practical reality.

The MX200 puts meetings in a high-quality environment, offering:

- Support for up to vivid 1080p30 and 720p60 video resolution and high-definition (HD) content sharing
- Clear 1920 x 1080 resolution in a high-quality 42-inch display
- Integrated design that provides a consistent high-quality video experience, regardless of room environment
- Optimal preset framing and video clarity from a Cisco TelePresence PrecisionHD USB camera
- HD sound system with two front speakers to deliver superior audio performance

Specifications

Specification	Description
Video standards	H.261, H.263, H.263+, H.264
Audio standards	G.711, G.722, G.722.1, 64/128 kbps MPEG4 AAC-LD, AAC-LD stereo
Protocols	<ul style="list-style-type: none">• H.323• SIP

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
<http://www.cisco.com/en/US/products/ps11776/index.html>

For More Information

<http://www.cisco.com/en/US/products/ps11776/index.html>

Personal Endpoints

Cisco TelePresence EX Series

The Cisco TelePresence EX Series offers the new Cisco TelePresence EX60 and ever popular Cisco TelePresence EX90. This family of personal telepresence for the desktop lets you and your colleagues instantly collaborate face-to-face, whether you are separated by a hallway, a street, or several time zones. Access the features you need right from your desktop, with the touch of a finger.

The EX Series includes the Cisco TelePresence touch-screen interface, so you can make and manage telepresence calls with a simple glide of the finger. New enhancements bring even greater usability and simplicity to connecting and sharing content over telepresence.

The Cisco TelePresence EX Series offers a full high-definition (HD) 24-inch or 21.5-inch screen. You can use it as both a PC monitor and a telepresence system, giving you more flexibility at your desk.

Other features include:

- Simple touch-screen control that makes calling and sharing easy and intuitive
- 1080p30 and 720p60 video resolution for an optimal telepresence experience at the desk
- H.323 and Session Initiation Protocol (SIP) with bandwidth up to 6 Mbps point-to-point
- Natural, transparent collaboration with one-touch sharing of high-definition (HD) content, and a built-in document camera feature
- An included wideband handset, with an option to add a headset input for privacy

No matter what your role, the Cisco TelePresence EX Series will become an integral part of your workflow. It helps enable faster decision-making, enhances relationships, and improves efficiency.

Connect face-to-face whenever you need to, at a moment's notice, with the Cisco TelePresence EX Series.



Specifications

Specification	Description
Video standards	H.261, H.263, H.263+, H.264
Audio standards	G.711, G.722, G.722.1, 64/128 kbps MPEG4 AAC-LD, AAC-LD stereo
Protocols	<ul style="list-style-type: none">• H.323• SIP

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
<http://www.cisco.com/en/US/products/ps11327/index.html>

For More Information

<http://www.cisco.com/en/US/products/ps11327/index.html>

Cisco Jabber Video for TelePresence

Cisco Jabber Video for TelePresence (Jabber Video) is a video soft client that enables any PC or Mac to become a business-quality video system that transparently connects you to any other standards-compliant video device.



Specifications

Specification	Description
Video standards	H.263, H.263+, H.264
Audio standards	G.711 A-law, G.711 μ -law, G.722.1 24 kbps, G.722.1 32 kbps, MPEG4 AAC-LD 48 kHz
Protocols	<ul style="list-style-type: none">• SIP• H.323 (via VCS interworking)• TCP/IP• TLS• RTP/RTCP• DTMF (in-band and out-of-band)• BFCP• H.239 (VCS H.323 Interworking)• H.281 (FECC)• ICE Support

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
<http://www.cisco.com/en/US/products/ps11328/index.html>

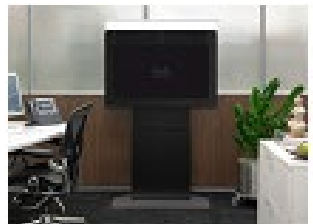
For More Information

<http://www.cisco.com/en/US/products/ps11327/index.html>

Cisco TelePresence System 500 Series

Now you have more choices for extending the virtual in-person experience provided by Cisco TelePresence technology to the office of executives and team leaders. The Cisco TelePresence System 500 32-inch joins a 37-inch version to form the Cisco TelePresence System 500 Series.

Cisco TelePresence System 500 Series offers the same experience of three-screen meeting room solutions, but with a smaller footprint, giving individuals the flexibility to join large, multilocation group meetings or host intimate, remote one-on-one meetings from the personal office.



Specific features of Cisco TelePresence 500 Series systems include:

- Streamlined design that fits private offices for easy installation, requiring little-to-no room remediation and construction cost
- 1080p and 720p resolution on a premium 32- or 37-inch display with camera, microphone, speakers, and lighting fully integrated in an elegant design
- Capability of one or two users to join meetings, appearing life-size on Cisco TelePresence 3000, Cisco TelePresence T3, and other immersive endpoints, with full Cisco TelePresence audio and video quality
- Multipoint meetings with up to 48 screens supported in any combination of Cisco TelePresence endpoints
- Simple "one-button-to-push" calling that integrates with common enterprise calendaring programs

With the Cisco TelePresence System 500 Series, sharing content such as data or graphics is easy with presentation-in-picture. Add a second monitor that can be dedicated to viewing content.

The system also offers any-to-any interoperability with standard- and high-definition videoconferencing endpoints and collaboration with desktop video applications, including Cisco WebEx meeting applications and the Cisco Digital Media System.

- Off-call functions give you the flexibility to use it as secondary computer monitor, or to show video for digital signage.
- Integration with the network helps ensure reliability with high availability, comprehensive security, and quality of service (QoS) for an optimal experience.

Specifications

Specification	Description
Video standards	H.264, TelePresence Interoperability Protocol (TIP)
Audio standards	G.711 and AAC-LD (22 kHz)
Protocols	<ul style="list-style-type: none"> • Cisco Discovery Protocol • Session Initiation Protocol (SIP) • IP • Dynamic Host Configuration Protocol (DHCP) • Secure Shell (SSH) Protocol • IEEE 802.1p/q • Real-Time Transport Protocol (RTP)

Solutions Platform

Cisco TelePresence System Integrator C Series

Designed for integrators who specialize in telepresence installations, the Cisco TelePresence System Integrator C Series delivers a total telepresence engine. With an excellent level of video and audio across the product range, these codecs offer advanced application programming interfaces (APIs) and industry-standard connectors for exceptional integration flexibility.



Products include:

- Cisco TelePresence Codec C40
- Cisco TelePresence Codec C60
- Cisco TelePresence Codec C90

Specifications

Specification	Description
Video standards	H.261, H.263, H.263+, H.264
Audio standards	G.711, G.722, G.722.1, 64 kbps & 128 kbps MPEG4 AAC-LD, AAC-LD Stereo
Protocols	<ul style="list-style-type: none"> • H.323 • SIP

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheets:
<http://www.cisco.com/en/US/products/ps11422/index.html>.

For More Information

<http://www.cisco.com/en/US/products/ps11422/index.html>

Infrastructure

Call Control

Cisco TelePresence Video Communication Server

The Cisco TelePresence Video Communication Server (Cisco VCS) extends the benefits of face-to-face video collaboration across networks and organizations by supporting any-to-any video and telepresence communications. This simple and scalable solution works with unified communications and voice-over-IP (VoIP) solutions, providing an optimal experience to users regardless of the devices they use.



The solution includes tools for large-scale installations and video network management, making deployment and management easier and cost-efficient. As organizations adopt telepresence for desktops and enable mobile workers with video, the Cisco TelePresence Video Communication Server supports highly scalable deployments.

Cisco TelePresence Video Communication Server Control (Cisco VCS Control) provides advanced telepresence applications and session management to all standards-compliant telepresence endpoints, infrastructure, and management solutions. Cisco VCS Control provides Session Initiation Protocol (SIP) proxy and H.323 gatekeeper services, enabling any-to-any interoperability between SIP and H.323 telepresence devices. Cisco VCS Control is a critical part of Cisco's unified call-control solution and is also critical for interoperability with third-party unified communications and IP telephony networks and VoIP solutions.

Cisco TelePresence Video Communication Server Expressway (Cisco VCS Expressway) opens the world outside the firewall to organizations using video communications. Cisco VCS Expressway enables business-to-business communications, empowers remote and home-based workers, and allows service providers to provide video communications to customers. Cisco VCS Expressway provides standards-based and secure firewall traversal for SIP and H.323 devices and enables communication with the outside world regardless of SIP or H.323 protocol.

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
<http://www.cisco.com/en/US/products/ps11337/index.html>

For More Information

<http://www.cisco.com/en/US/products/ps11337/index.html>

Conferencing

Cisco TelePresence MSE 8000 Series

Meet the mission-critical collaboration needs of large enterprises with the Cisco TelePresence MSE 8000 Series, an all-in-one multipoint control unit, ISDN and IP gateway, and recording solution. This highly scalable chassis-based platform is well suited for service providers seeking to offer their clients high-definition (HD) videoconferencing services.

The Cisco MSE 8000 Series is a high-density, high-capacity video bridge that supports large videoconferences.

Optional feature blades:

- Cisco TelePresence Server MSE 8710: Up to 16 screens of HD telepresence conferencing
- Cisco TelePresence MCU MSE 8510: Up to 20 ports of HD video plus 20 ports of voice multipoint conferencing, or up to 80 ports of standard-definition (SD) video multipoint conferencing
- Cisco TelePresence MCU MSE 8420: Up to 40 ports of SD video plus 40 ports of voice multipoint conferencing
- Cisco TelePresence IP GW MSE 8350: Up to 20 transcoding and 20 nontranscoding video calls
- Cisco TelePresence ISDN GW MSE 8321: Up to 8 E1 or T1 ISDN primary rate interfaces
- Cisco TelePresence VCR MSE 8220: Up to 10 ports of video recording with streaming server



Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
<http://www.cisco.com/en/US/products/ps11340/index.html>

For More Information

<http://www.cisco.com/en/US/products/ps11340/index.html>

Cisco TelePresence Server 7010

Bring together participants with high-definition (HD), standard-definition (SD), and telepresence endpoints with the Cisco TelePresence Server 7010. To facilitate the best possible user experience, the server intelligently recognizes system types. You can connect to up to 9 screens or upgrade the system to support 16 screens. Increase the large-scale telepresence experience with a full-screen, immersive view of the primary speakers and an overlay of the other participants.

Features include:

- Multivendor telepresence interoperability
- Compatibility with major vendors' videoconferencing endpoints
- Versatile, easy-to-use management interface
- Compact size: 19-inch rack-mountable with 2-rack-unit (2RU) height
- Cisco TelePresence Universal Port technology

Capabilities that help ensure a superior user experience:

- Supports single and multiscreen Cisco TelePresence systems
- Supports Polycom RPX and TPX telepresence systems
- Provides resolution enhancement
- Helps ensure an uninterrupted telepresence experience
- Supports OneTable and Room-Switched configurations
- Integrates with Cisco TelePresence Management Suite (TMS)

Features that facilitate high-quality telepresence:

- High-definition transcoding for participants
- ActivePresence support that allows the most active speakers to be seen continuously
- Consistent high capacity
- Additional wideband audio ports
- Up to 4 Mbps bandwidth per screen
- Advanced Encryption Standard (AES) encryption

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
<http://www.cisco.com/en/US/products/ps11397/index.html>

For More Information

<http://www.cisco.com/en/US/products/ps11397/index.html>

Cisco TelePresence MCU 4500 Series

The Cisco TelePresence MCU 4500 Series is the industry's leading full high-definition (HD) multimedia conferencing bridge. It delivers superior video and voice with an easy-to-use, versatile management interface.

Compatible with all major vendors' endpoints, each model maintains its capacity and performance in every configuration, providing an optimal experience for each participant, every time.

The Cisco TelePresence MCU 4500 Series offers:

- Up to 1080p at 30 frames per second
- Full continuous presence for all conferences
- Full transcoding
- An ideal solution for mixed-vendor HD endpoint environments



Specifications

Specification	Description
Video standards	H.261, H.263, H.263+, H.263++, and H.264
Audio standards	G.711, G.722, G.722.1, G.723, G.728, G.729, MPEG-4 AAC-LC, MPEG-4 AAC-LD, and Polycom Siren14/G.722.1 Annex C
Protocols	H.323, SIP, H.235 (Advanced Encryption Standard [AES]), Secure Real-Time Transport Protocol (SRTP), Transport Layer Security (TLS), H.239 (dual video), VNC, Binary Floor Control Protocol (BFCP), H.243 (chair control), FTP, Real-Time Transport Protocol (RTP), (Real-Time Streaming Protocol (RTSP), HTTP, Secure HTTP (HTTPS), Dynamic Host Configuration Protocol (DHCP), Simple Network Management Protocol (SNMP), Network Time Protocol (NTP), NT LAN Manager (NTLM) (authentication), IPv4, and IPv6

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:

http://www.cisco.com/en/US/prod/collateral/ps7060/ps11305/ps11317/ps11341/data_sheet_c78-627482.html

For More Information

<http://www.cisco.com/en/US/products/ps11341/index.html>

Media Services

Cisco TelePresence ISDN Gateway

Organizations that use ISDN can now enjoy the benefits of high-definition (HD) video with the Cisco TelePresence ISDN Gateway. The Cisco TelePresence ISDN GW 3201 Series is a high-capacity and scalable gateway that grows with your business demands. It provides smooth integration between IP and ISDN networks with complete feature transparency, including HD, enabling organizations using ISDN to enjoy the benefits of HD videoconferencing.



This gateway also offers transparent communication with the Cisco TelePresence Video Communication Server for call control and firewall traversal.

Specifications

Specification	Description
Video standards	H.261, H.263, H.263+, and H.264
Audio standards	G.711, G.722, G.728, Polycom Siren14™/G.722.1 Annex C
Protocols	H.323, H.320, H.233, H.234, H.235 (AES), H.239 (dual video), H.221, FTP, RTP, HTTP, HTTPS, DHCP, SNMP, NTP

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:

http://www.cisco.com/en/US/prod/collateral/ps7060/ps11305/ps11318/ps11344/data_sheet_c78-626475.html

For More Information

<http://www.cisco.com/en/US/products/ps11448/index.html>

Cisco TelePresence Advanced Media Gateway

Your organization can now use familiar business tools to collaborate in high definition (HD) across the enterprise with the Cisco TelePresence Advanced Media Gateway Series. These unified communications products help increase the value of your existing video and collaboration infrastructure. They connect to all standards-based video devices, including:

- Endpoints
- Multipoint control units (MCUs)
- Recording and streaming servers
- Telepresence servers



Combined with the Cisco TelePresence Video Communication Server, this series provides an innovative unified communications solution. This combination is the first network-centric solution to facilitate true high-definition communication between Microsoft Office Communications Server 2007 R2 users and standards-based telepresence and videoconferencing devices.

Specifications

Specification	Description
Video standards	RT Video, H.261, H.263, H.263+, and H.264
Audio standards	G.711, G.722, G.723.1, G.728, G.729, MPEG-4 AAC-LC, MPEG-4 AAC-LD, Polycom Siren7/ G722.1, Polycom Siren14, and G.722.1 Annex C
Protocols	SIP, FTP, Real-Time Transport Protocol (RTP), HTTP, Dynamic Host Configuration Protocol (DHCP), Simple Network Management Protocol (SNMP), and Network Time Protocol (NTP)

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
http://www.cisco.com/en/US/prod/collateral/ps7060/ps11305/ps11318/ps11345/data_sheet_c78-625364_ps11449_Products_Data_Sheet.html

For More Information

<http://www.cisco.com/en/US/products/ps11449/index.html>

Management

Cisco TelePresence Management Suite

Cisco TelePresence Management Suite is a scalable, easy-to-use, and reliable system that provides complete visibility and control for administrators while providing a simplified telepresence experience for end users. The Cisco TelePresence Management Suite provides one management platform for all your visual communication needs. Making the system easier to use results in greater adoption of telepresence and better collaboration throughout your organization. Cisco TelePresence Management Suite improves the return on investment (ROI) for your entire telepresence deployment.



The Cisco TelePresence Management Suite provides:

- Asset management tools that scale and centralize device management and upkeep
- Monitoring and diagnostics tools for raising alarms, reducing response times, and improving reliability
- Easy-to-use telepresence scheduling with multiple choices of interface
- The Conference Control Center, which offers real-time operator controls and conference management
- Centralized directories for provisioning, authentication, and phone books
- Advanced reporting for tracking usage

The Cisco TelePresence Management Suite is available as a software package for large-scale deployment and as an appliance server for small to midsize installations.

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the data sheet:
http://www.cisco.com/en/US/prod/collateral/ps7060/ps11305/ps11316/ps11338/data_sheet_c78-628598.html.

For More Information

<http://www.cisco.com/en/US/products/ps11338/index.html>

Cisco TelePresence Manager

Interact and collaborate across remote locations using high-definition (HD) video, advanced audio, and a finely tuned environment. Cisco TelePresence systems deliver life-size, immersive face-to-face experiences over the Internet. They are also simple to use and manage.



Cisco TelePresence Manager software makes it easy to schedule, initiate, and manage Cisco TelePresence experiences. As an integral part of the Cisco TelePresence solution, this software facilitates call scheduling and setup from common enterprise groupware such as Microsoft Exchange and Lotus Notes so that starting meetings is as simple as pushing a single button.

Cisco TelePresence Manager helps extend the full value of Cisco TelePresence meetings by:

- Managing conference resources for the various Cisco TelePresence meeting types: point-to-point, multipoint, interoperability, Cisco TelePresence WebEx OneTouch, and intercompany
- Providing administrators and help desk staff with system connectivity and management dashboards for reporting
- Delivering usage, productivity, and return on investment (ROI) reporting to give IT managers data that helps them justify their Cisco TelePresence investment
- Helping reduce total cost of ownership (TCO) by integrating with existing infrastructure

In addition to making it easy to schedule calls, thereby minimizing both training and support, Cisco TelePresence Manager also offers:

- Ability to launch calls by pushing a single button
- Integration with Cisco WebEx Meeting Center for integrated scheduling and call initiation
- Flexibility to integrate more enterprise resource scheduling interfaces into Cisco TelePresence Manager using an application programming interface (API)
- Tools for concierge and help desk staff to troubleshoot Cisco TelePresence meetings

Compatible with common groupware applications including Microsoft Exchange and Lotus Notes Domino, Cisco TelePresence Manager provides a web-based user interface that simplifies system administration. It also:

- Optimizes resource allocation for multipoint calls
- Consolidates views of scheduled meetings with an API for ROI reporting
- Integrates with Cisco Unified Communications Manager or Cisco TelePresence Video Communication Server (Cisco VCS) for call control

Specifications

Specification	Description
Protocols	HTTP and Secure HTTP (HTTPS) for administrative, XML (AXL), or Simple Object Access Protocol (SOAP), Simple Network Management Protocol (SNMP), WebDev, Enterprise Web Services (EWS), and a scheduling and reporting API

Selected Part Numbers and Ordering Information

For a full list of current part numbers, please view the data sheet:
http://www.cisco.com/en/US/prod/collateral/ps7060/ps8329/ps8331/ps7074/product_data_sheet0900aecd805455ff.html

For More Information

<http://www.cisco.com/en/US/products/ps7074/index.html>

Exchange System Cloud Services

Cisco TelePresence Exchange System

The Cisco TelePresence Exchange System is an integrated telepresence and video service-creation platform that can help service providers and strategic partners create and manage secure, cloud-based, hosted, and managed video collaboration services.



The Cisco TelePresence Exchange System is a feature-rich platform that offers the following features and benefits:

- System management and scalability:
 - Multitenancy: Service providers can support multiple business customer organizations from a single Cisco TelePresence Exchange System deployment. The system segments organization information and policy control for business-to-business communication and conferencing services.
 - Optimized call routing: The system optimizes call routing for endpoints and network bandwidth to improve network economics and user experience across geographies and across service provider networks. The meeting-scheduling application programming interfaces (APIs) also allow third-party applications to intelligently instruct the system to host meetings using the resources closest to the majority of the session participants.
 - Resource management and pooling: The Cisco TelePresence Exchange System manages the allocation of media resources for scheduled and reservationless conferencing services. By clearly separating the service-control components from the media-processing components, the system can consistently implement a pooling resource-management strategy for all media resources, including Cisco TelePresence Multipoint Switches, multipoint control units (MCUs), and interactive-voice-response (IVR) systems. The net result is a fully redundant solution where the system always selects the most available resource to handle a session in real time, so that even when a media resource failure affects existing sessions and meetings, as long as additional media resources are available the affected parties will be able to redial and continue from where their conversation was terminated.
 - In addition, the health of every resource is continuously monitored. The Cisco TelePresence Exchange System proactively takes a faulty resource out of service to avoid possible effects on service availability. The system exposes these fault conditions through its administration and Simple Network Management Protocol (SNMP) interfaces so that service providers can capture these events and produce appropriate alarms.
 - Multiregion support: Service providers can distribute media resources into different geographical regions. They can segregate customers and endpoints based on the region they are in. In addition, they can schedule meetings based on the region where most customers reside to optimize resource usage.
 - Exchange management: The Cisco TelePresence Exchange System offers service providers a comprehensive management solution. Solution-management interfaces include SNMP, a web-based management and provisioning administrator portal, and flow-through provisioning options for some media elements such as the Cisco TelePresence MCU MSE 8510 and Cisco TelePresence Server MCUs. Over time the flow-through provisioning capabilities of the product will expand to other network and media elements in order to support the service scale.
 - Call detail records (CDRs): The Cisco TelePresence Exchange System is a centralized control point for management, billing, and administration. The system provides real-time CDRs for all calls traversing the exchange solution. With a single point of collection for call information, service providers can easily aggregate and correlate call information from multiple sources to facilitate the billing and revenue settlement process with their customers and other service provider partners.
 - Open APIs: The Cisco TelePresence Exchange System enables further integration of third-party and internally developed applications to deliver customized meeting experiences and industry applications for Cisco TelePresence collaboration systems. For example, the scheduling API enables a third-party scheduling application to schedule, modify, or cancel point-to-point and multipoint meetings. Depending on the types of endpoints joining a meeting, the appropriate media resources are selected from the media resource infrastructure, optimizing performance, minimizing conferencing port costs, and simplifying the user experience.
- Services and customer experience:
 - One-button-to-push experience: The Cisco TelePresence Exchange System preserves ease-of-use features such as one-button-to-push session initiation. The system automatically provisions endpoints hosted in the service provider cloud with the one-button-to-push information necessary to either directly dial another endpoint or authenticate and join a prescheduled multipoint conference without any need for additional user interaction.
 - Conferencing: The system offers a prepackaged multimedia meet-me conferencing service enabler that uses instances of Cisco TelePresence Multipoint Switches and Cisco TelePresence MSE 8000 MCUs to deliver full endpoint interoperability while minimizing total cost per port. It supports a scheduled and impromptu paradigm with a dial-in and dial-out model to allow service providers to properly tailor the service based on their customers' needs. It also takes advantage of the internal

VoiceXML engine of the system to create a pool of interactive-voice-response (IVR) instances in the scenarios where it is necessary to interact with the end user for authentication and user notification.

- Business-to-business communication: The system is designed to securely support multipoint and point-to-point calls across enterprise and service provider boundaries. It can route scheduled and impromptu point-to-point calls between different organizations through the service provider cloud using an internal number routing database.
- Interoperability services: The system supports network-based Cisco TelePresence interoperability with traditional video systems or other telepresence solutions using the Cisco TelePresence MSE 8000 Series in a multitenant architecture for optimum service scalability and reach.
- Interprovider communication: The system conforms to a policy and resource-management framework for interprovider connectivity. It facilitates the process by which service providers can peer with other service provider partners' networks with the intent of increasing the service reach for their business customers while maintaining a consistent user experience across enterprise and service provider boundaries.

Specifications

Specifications	Description
System management	Cisco TelePresence Exchange Administrator user interface Secure Shell (SSH) Protocol command-line interface (CLI)
Performance and scalability	<ul style="list-style-type: none"> • Up to 2400 concurrent telepresence sessions • Up to 40 telepresence sessions per second in sustained mode • Up to 10 scheduling or billing API requests per second in sustained mode
Reliability and availability	Fully redundant multitiered system with every tier in either an active-active or active-standby configuration
Alarms and reporting	<ul style="list-style-type: none"> • Resource MIBs support to enable easy monitoring of solution components • Platform MIBs support to enable hardware-level monitoring • Event reporting on the Cisco TelePresence Exchange user interface to enable easy troubleshooting
Supported Cisco and third-party endpoints	Cisco TelePresence System 3010, System 3200, System 1100, System 1300, and System 500; Cisco TelePresence System Profile 42-inch and System Profile 52-inch; Cisco TelePresence System EX90 and System EX60; Cisco TelePresence System Codec C20, System Codec C40, and System Codec C60; and Cisco IP Video Phone E20 Standards-based SIP, H.323 telepresence standard, and standard- and high-definition (SD and HD, respectively) video endpoints
Protocol Family	
SIP	Support for SIP RFCs 2543 and 3261
Simple Object Access Protocol (SOAP) and HTTP	Support for SOAP- and HTTP-based Web Services API for integration with scheduling and billing systems
H.323	H.323 support, achieved using Cisco Unified Border Element (SP Edition) (CUBE-SP) for interop dialout
SNMP	SNMPv2c, SNMPv3, and SNMP Traps
Cisco Discovery Protocol	Full support, including neighbor discovery (and SNMP support) and Cisco Discovery Protocol advertisement
MIBs	CISCO-CDP-MIB; CISCO-SYSLOG-MIB; IF-MIB; IP-MIB(v2); RFC1213-MIB; SNMPv2-MIB; TCP-MIB; UDP-MIB; SNMP-FRAMEWORK-MIB; SNMP-MPD-MIB; SNMP-VACM-MIB (SNMP-VIEW-BASED-ACM-MIB); SNMP-NOTIFICATION-MIB; SNMP-TARGET-MIB; SNMP-USER-BASED-SM-MIB; HOST-RESOURCE-MIB; IBM-SYSTEM-AGENT-MIB; IBM-SYSTEM-ASSETID-MIB; IBM-SYSTEM-HEALTH-MIB; IBM-SYSTEM-LMSENSOR-MIB; IBM-SYSTEM-MEMORY-MIB; IBM-SYSTEM-MIB; IBM-SYSTEM-NETWORK-MIB; IBM-SYSTEM-POWER-MIB; IBM-SYSTEM-PROCESSOR-MIB; IBM-SYSTEM-RAID-MIB; IBM-SYSTEM-TRAP-MIB
Cisco TelePresence Exchange System Hardware and Environmental Specifications	
Components	Six Cisco TelePresence Exchange System servers (based on IBM x3650m2 architecture)
Connectivity	Two Gigabit Ethernet RJ-45 ports
Memory	8 GB on each server
Physical dimensions (H x W x D)	Six servers, each 2 rack units (2RU): 1.7 x 17.3 x 28.0 in. (71.14 x 43 x 440 mm)
Power	Rated six servers, each 675W Total rated: 4050W
Temperature range	50 to 95°F (10 to 35°C)
Approvals and compliance	U.S.: Safety: UL60950-1 2nd edition 21CFR1040 EMC: FCC Part 15/CISPR22 Class A

For More Information

<http://www.cisco.com/go/ctx>

Cisco WebEx Telepresence

Cisco WebEx Telepresence is a powerful cloud service that helps small and medium-sized businesses get started with telepresence so they can get closer to customers, colleagues, and partners without having to make extensive IT resource investments.

Product Features

- Endpoints supported: MX series, Profile 42, C40, C20, EX Series, E20, and Jabber Video (formerly Movl)
- Video call to any WebEx Telepresence subscriber as well as any standards-based endpoint (SIP, H.323)
- Integrated firewall traversal technology for a smooth setup experience: No special network configuration or on-premises equipment required
- Unlimited video calling and data sharing.
- Up to 1080p video and optional multiparty video calling
- Ability to include anyone with a webcam with Cisco Jabber Video
- Business-class 24-hour support by Cisco



Cisco WebEx TelePresence has been released with limited availability; please contact your Cisco Account Manager to find out if it is available in your country.

For More Information

<http://www.cisco.com/en/US/products/ps12433/index.html>

Peripherals

Cisco TelePresence Touch

Experience the innovative unified user interface that enables you to access Cisco TelePresence meetings intuitively. Make and manage video calls, share content, and access advanced features—all with the simple touch of a finger.

The interface comes in three models, optimally designed for Cisco endpoints. The models come in 8-, 12-, or 23-inch sizes.



You will quickly see how easy and effortless the Cisco TelePresence Touch Series is to use:

- Simple setup: Connect to the network with just one cable.
- Short learning curve: Experience clear, context-based interaction.
- Ease of connection: Select from list of video endpoints.
- Transparent collaboration: Select the device or content you want to share.
- Consistent experience: The user interface is standard, no matter what model you are using.

Selected Part Numbers and Ordering Information

For a full list of current part numbers, view the Touch data sheet:

http://www.cisco.com/en/US/prod/collateral/ps7060/ps11307/ps11336/data_sheet_c78-646041.html

For More Information

<http://www.cisco.com/en/US/products/ps11336/index.html>

Industry Solutions: Healthcare

Cisco TelePresence System Clinical Presence

Designed by medical professionals, the Cisco TelePresence System Clinical Presence is a telemedicine solution that is ideal for a variety of clinical video applications. Clinical Presence connects clinicians with patients, staff, and each other using powerful telepresence technology integrated with features and functions optimized for a healthcare setting.

Clinical Presence helps maximize quality, mobility, and ease of use for a telemedicine environment. You can customize it to your requirements with a wide variety of choices:

- AC or rechargeable battery power
- Single or dual-monitor configuration
- Additional options including:
 - 802.11B/G Wireless Ethernet
 - Storage modules for medical devices, laptops, PCs, keyboards, and light sources
 - Adjustable scope holders
 - Ancillary storage pods
 - Disposable splash guard

Clinical Presence, powered by the C40 Codec, features 1080p30 high-definition (HD) video, full-duplex audio, multisite with individual transcoding, and HD collaboration content sharing. The system includes a 24-inch 1080p LCD display and a PrecisionHD optical zoom camera with full pan-tilt-zoom capabilities that can be controlled remotely. The Clinical Presence is fully certified and compliant to IEC 60601-1-2 standards for equipment used in a medical setting.

Several features enable you to adapt the system to any clinical situation:

- Precise electronic height adjustment to quickly and easily adjust the platform, monitor, and camera to the desired height
- Rotating camera and display assembly to accommodate viewing at different angles and enhance ease of transport
- Dedicated high-output audio amplifier and speakers for environments where there is a high level of ambient noise
- Four hospital-grade AC outlets to power peripheral devices
- Multiple audio, video, and high-resolution inputs and outputs

Clinical Presence is easily controlled with an intuitive, tactile membrane user interface on the front panel or with the standard remote control.

For more information

visit <http://www.cisco.com/en/US/products/ps11417/index.html>.



Cisco TelePresence System Intern MXP

The Cisco TelePresence System Intern MXP provides interactive video communication that you can move to wherever it is needed. It is ideal for applications such as healthcare, emergency response, homeland security, and manufacturing.

The Intern MXP comes with a 24-inch LCD display and is powered by the Cisco TelePresence Edge MXP communication system and Cisco TelePresence system.

The compact IV-stand unit includes a shelf and a basket that make it easy to connect a laptop, medical imaging equipment, and other peripherals.

With the Intern MXP, you can:

- Join up to four video and three audio sites with embedded multisite functions
- Share records or images live through a one-step PC plug-in (PC Presenter) or LAN connection (PC Soft Presenter)
- View records or images and an offsite expert or audience simultaneously with H.239 Dual Stream
- Take advantage of Expressway technology for firewall traversal

Performance features include:

- Choice of network: Up to 51-kbps ISDN or external network (H.320) or 2-Mbps IP (H.323 or Session Initiation Protocol [SIP])
- Superior video quality incorporating the H.264 standard



- Standards-based embedded encryption to meet Health Insurance Portability and Accountability Act of 1996 (HIPAA) compliance for patient confidentiality regardless of network type
- Tested and listed to UL 2601-1 and CSA 601.1 regulatory standards for approval in patient contact environments
- PC card slot for wireless LAN connection

For more information

visit <http://www.cisco.com/en/US/products/ps11414/index.html>.

Industry Solutions: Education

Cisco TelePresence Synch

Expand educational opportunities and maximize your investment in telepresence and whiteboard technologies with Cisco TelePresence Synch.

This revolutionary technology transparently integrates supported interactive whiteboards with speakers and Cisco TelePresence C Series or MXP endpoints. Synch effectively converts a standard interactive whiteboard into a powerful multifunction collaboration tool that brings together live and remote experts and classrooms.

Interactive whiteboards increase learner participation and allow students to interact with dynamic content. But in the past, adding a video call was difficult and cumbersome. Now with Cisco TelePresence Synch, you can add a video call with no loss of functions on the whiteboard. And you can easily bring in an expert, a remote location, or even another class to the learning experience through telepresence.

Educators and presenters can integrate live telepresence sessions with any collaboration application such as WebEx meeting applications, running on the presenter's or teacher's computer.

With a touch of a finger, Cisco TelePresence Synch automatically calibrates changes in the application windows running on a computer with the whiteboard and the telepresence content. As a result, the entire whiteboard can be used as an integrated display as well as a new way to collaborate.

For more information,

visit <http://www.cisco.com/en/US/products/ps11653/index.html>



Cisco TelePresence System Educator MXP

If your room includes monitors, carts, and peripherals, the Cisco TelePresence System Educator MXP is an ideal solution that can integrate with your existing configuration.

Instructors can use the intuitive 12-inch color video touch panel to control video calls and multiple peripherals such as cameras, PCs, and DVDs. The Cisco TelePresence Educator MXP includes:

- Applications Module MXP that includes the Cisco TelePresence System Codec 6000 MXP, NPP software, and a controller
- High bandwidth: Up to 4 Mbps on IP, 4 Mbps on Session Initiation Protocol (SIP), 2 Mbps on H.320, and 6 Mbps total with Cisco TelePresence MultiSite functions
- An industry-leading wide-angle camera with extensive zoom, pan, and tilt

Multiple options are available, including instructor podiums, locator mats, and a variety of microphone products. Cisco TelePresence System Educator MXP features follow:

- Simultaneous views of presentations and presenters with optional DuoVideo or H.239 on single or dual monitors
- Cisco TelePresence Expressway technology
- Superior video quality incorporating the H.264 standard
- True CD-quality audio
- Standards-based embedded encryption (Advanced Encryption Standard [AES] and Digital Encryption Standard [DES])
- Automatic down-speeding and Intelligent Pack Loss Recovery (IPLR)

For more information

visit <http://www.cisco.com/en/US/products/ps11416/index.html>.



Cisco TelePresence Services

Services from Cisco and our partners enable you to realize the full business value of your Cisco TelePresence technology investments by harnessing the network as a powerful business platform—a platform enabled by smart, personalized services that solve your toughest business challenges.

For more information about Cisco TelePresence Services,

visit <http://www.cisco.com/go/services/telepresence>.

Infrastructure and Other Products

Cisco Unified Application Environment

Cisco Unified Application Environment offers an increasingly rich portfolio of ready-to-use packaged applications that deliver immediate out-of-the-box value and custom development tools that allow clients to transform their business by integrating unified communications into other business applications as well as building their own custom applications.

Main Features and Benefits

- This rich portfolio of packaged applications is available today, with more being added each month. These applications span a wide variety of markets; some are designed for specific industries such as retail and healthcare, whereas others are applicable to all industries.
- These automated test tools perform functional, load, system, and regression tests to reduce test cycles and increase the success rate of project completion.
- This set of application lifecycle management tools standardizes, centralizes, and automates management of all unified communications applications.
- A standard applications container facilitates development, quality assurance, and operations to collaboratively manage scalability, performance, and reliability of all unified communications applications.
- The solution summarizes implementation differences across products and versions to minimize interoperability challenges, so customers can upgrade their unified communications infrastructure without breaking their applications.
- Increased support for integrated development environments, including Eclipse and Microsoft Visual Studio, allows web and enterprise developers who lack telephony skills to easily and rapidly develop feature-rich applications.

Specifications

Components	Cisco Unified Application Environment
Cisco Unified Application Designer	The Cisco Unified Application Designer is a visual integrated development environment (IDE). Without learning the complex details of telephony protocols, developers with little or no Unified Communications development expertise can use the Cisco Unified Application Designer to easily and rapidly develop rich applications that converge voice and video with enterprise applications and data.
Cisco Unified Application Server	The Cisco Unified Application Server is an application server for converged voice, video and data applications. It abstracts the complexity of telephony protocols, protects the reliability of the IP call processing system from the applications, and provides a standard way to manage applications.
Cisco Unified Media Engine	The Cisco Unified Media Engine is a software-only media server. It provides ready-to-use and sophisticated media processing capabilities for all applications built using the Cisco Unified Application Designer.

Selected Part Number and Ordering Information

Configuration and ordering of Cisco Unified Application Environment products can be complicated because of the arbitrary and highly variable nature of the application developed. Please consult your Cisco account team or channel partner if you have any configuration, ordering, and pricing questions.

For More Information

http://www.cisco.com/en/US/netsol/ns738/networking_solutions_package.html

Cisco UC Integration for Microsoft Office Communicator

Instantly access enhanced Cisco Unified Communications directly from Microsoft Lync and Microsoft Office Communicator on your PC. With this easy-to-deploy desktop integration, extend proven Cisco Unified Communications Services to your workspace and benefit from the investment protection and reduced complexity delivered by a single call-control solution.

The solution extends the presence and instant messaging (IM) capabilities of Microsoft Lync and Microsoft Office Communicator (MOC) by providing access to a broad set of Cisco Unified Communications capabilities, including soft-phone standards-based video, unified messaging, audio, video and web conferencing, desk-phone control, and phone presence.

Ideal for Companies That Need these Features

Cisco UC Integration for Microsoft Office Communicator

- Existing or prospective Cisco Unified Communications Manager customers with existing investments in Microsoft Office Communications Server (OCS) seeking to enable real-time unified communications experiences from existing Microsoft Office Communicator presence and instant messaging (IM) client

Main Features and Benefits

- Integrated Cisco IP Softphone: Click to call directly from your desktop to have a business-class communication experience with an embedded Cisco IP Softphone.
- Cisco IP phone quality and rich mid-call control: Have a business-class desktop communications experience with the quality and reliability that you experience with your Cisco IP desk phone in the office.
- Desk-phone control: Simply click to make or answer business calls through your desk phone using its calling features and resources to have a rich communications experience.
- Phone presence: This feature adds telephony presence to your contact list—providing additional information about when the contact might be available.
- One-click voice messages and communications history access: With a mouse click, access your corporate voice messages and communications history and rapidly respond to voice messages or missed calls.
- Impromptu multiparty conferencing: If you need to initiate an impromptu collaboration session with multiple contacts on your contact list, you can also initiate multiparty conference calls from your desktop and quickly add additional participants.

For More Information

Cisco UC Integration for Microsoft Lync: <http://www.cisco.com/en/US/products/ps11390/index.html>

Cisco UC Integration for Microsoft Office Communicator: <http://www.cisco.com/en/US/products/ps10317/index.html>

Cisco Unified Communications 500 Series for Small Business

The Cisco Unified Communications 500 Series for Small Business is an affordable unified communications appliance that provides voice, data, voicemail, Automated-Attendant, video, security, and wireless capabilities while integrating with existing desktop applications such as calendar, email, and customer-relationship-management (CRM) programs. This easy-to-manage platform supports up to 104 IP phones and voice mailboxes and provides flexible deployment options based on your needs, with a wide array of IP phones, public-switched-telephone-network (PSTN) interfaces, and Internet connectivity options.

Main Features and Benefits

- Robust older telephony features, including directory, paging, intercom, call coverage, call park, music on hold (MoH), night bell, hunt groups, direct inward dialing (DID), and ad hoc and meet-me conferencing
- Support for Cisco Smart Business Productivity Applications (Cisco TimeCardView, Cisco WebEx PhoneConnect, and Single Number Reach)
- Support for multisite deployments
- System monitoring through third-party partner monitoring software and services
- Support for the Cisco Unified IP Phone 7900 Series and Cisco SPA 500 Series IP Phones
- Cisco MonitorView, enabling employees to speak to and see someone in an unattended lobby from a Cisco SPA525G phone

Specifications

Cisco Unified Communications 520						
Part Number	IP Phones	IP Phones Upgradable to	FXO/FXS	T1/E1 Support	BRI Support	Integrated Wireless
UC520-8U-4FXO-K9	8	16	4/4	No	No	No
UC520W-8U-4FXO-K9	8	16	4/4	No	No	Yes
UC520-8U-2BRI-K9	8	16	0/4	No	2	No
UC520W-8U-2BRI-K9	8	16	0/4	No	2	Yes
UC520-16U-4FXO-K9	16	24	4/4	No	No	No
UC520W-16U-4FXO-K9	16	24	4/4	No	No	Yes
UC520-16U-2BRI-K9	16	24	0/4	No	2	No
UC520W-16U-2BRI-K9	16	24	0/4	No	2	Yes
UC520-24U-8FXO-K9	24	32/48	8/4	No	No	No
UC520-24U-4BRI-K9	24	32/48	0/4	No	4	No
UC520-32U-8FXO-K9	32	48	8/4	No	No	No
UC520-32U-4BRI-K9	32	48	0/4	No	4	No
UC520-48U-8FXO-K9	48	64	12/4	No	No	No
UC520-48U-6BRI-K9	48	64	0/4	No	6	No
UC520-48U-T/E/F-K9	48	64	4/4	1	No	No
UC520-48U-T/E/B-K9	48	64	0/4	1	2	No
Cisco Unified Communications 540 and 560						
UC560-FXO-K9	16	104	4/4	No	No	No
UC560-BRI-K9	16	104	0/4	No	2	No
UC560-T1E1-K9	16	104	4/4	1	No	No
UC540W-FXO-K9	8	32	4/4	No	No	Yes
UC540W-BRI-K9	8	32	0/4	No	2	Yes

Selected Part Numbers and Ordering Information

UC520-8U-FXO/BRI or UC520W-8U-FXO/BRI	Unified Communications (UC) 500 Series Model 520 with 8 User Licenses for UC and integrated messaging, 4 Foreign Exchange Office (FXO) or 2 Basic Rate Interface (BRI) ports, 8 Power over Ethernet (PoE) 10/100 Ethernet ports, 1 VIC slot. Optional integrated wireless.
UC520-16U-FXO/BRI or UC520W-16U-FXO/BRI	UC 500 Series Model 520 with 16 User Licenses for UC and integrated messaging, 4 FXO or 2 BRI ports, 8 PoE 10/100 Ethernet ports, 1 VIC slot. Optional integrated wireless. Up to 16 employees.
UC520-24U-FXO or UC520-24U-BRI	UC 500 Series Model 520 with 24 User Licenses for UC and integrated messaging, 8 FXO or 4 BRI ports, 8 PoE 10/100 Ethernet ports, 1 VIC slot. Up to 64 employees.
UC520-32U-FXO or UC520-32U-BRI	UC 500 Series Model 520 with 32 User Licenses for UC and integrated messaging, 8 FXO or 4 BRI ports, 8 PoE 10/100 Ethernet ports, 1 VIC slot. Up to 64 employees.
UC520-48U-FXO or UC520-48U-BRI	UC 500 Series Model 520 with 32 User Licenses for UC and integrated messaging, 12 FXO or 6 BRI ports, 8 PoE 10/100 Ethernet ports, 1 VIC slot. Up to 64 employees.
UC520-48U-T/E/F or UC520-48U-T/E/B	UC 500 Series Model 520 with 32 User Licenses for UC and integrated messaging, T1, 8 PoE 10/100 ports, 1 VIC slot. Up to 64 employees.
UC540W-FXO-K9	UC 500 Series Model 540 with 8 User Licenses for UC and integrated messaging, 4 FXO ports, 8 PoE 10/100 Ethernet ports, integrated wireless, and 1 voice interface card (VIC) slot. Up to 32 employees.
UC540W-BRI-K9	UC 500 Series Model 540 with 8 User Licenses for UC and integrated messaging, 2 BRI ports, 8 PoE 10/100 Ethernet ports, integrated wireless, and 1 VIC slot. Up to 32 employees.
UC560-FXO-K9	UC 500 Series Model 560 with 4 FXO, 4 Foreign Exchange Service (FXS), and 2 VIC expansion slots. Up to 104 employees.
UC560-BRI-K9	UC 500 Series Model 560 with 2 BRI, 4 FXS, and 2 VIC expansion slots. Up to 104 employees.
UC560-T1E1-K9	UC 500 Series Model 560 system with 4 FXO, 4 FXS, 1 T1/E1 and 1 VIC expansion slot. Up to 104 employees.

For More Information

<http://www.cisco.com/go/uc500>

Cisco Unified Communications on the Cisco Unified Computing System

The Cisco Unified Computing System (Cisco UCS) is our next-generation integrated data center system designed to streamline data center operations. Optimized to run on the Cisco UCS, Cisco Unified Communications can provide new levels of performance, lower cost of ownership, and increased operational productivity.

Cisco Unified Communications on the Cisco UCS is composed of Cisco Unified Communications applications running in a virtualized environment, consisting of VMware software, Cisco UCS servers, and Fibre Channel storage-area-network (SAN) storage.



Primary capabilities include:

- Deployment flexibility for easy adaptation to your business, improving productivity and resource use
- Improved total cost of ownership (TCO), with fewer infrastructure components to purchase and fewer elements to manage
- Scalability so that you can add more software and services without increasing cooling, power, space, or cabling costs
- Management tool consolidation, so administrators can use familiar single tools or sets of tools, reducing operating costs
- Simpler installation and upgrades through service profiles, virtual machines, and centralized management

For More Information

<http://www.cisco.com/go/uconucs>

Cisco Unified Border Element (Cisco UBE)

Cisco Unified Border Element (Cisco UBE) is Cisco's enterprise session border controller (SBC). It provides session control, security, interworking, and demarcation to interconnect unified communications networks and enable end-to-end voice, video, and data. Deploying Cisco UBE is essential for routing voice calls beyond the enterprise through the IP public switched telephone network (PSTN) to customers and partners. With Session Initiation Protocol (SIP) Trunking, Cisco UBE lowers costs, simplifies the network, and extends rich collaborative services.

The functions of Cisco UBE are integrated into Cisco IOS Software on the Cisco Integrated Services Router (ISR) and Aggregation Services Router (ASR) series of routers. This integration provides the following benefits:

- An intelligent path to SIP trunking: Cisco UBE offers flexibility to ensure a migration to SIP trunking that fits business needs. It supports time-division multiplexing (TDM), mixed TDM, and SIP or full SIP environments in a single platform.
- Choice of deployment: Cisco UBE cost-effectively supports centralized, distributed or hybrid SIP trunk architectures, often with minimal to no hardware investment.
- Investment protection: Businesses can repurpose assets as their network needs change.
- Interoperability: Cisco UBE offers proven interoperability with IP private branch exchanges (PBXs) and service providers globally.
- Solutions for smallest to largest locations: All businesses and locations benefit from SIP trunking.
- Enterprise-wide security and intelligence: Integration with SecureLogix voice policy provides the industry's most comprehensive and flexible solution to help lower costs, improve efficiencies, and secure the enterprise.
- More applications with Cisco UC Gateway Services API: Learn how partners use the application programming interface (API) on the Cisco Integrated Services Routers Generation 2 (ISR G2) to bring value-added applications and services to TDM and SIP trunk environments.

Selected Part Numbers and Ordering Information

FL-CUBEE-25(=)	Feature license applicable to any Cisco 2900 or 3900 IOS platforms for 25 simultaneous calls
FL-CUBEE-1000(=)	Feature license applicable to any Cisco IOS 2900 or 3900 platforms for 1000 simultaneous calls
FLASR1-CUBEE-4KP	Feature license applicable to any Cisco IOS ASR 1000 platforms for 4000 simultaneous calls

For More Information

www.cisco.com/go/cube

Cisco TDM Gateways

Cisco TDM Gateways comprise a variety of different voice network modules to enable any-to-any collaboration. Cisco TDM Gateways allow IP voice networks to connect with the public switched telephone network (PSTN) or a private branch exchange (PBX) or to provide toll-bypass services within the enterprise network and even connect analog devices. Cisco TDM Gateway modules are deployed on the Cisco 2900 and 3900 Integrated Services Routers (ISRs). The Cisco TDM Gateway Family includes:

- T1, E1, and G.703 multiflex trunk voice and WAN interface cards (WICs)
- Voice interface cards (VICs)
- Analog and digital voice and fax
- ISDN Basic Rate Interface (BRI)
- Packet Voice and Video Digital Signal Processor Modules 3 (PVDM3s)
- Packet Voice and Video Digital Signal Processor Modules 2 (PVDM2s)

Modular Cisco ISRs support a wide variety of gateway interface cards and services. These services can also coexist with other Cisco ISR routing, switching, security, or unified communications services, such as Cisco Unified Survival Remote Site Telephony (SRST). Benefits of using Cisco TDM Gateways include:

- Broad deployment support: Voice, video, and voice and fax over IP, Frame Relay, and ATM
- Globally deployable: Support for a wide range of codecs and protocols, all critical interfaces
- Enhanced user experience: Reduction of background noise and prevention of acoustic shock
- Proven interoperability with Cisco, third-party PBXs, and service providers
- Flexibility on a single platform: Provision of multiple services on the same platform and use of router features for improved interworking
- Investment protection: Ability to repurpose assets as the voice network evolves

For More Information

www.cisco.com/go/tdmgateways

Cisco Unified SIP Proxy

The Cisco Unified SIP Proxy (USP) is a high-performance, highly available Session Initiation Protocol (SIP) server for centralized routing and SIP signaling normalization. By forwarding requests between call-control domains, the Cisco Unified SIP Proxy provides the means for routing sessions within enterprise and service provider networks. The application is delivered in a service module form factor on Cisco 2900, 3900, and 3900E Series Integrated Services Routers.



Cisco Unified SIP Proxy aggregates SIP elements and enables application of highly developed routing rules.

These rules enable greater control, management, and flexibility of SIP networks. Cisco Unified SIP Proxy simplifies large Cisco Unified Communications Manager, Cisco Unified Communications Manager Express (CME), Cisco Unified Border Element (UBE), and Cisco Unified Customer Voice Portal (CVP) deployments as well as other Cisco and multivendor deployments. Cisco Unified SIP Proxy provides great scalability, and network design can provide high availability.

Applications for Cisco Unified SIP Proxy include:

- Cisco Unified Communications Manager and Cisco Unified Communications Manager Express SIP aggregation
- Cisco Unified Border Element scalability and load balancing
- SIP Trunk for Contact Center
- Cisco Unity PBX IP Media Gateway integration
- Service Provider SIP Interconnect Services

For More Information

www.cisco.com/go/cusp

Cisco VG Series Gateways

The Cisco VG Series Gateways allow small, medium, and large enterprises to migrate at their own pace and budget by using the investments that they have. Cisco VG Series Gateways support existing analog phones and faxes in unified communications deployments.



- The Cisco VG350 Analog Gateway is Cisco's newest gateway and is ideal for high-density deployments of up to 160 analog ports. It offers these benefits:
- Mix-and-match modules for high-density long or short loop lengths solutions
- Increased flexibility with additional slots available for foreign-exchange-station (FXS) and foreign-exchange-office (FXO) ports
- Improved end-user experience using advanced digital-signal-processor (DSP) technology to reduce background noise and prevent acoustic shock
- Skinny Client Control Protocol (SCCP), Media Gateway Control Protocol (MGCP), Session Initiation Protocol (SIP), or H.323 support for analog ports

Cisco VG224 Analog Gateway is a medium-density gateway for deployments of 24 lines or fewer. Benefits include:

- Combines a RJ-21 analog interface with Cisco IOS Software manageability to maximize the functions of analog equipment
- Offers gateway capabilities for analog voicemail systems
- Housed in a compact, 19-inch rack-mount chassis
- Supports SCCP, MGCP, SIP, or H.323 for analog ports

Cisco VG204 and VG202 Analog Gateways are ideal for low-density deployments. The Cisco VG204 supports deployments of 4 lines or less, and the VG202 supports 2 lines or less. Benefits include:

- Combines RJ-11 interfaces with Cisco IOS Software manageability to maximize the functions of analog equipment
- Housed in a compact, fan-less, desktop chassis that also is wall-mountable
- Supports SCCP, MGCP, SIP, or H.323 support for analog ports

All platforms integrate with Cisco Unified Communications Manager, Cisco Business Edition, or Cisco Unified Communications Manager Express. In addition, these analog gateways interoperate with third-party private branch exchanges (PBXs).

Selected Part Numbers and Ordering Information

Low Density	VG202	Cisco VG202 analog phone gateway
Low Density	VG204	Cisco VG204 analog phone gateway
Medium Density	VG224	Cisco VG224 analog phone gateway
High Density	VG350	Cisco VG350 analog phone gateway

For More Information

<http://www.cisco.com/go/vg>

Cisco AS5400XM Universal Gateway

The Cisco AS5400XM Universal Gateway offers exceptional capacity in only 2 rack units (2RU) and provides voice, fax, and data services on any port at any time. High-density (up to one Channelized T3 [CT3] of voice over IP [VoIP] and two CT3 of time-division multiplexing [TDM] switching), low power consumption (as low as 3.5A at 48 VDC per CT3 of G.711), and universal port digital signal processors (DSPs) make the Cisco AS5400XM Universal Gateways ideal for many network deployment architectures, especially co-location environments and mega points of presence (POPs).



Ideal for Companies That Need These Features

Cisco AS5400XM Universal Gateway

- High density in a small footprint (up to 24 Channelized T1 [CT1]/20 CE1 or 1 CT3, any codec type, fax protocol, or modem type)
- High-performance voice, fax, data, and session-border-controller (SBC) services
- Concurrent voice gateway and SBC
- High call rates (up to 20 calls per second)
- Enhanced performance for processor-intensive Tool Command Language (TCL) or VoiceXML scripting for complex voice services
- T.38 Real-Time Fax Relay, T.37 Fax Store and Forward, fax detection, and unified communications

Main Features and Benefits

- Ideally suited for service provider and enterprise environments that require innovative voice, fax, and data services
- Offers a 2-rack unit (2RU), Channelized T3 (CT3)-capable universal gateway with hot-swappable cards and internal redundant power supply
- Supports best-in-class voice, fax, remote access, and session-border-controller (SBC) services
- Provides concurrent gateway and SBC operation
- Includes the following feature cards: 2, 4, or 8 T1/E1/Primary Rate Interface (PRI) feature cards (ISDN calls terminated on the card); CT3 feature card; 60- or 108-channel universal port feature card; and 384-channel voice feature card
- Offers two 10/100/1000 autosensing Gigabit Ethernet LAN ports
- Provides redundant 8-Mbps serial backhaul ports for Frame Relay, High-Level Data Link Control (HDLC), or Point-to-Point Protocol (PPP) WAN backhaul
- Provides one fast console port for local administrative access and one auxiliary port for remote administrative access, as well as redundant LAN and WAN backhaul ports
- European Telecommunications Standards Institute/Network Equipment Building Standards (ETSI/NEBS) Level 3 compliant, and has a redundant AC or DC power supply with dual fans
- Interoperable with the Cisco Signaling System 7 (SS7) Interconnect for Voice Gateway (signaling gateway)

Specifications

Feature	Cisco AS5400XM
Processor	750 MHz RISC processor
Calls Supported	Voice, fax, and remote access services to 648 concurrent calls (to 1CT3/16E1s)
SDRAM	512 MB (default), 1 GB (maximum)
Boot Flash	N/A
System Flash	128 MB (default), 1 GB (maximum)
Feature Card Slots	7
Trunk Feature Cards	4 T1/E1/PRI, 8 T1/E1/PRI, 1 CT3
DSP Feature Cards	60 Universal port card, 108 Universal port card 384 low complexity, 192 medium complexity or 144 high complexity port voice/fax card
Egress Ports	2 10/100/1000 autosensing Gigabit Ethernet LAN ports 2 8-Mbps serial ports; T1/E1 DS1 and CT3 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	Routing Information Protocol (RIP), RIPv2, OSPF, IGRP, EIGRP, BGPv4, IS-IS, AY-EIGRP, IPX-EIGRP, Next Hop Resolution Protocol (NHRP), AppleTalk Update-based Routing Protocol (AURP)
QoS Protocols	IP Precedence, Resource Reservation Protocol (RSVP), Weighted Fair Queuing (WFQ), Weighted Random Early Detection (WRED), Multichassis Multilink PPP (MMP), fragmentation and interleaving, 802.1P
Access Protocols	PPP, Serial Line Internet Protocol (SLIP), TCP Clear, IPXCP, ATCP, ARA, NBFCP, NetBIOS over TCP/IP, NetBEUI over PPP, protocol translation (PPP, SLIP, ARA, X.25, TCP, local-area transport [LAT], Telnet), and Xremote
Bandwidth Optimization	Multilink PPP (MLPPP), TCP/IP header compression, Bandwidth Allocation Control Protocol (BACP)
Voice Compression	G.711, G.723.1 (5.3K and 6.3K), G.726, G.729ab, G. Clear, GSM-FR, AMR-NB, iLBC
DSP Voice Features	Echo cancellation, programmable up to 128 MB; Voice activity detection, silence suppression, comfort noise generation; Fixed and adaptive jitter buffering; Call progress tone detection and generation—Dial tone, busy, ring-back, congestion, and re-order tones with local country variants; DTMF, Multifrequency (MF); Continuity Testing (COT)
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 QoS features (committed access rate [CIR], Random Early Detection [RED], IP Precedence, policy-based routing)
Session Border Control	H.323 to H.323 (including Cisco Unified Communications Manager); H.323 to SIP (including Cisco Unified Communications Manager); SIP to SIP (including Cisco Unified Communications Manager) 1000 concurrent calls with 2000 sessions in flow-through mode

Voice and Fax Signaling Protocols	H.323v2, H.323v3, H.323v4, SIP, MGCP 1.0, TGCP 1.0, Voice XML, Real-Time Streaming Protocol (RTSP), Extended Simple Mail Transfer Protocol (ESMTP); T.38 real-time fax relay; T.37 fax store and forward; Fax out (transmission) Group 3, standards EIA 2388 Class 2 and EIA 592 Class 2.0 at modulations V.33, V17, V.29, V.27ter, V.21; ITU-T T.30, T4; Fax detection; Fax and modem passthrough; Open Settlements Protocol (OSP); Media Recording Control Protocol (MRCP); TTS Servers; ASR Servers
Channelized T1	Robbed-bit signaling; Loop Start; Immediate Start; and Wink Start Protocols
Channelized E1	CAS, PR1, E1 R2, leased line, Frame Relay, G.703, G.704
ISDN Protocols Supported	Sync mode PPP, V110 at rates up to 38400 bps; Network- and user-side ISDN: NFAS with backup D-channel; QSIG, Feature Group B, Feature Group D; DoVBS
Modem Protocols Supported	V.90 or V.92 standard supporting rates of 56000 to 28000 in 1333-bps increments; V.92 Modem on Hold and Quick Connect; V.44 Compression supporting increased throughput by more than 100 percent for Internet browsing; K56Flex at 56000 to 32000 in 2000-bps increments; ITU-T V.34 Annex 12 at 33600 and 31200 bps; ITU-T V.34 at 28800, 26400, 24000, 21600, 19200, 16800, 14400, 12000, 9600, 7200, 4800, or 2400 bps; V.32bis 14400, 12000, 9600, 7200, 4800; V.32 9600, 4800; V.22bis 2400, 1200; V.21 300; Bell 103, 300; V.22 1200; V.23 1200/75; ITU-T V.42 (including Microcom Networking Protocol [MNP] 2-4 and Link Access Procedure for Modems [LAPM] error correction; ITU-T V.42bis (1000 nodes) and MNP 5 data compression; Async-mode PPP
Full Cisco IOS Software Support	IP Plus and Enterprise Plus feature sets including 3DES and Lawful Intercept images
Console and Auxiliary Ports	Asynchronous serial (RJ-45)
Chassis	Dimensions (H x W x D): 3.5 x 1.75 x 18.25 in.; Weight (fully loaded): 35 lbs. maximum (15.8 kg)
Memory Information	<ul style="list-style-type: none"> • Main SDRAM—2 slots, 512 MB default memory, 1 GB max memory • System Flash—1 slot, 128 MB default memory, 1 GB max memory

For More Information

<http://www.cisco.com/en/US/products/hw/iad/index.html>

Cisco ATA 187 Analog Telephone Adaptor

The Cisco ATA 187 Analog Telephone Adaptor brings analog telephones into the networked world. The Cisco ATA 187 addresses enterprise, business local services, small-office environments, and the emerging managed hosted services market by enabling analog devices, such as phones and fax machines, to support voice-over-IP (VoIP) services. It is an ideal solution to complement large IP phone deployments or installation environments where cabling can be difficult (such as in retail and manufacturing facilities) or where customers seek a cost-effective solution to interoperate with Cisco Unified Communications Manager but do not require comprehensive functions.



The Cisco ATA 187 Analog Telephone Adaptor will support line-side Session Initiation Protocol (SIP) based on Cisco Unified Communications Manager 7.10. It does not support Cisco Skinny Client Control Protocol (SCCP).

Ideal for Companies That Need These Features

- Cisco ATA 187 Analog Telephone Adaptor**
- Analog devices such as phones and fax machines enabled to support voice-over-IP (VoIP) services by converting the analog signal into an IP signal
 - Continuing use of existing analog phones with IP network

Main Features and Benefits

- Autoprovisioning with Trivial File Transfer Protocol (TFTP) provisioning servers
- Automatic assignment of IP address, network route IP, and subnet mask through Dynamic Host Configuration Protocol (DHCP)
- Configuration as per Cisco endpoint devices
- Touch-tone telephone keypad configuration with voice prompt
- Administrative password to protect configuration and access
- Remote upgrades through network
- Advanced preprocessing to optimize full-duplex voice compression
- High-performance line-echo cancellation to eliminate noise and echo
- Voice Activity Detection (VAD) and Comfort Noise Generation (CNG), which save bandwidth delivering voice, not silence
- Dynamic network buffering to reduce packet loss

- Session Initiation Protocol (SIP) line side for interoperability with Cisco Unified Communications Manager SIP-based systems (7.1.0 and later)
- T.38 Fax support
- Secure Real-Time Transport Protocol/Transport Layer Security (SRTP/TLS) over SIP for secure media and signaling paths

Specifications

Feature	Cisco ATA 187 Analog Terminal Adapter
Telephone and network interfaces	2 RJ-11 FXS ports 1 Fast Ethernet (FE) LAN port
Dimensions (H x W x D)	1.5 x 6.5 x 5.75 in. (3.8 x 16.5 x 14.6 cm)
Weights	15 oz. (425 gm)
VoIP Protocols	Session Initiation Protocol (SIP) line side based on Unified Communications Manager 7.1x. Cisco Skinny Protocol (SCCP) is not supported.

Selected Part Numbers and Ordering Information

ATA187-I1-A	Cisco ATA 187 Analog Terminal Adaptor
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A power supply cable for the ATA 187 Analog Terminal Adaptor is required and is regionally dependent.

For More Information

<http://www.cisco.com/en/US/products/hw/gatecont/ps514/index.html>

Cisco Unified Workspace Licensing

Cisco offers a variety of software licensing options to meet customer needs, regardless of the business size, the way employees work, and the tools they need. Based on a user-centric model, Cisco Unified Communications 9.0 licensing includes:

- **Cisco Unified Workspace Licensing:** Cisco Unified Workspace Licensing provides the most popular bundles of Cisco Collaboration applications and services in a cost-effective, simple package. It includes soft clients, applications server software, and licensing on a per-user basis. It is available in two primary editions:
- **Standard Edition:** Built on the reliable Cisco Unified Communications Manager platform, this edition includes call control, voice messaging, and unified clients. Instant messaging and presence are also included and may be deployed as a 1-year subscription in the cloud or as a perpetual license on premises.
- **Business Edition:** Refers to Standard Edition on Cisco Unified Communications Manager Business Edition 6000 and its functions are equivalent to those of Cisco Unified Workspace Licensing Standard Edition.
- **Professional Edition:** This edition includes all features in the Standard Edition plus WebEx Meetings, the WebEx Social Enterprise Collaboration platform, and contact center capabilities. You can deploy each WebEx solution as either a 1-year subscription in the cloud or as a perpetual license on premises.
- **Cisco User Connect Licensing:** This per-user–based license for individual Cisco Unified Communications applications includes the applications server software, user licensing, and soft clients. Depending on the type of device and number of devices that you require, User Connect Licensing is available in Essential, Basic, Enhanced, and Enhanced Plus versions.

Ideal for Companies That Need these Features

- | | |
|--|---|
| Cisco Unified Workspace Licensing | <ul style="list-style-type: none"> • Complete, media-rich collaboration experience for all their users across their workspaces • Ability to flexibly deploy collaboration applications as their evolving business needs dictate • Timely access to Cisco's latest software updates for major, minor, and maintenance releases, as well as online tools and communities that help solve problems quickly • Ability to offer workspace applications at a more affordable initial cost of acquisition • A simplified way to purchase and manage licensing, service, and support |
|--|---|

For specifications, please visit:

http://www.cisco.com/en/US/partner/prod/collateral/voicesw/ps6882/ps9156/product_en_solution_overview0900aecd806cc7a4.html

Table of Specifications:

Function	Included in Cisco Unified Workspace Licensing	Business Edition ¹	Entry Edition	Standard Edition	Professional Edition
Video conferencing	Cisco Unified MeetingPlace conferencing	No	No	No	Yes
Web conferencing	Cisco WebEx Meeting Center or Cisco Unified MeetingPlace	No	No	No	Yes
Audio conferencing	Cisco Unified MeetingPlace conferencing	No	No	No	Yes
Mobile phone client	Cisco Unified Mobile Communicator Client	No	No	No	Yes
Contact Center	Cisco Unified Contact Center Express (25 Cisco CUWL = 1 Standard Agent)	No	No	No	Yes
Presence	Cisco Unified Presence Profile	Yes	No	Yes	Yes
Mobility (with Sim ring services)	Cisco Unified Mobility Profile	Yes	Yes	Yes	Yes
Soft client	Cisco Unified Personal Communicator, Cisco Unified IP Communicator, or Cisco Unified Communications Integration for Cisco WebEx Connect or Microsoft Office Communicator or CUCILYNC	Yes	Yes, Cisco IP Communicator only	Yes	Yes
Messaging	Cisco Unity or Cisco Unity Connection	Cisco Unity Connection only	No	Yes	Yes
Phone and call control	Cisco Unified Communications Manager Licensing	Desktop video	Enhanced	Desktop video	Desktop video
Endpoints	Licenses for IP endpoints per user (hard or soft phone)	2 for IP endpoint	1 for hard phone; 1 for CIPC	2 for IP endpoint	10 for IP endpoint
Session Management	Cisco Unified Communications Manager Session Management Edition	No	No	No	Yes
User count	Supported user counts	50–500 (100 minimum for BE 6K)	50+	50+	50+

¹ BE 5000/BE 600

Selected Part Numbers and Ordering Information

Product Number	Description	UCSS Product Number	Product Number
CUWL-PRO-K9	Unified Workspace Licensing PRO, 1 User	UCSS-UWL-PRO	CON-ESW-PRO1 CON-ESW-PRO1K CON-ESW-PRO10K
CUWL-STD-K9	Unified Workspace Licensing STD, 1 User	UCSS-UWL-STD	CON-ESW-UWLST1 CON-ESW-UWLST1K CON-ESW-UWLST10K

For More Information

<http://www.cisco.com/go/uclicensing>

Cisco Unified Communications Software Subscription

Cisco Unified Communications Software Subscription (UCSS) increases business value by providing an economical and timely approach to upgrading to new Cisco technology, thereby optimizing return on investment (ROI) and reducing total cost of ownership (TCO) for Cisco Unified Communications Solutions. You can:

- Stay up-to-date: Get the latest product enhancements whenever there is a Cisco Unified Communications major software release, at no additional charge.
- Stay protected: During the term of your subscription agreement, you have guaranteed access to new software upgrades.
- Stay cost-effective: Whether you purchase a 1-, 2-, 3-, or 5-year subscription plan, Cisco Unified Communications Software Subscription can help you plan for the future while saving you money compared to repeat purchases of new software or individual upgrades.
- Stay productive: The process of planning, buying, deploying, and maintaining your Cisco Unified Communications upgrades is much easier and faster.

When combined with Cisco Unified Communications Essential Operate Service, you have timely access to Cisco's latest software updates for major, minor, and maintenance releases, as well as online tools and communities that help solve problems quickly.

Ideal for Companies That Need these Features

Cisco Unified Communications Software Subscription

- Maximizing return on investment (ROI) and lower total ownership costs
- Keeping pace with technology advancements and enhancing productivity
- Protecting Cisco Unified Communications investment in the future, regardless of what happens
- Predicting and planning IP communications budgets over multiple years or budget only once

Selected Part Numbers and Ordering Information

UCSS High Level SKU	Description
CMBE-WRKSP-BDL	Cisco Unified Workspace Licensing Business Edition
L-UCSS-ATT	Cisco Unified Attendant Console
L-UCSS-CCE	Cisco Unified Contact Center Enterprise
L-UCSS-CCH	Cisco Unified Contact Center Hosted
L-UCSS-CX	Cisco Unified Contact Center Express
L-UCSS-CUCRTX	Cisco Unified Communication Manager
L-UCSS-CUP	Cisco Unified Presence
L-UCSS-CVP	Cisco Unified Customer Voice Portal
L-UCSS-ER	Cisco Unified Emergency Responder
L-UCSS-ICME	Cisco Unified Intelligent Contact Management Enterprise
L-UCSS-ICMH	Cisco Unified Intelligent Contact Management (ICM) Hosted
L-UCSS-IPVR	Cisco Unified IP Interactive Voice Response
L-UCSS-MCP	Cisco Unified IP Media Recording
L-UCSS-MSG	Cisco Unity, Unity Connection
L-UCSS-MTNGPLACE	Cisco Unified MeetingPlace 8.0
L-UCSS-MTPLACE	Cisco Unified Meeting Place (Prior to 8.0)
L-UCSS-SME	Cisco Unified Communications Manager Session Management Edition
L-UCSS-UAE	Cisco Unified Application Environment
L-UCSS-UCM	Cisco Unified Communication Manager
L-UCSS-UCMBE	Cisco Call Manager Business Edition
L-UCSS-UPC	Cisco Unified Personal Communicator
L-UCSS-VOIP	Cisco Mobile Voice

For More Information

<http://www.cisco.com/go/ucss>

Chapter 5: Security

This chapter provides only a subset of Cisco products and part numbers.

Security At-a-Glance		
Product	Features	Page
Secure Network		
Cisco IOS Security	<ul style="list-style-type: none"> • Delivers firewall, intrusion prevention, VPN, and content filtering • Promotes integrating new network security features on existing routers • Maximizes network security without adding hardware • Decreases ongoing support and manageability costs 	5-4
Cisco ASA 5500 Series Adaptive Security Appliances	<ul style="list-style-type: none"> • Combines firewall, VPN, and optional content security and intrusion prevention • Provides threat defense and secure communications services to stop attacks • Reduces deployment and operational costs • Supports small businesses to large enterprises 	5-5
Cisco Intrusion Prevention Systems (IPSs)	<ul style="list-style-type: none"> • Identifies and stops malicious traffic, worms, viruses, and application abuse • Delivers intelligent threat detection and protection • Identifies and blocks Internet-based attackers using SES reputation filtering and global correlation inspection • Promotes business continuity and helps meet compliance needs 	5-12
Cisco Catalyst 6500 Series ASA Services Module *NEW PRODUCT*	<ul style="list-style-type: none"> • Provides high-speed, integrated firewall module for Cisco Catalyst 6500 Switches • Supports 20 Gbps of maximum firewall throughput • Supports 16 Gbps of maximum firewall throughput (multiprotocol) • Supports 300,000 connections per second • Supports 10 million concurrent connections • Supports 250 security contexts • Supports 1,000 VLANs 	5-14
Secure Access		
Cisco TrustSec technology	Secures your networks and services with context-based access control for users and devices; provides organizations with the ability to enforce compliance, strengthen security, increase operational efficiency, and establish a consistent global access policy while embracing the changing business environment	5-15
Cisco NAC Appliance (Clean Access)	<ul style="list-style-type: none"> • Enforces network security policies by allowing access only to trusted devices • Blocks access by noncompliant devices and limits damage from emerging threats and risks • Protects existing investments through third-party management application compatibility • Reduces virus, worm, and unwanted access threats by integrating with other Cisco products 	5-16
Cisco Identity Services Engine (ISE) *NEW PRODUCT*	<ul style="list-style-type: none"> • Applies policy-based access control • Supports greater flexibility to use devices and applications of choice • Provides a single IT interface for policy creation and enforcement • Allows you to deploy in active standby mode to help ensure high availability 	5-18
Cisco Secure Access Control System (ACS)	<ul style="list-style-type: none"> • Controls network access based on dynamic conditions and attributes • Meets evolving access requirements with rule-based policies • Increases compliance with integrated monitoring, reporting, and troubleshooting capabilities • Takes advantage of built-in integration capabilities and distributed deployment 	5-19
Secure Email and Web		
Cisco email security products: Cloud and appliance (formerly technology)	<ul style="list-style-type: none"> • Fights spam, viruses, and blended threats for organizations of all sizes • Enforces compliance and protects reputation and brand assets • Reduces downtime and simplifies administration of corporate mail systems • Deployed by more than 50 percent of the Fortune 1000 and 8 of the 10 largest Internet service providers (ISPs) 	5-22
Cisco Web Security Appliances	<ul style="list-style-type: none"> • Integrates web-usage controls, data security, reputation, and malware filtering • Applies Cisco Security Intelligence Operations and global threat technology • Combats sophisticated web-based threats with layered security technology • Supports built-in management for visibility of threat-related activity 	5-23
Cisco M-Series Content Security Management Appliance	<ul style="list-style-type: none"> • Complements all of the Cisco Email and Web Security appliances • Provides one location for you to monitor all corporate policy settings and audit information 	5-26

Cisco Cloud Web Security	<ul style="list-style-type: none"> Analyzes web requests for malicious, inappropriate, or acceptable content Offers granular control over open and encrypted web content Extends real-time protection and policy enforcement to remote employees Blocks unwanted and malicious email messages, while protecting confidential data 	5-28
Cisco Cloud Web Security: Web filtering	Offers granular control over all web content, including Secure Sockets Layer (SSL)-encrypted communications, using multiple techniques including real-time dynamic web content classification, an industry-leading URL filtering database, file-type filters, and early warning filtering and real-time scanning of search results with SearchAhead	5-28
Secure Mobility		
Cisco AnyConnect Secure Mobility Solution	<ul style="list-style-type: none"> Provides an intelligent, quick, optimal user experience and reliable connectivity experience Gives users a choice of how, when, and where they access their information Provides remote-access connectivity that is comprehensive and preemptive Enforces context-aware policy, and protection from malware Provides secure access to enterprise resources from a Windows, Mac, Linux, iPhone or iPad, or Android device to address bring-your-own-device (BYOD) needs 	5-29
Cisco Adaptive Wireless IPS Software	<ul style="list-style-type: none"> Provides automated wireless vulnerability and performance monitoring Maintains a constant awareness of the RF environment Automatically monitors and identifies unauthorized access and RF attacks Collaborates with Cisco network security products to create a layered security approach 	5-30
VPN Services for Cisco ASA 5500 Series	<ul style="list-style-type: none"> Provides remote access for up to 10,000 Secure Sockets Layer (SSL) (both Transport Layer Security [TLS] and Datagram TLS [DTLS]) or IP Security (IPsec) connections Supports functions unavailable to a clientless, browser-based VPN connection Connects users to IPv6 resources over IPv4 network tunnels Facilitates creating user profiles and defining names and addresses of host 	5-30
Cisco 3300 Series Mobility Engine	<ul style="list-style-type: none"> Delivers mobility services for wireless networks Scalable and centralized Offers open application programming interface (API) for easy integration with enterprise and mobile applications Supports context-aware security and wireless intrusion prevention system (IPS) 	5-31
Cisco Virtual Office	<ul style="list-style-type: none"> Extends highly secure and manageable network services to remote employees Cost-effectively scales through standard or express versions Includes Cisco and approved partner services, remote site aggregation, and headend systems Delivers full IP phone, wireless, data, and video services 	5-32
Security Management		
Cisco Security Manager	<ul style="list-style-type: none"> With integrated end-to-end tools, enables consistent policy enforcement, allows rapid troubleshooting of security events, and provides summarized reports for Cisco ASA 5500 Series Adaptive Security Appliances, Cisco IPS 4200 Series Sensor Appliances, Cisco Secure Routers, and the Cisco AnyConnect Secure Mobility Client Allows deployment of centralized and automatic software image updates for all ASAs throughout the network, helping ensure consistency and greatly reducing the time and administrative overhead required for deployment upgrades Supports access control and approval framework for proposing and integrating changes Through policy and object management, enables reuse of security rules and objects, and enhances the ability to monitor security threats from throughout the deployment, minimizing the potential for errors and maximizing efficiency Through troubleshooting and health and performance monitoring, allows configuration of alerts to predefined thresholds, allows event management, and enables administrators to proactively monitor the security environment, leading to operational efficiency, visibility, and lower time to resolution 	5-33
Physical Security		
Cisco Video Surveillance Manager	<ul style="list-style-type: none"> Supports the transmission, monitoring, recording, and management of surveillance video Enables network and security teams to collaborate effectively in a highly scalable environment; this secure, policy-based system helps ensure teams maximize their productivity across thousands of cameras 	5-34
Virtualized Physical Security Applications for Cisco Unified Computing Systems	<ul style="list-style-type: none"> Offers Cisco Video Surveillance Manager, Cisco IP Interoperability and Collaboration System (IPICS), Cisco Physical Security Operations Manager, and Cisco Physical Access Manager for deployment with the industry award-winning Cisco Unified Computing System platforms Application consolidation allows for solution components to be gathered into shared compute and storage 	5-34

Cisco Physical Access Gateway	<ul style="list-style-type: none"> • Provides primary means for the Cisco Physical Access Control solution to connect door hardware, such as locks and readers, to your IP network • Provides one gateway to control up to two doors and can scale to thousands of doors at a fixed cost per door 	5-35
Cisco Physical Access Manager	<ul style="list-style-type: none"> • Provides management application for the Cisco Physical Access Control solution • With its easy-to-use interface, lets you configure Cisco Physical Access Gateways and modules, monitor activity, enroll users, and integrate with IT applications and data stores 	5-35
Cisco Video Surveillance 2600 Series IP Cameras—Standard Definition	<ul style="list-style-type: none"> • Provides feature-rich, professional digital cameras designed for superior performance in a wide variety of environments • Employs powerful digital imaging technology, allowing it to capture high-quality images in a wide variety of lighting conditions • Reduces network traffic and storage requirements with H.264 compression while providing superior image quality 	5-36
Cisco Video Surveillance 4000 Series IP Cameras—High Definition	<ul style="list-style-type: none"> • Provides true high-definition (HD) video surveillance IP digital cameras designed for superior performance in a wide variety of video surveillance applications • Provides efficient network usage with the highest-quality video • Supports medianet and video analytics • With open, standards-based design, provides an ideal platform for integration and operation as independent devices or as part of a Cisco Video Surveillance Network 	5-36
Cisco Video Surveillance 5000 Series HD IP Dome Cameras	<ul style="list-style-type: none"> • Offers 2.1-megapixel indoor fixed-dome cameras designed with industry-leading image quality and high processing power • Designed to install quickly and easily; all of the post-back-box installation and setup can be done with one hand • Supports MJPEG and H.264 compression 	5-37
Cisco Video Surveillance 6000 Series IP Cameras	<ul style="list-style-type: none"> • Offers high-definition 2.1-megapixel cameras that produce video streams in full 1080p resolution • Provides simplified installation and maintenance through medianet • Supports MJPEG and H.264 compression 	5-38
Cisco Video Surveillance 2900 Series PTZ IP Dome Cameras	<ul style="list-style-type: none"> • Offers easy-to-deploy, multifeature IP standard-definition pan-tilt-zoom (PTZ) cameras • Includes indoor and outdoor models, both supporting day and night operation • Supports two simultaneous video streams, which can be compressed in MJPEG, MPEG-4, and H.264 formats across several resolution configurations 	5-38
Cisco Video Surveillance Encoders *NEW PRODUCT*	<ul style="list-style-type: none"> • Offers 4- and 8-port standalone encoders that you can use to convert analog video sources into digit formats • Supports H.264, MPEG-4, and MJPEG compression options 	5-39
Cisco Physical Security Operations Manager	<ul style="list-style-type: none"> • Unifies video surveillance, access control, and incident response with a command-and-control console • Provides complete view of facilities, sensors, and alarms in a map-enabled GUI • Offers comprehensive management system with powerful workflow and business logic engine 	5-39
Cisco Physical Security Multiservices Platform	<ul style="list-style-type: none"> • Offers innovative choices for deploying and managing physical security services, including video surveillance, access control, and flexible incident response communications • Offers compact, 1-rack-unit (1RU) or 2RU server that includes a wide array of features in a single, easy-to-use, and easy-to-deploy component 	5-40
Cisco IPICS Server Software	<ul style="list-style-type: none"> • Serves as the conductor of the Cisco Interoperability and Collaboration Systems (IPICS) • Creates virtual talk groups (VTGs) to facilitate push-to-talk (PTT) communications among users of multiple types and technologies of Land Mobile Radios (LMRs) with users of PCs, landline phones, cellular, smartphones, and Cisco Unified IP Phones • Delivers critical communications interoperability between the boundaries of traditional systems 	5-41
Cisco IPICS Dispatch Console	<ul style="list-style-type: none"> • Offers end-to-end radio dispatching solution designed for mission-critical radio communications; it is the vital link between dispatchers and field personnel, helping to coordinate field response and ensure personnel safety • Designed and built to take advantage of the newest IP communications technologies, making it easier to dispatch responders and provide them with information that improves their situational awareness • Running on a standard PC platform, extends existing PTT radio channels so that users with a variety of communication devices can participate 	5-41
Cisco IPICS Mobile Client	<ul style="list-style-type: none"> • Allows responders to interact with other incident participants (smartphone application) • In conjunction with the Cisco IPICS Dispatch Console, provides an on-demand solution for physical security and emergency first responders who are mobile, enabling them to begin reviewing incident information and addressing an incident even while on the way to the scene 	5-42

Cisco Services Portfolio for Physical Safety and Security Products	<ul style="list-style-type: none"> • Provides a comprehensive suite of services designed specifically for Physical Safety and Security (PSS) products based on the Cisco Services Lifecycle framework to help ensure customer success with the Cisco Physical Safety and Security products and solutions • Offers services either directly from Cisco or through Authorized Cisco Advanced Technology Program (ATP) Partners • Offers new services across the Services lifecycle phases of plan, build, and manage 	5-42
Services		
<p>Cisco Security Services:</p> <p>These services help you plan, build, and manage secure networks and context-aware solutions that enable consistent security enforcement across the extended organization and greater alignment of security policies with business needs. Using leading practices, services delivered by Cisco and our partners can help you more quickly and cost-effectively deploy an effective yet flexible security solution. Operational and remote management services help maintain network security, and optimization services help you identify and address evolving needs.</p>	5-44	
For More Information		
Product Ordering		
To place an order, visit: http://www.cisco.com/en/US/ordering/index.shtml .		
Cisco Services		
Please visit www.cisco.com/go/services/security for further information.		
End-of-Life and End-of-Sale Information		
Please visit the end-of-life and end-of-sale website for a complete and up-to-date listing of products that are no longer being sold or supported, what replacement products are available, and information about product support. http://www.cisco.com/en/US/products/prod_end_of_life.html		
Note: This chapter provides only a subset of Cisco products and part numbers. For the most up-to-date and comprehensive information, refer to the Cisco website at http://www.cisco.com , refer to the Cisco ordering website at http://www.cisco.com/en/US/ordering/index.shtml , or reference the URL listed in the "For More Information" section of each product.		

Secure Network

Cisco IOS Security

Cisco IOS Software routers ship with the industry's most comprehensive security services, intelligently embedding data, security, voice, and wireless in the platform portfolio for fast, scalable delivery of mission-critical business applications. The Cisco 800 Series Routers and Cisco 1900, 2900, and 3900 Series Integrated Services Routers are ideal for small businesses and enterprise branch offices, delivering a rich, integrated solution for connecting remote offices, mobile users, and partner extranets or service provider-managed customer premises equipment (CPE). The Cisco 7200 Series and 7301 Routers and the Cisco ASR 1000 Series Aggregation Services Routers are ideal for aggregation of WAN security services in campus and enterprise environments.

Cisco IOS Software routers include security services that address customer concerns regarding threat management, VPN and secure communications, integrated network solutions, and security management. With the convergence of features such as advanced firewall, VPN services, intrusion prevention system (IPS), Cisco Network Admission Control (NAC), and content filtering, the Cisco IOS Security routers give customers flexibility to choose a solution that meets their bandwidth, LAN and WAN density, and multiservice requirements while benefiting from advanced security.

Ideal for Companies That Need These Features

- Cisco IOS Software**
- An integrated security solution that includes firewall, VPN, remote access, intrusion-prevention-system (IPS), and content-filtering technologies
 - Low total cost of ownership (TCO) by taking advantage of the existing infrastructure for modular and flexible deployment options
 - An integrated stateful inspection firewall with powerful security and multiprotocol routing all on the same routing platform
 - Scalability options from the Cisco 800 Series up to the Cisco 7200 Series, the Cisco 7301, and the Cisco ASR 1000 Series Aggregation Services Routers
 - Integrated, secure network solutions including secure unified communications and secure mobility
 - Secure extranet and intranet perimeters and Internet connectivity for secure branch and remote offices
 - Ability to meet compliance regulations such as Payment Card Industry (PCI), Health Insurance Portability and Accountability Act (HIPAA), or Sarbanes-Oxley Act of 2002 (SOX) that require firewall or data-encryption services

Main Features and Benefits

- Cisco IOS Security offers an advanced firewall that includes Zone-Based Firewall, which provides secure, stateful, application-based packet inspection to support the latest protocols and advanced applications.
- Cisco IOS Firewall offers a threat-management foundation to deploy secure access policies at all network interfaces.
- Cisco IOS Intrusion Prevention System (IPS) is an inline, deep-packet inspection feature that effectively mitigates a wide range of network attacks. Supporting thousands of attack signatures, it provides the network intelligence to accurately identify, classify, and stop or block malicious traffic in real time.
- Cisco IOS Content Filtering helps your organization protect itself from known and new Internet threats, improve employee productivity, and enforce business policies for regulatory compliance.
- Cisco IOS IP Security (IPsec) and Secure Sockets Layer (SSL) VPN offer services for site-to-site VPN and unified remote-access security. These services include standards-based IPsec VPN, Cisco Group Encrypted Transport VPN, Dynamic Multipoint VPN (DMVPN), Easy VPN, and SSL VPN.
- Dynamic, per-user authentication and authorization for LAN, WAN, and VPN clients are supported.
- Cisco Network Admission Control (NAC) support extends the ability of the network to enforce organizational security policies on devices seeking network access by delivering NAC services on an integrated services module.

Selected Part Numbers and Ordering Information

The Cisco IOS Security router bundles are based on the Cisco 800 Series Routers, Cisco 1900, 2900, and 3900 Series Integrated Services Routers, and Cisco 7200 Series and 7301 routers providing a full range of security features. These bundles include entry security bundles, enhanced security bundles for added performance and scale, and entry voice (Voice Security [VSEC]) and premier voice (H-VSEC) bundles for combined security and unified communications. These bundles are orderable through a single part number at a reduced price compared to ordering each component separately.

Cisco 7600 Series security bundles are based on the Cisco 7600 Series E chassis and the IP Security (IPsec) VPN shared port adapter (SPA).

Cisco ASR 1000 Series Aggregation Services Router security bundles are available for the Cisco ASR 1002, ASR 1004, and ASR 1006 chassis and include the respective Cisco IOS XE feature licenses without the need for additional hardware support in the form of security blades or modules.

For More Information

<http://www.cisco.com/go/routersecurity>

Cisco ASA 5500 Series Adaptive Security Appliances

As a core component of Cisco Borderless Networks, Cisco ASA 5500 Series Adaptive Security Appliances provide:

- Context-aware firewall capabilities
- Proven firewall services
- Comprehensive real-time threat defense
- Effective, always-on, highly secure remote access
- Highly secure communication services

These solutions help reduce deployment and operational costs while delivering comprehensive network security for networks of all sizes.

Deploy Comprehensive, Context-Aware Network Security

Cisco adaptive security appliances integrate industry-leading firewalls, VPN technology, intrusion prevention, content security, and unified communications security in a unified platform. These applications help:

- Stop attacks before they penetrate the network perimeter
- Control network and application activity by using context-aware security parameters
- Protect resources and data, as well as voice, video, and multimedia traffic
- Reduce deployment and operational costs

Context-aware firewalling capabilities combine:

- In-depth local network context from Cisco TrustSec technology
- Real-time global threat intelligence from Cisco Security Intelligence Operations (SIO)
- Unique mobile client insight from Cisco AnyConnect Secure Mobility Client

In addition, these solutions offer an advanced intrusion prevention system (IPS) with Global Correlation, which is twice as effective as a traditional IPS and includes Cisco guaranteed coverage.

The high-performing Cisco ASA 5500 Series Adaptive Security Appliances also provide:

- Fast throughput, high connection setup rates, and capacity for exceptional scalability and investment protection

- Adaptable architecture for rapid and customized security services deployment
- Versatile, always-on remote access integrated with IPS and web security for highly secure mobility and enhanced productivity

Main Features and Benefits

- Market-proven security and VPN capabilities: Full-featured, high-performance firewall, intrusion prevention system (IPS), content security, and Secure Sockets Layer/IP Security (SSL/IPsec) VPN technologies deliver robust application security, user- and application-based access control, worm and virus mitigation, malware protection, content filtering, and remote user-site connectivity.
- Extensible services architecture: Taking advantage of a modular services processing and policy framework offered by the Cisco ASA 5500 Series Adaptive Security Appliances, businesses can apply specific security and network services on a per-traffic flow basis, delivering highly granular policy controls and a wide range of protective services with streamlined traffic processing. The efficiencies of this policy framework, as well as software and hardware extensibility through user-installable security services modules (SSMs) and security services cards (SSCs), advance the evolution of existing services and the deployment of new services without requiring a platform replacement or performance compromise. With these capabilities, the Cisco ASA 5500 Series provides the foundation for highly customizable security policies and exceptional services extensibility to help protect against the fast-evolving threat environment.
- Reduced deployment and operations costs: The multifunction Cisco ASA 5500 Series allows for platform configuration and management standardization, helping to decrease the costs of deployment and ongoing operations.
- Cisco and our partners offer ASA Migration Services that provide detailed planning and assistance throughout the deployment process.

Specifications

Cisco ASA 5500 Series Model/ License	Cisco ASA 5580-20	Cisco ASA 5580-40	Cisco ASA 5585-X with SSP-10	Cisco ASA 5585-X with SSP-20	Cisco ASA 5585-X with SSP-40	Cisco ASA 5585-X with SSP-60
Network Location	Data Center, Campus	Data Center, Campus	Internet Edge, Campus	Data Center, Campus	Data Center, Campus	Data Center, Campus
Performance Summary						
Firewall Throughput¹	5 Gbps (real-world HTTP), 10 Gbps (max)	10 Gbps (real-world HTTP), 20 Gbps (max)	3 Gbps (multi-protocol), 4 Gbps (max)	7 Gbps (multi-protocol), 10 Gbps (max)	12 Gbps (multi-protocol), 20 Gbps (max)	20 Gbps (multi-protocol), 40 Gbps (max)
Maximum Firewall Connections	2,000,000	4,000,000	1,000,000	2,000,000	4,000,000	10,000,000
Maximum Firewall Connections/ Second	90,000	150,000	65,000	140,000	240,000	350,000
Packets per second (64 byte)	2,500,000	4,000,000	1,500,000	3,200,000	6,000,000	10,500,000
Maximum 3DES/AES VPN Throughput²	1 Gbps	1 Gbps	1 Gbps	2 Gbps	3 Gbps	5 Gbps
Maximum Site-to-Site and IPsec IKEv1 Client VPN User Sessions	10,000	10,000	5,000	10,000	10,000	10,000
Maximum AnyConnect or Clientless VPN User Sessions	10,000	10,000	5,000	10,000	10,000	10,000
Bundled SSL VPN User Sessions	2	2	2	2	2	2
Technical Summary						
Memory	8 GB	12 GB	6 GB (SSP-10) 12 GB (SSP-10 and IPS SSP-10)	12 GB (SSP-20) 24 GB (SSP-20 and IPS SSP-20)	12 GB (SSP-40) 36 GB (SSP-40 and IPS SSP-40)	24 GB (SSP-60) 72 GB (SSP-60 and IPS SSP-60)
Minimum System Flash	1 GB	1 GB	2 GB	2 GB	2 GB	2 GB

Integrated Ports	2-10/100/1000 management +4-10/100/1000 (with ASA5580-4 GE-CU) +4 GE SR (with ASA5580-4 GE-FI) +2 10 GE SR (with ASA5580-2X10 GE-SR)	2-10/100/1000 management +4-10/100/1000 (with ASA5580-4 GE-CU) +4 GE SR (with ASA5580-4 GE-FI) +2 10 GE SR (with ASA5580-2X10 GE-SR)	8-10/100/1000, 2-10 GE SFP+ (with ASA5585-Sec-PI license), 2-10/100/1000 management + 8-10/100/1000, 2-10 GE SFP+, 2-10/100/1000 management (with IPS SSP-10)	8-10/100/1000, 2-10 GE SFP+ (with ASA5585-Sec-PI license), 2-10/100/1000 management + 8-10/100/1000, 2-10 GE SFP+, 2-10/100/1000 management (with IPS SSP-20)	6-10/100/1000, 4-10 GE SFP+, 2-10/100/1000 management + 6-10/100/1000, 4-10 GE SFP+, 2-10/100/1000 management (with IPS SSP-40)	6-10/100/1000, 4-10 GE SFP+, 2-10/100/1000 management + 6-10/100/1000, 4-10 GE SFP+, 2-10/100/1000 management (with IPS SSP-60)
Maximum Virtual Interfaces (VLANs)	1024	1024	1024	1024	1024	1024
Expansion Capabilities						
SSP Expansion	Not available	Not available	1- IPS SSP	1- IPS SSP	1-IPS SSP	1-IPS SSP
SSP Supported	Not available	Not available	IPS SSP-10	IPS SSP-20	IPS SSP-40	IPS SSP-60
Intrusion Prevention	Not available	Not available	Yes (with IPS SSP)	Yes (with IPS SSP)	Yes (with IPS SSP)	Yes (with IPS SSP)
Concurrent Threat Mitigation Throughput (Mbps) (Firewall + IPS Services)	Not available	Not available	2 Gbps	3 Gbps	5 Gbps	10 Gbps
Features						
Cisco Adaptive Security Appliance Software Version (latest)	8.4	8.4	8.4	8.4	8.4	8.4
Application-Layer Firewall Services	Yes	Yes	Yes	Yes	Yes	Yes
Layer 2 Transparent Firewalling	Yes	Yes	Yes	Yes	Yes	Yes
Security Contexts (included/ maximum³)	2/250	2/250	2/100	2/250	2/250	2/250
GTP/GPRS Inspection³	Yes	Yes	Yes	Yes	Yes	Yes
High-Availability Support⁴	A/A and A/S	A/A and A/S	A/A and A/S	A/A and A/S	A/A and A/S	A/A and A/S
SSL and IPsec VPN Services	Yes	Yes	Yes	Yes	Yes	Yes
VPN Clustering and Load Balancing	Yes	Yes	Yes	Yes	Yes	Yes
Advanced Endpoint Assessment³	Yes	Yes	Yes	Yes	Yes	Yes

¹ Maximum throughput measured under ideal test condition

² VPN throughput and sessions count depend on the ASA device configuration and VPN traffic patterns. These elements should be taken in to consideration as part of your capacity planning

³ Licensed feature

⁴ A/S = Active/Standby; A/A = Active/Active

Specifications—Mid-Range

Cisco ASA 5500 Series Model/ License	Cisco ASA 5505 Base / Security Plus	Cisco ASA 5510 Base / Security Plus	Cisco ASA 5520	Cisco ASA 5540	Cisco ASA 5550
Network Location	Small Business, Branch Office, Enterprise Teleworker	Internet Edge	Internet Edge	Internet Edge	Internet Edge, Campus
Performance Summary					
Maximum Firewall throughput	150 Mbps	300 Mbps	450 Mbps	650 Mbps	1.2 Gbps
Maximum Firewall Connections	10,000 / 25,000	50,000 / 130,000	280,000	400,000	650,000
Maximum Firewall Connections/ Second	4000	9000	12,000	25,000	36,000
Packets Per Second (64 byte)	85,000	190,000	320,000	500,000	600,000
Maximum 3DES/AES VPN Throughput	100 Mbps	170 Mbps	225 Mbps	325 Mbps	425 Mbps
Maximum Site-to-Site and IPsec IKEv1 Client VPN User Sessions	10 / 25	250	750	5000	5000
Maximum AnyConnect or Clientless VPN User Sessions	25	250	750	2500	5000
Bundled SSL VPN User Session	2	2	2	2	2
Technical Summary					
Memory	512 MB	1 GB	2 GB	2 GB	4 GB
Minimum System Flash	128 MB	256 MB	256 MB	256 MB	256 MB
Integrated Ports	8 port 10/100 switch with 2 Power over Ethernet (PoE) ports	5-10/100 / 2-10/100/1000, 3-10/100 +4-10/100/1000, 4 SFP (with 4GE SSM)	4-10/100/1000, 1-10/100 +4-10/100/1000, 4 SFP (with 4GE SSM)	4-10/100/1000, 1-10/100 +4-10/100/1000, 4 SFP (with 4GE SSM)	8-10/100/1000, 4-SFP, 1-10/100
Maximum Virtual Interfaces (VLANs)	3 (trunking disabled) / 20 (trunking enabled)	50 / 100	150	200	400
Expansion Capabilities					
SSC/SSM/ICs Expansion	1-SSC	1-SSM	1-SSM	1-SSM	Not available
SSC/SSM/ICs Supported	AIP, SSC	CSC SSM, AIP SSM, 4GE SSM	CSC SSM, AIP SSM, 4GE SSM	CSC SSM, AIP SSM, 4GE SSM	Not available
Intrusion Prevention	Yes (with AIP SSC)	Yes (with AIP SSM)	Yes (with AIP SSM)	Yes (with AIP SSM)	Not available
Concurrent Threat Mitigation Throughput (Mbps) (Firewall + IPS Services)	75 (with AIP SSC-5)	150 (with AIP SSM-10) 300 (with AIP SSM-20)	225 (with AIP SSM-10) 375 (with AIP SSM-20) 450 (with AIP SSM-40)	500 (with AIP SSM-20) 650 (with AIP SSM-40)	Not available
Content Security (Anti-virus, Anti-Spyware, File Blocking)	Not available	Yes (with CSC SSM)	Yes (with CSC SSM)	Yes (with CSC SSM)	Not available
Maximum Number of Users for Anti-virus, Anti-spyware, File Blocking (CSC SSM only)	Not available	500 (CSC-SSM-10) 1000 (CSC-SSM-20)	500 (CSC-SSM-10) 1000 (CSC-SSM-20)	500 (CSC-SSM-10) 1000 (CSC-SSM-20)	Not available

Content Security Plus License features	Not available	Anti-spam, anti-phishing, URL filtering	Anti-spam, anti-phishing, URL filtering	Anti-spam, anti-phishing, URL filtering	Not available
Features					
Cisco Adaptive Security Appliance Software Version (latest)	8.4	8.4	8.4	8.4	8.4
Application-layer Firewall Services	Yes	Yes	Yes	Yes	Yes
Layer 2 Transparent Firewalling	Yes	Yes	Yes	Yes	Yes
Security Contexts (included/maximum)	0/0	0/0 / 2/5	2/20	2/50	2/100
GTP/GPRS Inspection	Not available	Not available	Yes	Yes	Yes
High-availability Support	Not supported Stateless A/S	Not supported A/A and A/S	A/A and A/S	A/A and A/S	A/A and A/S
SSL and IPsec VPN Services	Yes	Yes	Yes	Yes	Yes
VPN Clustering and Load Balancing	Not available	Not available / Yes	Yes	Yes	Yes
Advanced Endpoint Assessment	Yes	Yes	Yes	Yes	Yes

Selected Part Numbers and Ordering Information

Cisco ASA 5500 Series Firewall Edition Bundles	
ASA5505-BUN-K9	Cisco ASA 5505 10-User Bundle includes 8-port Fast Ethernet switch, 10 IPsec VPN peers, 2 SSL VPN peers, Triple Data Encryption Standard/Advanced Encryption Standard (3DES/AES) license
ASA5505-K8	Cisco ASA 5505 10-User Bundle includes 8-port Fast Ethernet switch, 10 IPsec VPN peers, 2 SSL VPN peers, Data Encryption Standard (DES) license
ASA5505-50-BUN-K9	Cisco ASA 5505 50-User Bundle includes 8-port Fast Ethernet switch, 10 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license
ASA5505-UL-BUN-K9	Cisco ASA 5505 Unlimited-User Bundle includes 8-port Fast Ethernet switch, 10 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license
ASA5505-SEC-BUN-K9	Cisco ASA 5505 Unlimited-User Security Plus Bundle includes 8-port Fast Ethernet switch, 25 IPsec VPN peers, 2 SSL VPN peers, DMZ, stateless Active/Standby high availability, 3DES/AES license
ASA5510-BUN-K9	Cisco ASA 5510 Firewall Edition includes 3 Fast Ethernet interfaces, 250 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license
ASA5510-K8	Cisco ASA 5510 Firewall Edition includes 3 Fast Ethernet interfaces, 250 IPsec VPN peers, 2 SSL VPN peers, DES license
ASA5510-SEC-BUN-K9	Cisco ASA 5510 Security Plus Firewall Edition includes 2 Gigabit Ethernet + 3 Fast Ethernet interfaces, 250 IPsec VPN peers, 2 SSL VPN peers, Active/Standby high availability, 3DES/AES license
ASA5520-BUN-K9	Cisco ASA 5520 Firewall Edition includes 4 Gigabit Ethernet interfaces + 1 Fast Ethernet interface, 750 IPsec VPN peers, 2 SSL VPN peers, Active/Active and Active/Standby high availability, 3DES/AES license
ASA5520-K8	Cisco ASA 5520 Firewall Edition includes 4 Gigabit Ethernet interfaces + 1 Fast Ethernet interface, 750 IPsec VPN peers, 2 SSL VPN peers, Active/Active and Active/Standby high availability, DES license
ASA5540-BUN-K9	Cisco ASA 5540 Firewall Edition includes 4 Gigabit Ethernet interfaces + 1 Fast Ethernet interface, 5000 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license
ASA5540-K8	Cisco ASA 5540 Firewall Edition includes 4 Gigabit Ethernet interfaces + 1 Fast Ethernet interface, 5000 IPsec VPN peers, 2 SSL VPN peers, DES license
ASA5550-BUN-K9	Cisco ASA 5550 Firewall Edition includes 8 Gigabit Ethernet interfaces + 1 Fast Ethernet interface, 4 Gigabit SFP interfaces, 5000 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license
ASA5550-K8	Cisco ASA 5550 Firewall Edition includes 8 Gigabit Ethernet interfaces + 1 Fast Ethernet interface, 4 Gigabit SFP interfaces, 5000 IPsec VPN peers, 2 SSL VPN peers, DES license
ASA5580-20-BUN-K8	Cisco ASA 5580-20 Firewall Edition includes 2 management interfaces, 5000 IPsec VPN peers, 2 SSL VPN peers, DES license

ASA5580-20-BUN-K9	Cisco ASA 5580-20 Firewall Edition includes 2 management interfaces, 5000 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license
ASA5580-20-4GE-K9	Cisco ASA 5580-20 Firewall Edition 4 Gigabit Ethernet Bundle includes 4 Gigabit Ethernet interfaces, 2 management interfaces, 5000 IPsec VPN peers, 2 SSL VPN peers, Dual AC power, 3DES/AES license
ASA5580-20-8GE-K9	Cisco ASA 5580-20 Firewall Edition 8 Gigabit Ethernet Bundle includes 8 Gigabit Ethernet interfaces, 2 management interfaces, 5000 IPsec VPN peers, 2 SSL VPN peers, Dual AC power, 3DES/AES license
ASA5580-40-BUN-K8	Cisco ASA 5580-40 Firewall Edition includes 2 management interfaces, 5000 IPsec VPN peers, 2 SSL VPN peers, DES license
ASA5580-40-BUN-K9	Cisco ASA 5580-40 Firewall Edition includes 2 management interfaces, 5000 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license
ASA5580-40-8GE-K9	Cisco ASA 5580-40 Firewall Edition 8 Gigabit Ethernet Bundle includes 8 Gigabit Ethernet interfaces, 2 management interfaces, 5000 IPsec VPN peers, 2 SSL VPN peers, Dual AC power, 3DES/AES license
ASA5580-40-10GE-K9	Cisco ASA 5580-40 Firewall Edition 4 10Gigabit Ethernet Bundle includes 4 10Gigabit Ethernet interfaces, 2 management interfaces, 5000 IPsec VPN peers, 2 SSL VPN peers, Dual AC power, 3DES/AES license
Cisco ASA 5500 Series IPS Edition Bundles	
ASA5505-50-AIP5-K9	Cisco ASA 5505 50-User IPS Edition includes AIP-SSC-5, 8-port Fast Ethernet switch, 10 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license
ASA5505-U-AIP5P-K9	Cisco ASA 5505 Unlimited-User IPS Edition includes AIP-SSC-5, DMZ support, high availability, 8-port Fast Ethernet switch, 10 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license
ASA5510-AIP10-K9	Cisco ASA 5510 IPS Edition includes AIP-SSM-10, firewall services, 250 IPsec VPN peers, 2 SSL VPN peers, 5 Fast Ethernet interfaces
ASA5510-AIP10SP-K9	Cisco ASA 5510 IPS Edition includes AIP-SSM-10, firewall services, 250 IPsec VPN peers, 2 SSL VPN peers, 2 Gigabit Ethernet interfaces, 3 Fast Ethernet interfaces, and high availability
ASA5510-AIP20SP-K9	Cisco ASA 5510 IPS Edition includes AIP-SSM-20, firewall services, 250 IPsec VPN peers, 2 SSL VPN peers, 2 Gigabit Ethernet interfaces, 3 Fast Ethernet interfaces, and high availability
ASA5520-AIP10-K9	Cisco ASA 5520 IPS Edition includes AIP-SSM-10, firewall services, 750 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5520-AIP20-K9	Cisco ASA 5520 IPS Edition includes AIP-SSM-20, firewall services, 750 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5520-AIP40-K9	Cisco ASA 5520 IPS Edition includes AIP-SSM-40, firewall services, 750 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5540-AIP20-K9	Cisco ASA 5540 IPS Edition includes AIP-SSM-20, firewall services, 5000 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5540-AIP40-K9	Cisco ASA 5540 IPS Edition includes AIP-SSM-40, firewall services, 5000 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
Cisco ASA 5500 Series Content Security Edition Bundles	
ASA5510-CSC10-K9	Cisco ASA 5510 Content Security Edition includes CSC-SSM-10, 50-user antivirus/anti-spyware with 1-year subscription, firewall services, 250 IPsec VPN peers, 2 SSL VPN peers, 3 Fast Ethernet interfaces
ASA5510-CSC20-K9	Cisco ASA 5510 Content Security Edition includes CSC-SSM-20, 500-user antivirus/anti-spyware with 1-year subscription, firewall services, 250 IPsec VPN peers, 2 SSL VPN peers, 3 Fast Ethernet interfaces
ASA5520-CSC10-K9	Cisco ASA 5520 Content Security Edition includes CSC-SSM-10, 50-user antivirus/anti-spyware with 1-year subscription, firewall services, 750 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5520-CSC20-K9	Cisco ASA 5520 Content Security Edition includes CSC-SSM-20, 500-user antivirus/anti-spyware with 1-year subscription, firewall services, 750 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
Cisco ASA 5500 Series SSL/IPsec VPN Edition Bundles	
ASA5505-SSL10-K9	Cisco ASA 5505 SSL/IPsec VPN Edition includes 10 IPsec VPN peers, 10 SSL VPN peers, 50 firewall users, 8-port Fast Ethernet switch
ASA5505-SSL25-K9	Cisco ASA 5505 SSL/IPsec VPN Edition includes 25 IPsec VPN peers, 25 SSL VPN peers, 50 firewall users, 8-port Fast Ethernet switch
ASA5510-SSL50-K9	Cisco ASA 5510 SSL/IPsec VPN Edition includes 250 IPsec VPN peers, 50 SSL VPN peers, firewall services, 3 Fast Ethernet interfaces
ASA5510-SSL100-K9	Cisco ASA 5510 SSL/IPsec VPN Edition includes 250 IPsec VPN peers, 100 SSL VPN 100 peers, firewall services, 3 Fast Ethernet interfaces
ASA5510-SSL250-K9	Cisco ASA 5510 SSL/IPsec VPN Edition includes 250 IPsec VPN peers, 250 SSL VPN peers, firewall services, 3 Fast Ethernet interfaces
ASA5520-SSL500-K9	Cisco ASA 5520 SSL/IPsec VPN Edition includes 750 IPsec VPN peers, 500 SSL VPN peers, firewall services, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface

ASA5540-SSL1000-K9	Cisco ASA 5540 SSL/IPsec VPN Edition includes 5000 IPsec VPN peers, 1000 SSL VPN peers, firewall services, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5540-SSL2500-K9	Cisco ASA 5540 SSL/IPsec VPN Edition includes 5000 IPsec VPN peers, 2500 SSL VPN peers, firewall services, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5550-SSL2500-K9	Cisco ASA 5550 SSL/IPsec VPN Edition includes 5000 IPsec VPN peers, 2500 SSL VPN peers, firewall services, 8 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5550-SSL5000-K9	Cisco ASA 5550 SSL/IPsec VPN Edition includes 5000 IPsec VPN peers, 5000 SSL VPN peers, firewall services, 8 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5580-20-10K-K9	Cisco ASA 5580 SSL/IPsec VPN Edition includes 10,000 IPsec VPN peers, 10,000 SSL VPN peers, firewall services, 4 Gigabit Ethernet interfaces, 2 management interfaces, Dual AC power, 3DES/AES license
Security Services Modules	
ASA-SSM-AIP-5-K9=	Cisco ASA Advanced Inspection and Prevention Security Services Module 5
ASA-SSM-AIP-10-K9=	Cisco ASA Advanced Inspection and Prevention Security Services Module 10
ASA-SSM-AIP-20-K9=	Cisco ASA Advanced Inspection and Prevention Security Services Module 20
ASA-AIP-40-INC-K9=	Cisco ASA Advanced Inspection and Prevention Security Services Module 40
ASA-SSM-CSC-10-K9=	Cisco ASA Content Security and Control Security Services Module 10 with 50-user antivirus/anti-spyware, 1-year subscription
ASA-SSM-CSC-20-K9=	Cisco ASA Content Security and Control Security Services Module 20 with 500-user antivirus/anti-spyware, 1-year subscription
SSM-4GE=	Cisco ASA 4-Port Gigabit Ethernet Security Services Module
Cisco ASA 5520 Adaptive Security Appliance for Unified Communications Security	
ASA5520-UC-BUN-K9	Cisco ASA 5520 Adaptive Security Appliance UC Security Edition; includes 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface, 1000 UC proxy sessions, 750 IPsec VPN peers, 2 SSL VPN peers, Active/Active and Active/Standby high availability, Triple Data Encryption Standard/Advanced Encryption Standard (3DES/AES) license
ASA5520-UC-BUN-K8	Cisco ASA 5520 Adaptive Security Appliance UC Security Edition; includes 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface, 1000 UC proxy license, 750 IPsec VPN peers, 2 SSL VPN peers, Active/Active and Active/Standby high availability, DES license
Cisco ASA 5540 Adaptive Security Appliance for Unified Communications Security	
ASA5540-UC-BUN-K9	Cisco ASA 5540 Adaptive Security Appliance UC Security Edition; includes 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface, 2000 UC proxy sessions, 5000 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license
ASA5540-UC-BUN-K8	Cisco ASA 5540 Adaptive Security Appliance UC Security Edition includes 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface, 2000 UC proxy sessions, 5000 IPsec VPN peers, 2 SSL VPN peers, DES license
Cisco ASA 5550 Adaptive Security Appliance for Unified Communications Security	
ASA5580-20-UC-K9	Cisco ASA 5580 Adaptive Security Appliance UC Security Edition; includes 4 Gigabit Ethernet interfaces, 5000 UC proxy sessions, 10,000 IPsec VPN peers, 2 SSL VPN peers, 3DES/AES license,
ASA5580-20-UC-K8	Cisco ASA 5580 Adaptive Security Appliance UC Security Edition; includes 4 Gigabit Ethernet interfaces, 5000 UC proxy sessions, 10,000 IPsec VPN peers, 2 SSL VPN peers, DES license
Cisco ASA 5580 Series Interface Expansion Cards	
ASA5580-4GE-CU=	Cisco ASA 5580 4-port 10/100/1000 Ethernet interface card, RJ45
ASA5580-4GE-FI=	Cisco ASA 5580 4-port Gigabit Ethernet fiber interface card, SR, LC
ASA5580-2X10GE-SR=	Cisco ASA 5580 2-port 10 Gigabit Ethernet fiber interface card, SR, LC
Cisco ASA 5500 Series Software	
ASA-SW-UPGRADE=	Cisco ASA Software one-time upgrade for nonsupport customers

For More Information

<http://www.cisco.com/go/asa>

<http://www.cisco.com/go/services/security>

Cisco Intrusion Prevention System



Business networks of all sizes now face increasingly sophisticated attacks that can impede productivity, obstruct access to applications and resources, and cause significant communications disruption. In addition, because of compliance regulations and consumer privacy laws, business priorities now include minimizing legal liability, protecting brand reputation, and safeguarding intellectual property.

A core component of Cisco Secure Borderless Networks, Cisco Intrusion Prevention System (IPS) collaborates with other critical network components for end-to-end networkwide protection. Threat information is shared between Cisco IPS and host-based IPS Cisco Security Agent and Cisco Wireless Security Module. Available as a dedicated appliance, Cisco IPS is also integrated into Cisco firewall, switch, and router platforms for maximum protection and deployment flexibility.

This inline, network-based defense can identify, classify, and stop known and unknown threats, including worms, network viruses, application threats, system intrusion attempts, and application misuse.

Cisco IPS Sensors and Cisco IPS Sensor Software deliver high-performance, intelligent threat detection and protection. Cisco IPS with Global Correlation uses global threat information that has been turned into actionable intelligence, such as reputation scores, and pushed out to all enabled technologies. Reputation filtering and global inspection give Cisco IPS 70 several advantages:

- Twice the effectiveness of signature-only intrusion prevention systems
- More accurate with fewer false positives using reputation
- One hundred times faster than traditional signature-only methods

This technology provides metrics in both multimedia and transactional environments, so organizations can anticipate true IPS performance tailored to their businesses. The sensors can be deployed widely and incrementally on servers and endpoints, as dedicated appliances and as service modules on routers, switches, and firewalls. They collaborate and adapt in real time to emerging threats.

In addition, with Cisco Services for IPS, organizations easily manage their IPS deployment with near-real-time updates to the most recent threats.

Ideal for Companies That Need These Features

- | | |
|--|--|
| Cisco IPS 4200 Series Sensors | • Dedicated hardware appliance platform with performance levels from 300 Mbps to 4 Gbps |
| Cisco Advanced Inspection and Prevention Security Services Module (AIP-SSM) | • IPS security module or card for the Cisco ASA 5500 Series for companies that want to manage IPS with their firewall in one appliance |
| Cisco IPS Advanced Integration Module (AIM) | • IPS AIM for the Cisco 1841, 2800, and 3800 Series Integrated Services Routers with performance level of up to 45 Mbps |
| Cisco IDS Services Module (NME) | • IPS NME for the Cisco 2800 and 3800 Series Integrated Services Routers with performance level of up to 75 Mbps |
| Cisco IDS Services Module 2 (ISDM-2) | • IPS security module for Cisco Catalyst 6500 Series Switches with up to 500-Mbps performance |
| Cisco IOS IPS | • Focused set of IPS capabilities using Cisco IOS Software on the router with varying performance levels |

Main Features and Benefits

- Pervasive network integration: Cisco Intrusion Prevention System (IPS) solutions defeat threats from multiple vectors, including network, server, and desktop endpoints. The solutions extend across Cisco platforms, from purpose-built appliances to services modules integrated into firewalls, routers, and switches. A Cisco IPS solution protects the network from policy violations, vulnerability exploitations, and anomalous activity through detailed inspection of traffic at Layers 2 through 7 across the entire network.
- Collaborative threat prevention: A Cisco IPS solution employs a unique, systemwide security ecosystem that assesses and reacts to threats, delivering exceptional network scalability and resiliency. This ubiquitous alliance includes cross-solution feedback linkages, common policy management, multivendor event correlation, attack-path identification, passive-active fingerprinting, and host-based (Cisco Security Agent) IPS collaboration.
- Proactive posture adaptation: As an organization's network threat posture changes, a Cisco IPS solution evolves and adapts to stay ahead of the security landscape, mitigating threats by both known and unknown attacks. Extensive behavioral analysis, anomaly detection, policy adjustments, and rapid threat-response techniques save time, resources, and most importantly, the organization's assets and productivity.

Note: IPS technology strategically deployed throughout the network provides excellent end-to-end, zero-day protection. A Cisco IPS solution protects an organization's infrastructure and business.

Specifications

Feature	Cisco IPS-4240	Cisco IPS-4255	Cisco IPS-4260	Cisco IPS-4270	Cisco IPS Module (IDSM-2)	Cisco IPS Network Module (AIM)	Cisco IPS Network Module (NM-CIDS)
Performance	250 Mbps	500 Mbps	1 Gbps	2 Gbps	500 Mbps	45 Mbps	45 Mbps
Monitoring Interface	Four 10/100/1000 Base-TX	Four 10/100/1000 Base-TX	Autosensing 10/100/1000 Base-TX	Four 10/100/1000 Base-TX or Four 10-00Base-SX	PCI	Internal 10/100 Mbps Ethernet	Internal 10-100-Mbps Ethernet and external 10-100-Mbps Ethernet
Command and Control Interface	10/100 Base-TX	10/100 Base-TX	10/100 Base-TX	Two onboard 10/100/1000 Base-TX	PCI	10/100 Base-TX (on host ISR)	10/1010/100 Base-TX
Optional Interface			4x 10/100/1000 Base-TX 2x1000SX	<ul style="list-style-type: none"> Four 10/100/1000 Base-TX Two 1000Base-SX (fiber) (up to 16 total monitoring interfaces) 			

Selected Part Numbers and Ordering Information

Cisco IPS 4200 Appliances	
IPS-4240-K9	Cisco IPS 4240 Sensor (chassis, software, SSH, four 10/100/1000BASE-TX interfaces with RJ-45 connector)
IPS4240-DC-K9	Cisco IPS 4240 NEBS-Compliant Sensor with DC power (chassis, software, SSH, four 10/100/1000BASE-TX interfaces with RJ-45 connector)
IPS-4255-K9	Cisco IPS 4255 Sensor (chassis, software, SSH, four 10/100/1000BASE-TX interfaces with RJ-45 connector)
IPS-4260-K9	Cisco IPS 4260 Sensor (chassis, software, SSH, two onboard 10/100/1000BASE-TX interfaces with RJ-45 connector)
IPS-4260-4GE-BP-K9	Cisco IPS 4260 Sensor with an included 4-GE copper NIC with hardware bypass (chassis, software, SSH, two onboard 10/100/1000BASE-TX interfaces with RJ-45 connector, and four 10/100/1000BASE-TX interfaces with built-in bypass)
IPS-4260-2SX-K9	Cisco IPS 4260 Sensor with an included NIC card (chassis, software, SSH, two onboard 10/100/1000BASE-TX interfaces with RJ-45 connector, and two fiber interfaces)
IPS4270-20-K9	Cisco IPS 4270 Sensor (chassis, redundant power, software, SSH, two onboard 10/100/1000BASE-TX interfaces with RJ-45 connector)
IPS4270-20-4GE-K9	Cisco IPS 4270 Sensor (chassis, redundant power, software, SSH, two onboard 10/100/1000BASE-TX interfaces with RJ-45 connector, and four 10/100/1000BASE-TX interfaces)
IPS4270-20-4SX-K9	Cisco IPS 4270 Sensor (chassis, redundant power, software, SSH, two onboard 10/100/1000BASE-TX interfaces with RJ-45 connector, and four fiber interfaces)
IPS-4GE-BP-INT=	Spare 4-port copper interface card with built-in hardware bypass for the Cisco IPS 4260 and 4270
IPS-2SX-INT=	Spare 2-port fiber interface card for the Cisco IPS 4260 and 4270
IPS Modules on ISR	
AIM-IPS-K9	Cisco Intrusion Prevention System Advanced Integrated Module for Cisco 1841, 2800, 3800
NME-IPS-K9	Cisco Intrusion Prevention System Advanced Integrated Module for Cisco 2800, 3800
Security Services Modules	
ASA-SSC-AIP-5-K9=	Cisco ASA Advanced Inspection and Prevention Security Services Card 5
ASA-SSM-AIP-10-K9=	Cisco ASA Advanced Inspection and Prevention Security Services Module 10
ASA-SSM-AIP-20-K9=	Cisco ASA Advanced Inspection and Prevention Security Services Module 20
ASA-AIP-40-INC-K9 =	Cisco ASA Advanced Inspection and Prevention Security Services Module 40
Select Bundles	
ASA5510-AIP10-K9	Cisco ASA 5510 IPS Edition includes AIP-SSM-10, firewall services, 250 IPsec VPN peers, 2 SSL VPN peers, 5 Fast Ethernet interfaces
ASA5520-AIP10-K9	Cisco ASA 5520 IPS Edition includes AIP-SSM-10, firewall services, 750 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface

ASA5520-AIP20-K9	Cisco ASA 5520 IPS Edition includes AIP-SSM-20, firewall services, 750 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5520-AIP40-K9	Cisco ASA 5520 IPS Edition includes AIP-SSM-40, firewall services, 750 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5540-AIP20-K9	Cisco ASA 5540 IPS Edition includes AIP-SSM-20, firewall services, 5000 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
ASA5540-AIP40-K9	Cisco ASA 5540 IPS Edition includes AIP-SSM-40, firewall services, 5000 IPsec VPN peers, 2 SSL VPN peers, 4 Gigabit Ethernet interfaces, 1 Fast Ethernet interface
WS-C6506E-IPSC-K9	Cisco Catalyst 6506-E Switch, Supervisor Engine 32 with 8 x 1 Gigabit Ethernet Small Form-Factor Pluggable (SFP) plus 1 x 10/100/1000 uplink port, 8 copper SFP interfaces, 4 IDSM-2s, and 1 Power-Supply 3000W
WS-C6506E-IPSF-K9	Cisco Catalyst 6506-E Switch, Supervisor Engine 32 with 8 x 1 Gigabit Ethernet SFP plus 1 x 10/100/1000 uplink port, 8 multimode fiber SFP interfaces, 4 IDSM-2s, and 1 Power-Supply 3000W
WS-C6506E-IPS10GK9	Cisco Catalyst 6506-E Switch, Supervisor Engine 32 with 2 x 10 Gigabit Ethernet XENPAK plus 1 x 10/100/1000 uplink port, 2 short-range 10 Gigabit XENPAK interfaces, 4 IDSM-2s, and 1 Power-Supply 3000W

For More Information

<http://www.cisco.com/go/ips>

Cisco Catalyst 6500 Series ASA Services Module

The Cisco Catalyst 6500 Series ASA Services Module is a high-speed, integrated network security module for Cisco Catalyst 6500 Series Switches. Delivering industry-leading firewall data rates, this module provides exceptional scalability to meet the needs of today's dynamic organizations—in a single-blade architecture.



The Cisco Catalyst 6500 Series ASA Services Module provides enhanced security, reliability, and performance. It offers twice the performance and four times the session count of competitive network security modules.

Ideal for Companies That Need These Features

Cisco Catalyst 6500 Series ASA Services Module • Ability to add an integrated firewall module for Cisco Catalyst 6500 Switches

Main Features and Benefits

- 20 Gbps of maximum firewall throughput (maximum)
- 16 Gbps of maximum firewall throughput (multiprotocol)
- 300,000 connections per second
- 10 million concurrent connections
- 250 security contexts
- 1,000 VLANs

Its advanced features can help your organization reduce costs and operational complexity, while allowing you to manage multiple firewalls from the same platform. In addition, you can install up to four Cisco Catalyst 6500 Series ASA Services Module blades in a Cisco Catalyst 6500 Series Switch, providing scalability to 64 Gbps.

The Cisco Catalyst 6500 Series ASA Services Module delivers industry-leading innovations, including the following customer benefits:

- Advanced scalability and performance
- Exceptional security protection at Layer 2 through Layer 7
- Ability to work with other modules in the chassis for comprehensive security delivery

It also delivers superior return on investment (ROI) by taking advantage of the existing infrastructure to deliver new services. You can add full firewall capabilities by sliding a blade into an empty slot in the existing Cisco Catalyst 6500 Series Switch. No additional rack space, cabling, power, or physical interface is required.

Selected Part Numbers and Ordering Information

Hardware	
WS-SVC-ASA-SM1-K9	ASA Services Module for Catalyst 6500-E, 3DES/AES
WS-SVC-ASA-SM1-K9=	ASA Services Module for Catalyst 6500-E, 3DES/AES (Spare)
WS-SVC-ASA-SM1-K8	ASA Services Module for Catalyst 6500-E, DES

WS-SVC-ASA-SM1-K8=	ASA Services Module for Catalyst 6500-E, DES (Spare)
WS-SVC-ASA-SM1-K7	ASA Services Module for Catalyst 6500-E, NPE
WS-SVC-ASA-SM1-K7=	ASA Services Module for Catalyst 6500-E, NPE (Spare)
Security Bundles	
WS-C6506-E-FWM-K9	Cisco Catalyst 6506 Firewall Security System with Enhanced Chassis and Supervisor 720 3B
WS-C6509-E-FWM-K9	Cisco Catalyst 6509 Firewall Security System with Enhanced Chassis and Supervisor 720 3B
WS-C6513-FWM-K9	Cisco Catalyst 6513 Firewall Security System with Supervisor 720 3B
WS-6509EXL-2FWM-K9	Cisco Catalyst 6509 Firewall Security System with Enhanced Chassis, Supervisor 720 3BXL and two Firewall Service Modules
WS-6513XL-2FWM-K9	Cisco Catalyst 6513 Firewall Security System with Supervisor 720 3BXL and two Firewall Service Modules
WS-6506-EXL-FWM-K9	Cisco Catalyst 6506 Firewall Security System with Enhanced Chassis, Supervisor 720 3BXL and one Firewall Service Module
WS-6509-EXL-FWM-K9	Cisco Catalyst 6506 Firewall Security System with Enhanced Chassis, Supervisor 720 3BXL and one Firewall Service Module
WS-C6513-XL-FWM-K9	Cisco Catalyst 6513 Firewall Security System with Enhanced Chassis, Supervisor 720 3BXL and one Firewall Service Module

For More Information

http://www.cisco.com/en/US/prod/collateral/modules/ps2706/ps11621/data_sheet_c78-672507.html

Secure Access

Cisco TrustSec Technology

Secure your networks and services with Cisco TrustSec context-based access control for users and devices. Cisco TrustSec technology allows organizations to enforce compliance, strengthen security, increase operational efficiency, and establish a consistent global access policy while embracing the changing business environment:

- Growth in user demand for mobility and device choices
- Use and deployment of IP-enabled devices
- A complex workforce of employees, partners, and guests
- Convergence of wired and wireless environments
- Increased use of virtual network devices, services, and cloud-based access

Cisco TrustSec software can be deployed as an appliance-based overlay mode where a set of appliances provides the access control on top of an existing network infrastructure, or as a network-integrated 802.1X mode where authentication, authorization, and enforcement occur on the network. The Cisco TrustSec architecture includes three pillars:

- **Identity context:** You can identify who and what is in your network based on a variety of attributes such as user, posture, location, access type, device type, and more. This rich set of attributes provides the true “role” of a user or device in the network. Context awareness is derived from the networking infrastructure in the case of the 802.1X network-integrated solution, with consistent identity features supported across all Cisco switch platforms. In the overlay mode, context awareness is provided through the Cisco Network Admission Control (NAC) agent intelligence.
- **Authorization and enforcement:** The next step after organizations have visibility into who and what is in the network is the ability to allow them into appropriate parts of the network. Cisco offers the traditional authorization options at ingress using VLANs and downloadable access control lists (ACLs). Cisco also offers Security Group Access, the ability to authorize users with “security group tags” that define their role in the organization. When user traffic has these tags, any device in the network can enforce policies based on the tags at egress. It is operationally more scalable than the traditional authorization options.
- **Data integrity:** The third component of the Cisco TrustSec architecture is data integrity and confidentiality through MAC Security (MACsec) or 802.1AE, including the ability to tie your policy to encryption; for example, allowing users access to the network based on the ability to encrypt from endpoint to switch. In addition, switch-to-switch encryption from access to data center switches and between data centers protects data throughout the entire network.

Cisco TrustSec software integrates with the Cisco SecureX Architecture to allow the Cisco security portfolio to take advantage of network-based identity context for full context-aware firewalling and policy enforcement.

For More Information

<http://www.cisco.com/go/trustsec>

Cisco NAC Appliance (Clean Access)

Cisco NAC Appliance (formerly Cisco Clean Access) is an easily deployed Network Admission Control (NAC) product that uses the network infrastructure to enforce security policy compliance on all devices seeking to access network computing resources. With Cisco NAC Appliance, network administrators can authenticate, authorize, evaluate, and remediate wired, wireless, and remote users and their machines prior to network access. It identifies whether networked devices such as laptops, IP phones, or game consoles are compliant with your network security policies and repairs any vulnerabilities before permitting access to the network.

Cisco NAC has several core components, with additional optional components for enhanced capabilities:

- **Cisco NAC Server:** This device initiates assessment and enforces access privileges based on endpoint compliance. Users are blocked at the port layer and restricted from accessing the trusted network until they successfully pass inspection. The Cisco NAC Server is available in seven sizes based on the number of online, concurrent users: 100, 250, 500, 1500, 2500, 3500, and 5000 users. A single company can have several servers of differing sizes; for example, a headquarters building would require a 1500-user Cisco NAC Server, whereas a branch office for the same company might require only a 100-user server.
- **Cisco NAC Manager:** This centralized, web-based console for establishing roles, checks, rules, and policies is available in three sizes: the Cisco NAC Lite Manager manages up to three Cisco NAC Servers; the Cisco NAC Standard Manager manages up to 20 Cisco NAC Servers; and the Cisco NAC Super Manager manages up to 40 Cisco NAC Servers or 80 Cisco NAC Network Modules.
- **Cisco NAC Agent:** This thin, read-only agent enhances posture assessment functions and streamlines remediation. Cisco NAC Agents are optional and are distributed free of charge.

Ideal for Companies That Need These Features

- | | |
|---|---|
| Cisco NAC Appliance (Clean Access) | <ul style="list-style-type: none">• Minimized network outages• Enforcement of security policies• Significant cost savings with automated device repairs and updates |
|---|---|

Main Features and Benefits

- **Authentication integration with single sign-on:** Cisco Network Admission Control (NAC) serves as an authentication proxy for most forms of authentication, natively integrating with Kerberos, Lightweight Directory Access Protocol (LDAP), RADIUS, Active Directory, Secure/Identification (S/Ident), and others. Cisco NAC supports single sign-on for VPN clients, wireless clients, and Windows Active Directory domains.
- **Vulnerability assessment:** Cisco NAC supports scanning of all Windows, Mac OS, and Linux-based operating systems and machines, as well as non-PC networked devices such as game consoles, personal digital assistants (PDAs), printers, and IP phones. It conducts network-based scans or can use custom-built scans as required. Cisco NAC can check for any application as identified by registry key settings, services running, or system files.
- **Device quarantine:** Cisco NAC can place noncompliant machines into quarantine. Quarantine can be accomplished by using subnets as small as /30, or by using a quarantine VLAN.
- **Automatic security policy updates:** Automatic security policy updates that are part of the Cisco standard software maintenance package provide predefined policies for the most common network access criteria, including policies that check for critical operating system updates, common antivirus software virus definition updates, and common antispyware definition updates.
- **Centralized management:** The Cisco NAC web-based management console allows administrators to define the types of scans required for each role, as well as the related remediation packages necessary for recovery. One management console can manage multiple servers.
- **Remediation and repair:** Quarantining gives devices access to remediation servers that can provide operating system patches and updates, virus definition files, or endpoint security solutions such as Cisco Security Agent. Administrators can enable automated remediation through the optional agent, or specify a series of remediation instructions. In addition, Cisco NAC delivers user-friendly features, such as the monitoring mode and silent remediation, to minimize user effect.
- **Flexible deployment modes:** Cisco NAC offers the broadest array of deployment modes to fit into any customer network. Customers can deploy the product as a virtual or real IP gateway, at the edge or centrally, with Layer 2 or Layer 3 client access, and in-band or out-of-band with network traffic.
- **Cisco TrustSec Planning and Design Service** from Cisco and our partners can help you customize and successfully deploy your Cisco TrustSec solution based on the Cisco NAC appliance and take full advantage of the available features.

Specifications

Feature	Cisco NAC Appliance 3315	Cisco NAC Appliance 3355	Cisco NAC Appliance 3395
Products	<ul style="list-style-type: none"> Cisco NAC Server for 100, 250, and 500 users Cisco NAC Lite Manager 	<ul style="list-style-type: none"> Cisco NAC Server for 1500, 2500, 3500, and 5000 users Cisco NAC Standard Manager 	<ul style="list-style-type: none"> Cisco NAC Super Manager
Processor	Quad-core Intel Xeon (Core 2 Quad)	Quad-core Intel Xeon (Nehalem)	2 x Quad-core Intel Xeon (Nehalem)
Memory	4 GB	6 GB	8 GB
Hard disk	250-GB SATA drive	2 x 300-GB SAS RAID drives	4 x 300-GB SFF SAS RAID drives
Removable media	CD/DVD-ROM drive	CD/DVD-ROM drive	CD/DVD-ROM drive
Network Connectivity			
Ethernet network interface cards (NICs)	<ul style="list-style-type: none"> 2 x Integrated NICs 2 x Gigabit NICs (PCI-X) 	<ul style="list-style-type: none"> 2 x Integrated NICs 2 x Gigabit NICs (PCI-X) 	<ul style="list-style-type: none"> 2 x Integrated NICs 2 x Gigabit NICs (PCI-X)
10BASE-T cable support	Category (Cat) 3, 4, or 5 unshielded twisted pair (UTP) up to 328 ft (100 m)	Cat 3, 4, or 5 UTP up to 328 ft (100 m)	Cat 3, 4, or 5 UTP up to 328 ft (100 m)
10/100/1000BASE-TX cable support	Cat 5 UTP up to 328 ft (100 m)	Cat 5 UTP up to 328 ft (100 m)	Cat 5 UTP up to 328 ft (100 m)
Secure Sockets Layer (SSL) accelerator card	None	Cavium CN1 120-NHB-E	Cavium CN1 120-NHB-E
Interfaces			
Serial ports	1	1	1
USB 2.0 ports	4 (two front, two rear)	4 (one front, one internal, two rear)	4 (one front, one internal, two rear)
Keyboard ports	1	1	1
Video ports	1	1	1
Mouse ports	1	1	1
External SCSI ports	None	None	None
System Unit			
Form factor	Rack-mount 1 RU	Rack-mount 1 RU	Rack-mount 1 RU
Weight	35 lb (15.87 kg) fully configured	35 lb (15.87 kg) fully configured	35 lb (15.87 kg) fully configured
Dimensions	1.70 x 16.78 x 27.75 in. (4.32 x 42.62 x 70.49 cm)	1.70 x 16.78 x 27.75 in. (4.32 x 42.62 x 70.49 cm)	1.70 x 16.78 x 27.75 in. (4.32 x 42.62 x 70.49 cm)
Power supply	350W	Dual 675W (redundant)	Dual 675W (redundant)
Cooling fans	6: non-hot plug, nonredundant	9: redundant	9: redundant
BTU rating	2661 BTU/Hr (at 120V)	2661 BTU/Hr (at 120V)	2661 BTU/Hr (at 120V)
Regulatory and Standards Compliance			
Industry certifications	FIPS 140-2 Level 2 Common Criteria EAL2	FIPS 140-2 Level 2 Common Criteria EAL2	FIPS 140-2 Level 2 Common Criteria EAL2

Selected Part Numbers and Ordering Information

NACMGR-3-K9	Cisco NAC Appliance 3310 Manager—Max 3 servers
NACMGR-3FB-K9	Cisco NAC Appliance 3310 Manager Failover Bundle—Max 3 servers
NACMGR-20-K9	Cisco NAC Appliance 3350 Manager—Max 20 servers
NACMGR-20FB-K9	Cisco NAC Appliance 3350 Manager Failover Bundle—Max 20 servers
NACMGR-40-K9	Cisco NAC Appliance 3390 Manager—Max 40 servers
NACMGR-40FB-K9	Cisco NAC Appliance 3390 Manager Failover Bundle—Max 40 servers

For More Information

<http://www.cisco.com/en/US/products/ps6128/index.html>

Cisco Identity Services Engine

Provision and deliver cross-domain application and network services more securely and reliably with Cisco Identity Services Engine (ISE). This policy-based service-enablement platform helps ensure corporate and regulatory compliance.

Enhance infrastructure security and simplify enterprise service operations. Gather real-time contextual information from the network, users, and devices, and make proactive governance decisions by enforcing policy across the network infrastructure.

Cisco Identity Services Engine offers the following benefits:

- **Security:** Get visibility and control over all users and devices on your network.
- **Compliance:** Create consistent policy across the infrastructure for corporate governance.
- **Efficiency:** Increase IT staff productivity by automating labor-intensive tasks and simplifying service delivery.

Ideal for Companies That Need These Features

- Cisco ISE**
- Network visibility
 - Context-aware enforcement
 - Significant cost savings with automated device repairs and updates

Main Features and Benefits

An integral component of the Cisco TrustSec solution, the Cisco Identity Services Engine:

- Allows enterprises to authenticate and authorize users and endpoints through wired, wireless, and VPN with consistent policy throughout the enterprise
- Prevents unauthorized network access to protect corporate assets
- Provides complete guest lifecycle management by empowering sponsors to allow guests onboard, thus reducing IT workload
- Discovers, classifies, and controls endpoints connecting to the network to enable the appropriate services per endpoint type
- Addresses vulnerabilities on user machines through periodic evaluation and remediation to help proactively mitigate network threats such as viruses, worms, and spyware
- Enforces security policies by blocking, isolating, and repairing noncompliant machines in a quarantine area without needing administrator attention
- Offers a built-in monitoring, reporting, and troubleshooting console to assist helpdesk operators and administrators streamline operations

Specifications

Feature	Cisco Identity Services Engine Appliance 3315 (Small)	Cisco Identity Services Engine Appliance 3355 (Medium)	Cisco Identity Services Engine Appliance 3395 (Large)
Processor	1 x QuadCore Intel Core 2 CPU Q9400 @ 2.66 GHz	1 x QuadCore Intel Xeon CPU E5504 @ 2.00 GHz	2 x QuadCore Intel Xeon CPU E5504 @ 2.00 GHz
Memory	4 GB	4 GB	4 GB
Hard disk	2 x 250-GB SATA HDD	2 x 300-GB SAS drives	4 x 300-GB SFF SAS drives
RAID	No	Yes (RAID 0)	Yes (RAID 0+1)
Removable media	CD/DVD-ROM drive	CD/DVD-ROM drive	CD/DVD-ROM drive
Network Connectivity			
Ethernet NICs	x Integrated Gigabit NICs	4 x Integrated Gigabit NICs	4 x Integrated Gigabit NICs
10BASE-T cable support	Cat 3, 4, or 5 unshielded twisted pair (UTP) up to 328 ft (100 m)	Cat 3, 4, or 5 UTP up to 328 ft (100 m)	Cat 3, 4, or 5 UTP up to 328 ft (100 m)
10/100/1000BASE-TX cable support	Cat 5 UTP up to 328 ft (100 m)	Cat 5 UTP up to 328 ft (100 m)	Cat 5 UTP up to 328 ft (100 m)
Secure Sockets Layer (SSL) accelerator card	None	Cavium CN1620-400-NHB-G	Cavium CN1620-400-NHB-G
Interfaces			
Serial ports	1	1	1
USB 2.0 ports	4 (two front, two rear)	4 (one front, one internal, two rear)	4 (one front, one internal, two rear)
Video ports	1	1	1
External SCSI ports	None	None	None

System Unit			
Form factor	Rack-mount 1 RU	Rack-mount 1 RU	Rack-mount 1 RU
Weight	28 lb (12.7 kg) fully configured	35 lb (15.87 kg) fully configured	35 lb (15.87 kg) fully configured
Dimensions	1.69 x 1732 x 22 in. (43 x 440 x 55.9 mm)	1.69 x 1732 x 2799 in. (43 x 42.62 x 711 mm)	1.69 x 1732 x 2799 in. (43 x 42.62 x 711 mm)
Power supply	350W	Dual 675W (redundant)	Dual 675W (redundant)
Cooling fans	6: non-hot plug, nonredundant	9: redundant	9: redundant
BTU rating	1024 BTU/hr (at 300W)	2661 BTU/hr (at 120V)	2661 BTU/hr (at 120V)
Regulatory and Standards Compliance			
Industry certifications	Criteria EAL2	Criteria EAL2	Criteria EAL2

Selected Part Numbers and Ordering Information

SE-3315-K9	Cisco Identity Services Engine 3315 Appliance
ISE-3355-K9	Cisco Identity Services Engine 3355 Appliance
ISE-3395-K9	Cisco Identity Services Engine 3395 Appliance
ISE-VM-K9=	Cisco Identity Services Engine Virtual Appliance
ISE-5VM-K9=	Bundle of 5 Cisco Identity Services Engine Virtual Appliances
ISE-10VM-K9=	Bundle of 10 Cisco Identity Services Engine Virtual Appliances

For More Information

<http://www.cisco.com/en/US/products/ps11640/index.html>

Cisco Secure Access Control System

Cisco Secure Access Control System (ACS) is a highly scalable, high-performance access policy system that centralizes device administration, authentication, and user access policy and reduces the management and support burden for these functions.

Cisco Secure ACS 5.1 is the second release of this next-generation network identity and access solution. This release establishes Cisco Secure ACS as a Policy Administration Point (PAP) and Policy Decision Point (PDP) for policy-based access control. Release 5.1 offers additional capabilities, including:

- A powerful, attribute-led rules-based policy model that flexibly addresses complex policy
- A lightweight, web-based GUI with intuitive navigation and workflow
- Integrated advanced monitoring, reporting, and troubleshooting capabilities for maximum control and visibility
- Improved integration with external identity and policy databases, including Windows Active Directory and Lightweight Directory Access Protocol (LDAP)-accessible databases, simplifying policy configuration and maintenance
- A distributed deployment model that enables large-scale deployments and provides a highly available solution

The Cisco Secure ACS 5.1 rules-based policy model supports the application of different authorization rules under different conditions, and thus policy is contextual and not limited to authorization determined by a single group membership. New integration capabilities allow information in external databases to be directly referenced in access policy rules, and attributes can be used both in policy conditions and authorization rules.

Cisco Secure ACS 5.1 features centralized collection and reporting for activity and system health information for full manageability of distributed deployments. It supports proactive operations such as monitoring and diagnostics, and reactive operations such as reporting and troubleshooting. Advanced features include a deploymentwide session monitor, threshold-based notifications, entitlement reports, and diagnostic tools.

Main Features and Benefits

Cisco Secure Access Control Server

- Complete access control and confidentiality solution: Cisco Secure ACS can be deployed with other Cisco TrustSec components—including policy components, infrastructure enforcement components, endpoint components, and professional services—for a comprehensive access control and confidentiality solution.
- Authentication, authorization, and accounting (AAA) protocols: Cisco Secure ACS 5.1 supports two distinct protocols for AAA. Cisco Secure ACS 5.1 supports RADIUS for network access control and TACACS+ for network device access control. Cisco Secure ACS is a single system for enforcing access policy across the network.

- Database options: Cisco Secure ACS 5.1 supports an integrated user repository in addition to supporting integration with existing external identity repositories such as Windows Active Directory and Lightweight Directory Access Protocol (LDAP). Multiple databases can be used concurrently for maximum flexibility in enforcing access policy.
- Authentication protocols: Cisco Secure ACS 5.1 supports a wide range of authentication protocols including Password Authentication Protocol (PAP), Microsoft Challenge Handshake Authentication Protocol (MS-CHAP), Extensible Authentication Protocol (EAP)-Message Digest Algorithm 5 (MD5), Protected EAP (PEAP), EAP-Flexible Authentication via Secure Tunneling (FAST), and EAP-Transport Layer Security (TLS) to support your authentication requirements.
- Access policies: Cisco Secure ACS 5.1 supports a rules-based, attribute-led policy model that provides greatly increased power and flexibility for access control policies that may include authentication protocol requirements, device restrictions, time-of-day restrictions, posture validation, and other access requirements. Cisco Secure ACS may apply downloadable access control lists (dACLs), VLAN assignments, and other authorization parameters.
- Centralized management: Cisco Secure ACS 5.1 supports a completely redesigned lightweight, web-based GUI that is easy to use. An efficient, incremental replication scheme quickly propagates changes from primary to secondary systems providing centralized control over distributed deployments. Software upgrades are also managed through the GUI and can be distributed by the primary system to secondary instances.
- Monitoring and troubleshooting: Cisco Secure ACS 5.1 includes an integrated monitoring, reporting, and troubleshooting component that is accessible through the web-based GUI. This tool provides maximum visibility into configured policies and authentication and authorization activities across the network. Logs are viewable and exportable for use in other systems as well.
- Platform options: Cisco Secure ACS 5.1 is available as a closed and hardened Linux-based appliance or as a software operating system image for VMware ESX.

Cisco Secure Access Control Server Express

Cisco Secure Access Control Server (ACS) Express is an entry-level RADIUS and TACACS+ authentication, authorization, and accounting (AAA) server for retail branch-office locations, enterprise branch offices, and small and medium-sized businesses (SMBs) that have fewer than 350 users and 50 devices.

Cisco Secure ACS Express provides a centralized identity networking solution that:

- Offers a simple user and access policy management interface
- Gives administrators greater access to and control of users and machines in various networks including wireless, wired, and virtual private networks
- Controls administrative access to network devices using RADIUS and TACACS+

This product is intended to serve small to medium-sized businesses, retail sites, and enterprise branch offices where customers need an easy-to-use GUI yet require a comprehensive but simple feature set and a lower price point to address their specific deployment needs.

Cisco Policy Administration Point

Cisco Policy Administration Point (PAP) provides centralized administration, management, and monitoring of entitlement policies, and delegation and integration with enterprise information repositories such as Active Directory and Lightweight Directory Access Protocol (LDAP).

Cisco Secure Access Control Server Solution Engine

The Cisco Secure Access Control Server (ACS) Solution Engine is a dedicated, rack-mountable appliance for network access policy control. It helps companies comply with growing regulatory and corporate requirements, improve productivity, and contain costs. It supports multiple scenarios simultaneously, including:

- Device administration: Authenticates administrators, authorizes commands, and provides an audit trail
- Remote access: Works with VPN and other remote network access devices to enforce access policies
- Wireless: Authenticates and authorizes wireless users and hosts and enforces wireless-specific policies
- Network admission control: Communicates with posture and audit servers to enforce admission control policies

Cisco Secure Access Control System View

Cisco Secure Access Control System (ACS) View provides the highest level of reporting, alerting, and troubleshooting functions for Cisco Secure ACS deployments. Providing maximum visibility into configured policies and authentication and authorization activities across the network, Cisco Secure ACS View is the ideal solution for organizations that require the greatest levels of reporting and control.

Specifications

Component Specifications		Cisco ACS 5.1
CPU		Intel Xeon 2.66-GHz Q9400 (Quad Core)
System memory		4 GB DDR II ECC
Hard disk drive		2 x 250 GB 72K RPM 3.5" SATA
Optical storage		DVD-ROM
Network connectivity		4 10/100/1000, RJ-45 interfaces
I/O ports		1 serial port, 4 USB 2.0 (2 front, 2 rear), SVGA Video
Rack-mounting		4-post (kit included)
Physical dimensions (1RU)		173 (W) x 22.0 (D) x 1.75 (H) in.; 44.0 (W) x 55.9 (D) x 4.45 (H) cm
Weight		24.25 (minimum) to 28.0 lb (maximum); 11.0-12.7 kg

Power Specifications	
Number of Power Supplies	1
Power Supply Size	351W universal, autoswitching
Environmental Specifications	
Operating temperature range	50 to 95°F; 10 to 35°C (up to 3000 ft / 914.4m)
Heat emitted	341 (minimum) to 1024 (maximum) BTUs; 100-300W
Maximum altitude	7000 ft; 2133 m

Component Specifications	
VMware Version	ESX 3.5 or ESX 4.0
CPU	Intel Core 2 (2.13 GHz)
System memory	4 GB
Hard disk requirement	Minimum 512 GB

Cisco Secure Access Control Server (ACS) Express	
Processor	Intel 352 Celeron D
Memory	1 GB RAM
Hard drive	250 GB
Optical Drive	DVD-ROM
Interfaces	Two onboard 10/100/1000 Ethernet NIC ports

Cisco Secure Access Control Server (ACS) 4.2	
Hardware Requirements	<ul style="list-style-type: none"> • IBM PC compatible with Pentium IV processor, 1.8 GHz or faster • 1GB RAM minimum • Color monitor with minimum graphics resolution of 256 colors at 800 x 600 resolution • CD-ROM drive • 100BaseT or faster network connection
OS Requirements	Windows Server 2003, R2, Service Pack 2

Cisco ACS Secure Solution Engine	
Processor	Pentium IV, 3.4 GHz
Memory	1 GB RAM
Hard drive	120 GB SATA
Optical Drive	CD/DVD combo
Interfaces	Two integrated 10/100/1000 Ethernet ports

Selected Part Numbers and Ordering Information

For the most up to date part numbers, visit <http://www.cisco.com/go/acs>.

For More Information

<http://www.cisco.com/go/acs>

Secure Email and Web

Cisco Email Security Appliances

Cisco Email Security solutions provide outstanding protection to organizations of all sizes. Sophisticated and scalable mechanisms help to:

- Minimize the downtime associated with email-borne malware
- Simplify the administration of corporate mail systems
- Reduce the burden on technical staff while offering insight into mail system operation

Ideal for Companies That Need These Features

Cisco Email Security Appliances	<ul style="list-style-type: none">• Antispam and antivirus solution• Data loss prevention (DLP)• Regulatory compliance• Email encryption
Cisco Cloud Email Security	<ul style="list-style-type: none">• Superior protection and control with the cost-effective convenience of a cloud deployment model• Prevention of spam and viruses with a fully supported infrastructure in Cisco data centers• Maximum data protection that eliminates data contamination, reduces overhead, increases the speed of deployment, and provides capacity assurance for future growth
Cisco Hybrid Email Security	<ul style="list-style-type: none">• Maximum flexibility of control• Secure email infrastructure• Maximum flexibility and optimal design with additional outbound controls including DLP, encryption, and onsite Lightweight Directory Access Protocol (LDAP) integration
Cisco Managed Email Security	<ul style="list-style-type: none">• Email infrastructure security• Elimination of the need to continuously train personnel and budget for more hardware because of increasing spam volumes• Highest possible levels of data security provided by an onsite email security appliance

Note: Please contact Cisco for sizing of specific appliances.

Main Features and Benefits

- **Cisco AsyncOS:** Cisco AsyncOS is a high-performance software architecture engineered to address concurrency-based communications bottlenecks and the limitations of file-based queuing.
- **Cisco Reputation Filters:** Cisco Reputation Filters perform a real-time email threat assessment and then identify suspicious email senders. Suspicious senders are rate-limited or blocked, preventing malicious traffic from entering the network. As the first line of defense on the Cisco Email Security Appliances, Reputation Filters dispose of up to 90 percent of incoming spam at the connection level—saving bandwidth, conserving system resources, and yielding the very highest levels of security for critical messaging systems. A proven preventive solution, Cisco Reputation Filters defend the largest Internet service provider (ISP) and enterprise networks, as well as small and medium-sized businesses (SMBs), in production environments around the world.
- **Cisco Anti-Spam:** The catch rate of Cisco Anti-Spam is 99 percent. Its false-positive rate is less than 1 in 1 million. To eliminate the broadest range of known and emerging email threats, Cisco Anti-Spam combines best-of-class conventional techniques with breakthrough context-sensitive detection technology.
- **Cisco Outbreak Filters:** These filters stop email-borne targeted attacks in real time, using cloud web scanning capabilities and Cisco Security Intelligence Operations (SIO).
- In addition, while continuing to detect new virus outbreaks in real time, Cisco Outbreak Filters offer protection up to 42 hours before traditional antivirus solutions.
- **Cisco Email Encryption:** Cisco Email Encryption technology revolutionizes email encryption, meeting compliance requirements while delivering powerful new business-class email features.
- **Cisco Data Loss Prevention (DLP):** Cisco DLP delivers high-performance, comprehensive data loss prevention for data in motion, helping organizations both large and small prevent leaks, enforce compliance, and protect their brand and reputation.
- **The Cisco SensorBase Network:** Cisco SensorBase technology collects data from more than 10 times the networks of competing monitoring systems, with data on more than 30 percent of the world's email and web traffic. This volume provides a very statistically significant sample size, resulting in immediate and accurate detection of even low-volume mail senders. A highly diverse group of more than 100,000 organizations, including some of the largest networks in the world, contribute information to the Cisco SensorBase Network on a remarkable 10 billion messages per day. The Cisco SensorBase solution gives mail administrators excellent real-time visibility into security threats from around the world.
- **Cisco Security Intelligence Operations (SIO):** Cisco Security Intelligence Operations collects threat intelligence from numerous Cisco security solutions and sees 35 percent of the world's email traffic, broadly expanding the base of threat telemetry from which Cisco Email Security products can draw to identify and block threats.

For More Information

<http://www.cisco.com/go/emailsecurity>

Cisco Web Security Appliances

The Cisco S-Series Web Security Appliance provides multiple layers of defense against the risks of malware activity, both horizontally (at the application layer) and vertically (up the protocol stack). Cisco Web Usage Controls enforce acceptable-use policy (AUP), whereas Cisco Security Intelligence Operations (SIO), Cisco Web Reputation Filters, and the Cisco Anti-Malware System—with simultaneous scanning by Sophos, Webroot, and McAfee for greater efficacy—provide protection against web-based malware.

The Cisco S-Series also offers comprehensive coverage for the three most common protocols carrying business information across the boundary and over the Internet: HTTP, Secure HTTP (HTTPS), and FTP. Finally, the Layer 4 Traffic Monitor detects and blocks phone-home malware activity that attempts to circumvent port 80 security features. With threats becoming more complex and sophisticated, Cisco S-Series appliances offer one of the industry's most comprehensive web security protection and enterprise-class performance.

Ideal for Companies That Need These Features

Cisco S-Series

Secure Web Security Appliance

- A secure web gateway, with multiple layers of defense against malware
- High security and high performance
- Consolidated security, acceptable-use policy (AUP), application control, and content caching features, all on a single, integrated appliance
- Secure HTTP (HTTPS) decryption and scanning
- Data security and off-box Cisco Data Loss Prevention (DLP) support

Main Features and Benefits

- **Single appliance security and control:** The Cisco S-Series offers a single-appliance solution to secure and control the three greatest web traffic risks facing enterprise networks: security risks, resource risks, and compliance risks.
- **Mitigation of malware risks and costs:** With malware infecting approximately 75 percent of corporate desktops, overhead for managing infected desktops, ensuring minimal downtime to employees, and minimizing the risk of information leakage is considerable.
- **Reduced administrative costs:** By stopping these threats at the network perimeter with Cisco Web Security Appliances, enterprises can significantly reduce the administrative costs, prevent attacker phone-home activity on networks, reduce support calls, enhance worker productivity, and also eliminate the business exposure that accompanies these threats.
- **Complete, accurate protection:** Cisco S-Series appliances are designed to address the broadest range of web-based malware threats, including those from the use of FTP and dynamic Web 2.0 sites. A multilayered defense that includes Cisco Security Intelligence Operations (SIO), Cisco Web Usage Controls, Cisco Web Reputation Filters, and Cisco DVS technology (with multiple antimalware scanning engines running simultaneously) helps ensure industry-leading accuracy.

This multilayered protection is based on a comprehensive content application layer inspection, as well as network layer pattern detection, checking both inbound and outbound activities. These innovations make the Cisco S-Series one of the industry's most secure web gateways.

- **Enforcement of acceptable-use policies:** By implementing acceptable-use web policies, enterprises can both conserve resources for work-related web usage and inform employees to help shape web access behavior over time. Enterprises can increase the amount of time that employees spend on business-oriented activities, reducing misuse of enterprise networks and bandwidth.
- **Simplified data security:** The data-loss problem extends well beyond malware. Employees can easily use webmail to send a message including proprietary information, post confidential data on social networks and blogs, or transfer financial documents over FTP to a server outside the corporate network. Making sure that sensitive data does not leave the corporate boundary—while allowing employees to take advantage of the full power of the Internet—is an important and challenging problem to solve.

Cisco Web Security Appliances enable organizations to take quick, easy steps to enforce common-sense data security policies for outbound traffic on HTTP, Secure HTTP (HTTPS), and FTP, as well as enabling simple interoperability with major dedicated Data Loss Prevention (DLP) solutions.

- **Mobile security across borderless networks:** The Cisco AnyConnect Secure Mobility solution supports a wide range of desktops and mobile devices, helping ensure that web security continues to be enforced as employees change the devices they use. By using a standardized security solution for employees whether they are in the office or mobile, IT can also streamline security operations for a compelling total cost of ownership (TCO).
- **Software-as-a-Service (SaaS) access controls:** The Cisco Web Security solution uses a standards-based authentication mechanism to bring sign-on under the control of your enterprise. Taking advantage of the employee credentials and access rights stored in the local directory, either Active Directory or Lightweight Directory Access Protocol (LDAP), administrators retain control over access rights, and employees get a transparent experience using their corporate username and password for accessing all applications.
- **Reporting visibility:** The Cisco S-Series appliances deliver real-time and historical security information, allowing administrators to quickly understand web traffic activity. Real-time reports let administrators

identify and track factors such as policy and security violations as they occur. Historical reports allow administrators to identify trends and report on efficacy and return on investment (ROI).

- Enterprise-scale performance: Cisco Web Security Appliances scale to meet the unique scanning needs of web traffic, thereby helping ensure that the employee's experience is maintained. Cisco offers industry-leading performance through its proprietary Cisco AsyncOS platform, an enterprise-grade web proxy and cache file system as well as an intelligent, multicore engine for rapid content scanning. Consequently, the Cisco S-Series platform can address the capacity requirements of even the largest of enterprises.
- Low TCO: Traditional solutions typically require multiple appliances or servers to protect against security, resource, and compliance risks. Unlike other solutions, the Cisco S-Series provides a single platform that contains a complete, in-depth defense—along with all the necessary management tools—significantly reducing initial and ongoing TCO.
- Reduced administrative overhead: Designed to minimize administrative overhead, Cisco Web Security Appliances offer easy setup and management with an intuitive GUI, support for automated updates, and comprehensive monitoring and alerting. The solution is also easy to deploy and configure to match corporate-specific policies.

Specifications

Feature	S660	S360	S160
User Targets	10000+	1000-10000	< 1000
Chassis			
Form Factor	2RU	2RU	1RU
Dimensions	3.5" (h) x 17.5" (w) x 29.5" (d)	3.5" (h) x 17.5" (w) x 29.5" (d)	1.75" (h) x 17.5" (w) x 21.5" (d)
Power Supply	750 watts, 100/240 volts	750 watts, 100/240 volts	345 watts, 100/240 volts
Redundant Power Supply	Yes	Yes	No
Processor, Memory, and Disks			
CPUs	2x4 (2 Quad Cores) XEONS	1x4 (1 Quad Core) XEONS	2x2 (1 Dual Core) Pentium
Memory	8 GB	4 GB	4 GB
Disk Space	1.6 TB	1.2 TB	500 GB
Hot Swappable Hard Drives	Yes	Yes	No
RAID	RAID 10, battery-backed 256MB cache	RAID 10, battery-backed 256MB cache	RAID 1, battery-backed 256MB cache
Interfaces			
Ethernet	6xGigabit NICs, RJ-45	6xGigabit NICs, RJ-45	2xGigabit NICs, RJ-45
Serial	1xRS-232 (DB-9) Serial	1xRS-232 (DB-9) Serial	1xRS-232 (DB-9) Serial
Fiber	Optional	No	No
Configuration, Logging, and Monitoring			
Web Interface	GUI-based (HTTP or HTTPS)	GUI-based (HTTP or HTTPS)	GUI-based (HTTP or HTTPS)
Command Line Interface	SSH or Telnet (Configuration Wizard or command-based)	SSH or Telnet (Configuration Wizard or command-based)	SSH or Telnet (Configuration Wizard or command-based)
Logging	Squid, Apache, syslog	Squid, Apache, syslog	Squid, Apache, syslog
Centralized Reporting	Supported	Supported	Supported
File Transfer	SCP, FTP	SCP, FTP	SCP, FTP
Configuration Files	XML-based	XML-based	XML-based
Centralized Configuration	Supported	Supported	Supported
Monitoring	SNMPv1-3, e-mail alerts	SNMPv1-3, e-mail alerts	SNMPv1-3, e-mail alerts

Selected Part Numbers and Ordering Information

The following information pertains to Cisco Web Security bundle offerings. For a-la-carte, government, or educational pricing, please contact a Cisco sales representative at www.cisco.com.

Note: All bundles include Platinum Support, Rails (4-Post Square), and Sawmill Software for Cisco Web Security URL Filtering, Web Reputation Filters, and Anti-Malware System; the Cisco Anti-Malware System includes signatures from Webroot and McAfee.

Note the following abbreviations: URL = URL Filtering; ASPY = Antispyware; WEBREP = Cisco Web Reputation Filters; AV = Antivirus and antimalware

Appliance Bundles (1 Year)		
URL(Essentials)	URL+WREP(Premium)	URL+WREP+ASPY+AV
WSA-WSE-1Y-S1	WSA-WSP-1Y-S1	WSA-WSM-1Y-S1
WSA-WSE-1Y-S2	WSA-WSP-1Y-S2	WSA-WSM-1Y-S2
WSA-WSE-1Y-S3	WSA-WSP-1Y-S3	WSA-WSM-1Y-S3
WSA-WSE-1Y-S4	WSA-WSP-1Y-S4	WSA-WSM-1Y-S4
WSA-WSE-1Y-S5	WSA-WSP-1Y-S5	WSA-WSM-1Y-S5
WSA-WSE-1Y-S6	WSA-WSP-1Y-S6	WSA-WSM-1Y-S6
WSA-WSE-1Y-S7	WSA-WSP-1Y-S7	WSA-WSM-1Y-S7
WSA-WSE-1Y-S8	WSA-WSP-1Y-S8	WSA-WSM-1Y-S8
WSA-WSE-1Y-S9	WSA-WSP-1Y-S9	WSA-WSM-1Y-S9
WSA-WSE-1Y-S10	WSA-WSP-1Y-S10	WSA-WSM-1Y-S10
WSA-WSE-1Y-S11	WSA-WSP-1Y-S11	WSA-WSM-1Y-S11
WSA-WSE-1Y-S12	WSA-WSP-1Y-S12	WSA-WSM-1Y-S12
Appliance Bundles (3 Year)		
URL (Essentials)	URL+WREP (Premium)	URL+WREP+ASPY+AV
WSA-WSE-3Y-S1	WSA-WSP-3Y-S1	WSA-WSM-3Y-S1
WSA-WSE-3Y-S2	WSA-WSP-3Y-S2	WSA-WSM-3Y-S2
WSA-WSE-3Y-S3	WSA-WSP-3Y-S3	WSA-WSM-3Y-S3
WSA-WSE-3Y-S4	WSA-WSP-3Y-S4	WSA-WSM-3Y-S4
WSA-WSE-3Y-S5	WSA-WSP-3Y-S5	WSA-WSM-3Y-S5
WSA-WSE-3Y-S6	WSA-WSP-3Y-S6	WSA-WSM-3Y-S6
WSA-WSE-3Y-S7	WSA-WSP-3Y-S7	WSA-WSM-3Y-S7
WSA-WSE-3Y-S8	WSA-WSP-3Y-S8	WSA-WSM-3Y-S8
WSA-WSE-3Y-S9	WSA-WSP-3Y-S9	WSA-WSM-3Y-S9
WSA-WSE-3Y-S10	WSA-WSP-3Y-S10	WSA-WSM-3Y-S10
WSA-WSE-3Y-S11	WSA-WSP-3Y-S11	WSA-WSM-3Y-S11
WSA-WSE-3Y-S12	WSA-WSP-3Y-S12	WSA-WSM-3Y-S12
Appliance Bundles (5 Year)		
URL (Essentials)	URL+WREP (Premium)	URL+WREP+ASPY+AV
WSA-WSE-5Y-S1	WSA-WSP-5Y-S1	WSA-WSM-5Y-S1
WSA-WSE-5Y-S2	WSA-WSP-5Y-S2	WSA-WSM-5Y-S2
WSA-WSE-5Y-S3	WSA-WSP-5Y-S3	WSA-WSM-5Y-S3
WSA-WSE-5Y-S4	WSA-WSP-5Y-S4	WSA-WSM-5Y-S4
WSA-WSE-5Y-S5	WSA-WSP-5Y-S5	WSA-WSM-5Y-S5
WSA-WSE-5Y-S6	WSA-WSP-5Y-S6	WSA-WSM-5Y-S6
WSA-WSE-5Y-S7	WSA-WSP-5Y-S7	WSA-WSM-5Y-S7
WSA-WSE-5Y-S8	WSA-WSP-5Y-S8	WSA-WSM-5Y-S8
WSA-WSE-5Y-S9	WSA-WSP-5Y-S9	WSA-WSM-5Y-S9
WSA-WSE-5Y-S10	WSA-WSP-5Y-S10	WSA-WSM-5Y-S10
WSA-WSE-5Y-S11	WSA-WSP-5Y-S11	WSA-WSM-5Y-S11
WSA-WSE-5Y-S12	WSA-WSP-5Y-S12	WSA-WSM-5Y-S12

For More Information

<http://www.cisco.com/go/websecurity>

Cisco M-Series Content Security Management Appliance

The Cisco M-Series Content Security Management Appliance complements all of the Cisco Email and Web Security Appliances. By helping ensure top performance for all of your application security gateways, the Cisco M-Series provides one location for you to monitor all corporate policy settings and audit information. Designed and built as a flexible management tool to centralize and consolidate policy and runtime data, this product can provide a single management interface for all of your organization's Cisco security appliances. Optional features allow you to run all your security operations from a single appliance, or to spread the load across multiple appliances.

Ideal for Companies That Need These Features

Cisco M-Series Content Security Management Appliance

- Top performance from Cisco Email and Web Security Appliances
- A central platform for managing all reporting and auditing information
- Comprehensive visibility into all email traffic
- Flexible management and complete security control at the network gateway
- Deployment flexibility and management to protect corporate network integrity

Main Features and Benefits

- Each Cisco M-Series appliance can host one or more of the innovative security management features available from the Cisco Web Security Appliance or Cisco Email Security Appliance to ease administrator workload.
- The end-user quarantine is a self-service solution, with an easy-to-use web or email-based interface and simple integration into existing directory and mail systems. All operations are automatic and self-managing, so there is no risk of a capacity overload. Most importantly, the Cisco Spam Quarantine requires no maintenance by the administrator or the end user.
- End users can be authenticated either through a corporate Lightweight Directory Access Protocol (LDAP) directory or with their regular email password for any standards-based Internet Message Access Protocol (IMAP) or point-of-presence (POP) server. Message distribution lists can be managed through one-click authentication from the quarantine message digests.
- Centralized reporting allows for consolidation of traffic data from multiple email security appliances to provide fully integrated security reporting.
- The third-generation reporting technology from this content security management appliance provides comprehensive insight into even the highest-volume networks in the world. Detailed and accurate information is coalesced into clear and informative reports, suitable for all levels of your organization.
- Cross-application reporting provides insight into the threats being blocked from inside and outside your network, internal user behavior, and critical content security policy infractions. You can see which users are sending the most mail, and track policy infractions across any department, site, or communication medium.
- End-to-end communications auditing enables administrators to know where and when a communication took place. They can search message telemetry for multiple email security appliances or request-response data from the web and report the full scanning and delivery details.
- The Cisco M-Series is a centralized policy and device management system that provides fine-grained role-based and hierarchical access to security and policy settings across hundreds of Cisco S-Series devices, improving security and reducing management overhead by allowing for delegation of critical policy decisions.
- You can use the Cisco M-Series appliance to manage quarantines, reporting data, and message tracking information—letting you dedicate your other appliances to mitigating email and web security threats.
- All upgrades and new features are delivered directly from the Cisco security appliance for your approval, and then automatically installed and managed.

Specifications

Chassis	Cisco M1060	Cisco M660	Cisco M160
Form Factor	19" rack-mountable 2RU rack height	19" rack-mountable 2RU rack height	19" rack-mountable 2RU rack height
Dimensions	3.5" (h) x 17.5" (w) x 29.5" (d)	3.5" (h) x 17.5" (w) x 29.5" (d)	1.75" (h) x 17.5" (w) x 21.5" (d)
Power Supply	750 watts, 100/240 volts	750 watts, 100/240 volts	345 watts, 100/240 volts
Processor, Memory, and Disks			
CPUs	2x4 (Quad Cores) Intel XEON	2x4 (Quad Core) Intel XEON	1x2 (Dual Core) Intel XEON
Disk Space	3 TB	1.8 TB	500 GB
RAID	RAID 10, battery-backed 256MB cache	RAID 10, battery-backed 256MB cache	RAID 1, battery-backed 256MB cache
Interfaces			
Ethernet	3xGigabit NICs, RJ-45	3xGigabit NICs, RJ-45	2xGigabit NICs, RJ-45
Fiber	Yes	No	No
Web Interface	GUI-based (HTTP or HTTPS)	GUI-based (HTTP or HTTPS)	GUI-based (HTTP or HTTPS)

Selected Part Numbers and Ordering Information

The following information pertains to Cisco M-Series bundle offerings. For a-la-carte, government, or educational pricing, please contact a Cisco sales representative at sales@cisco.com.

Cisco M-Series Content Security Reporting Bundle

This bundle is for email messaging only.

- All new deals include a Cisco M160 Content Security Management Appliance.
- All bundles include the following licenses for up to two Cisco Email Security Appliances
 - Cisco spam quarantine
 - Centralized email reporting
 - Centralized message tracking
- All bundles include platinum support and rails (4-post square)
- For 5-year bundle contracts only: If Cisco, in its sole discretion, creates a new version or upgrade that is delivered to customer as part of the support and maintenance program and the software specifically licensed by the customer is incompatible with the Cisco hardware the customer uses to run the software, Cisco will upgrade the customer's incompatible hardware at no additional charge.

New Deals (1 Year)		
SKU	ISQ + Reporting + Tracking	Users
MBUN-1A-EN-ABC-1K-1Y	5000.00	100 to 999
MBUN-1A-EN-ABC-2K-1Y	11,675.00	1000 to 2000
New Deals (3 Years)		
SKU	ISQ + Reporting + Tracking	Users
MBUN-1A-EN-ABC-1K-3Y	9000.00	100 to 999
MBUN-1A-EN-ABC-2K-3Y	21,000.00	1000 to 2000
New Deals (3 Years)		
SKU	ISQ + Reporting + Tracking	Users
MBUN-1A-EN-ABC-1K-3Y	9000.00	100 to 999
Security Management Appliances		
M1050-BUN-R-NA	Cisco M1050, Standard Configuration	
M650-BUN-R-NA	Cisco M650, Standard Configuration	
M1060-BUN-R-NA	Cisco M1060, Standard Configuration	
M660-BUN-R-NA	Cisco M660, Standard Configuration	
M160-BUN-R-NA	Cisco M160, Standard Configuration	
M1050-BUN-S-NA	Cisco M1050, Spare Unit (production unit required)	
M650-BUN-S-NA	Cisco M650, Spare Unit (production unit required)	
M1060-BUN-S-NA	Cisco M1060, Spare Unit (production unit required)	
M660-BUN-S-NA	Cisco M660, Spare Unit (production unit required)	
M160-BUN-S-NA	Cisco M160, Spare Unit (production unit required)	
M1050-BUN-U-NA	Cisco M1050, Refurbished Unit	
M650-BUN-U-NA	Cisco M650, Refurbished Unit	

For More Information

<http://www.cisco.com/en/US/products/ps10155/index.html>

Cisco Cloud Web Security

Cisco Cloud Web Security is powered by Outbreak Intelligence, which comprises numerous correlated detection technologies, automated machine-learning heuristics, and multiple “scanlets”. Outbreak Intelligence builds a detailed view of each web request and the associated security risk to ensure that Cisco Cloud Web Security customers use the web safely.

Outbreak Intelligence scans more than 1 billion web requests a day in real time, stopping millions of malware instances and protecting thousands of the most demanding organizations around the world. Outbreak Intelligence scanlets analyze all elements of a web request including HTML, JavaScript, Flash, and active scripts, among others, which, when coupled with numerous Context scanlets, offer multiple indicators as to the security posture of each web request.

Ideal for Companies That Need These Features

- Proactive, in-the-cloud protection against zero-day threats
- Prevention of malware that is attempting to steal confidential data
- Protection against malware communication leaving the network
- Easy identification of infected machines on your network
- Reduction in time and resources used to remediate infected machines

Main Features and Benefits

- In-depth security analysis of all web content as it is requested by end users
- High-performance, secure web access enabled by a global, multitenant infrastructure
- Powered by Outbreak Intelligence that is proven to block more than 20-percent more malware than traditional security techniques
- Granular reporting to determine and resolve users who are infected by malware or are at risk

For More Information

<http://www.cisco.com/en/US/products/ps11720/index.html>

Cisco Web Filtering

Cisco Web Filtering offers granular control over all web content, including Secure Sockets Layer (SSL)-encrypted communications, using multiple techniques including real-time dynamic web content classification, an industry-leading URL filtering database, file-type filters and early warning filtering, and real-time scanning of search results with *SearchAhead*.

Enabled in the cloud, Cisco Web Filtering enables businesses to implement granular control for both inbound and outbound communications while realizing cost savings of up to 40 percent by eliminating the need to purchase, deploy, and maintain hardware required for on-premises solutions. Cisco Web Filtering allows businesses to be in complete control of how end users access content on the Internet by providing intuitive tools to create, monitor, and enforce effective inbound and outbound web policy.

Cisco Web Filtering is managed through an intuitive web-based interface, ScanCenter, which integrates all management and reporting capabilities. Through ScanCenter, a global web usage policy can be created and enforced across the organization, even down to the group or user level. Any edits to the policy are rolled out in real time without having to wait for policy changes to propagate throughout the network.

Ideal for Companies That Need These Features

- Limited legal liability by controlling access to inappropriate web content
- Optimized network resources by reducing bandwidth consumption
- Enhanced productivity by limiting non-business-related web activity
- Limited exposure to financial and other penalties related to the loss of confidential data
- Understanding and control of how your network resources are being used

Main Features and Benefits

- Control all web-based traffic including Secure Sockets Layer (SSL)-encrypted communications
- Prevent confidential data from leaving the network
- Ensure safe search engine results
- Develop granular reporting on all aspects of web usage

For More Information

<http://www.cisco.com/en/US/products/ps11733/index.html>

Secure Mobility

Cisco AnyConnect Secure Suite Mobility Solution

With the Cisco AnyConnect Secure Mobility solution, you can access the network with your mobile device of choice, including laptops, tablets, and smartphones. At the same time, this solution can help your organization easily manage the security risks of borderless networks, while supporting the bring-your-own-device (BYOD) trend and IT consumerization.

This mobile security solution provides:

- Security policy enforcement that is context-aware, comprehensive, and preemptive
- Connectivity that is intelligent, quick, and always on; the interface is user-optimized
- Highly secure mobility across the rapidly increasing number of managed and unmanaged mobile devices

The Cisco AnyConnect Secure Mobility solution consists of the following components:

- Cisco AnyConnect Secure Mobility Client for highly secure connectivity (including support for the National Security Agency's (NSA's) Suite B Cryptography (part of Next-Generation Encryption))
- Cisco ASA 5500 Series Adaptive Security Appliance, a proven firewall leader that provides users with more secure access to data—anytime, anywhere, using any device
- Cisco Web Security Appliance for security policy enforcement
- Cisco AnyConnect Secure Mobility solution, which enables your connection to simply work and be persistently connected, without your needing to juggle where and how to best connect and persist, even when roaming between networks
- Cisco ASA Series as the firewall and secure mobility, which works with Cisco AnyConnect Version 3.1 and provides the secure remote-access connectivity portion of Cisco AnyConnect Secure Mobility
- The Cisco S-Series Web Security Appliance applies context-aware policy, including enforcing acceptable use and protection from malware for all users. The Cisco Web Security Appliance also accepts user authentication information from the AnyConnect client, providing an automatic authentication step for you to access your web content.

Ideal for Companies That Need These Features

Cisco AnyConnect Secure Mobility Solution

For end users, Cisco AnyConnect Secure Mobility provides:

- A connectivity experience that is intelligent, quick, and always on worldwide with IPv6
 - User-optimized interface
 - Secure mobility across today's proliferating managed and unmanaged mobile devices
- For security administrators, Cisco AnyConnect Secure Mobility provides:
- Security policy enforcement that is context-aware, comprehensive, and preemptive
 - Reduced operating costs with a simplified IT operations for all end users
 - Improved customer satisfaction by providing flexibility and choice for end users

For company executives, Cisco AnyConnect Secure Mobility provides:

- Ability to boost productivity by enabling mobile access from any device without compromising security
- The end users' choices of how, when, and where to access their information

Main Features and Benefits

- Security policy enforcement that is context-aware, comprehensive, and preemptive
- A connectivity experience that is intelligent, quick, and always on; the interface is user-optimized
- Secure mobility across today's proliferating managed and unmanaged mobile devices

Specifications

Advanced IP Network Connectivity	<ul style="list-style-type: none">• Access to internal IPv4 and IPv6 network resources• Centralized split tunneling control for optimized network access IP address assignment mechanisms:<ul style="list-style-type: none">• Static• Internal pool• Dynamic Host Configuration Protocol (DHCP)• RADIUS/LDAP
Client Firewall Policy	<ul style="list-style-type: none">• Added protection for Split Tunneling configurations.• Used in conjunction with Cisco Secure Mobility to allow for local access exceptions (i.e. printing, tethered device support, etc).• Supports port-based rules for IPv4 and network/IP Access Control Lists (ACLs) for IPv6.• Available for Windows XP SP2, Vista, Windows 7 & Mac OS X
AnyConnect Profile Editor	<ul style="list-style-type: none">• AnyConnect policies may be customized directly from Cisco ASDM (Adaptive Security Device Manager).

<p>Pre-connection Posture Assessment (Premium license required)</p>	<ul style="list-style-type: none"> • In conjunction with Cisco Secure Desktop, Host Scan verification checking seeks to detect the presence of antivirus software, personal firewall software, and Windows service packs on the endpoint system prior to granting network access. • Administrators also have the option of defining custom posture checks based on the presence of running processes. • Cisco Secure Desktop can detect the presence of a watermark on a remote system. The watermark can be used to identify assets that are corporate-owned and provide differentiated access as a result. The watermark checking capability includes system registry values, file existence matching a required CRC32 checksum, IP address range matching, and certificate issued by/to matching. • An advanced endpoint assessment option is available to automate the process of repairing out-of-compliance • Applications.
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For More Information

<http://www.cisco.com/en/US/netsol/ns1049/index.html>

Cisco Adaptive Wireless IPS Software

Cisco Adaptive Wireless Intrusion Prevention System (IPS) offers advanced network security for dedicated monitoring and detection of wireless network anomalies, unauthorized access, and RF attacks. Fully integrated with the Cisco Unified Wireless Network, this solution delivers integrated visibility and control across the network, without the need for an overlay solution.

To further reduce capital investment, organizations can now benefit from the Enhanced Local Mode feature, allowing them to capitalize on the same access points they are already using for data, voice, and video traffic to provide Adaptive Wireless IPS functions.

Selected Part Numbers and Ordering Information

Cisco Adaptive wIPS in Cisco Unified Wireless Network Version 5.2 or later is a licensed software feature set on the Cisco Mobility Services Engine. The following table shows the license levels available for Adaptive wIPS. These license levels may be combined in any permutation to arrive at the count of access points you need to run Adaptive wIPS. For example, combining a five access point and a 25 access point license yields a license to run Adaptive wIPS on 30 access points.

Cisco Adaptive Wireless IPS Software Licenses	
AIR-WIPS-AP-5	Adaptive wIPS Software License: Supports 5 Cisco Monitor-Mode Access Points
AIR-WIPS-AP-25	Adaptive wIPS Software License: Supports 25 Cisco Monitor-Mode Access Points
AIR-WIPS-AP-100	Adaptive wIPS Software License: Supports 100 Cisco Monitor-Mode Access Points
AIR-WIPS-AP-500	Adaptive wIPS Software License: Supports 500 Cisco Monitor-Mode Access Points
AIR-WIPS-AP-2000	Adaptive wIPS Software License: Supports 2000 Cisco Monitor-Mode Access Points

For More Information

<http://www.cisco.com/en/US/products/ps9817/index.html>

VPN Services for Cisco ASA Series

Today's remote-access VPN deployments require the ability to safely and easily extend corporate network access beyond managed desktops to different user devices, while protecting these endpoints and important corporate resources from ever-evolving threats.

Secure Remote Access, powered by the Cisco ASA 5500 Series Secure Sockets Layer/IP Security (SSL/IPsec) VPN Edition, enables organizations to securely and transparently provide resource access to a broad array of users, contractors, and business partners on the largest variety of mobile and fixed endpoints.

Supporting a wide range of deployment and application environments, the Cisco ASA 5500 Series delivers maximum value to your organization with the most comprehensive set of SSL and IPsec VPN features, performance, and scalability in the industry. The solution, comprising a single unified platform—the Cisco ASA 5500 Series and the AnyConnect Secure Mobility Client—enables organizations to use a powerful combination of transparent, controlled access and market-proven, best-of-class firewall, intrusion prevention inspection, and web threat prevention that enables mobile workers to be productive while protecting corporate interests. With inclusive support for unrestricted full-network access, as well as controlled access to select web-based applications and network resources, the platform provides the flexibility required by any VPN deployment.

For More Information

http://www.cisco.com/en/US/prod/collateral/vpndev/ps6032/ps6094/ps6120/prod_brochure0900aecd80402e39.html

Cisco 3300 Series Mobility Services Engine

The Cisco 3300 Series Mobility Services Engine is an open platform that provides a new approach for the delivery of mobility services to enable mobile business applications. A combination of hardware and software, the mobility services engine is an appliance-based solution that supports a suite of software services to provide centralized and scalable service delivery. It transforms the wireless LAN (WLAN) into a mobility network by abstracting the application layer from the network layer, effectively allowing for the delivery of mobile applications across different types of networks, including Wi-Fi, Ethernet, cellular, and radio frequency identification (RFID).

The Cisco 3300 Series Mobility Services Engine provides an open application programming interface (API) that allows a broader ecosystem of partners to access network intelligence when developing industry-relevant mobility solutions. The mobility services engine is an extension of the Cisco Unified Wireless Network, and integrates with Cisco Unified Communications and Cisco compatible devices to deliver a comprehensive approach to business mobility—an approach that extends applications to the right device at the right time, no matter which network is being used.

Main Features and Benefits

- Simplifies provisioning and management of mobility services
- Offers scalable and reliable multidevice, multinet network application delivery
- Facilitates a broad partner ecosystem for mobile applications development
- As a component of the Cisco Unified Wireless Network, supports lightweight access points
- Integrates with the Cisco Unified Wireless Network, including the Cisco Wireless Control System, for a single mobility management solution

The Cisco 3350 Mobility Services Engine transforms existing wireless LANs (WLANs) into comprehensive mobility networks through a uniform method of mobility services delivery.

The Cisco 3350 Mobility Services Engine software suite includes:

- Cisco Context-Aware Software to track up to 18,000 devices
- Cisco Mobile Intelligent Roaming for up to 2000 simultaneous devices
- Cisco Adaptive Wireless Intrusion Prevention System (IPS) Software

Specifications

Feature	Cisco 3310	Cisco 3350
Supported Services	<ul style="list-style-type: none"> • Context-aware software to track up to 2000 devices • Adaptive Wireless Intrusion Prevention System software to support up to 2000 monitor mode access points 	<ul style="list-style-type: none"> • Context-aware software to track up to 18,000 devices • Adaptive Wireless Intrusion Prevention System software to support up to 3000 monitor mode access points.
Evaluation Support	<ul style="list-style-type: none"> • Customers who purchase a mobility service have the option to trial other mobility services on their MSE at the following scale: • Context-aware client tracking: 100 Clients • Context-aware tag tracking: 100 Tags • Adaptive Wireless Intrusion Prevention: 20 monitor mode access points 	
Processor	(1) Dual-Core Intel Processor 1.8 GHz	(2) Quad-Core Intel Xeon Processors 2.33 GHz
Memory	4-GB PC2-5300 (4 x 1 GB)	8-GB PC2-5300 (4 x 2 GB)
Hard Disk	(2) Fixed 247-GB Serial ATA-150 / SATA-300 MBps	(2) Hot-swappable 137-GB SAS-300 MBps drives
Connectivity	Network: Two embedded Multifunction Gigabit Network Adapters	Network: Two embedded Multifunction Gigabit Network Adapters with TCP/IP Offload Engine
Management	SNMP v1, v2c, and v3	SNMP v1, v2c, and v3
Management Interface	Cisco WCS Mobility Services v5.2 or greater running Internet Explorer 6.0/Service Pack 1 or later	Cisco WCS Mobility Services v5.2 or greater running Internet Explorer 6.0/Service Pack 1 or later
Network Devices	Cisco 2100, 4400 & 5500 Series Wireless LAN Controllers; Cisco Catalyst 6500 Series Wireless Services Module, Cisco Catalyst 3750G Integrated Wireless LAN Controller, Cisco Wireless LAN Controller Module (WLCM and WLCM-E) for Integrated Services Routers; Cisco Aironet® lightweight access points	Cisco 2100, 4400 & 5500 Series Wireless LAN Controllers; Cisco Catalyst 6500 Series Wireless Services Module, Cisco Catalyst 3750G Integrated Wireless LAN Controller, Cisco Wireless LAN Controller Module (WLCM and WLCM-E) for Integrated Services Routers; Cisco Aironet lightweight access points
Programming Interfaces	SOAP/XML APIs	SOAP/XML APIs

Form Factor	<ul style="list-style-type: none"> • 1.70 in. x 16.78 in. x 20 in. (4.32 cm x 42.62 cm x 50.8 cm) • 15 lbs (6.8 kg) maximum 	<ul style="list-style-type: none"> • 1.70 in. x 16.78 in. x 27.25 in. (4.32 cm x 42.62 cm x 69.22 cm) • 39.5 lbs (17.92 kg) maximum
Power	<ul style="list-style-type: none"> • AC power supply wattage: 540W • AC power supply voltage: 100-120V at 50-60 Hz; 200-240V at 50-60 Hz 	<ul style="list-style-type: none"> • AC power supply wattage: 852W • AC power supply voltage: 100-120V at 50-60 Hz; 200-240V at 50-60 Hz • Redundant Power Supplies
Software Compatibility	<ul style="list-style-type: none"> • Available with Cisco Mobility Services Engine (MSE) Software Release 5.2 or later • Requires WLC software version 4.2130 or later and Wireless Control System (WCS) Version 5.2 or later • Multiple mobility services can run concurrently on the same MSE using WLC and MSE Software Release 6.0 or later • Supported services may have different software requirements 	<ul style="list-style-type: none"> • Available with Cisco Mobility Services Engine (MSE) Software Release 5.1 or later • Requires WLC software Version 4.2130 or later and WCS Version 5.1 or later • Multiple mobility services can run concurrently on the same MSE using WLC and MSE Software Release 6.0 or later • Supported services may have different software requirements

Selected Part Numbers and Ordering Information

AIR-MSE-3350-K9	Cisco 3350 Series Mobility Services Engine
AIR-MSE-3310-K9	Cisco 3310 Series Mobility Services Engine

For More Information

<http://www.cisco.com/en/US/products/ps9742/index.html>

Cisco Virtual Office

Remote worker solutions from Cisco boost flexibility and productivity and extend the enterprise by delivering secure, rich, and manageable network services to teleworkers and employees working outside the traditional office environment. By providing full IP phone, wireless, data, and video services, Cisco Virtual Office provides a smooth, office-caliber experience to staff, wherever they may be located.

The Cisco Virtual Office solution consists of the following components:

- A remote-site presence with a Cisco 800 Series Integrated Services Router and a Cisco Unified IP Phone 7900 Series phone
- Headend presence remote-site aggregation that includes a VPN router and centralized management software for policy, configuration, and identity controls; Cisco and approved partners provide deployment and ongoing services for successful deployment and integration as well as consultative guidance for automating the deployment

Deployment Options

Cisco Virtual Office includes provisioning and management through numerous management tools that provide the ability to define networkwide policy, use identity for authorization, and actively update configurations at remote sites.

Cisco Virtual Office Express refers to a simplified architecture to address initial installation steps. It extends the same network services available through the Cisco Virtual Office solution but is distinct in its ability to quickly set up the secured connections between sites. Cisco Virtual Office Express has a reduced number of management and secured components to provide rich functions while keeping operating costs low.

Solution Benefits

The Cisco Virtual Office solution addresses many of the requirements associated with remote working for both end users and organizations alike. In doing so, it also provides benefits across three distinct organizational groups:

- For end users: Cisco Virtual Office allows schedule flexibility and improves work-life balance by providing the ability to work at home or on the road. The solution also provides integrated family support with multiple Service Set Identifiers (SSIDs) for wireless and separate VLANs for a secure "split-tunneling".
- For IT groups: Cisco Virtual Office simplifies the process of extending real-time, high-performance network services to remote locations. These services are delivered without any compromise to the overall security policy. Traffic is protected through VPN technologies, and authorization to access corporate resources is managed through strict identity controls. This solution also provides architecture for centralized, simplified management and operations, and contributes to improved scalability security and low total cost of ownership (TCO). For example, Cisco IT effectively supports more than 20,000 Cisco Virtual Office deployments with just a handful of resources. This support is particularly important because users at these locations have heightened expectations for the delivery of virtual office services, and these locations typically do not have IT staff for onsite support. For an even simpler deployment model, Cisco Virtual Office Express comprises a single, integrated device that results in initial cost savings as

well as investment protection in the form of the scalability and modularity of the routers as business needs expand. With only one management solution to learn, training needs are minimized and ongoing operations are simplified.

- For businesses and organizations: This solution improves productivity of the workforce while saving costs associated with energy, facilities, and real estate. It also enables better business resiliency, allowing the workforce to stay secure and connected if employees cannot get to the office or are traveling.

A Differentiated Solution

Teleworkers and technology that enables teleworking has existed for many years, but the solutions in the past have typically lacked a critical component, creating a barrier to adoption. Perhaps the solution is not robust enough to handle communication and collaboration applications. Perhaps it lacks the proper security controls to comply with corporate standards. Or perhaps it does not use unified communications or wireless technologies, making it less convenient. Cisco Virtual Office delivers a truly comprehensive solution that addresses each of these concerns, providing mutual benefits to the end user, the IT department—and ultimately—the business.

For More Information

<http://www.cisco.com/go/cvo>

Security Management

Cisco Security Manager

Cisco Security Manager is an enterprise-class management application that provides insight into and control of Cisco security and network devices. Cisco Security Manager offers comprehensive security management (configuration and event management) across a wide range of Cisco security appliances, including Cisco ASA Adaptive Security Appliances, Intrusion Prevention System (IPS) Sensor Appliances, Integrated Services Routers, Firewall Services Modules, and Cisco Catalyst 6000 Series Switches. Cisco Security Manager allows you to efficiently manage networks of all sizes—from small networks to large networks consisting of hundreds of devices.

Cisco Threat Defense

Cisco threat defense helps organizations secure and manage their Borderless Networks environment. Organizations are protected from today's dynamic threat environment using proactive intelligence from Cisco Security Intelligence Operations (SIO), market-leading network security devices, and a single, integrated management platform.

Simplified Security Management

- Next-generation Cisco Security Manager enables organizations to gain insight and control of the entire security topology through a single, integrated user interface, including:
 - Global policies for Cisco Adaptive Security Appliances (ASA) and Intrusion Prevention System (IPS) Appliances
 - Single console for configuration and device changes
- Next-generation Cisco Security Manager increases visibility into your security environment so that you can better understand and respond to threat patterns and risk. Features include:
 - Single view of Cisco IPS with Cisco Global Threat Correlation Engine and ASA-thwarted events
 - Single view of traffic statistics
 - Comprehensive navigation capabilities
 - Integration of reputation data into IPS events
 - Dynamic policy tuning based on actionable events
- Cisco IPS with the Cisco Global Threat Correlation Engine reduces the time needed to manage IPS by providing more accurate detection and automated rule sets.
- Policy and object management enables reuse of security rules and objects, and enhances the ability to monitor security threats from throughout the deployment, minimizing the potential for errors and maximizing efficiency
- Troubleshooting and Health and Performance Monitoring allows configuration of alerts to predefined thresholds; it allows for event management, and it enables administrators to proactively monitor the security environment, leading to operational efficiency, visibility, and lower time to resolution. It also supports tools such as Cisco Packet Tracer and the **traceroute** command.
- Detection of out-of-band changes and selective ASA policy management for heterogeneous operational IT environments are supported.
- The application supports simplified policy definition paradigms for ASA appliances (providing Network Address Translation [NAT] services) and Global Access Rules for improved management efficiency.
- You can deploy centralized and automatic software image updates for all ASAs throughout the network, helping ensure consistency and greatly reducing the time and administrative overhead required for deployment upgrades.

- Northbound application programming interfaces (APIs) enable representational state transfers for the secure sharing of essential data with third-party network services such as compliance and advanced security analysis systems to help streamline security operations and adhere to compliance requirements.
- The application provides enhanced support for Cisco's latest IPS and firewall features, such as Botnet Traffic Filter and the Global Threat Correlation Engine, for an improved threat response experience.
- The application supports role-based access control (RBAC) and an approval framework for proposing and integrating changes.

For More Information

<http://www.cisco.com/go/csmanager>

Physical Security

Cisco Video Surveillance Manager

Cisco Video Surveillance Manager (VSM) provides a comprehensive system for your video surveillance needs. This system enables your network and security teams to collaborate effectively in a highly scalable environment, combining both video and network techniques to optimize the experience. Enable your team with this secure, policy-based system to ensure they maximize their productivity across thousands of cameras.



Features and Capabilities

Cisco Video Surveillance Manager:

- Provides a web-based toolkit for configuration, management, display, and control of video from a wide variety of both Cisco and third-party surveillance endpoints
- Uses IP technology to provide outstanding scalability in terms of sites, cameras, viewers, and storage
- Delivers low-latency, high-quality, event-tagged video
- Supports a broad range of network topologies and platforms ranging from virtual to nonvirtual, centralized to decentralized, and everything in between
- Enables simple, effective management through comprehensive template capability

Cisco Virtualized Video Surveillance solutions:

- Offer a complete virtualized solution for Cisco Video Surveillance Media Server software on Cisco Unified Computing Systems (UCS) platforms
- Provide a hyperscalable solution with modular Cisco UCS platform building blocks
- Provide centralized management with improved situational awareness and real-time response
- Can support hundreds of thousands of video surveillance cameras with core routing and Cisco UCS

For More Information

<http://www.cisco.com/en/US/products/ps10818/index.html>

Virtualized Physical Security Applications on the Cisco Unified Computing Systems

The move of physical security applications to a shared, secure, and scalable network is well underway. Cisco is now leading the move of physical security applications to shared, secure, and scalable compute and storage environments. Cisco partners and customers can now deploy physical security applications virtualized on Cisco UCS.



Main Features and Benefits

- Highly scalable from lean branch office to massive data center
- Greatly reduced deployment times achieved by using application virtualization
- Shared investment in compute and storage, which reduces total cost of ownership (TCO)
- Application consolidation, which allows for solution components to be gathered into shared compute and storage
- Greatly reduced physical footprint for large and small systems
- Simplified cabling, which reduces deployment complexity
- Reduced power consumption

For More Information

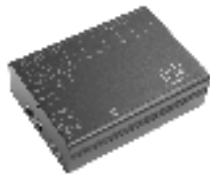
<http://www.cisco.com/en/US/products/ps12689/index.html>

Cisco Physical Access Gateway

An integral component of the Cisco Physical Access Control solution, the Cisco Physical Access Gateway is the primary module used to connect door hardware (readers, locks, etc.) to the IP network. The gateway can connect to a maximum of two doors and associated inputs and outputs.

The Cisco Physical Access Gateway is a mandatory component of any access-control deployment. You can connect the following optional modules to the Cisco Physical Access Gateway to control additional doors, inputs, and outputs:

- Cisco Physical Access Gateway Reader Module
- Cisco Physical Access Gateway Input Module
- Cisco Physical Access Gateway Output Module



Main Features and Benefits

- Manages up to two doors
- Supports additional modules
- Supports reader and lock power
- Supports credential cache
- Supports event cache
- Supports encryption

For More Information

<http://www.cisco.com/en/US/products/ps9687/index.html>

Cisco Physical Access Manager

Cisco Physical Access Manager is the management application for the Cisco Physical Access Control solution. It comes installed on hardware, and is sold as an appliance. This application is used to configure Cisco Physical Access Gateways and Modules, monitor activity, enroll users, and integrate with IT applications and data stores.

The Cisco Physical Access Manager is sold in two form factors—a hardware appliance (Physical Security Multiservices Platform) and virtual appliance for the Cisco Unified Computing System.

Main Features and Benefits

- Flexible options for enrolling users and assigning fine-grained credentials to tailor privileges to organizational roles
- Support for a comprehensive list of access control policies
- Simplified, data-directed integration with other IT systems, without requiring programming or custom development
- Flexible reporting capability that lets you generate template-based and custom reports
- Redundancy between two Cisco Physical Access Module instances, for failover support and reduced downtime
- Easy access to live or recorded video through integration with Cisco Video Surveillance Manager
- Sold in two form factors—a hardware appliance and virtual appliance for the Cisco Unified Computing System

Selected Part Numbers and Ordering Information

CIAC-PAME-EDI=	Cisco Physical Access Manager Enterprise Data Integration License
CIAC-PAME-WSAPI=	Cisco Physical Access Manager Web Services API License

¹ The Cisco Physical Access Manager is available through Cisco Authorized Technology Provider (ATP) Partners.

For More Information

<http://www.cisco.com/en/US/products/ps9688/index.html>

Cisco Video Surveillance 2600 Series IP Cameras

The Cisco Video Surveillance 2600 Series IP Cameras and IP Domes are professional-class, multifeature cameras that offer:

- Outstanding performance and image quality
- Ease of deployment
- Options ranging from indoor mounting to outdoor and vandal- and weather-resistant installations

The cameras employ H.264 compression for the optimal balance of image quality and compression. They provide a superior image while reducing network traffic and storage requirements. You can remotely adjust the focus and field of view of the dome cameras, greatly simplifying deployment.



Main Features and Benefits

- **Optimal imaging efficiency:** The Cisco Video Surveillance 2600 Series IP Camera can stream video using H.264 compression, reducing network traffic and storage requirements while providing superior image quality.
- **Wide dynamic range:** The camera employs powerful digital imaging technology, allowing it to capture high-quality images in a wide variety of lighting conditions. It uses a progressive scan image sensor with global electronic shuttering to help ensure natural color rendition, zero blooming and smear, and minimal motion blurring.
- **Dual streaming:** The camera can deliver two simultaneous video streams over the network. A combination of H.264, MPEG4, and MJPEG can be configured. Each video stream can be configured with individual resolution, quality, and frame-rate settings.
- **Day and night operation:** The camera provides true day and night functions including an infrared (IR) filter that can automatically switch to night mode in low-light scenes. This function can be set to manual or automatic control.
- **Embedded security and networking:** The camera provides 802.1X authentication and supports IP Multicast for enhanced bandwidth management.
- **Event notification:** The camera can examine designated areas in the video for motion activity and then notify users or other applications when it detects activity that exceeds a predefined threshold.
- **Motorized focus and zoom:** The lens on the IP dome allows the focus and zoom to be controlled remotely, greatly simplifying installations and field-of-view adjustments.

Specifications

To choose the best digital IP camera for your needs, refer to the model comparison chart at: http://www.cisco.com/en/US/products/ps11251/prod_models_comparison.html#~standard_cameras.

For More Information

<http://www.cisco.com/en/US/products/ps11251/index.html>

Cisco Video Surveillance 4000 Series High-Definition IP Cameras

Cisco Video Surveillance 4000 Series IP Cameras are feature-rich digital cameras designed for superior performance in a wide variety of video surveillance applications. The cameras employ true high-definition (HD) video and H.264 compression, streaming up to 30 frames per second (fps) at 1080p (1920 x 1080) resolution, and 60 fps at 720p (1280 x 720) resolution, offering efficient network usage with the highest-quality video. Contact closures and two-way audio allow integration with microphones, speakers, and access control systems. With their open, standards-based design, the cameras provide an ideal platform for integration and operation as independent devices or as part of a Cisco Video Surveillance network.

The Cisco Video Surveillance 4300 Series and 4500 Series IP Cameras (CIVS-IPC-4300 and CIVS-IPC-4500, respectively) have identical feature sets, with the exception of the additional digital-signal-processor (DSP) capabilities specifically designed to support real-time video analytics at the edge on the Cisco Video Surveillance 4500 Series IP Cameras. On these cameras, applications and end users have the option to run multiple analytics packages without compromising video streaming performance on the cameras. This highly flexible computing platform, which will be compatible with future versions, is ideal for next-generation video analytics applications.



Main Features and Benefits

- True high-definition (HD) video: The cameras stream crisp and clear 1080p (1920 x 1080) video at 30 frames per second (fps) while maintaining surprisingly low network bandwidth. For fast-motion applications, you can set the cameras to stream 720p (1280 x 720) video at 60 fps.
- Progressive scan video: The cameras capture each frame at its entire resolution using progressive scan rather than interlaced video capture, which captures each field of video. This feature allows for better detail for video of moving objects such as faces and license plates on automobiles.
- Dual streaming: The camera can stream H.264 and MJPEG video simultaneously. Each video stream can be configured with individual resolution, quality, and frame-rate settings.
- Day and night operation: The cameras provide true day and night functions including an automatic infrared (IR) filter in low-light scenes. With the appropriate IR-corrected lenses and IR illumination, the cameras can provide HD video in low-light environments.
- Flexible power options: The cameras support Power over Ethernet (PoE) 802.3af, 12-VDC, or 24-VAC power through an optional external power supply.
- Mounting options: You can install the cameras with a fixed mount or with an optional external pan or tilt mount and motorized zoom lens.*
- Embedded security and networking*: The camera provides hardware-based Advanced Encryption Standard (AES). For enhanced bandwidth management, the camera supports IP Multicast.
- Event notification*: The camera can examine designated areas for activity and notify users or other applications when it detects activity that exceeds a predefined sensitivity and threshold. The camera also provides two digital inputs and two digital outputs that can be used to initiate specific actions when an alarm is detected.
- Medianet support: The camera supports the medianet interface. When connected to a Cisco switch that also supports medianet, the camera is recognized as a video endpoint by the switch, which then uses SmartPort macros to set the right network parameters for the video stream on the network.
- Video analytics support: The Cisco Video Surveillance 4500 IP Camera provides real-time, edge-based video analytics capabilities.

*Note: Features with an asterisk are not available when the camera is used with Cisco Video Surveillance Manager.

Specifications

To choose the best digital IP camera for your needs, refer to the model comparison table:
http://www.cisco.com/en/US/products/ps9716/prod_models_comparison.html#-hd_cameras

¹ The Cisco 4000 Series Video Surveillance IP Camera is available through Cisco Authorized Technology Provider (ATP) Partners.

For More Information

<http://www.cisco.com/en/US/products/ps9716/index.html>

Cisco Video Surveillance 5000 Series HD IP Dome Cameras

Cisco Video Surveillance 5010 and 5011 Indoor Fixed Dome IP HD Cameras are 2.1-megapixel indoor fixed dome cameras designed with industry-leading image quality and high processing power. Designed to install quickly and easily, all of the post-back-box installation and setup can be done with one hand.

The Cisco Video Surveillance 5010 and 5011 Cameras deliver high-definition (HD) resolution, advanced low-light capabilities, consistent color science, and fast processing power. The H.264 compression video files are up to 20 times smaller, making HD video more affordable. With their open, standards-based design, the cameras provide an ideal platform for integration and operation as independent devices or as part of a Cisco Video Surveillance network.



Main Features and benefits

- Up to 2.1-megapixel resolution (1920 x 1080)
- Up to 30 frames per second (fps) at full high-definition (HD) 1080p
- Optional CS-mount lenses
- Auto back focus for high precision
- Easy, quick, one-handed installation
- H.264 and MJPEG compression
- Day and night capability
- Sensitivity down to 0.03 lux
- Power over Ethernet (PoE; IEEE 802.3af Class 3) or 24 VAC

- Video setup jack and focus button accessible with dome closed
- Up to two simultaneous video streams
- Motion detection

Specifications

To choose the best digital IP camera for your needs, refer to the model comparison table at: http://www.cisco.com/en/US/products/ps11027/prod_models_comparison.html#-hd_cameras.

For More Information

<http://www.cisco.com/en/US/products/ps11027/index.html>

Cisco Video Surveillance 6000 Series IP Cameras

Enterprise-Class Video Surveillance

Cisco Video Surveillance 6000 Series IP Cameras are 2.1-megapixel, high-definition (HD) cameras that produce video streams in full 1080p resolution. Models are available in box, dome, and bullet form factors with options for indoor or outdoor mounting.



Cisco Video Surveillance 6000 Series IP Cameras offer a variety of benefits, including:

- Full high-definition (HD) resolution (1080p) at 30 frames per second (fps), H.264 and MJPEG compression, and dual streaming
- Day or night capability with motion detection and event notification
- Simplified installation and maintenance through medianet
- Support for Power over Ethernet (PoE)
- Integrated infrared (IR) illuminator (Bullet camera only)

For More Information

<http://www.cisco.com/en/US/products/ps12663/index.html>

Cisco Video Surveillance 2900 Series PTZ IP Dome Cameras

Cisco Video Surveillance 2900 Series PTZ IP Dome Cameras are standard-definition (SD), feature-rich cameras designed for superior performance, image quality, and ease of deployment. These cameras allow for viewing and control of analog video while simultaneously viewing, recording, and controlling IP video.



The cameras come with integrated camera optics packages. They offer 360° continuous pan rotation, as well as 256 Pan/Tilt/Zoom (PTZ) presets. In addition, the back boxes for these cameras feature built-in memory, which can be used to store camera- and location-specific dome settings, including labels, presets, patterns, and zones.

Cisco Video Surveillance 2900 Series IP Cameras support two simultaneous video streams. The two streams can be compressed in MJPEG, MPEG-4, and H.264 formats across several resolution configurations. The streams can be configured in a variety of frame rates, bit rates, and group-of-pictures (GOP) structures for additional bandwidth administration.

All cameras in the Cisco Video Surveillance 2900 Series feature a Sony EXview HAD imager for increased sensitivity, and low-light technology that allows the cameras to compensate for scenes where minimal light is present. In addition, the cameras feature built-in motion detection and advanced 128X wide dynamic range (WDR) that enables the system to compensate for scenes where dramatic contrasts in lighting are present. The 35X day and night camera also supports electronic image stabilization, which digitally reduces the blurring of the camera image due to vibration caused by external sources such as wind and traffic.

Main Features and Benefits

The indoor camera features:

- In-ceiling mounting
- 27X zoom
- Smoked dome
- Separate PAL and NTSC models

The outdoor camera features:

- Pendant mounting
- IP-66 rating

- 35X zoom
- Clear dome
- Separate PAL and NTSC models

Cisco Video Surveillance 2900 Series IP PTZ Cameras offer a variety of benefits, including:

- Simultaneous IP and analog video
- H.264, MPEG-4, and MJPEG compression
- Integrated camera and optics packages with autofocus
- Window blanking
- 256 Pan/Tilt/Zoom (PTZ) presets and 8 user-defined patterns
- 360° continuous pan rotation
- Motion detection
- Electronic image stabilization (35X models only)
- Onscreen compass and tilt display
- Wide dynamic range
- Day and night operation

Specifications

To choose the best digital IP camera for your needs, refer to the model comparison table:
http://www.cisco.com/en/US/products/ps11027/prod_models_comparison.html#~hd_cameras.

For More Information

<http://www.cisco.com/en/US/products/ps11252/index.html>

Cisco Video Surveillance Encoders

Easily Convert Analog Video to Digital Format

Cisco Video Surveillance Encoders are standalone devices that can be used to convert analog video sources into digital formats. These formats can be easily transported across a networked, IP-based video surveillance system. Both the 4- and 8-port models can be stacked, wall-mounted, or rack-mounted.



Features include the following:

- Up to 30 frames per second (fps) at D1 resolution (180 fps maximum across all ports and channels)
- H.264, MPEG-4, and MJPEG compression options
- Up to two simultaneous video streams per port (CIVS-SENC-4P only)
- Up to five privacy mask windows per port
- Up to three motion detection windows per port

For More Information

<http://www.cisco.com/en/US/products/ps12242/index.html>

Cisco Physical Security Operations Manager

Cisco Physical Security Operations Manager is a scalable command-and-control style operator console that unifies management and operation of Cisco Video Surveillance Manager, Cisco Physical Access Manager, and the Cisco IP Interoperability and Collaboration System (IPICS). The Cisco Physical Security Operations Manager integrates security alarms and events from multiple sources, consolidates device management into a single location, and displays information on easy-to-use and intuitive maps, providing efficient data visualization and allowing smooth access to live and stored video and access-controlled doors. The Cisco Physical Security Operations Manager is powered by a sophisticated business logic engine, enabling you to create custom workflows to support use cases that cross all product domains. The manager helps mitigate risk across an enterprise by providing actionable intelligence, speeding security incident resolution, and reducing security operations costs.



The Cisco Physical Security Operations Manager is available as a downloadable Open Virtualization Format (OVF) virtual appliance for the Cisco Unified Computing System (Cisco UCS) C- and B-Series.

Main Features and Benefits

- Improved scalability for large and geographically distributed environments
- Complete view of facilities, sensors, and alarms in an easy-to-use and intuitive map-enabled graphical interface
- A comprehensive security alarms and events management system with a powerful workflow and business logic engine

For More Information

<http://www.cisco.com/en/US/products/ps11265/index.html>

Cisco Physical Security Multiservices Platform

The Cisco Physical Security Multiservices Platform offers you innovative choices for deploying and managing physical security services, including video surveillance, access control, and flexible incident response communications. It is composed of a suite of two server models and includes a wide array of features in a single, easy-to-use, and easy-to-deploy component that offers you choices among the following security applications:



- **Video surveillance:** This application provides network digital recording and playback. With optional built-in analog video encoder cards and Fibre Channel interfaces, the Cisco Physical Security Multiservices Platform 1- and 2-rack-unit (1RU and 2RU, respectively) servers enable direct connectivity from analog cameras or for IP video directed from the network, and allow remote playback of the recordings over an IP network. This platform offers scalable and flexible options for replacing traditional analog or digital video recorders in a variety of video surveillance deployments. For other video surveillance platform options, refer to: http://www.cisco.com/en/US/products/ps9152/products_data_sheets_list.html.
- **Physical access control:** This application provides electronic access control using the IP network to manage doors and locks. The solution consists of hardware and software products and is modular, scalable, and easy to install. The management application of the solution, Cisco Physical Access Manager, comes installed on the Cisco Physical Security Multiservices Platform 1RU appliance. Cisco Physical Access Manager is used to configure Cisco Physical Access Gateways and Modules, monitor activity, enroll users, and integrate with IT applications and data stores. For other physical access control platform options, refer to: http://www.cisco.com/en/US/products/ps9688/products_data_sheets_list.html.
- **Cisco IP Interoperability and Collaboration System (IPICS):** This application provides on-demand incident communications across multiple agencies, enabling new levels of interoperability and operational efficiencies for public safety agency and support personnel. Cisco IPICS Server Software, which can be installed on the Cisco Physical Security Multiservices Platform 1RU and 2RU servers, integrates disparate push-to-talk (PTT) systems with other voice systems for emergency personnel. For other Cisco IPICS platform options, refer to: http://www.cisco.com/en/US/products/ps6718/products_data_sheets_list.html.
- **Cisco Physical Security Operations Manager:** This application provides a scalable command-and-control style operator console that unifies event management and operation of Cisco Video Surveillance Manager, Cisco Physical Access Manager, and Cisco IPICS. Cisco Physical Security Operations Manager comes in both Enterprise and Lite versions. The Lite version can be installed on the Cisco Physical Security Multiservices Platform 1RU and 2RU servers. The Enterprise version can be installed only on the 2RU server. For more information, refer to: http://www.cisco.com/en/US/products/ps11265/products_data_sheets_list.html.

Main Features and Benefits

- Built-in 300W high-efficiency power supply in the 1-rack-unit (1RU) server
- 900W high-efficiency power supply with hot-swappable, redundancy option in 2RU server
- High-performance fans with built-in redundancy for optimized cooling
- System health and management features, including redundant cooling fans, a convenient power switch, reset button, and LED indicators
- Various Redundant Array of Independent Disks (RAID) configurations for resiliency
- Optional encoder cards that compress up to 16 analog video inputs with full frame rate at D1 resolution
- Optional hot-swappable hard-disk drives that can be removed without powering down the server (must have RAID configuration to be hot-swappable)
- High storage density
- System resiliency
- Hardware diagnostics
- High-performing motherboard

For More Information

<http://www.cisco.com/en/US/products/ps10823/index.html>

Cisco IPICS Server Software

The Cisco IP Interoperability and Collaboration System (IPICS) Server is the conductor of the Cisco IPICS system. Agency personnel use the Cisco IPICS Administration Console, a web-based GUI, to dynamically manage system resources and orchestrate interoperable communications. The Cisco IPICS Server is used to create virtual talk groups (VTGs) to facilitate push-to-talk (PTT) communications among users of multiple types and technologies of Land Mobile Radios (LMRs) with users of PCs, landline phones, cellular, smartphones, and Cisco Unified IP Phones. This function delivers critical communications interoperability between—and beyond—the boundaries of traditional systems.

The Cisco IPICS Server is a security-enhanced, Linux-based platform installed on the Cisco Multiservice Platform Server or virtualized in the Cisco Unified Computing System (Cisco UCS), a family of proven and reliable hardware platforms that you can deploy in mobile command units or in headquarters, branch offices, or operations centers. Other Cisco IPICS system components include the Cisco Dispatch Console (DC), Cisco Mobile Client, Cisco IPICS IP Phone Client, Cisco IPICS Operational Views (Ops Views), Cisco LMR gateways, Router Media Service (RMS), Cisco Unified Media Service (UMS), Cisco Inter-RF Subsystem Interface (ISSI) Gateway, and Session Initiation Protocol (SIP) telephony gateways.

Cisco IPICS is a systems-level, network-based solution for voice interoperability. It takes full advantage of open IP standards and IP network infrastructure for greater resiliency, scaling, and security, and is part of a complete communications solution for organizations of all sizes.

Main Features and Benefits

- All-in-one safety and security incident response, communications, and collaboration solution
- User-friendly setup and operation
- Centralized, remote, or distributed administration across locations, agencies, networks, and jurisdictions
- Complete and secure virtual push-to-talk (PTT) communications and management
- Support for secure incident management, response, notification, and messaging
- Customizable secure voice dial-in and dial-out access to radio channels and incident virtual talk groups
- Role-based user, dispatch console, operator, and system administrator management
- Support for radio resources, desktop PC clients, and Cisco Unified Communications IP Phone PTT clients
- Integrated support and management of Cisco Integrated Services Routers and Land Mobile Radio (LMR) gateways
- Proven IP network protocols for critical communications over IP Unicast, IP Multicast, Session Initiation Protocol (SIP), VPN, satellite, IP, and wireless networks

For More Information

<http://www.cisco.com/go/ipics>

Cisco IPICS Dispatch Console

The Cisco IP Interoperability and Collaboration System (IPICS) Dispatch Console is an end-to-end radio dispatching solution designed for mission-critical radio communications. It is the vital link between dispatchers and field personnel, helping to coordinate field response and ensure personnel safety. Running on a standard PC platform, it extends existing push-to-talk (PTT) radio channels so that users with a variety of communication devices can participate.

The Cisco IPICS Dispatch Console introduces rich-media incident management support, giving dispatchers the power to consolidate information relating to an incident and instantly share it among participants. Incident dispatch enables the sharing of multimedia data such as the following:

- Live video sent from surveillance cameras, access control gateways, and mobile clients
- Archived or YouTube videos
- Photos
- Alarm monitoring
- Journal and live statuses
- Website links to resources, such as Federal Emergency Management Agency (FEMA) and hazardous material databases, standard operating procedures, and maps

Main Features and Benefits

- Comprehensive feature set, supporting the features important to a dispatcher, on an IP-based application



- Disaster recovery mobility, because this PC-based application moves with the user anywhere there is an IP network, unlike a traditional dispatch console that stays where it is installed
- Radio interoperability and beyond, because it supports multiagency talkgroups; talkgroups between disparate radios; and talkgroups that include radios, PCs, phones, cell phones, and IP phones
- Rich-media incident management, because it moves beyond audio to support rich-media talkgroups and a new generation of mobile endpoints
- Integrated policy engine, giving dispatchers a new set of tools that simplify notification and improve response time
- Smooth evolution to P25, Tetra, and other radio protocols

For More Information

<http://www.cisco.com/go/ipics> or
http://www.cisco.com/en/US/prod/collateral/ps6712/ps6718/datasheet_c78-582928.html

Cisco IPICS Mobile Client

The Cisco IP Interoperability and Collaboration System (IPICS) Mobile Client is a new component of the Cisco IPICS solution that helps smartphones join an IPICS-enabled incident-response network. This smartphone application allows responders to interact with other incident participants. Incidents can be within a single agency or among multiple agencies. With this application, responders can perform a variety of incident-related activities, including:



- Access incident-related push-to-talk (PTT) channels to communicate between responders and radio users
- Obtain up-to-date incident status information from each responder
- Access incident-related video clips, photographs, and status either pushed to them from the dispatcher or added by other responders
- Dynamically add their own video clips, photographs, and status updates

Main Features and Benefits

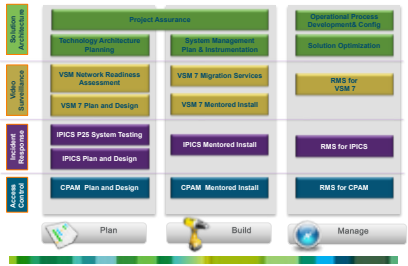
- Mobility: The Cisco IP Interoperability and Collaboration System (IPICS) Mobile Client, based on smartphone technology, moves with the user anywhere there is a wireless network; for example, Wi-Fi or third-generation (3G) cellular network.
- Radio interoperability and beyond: The Cisco IPICS Mobile Client allows push-to-talk (PTT) interoperability with radio channels and talk groups.
- Rich media: The Cisco IPICS Mobile Client moves beyond audio to support rich media and a new generation of mobile endpoints.
- Open standards compatible: Built as a smartphone application, the Cisco IPICS Mobile Client transfers to new devices as replacement technology is introduced.

Cisco Services Portfolio for Physical and Security Products

The Cisco Services Portfolio helps ensure successful planning, deployment, risk mitigation, and ongoing operational success and management of the Physical Safety and Security product environment. Drawing on extensive experience, leading practices, and advanced tools, the services team can help the Cisco customer and Authorized Channel Partner achieve a range of benefits, including reducing risk of downtime, avoiding time-consuming and expensive redesign by proper planning; increasing productivity by using tried and tested design principles; and ultimately accelerating customer realization of their business objectives.

The next section highlights key new services that have been added to the portfolio. This is in addition to existing services.

Physical Safety and Security Services Portfolio



Solution Architecture Services

1) Cisco Project Assurance Service for Physical Safety and Security

This service is targeted to partners and customers to get Cisco oversight and experience to assure project success. Optimize project cost, Manage Risks, dependencies, schedule. Cisco manages the overall project management and assurance for the project. This service is especially useful in complex, multi site and multiple technology environments

2) Cisco Technology Architecture Planning for Physical Safety and Security

The Cisco Technology Architecture Planning service includes the functional description of the solution, the high level design, a proposed bill of materials, a recommended operating model, solution roadmap and high level schedule, a gap analysis between solution requirements and current state, and a business case that the customer can use for internal budget justification. The service then provides the detailed designs and test plans needed by the delivery teams to deploy the solution and its supporting management systems, as well as the detailed operational plans the customer will use to operate the solution.

New Fixed Price Mentored Install Services for VSM and IPICS:

The new Fixed Price Mentored Install service is targeted to partners and customers who are looking at Cisco to help and assist with a deployment of the VSM and IPICS technology. The service is fixed in scope and hence can be ordered off the Cisco Ordering tools. Service includes a workshop to understand project requirements and desired outcome. Cisco will provide a Runbook documenting the customer requirements, system parameters, implementation plan and basic test cases. A Cisco SME will validate the system installation against the project requirements. The SME will provide configuration assistance to the Customer and guidance on any installation issues. The service has different SKU's and price points to accommodate a range of project sizes and scope.

Select Part Numbers and Ordering Information

Solution Architecture Services	
Contact Cisco Services Sales Representative for Scoping and Pricing	<ul style="list-style-type: none"> • Technology Architecture Planning • Project Assurance • System Management Plan and Instrumentation • Operational Process Improvement • Solution Optimization
VSM Services	
Contact Cisco Services Sales Representative for Scoping and Pricing	<ul style="list-style-type: none"> • VSM 7 Network Readiness Assessment • VSM 7 Migration Service • VSM 7 Plan and Design Services (for custom and complex situations)
ASF-ESG-G-PSS-VSMS* ASF-ESG-G-PSS-VSMM* ASF-ESG-G-PSS-VSML*	VSM Mentored Install Services (Fixed Price SKU's - NEW)*
CON-ROSF-VSMSW7X CON-ROSF-VSOMSW7X CON-ROSF-VSM7MS= CON-ROSF-VM7CM50 CON-ROSF-VM7CM100 CON-ROSF-VM7CM200 CON-ROSF-VM7CM500 CON-ROSF-VSM7BVM= CON-ROSF-VSM7CVM= CON-ROSF-7OMBVM= CON-ROSF-7OMCVM=	RMS for VSM
Incident Response Services	
ASF-ESG-G-PSS-IPS* ASF-ESG-G-PSS-IPM* ASF-ESG-G-PSS-IPL*	IPICS Mentored Install Services (Fixed Price SKU's - New)*
Contact Cisco Services Sales Representative for Scoping and Pricing	IPICS Plan and Design Services IPICS P 25 Testing and Support
CON-ROSF-IPX4BDL1 CON-ROSF-IPX4BDL2 CON-ROSF-IPX4BDL3 CON-ROSF-IPXUPG1D CON-ROSF-IPXUPG1V CON-ROSF-IPXUPG1M CON-ROSF-IPXMEDHA CON-ROSF-IPXLRGHA CON-ROSF-IPXADDHA CON-ROSF-IPIC S-RMS CON-ROSF-IPIC S-LMR CON-ROSF-IPXSLMR2 CON-ROSF-IPX3945 CON-ROSF-IPXS2P25 CON-ROSF-IPXS2UMS	RMS for IPICS

Access Control Devices	
Contact Cisco Services Sales Representative for Scoping and Pricing	Plan and Design for CPAM Mentored Install for CPAM
CON-ROSF-CPAG CON-ROSF-CPAM	RMS for Access Control

* Fixed Price SKU's in development. Will be available in March 2013.

For More Information

<http://www.cisco.com/web/services/portfolio/index.html>

Cisco Security Services

Services delivered by Cisco and our partners can help you accelerate business transformation; achieve operational maturity; and increase agility through consultative planning, solution development, full deployment, optimization, and management. We can help you create network architectures to support transformational business solutions that help you meet your organization's goals.

The broad portfolio of Cisco Security Services plan, build, manage, and optimize secure networks and context-aware, network-centric solutions that enable consistent security enforcement across the extended organization from the desktop to the cloud; help you achieve greater alignment of security policies with business needs; and use global threat intelligence to address the dynamic threat landscape.

Cisco has a portfolio of technical services that help maintain the health and performance of every Cisco product. These services range from traditional maintenance to proactive and predictive services that use smart services capabilities. Cisco Security Services provide detailed diagnostics and immediate alerts on core network devices to help resolve concerns quickly and improve network availability. The Cisco Technical Services portfolio is built on foundational and expanded performance capabilities to meet your changing technology needs.

For more information about Cisco Security Services, visit

<http://www.cisco.com/go/services/security>.

Chapter 6: Data Center

This chapter presents only a subset of Cisco products and part numbers.

Data Center At-a-Glance		
Product	Features	Page
Data Center Switching		
Cisco Nexus 7000 Series Switches	<ul style="list-style-type: none"> • Scales to 176 terabits per second (Tbps) with high-density 1-, 10-, 40-, and 100-Gbps connectivity • Enables data center consolidation of LAN and storage-area network (SAN) over a simplified, single network • Offers extensive industry-leading Cisco NX-OS Software innovations for exceptional intra- and inter-data center scalability for virtualization and cloud deployments 	6-8
Cisco Nexus 5000 Series Switches	<ul style="list-style-type: none"> • Consolidates the data center and protects investment assets • Lowers total cost of ownership (TCO) by simplifying data center infrastructure • Increases agility with faster, more pervasive data center virtualization • Enhances business resilience through greater operational continuity • Supports Layer 2/3 LAN and SAN traffic over fiber and copper Ethernet 	6-11
Cisco Nexus 4000 Series Switches	<ul style="list-style-type: none"> • Reduces the number of switches, network interface cards, and power requirements • Is purpose-built with unified switch application-specific integrated circuit (ASIC) • Is a line-rate, extremely low-latency 10 Gigabit Ethernet switch 	6-12
Cisco Nexus 3000 Series Switches	<ul style="list-style-type: none"> • Processes trades more quickly because of ultra-low latency with high density • Increases application performance through wire-rate Layer 3 switching • Is well suited for high-frequency trading (HFT) and Web 2.0 deployments 	6-13
Cisco Nexus 2000 Series Fabric Extenders	<ul style="list-style-type: none"> • Provides server connectivity for 100-Mbps Ethernet and 1 and 10 Gigabit Ethernet, converged fabric, rack and blade servers, and any connectivity, copper and fiber. • Acts as a remote line card to a parent Cisco Nexus switch in order to deliver fabric extensibility with single point of management and policy consistency for more than 1000 ports • Offers architectural flexibility for top-of-rack and end-of-row topologies • Allows smooth transition from Gigabit to 10 Gigabit Ethernet • Reduces data center cabling costs and footprint and optimizes inter-rack cabling • Based on the IEEE 802.1BR standard; refer to the "Fabric Extender Technology: A Portfolio of Fabric Extenders" section for additional IEEE 802.1BR-based technologies 	6-15
Cisco Nexus 1000V Series Switches	<ul style="list-style-type: none"> • Integrates directly with VMware vSphere and VMware vCloud Director • Delivers virtual machine-aware network services • Accelerates server virtualization deployments and simplifies management • Reduces total cost of ownership (TCO) and provides consistency and network visibility • Provides scalable network isolation for cloud networking 	6-14
Cisco Catalyst 4900M Series Switches (refer to Chapter 2)	<ul style="list-style-type: none"> • Architectural flexibility: Increased link use without buffer overflow and Layer 2 and 3 support at the access layer as needed • Investment protection: Smooth transition from 10/100/1000-Gbps to 10 Gigabit Ethernet interfaces • Simplified management: Edge switch autoprovisioning • Transport flexibility: Support for a wide range of storage, high-performance computing, and video applications 	See 2-14
Fabric Extender Technology: A Portfolio of Fabric Extenders		
Cisco Nexus 2000 Series Fabric Extenders	<ul style="list-style-type: none"> • Provides server connectivity for 100-Megabit Ethernet and 1 and 10 Gigabit Ethernet • Offers architectural flexibility for top-of-rack and end-of-row topologies • Simplifies operations with fabric extensibility, single point of management, and consistent policy enforcement across all ports • Allows smooth transition from 1 Gigabit to 10 Gigabit Ethernet • Reduces data center cabling costs and footprint and optimizes inter-rack cabling • Based on the standard IEEE 802.1BR 	6-15
Cisco Adapter Fabric Extender (Adapter FEX)	<ul style="list-style-type: none"> • Single point of management • Increased 10 Gigabit Ethernet bandwidth usage • Less power and fewer cabling adapters with Cisco Adapter FEX • Based on the standard IEEE 802.1BR 	6-17
Cisco Data Center Virtual Machine Fabric Extender (VM-FEX)	<ul style="list-style-type: none"> • Collapse virtual and physical networking into a single infrastructure • Provision, configure, manage, monitor, and diagnose virtual machine network traffic and bare-metal network traffic within one unified infrastructure • Based on the standard IEEE 802.1BR 	6-17

Storage Networking: SAN Switching

Cisco MDS 9500 Series Multilayer Directors	<ul style="list-style-type: none"> • Share a common architecture, the Cisco MDS 9000 NX-OS operating system, and switching and services modules that are backward- and forward-compatible throughout all Cisco MDS 9500 Series Multilayer Directors • The portfolio includes: <ul style="list-style-type: none"> ◦ Cisco MDS 9513 Multilayer Director ◦ Cisco MDS 9509 Multilayer Director ◦ Cisco MDS 9506 Multilayer Director 	6-18
Cisco MDS 9200 Series Multilayer Switches	<ul style="list-style-type: none"> • Delivers state-of-the-art multiprotocol and distributed multiservice convergence, offering high-performance SAN extension and disaster-recovery solutions, intelligent fabric services, and cost-effective multiprotocol connectivity including Fibre Channel, Small Computer System Interface over IP (iSCSI), Fibre Channel over IP (FCIP), and IBM Fiber Connection (FICON) • The portfolio includes: <ul style="list-style-type: none"> ◦ Cisco MDS 9222i Multiservice Modular Switch 	6-20
Cisco MDS 9100 Series Multilayer Fabric Switches	<ul style="list-style-type: none"> • Cost-effective, scalable, easy-to-install, and highly configurable fixed-port Fibre Channel fabric switches are excellent for small to medium-sized businesses. • The switches are available as blade-switch form factors for market-leading original storage manufacturers (OSMs). • The portfolio includes: <ul style="list-style-type: none"> ◦ Cisco MDS 9148 Multilayer Fabric Switch ◦ Cisco MDS 9124 Multilayer Fabric Switch 	6-21
Cisco MDS 9000 Series Intelligent Fabric Applications	<ul style="list-style-type: none"> • Applications such as continuous data replication, Cisco Storage Media Encryption (SME disk and tape), and Cisco MDS Data Mobility Manager (DMM) address customer concerns related to storage provisioning, security (security for data at rest), data migration and replication, backup and recovery, storage use, and increasing storage costs. • The portfolio includes: <ul style="list-style-type: none"> ◦ Cisco FCIP for Remote SAN Extension ◦ Cisco MDS 9000 Storage Media Encryption (SME) ◦ Cisco MDS 9000 Family I/O Accelerator (IOA) ◦ Cisco MDS 9000 XRC Acceleration ◦ Cisco MDS Data Mobility Manager (DMM) 	6-22
Unified Computing		
Cisco Unified Computing System (Cisco UCS)	<ul style="list-style-type: none"> • Next-generation data center platform that unites computing, networking, storage access, and virtualization resources into a cohesive system designed to reduce total cost of ownership (TCO) and increase business agility • Built from the following components: <ul style="list-style-type: none"> ◦ Cisco UCS 6100 Series Fabric Interconnects ◦ Cisco UCS 5100 Series Blade Server Chassis ◦ Cisco UCS 2100 Series Fabric Extenders ◦ Cisco UCS network adapters ◦ Cisco UCS Manager Management software ◦ Cisco UCS C-Series Rack Servers and B-Series Blade Servers 	6-24
Cisco UCS B-Series Blade Servers *NEW PRODUCT*	<ul style="list-style-type: none"> • Based on the Intel Xeon processor E5-2400, E5-2600, E5-4600, E7-2800, and E7-4800 product families, Cisco UCS B-Series Blade Servers offer outstanding performance and availability while intelligently scaling energy use. • Outstanding half-width bandwidth up to 80 Gbps]] and full-width bandwidth up to 160 Gbps. Used in combination with the Cisco UCS Virtual Interface Card 1240 (VIC 1240), or Cisco VIC 1280 port I/O expander in a half-width blade or two I/O expanders in a full-width blade form factors • The servers offer exceptional embedded integration with Cisco UCS Manager for all infrastructure policies. • The servers incorporate standards-based unified network fabric and Cisco Data Center Virtual Machine Fabric Extender (VM-FEX) and Adapter Fabric Extender (Adapter FEX) support. • The servers enable the stateless movement of service profiles (server personalities) from blade to blade or blade to rack. • Programmable infrastructure transforms the physical infrastructure into a pool of resources that can be provisioned to support any workload in minutes. • Unified, model-based management configures servers quickly and accurately, improving business agility and eliminating a major source of errors. • Cisco Extended Memory Technology also offers a more cost-effective memory footprint for less-demanding workloads. 	6-26

	<ul style="list-style-type: none"> • The servers scale horizontally with one instance of Cisco UCS Manager and one set of Cisco UCS 6100 or 6200 Series Fabric Interconnects. The blade-server offerings include: <ul style="list-style-type: none"> ◦ Cisco UCS B440 M2 High-Performance Blade Server ◦ Cisco UCS B420 M3 Blade Server ◦ Cisco UCS B250 M2 Extended-Memory Blade Server ◦ Cisco UCS B230 M2 Blade Server ◦ Cisco UCS B200 M3 Blade Server ◦ Cisco UCS B22 M3 Blade Servers 	
<p>Cisco UCS C-Series Rack Servers</p> <p>*NEW PRODUCT*</p>	<ul style="list-style-type: none"> • Extends unified computing innovations to an industry-standard form factor • Designed to operate both in standalone environments and as part of the Cisco Unified Computing System • Based on the Intel Xeon processor E5-2400, E5-2600, E5-4600, E7-2800, and E7-4800 product families, server offers outstanding performance and availability while intelligently scaling energy use • Supports an incremental deployment model and an entry point into unified computing • Incorporates standards-based unified network fabric and Cisco Data Center VM FEX and Adapter FEX support with the addition of Cisco UCS P81 or 1225 VIC cards • Offers ability to connect to a Cisco Nexus 2232PP Series Fabric Extender that with a Cisco Nexus parent switch delivers a cost-effective and highly scalable 1 Gigabit Ethernet and 10 Gigabit Ethernet environments while facilitating migration to 10 Gigabit Ethernet, virtual machine-aware, and unified fabric environments • Enables the stateless movement of service profiles (server personalities) from rack to rack, blade to blade, or blade to rack • Offers programmable infrastructure that transforms the physical infrastructure into a pool of resources that can be provisioned to support any workload in minutes • Provides unified, model-based management that lets you configure servers quickly and accurately, improving business agility and eliminating a major source of errors • Offers cost-effective Cisco Extended Memory Technology for memory-intensive workloads • Extends unified computing innovations to an industry-standard rack-mount form factor • Scales horizontally with one instance of Cisco UCS Manager and one set of Cisco UCS 6100 or 6200 Series Fabric Interconnects • Offers embedded integration with Cisco UCS Manager for all infrastructure policies • The portfolio includes: <ul style="list-style-type: none"> ◦ Cisco UCS C460 M2 High-Performance Rack Server ◦ Cisco UCS C260 M2 Rack Server ◦ Cisco UCS C2400 M3 Rack Server ◦ Cisco UCS C220 M3 Rack Server ◦ Cisco UCS C24 M3 Rack Server ◦ Cisco UCS C22 M3 Rack Server 	6-27
Application Networking Services		
<p>Cisco Application Control Engine (ACE) Family</p>	<ul style="list-style-type: none"> • Simplifies the way applications and business services are deployed, secured, and managed across the enterprise • Provides greater control over the application infrastructure, allowing organizations to quickly deploy and migrate applications to deliver more responsive services to the end user while simplifying the overall management of the data center • Application delivery products in the Cisco ACE Family include: <ul style="list-style-type: none"> ◦ Cisco ACE Module for Cisco Catalyst 6500 Series Switches and Cisco 7600 Series Routers ◦ Cisco ACE 4710 Appliance ◦ Cisco ACE Global Site Selector (GSS) 4400 Series 	6-28
<p>Cisco Wide Area Application Services (WAAS) Family</p>	<ul style="list-style-type: none"> • Delivers a comprehensive, cost-effective, cloud-ready WAN optimization solution that accelerates applications over the WAN, provides local hosting of branch-office IT services, and can accelerate video delivery to the branch office • WAN optimization products in the Cisco WAAS Family include: <ul style="list-style-type: none"> ◦ Cisco Wide Area Application Services Software ◦ Cisco Virtual WAAS (vWAAS) ◦ Cisco WAAS Mobile ◦ Cisco Wide Area Virtualization Engine (WAVE) Appliances ◦ Cisco WAAS Express Integrated Services Router Generation 2 (ISR G2) products ◦ Cisco WAAS Software for Services-Ready Engine (SRE) Service Modules (SM) for ISR G2 products. ◦ Cisco Enterprise Content Delivery System (ECDS) Virtual Blades ◦ Windows Server on WAAS 	6-29

Cisco Network Analysis Module (NAM)	<ul style="list-style-type: none"> Empowers network administrators with actionable visibility to optimize network resources, troubleshoot performance problems, and help ensure consistent user experience. Network analysis products in the Cisco NAM portfolio include: <ul style="list-style-type: none"> Cisco Catalyst 6500 Series Network Analysis Module (NAM-3) Cisco NAM 2200 Series Appliances Cisco Prime NAM for ISR G2 SRE Cisco Prime NAM for Nexus 1010 Cisco Prime NAM for WAAS Virtual Blade (VB) 	6-32
Data Center Security		
Cisco ASA 5585-X Adaptive Security Appliance	<ul style="list-style-type: none"> Meets the needs of mission-critical data centers by delivering eight times the performance density of competitive products and spanning multiple platforms, technologies, and deployment scenarios Supports the highest VPN session counts and twice as many connections per second as competitive firewalls to meet the growing needs of today's most dynamic organizations, in a compact 2-rack-unit (2RU) form factor Combines the world's most proven firewall with the industry's most comprehensive, effective intrusion prevention system (IPS) for a powerful, effective security solution 	6-33
Cisco Catalyst 6500 Series ASA Services Module	<ul style="list-style-type: none"> Transparently integrates with Cisco Catalyst 6500 Series Switches to provide exceptional security, reliability, and performance Employs the same architecture as the Cisco ASA 5585-X Adaptive Security Appliance, but in a blade form factor Supports the highest throughput, five times the concurrent connections, and twice as many connections per second as competitive network security modules, in a single blade architecture Easily integrates into an existing Cisco Catalyst 6500 Series Switch to add security at the central point of the data center, with no need to worry about how many interfaces are needed, no recabling, and no need for any additional rack space 	6-33
Cisco Secure Access Control System (ACS)	<ul style="list-style-type: none"> Controls network access based on dynamic conditions and attributes Provides a next-generation platform for centralized network identity and access control Provides a simple yet powerful, rule-based policy model and a new, intuitive management interface designed for optimum control and visibility 	5-19
Cisco Virtual Security Gateway (VSG)	<p>Enhance regulatory compliance and simplify virtual-environment audit processes with the Cisco Virtual Security Gateway (VSG):</p> <ul style="list-style-type: none"> Provides trusted multitenant access with detailed, zone-based, and context-aware security policies Supports dynamic provisioning of security policies and trust zones during virtual machine instantiation and movement Helps reduce errors, promote collaboration across server and security teams, and separate administrative responsibilities 	6-34
Cisco Adaptive Security Appliance 1000V Cloud Firewall	<ul style="list-style-type: none"> Adaptive security deployments: A 1000V secures the tenant edge in multitenant private and public cloud. The Cisco ASA 1000V integrates with the Cisco Nexus 1000V for hooks into the hypervisor, and for enhanced architectural scalability and flexibility. Virtual Network Management Center (VNMC) provides centralized, multitenant, multidevice policy manager for both the Cisco ASA 1000V and VSG. The Cisco ASA 1000V and VNMC are both software products, run as virtual machines, and are licensed based on the number of CPU sockets protected. 	6-35
Cisco Intrusion Prevention System 4500 Series Sensors	<ul style="list-style-type: none"> The Cisco IPS 4500 Series protects critical information found in data center applications (accounting systems, manufacturing, sales, human resources, Active Directory, Exchange) from targeted attacks and sophisticated malware. Cisco offers the broadest visibility of attacker, victim, and attack information of any inline IPS in the market. Signature-only detection products from other vendors can provide only a one-dimensional—and sometimes incorrect—response. The Cisco IPS 4500 Series offers the highest degree of attack protection and confidence that legitimate business functions and business productivity will not be affected. Ease of use: Wizard-led setup steps include data center–focused templates as a valuable starting point for deployments. 	6-36
Cisco Security Manager	<ul style="list-style-type: none"> Integrated end-to-end tools enable consistent policy enforcement, allow rapid troubleshooting of security events, and provide summarized reports for Cisco ASA 5500 Series Adaptive Security Appliances, Cisco IPS 4200 Series Sensor Appliances, Cisco Secure Routers, and the Cisco AnyConnect Secure Mobility Client. Centralized and automatic software image updates can be deployed for all ASAs throughout the network, helping ensure consistency and greatly reducing the time and administrative overhead required for deployment upgrades. Troubleshooting and Health and Performance Monitoring allows configuration of alerts to predefined thresholds, allows event management, and enables administrators to proactively monitor the security environment, leading to operational efficiency, visibility, and lower time to resolution. Northbound application programming interfaces (APIs) enable representational state transfers, for the secure sharing of essential data with third-party network services such as compliance and advanced security analysis systems to help streamline security operations and adhere to compliance requirements. 	6-36

	<ul style="list-style-type: none"> • Policy and object management enables reuse of security rules and objects, and enhances the ability to monitor security threats from throughout the deployment, minimizing the potential for errors and maximizing efficiency • The application provides centralized monitoring, event correlation, and an attack-mitigation system, offering a comprehensive management solution for Cisco ASA 5500 Series Adaptive Security Appliances, Cisco IPS 4200 Series Sensor Appliances, Cisco Secure Routers, and the Cisco AnyConnect Secure Mobility Client. • The application supports role-based access control (RBAC) and an approval framework for proposing and integrating changes. • It provides improved visibility into security devices, including custom reports that can be created using advanced filters, and reports that can be viewed on demand and scheduled for email delivery. 	
Data Center and Cloud Management		
Cisco Tidal Enterprise Scheduler (TES)	<ul style="list-style-type: none"> • Cisco TES 61 is an advanced workload automation engine that coordinates—in real time or scheduled batch mode—a wide variety of workload types with complex dependencies across a broad spectrum of operating systems and application platforms. • It connects and manages data flows and application functions across Oracle, Microsoft, IBM, and SAP as well as service-oriented architectures (SOA); integration capabilities for web services and Java EE-based applications; Cisco Tidal Enterprise Orchestrator service-level orientation for managing workloads and a critical path analysis and reporting capabilities. • This N-tier architecture decouples core functions for scaling up and out allowing organizations to support a large number of concurrent and distributed users and jobs. • It provides a single view and point of control over business processes and the jobs that comprise them—enterprisewide—without the need to learn new scripting languages or run multiple tools. • Deep integration for Business Intelligence, data integration, database and data warehouse activities as well as new Big Data applications, providing a low-risk path for transitioning Big Data “science projects” from test to production environments. • For more information, visit: http://www.cisco.com/go/workloadautomation. 	6-37
Cisco Intelligent Automation for Cloud *NEW PRODUCT*	<ul style="list-style-type: none"> • Lowers total cost of ownership (TCO) and increases the value of your infrastructure investments • Increases business agility by standardizing the delivery of IT services across virtual and physical infrastructure • Shortens your time to cloud with a set of best-practice automation packs • Simplifies the delivery of data center resources while enforcing policy-based controls • Designed for heterogeneous environments and optimized for Cisco Unified computing System (Cisco UCS)more information: http://www.cisco.com/go/iacloud 	6-38
Cisco Cloud Portal *NEW PRODUCT*	<ul style="list-style-type: none"> • Reduces the number of switches, network interface cards, and power requirements • Is purpose-built with unified switch ASIC • Is a line-rate, extremely low-latency 10 Gigabit Ethernet switch • http://www.cisco.com/go/cloudportal 	6-38
Cisco Workplace Portal *NEW PRODUCT*	<ul style="list-style-type: none"> • Processes trades more quickly because of ultralow latency with high density • Increases application performance through wire-rate Layer 3 switching • Is well suited for high-frequency trading (HFT) market • For more information: http://www.cisco.com/go/workplaceportal 	6-39
SAP IT Process Automation *NEW PRODUCT*	<ul style="list-style-type: none"> • Unified incident response: Automate and integrate the whole incident response process. • Predefined corrective actions: Model resolution schemes or resolve problems using predefined methods of support for operational processes. • Advanced reporting: Enforce compliance with such regulations as the Health Insurance Portability and Accountability Act and the Sarbanes-Oxley Act. • Visual configuration environment: Create reusable flows and build in human input points using drag-and-drop techniques. • For more information: http://www.cisco.com/web/go/automatesap 	6-39
Cisco Network Services Manager	<ul style="list-style-type: none"> • Organizes network resources with multiservice data center infrastructure • Integrates with existing IT operational tools and processes • Uses sophisticated network containers to reduce network operational costs • Optimizes capacity use and accelerates service delivery • Deploys flexible, policy-directed management • For more information: http://www.cisco.com/web/go/nsm 	6-39
Cisco Virtual Network Management Center	<ul style="list-style-type: none"> • Provides centralized multidevice and policy management for Cisco network virtual services • Offers rapid and scalable deployment based on security profiles • Provides easy operational management through XML APIs to help third-party integration • Provides a nondisruptive administration model across security and server teams • Supports Cisco edgefirewalls • For more information: http://www.cisco.com/go/vnmc 	6-40

<p>Cisco Data Center Network Manager (converged)</p> <p>*NEW PRODUCT*</p>	<ul style="list-style-type: none"> • Advanced management software that provides comprehensive lifecycle management of data center LAN and SAN. Cisco DCNM enables holistic management of the data center infrastructure and optimizes overall uptime and reliability. • Automatically builds an accurate representation of your data center topologies and traffic flows • Real-time proactive operational monitoring of the data center network • Monitors high-level performance and capacity trends in the data center network • Quickly diagnoses end-to-end path for latency and congestion • Provides powerful, industry-standard Simple Object Access Protocol (SOAP)/XML API for integration into operations and business support systems (OSS and BSS, respectively) 	6-41
Data Center Converged Infrastructure Solutions		
<p>Vblock Systems</p>	<p>VCE, formed by Cisco and EMC with investment from VMware and Intel, delivers the industry's only fully integrated and fully virtualized cloud infrastructure system. From purchase and deployment to operations and support, Vblock Systems off-load IT staff of time consuming tasks, enabling IT to focus on business innovation instead of integrating, validating, and managing IT infrastructure.</p>	6-43
<p>FlexPod</p>	<p>FlexPod is a pre-designed, base configuration built on leading computing, networking, storage, and infrastructure software components from Cisco, NetApp, and VMware. It offers a prevalidated data center solution built on a flexible, shared infrastructure that can be optimized for a variety of mixed application workloads, or can be configured for virtual desktop or server infrastructure, secure multitenancy, or cloud environments.</p>	6-43
<p>Hitachi Unified Computing Platform</p>	<p>The Hitachi Unified Computing Platform includes infrastructure components from Cisco, Hitachi, and VMware and is a flexible framework for creating cloud network-ready, virtualized infrastructure solutions. It consists of storage components from Hitachi Data Systems, computing and networking components from Cisco, and virtualization components from VMware. These industry leaders have combined their expertise to create a comprehensive virtualization solution that can be deployed quickly and effectively.</p>	6-44
Data Center Professional Services		
<p>Cisco Application Networking Services</p>	<p>Accelerate deployment of Cisco Wide Area Application Services (WAAS) and Cisco Application Control Engine (ACE) solutions and help secure and increase the availability of business-critical applications. These services include:</p> <ul style="list-style-type: none"> • Cisco WAAS Planning and Design Service • Cisco ACE Planning and Design Service • Cisco Data Center Optimization Services to support application delivery, distribution, and network performance • For more information, go to: www.cisco.com/en/US/products/ps6894/serv_group_home.html. 	6-45
<p>Cisco Data Center Switching Services</p>	<p>Accelerate deployment of Cisco Nexus switches and migrate to unified fabric. These services help IT departments build, operate, and maintain an agile, high-performance infrastructure. These services include:</p> <ul style="list-style-type: none"> • Cisco Nexus Planning and Design Service • Cisco Data Center Optimization Services to support unified fabric • For more information, go to www.cisco.com/en/US/products/ps9443/serv_group_home.html. 	6-45
<p>Cisco Unified Computing Services</p>	<p>Accelerate the transition to a unified computing architecture and optimize ongoing operations. These services include:</p> <ul style="list-style-type: none"> • Cisco Unified Computing Architecture Assessment Service • Cisco Unified Computing Planning, Design, and Implementation Services: <ul style="list-style-type: none"> ◦ Accelerated deployment ◦ Database accelerator ◦ Preproduction pilot ◦ Management systems integration ◦ Migration and transition ◦ Virtualization • Cisco Unified Computing Remote Management Services • Cisco SMARTnet Service for Unified Computing Services • Cisco Data Center Optimization Services to support unified computing systems • For more information, go to www.cisco.com/en/US/products/ps10312/serv_group_home.html. 	6-45
<p>Cisco Data Center Storage Networking Services</p>	<p>Plan and deploy, increase operation efficiency, and optimize Cisco MDS SAN architectures. These services include:</p> <ul style="list-style-type: none"> • Cisco Director Class SAN Planning and Design Service • Cisco SAN Health Check Service • Cisco Data Mobility Manager (DMM) Planning and Design Service • Cisco Data Center Optimization Service for SAN • For more information, go to www.cisco.com/en/US/products/svcs/ps2961/ps3010/serv_group_home.html. 	6-45

Cisco Data Center Optimization Services	Build a data center architecture that quickly and securely adapts to virtual and cloud environments, supports business growth, and delivers operational excellence. The following supporting service packages are available as part of Cisco Data Center Optimization Services: <ul style="list-style-type: none"> • Strategy and Architecture • Cloud Optimization • Desktop Virtualization Optimization • Unified Network Services Optimization • Unified Computing Optimization • Unified Fabric Optimization • Storage Area Network (SAN) Optimization For more information, visit: http://www.cisco.com/web/services/portfolio/optimization/data-center-optimization/index.html .	6-45
Cisco Data Center Virtualization / Desktop Virtualization Services	Accelerate your virtualization initiative with a cohesive, business-influenced strategy and design. Services include: <ul style="list-style-type: none"> • Cisco Virtualization Assessment Service • Cisco Virtualization Strategy Services: <ul style="list-style-type: none"> ◦ Application Dependency Mapping Service ◦ Data Center Architecture Value Analysis Service ◦ Data Center Virtualization Assessment Service ◦ Virtualization Operations Management Assessment • Cisco Data Center Virtualization Planning and Design Service • Cisco Services for Virtual Desktop Infrastructure (VDI) and Virtualization Experience Infrastructure (VXI) • Cisco Unified Computing Virtualization Services • Cisco Solution Support Services For more information, go to: http://www.cisco.com/en/US/netsol/ns340/ns394/ns224/services.html .	6-45
Cisco Data Center Operations Enhancement Services	Get the most out of a virtualized IT environment and improve operational efficiency. These services include: <ul style="list-style-type: none"> • Operations Support Planning • Management Solution Architecture • Management Product Design and Implementation • Management Solution Integration • Operations Support Build • Management Optimization • Operations Audit • Resiliency Analysis For more information, go to: http://www.cisco.com/en/US/services/collateral/ps2961/ps10364/ps10366/dc-ops-enhancement-aag.pdf .	6-45
Cisco Cloud Enablement Services	Accelerate deployment of cloud solutions and applications. These services help shorten time to market, reduce costs, and quickly realize a return on investment. These services include: <ul style="list-style-type: none"> • Cisco Cloud Enablement Services for Building IaaS Clouds • Cisco Cloud Enablement Services for Adopting Clouds For more information, go to: http://www.cisco.com/web/services/enterprise-it-services/cloud-enablement-services/index.html#-one .	6-45

For More Information
Product Ordering

To place an order, visit <http://www.cisco.com/en/US/ordering/index.shtml>.

Cisco Services

Cisco Services can be ordered directly or through our global network of certified partners. visit: <http://www.cisco.com/web/services/order-services/index.html>

End of Life and End of Sale

Please visit the end-of-life and end-of-sale website for a complete and up-to-date listing of products that are no longer being sold or supported, the replacement products that are available, and information about product support: http://www.cisco.com/en/US/products/prod_end_of_life.html.

Note: This chapter provides only a subset of Cisco products and part numbers. For the most up-to-date and comprehensive information, refer to the Cisco website at <http://www.cisco.com>, the Cisco ordering website at <http://www.cisco.com/en/US/ordering/index.shtml>, or the URLs listed in the "For More Information" section for each product.

Data Center Switching

Critical components of the Cisco Unified Fabric, Cisco's data center switching solutions built on the Cisco Nexus and Cisco Catalyst portfolios, allow you to build a fabric-based data center network that promotes infrastructure scalability, operational continuity, and transport flexibility.

Cisco Unified Fabric, a critical technological pillar of the Cisco Unified Data, provides the breadth of portfolio, innovations, industry partnerships, and experience needed to deliver a solution for traditional, virtual, and cloud-based environments.

Cisco Nexus 7000 Series Switches

Cisco Nexus 7000 Series Switches comprise Cisco's flagship modular switching platform for data center Cisco Unified Fabric deployments and for highly scalable campus core deployments. They are designed for exceptional 10, 40, and 100 Gigabit Ethernet scalability, with the industry's highest resiliency rate and exceptional deployment flexibility for the data center core, aggregation layer, and access layer. Their industry-leading Cisco NX-OS Software innovations and robust feature set enable you to build the next-generation network fabric for your data center.



Features and Benefits

Scalable Architectural Design

- End-to-end solution for data center core, aggregation layer, and high-density end-of-row and top-of-rack server connectivity in a single platform, and for high-performance campus core developments
- Designed for 1, 10, 40, and 100 Gigabit Ethernet scalability to more than 1576 terabits per second (Tbps) for ongoing investment protection
- Multicore, multithreaded, highly modular OS to optimize CPU resources and offload tasks to processors distributed across the modules
- Virtual device context (VDC) that virtualizes a single physical Cisco Nexus 7000 Switch into multiple logical switches for infrastructure consolidation and segmentation (PCI certified)
- In conjunction with the Cisco Nexus 2000 Series Fabric Extenders, scales up to 1500 ports per Cisco Nexus 7000 Series Switch with a single point of management, significantly simplifying management

Operational Continuity

- Based on Cisco NX-OS with highly granular process modularity with automatic fault isolation and containment integrated with hardware resiliency features
- Zero-service downtime with industry's only hitless In-Service Software Upgrade (ISSU) for nondisruptive upgrades
- Highest resiliency rate, with no single point of failure in the system hardware and a modular operating system

Industry-Leading Innovations

- Cisco Overlay Transport Virtualization (OTV): Extends Layer 2 networks across geographically distributed data centers over any network, enabling Layer 2 adjacencies for distributed clustering and transparent workload mobility
- Cisco FabricPath: Enables a highly scalable, high-bandwidth (up to more than 100-Tbps fabric) and resilient Layer 2 multipath network without a spanning tree for large virtualization deployments
- Virtual device context (VDC): Virtualizes a single physical Cisco Nexus 7000 Series Switch into multiple logical switches for infrastructure consolidation and segmentation (PCI certified)
- Fibre Channel over Ethernet (FCoE): Allows consolidation for LAN and storage area network (SAN) traffic over a single converged network, reducing network sprawl and increasing network agility
- Location/ID Separation Protocol (LISP): Provides global IP address portability, significantly increasing routing scalability and enabling scalable virtualization, multitenancy, cloud computing, and IPv6 transition
- In-Service Software Upgrade (ISSU): Offers the industry's only truly nondisruptive ISSU, eliminating maintenance network outages
- Virtual PortChannel (vPC): Enables deployment of active-active uplinks for high availability and double the network bandwidth

Modules

Cisco Nexus 7000 Series Supervisor Module

- Designed to deliver scalable control-plane and management functions for the Cisco Nexus 7000 Series chassis
- Delivers continuous system operation
 - Active and standby supervisor with nondisruptive failover

- Segmented and redundant out-of-band provisioning and management paths
- Virtualization of the management plane
- Integrated diagnostics and protocol decoding with an embedded control-plane packet analyzer
- Upgradable architecture
 - Fully decoupled control plane and data plane with no software forwarding through the supervisor
 - Distributed forwarding architecture, allowing independent upgrades of the supervisor and fabric
 - Superior operating efficiency with dedicated out-of-band management processor for lights-out management

Supervisor 2E Module

With two quad-core processors, the Supervisor 2E Module delivers higher feature scalability and faster control-plane processing, making it ideal for medium to large data center deployments.

Highlights include:

- Four times the CPU performance of the Supervisor 1 Module
- Increased scalability for features such as Virtual Device Context (VDC), Fabric Extender (FEX), and Virtual Route Forwarding (VRF)
- FCoE support for F2-Series modules

Supervisor 2 Module

With a quad-core processor, the Supervisor 2 Module delivers faster control-plane processing, making it ideal for small- to medium-sized data center deployments.

Highlights include:

- Twice the CPU performance of the Supervisor 1
- Fibre Channel over Ethernet (FCoE) support for Cisco Nexus 7000 F2-Series modules

Supervisor 1 Module

With a dual-core processor, the Supervisor 1 Module delivers faster control-plane processing, making it ideal for small-size data center deployments.

CISCO NEXUS 7000 I/O MODULES

Cisco Nexus 7000 M2-Series 100 Gigabit Ethernet Module with XL Option

The second-generation M2-Series module delivers high-performance full-feature Layer 2 and Layer 3 functions:

- Two 100 Gigabit Ethernet line-rate ports with 120 Mpps and 200 Gbps of throughput
- Up to 32 wire-speed 100 Gigabit Ethernet ports per 7018 chassis
- Comprehensive Layer 2 and Layer 3 forwarding and Multiprotocol Label Switching (MPLS) and IPv4 and IPv6 support
- Large Forwarding Information Base (FIB) table size supporting up to 1 million IPv4 routes

Cisco Nexus 7000 M2-Series 40 Gigabit Ethernet Module with XL Option

The second-generation M2-Series module delivers high-performance full-feature Layer 2 and Layer 3 functions:

- Six 40 Gigabit Ethernet line-rate ports with 120 Mpps and 240 Gbps of throughput
- Up to 96 wire-speed 40 Gigabit Ethernet ports per chassis
- Comprehensive Layer 2 and Layer 3 forwarding and MPLS and IPv4 and IPv6 support
- Large FIB table size supporting up to 1 million IPv4 routes

Cisco Nexus 7000 M2-Series 24-Port 10 Gigabit Ethernet with XL Option Module

The second-generation M2-Series module delivers high-performance full-feature Layer 2 and Layer 3 functions:

- Twenty-four 10 Gigabit Ethernet ports (Small Form-Factor Pluggable Plus [SFP+] optics) line-rate ports with 120 Mpps for IPv4 and 60 Mpps for IPv6 and 240 Gbps of throughput
- Up to 384 nonblocking 10 Gigabit Ethernet ports per chassis
- Comprehensive Layer 2 and Layer 3 forwarding functions; full-featured module with MPLS, IPv4 and IPv6, and Cisco Overlay Transport Virtualization (OTV) support
- Support for Cisco Nexus 2000 Fabric Extenders for high-density 1 and 10 Gigabit Ethernet deployment and simplified point of management

Cisco Nexus 7000 M1-Series 8-Port 10 Gigabit Ethernet Module with XL Option

- Full support for Layer 2 and Layer 3 IPv4 and IPv6 protocols, NetFlow, and MPLS
- XL mode, which enables larger forwarding table (up to 1 million routes) for increased scalability
- Wire speed on all ports, with 120 million packets per second (mpps) on Layer 2 and 80 Gbps on Layer 3
- Flexibility to run in non-XL or XL mode without requiring a hardware change or upgrade
- Powerful security capabilities through hardware-integrated support for Cisco TrustSec security

Cisco Nexus 7000 M1-Series 32-Port 10 Gigabit Ethernet Module with XL Options

- Full support for Layer 2 and Layer 3 IPv4 and IPv6 protocols, NetFlow, and MPLS
- XL mode, which enables larger forwarding table (up to 1 million routes) for increased scalability

- Flexibility to run in non-XL or XL mode without requiring a hardware change or upgrade
- Downstream connection to Cisco Nexus 2224TP, 2248TP, or 2232PP 10 Gigabit Ethernet Fabric Extender, offering a cost-effective, scalable server connectivity solution
- Powerful security capabilities through hardware-integrated support for Cisco TrustSec security

Cisco Nexus 7000 M1-Series 48-Port Gigabit Ethernet Modules

- Full support for Layer 2 and Layer 3 IPv4 and IPv6 protocols, NetFlow, and MPLS
- Excellent for access-layer connectivity, delivering a solution with high density, high performance, and continuous operation
- Interface flexibility through support for 10/100/1000 RJ-45 connectivity or fiber (SFP) connectivity
- Highly scalable solution with up to 768 ports of Gigabit Ethernet on the Cisco Nexus 7000 18-Slot Switch
- 60 mpps of Layer 2 and Layer 3 IPv4 unicast forwarding

Cisco Nexus 7000 Series F2-Series 48-Port 1 and 10 Gigabit Ethernet Module (SFP+)

- Layer 2 and Layer 3 forwarding with 720 mpps and up to 480 Gbps of data throughput, respectively
- Interface flexibility through support for 1 and 10 Gigabit Ethernet on a per-port basis in both SFP and SFP+ media options
- Support for Cisco Nexus 2000 Fabric Extender, offering a cost-effective, scalable server connectivity solution
- LAN and SAN convergence through support for FCoE and IEEE Data Center Bridging (DCB) technologies
- Highly scalable Layer 2 networks with Cisco FabricPath

Cisco Nexus 7000 Series Enhanced F2-Series 48-Port 1 and 10 Gigabit Ethernet Module (SFP+)

- Layer 2 and Layer 3 forwarding with 720 mpps and up to 480 Gbps of data throughput, respectively
- Interface flexibility through support for 1 and 10 Gigabit Ethernet on a per-port basis in both SFP and SFP+ media options
- Support for Cisco Nexus 2000 Fabric Extender, offering a cost-effective, scalable server connectivity solution
- LAN and SAN convergence through support for FCoE and IEEE DCB technologies
- Highly scalable Layer 2 networks with Cisco FabricPath
- Support for IEEE 802.1az linksec encryption at line rate on a subset of port
- Same virtual device context (VDC) interoperability support with M-Series I/O modules

Cisco Nexus 7000 Series Enhanced F2-Series 48-Port 1 and 10 GBASE-T Ethernet Module (RJ-45)

- Layer 2 and Layer 3 forwarding with 720 mpps and up to 480 Gbps of data throughput, respectively
- Dual speed for gradual migration to 10 Gigabit Ethernet server access through support for 1 and 10 Gigabit Ethernet on a per-port basis
- Low power consumption with approximately 8.5W per port in a typical configuration
- Support for IEEE 802.3az Energy Efficient Ethernet, which reduces power consumption in response to changes in network demand
- Support for IEEE 802.1az Linksec encryption at line rate on a subset of port
- Highly scalable Layer 2 networks with Cisco FabricPath
- Same VDC interoperability support with M-Series I/O modules

Specifications

Feature	N7K-C7004	N7K-C7009	N7K-C7010	N7K-C7018
Slots	4	9	10	18
1 Gigabit Ethernet Density	96	336	384	768
10 GbE Density	96	336	384	768
40/100 GbE Port Density	12/4	42/14	48/16	96/32

Selected Part Numbers and Ordering Information

N7K-C7004	Cisco Nexus 7000 Series 4-Slot chassis including Fan Trays, No Power Supply
N7K-C7009	Cisco Nexus 7000 Series 9-Slot chassis including Fan Trays, No Power Supply
N7K-C7010	Cisco Nexus 7000 Series 10-Slot chassis including Fan Trays, No Power Supply
N7K-C7018	Cisco Nexus 7000 Series 18-Slot chassis including Fan Trays, No Power Supply
N7K-C7009-FAB-2	Cisco Nexus 7000 9-Slot Chassis 110 Gbps/Slot Fabric Module (and Spare)
N7K-C7010-FAB-2	Cisco Nexus 7000 10-Slot Chassis 110 Gbps/Slot Fabric Module (and Spare)
N7K-C7018-FAB-2	Cisco Nexus 7000 18-Slot Chassis 110 Gbps/Slot Fabric Module (and Spare)
N7K-C7010-FAB-1	Cisco Nexus 7000 10-Slot Chassis 46 Gbps/Slot Fabric Module (and Spare)
N7K-C7018-FAB-1	Cisco Nexus 7000 18-Slot Chassis 46 Gbps/Slot Fabric Module (and Spare)
N7K-SUP2E	Cisco Nexus 7000 Series – Supervisor 2E, Includes External 32GB Flash (and Spare)

N7K-SUP2	Cisco Nexus 7000 Series – Supervisor 2, Includes External 12GB Flash (and Spare)
N7K-SUP1	Cisco Nexus 7000 Series Supervisor Module, Includes External 8 GB flash
N7K-F248XP-25E	Enhanced F2-Series 48-Port 1 and 10 Gigabit Ethernet Module (SFP+)
N7K-F248XT-25E	Enhanced F2-Series 48-Port 1 and 10GBASE-T Ethernet Module (RJ45)
N7K-F248XP-25	-F2-Series 48 Port 1G/10G Ethernet Module, SFP/SFP+
N7K-F132XP-15	F2-Series 32 Port 1G/10G Ethernet Module, SFP/SFP+ (and Spare)
N7K-M108X2-12L	M1-Series 8-Port 10 Gigabit Ethernet Module with XL Option (requires X2)
N7K-M108X2-12L	M1-Series 32-Port 10 GB Ethernet Module with 80 Gbps Fabric (Requires SFP+ Optic Module)
N7K-M148GT-11	M1-Series 48-Port 10/100/1000 Ethernet Module
N7K-M148GS-11	M1-Series 48-Port Gigabit Ethernet Module (SFP)
N7K-M148GS-11L	M1-Series 48-port Gigabit Ethernet Module with XL Option (SFP Optics)
N7K-M148GT-11L	M1-Series 48-port 10/100/1000 Ethernet Module with XL Option (RJ45)
N7K-M132XP-12L	M1-Series 32 Port 10GBE with XL Option, 80 G Fabric (Requires SFP+ Optics Module)
N7K-M224XP-23L	M2-Series 24 Port 10GE SFP+ Module with XL Option
N7K-M206FQ-23L	M2-Series 6 Port 40GE QSFP Module with XL Option
N7K-M202CF-22L	M2-Series 2 Port 100GE CFP Module with XL Option

For More Information

<http://www.cisco.com/go/nexus7000>

Cisco Nexus 5000 Series Switches

The Cisco Nexus 5000 Series Switches help you transform the data center with innovative, standards-based, multilayer, multiprotocol, and multipurpose Ethernet-based fabric. Now with Unified Ports, you can enable any transport over Ethernet, including Layer 2 and Layer 3 traffic and storage traffic, all on one common data center-class platform.



Features and Benefits

- Based on the Cisco NX-OS Software operating system, which is resilient, efficient, virtualized, and extensible
- Offers a high-performance, low-latency system with a switching fabric of up to 1.92 terabits per second (Tbps) and a forwarding rate of 1428 million packets per second (mpps)
- Provides front-to-back cooling, supporting efficient data center hot- and cold-aisle designs
- Provides unified ports, providing flexibility in choosing storage area network (SAN) and LAN port options consistent with the virtualized data center and offering a migration path to Fibre Channel over Ethernet (FCoE)
- Ready for LAN and SAN convergence through FCoE-based unified fabric and Fibre Channel support in a lossless Ethernet service platform, with energy efficiency achieved with the convergence of the networks
- Offers virtualization-aware networking through optimized services and mobility by mapping virtual machines to network profiles
- Supports extension of the fabric extender technology into the servers and virtual machines through Cisco Adapter Fabric Extender (Adapter FEX) and Cisco Data Center Virtual Machine Fabric Extender (VM-FEX) technologies
- Acting as the single point of network management for the servers and virtual machines mentioned previously that use Adapter FEX or VM-FEX, Cisco Nexus 2000 Series Fabric Extenders, can single- or dual-connect (using Enhanced Virtual PortChannel [vPC]) to two upstream Cisco Nexus 5500 platform switches

Industry-Leading Innovations

- Cisco FabricPath: Enables a highly scalable, high-bandwidth (fabric supporting 100 Tbps or more), and resilient Layer 2 multipath network without a spanning tree for large virtualization deployments
- FCoE: Allows consolidation for LAN and SAN traffic over a single converged network, reducing network sprawl and increasing network agility
- In-Service Software Upgrade (ISSU): Offers industry's only truly nondisruptive ISSU, eliminating maintenance network outages
- Virtual PortChannel (vPC): Enables deployment of active-active uplinks for high availability and double the network bandwidth

Specifications

Feature	N5K-C5548P-FA	N5K-C5548UP-FA	N5K-C5596UP-FA	N5K-C5596T-FA	N5K-C5010P-BF	N5K-C5020P-BF
Switching Fabric (Gbps)	960	960	1.92Tbps	1.92Tbps	520 Gbps	1.04 Tbps
Packets per Second (Mpps)	714.2	714.2	1428Mpps	1428Mpps	386.9 mpps	773.8
Expansion Slots	1	1	3	3	1	2
Nexus 2000 Fabric Extender System (FEX)	Up to 24 FEX	Up to 24 FEX	Up to 24 FEX	Up to 24 FEX	Up to 12 FEX	Up to 12 FEX
Fiber Channel Ports	16	48	96	64	8	16
Fiber Channel over Ethernet ports	48	48	96	64	26	52

Selected Part Numbers and Ordering Information

Part Number	Description
Chassis	
N5K-C5548P-FA	Chassis includes 32 fixed ports, Front-to-Back Airflow, 2 750W AC Power Supplies, Fan Trays, 1 Expansion Slot
N5K-C5548UP-FA	Chassis includes 32 fixed unified ports, Front-to-Back Airflow, 2 750W AC Power Supplies, Fan Trays, 1 Expansion Slot
N5K-C5596UP-FA	Chassis includes 48 fixed unified ports, Front-to-Back Airflow, 2 1100W AC Power Supplies, Fan Trays, 3 Expansion Slots
N5K-C5596T-FA	Chassis includes 32 10G Base-T fixed ports and 16 1/10G SFP+ fixed ports, Back-to-Front Airflow, 2 1100W AC Power Supplies, Fan Trays, 3 Expansion Slots
N5K-C5010P-BF	Cisco Nexus 5010 1RU Chassis no PS, 2 Fan Modules, 20 ports (req SFP+)
N5K-C5020P-BF	Cisco Nexus 5020 2RU Chassis no PS, 5 Fan Modules, 40 ports (req SFP+)

For More Information

<http://www.cisco.com/go/nexus5000>

Cisco Nexus 4000 Series Switches

The Cisco Nexus 4001I Switch Module for IBM BladeCenter is a blade switch solution for IBM BladeCenter H and HT chassis, providing the server I/O solution required for high-performance, scale-out, virtualized, and nonvirtualized x86 computing architectures.



Features and Benefits

- Layer 2 line-rate, extremely low-latency, nonblocking 10 Gigabit Ethernet blade switch
- Fully compliant with the INCITS Fibre Channel over Ethernet (FCoE) and IEEE 802.1 Data Center Bridging (DCB) standards
- Using Cisco Unified Fabric architecture, significantly reduces the number of switches and network interface cards and cabling and power requirements.
- Support for 14 fixed 1 or 10 Gigabit Ethernet server-facing downlinks and 6 fixed 1 or 10 Gigabit Ethernet uplinks

Selected Part Numbers and Ordering Information

N4K-4001I-XPX	Cisco Nexus 4001I Switch Module chassis for IBM Blade Center
N4K-4001I-SSK9	Cisco Nexus 4001I Storage Protocol Services Software License

For More Information

<http://www.cisco.com/go/nexus4000>

Cisco Nexus 3000 Series Switches

The Cisco Nexus 3000 Series expands Cisco's market-leading Cisco Nexus portfolio by offering data center-class top-of-rack switch platforms with 1, 10, and 40 Gigabit Ethernet connectivity and are ideal for financial co-location, Big Data, and Web 2.0 deployments. The Cisco Nexus 3000 Series comprises dense high-performance switches that deliver line-rate Layer 2 and 3 switching at ultra-low latencies in compact 1-rack-unit (1RU) form factors.



The Cisco Nexus 3500 platform further extends the leadership of the Cisco Nexus 3000 Series by including the innovative Algorithm Boost (or Algo Boost) engine. At its base, the Algo Boost engine allows a full-featured switch to achieve exceptional latencies as low as 190 nanoseconds (ns).

The switches in the series include: Cisco Nexus 3548 with Algo Boost; Cisco Nexus 3016, which is a 40 Gigabit Ethernet switch; Cisco Nexus 3064, which is a 10 Gigabit Ethernet switch, and Cisco Nexus 3048, which is a 1 Gigabit Ethernet switch.

Features and Benefits

- Normal-mode latency: Process transactions as low as 250 ns.
- Warp-mode latency: Further reduce latency to 190 ns for small-to-midsize deployments.
- Warp Switched Port Analyzer (SPAN): Enable stock market data delivery to trading servers in as little as 50 ns.
- Active Buffer Monitoring: Never miss another microburst.
- Network Address Translation (NAT): Make executive trades at any venue, with no latency penalty.
- Embedded Remote SPAN with nanosecond timestamp: Monitor your traffic with unparalleled precision.
- 48 fixed 1- and 10-Gbps Small Form-Factor Pluggable Plus (SFP+) ports
- Line-rate Layer 2 and Layer 3 throughput of up to 960 Gbps
- Compact 1RU form factor
- Dual redundant color-coded power supplies
- Four redundant color-coded fans
- Full-featured unicast protocols including Border Gateway Protocol (BGP), Open Shortest Path First (OSPF), Enhanced Interior Gateway Routing Protocol (EIGRP), and Routing Information Protocol Version 2 (RIPv2)
- Multicast protocols including Protocol-Independent Multicast sparse mode (PIM-SM), PIM source-specific mode (PIM-SSM), and Multicast Source Discovery Protocol (MSDP)
- Full support for access control lists (ACLs) (port, VLAN, and routed) and quality of service (QoS) (queuing and marking)
- Switch management by Cisco Data Center Network Manager (DCNM)

Selected Part Numbers and Ordering Information

N3K-C3064PQ-10GX	Nexus 3064-X, 48 SFP+ & 4 QSFP+ ports, low latency
N3K-C3064PQ-10GT	Nexus 3064-T, 48 10GBase-T & 4 QSFP+ ports.
N3K-C3016Q-40GE	Nexus 3016Q- 1RU 16 QSFP ports switch
N3K-C3048TP-1GE	Nexus 3048TP-1GE 1RU 48 10/100/1000 RJ-45 and 4 SFP+ ports
N3K-BAS1K9	Nexus 3000 Base License
N3K-LAN1K9	Nexus 3000 LAN Enterprise License
N3K-C3548P-10G	Nexus 3548 Switch, 48 SFP+
N3548-BAS1K9	Nexus 3000 Layer 3 Base License
N3548-ALGK9	Nexus 3500 Algo Boost License

For More Information

<http://www.cisco.com/go/nexus3000>

Cisco Nexus 1000V Series Switches and Nexus 1100 Virtual Services Appliance

Cisco Nexus 1000V Series Switches are virtual software switches that help ensure secure network connectivity for all the virtual machines in the data center. The solution is based on the IEEE 802.1Q standard and is integrated with VMware vSphere. Cisco Nexus 1000V Series Switches deliver highly scalable and secure multitenant services by adding virtualization intelligence to the data center network. Cisco Nexus 1000V Series Switches consist of two components:

- Virtual Ethernet module (VEM), a software-based switch embedded in the VMware hypervisor
- Virtual supervisor module (VSM), which manages networking policies and quality of service (QoS) for virtual machines in concert with the VEM

The Cisco Nexus 1000V Series can optimize the use of Layer 4 through 7 services in a virtual machine environment through Cisco vPath architecture services.

The Cisco Nexus 1100 Series Virtual Service Appliances (VSA) are dedicated appliances for running the VSM, offloading application servers and providing a management appliance for virtual network policies to the network administration team. The Cisco Nexus 1100 also runs virtual services, such as the Virtual Security Gateway (VSG), virtual Prime Network Analysis Module (NAM), and DCNM.

Features and Benefits

- Cisco VN-Link technology provides scalable network isolation for cloud deployments, enabling on-demand provisioning of new network segments for cloud deployments. This feature is fully integrated with VMware vCloud Director.
- Cisco vPath technology is aware of all Layer 4 through 7 policies associated with individual virtual machines. After the data packets of a specific virtual machine have been identified and policies applied, the remaining data packets flow directly to the virtual machines.
- Cisco Virtual Security Gateway (VSG), integrated with the Cisco Nexus 1000V Series Switches, provides trusted multitenant access with granular zone-based security policies for virtual machines. Cisco VSG delivers security policies across multiple servers, supporting virtual machine mobility across physical servers for workload balancing, availability, and scalability scale for business growth in cloud computing.
- Cisco Virtual Wide Area Application Services (vWAAS), a WAN optimization solution integrated with Cisco Nexus 1000V Series Switches, delivers application performance acceleration to IT users connected to enterprise data centers and enterprise private clouds.
- Developed in close collaboration with VMware, the Cisco Nexus 1000V Series is certified by VMware to be compatible with VMware vSphere, vCenter, ESX, and ESXi, and with many other VMware vSphere features.
- The Cisco Nexus 1000V has also been designed to run with a wide range of commercially available hypervisors, including Microsoft Hyper-V on Windows Server 2012 and Citrix XenServer. For a detailed list of currently available hypervisors supported, please refer to the Cisco Nexus 1000V product page link: <http://www.cisco.com/go/nexus1000V>.

Selected Part Numbers and Ordering Information

N1K-VSMK9-404S12=	Nexus 1000V VSM on Physical Media
N1K-VLCPU-01=	Nexus 1000V Paper CPU License Qty 1-Pack
N1K-VLCPU-04=	Nexus 1000V Paper CPU License Qty 4-Pack
N1K-VLCPU-16=	Nexus 1000V Paper CPU License Qty 16-Pack
N1K-VLCPU-32=	Nexus 1000V Paper CPU License Qty 32-Pack
L-N1K-VLCPU-01=	Nexus 1000V eDelivery CPU License Qty 1-Pack
L-N1K-VLCPU-04=	Nexus 1000V eDelivery CPU License Qty 4-Pack
L-N1K-VLCPU-16=	Nexus 1000V eDelivery CPU License Qty 16-Pack
L-N1K-VLCPU-32=	Nexus 1000V eDelivery CPU License Qty 32-Pack
N1K-1110-X-HA96	Nexus 1110-X HA Pair with 96x Nexus 1000V licenses
N1K-1110-X-HA48	Nexus 1110-X HA Pair with 48x Nexus 1000V licenses
N1K-1110-X-HA00	Nexus 1110-X HA Pair without Nexus1000V licenses
N1K-1110-X	ONE Nexus 1110-X with 48x Nexus 1000V licenses
N1K-1110-S-HA64	Nexus 1110-S HA Pair with 64x Nexus 1000V licenses
N1K-1110-S-HA32	Nexus 1110-S HA Pair with 32x Nexus 1000V licenses
N1K-1110-S-HA00	Nexus 1110-S HA Pair without Nexus 1000V licenses
N1K-1110-S	ONE Nexus 1110-S with 32x Nexus 1000V licenses

For More Information

<http://www.cisco.com/go/nexus1000V>

Fabric Extender Technology – A Portfolio of Fabric Extenders

Cisco Fabric Extender (FEX) technology delivers an extensible and a scalable fabric that provides a flexible and comprehensive solution as part of Cisco Unified Fabric. Cisco FEX Technology:

- Enables the switching fabric access layer to extend and expand all the way to the server hypervisor as your business grows
- Enables operational simplicity at scale, with a single point of management and policy enforcement on the access parent switch across more than one thousand 10 Gigabit Ethernet ports

Based on the standard IEEE 802.1BR (Bridge Port Extension), Cisco FEX technology includes:

- Cisco Nexus 2000 Series Fabric Extenders (FEX): Extends the fabric to top-of-the-rack (TOR)
- Cisco Nexus B22 Fabric Extenders (B22 FEX): Extends the fabric to the blade server
- Cisco UCS 2100 Series Fabric Extenders: Extends the fabric to the Cisco UCS Blade Chassis
- Cisco Adapter Fabric Extender (Adapter FEX): Extends the fabric into the server
- Cisco Data Center Virtual Machine Fabric Extender (VM-FEX): Extends the fabric to the virtual machines

Main Benefits

Simplified Operations

- Implements a single point of management from the access layer parent switches, Cisco Nexus 5000 and Cisco Nexus 7000 Series Switches
- Consolidates multiple 1 Gigabit Ethernet adapters with a 10 Gigabit Ethernet adapter
- Reduces cabling, network interface cards (NICs), power consumption, and operating expenses
- Enables partitioning of the 10 Gigabit Ethernet server adapter or switch into multiple connections (virtual network interface cards [vNICs] or virtual line cards)
- Provides dedicated network bandwidth to individual applications or virtual machines

Architectural Flexibility

- Offers common, scalable, and adaptive architecture across data center racks and points of delivery (PoD)
- Supports various server options, connectivity options, physical topologies, and evolving needs
- Offers choice of parent switches and adapter vendors, to work across Cisco platforms and third-party architectures

Scalability

- Homogeneous, consistent policies across large number of ports
- More than 1500 1 Gigabit Ethernet ports, more than 1000 10 Gigabit Ethernet physical ports, and more virtual ports managed from a single access parent switch
- Scalable Gigabit and 10 Gigabit Ethernet server access, with no reliance on Spanning Tree Protocol
- Low predictable latency at scale

For more information

visit: www.cisco.com/go/fex.

Cisco Nexus 2000 Series Fabric Extenders

The Cisco Nexus 2000 Series Fabric Extenders behave like remote line cards for a parent Cisco Nexus 5000 or Nexus 7000 Series Switch, simplifying data center access operations and architecture by combining the management simplicity of end-of-row platforms with the flexible physical layout of top-of-rack platforms.



Features and Benefits

- Comprehensive range of connectivity options including 100-Mbps and 1 and 10 Gigabit Ethernet unified fabric environments
- Transparent addition of network capacity as needed, reducing initial capital expenditures (CapEx)
- Single point of management and policy enforcement with Cisco Nexus 5000 or Nexus 7000 Series parent switches
- Support for virtual machine-aware network services; per-virtual machine awareness helps maintain a consistent policy view for each virtual machine and mobility of virtual machines and workloads within data centers
- Support for In-Service Software Upgrade (ISSU) and virtual PortChannel (vPC) technology, extending the resiliency of data center deployments for server connectivity

Specifications

Feature	Cisco Nexus 2224TP	Cisco Nexus 2248TP	Cisco Nexus 2248TP-E	Cisco Nexus 2232PP	Cisco Nexus 2232TM
Fabric extender host interfaces	24	48	48	32	32
Fabric extender host interfaces type	100BASE-T/ 1000BASE-T ports: RJ-45 connectors	100BASE-T/ 1000BASE-T ports: RJ-45 connectors	100BASE-T/ 1000BASE-T ports: RJ-45 connectors	1/10 Gigabit Ethernet ports SFP/SFP	1/10GBASE-T ports: RJ-45 connectors
Fabric extender fabric interfaces	2	4	4	8	Uplink module: 8 SFP+ (N2K- M2800P)
Fabric speed	20 Gbps in each direction (40 Gbps full duplex)	40 Gbps in each direction (80 Gbps full duplex)	40 Gbps in each direction (80 Gbps full duplex)	80 Gbps in each direction (160 Gbps full duplex)	80 Gbps in each direction (160 Gbps full duplex)
Oversubscription	1.2:1	1.2:1	1.2:1	4:1	4:1
Performance	Hardware forwarding at 88 Gbps or 65 mpps	Hardware forwarding at 176 Gbps or 131 mpps	Hardware forwarding at 176 Gbps or 131 mpps	Hardware forwarding at 560 Gbps or 595 mpps	Hardware forwarding at 560 Gbps or 595 mpps
Cisco parent switch	Cisco Nexus 5000 Series Cisco Nexus 7000 Series	Cisco Nexus 5000 Series Cisco Nexus 7000 Series	Cisco Nexus 5000 Series	Cisco Nexus 5000 Series Cisco Nexus 7000 Series	Cisco Nexus 5000 Series
FCoE support	No	No	No	Yes	No

Selected Part Numbers and Ordering Information

Part Number	Description
Nexus 2000 Series Chassis	
N2K-C2224TP	Cisco Nexus 2000 Series 1GE Fabric Extender, 2PS, 1 Fan Module, 24x100/1000Base-T + 2x10GE (req SFP+), choice of airflow and power supply
N2K-C2248TP	Cisco Nexus 2000 Series 1GE Fabric Extender, 2PS, 1 Fan Module, 48x100/1000Base-T + 4x10GE (req SFP+), choice of airflow and power supply
N2K-C2248TP-E	Cisco Nexus 2000 Series 1GE Fabric Extender, 2PS, 1 Fan Module, 48x100/1000Base-T + 4x10GE (req SFP+), 32MB buffer, choice of airflow and power supply
N2K-C2232PP	Cisco Nexus 2000 Series 10GE Fabric Extender, 2PS, 1 Fan Module, 32x1/10GE (req SFP/SFP+) + 8x10GE (req SFP+), choice of airflow and power supply
N2K-C2232TM	Cisco Nexus 2000 Series 10GBASE-T Fabric Extender, 2PS, 1 Fan Module, 32x1/10GBase-T + 8x10GE Module (req SFP+), choice of airflow and power supply
N2K-C2232TM-E	Cisco Nexus 2000 Series 10GBASE-T Fabric Extender, 2PS, 1 Fan Module, 32x1/10GBase-T + 8x10GE Module (req SFP+), choice of airflow and power supply
N2K-C2148T-1GE	Cisco Nexus 2000 Series 1GE Fabric Extender, 1 AC PS, 1 Fan Module (Standard Airflow), 48x1GBase-T + 4x10GE (req SFP+)
N2K-C2224TP-1GE	Cisco Nexus 2000 Series 1GE Fabric Extender, 2 AC PS, 1 Fan Module (Standard Airflow), 24x100/1000Base-T + 2x10GE (req SFP+), same as N2K-C2224TP
N2K-C2248TP-1GE	Cisco Nexus 2000 Series 1GE Fabric Extender, 2 AC PS, 1 Fan Module (Standard Airflow), 48x100/1000Base-T + 4x10GE (req SFP+), same as N2K-C2248TP
N2K-C2232PP-10GE	Cisco Nexus 2000 Series 10GE Fabric Extender, 2 AC PS, 1 Fan Module (Standard Airflow), 32x1/10GE (req SFP/SFP+) + 8x10GE (req SFP+), same as N2K-C2232PP
N2K-C2232TM-10GE	Cisco Nexus 2000 Series 10GBASE-T Fabric Extender, 2 AC PS, 1 Fan Module (Standard Airflow), 32x1/10GBase-T + 8x10GE Module (req SFP+), same as N2K-C2232TM
Nexus 2000 Series Chassis with FET	
N2K-C2224TF	Cisco Nexus 2000 Series 1GE Fabric Extender, 2PS, 1 Fan Module, 24x100/1000Base-T + 2x10GE (includes 4 Fabric Extender Transceivers), choice of airflow and power supply
N2K-C2248TF	Cisco Nexus 2000 Series 1GE Fabric Extender, 2PS, 1 Fan Module, 48x100/1000Base-T + 4x10GE (includes 8 Fabric Extender Transceivers), choice of airflow and power supply
N2K-C2248TF-E	Cisco Nexus 2000 Series 1GE Fabric Extender, 2PS, 1 Fan Module, 48x100/1000Base-T + 4x10GE (includes 8 Fabric Extender Transceivers), 32MB buffer, choice of airflow and power supply
N2K-C2232PF	Cisco Nexus 2000 Series 10GE Fabric Extender, 2PS, 1 Fan Module, 32x1/10GE (req SFP/SFP+) + 8x10GE (includes 16 Fabric Extender Transceivers), choice of airflow and power supply
N2K-C2232TF	Cisco Nexus 2000 Series 10GBASE-T Fabric Extender, 2PS, 1 Fan Module, 32x1/10GBase-T + 8x10GE Module (includes 16 Fabric Extender Transceivers), choice of airflow and power supply
N2K-C2232TF-E	Cisco Nexus 2000 Series 10GBASE-T Fabric Extender, 2PS, 1 Fan Module, 32x1/10GBase-T + 8x10GE Module (includes 16 Fabric Extender Transceivers), choice of airflow and power supply

N2K-C2224TF-1GE	Cisco Nexus 2000 Series 1GE Fabric Extender, 2 AC PS, 1 Fan Module (Standard Airflow), 24x100/1000Base-T + 2x10GE (includes 4 Fabric Extender Transceivers)
N2K-C2248TF-1GE	Cisco Nexus 2000 Series 1GE Fabric Extender, 2 AC PS, 1 Fan Module (Standard Airflow), 48x100/1000Base-T + 4x10GE (includes 8 Fabric Extender Transceivers)
N2K-C2232PF-10GE	Cisco Nexus 2000 Series 10GE Fabric Extender, 2 AC PS, 1 Fan Module, 32x1/10GE (req SFP/SFP+) + 8x10GE (includes 16 Fabric Extender Transceivers)
N2K-C2232TF-10GE	Cisco Nexus 2000 Series 10GBASE-T Fabric Extender, 2 AC PS, 1 Fan Module (Standard Airflow), 32x1/10GBASE-T + 8x10GE Module (includes 16 Fabric Extender Transceivers)

For More Information

<http://www.cisco.com/go/nexus2000>

Cisco Adapter Fabric Extender

Cisco Adapter Fabric Extender (Adapter FEX) is a technology that extends the current Cisco fabric extender solution to servers and enables the server adapter to be logically partitioned into multiple virtual network interface cards (vNICs). Each vNIC behaves like a physical network- interface-card (NIC) port to satisfy the connectivity needs to help ensure network quality of service (QoS) for applications.

Cisco Adapter FEX enables the efficient use of 10 Gigabit Ethernet bandwidth across server adapters and switches in the server access layer.

The technology is based on the IEEE 802.1BR standard architecture for delivering secure, scalable network monitoring and management in rack and virtualized servers.

There is a single point of management from the access layer switch that manages and controls the end-to-end connectivity between server adapters and the switches in a virtualized environment.

Features and Benefits

- Enables efficient use of 10 Gigabit Ethernet bandwidth:
 - Partition 10 Gigabit Ethernet server adapters to provide dedicated network bandwidth to individual applications or virtual machines.
 - Reduce cabling, network interface cards (NICs), power, and operating costs.
 - Deliver near-line-rate network performance and meet network quality-of-service (QoS) requirements.
- Provides single point of monitoring and management:
 - Monitor and manage the entire network, from the server access layer switch to Cisco Nexus 5000 Series Switches, to virtual machines.
- Provides flexibility and scalability with security:
 - It is based on industry-standard IEEE 802.1BR, which enables the network device (server adapter or switch) to be partitioned into multiple connectivity points (virtual NICs [vNICs] or virtual line cards).
 - The IEEE standard enables bare-metal and virtualized environments to scale as the business grows, adding more applications, virtual machines, and servers.
 - Secure protection is provided for each data packet. By basing access-control-list (ACL) implementation on tagged data packets instead of MAC addresses, each data packet is protected, and rogue data packets will not affect the overall network.

For More Information

<http://www.cisco.com/go/adapterfex>

Cisco Data Center Virtual Machine Fabric Extender

Cisco Data Center Virtual Machine Fabric Extender (VM-FEX) collapses virtual and physical networking into a single infrastructure. Data center administrators can now provision, configure, manage, monitor, and diagnose virtual machine network traffic and bare-metal network traffic within one unified infrastructure.

Features and Benefits

- The Cisco Data Center VM-FEX software extends Cisco Fabric Extender technology (FEX technology) all the way to the virtual machine:
 - Each virtual machine gets a dedicated interface on the parent switch.
 - All virtual machine traffic is sent directly to the dedicated interface on the switch.
 - The software-based switch in the hypervisor is eliminated.
- Cisco Data Center VM-FEX collapses virtual switching infrastructure and physical switching infrastructure into a single, easy-to-manage environment:
 - Simplifies operations by eliminating the need for a separate virtual networking infrastructure

- Improves network security by containing VLAN proliferation
- Optimizes network use by reducing the number of broadcast domains
- Boosts application performance by offloading virtual machine switching from the host CPU to the parent switch application-specific integrated circuits (ASICs)
- Cisco Data Center VM-FEX is supported on Red Hat Kernel-Based Virtual Machine (KVM) and VMware ESX hypervisors. Cisco Data Center VM-FEX supports live migration and VMware vMotion.

For More Information

<http://www.cisco.com/go/vmfex>

Cisco Nexus B22 Fabric Extender

Cisco Nexus B22 Blade Fabric Extenders extend the benefits of Cisco Fabric Extenders (FEX) to third-party blade servers such as HP and Fujitsu. They simplify data center access operations by combining the management simplicity of a single high-density access switch with the cabling simplicity of integrated blade switches.

Features and Capabilities

Highly Scalable, Consistent Server Access

A distributed modular system provides a scalable server access environment with no reliance on Spanning Tree Protocol, allowing consistency between blade and rack servers.

Simplified Operations

A single point of management and policy enforcement using upstream Cisco Nexus switches eases the deployment of FEX blades through zero-touch installation and automatic configuration.

Increased Business Benefits

Reduce operating expenses (OpEx) and capital expenditures (CapEx) with:

- Infrastructure consolidation
- Cabling reduction
- Feature inheritance from the parent switch, which protects current investments

Cisco Nexus B22 Fabric Extenders deliver fabric extensibility with single point of management from the Cisco Nexus 5000 Series Switches to:

- HP BladeSystem c-Class chassis with Cisco Nexus B22HP
- Fujitsu PRIMERGY Blade Chassis with Cisco Nexus B22F

For More Information

<http://www.cisco.com/go/b22fex>

Storage Networking: SAN Switching

Cisco MDS 9500 Series Multilayer Directors

The Cisco MDS 9500 Series Multilayer Directors provide industry-leading availability, scalability, security, and management. The Cisco MDS 9500 Series allows businesses to deploy high-performance SANs with the lowest total cost of ownership (TCO) in the industry. Layering a comprehensive set of intelligent features onto a high-performance, protocol-independent switch fabric, the Cisco MDS 9500 Series addresses the stringent requirements of large data center storage environments.



Available in 6-, 9-, and 13-slot configurations, the Cisco MDS 9500 Series supports 1-, 2-, 4-, 8-, and 10-Gbps Fibre Channel port speeds, up to 528 1-, 2-, 4-, and 8-Gbps autosensing Fibre Channel ports in a single chassis, and up to 1584 Fibre Channel ports per rack.

Cisco MDS 9500 Series Multilayer Directors are also ready for integration of future high-speed standards, helping ensure continued investment protection. Cisco NX-OS Software is included at no charge with every Cisco MDS 9000 Multilayer SAN Switch, and is the underlying system software that powers the Cisco MDS 9000 Family solutions.

The portfolio includes:

- Cisco MDS 9513 Multilayer Director
- Cisco MDS 9509 Multilayer Director
- Cisco MDS 9506 Multilayer Director

Cisco MDS 9513 Multilayer Director

The Cisco MDS 9513 Multilayer Director addresses the stringent requirements of large data center storage environments: uncompromising high availability, security, scalability, ease of management, and transparent integration of new technologies for extremely flexible data center SAN solutions. Compatible with first-, second-, and third-generation Cisco MDS 9000 Family switching modules, the Cisco MDS 9513 provides advanced functions and outstanding investment protection, allowing the use of any Cisco MDS 9000 Family switching module in this highly scalable system.

The Cisco MDS 9513 supports modular, multilayer, multiprotocol, highly available, dual Cisco MDS 9513 Supervisor 2 modules and 11 module slots (14 rack units [14RU]):

- Maximum of 528 1-, 2-, 4-, or 8-Gbps Fibre Channel ports per chassis
- Maximum of 44 10-Gbps Fibre Channel ports per chassis
- Maximum of 60 Small Computer System Interface over IP (iSCSI) and Fibre Channel over IP (FCIP) ports per chassis
- Thirteen available slots
- Support for 8-Gbps Fibre Channel: 24-, 48-, and four 44-port 8-Gbps Fibre Channel switching modules
- Support for 4-Gbps Fibre Channel: 12-, 24-, and 48-port 4-Gbps Fibre Channel switching modules
- Support for IP and storage services: 18 ports of 4 Gbps FibreChannel (18/4) with 4 1-Gbps Ethernet IP storage-port multiservice modules and 16-port storage services node
- Support for 10-Gbps Fibre Channel: 4-port 10-Gbps Fibre Channel switching module
- Support for Fibre Channel over Ethernet (FCoE): 10-Gbps 8-Port FCoE module

Cisco MDS 9509 Multilayer Director

The Cisco MDS 9509 supports up to 336 ports of 1-, 2-, 4-, 8-, and 10-Gbps Fibre Channel connectivity and is a powerful director-class SAN switch offering industry-leading availability, scalability, and security. The Cisco MDS 9509 Multilayer Director comes with two redundant Cisco MDS 9500 Supervisor 2 modules preinstalled, and it layers a comprehensive set of intelligent features onto a high-performance, protocol-independent switch fabric to meet the needs of large data center storage environments:

- Maximum of 336 1-, 2-, 4-, or 8-Gbps Fibre Channel ports per chassis
- Maximum of 28 10-Gbps Fibre Channel ports per chassis
- Maximum of 48 iSCSI and FCIP ports per chassis
- Nine available slots
- 1-, 2-, and 4-, and 10-Gbps Fibre Channel switching modules
- Advanced management tools for overall low TCO
- Backward-compatible for investment protection
- Support for FCoE: 10-Gbps 8-port FCoE module
- Unified SAN management

Cisco MDS 9506 Multilayer Director

The Cisco MDS 9509 Multilayer Director supports up to 336 ports of 1-, 2-, 4-, 8-, and 10-Gbps Fibre Channel connectivity and is a powerful director-class SAN switch offering industry-leading availability, scalability, and security. The Cisco MDS 9509 Multilayer Director comes with two redundant Cisco MDS 9500 Supervisor 2 modules preinstalled, and it layers a comprehensive set of intelligent features onto a high-performance, protocol-independent switch fabric to meet the needs of large data center storage environments:

- Maximum of 192 1-, 2-, 4- or 8-Gbps Fibre Channel ports per chassis
- Maximum of 16 10-Gbps Fibre Channel ports per chassis
- Maximum of 24 iSCSI and FCIP ports per chassis
- Six available slots
- 1-, 2-, 4-, 8- and 10-Gbps Fibre Channel switching
- Advanced management tools for overall low TCO
- Backward-compatible for investment protection
- Support for FCoE: 10-Gbps 8-port FCoE module
- Unified SAN management

Selected Part Numbers and Ordering Information

Cisco MDS 9500 Base Configuration	
DS-C9506	Cisco MDS 9506 Chassis
DS-C9506-2K9	Cisco MDS 9506 Base Configuration: Chassis, 2-Sup-2.2, 1.9K AC power supply
DS-C9509	Cisco MDS 9509 Chassis
DS-C9509-2K9	Cisco MDS 9509 Base Configuration: Chassis, 2-Sup-2.2, 3K AC power supply
DS-C9513	Cisco MDS 9513 Chassis
DS-C9513-K9	Cisco MDS 9513 Base Configuration: Chassis, 2-Sup-2.2 Fabric, 2 6K AC power supply
DS-X9530-SF2-K9	Cisco MDS 9500 Supervisor/Fabric 2
Cisco MDS 9000 Modules	
DS-X9032-SSM	Cisco MDS 9000 Storage Services Module

DS-X9112	Cisco MDS 9000 12-port 1/2/4-Gbps FC Module
DS-X9124	Cisco MDS 9000 24-port 1/2/4-Gbps FC Module
DS-X9148	Cisco MDS 9000 48-port 1/2/4-Gbps FC Module
DS-X9248-48K9	4/44-Port Host-Optimized 8-Gbps FC Module
DS-X9248-96K9	48-Port 8-Gbps Fibre Channel Switching Module
DS-X9224-96K9	24-Port 8-Gbps Fibre Channel Switching Module
DS-X9304-18K9	Cisco MDS 9000 4-port GE and 18-port FC Module
DS-X9304-18FK9	Cisco MDS 9000 4-port GE and 18-port FC FIPS Module
DS-X9308-SMIP	Cisco MDS 9000 8-port 1 GE IP Storage Services Module
DS-SFP-FC-2G-SW	1/2-Gbps Fibre Channel-SW SFP, LC
DS-SFP-FC-2G-LW	1/2-Gbps Fibre Channel-LW SFP, LC
DS-SFP-FC4G-SW	1/2/4-Gbps Fibre Channel-Shortwave SFP, LC
DS-SFP-FC4G-MR	1/2/4-Gbps Fibre Channel-Longwave SFP, LC (4km reach)
DS-SFP-FC4G-LW	1/2/4-Gbps Fibre Channel-Longwave SFP, LC (10km reach)
DS-SFP-FCGE-SW	1-Gbps Ethernet and 2-Gbps Fibre Channel-SW, SFP, LC
DS-SFP-FCGE-LW	1-Gbps Ethernet and 2-Gbps Fibre Channel-LW, SFP, LC
DS-X2-FC10G-SR	10-Gbps Fibre Channel-Shortwave, SC
DS-X2-FC10G-LW	10-Gbps Fibre Channel-Longwave, SC
DS-SFP-GE-T	Gigabit Ethernet Copper, SFP, RJ-45
Cisco MDS 9500 Memory Options	
MEM-MDS-FLD512M=	Cisco MDS 9500 Sup Compact Flash Disk, 512 MB, Spare

For More Information

<http://www.cisco.com/go/storagenetworking>

Cisco MDS 9200 Series Multilayer Switches

The Cisco MDS 9222i Multiservice Modular Switch (MMS) delivers high-performance storage area network (SAN) extension solutions, distributed intelligent fabric services, and cost-effective multiprotocol connectivity for both open and mainframe environments. Its compact form factor and modularity make it excellent for departmental and remote branch-office SANs. It enables virtual fabric isolation with virtual SANs (VSANs); Fibre Channel routing with Inter-VSAN Routing (IVR); and high availability with In-Service Software Upgrade (ISSU), stateful process restart, and PortChannels. The Cisco MDS 9222i enables cost optimization through Small Computer System Interface over IP (iSCSI) connectivity to Ethernet-attached servers.



Sharing a consistent architecture with the Cisco MDS 9500 Series and powered by Cisco MDS 9000 NX-OS Software, the Cisco MDS 9222i offers eighteen 4-Gbps Fibre Channel ports and 4 Gigabit Ethernet IP storage services ports in a fixed base configuration with a single application engine and a modular expansion slot to host the optional Cisco MDS 9000 Family switching and multiservices modules. This configuration allows it to scale up to a 66-port Fibre Channel switch with various 10-, 8-, and 4-Gbps Fibre Channel switching modules or to host and accelerate storage applications such as network-hosted volume management, network-assisted data protection, data migration, and backup with the Cisco MDS 9000 18- or 4-Port \ Multiservice Module (MSM) single-engine or Cisco MDS 16-Port Storage Services Node (SSN) quad-engine MSM. The Cisco MDS 9222i is also capable of high-density connectivity through 8-Gbps Fibre Channel ports, and it supports the 4/44-port 8-Gbps host-optimized Fibre Channel switching module. The switch:

- Offers 1-, 2-, 4- and 8-Gbps performance
- Scales up to 66 Fibre Channel ports
- Offers eighteen 4-Gbps Fibre Channel interfaces for high-performance SAN connectivity
- Offers 4 Gigabit Ethernet IP storage services ports
- Supports iSCSI, Fibre Channel, Fibre Channel over IP (FCIP), and IBM Fiber Connection (FICON)

Selected Part Numbers and Ordering Information

Cisco MDS 9200 Base Configuration	
DS-C9222i-K9	Cisco MDS 9222i 18-port FC and 4-port GE + 1-slot Modular Switch

For More Information

<http://www.cisco.com/go/mds>

Cisco MDS 9100 Series Multilayer Fabric Switches

The Cisco MDS 9100 Series Multilayer Fabric Switches are cost-effective, scalable, easy-to-install, and highly configurable Fibre Channel switches that are excellent for small to medium-sized businesses. The fabric switches are also available as blade-switch form factors for market-leading blade servers, specifically IBM and HP blade servers.



The Cisco 9100 Series portfolio includes:

- Cisco MDS 9148 Multilayer Fabric Switch
- Cisco MDS 9124 Multilayer Fabric Switch

Cisco MDS 9148 Multilayer Fabric Switch

The Cisco MDS 9148 Multilayer Fabric Switch is a high-performance, flexible, cost-effective 1-rack-unit (1RU) platform providing the highest density of line-rate 8-Gbps Fibre Channel ports in the industry. It is fully compatible with the Cisco MDS 9500 Series Multilayer Directors, MDS 9200 Series Multilayer Switches, and MDS 9100 Series Multilayer Fabric Switches for transparent, end-to-end service delivery in large data center core-edge deployments. Its ready-to-use capabilities, including Quick Configuration and Task wizards, allow easy deployment in any size network. The Cisco MDS 9148 is competitively priced with enterprise-class capabilities: virtual SANs (VSANs), PortChannels, nondisruptive code upgrade, comprehensive security (authentication, authorization, and accounting [AAA], role-based access control [RBAC], etc.), troubleshooting, and diagnostics. It is fully optimized to accommodate virtualized server environments. Scalability is provided for virtual machines through N-Port ID Virtualization (NPV) and VSAN technology. Virtual machine-level details are provided for quality of service (QoS) and management together with flexibility for virtual machine mobility and security. The switch:

- Provides 8-Gbps nonblocking throughput on all 48 ports
- Offers Cisco FlexAttach technology to enable transparent server deployment without the need to reconfigure the storage area network (SAN)
- Offers N-Port Virtualization (NPV) technology and NPV support for virtual environments
- Supports virtual SAN (VSAN) for security and fault isolation
- Provides PortChannels for aggregating up to 16 physical ports into one logical channel
- Offers In-Service Software Upgrade (ISSU) to enable firmware upgrades without removing the switch from service
- Supports high availability with dual hot-swappable power supplies and fans
- Supports RADIUS and TACACS+ port security, Fibre Channel Security Protocol, Secure FTP, Secure Shell (SSH) Protocol Version 2, and RBAC for comprehensive security controls
- Like all Cisco MDS 9000 Family switches and directors, blocks corrupted and malformed frames from entering a fabric, protecting servers and applications

Cisco MDS 9124 Multilayer Fabric Switch

The Cisco MDS 9124 supports 4-Gbps dedicated Fibre Channel ports. It shares common features and the same Cisco MDS 9000 NX-OS Software with the Cisco MDS 9500, MDS 9200, and MDS 9100 Series multilayer switches and directors. It is competitively priced with enterprise-class capabilities: VSANs, PortChannels, nondisruptive code upgrade, comprehensive security (AAA, RBAC, etc.), troubleshooting, and diagnostics. The Cisco MDS 9124 can be used as the foundation of small standalone SANs or as an edge switch in larger core-edge SAN infrastructures.

The Cisco MDS 9124 has ready-to-use capabilities, including Quick Configuration wizard support and Task wizards, which allow easy deployment in any size network. The on-demand port activation license makes port activation faster. The switch:

- Offers 1-, 2-, and 4-Gbps performance
- Scales up to 24 Fibre Channel ports
- Offers simplified management
- Offers easy configuration and deployment
- Provides a highly available platform for mission-critical deployments
- Provides a comprehensive security framework
- Provides ordering and serviceability flexibility with either single or dual-redundant hot-pluggable AC or DC power supplies

Selected Part Numbers and Ordering Information

DS-C9124-K9	Cisco MDS 9124 8-port base with single AC Power Supply
DS-C9124DC-K9	Cisco MDS 9124 8-port base with single DC Power Supply
DS-C9148-16P-K9	Cisco MDS 9148 16-port base with dual AC Power Supplies/Fans
DS-C9148-32P-K9	Cisco MDS 9148 32-port base with dual AC Power Supplies/Fans
DS-C9148-48P-K9	Cisco MDS 9148 48-port base with dual AC Power Supplies/Fans

For More Information

<http://www.cisco.com/go/mds>

Cisco MDS 9000 Intelligent Fabric Applications

Cisco offers a collection of software applications designed to optimize your data center resources by providing integrated, high-performance applications to Cisco storage networks. These applications support remote disaster recovery, security, data mobility, and other heterogeneous storage requirements without the need to add appliances or use host or array resources. The Cisco MDS 9000 Family services nodes provide network-hosted services to Cisco storage networks such as SAN extension (Fibre Channel over IP (FCIP)) and Cisco I/O Acceleration (IOA), XRC Acceleration (XRC), Storage Media Encryption (SME), and Data Mobility Manager (DMM).

Network-assisted applications are enabled through the open Intelligent Services API (ISAPI). Cisco makes this development platform available to original storage manufacturers (OSMs) and independent software vendors (ISVs) who want to develop storage applications on the Cisco storage networks platform.

For More Information

<http://www.cisco.com/go/storagenetworking>

Cisco MDS 9000 XRC Acceleration

Cisco MDS 9000 XRC Acceleration is a storage area network (SAN) fabric-based feature that improves the performance of IBM z/OS Global Mirror (formerly XRC) over WAN links, improving bandwidth usage and dynamic update performance. It is implemented on the Cisco MDS 9000 18/4-Port Multiservice Module (MSM) and the Cisco MDS 9222i Multiservice Modular Switch (MMS). It requires Cisco MDS 9000 NX-OS Software Release 4.2 or later.

- XRC Acceleration increases parallelism by supporting multiple system data movers (SDMs) and multiple readers within each SDM. IBM Parallel Access Volumes (PAVs) and HyperPAVs are supported. IBM Fibre Connection (FICON) data access storage devices (DASDs), and devices from EMC, and HDS are supported to complete the ecosystem
- XRC Acceleration runs on the same hardware as the underlying SAN Extension on Fibre Channel over IP (FCIP), and it takes advantage of the IP Security (IPsec) encryption and data compression that Cisco MDS 9000 Family Switches provide. Many customers experience compression ratios of 4:1 or greater, and many report compression exceeding 5:1.

Selected Part Numbers and Ordering Information

M9500XRC=	Cisco MDS 9000 XRC Acceleration Package for one Cisco MDS 9500 Series Multilayer Director
M9200XRC=	Cisco MDS 9000 XRC Acceleration Package for one Cisco MDS 9200 Series Multilayer Switch

For More Information

<http://www.cisco.com/go/storagenetworking>

Cisco Storage Media Encryption (SME)

Cisco Storage Media Encryption (SME) provides encryption as a storage area network (SAN) service. It encrypts data at rest on heterogeneous tape devices and virtual tape libraries. Cisco SME is completely integrated with Cisco MDS 9000 Family Switches and Cisco Fabric Manager, enabling deployment and management of highly available encryption services without the need to rewire or reconfigure SANs or install additional software. Data stored in any virtual SAN (VSAN) can use Cisco SME. It employs clustering technology to enhance reliability and availability, enable automated load balancing and failover capabilities, and simplify provisioning. Secure key management is included, with essential features such as key archival and shredding.

- Cisco SME offers simple, nondisruptive installation and provisioning. Neither rewiring nor SAN reconfiguration is required.
- Encryption engines are integrated on Fibre Channel switching modules.
- Cisco SME encrypts traffic from any VSAN.
- No additional software is required for provisioning, key, or user role management.

Selected Part Numbers and Ordering Information

M9500SME1MK9	Cisco Storage Media Encryption package for one MPS-18/4 or MPS-18/4 FIPS module in the Cisco MDS 9500 series
DS-SCR-K9=	Smart Card Reader for Cisco SME

For More Information

<http://www.cisco.com/go/storagenetworking>

Cisco MDS 9000 I/O Accelerator

Cisco MDS 9000 Family I/O Accelerator (IOA) software improves remote I/O performance and bandwidth usage over metropolitan-area network (MAN) and WAN links. This fabric-based acceleration service is implemented on the Cisco MDS 9000 16-Port Storage Services Node (SSN), Cisco MDS 9000 18/4-Port Multiservice Module (MSM), and Cisco MDS 9222i Multiservice Modular Switch (MMS). It requires Cisco MDS 9000 NX-OS Software Release 4.2 or later.

- IOA accelerates Small Computer System Interface (SCSI) disk write operations and tape read operations and writes over MANs and LANs.
- IOA service nodes can be located anywhere in the fabrics on each side of the remote link.
- Fibre Channel over IP (FCIP) links can take advantage of the encryption and compression (as much as 5:1) built into the supporting hardware.
- Inter-Switch Links (ISLs) between a pair of 8-Gbps line cards can use Cisco TrustSec Fabric Channel link encryption to help secure data sent between data centers, and IOA can also add compression to MAN traffic.
- A Cisco Fabric Manager wizard simplifies configuration of the infrastructure on each side of the MAN or WAN link.
- Insertion of the acceleration service into the data path is transparent and nondisruptive.
- Installation and provisioning are simple and nondisruptive. Neither rewiring nor SAN reconfiguration is required.
- Encryption engines are integrated on Fibre Channel switching modules.
- IOA encrypts traffic from any VSAN.
- No additional software is required for provisioning, key, or user role management.

Selected Part Numbers and Ordering Information

M92IOA184=	Cisco MDS 9000 Family I/O Accelerator Package license for MSM-18/4 on Cisco MDS 9200
M95IOA184=	Cisco MDS 9000 Family I/O Accelerator Package license for MSM-18/4 on Cisco MDS 9500
M92IOASSN=	Cisco I/O Accelerator license (1 engine) for SSN-16 on Cisco MDS 9200
M95IOASSN=	Cisco I/O Accelerator license (1 engine) for SSN-16 on Cisco MDS 9500
M9222IOA=	Cisco I/O Accelerator license for Cisco MDS 9222i base switch

For More Information

<http://www.cisco.com/go/storage networking>

Cisco Data Mobility Manager

Cisco Data Mobility Manager (DMM) is a fabric-based data-migration solution that transfers block data across heterogeneous storage volumes and across distances, regardless of whether the host is online or offline. With no host components to deploy, the time-consuming, costly, and sensitive task of installing and licensing hardware and software on servers is avoided. In addition, host CPU and bandwidth cycles are available to the application in their entirety, so applications do not experience any deterioration in performance.

Cisco DMM is implemented on the Cisco MDS 9000 18/4-Port Multiservice Module (MSM) and Cisco MDS 9222i Multiservice Modular Switch (MMS). The Cisco MDS 9000 18/4-Port MSM and MDS 9222i MMS require Cisco MDS 9000 NX-OS Software Release 4.1 or later. Typically this capability addresses:

- Array lease expiration and decommissioning
- Capacity planning and tiered storage strategies
- Asynchronous and synchronous migration across heterogeneous arrays
- Unlimited support on the number of arrays and no restriction on the amount of data moved

Selected Part Numbers and Ordering Information

M92DMM184K9=	Cisco Data Mobility Manager (DMM) License for one 18/4 on Cisco MDS 9200
M95DMM184K9=	Cisco Data Mobility Manager (DMM) License for one 18/4 on Cisco MDS 9500
M9222IDMMK9=	Cisco Data Mobility Manager (DMM) License for Cisco MDS 9222i

For More Information

<http://www.cisco.com/go/storage networking>

Cisco MDS 9000 NX-OS Software

Cisco MDS 9000 NX-OS Software is designed to create a strategic data center platform with superior reliability, performance, scalability, and features. Formerly known as Cisco SAN-OS, Cisco MDS 9000 NX-OS Software is fully interoperable with earlier Cisco SAN-OS versions and enhances hardware platform and module support. Cisco NX-OS Software helps unify and simplify the next-generation data center. Cisco NX-OS currently runs on the following Cisco data center products:

- Cisco Nexus 7000 Series modular switches
- Cisco Nexus 5000 Series rack switches
- Cisco Nexus 4000 Series blade switches
- Cisco Nexus 1000V Series virtual switches
- Cisco MDS 9000 Series Fibre Channel storage switches
- Cisco UCS 6100 Series Fabric Interconnects of the Cisco Unified Computing System (Cisco UCS)

By allowing you to implement a single operating system across network, storage, and computing infrastructure, Cisco NX-OS greatly simplifies data center operations, producing a direct, positive effect on operating costs. Similarly, because it is designed for high system availability, enhanced manageability, and unified data center infrastructure, Cisco NX-OS further reduces both data capital and operating expenditures. In addition, because it is built on a modular, adaptable architecture, Cisco NX-OS provides future investment protection with an inherent ability to easily incorporate additional innovations and new technologies.

For More Information

<http://www.cisco.com/go/mds>

Unified Computing

Cisco Unified Computing System

The Cisco Unified Computing System (Cisco UCS) is a next-generation data center platform that unites computing, networking, storage access, and virtualization resources into a cohesive system designed to reduce total cost of ownership (TCO) and increase business agility. The system integrates a low-latency, lossless 10 Gigabit Ethernet unified network fabric with enterprise-class, x86-architecture servers. The system is an integrated, scalable, multichassis platform in which all resources participate in a unified management domain.



Cisco UCS is managed as a single system whether it has 1 server or 160 servers with up to thousands of virtual machines; this approach decouples scale from complexity. Cisco UCS rack and blade servers accelerate the delivery of new services simply, reliably, and securely through end-to-end provisioning and migration support for both virtualized and nonvirtualized systems.

Cisco UCS is designed to deliver:

- Programmable infrastructure that transforms the physical infrastructure into a pool of resources that can be provisioned to support any workload in minutes
- Unified, model-based management that configures and provisions servers quickly and accurately, improving business agility and eliminating a major source of errors
- Cisco Fabric Extender technology, which extends fabric interconnect ports directly to blades and rack servers and individual virtual machines, eliminating unnecessary switches and management points
- Cisco Unified Fabric, which integrates the computing resources of the system into a single network that supports all I/O in the system, eliminating switches, ports, host bus adapters (HBAs), and network interface cards (NICs) and their purchase, power, cooling, and management costs
- Reduced TCO at the platform, site and at organizational levels
- Increased IT staff productivity and business agility through just-in-time provisioning and mobility support for both virtualized and nonvirtualized environments
- A transparent integrated system that is managed, serviced, and tested as a whole
- Scalability through a design for up to 160 discrete servers and thousands of virtual machines, and the capability to scale I/O bandwidth to match demand
- Industry standards supported by a partner ecosystem of industry leaders

Cisco UCS Product Family of Products

Cisco UCS is built from the following components:

- Cisco 1RU, 20-port Cisco UCS 6100, and 2RU, 40-port Cisco UCS 6200 Series Fabric Interconnects offer line-rate, low-latency, lossless 10 Gigabit Ethernet and Fibre Channel over Ethernet (FCoE) that:
 - Reduce barriers to deploying a fully virtualized environment for data center implementations

- Provide both the LAN and storage area network (SAN) connectivity for all blades and racks within their domain
- Virtual machine–optimized services with support for VM-FEX technologies
- Centralize unified management with Cisco UCS Manager software
- Cisco 1RU, 48-port, UCS 6148, and 2RU, 96-port UCS 6296 Series Fabric Interconnects offer line-rate, low-latency, lossless 10 Gigabit Ethernet and Fibre Channel over Ethernet (FCoE) ports:
 - Reduce barriers to deploying a fully virtualized environment for data center implementations
 - Provide both the LAN and SAN connectivity for all blades and racks within their domain
 - Centralize unified management with Cisco UCS Manager software
 - Virtual-machine-optimized services with support for Cisco Virtual Machine Fabric Extender (VM-FEX) technologies
 - Efficient cooling and serviceability with front-to-back cooling, redundant front-plug fans and power supplies, and rear cabling
 - Expansion module options that provide Fibre Channel and 10 Gigabit Ethernet uplink connectivity
- Cisco UCS 5100 Series Blade Server Chassis support up to eight half-width blade servers or four full-width blade servers and up to two fabric extenders in a 6-rack-unit (6RU) enclosure without the need for additional management, SAN switching, or LAN switching modules.
- Cisco UCS 2100, Cisco UCS 2204XP, and Cisco UCS 2208XP Series Fabric Extenders bring unified fabric into the blade-server chassis, providing up to four or eight 10-Gbps connections each between blade servers and the fabric interconnect and simplifying diagnostics, cabling, and management.
- Cisco UCS B-Series Blade Servers offer a variety of computing and memory choices to populate the Cisco UCS 5100 Series Blade Server chassis. The Cisco UCS B-Series Blade Servers span both 2- and 4-socket servers based on Intel Xeon processor E5 and E7 product families. Nearly all workloads are accommodated with a full range of hardware choice, including the half-width Cisco UCS B200 M3 Blade Server with up to 768 GB of memory and up to 80 Gbs I/O bandwidth, the large memory footprint of the half-width Cisco UCS B230 M2 Blade Server with up to 512 GB of memory, and the 4-socket Cisco UCS B440 M2 High-Performance Blade Server supporting up to 40 processing cores or the 4-socket Cisco UCS B420 M3 Blade Server with up to 1.5 TB of memory and up to 160 Gbs I/O bandwidth.
- Cisco UCS C-Series Rack Servers offer another entry point to Cisco UCS. In addition, Cisco UCS C-Series rack servers can be deployed as standalone computing devices in traditional environments while providing many innovative features such as enterprise-class reliability, availability, and serviceability (RAS), Cisco Extended Memory technology, and Cisco Adapter Fabric Extender (Adapter FEX) and Data Center Virtual Machine Fabric Extender (VM-FEX) technologies. The Cisco UCS C-Series accommodates nearly all workloads, ranging from small infrastructure applications to large memory- and CPU-intensive databases and application servers.
- Cisco UCS Network Adapters are offered in a mezzanine-card and PCIe form factors. Three types of adapters offer a range of options to meet application requirements, including adapters optimized for virtualization, compatibility with existing driver stacks, or efficient, high-performance Ethernet.

Features and Benefits

- Reduced total cost of ownership (TCO) at the platform, site, and organizational levels
- Increased IT staff productivity and business agility through just-in-time provisioning and mobility support for both virtualized and nonvirtualized environments
- Scalability through a design for up to 160 discrete rack or blade servers and thousands of virtual machines in a single highly available management domain
- Industry standards supported by a partner ecosystem of innovative, trusted industry leaders

Selected Part Numbers and Ordering Information

N10-S6100	Cisco Unified Computing System 6120XP 20-port Fabric Interconnect/0 PSU/2 fans/no SFP+
N10-S6200	Cisco Unified Computing System 6140XP 40-port Fabric Interconnect/0 PSU/5 fans/no SFP+
N20-C6508	Cisco Unified Computing System 5108 Blade Server Chassis/0 PSU/8 fans/0 fabric extender
UCS-FI-6248UP	UCS 6248UP 1RU Fabric Int/No PSU/32 UP/ 12p LIC
UCS-FI-6296UP	UCS 6296UP 2RU Fabric Int/No PSU/48 UP/ 18p LIC
UCS-MR-1X162RY-A=	16GB DDR3-1600-MHz RDIMM/PC3-12800/dual rank/1.35v
N20-AI0002	Mezzanine Cards—UCS 82598KR-CI 10-Gigabit Ethernet Adapter/Pcie/2-port 10Gb (NOTE Emulx, QLogic, and Virtual interface card options are available during configuration)
N20-D073GC	Hard Drive Options—73GB SAS 15K RPM SFF HDD/hot plug/B-series drive sled (NOTE 146GB, 300GB options available during configuration)
Operation systems	UCS blade servers can be preconfigured with Red Hat, SUSE, Microsoft, or VMware operating systems

For More Information

<http://www.cisco.com/go/ucs>

Cisco UCS B-Series Blade Servers

Cisco UCS B-Series Blade Servers are designed to increase performance, energy efficiency, and flexibility for demanding virtualized and nonvirtualized computing environments. Each Cisco UCS B-Series Blade Server incorporates converged network adapters (CNAs) for access to the unified fabric. This design reduces the number of adapters, cables, management points, and access layer switches while still allowing traditional LAN and storage area network (SAN) connectivity. This Cisco innovation reduces capital expenditures (CapEx) and operating expenses (OpEx), including administrative overhead and power and cooling costs.



The Cisco UCS B-Series models featuring 2-socket designs help increase performance, energy efficiency, and flexibility for demanding virtualized and nonvirtualized applications. These 2-socket blade servers are based on the Intel Xeon processor 5600 series and the Intel Xeon processor E7-2800 product family.

- The Cisco UCS B200 M3 Blade Server addresses the broadest set of workloads while delivering performance, versatility, and density without compromise. The Cisco UCS B200 M3 Blade Server addresses the workloads from IT and web infrastructure through a distributed database.
- The Cisco UCS B22 M3 Blade Server feature set offers price and performance to address a range of requirements, from IT and web infrastructure to scale-out applications.
- The Cisco UCS B200 M2 Blade Servers balance simplicity, performance, and density for production-level virtualization and other mainstream data center workloads.
- The Cisco UCS B250 M2 Extended Memory Blade Servers increase performance and capacity for demanding virtualization and large-data set workloads with up to 384 GB of industry-standard memory. They also offer a more cost-effective memory in a full-width footprint.
- The Cisco UCS B230 M2 Blade Servers combine the performance and reliability of the Intel Xeon E7-2800 product family, respectively, with a unique combination of 32 dual-inline-memory-module (DIMM) slots in a half-width form factor.

The Cisco UCS B-Series 4-socket servers extend the agility and cost benefits of unified computing to the upper end of today's workloads.

- The four-socket Cisco UCS B440 M2 High-Performance Blade Server offers new levels of scalability, performance, and reliability. The B440 M2 server is powered by the scalable performance and reliability of the Intel Xeon processor E7-4800 product family. It is designed to meet the needs of computing-intensive and enterprise-critical applications.
- The Cisco UCS B440 M2 High-Performance Blade Server is powered by the scalable performance and reliability features of up to four Intel Xeon E7-4800 processors, and it easily handles computation-intensive, memory-intensive, highly scalable, enterprise-critical applications.

Features and Benefits

- Service profile support, with embedded integration with Cisco UCS Manager for all infrastructure policies required to deploy applications and provision servers
- Autodiscovery, with automatic recognition and configuration of blades by Cisco UCS Manager
- Remote management through an integrated service processor that also implements policy established in Cisco UCS Manager software
- Keyboard, video, and mouse (KVM) access either locally through the front of each server or remotely by Cisco UCS Manager
- Out-of-band access by remote KVM, Secure Shell (SSH) Protocol, Serial over LAN, and virtual media (vMedia) as well as the Intelligent Platform Management Interface (IPMI)
- Increased capacity for virtualization and large-data set workloads
- Flexibility and choice of half- or full-width and two-socket or four-socket blades, memory or CPU-intensive solutions, or both
- Improved virtualized and nonvirtualized workload performance that enables deployment of more virtual machines per server
- Reduced CPU core and software licensing fees
- Exceptional flexibility, adaptability, and agility when used in a Cisco Unified Computing System (Cisco UCS) environment
- Better infrastructure management with full compatibility with third-party management solutions

Selected Part Numbers and Ordering Information

UCSB-B200-M3	UCS B200 M3 Blade Server w/o CPU, memory, HDD, VIC 1240, or mezzanine adapters
UCSB-B22-M3	UCS B22 M3 Blade Server without CPU, memory, HDD, or mLOM/mezzanine cards
UCSB-B420-M3	UCS B420 M3 Blade Server with no CPU, memory, HDD, SSD, mLOM, or adapter card
B440-BASE-M2	Cisco UCS B440 M2 Blade Server w/o CPU, memory, HDD, mezzanine

N20-B6625-2	Cisco UCS B250 M2 Blade Server
N20-B6625-1	Cisco UCS B200 M2 Blade Server w/o CPU, memory, HDD, mezzanine

For More Information

<http://www.cisco.com/go/ucs>

Cisco UCS C-Series Rack Servers

The Cisco UCS C-Series Rack Servers extend the capabilities of the Cisco Unified Computing System (Cisco UCS), using Intel Xeon E5-2400, E5-2600, E72800, and E7-4800 product families of multicore processors to deliver even better performance and efficiency. Each product in the series is designed to address different workload challenges through a balance of processing, memory, I/O, and internal storage resources. The Cisco UCS C-Series servers include the following models:



- The Cisco UCS C240 M3 Rack Server is a 2-rack-unit (2RU) server designed for both performance and expandability over a wide range of storage-intensive infrastructure workloads, from big data to collaboration.
- The Cisco UCS C220 M3 Rack Server is 1RU server that offers superior performance and density over a wide range of business workloads, from web serving to distributed database.
- The Cisco UCS C22 M3 Rack Server is a 1RU, 2-socket rack server that combines outstanding economics and a density-optimized feature set over a range of scale-out workloads, from IT and web infrastructure to distributed applications.
- The Cisco UCS C24 M3 Rack Server is a 2RU, 2-socket rack server that is designed for both outstanding economics and internal expandability over a range of storage-intensive infrastructure workloads, from IT and web infrastructure to big data.
- The Cisco UCS C260 M2 Rack Server is one of the industry's most expandable, high-performance, memory-intensive, 2-socket, 2RU servers designed to increase performance, and it has the capacity for the most demanding, 2-socket virtualization and large-data set workloads. The Cisco UCS C260 M2 is based on the industry-leading Intel Xeon processor E7-2800 product family—the proven choice for the most data demanding applications.
- The Cisco UCS C460 M2 High-Performance Rack Server is a 4-socket, 4RU server for the most scalable applications, including enterprise-critical, standalone, and virtualized workloads. The Cisco UCS C460 M2 is based on the industry-leading Intel Xeon processor E7-4800 product family—the proven choice for your most mission-critical business solutions.

Features and Benefits

- Provides form factor-agnostic entry point into Cisco UCS that extends unified computing innovations and benefits to rack servers
- Simplifies and speeds deployment of applications
- Provides exceptional flexibility, adaptability, and agility when used in a Cisco UCS environment
- Provides better infrastructure management with full compatibility with third-party management solutions
- Achieves new levels of rack server horizontal scalability by taking advantage of service profile technology over one set of access layer switches and one instance of the Cisco UCS Manager management software
- Offers industry-standard double-data-rate-3 (DDR3) memory
- Has a front-panel connection for physical keyboard, video, and mouse (KVM); USB devices; and serial console
- Offers serial and network access to the Cisco UCS C-Series Integrated Management Controller (IMC) with up to 16 disk drives and 16 terabytes (TB) of internal storage
- Offers agent and agentless management with third-party tools through in-band, data-plane connections
- Provides SSD (Solid State Disk), SATA (Serial Advanced Technology Attachment) and SAS (Serial Attached SCSI) (Small Computer System Interface) disk-drive types
- Helps reduce total cost of ownership (TCO) and increase business agility

Selected Part Numbers and Ordering Information

UCSC-BASE-M2-C460	Cisco UCS C460 M2 Rack Server with DVD-RW and 1 PSU. CPUs, memory, HDD, PCIe cards, Rail Kit and Redundant PSU must be ordered below.
UCSC-C240-M3S	UCS C240 M3 SFF, no CPU, memory, HDD, power supply, or PCIe, with rail kit, 24-drive backplane, and SAS expander
UCSC-C220-M3S	UCS C220 M3 SFF, no CPU, memory, HDD, SDD, power supply, SD card, or PCIe cards, with 1 rail kit

For More Information

<http://www.cisco.com/go/ucs>

Application Networking Services

Cisco Application Control Engine Series Module

The Cisco Application Control Engine 30 (ACE 30) Module must always be ordered as a set including the following components:

- Cisco ACE 30 Module Hardware, which carries no cost
- Cisco ACE Software, which carries no cost
- Cisco ACE 30 Module License, which carries the full cost of the Cisco ACE 30 Module set.

Selected Part Numbers and Ordering Information

SC6K-A41-ACE	ACE A4(1) Software Release
ACE30-MOD-16-K9	ACE30 Module with 16G, 6G Comp, 30K SSL TPS and 250VC
ACE30-SYS-AC-04-K9	ACE30 16G 6504-E 720-10G-3C 6716 AC System

For More Information

<http://www.cisco.com/go/ace>

Cisco ACE 4710 Appliance

With Cisco Application Control Engine (ACE) Software Release 4.2, customers can order the Cisco ACE 4710 appliance from standard preconfigured bundles that bundle appliance hardware with appliance software licenses based on throughput. The customer enters a part number for each hardware and software bundle and receives the Cisco ACE 4710 appliance hardware together with a predefined software license for the desired level of throughput. Other features such as Secure Sockets Layer (SSL) transactions per second (TPS), compression, and virtual contexts are now fully supported on the Cisco ACE 4710 platform and do not require any additional licensing.

Selected Part Numbers and Ordering Information

ACE-4710-05-K9	ACE 4710 appliance, 0.5 Gbps throughput, 7500 SSL TPS, 0.5-Gbps compression, 20-virtual devices, Cisco Embedded Device Manager
ACE-4710-04-K9	ACE 4710 appliance, 4 Gbps throughput, 7500 SSL TPS, 2-Gbps compression, 20-virtual devices, Cisco Embedded Device Manager

For More Information

<http://www.cisco.com/go/ace>

Cisco ACE Global Site Selector 4400 Series

The Cisco Application Control Engine (ACE) Global Site Selector (GSS) 4400 Series, along with Cisco ACE Modules, represents the next generation of application switches and Domain Name System (DNS) appliances. Together these devices form an application-fluent networking solution that increases availability, acceleration, and security for data center applications.

The Cisco ACE GSS 4492R is part of the Cisco ACE product line and a crucial component of any data center architecture that requires an appliance-based, security-focused, universal global load balancer. Use of a special protocol (Keepalive Application Protocol [KAL-AP]) facilitates the exchange of application load and availability between the Cisco ACE GSS 4492R and the Cisco ACE Module.

Features and Benefits

- Provides resilient architecture critical for disaster recovery and multisite web applications deployments
- With optional software, supports full DNS and Dynamic Host Configuration Protocol (DHCP) services, allowing the Cisco ACE GSS to be deployed as a DNS appliance
- Offers advanced traffic management for multisite web application deployments
- Offers innovative DNS-focused distributed denial-of-service (DDoS) protection software to mitigate the effects of DNS-based DDoS attacks
- Provides a centralized command and control of DNS resolution process for direct and precise control of global load-balancing processes
- Offers site persistence for e-commerce applications
- Supports a web-based GUI, role-based access, and a DNS wizard to simplify DNS command and control

Specifications

Feature	Cisco ACE GSS (Global Site Selector) 4400 Series
Ports	Two 10/100/1000 Fast Ethernet autosensing, one console port
DNS requests per second	Up to 30,000, depending on configuration
Network Management	Console port-CLI; Access to system through Telnet; Secure copy (SCP) or FTP; GUI-Secure HTTP (HTTPS) for Internet Explorer and Netscape Navigator; Network management MIBs; Read-only monitoring of network and device status, including RFC 1213; (MIB-II) and RFC 1514 (HOST-RESOURCES-MIB)
Storage	One 80-GB hard drive; Software image SF-GSS-V1.3-K9; 2 GB RAM; Pentium CPU
Physical	One-rack unit size chassis; 1 GB RAM; Prescott 3.2-GHz CPU
Power	Integrated AC power (autosensing 110V/60Hz)

Selected Part Numbers and Ordering Information

GSS-4492R-K9	Cisco GSS 4492R Global Site Selector
SF-GSS-V31-K9	Cisco Global Site Selector Software 3.1
SF-GSS-DDOSLIC	DDoS Mitigation software license

For More Information

<http://www.cisco.com/go/gss>

Cisco Wide Area Application Services

Cisco Wide Area Application Services (WAAS) delivers a comprehensive, cost-effective, cloud-ready WAN optimization solution available on a wide range of form factors, including data center and branch-office appliances, virtual appliances, integrated Cisco IOS Software (Cisco WAAS Express), software for Cisco Integrated Services Routers Generation 2 (ISR G2) with Cisco Services-Ready Engine Service Modules (SRE SMs), dedicated blades for Cisco ISRs, and client software for mobile users.

Cisco WAAS accelerates applications, optimizes bandwidth, provides local hosting of branch-office IT services, and enables a smooth evolution to cloud-based services. Cisco WAAS improves end-user productivity with fast application delivery while preserving IT staff productivity with network transparency, lower total cost of ownership (TCO), and increased business agility with network integration.

Features and Benefits

- Makes applications run faster: A better end-user experience increases productivity by doubling effective bandwidth and reducing latency on business applications, video, and virtual desktops.
- Increases collaboration and saves time: Cisco WAAS accelerates office applications, medical applications, and engineering and design applications. Cisco WAAS enables employees in any branch office to send and receive email fast and work with a global team as if they are in the same local network.
- Improves productivity: IT departments can deploy more applications faster without transferring the burden to IT staff or increasing the workload on network managers. Cisco WAAS reduces costs by enabling centralization of IT services and decreasing bandwidth expenses with low total cost of ownership (TCO) and fast return on investment (ROI).
- Enables the evolution to the cloud: Cisco WAAS removes performance barriers that pose a challenge to data center virtualization, a step along the way to true cloud service. With transparent integration into network architectures, Cisco WAAS increases agility and provides transparent migration to cloud services and software as a service (SaaS).

For More Information

<http://www.cisco.com/go/WAAS>

Cisco Wide Area Virtualization Engine Appliances

Cisco Wide Area Virtualization Engine (WAVE) appliances host Cisco Wide Area Application Services (WAAS) and provide embedded virtualization for local hosting and branch-office video delivery.

Cisco WAVE appliances enable local hosting of branch-office IT services using a network-embedded virtualization architecture. This architecture maintains native performance for WAN optimization while using the same hardware platform for additional hosted services and reducing the branch-office device footprint.



Features and Benefits

- Makes applications run faster: A better end-user experience increases productivity by doubling effective bandwidth and reducing latency on business applications, video, and virtual desktops.
- Increases collaboration and saves time: Cisco WAVE accelerates office applications, medical applications, and engineering or design applications. Cisco WAAS enables employees in any branch office to send and receive email fast and work with a global team as if they are in the same local network.
- Improves productivity: Cisco WAVE enables IT departments to deploy more applications faster without transferring the burden to IT staff or increasing the workload on network managers. Cisco WAAS reduces cost by enabling centralization of IT services and decreasing bandwidth expenses with lower total cost of ownership (TCO) and faster return on investment (ROI).
- Enables the evolution to the cloud: Cisco WAVE removes performance barriers that pose a challenge to data center virtualization, a step along the way to true cloud service. With transparent integration into network architectures, Cisco WAAS increases agility and provides transparent migration to cloud services and software as a service (SaaS).

Selected Part Numbers and Ordering Information

WAVE-294-K9	Cisco WAVE-294 with up to 8GB of SDRAM and 250-GB hard disk drive (HDD). Optional 4 port or 8 port Inline GE Copper module. Support for up to 2 virtual blades. Includes Enterprise license.
WAVE-594-K9	Cisco WAVE-594 with up to 12GB of SDRAM and 500-GB HDD with Optional 2nd 500 GB HDD for RAID 1 support. Optional 4 port or 8 port Inline GE Copper module. Support for up to 4 virtual blades. Includes Enterprise license.
WAVE-694-K9	Cisco WAVE-694 with up to 24GB of SDRAM and 2 x 600-GB HDD (RAID 1). Optional 4 port or 8 port Inline GE Copper module. Support for up to 8 virtual blades. Includes Enterprise license.
WAVE-7541-K9	Cisco WAVE-7541 with 24GB of SDRAM and 6 x 450-GB HDD (RAID 5). Optional GE Copper, GE Fiber or 10GE modules. Includes Enterprise license.
WAVE-8541-K9	Cisco WAVE-8541 with 96GB of SDRAM and 8 x 600-GB HDD (RAID 5). Optional GE Copper, GE Fiber or 10GE modules. Includes Enterprise license.

For More Information

<http://www.cisco.com/go/WAAS>

Virtual Blade Options for Cisco WAVE Appliances

Solutions available for Cisco Wide Area Virtualization Engine (WAVE) appliance virtual blades include:

- Microsoft Windows Server on WAAS can reduce the cost and complexity of providing IT services in branch-office locations by provisioning Microsoft Windows Server 2008 R2 on a Cisco Wide Area Application Services (WAAS) virtual blade. It combines accelerated access to centralized applications with highly secure, reliable, local Microsoft Windows Server services. It also adds additional application servers supported by the Microsoft Server Virtualization Validation Program (SVVP).
- Cisco Prime Network Analysis Module (NAM) for WAAS Virtual Blade delivers visibility into Cisco Wide Area Application Services (WAAS) deployments. Network administrators obtain actionable visibility to optimize network resources, troubleshoot performance problems, and help ensure a consistent end-user experience.
- Cisco Enterprise Content Delivery System (ECDS) Service Engine provides edge-content streaming, caching, and download to various endpoint devices such as PCs, Macs, digital signs, and smartphones.

Selected Part Numbers and Ordering Information

WAAS-VB-W2K8-LIC	WAAS VB + Win2K8 for AD, DNS, DHCP. Print only, unlimited users
WAAS-VB-NAM5.1-K9	Cisco Prime NAM Software 5.1 for WAAS 574/674
MDE-50WVB-SW253-K9	Base ECDS Software License for WAAS Virtual Blades
MDE-50WVB-ML50-200	ECDS Media License for 50Mbps and 200 concurrent connections

Cisco Virtual Wide Area Application Services

Cisco Virtual Wide Area Application Services (vWAAS) is a virtual appliance that accelerates business applications delivered from private and virtual private cloud infrastructure, helping ensure an optimal user experience.

Cisco vWAAS is the industry's first cloud-ready WAN optimization solution and the only WAN optimization service that supports on-demand orchestration on a per-application basis using policy-based operations. It allows customers to migrate business applications and mitigate poor application performance over the cloud. Cisco vWAAS also offers rapid delivery of WAN optimization service with little need for network configuration in cloud environments. Cisco vWAAS runs on VMware ESX and ESXi hypervisor and Cisco Unified Computing System (Cisco UCS) x86 servers, allowing an agile, elastic, multitenant deployment. Cisco vWAAS Central Manager (vCM) provides common management of physical and virtual instances of Cisco WAAS.

Selected Part Numbers and Ordering Information

WAAS-ENT-VIRTK9	Virtual WAAS includes WAAS Enterprise License. It requires one of the following vWAAS software licenses <ul style="list-style-type: none">• License for 750 optimized connections (-750)• License for 6000 optimized connections (-6000)• License for 12000 optimized connections (-12000)
WAAS-CM-VIRT-K9	Virtual WAAS CM requires one of the following licenses <ul style="list-style-type: none">• License to manage 100 WAAS devices (-100)• License to manage 2000 WAAS devices (-2000)

For More Information

<http://www.cisco.com/en/US/products/ps11231/index.html>

Cisco Wide Area Application Services Mobile

Cisco Wide Area Application Services (WAAS) Mobile extends application-acceleration benefits to mobile workers. It addresses the unique challenges of mobile networks and offers a wide range of benefits:

- Because mobile workers experience a greater percentage of first-time traffic than branch-office users, Cisco WAAS Mobile applies aggressive application-acceleration techniques to deliver first-time download performance.
- Cisco WAAS Mobile optimizes cellular, satellite, Wi-Fi, WiMAX, and DSL networks to reduce timing variations, high latency, and noisy connections and increase link resiliency.
- Bidirectional history of data on both the mobile device and the Cisco WAAS Mobile server reduces bandwidth consumption because history is shared across all protocols, across different VPN sessions, and even after a reboot.
- Application protocol optimizers reduce application round-trips for file transfers, Microsoft Outlook, enterprise web applications, and web browsing.

Selected Part Numbers and Ordering Information

WAAS-MBL-SRV-SW	Cisco WAAS Mobile Server Software (Software Microsoft Windows Server hardware required)
WAAS-MBL-LIC25	Cisco WAAS Mobile 25 Concurrent User License
WAAS-MBL-LIC100	Cisco WAAS Mobile 100 Concurrent User License
WAAS-MBL-LIC500	Cisco WAAS Mobile 500 Concurrent User License

For More Information

<http://www.cisco.com/en/products/ps6474/index.html>

Cisco Network Analysis Module

The Cisco Prime Network Analysis Module (NAM) delivers application-aware traffic and performance analysis capabilities that integrate with Cisco switching and routing platforms to simplify operational manageability. It empowers network administrators to quickly troubleshoot performance problems, help ensure optimal use of network resources, and deliver a consistent end-user experience. The Cisco NAM portfolio includes cost-effective form-factor choices ranging from integrated service blades, virtual service blades, and standalone appliances. The portfolio offers deployment flexibility, helping ensure consistent performance visibility across the network and at the same time addressing troubleshooting and optimization demands specific to the places in the network: the branch office, campus, WAN, and data center.



Features and Benefits

- Interactive reports with advanced filters and contextual navigation allows quick access to critical network information to improve operation efficiency and boost productivity.
- Site-based monitoring facilitates tracking of site-specific service-level objectives, resolving performance problems and enforcing optimization policies.
- Application performance intelligence helps characterize the end-user experience and isolate application response-time problems.
- Cisco Performance Agent reporting enables multi-branch office performance visibility from a centralized Cisco NAM deployment.
- Flow- and packet-based traffic monitoring combines a broad network performance view with deep packet analysis for rapid troubleshooting.
- Historical analysis with embedded performance database helps address unanticipated performance problems and assess optimization needs.
- Web-based packet capture, decoding, and error scanning expedite resolution of complex performance problems.
- REST and XML-based application-programming-interface (API) integration preserves investments in existing management assets.

Selected Part Numbers and Ordering Information

WS-SVC-NAM3-6G-K9	Cisco Catalyst 6500 Series NAM-3 600GB
WS-SVC-NAM3-6G-K9=	Cisco Catalyst 6500 Series NAM-3 600GB
SC-SVC-NAM-501T-K9	Cisco NAM 5.0(1T) for Cat6500 NAM-3
NIK-C1010NAM51-K9	Cisco Prime NAM VSB Software 5.1 for C1010
NIK-C1010NAM51-K9=	Cisco Prime NAM VSB Software 5.1 for C1010 Spare
SM-NAM-SW-51-K9	Cisco Prime NAM Software 5.1 for ISR G2 SRE SM
WAAS-VB-NAM51-K9	Cisco Prime NAM Software 5.1 for WAAS 574/674
WAAS-VB-NAM51-K9=	Cisco Prime NAM Software 5.1 for WAAS 574/674 Spare
NAM2220	NAM2220 Chassis, 2x10GbE (no HDD or Memory)
NAM2204-RJ45	Cisco NAM 2204 Appliance, 4x1GbE, RJ45
NAM2204-SFP	Cisco NAM 2204 Appliance, 4x1GbE, SFP
NAM-APPL-SW-51-K9	Cisco NAM 5.1 for Appliances w/Recovery CD

For More Information

<http://www.cisco.com/go/nam>

Data Center Security

Cisco ASA 5585-X Adaptive Security Appliance

Designed for mission-critical data centers that require exceptional flexibility and security, the Cisco ASA 5585-X Adaptive Security Appliance delivers eight times the performance density of competitive products and spans multiple platforms, technologies, and deployment scenarios. The Cisco ASA 5585-X supports the highest VPN session counts and twice as many connections per second as competitive firewalls to meet the growing needs of today's most dynamic organizations in a compact 2-rack-unit (2RU) footprint. Unlike most security providers, who force you to choose between a high-quality firewall and an effective intrusion prevention system (IPS), Cisco, with the Cisco ASA 5585-X, combines the world's most proven firewall with the industry's most comprehensive, effective IPS for a powerful, effective security solution.



Features and Benefits

- Cisco ASA 5585-X delivers superior investment protection with twice the connections per second and four times the session count in hardware of competitive firewalls.
- Cisco ASA 5585-X is the only security appliance delivering best-in-class firewall, IPS, and VPN services in a compact chassis.
- Cisco ASA 5585-X has the broadest deployment flexibility, with proven security technology that spans physical, virtual, and switch module platforms.
- Cisco ASA 5585-X integrates a full-featured IPS with market-leading reputation technology backed by Cisco Global Correlation and guaranteed coverage.

Selected Part Numbers and Ordering Information

ASA5585-S60P60SK9	Cisco ASA 5585-X Integrated Edition SSP-60 IPS SSP-60 Bundle with firewall services, IPS services, 10,000 IPsec VPN peers, 10,000 SSL VPN peers, 12 Gigabit Ethernet interfaces, 8 10 Gigabit Ethernet SFP+ interfaces, 4 management interfaces, 3DES/AES license
ASA5585-S60P60-K9	Cisco ASA 5585-X IPS Edition SSP-60 IPS SSP-60 bundle includes firewall services, 12 Gigabit Ethernet interfaces, 8 10 Gigabit Ethernet SFP+ interfaces, 4 Gigabit Ethernet management interfaces, 10,000 IPsec VPN peers, 2 SSL VPN peers, dual AC power, 3DES/AES license
ASA5585S60-10K-K9	Cisco ASA 5585-X SSL/IPsec VPN Edition SSP-60 includes 10,000 IPsec VPN peers, 10,000 SSL VPN peers, firewall services, 6 Gigabit Ethernet interfaces, 4 10 Gigabit Ethernet SFP+ interfaces, 2 management interfaces, 3DES/AES license

For More Information

<http://www.cisco.com/go/asa>

Cisco Catalyst 6500 Series ASA Services Module

The Cisco ASA Adaptive Security Appliance Services Module transparently integrates with Cisco Catalyst 6500 Series Switches to provide exceptional security, reliability, and performance. Based on the Cisco ASA platform, the most widely deployed firewall in the industry, the Cisco ASA Services Module supports the highest throughput in its class and five times the concurrent connections and twice as many connections per second as competitive network security modules, meeting the growing needs of today's most dynamic organizations in a single-blade architecture. The Cisco ASA Services Module makes it easy to add full firewall capabilities to an existing infrastructure by sliding a blade into an empty slot in an existing Cisco Catalyst 6500 Series Switch; no additional rack space, cabling, power, or physical interface is required.



Features and Benefits

- The Cisco ASA Services Module transparently integrates with Cisco Catalyst 6500 Series Switches, greatly simplifying the addition of security services by dramatically reducing the time required for installation and configuration.
- The Cisco ASA Services Module enables the addition of high-performance network security services to an existing infrastructure with a fraction of the maintenance and management resources required by a standalone security appliance.
- The Cisco ASA Services Module reduces environmental costs by using the power and cooling from the switch. It also consumes far less power than competitive modules, and a fraction of the power required by standalone appliances.

Selected Part Numbers and Ordering Information

WS-SVC-ASA-SM1-K9	ASA Services Module for Catalyst 6500-E, 3DES/AES
WS-SVC-ASA-SM1-K8	ASA Services Module for Catalyst 6500-E, DES
WS-SVC-ASA-SM1-K7	ASA Services Module for Catalyst 6500-E, NPE

For More Information

<http://www.cisco.com/go/asasmc>

Cisco Virtual Security Gateway

Cisco Virtual Security Gateway (VSG) for Cisco Nexus 1000V Series Switches is a virtual appliance that delivers security and compliance for virtual computing environments. Cisco VSG uses virtual network service data path (vPath) technology embedded in the Cisco Nexus 1000V Series virtual Ethernet module (VEM), offering transparent insertion, efficient deployment, and very high performance with vPath-based distributed enforcement of packets.

Cisco VSG works with the Cisco Nexus 1000V Series virtual supervisor module (VSM) and with the new Cisco Virtual Network Management Center (VNMC). Together, they allow security, network, and server teams to collaborate while simultaneously helping ensure administrative segregation to meet compliance and audit requirements and reduce administrative errors. The security team continues to be responsible for creating and managing security profiles through Cisco VNMC.

Cisco VSG supports dynamic virtualization environments. Security profiles are bound to Cisco Nexus 1000V Series port profiles. The Cisco Nexus 1000V Series manages and enforces port and security profiles for each virtual machine virtual Ethernet port. A virtual machine can be repurposed by assigning a different port and security profile. Similarly, as VMware vMotion operations move virtual machines across physical servers, the Cisco Nexus 1000V Series helps ensure that port and security profiles follow them. Security enforcement and monitoring remain transparent to VMware vMotion events.

Features and Benefits

- Reduced IT costs by enabling secure virtualized workloads across multiple tenants on a shared computing infrastructure for virtual data centers or for private or public cloud computing environments
- Enhanced compliance with industry standards and government regulations
- Nondisruptive administration, maintaining separation of roles between security and server teams while increasing compliance and reducing administrative errors
- Simplified auditing processes for virtualized environments

Selected Part Numbers and Ordering Information

Initial Order of Base Image and Licenses (eDelivery of Licenses)	
L-VSG-VNMC-BASE	VSG and VNMC eDelivery plus one CPU License (Base)
Incremental Order of Licenses	
L-VSG-VNMC-04-P2=	VSG and VNMC eDelivery CPU License Promo2 Qty 4 (Increment)
L-VSG-VNMC-16-P2=	VSG and VNMC eDelivery CPU License Promo2 Qty 16 (Increment)
L-VSG-VNMC-32-P2=	VSG and VNMC eDelivery CPU License Promo2 Qty 32 (Increment)
Virtual Security Gateway & Network Mgmt Center on a CD (no licenses):	
VSG-VNMCP1K9-CD	VSG and VNMC software on a CD
Initial Order of Base Image and Licenses (Paper Delivery of Licenses)	
VSG-VNMC-BASE=	VSG and VNMC Paper plus one CPU License (Base)
Incremental Order of Licenses	
VSG-VNMC-04-P2=	VSG and VNMC Paper CPU License Promo2 Qty 4 (Increment)
VSG-VNMC-16-P2=	VSG and VNMC Paper CPU License Promo2 Qty 16 (Increment)
VSG-VNMC-32-P2=	VSG and VNMC Paper CPU License Promo2 Qty 32 (Increment)

For More Information

<http://www.cisco.com/go/vsg>

Cisco ASA 1000V Cloud Firewall

The Cisco ASA 1000V Cloud Firewall provides consistent, enterprise-class security for private and public clouds. By employing mainstream, proven ASA security technology, the Cisco ASA 1000V secures the tenant edge in multitenant private and public cloud deployments. It acts as a default gateway, provides edge firewall functions, and secures against network-based attacks. The Cisco ASA 1000V complements the Cisco Virtual Security Gateway (VSG), which provides granular inter-virtual machine security within a tenant.

The Cisco ASA 1000V integrates with the Cisco Nexus 1000V Series Switch for unparalleled flexibility and operational efficiency:

- **Efficient deployment:** A single Cisco ASA 1000V instance can span and secure multiple physical servers for enhanced deployment flexibility, simplified management, and optimized resource usage. This architecture eliminates the need to deploy one virtual appliance per physical server.
- **Independent capacity planning:** Cisco ASA 1000V can be placed on a dedicated server controlled by the security operations team so that appropriate computing capacity can be allocated to application workloads; capacity planning can occur independently across server and security teams; and operational segregation can be maintained across security, network, and server teams.
- **Scalable cloud networking:** Cisco ASA 1000V acts as a Virtual Extensible LAN (VXLAN) gateway to send traffic to and from the VXLAN to a traditional VLAN.
- **Service chaining:** vPath supports service chaining so that multiple virtual network services can be used as part of a single traffic flow. For example, by merely specifying the network policy, vPath can direct the traffic to first go through the Cisco ASA 1000V Cloud Firewall, providing tenant edge security, and then go through the Virtual Security Gateway, providing zone firewall capabilities.
- **Multihypervisor capability:** Cisco ASA 1000V does not need to be custom-built for each hypervisor. The Cisco Nexus 1000V Switch provides hooks into the hypervisor. Therefore, integration with the Cisco Nexus 1000V Switch enables the Cisco ASA 1000V to secure heterogeneous hypervisor environments with ease, because Cisco Nexus 1000V spans across these heterogeneous infrastructures.

The Cisco ASA 1000V also employs the Cisco Virtual Network Management Center (VNMC) for centralized, multidevice and multitenant policy management. VNMC provides the following important benefits:

- Rapid and scalable deployment through dynamic, template-directed policy management based on security profiles
- Easy operational management through XML application programming interfaces (APIs) to enable integration with third-party management and orchestration tools
- A nondisruptive administration model that enhances collaboration across security and server teams while maintaining administrative separation and reducing administrative errors
- Role-based access privileges for more precise control

Cisco ASA 1000V required solution components follow:

- Cisco ASA 1000V Cloud Firewall (ASA Software Release 8.7)

Cisco Virtual Network Management Center (VNMC Software Release 2.0)

- Cisco ASA 1000V Distributed Virtual Switch (N1KV Software Release 4.2(1)SV1(5,2) and later)
- VMware vSphere (Software Release 4.1 and later; Enterprise Plus License)

Selected Part Numbers and Ordering Information

ASA 1000V PIDS	
L-ASA1000V-BASE (eDelivery) or ASA1000V-BASE (Paper Delivery)	1 ASA1000V/VNMC K9 base license [base license is needed for each VNMC instance]
L-ASA1000V-04= (eDelivery) or ASA1000V-04= (Paper delivery)	4 ASA1000V/VNMC incremental licenses
L-ASA1000V-16= (eDelivery) or ASA1000V-16= (Paper delivery)	16 ASA1000V/VNMC incremental licenses
L-ASA1000V-32= (eDelivery) or ASA1000V-32= (Paper delivery)	32 ASA1000V/VNMC incremental licenses
ASA1000V-K9-CD=	Physical delivery of the software on a CD
ASA 1000V Promo PIDS	
L-ASA1000V-BASE-PR (eDelivery) or ASA1000V-BASE-PR (Paper Delivery)	1 Promo ASA1000V/VNMC K9 base license [base license is needed for each VNMC instance]
L-ASA1000V-04-PR= (eDelivery) or ASA1000V-04-PR= (Paper delivery)	4 Promo ASA1000V/VNMC incremental licenses

L-ASA1000V-16-PR= (eDelivery) or ASA1000V-16-PR= (Paper delivery)	16 Promo ASA1000V/VNMC incremental licenses
L-ASA1000V-32-PR= (eDelivery) or ASA1000V-32-PR= (Paper delivery)	32 Promo ASA1000V/VNMC incremental licenses
ASA1000V-K9-CD=	Physical delivery of the ASA 1000V and VNMC software on a CD

For More Information

<http://www.cisco.com/go/asa1000v>

Cisco Intrusion Prevention: Cisco IPS 4500 Series Sensors

The Cisco IPS 4500 Series delivers hardware-accelerated intrusion prevention services, real-world performance, high port density, and energy efficiency in an expansion-ready chassis for future growth and investment protection. Its small form factor and low power consumption were specifically engineered for space-challenged data center environments. With highly effective, out-of-the-box protection and automated threat management, your critical data center assets are protected in minutes.



Features and Benefits

- The Cisco IPS 4500 Series protects critical information found in data center applications (accounting systems, manufacturing, sales, human resources, Active Directory, and Exchange) from targeted attacks and sophisticated malware.
- Cisco offers the broadest visibility of attacker, victim, and attack information of any inline intrusion prevention system (IPS) in the market. Signature-only detection products from other vendors can provide only a one-dimensional—and sometimes incorrect—response.
- The Cisco IPS 4500 Series offers the highest degree of attack protection and confidence that legitimate business functions and business productivity will not be affected.
- Easey wizard-directed setup steps include data center-focused templates as a valuable starting point for deployments.

Selected Part Numbers and Ordering Information

IPS-4510-K9	Cisco IPS 4510 Sensor
IPS-4520-K9	Cisco IPS 4520
IPS-4510-SSP-K9=	Cisco IPS 4510 Spare Card
IPS-4520-SSP-K9=	Cisco IPS 4520 Spare Card

For More Information

<http://www.cisco.com/go/ips>

Cisco Security Manager

Cisco Security Manager is an enterprise-class security management solution that helps organizations easily configure, monitor, and troubleshoot any Cisco security deployment. Cisco Security Manager can be used to manage network services such as firewall, intrusion prevention system (IPS), site-to-site VPN, and remote-access VPN services. Cisco Security Manager also supports security features across a wide range of Cisco devices, including firewalls, IPS sensors, Cisco Integrated Services Routers (ISRs), and Cisco Aggregation Services Routers (ASRs), as well as Cisco Catalyst switches and service blades such as the Cisco Catalyst 6500 Series Firewall Services Module (FWSM) and Intrusion Detection System Services Module (IDSM).

Features and Benefits

- Integrated end-to-end tools enable consistent policy enforcement, allow rapid troubleshooting of security events, and provide summarized reports for Cisco ASA 5500 Series Adaptive Security Appliances, Cisco IPS 4200 Series Sensor Appliances, Cisco Secure Routers, and the Cisco AnyConnect Secure Mobility Client.
- Centralized and automatic software image updates can be deployed for all ASAs throughout the network; ensuring consistency and greatly reducing the time and administrative overhead required for deployment upgrades.

- Troubleshooting and Health and Performance Monitoring allows configuration of alerts to predefined thresholds and event management and enables administrators to proactively monitor the security environment, leading to operational efficiency, visibility, and lower time to resolution.
- Northbound application programming interfaces (APIs) enable representational state transfers for the secure sharing of essential data with third-party network services such as compliance and advanced security analysis systems to help streamline security operations and adhere to compliance requirements.
- Policy and object management enables reuse of security rules and objects, and enhances the ability to monitor security threats from throughout the deployment, minimizing the potential for errors and maximizing efficiency.
- These appliances support role-based access control (RBAC) and an approval framework for proposing and integrating changes.
- The appliances provide improved visibility into security devices, including custom reports that can be created using advanced filters and reports that can be viewed on demand and scheduled for email delivery.

Selected Part Numbers and Ordering Information

L-CSMST5-4.3-K9	Cisco Security Manager 4.3 Standard - 5-Device Limit
L-CSMST10-4.3-K9	Cisco Security Manager 4.3 Standard - 10-Device Limit
L-CSMST25-4.3-K9	Cisco Security Manager 4.3 Standard - 25-Device Limit

For More Information

<http://www.cisco.com/go/csmanager>

The Cisco Unified Management Portfolio automates the process of deploying IT infrastructure and services to support business objectives with Cisco Unified Management. These end-to-end management software solutions provide an intelligent approach to IT management, offering speed and enterprise-grade reliability.

Cisco Unified Management is a critical technological pillar of the Cisco Data Center along with the Cisco Unified Computing System (Cisco UCS), which addresses computing and virtualization, and Cisco Unified Fabric.

Learn more by visiting <http://cisco.com/go/unifiedmanagement>.

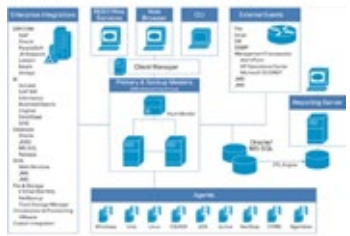
Data Center and Cloud Management

Cisco Tidal Enterprise Scheduler

Cisco Tidal Enterprise Scheduler simplifies job scheduling and automates and tracks how jobs are carried out. Cisco Tidal Enterprise Scheduler provides a single point of control and visibility for job scheduling, managing, and performing all scheduling processes. It can be set as the job scheduling standard for a data center because it offers:

- Single point of control
- Deep visibility into processes
- Reduction of risks due to error
- Breadth of coverage and ease of use

As a result, Cisco Tidal Enterprise Scheduler improves the quality of data and reporting for functions such as order management, business intelligence, and sales reporting.



Features and Benefits

With an intuitive GUI, Cisco Tidal Enterprise Scheduler makes the process of job scheduling easy for operations staff by supporting and managing:

- Script-free job scheduling through a rich visual interface
- Scalable, extensible architecture
- Reduction of risks due to error
- Management of hundreds of thousands of tasks per day
- Detailed notification and alerts with minimum disruption

For More Information

<http://www.cisco.com/go/workloadautomation>

Cisco Intelligent Automation for Cloud

The Cisco Intelligent Automation for Cloud enables self-service provisioning and orchestration for cloud computing and data center automation. Regardless of the type of cloud being deployed—private, public, or hybrid—two fundamental capabilities form the basis of cloud computing. Cisco Intelligent Automation for Cloud provides these capabilities to support your cloud initiative:

- A web-based, self-service portal and service catalog
- An orchestration engine for automated provisioning



Cisco Intelligent Automation for Cloud combines the functions in a unified management solution for infrastructure-as-a-service and other cloud models. Users can order what they need from a menu of standard options in an intuitive self-service portal interface. Cisco Intelligent Automation for Cloud then orchestrates the provisioning of application and infrastructure requests within minutes according to governance and control policies established by IT. Full lifecycle management enables IT to control and track each service from initial request to decommissioning.

This powerful solution complements the Cisco Unified Computing System (Cisco UCS) and Cisco networking with Cisco Network Services Manager as well as other Cisco products, services, and partner technology solutions in heterogeneous data centers.

Features and Benefits

- **Simplicity:** Cisco's easy-to-use portal simplifies the provisioning of complex data center resources and extends self-service to all users while enforcing policy-based controls and governance.
- **Flexibility:** A multicloud accelerator pack provides a choice of virtualization platform including VMware and OpenStack. OpenStack provides connectivity to Red Hat RHEV, Citrix XenServer, and VMware vCloud Director.
- **Faster cloud deployment:** Out-of-box multiple virtual data center cloud lifecycle management includes more than 90 prebuilt workflows and processes. Automation packs are available for configuring services and extending platform support, helping ensure rapid time to value.
- **Lower total cost of ownership (TCO):** Changes and updates to your cloud environment can be implemented quickly to respond to changing business needs, saving time and money for your organization.

For More Information

<http://www.cisco.com/go/iacloud>

Cisco Cloud Portal

With Cisco Cloud Portal, application and infrastructure requests can be processed in hours or even minutes, instead of weeks. The greater transparency and control help both your IT staff and users track and manage the lifecycle of a service, from initial request to decommissioning. You get greater agility, speed, and efficiency for your next-generation data center.

An integral component of the **Cisco Intelligent Automation for Cloud** solution, Cisco Cloud Portal also includes advanced capabilities for orchestration and automated provisioning of physical and virtual infrastructure resources.



Features and Benefits

- Encourage adoption of standardized options with a menu of choices in an online catalog.
- Reduce the end-to-end cycle time for requested data center services from weeks to hours or even minutes.
- Deploy a private or hybrid cloud with a self-service portal that enables accelerated delivery of services while helping ensure governance and control.
- Enable IT staff and users to track and manage the lifecycle of each service, from initial request to decommissioning.
- Track consumption of services to support show-back or chargeback, if desired.
- Improve visibility into demand to help ensure more accurate capacity planning.

For More Information

<http://www.cisco.com/go/cloudportal>

Cisco Workplace Portal

Cisco Workplace Portal helps your IT organization:

- Offer a menu of options in an easy-to-use web-based service catalog
- Make it as easy for employees to order IT services as it is to buy an item online
- Provide a consistent way to request all IT services through a unified self-service portal
- Offer online status updates on user requests and manage the lifecycle of each service



Cisco Workplace Portal can act as the employee self-service IT storefront. This portal offers tools for desktop, communications, collaboration, and other workplace-related services, resulting in:

- Improved user satisfaction
- More efficient IT service delivery
- More productive employees

Features and Benefits

- Offer a menu of options in a self-service, web-based IT service catalog.
- Provide a consistent way to request all IT services using a unified store front for desktop, communications, collaboration, and other workplace-related services.
- Offer online status updates for requests and manage the lifecycle of each service.
- Accelerate the delivery of IT services to facilitate greater workforce productivity.
- Improve internal perceptions of IT as a modern, business-oriented service partner.

For More Information

<http://www.cisco.com/go/workplaceportal>

SAP IT Process Automation

SAP IT Process Automation by Cisco is an IT process automation solution that can capture run-book procedures and IT best practices for optimizing service delivery and support across applications, servers, network, and storage devices. Through predefined process flows, SAP IT Process Automation by Cisco connects the correct policies, procedures, people, and technologies to streamline operational support and delivery processes. The ability to integrate and augment existing element management systems such as SAP Solution Manager and CCMS with automated corrective actions enables organizations to lower total cost of ownership (TCO) and avoid costly business service outages.

Features and Benefits

- IT process automation solution that captures operational best practices
- Integrates event and alert management data for automated analysis
- Combines decision-directed event processing with automated incident response
- Standardizes, unifies, and automates best practices for operational processes

For More Information:

www.cisco.com/go/automatesap

Cisco Network Services Manager

Organize your network resources into a flexible, multitenant data center infrastructure with Cisco Network Services Manager 5.0. Using Cisco Network Services Manager, you can integrate your network with your existing IT operational tools and processes.

Features and Benefits

The Cisco Network Services Manager network abstraction layer helps you provision and deploy numerous individual network components as sophisticated network "containers". You can create these containers:

- Across single and multipod cloud computing deployments



- Much more easily and quickly than with template- and script-based systems

These containers:

- Dramatically reduce network operational costs and potential misconfiguration
- Optimize capacity use and accelerate service delivery

Cisco Network Services Manager offers a flexible, policy-directed approach to managing and controlling cloud computing network services. Through a configuration user interface, Cisco Network Services Manager helps administrators dynamically define and control an array of behaviors in their cloud computing environment, including:

- Creating different levels of service capability or "service tiers" for tenant use
- Defining the capabilities and resources available in each tier
- Structuring a system of "containment" tailored to tenant application and deployment model needs

Selected Part Numbers and Ordering Information

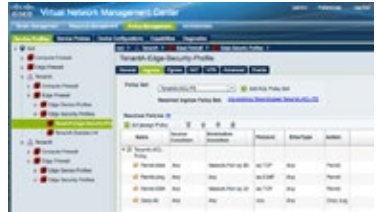
NSM-5.0-A-LAB-K9	POC Stage – NSM Non Production License Network Services Manager 5.0 Adv 16 Blade Not for Production with CON-SAS-NSM5LAB (15% of list SAS)
NSM-5.0-A-64-K9	Production Stage – NSM License with 64 Blade Right to Use Network Services Manager 5.0 Advanced + 64 Blade/Server RTU with CON-SAS-NSM50A64 (15% of list SAS)
L-NSM-5.0-ADD-RTU	Expansion Stage – Per Blade Add on RTU License Network Services Manager 5.0 Adv ADD RTU - 1 Blade/Server with CON-SAS-LNSM5ADD (15% of list SAS)

For More Information

<http://www.cisco.com/go/nsm>

Cisco Virtual Network Management Center

Cisco Virtual Network Management Center (VNMC) provides centralized multidevice and policy management for Cisco network virtual services. The product addresses those areas by automating processes, thereby freeing staff to focus on optimizing the network environment. Cisco VNMC supports greater scalability along with standardization and consistent execution of policies.



When combined with the Cisco Nexus 1000V Switch, Cisco ASA 1000V Cloud Firewall, or the Cisco Virtual Security Gateway (VSG), you can implement the solution to provide:

- Rapid and scalable deployment through dynamic, template-directed policy management based on security profiles
- Easy operational management through XML application programming interfaces (APIs) to enable integration with third-party management and orchestration tools
- A nondisruptive administration model that enhances collaboration across security and server teams while maintaining administrative separation and reducing administrative errors
- Support for edge firewalls to enable:
 - Adding and configuring edge firewalls
 - Creating and applying edge security profiles that contain access-control-list (ACL) policy sets (ingress and egress), connection timeout, Network Address Translation (NAT) policy sets, TCP intercept, VPN interface policy sets, and more
 - Site-to-site IP Security (IPsec) VPNs

Features and Benefits

Improve Security and Enhance Collaboration

Cisco Virtual Network Management Center (VNMC) operates in conjunction with the Cisco Nexus 1000V Virtual Supervisor Module (VSM) to improve operations and collaboration across IT. It streamlines the services performed by security, network, and server administrators.

Security Administrator

This solution allows the security administrator to author and manage security profiles and Cisco Virtual Security Gateway (VSG) instances through the VNMC programmatic interface with Cisco Nexus 1000V. Cisco VSG provides trusted multitenant access with granular, zone-based, and context-aware security policies.

Cisco VNMC also manages the Cisco ASA 1000V Cloud Firewall to enable rapid and scalable security at the edge through dynamic, template-directed policy management.

Network Administrator

The network administrator can author and manage port profiles and Cisco Nexus 1000V virtual switches through the programmatic interface with VMware Virtual Center.

Server Administrator

The server administrator can select the appropriate port profile in VMware Virtual Center to instantiate virtual machine XML API support, facilitating coordination with third-party tools to provision and manage Cisco VSG.

For More Information

<http://www.cisco.com/go/vnmc>

Cisco Data Center Network Manager: Converged

The newly converged Cisco Data Center Network Manager (DCNM) provides visibility into LAN and storage area network (SAN) data center networks covering Cisco Nexus, Cisco MDS 9000 Family, Cisco Catalyst, and Cisco Unified Computing System (Cisco UCS) products. With the introduction of VMware and Cisco UCS discovery, Cisco now offers end-to-end path monitoring, from virtual infrastructure and computing, to the fabric, and to the storage port. Storage and network teams now have a unified solution for troubleshooting and managing port and bandwidth capacity across the Cisco portfolio of data center networking and computing products. Both teams still maintain individual control for monitoring and provisioning of their respective domains through role-based access control (RBAC) of the Cisco MDS 9000 Family and Cisco Nexus lines of switches.



- Capacity management:
 - Cisco DCNM helps track port inventory and port use. IT staff can identify available ports for provisioning from a single dashboard. SAN administrators can also see where more ports are needed and make buying decisions based on this information.
 - By looking at port use, SAN administrators can identify orphaned ports by looking at their statistics over time. Reclaiming underused ports leads to power and cooling savings and increases port usage.
- Fault management:
 - The Cisco DCNM event forwarding mechanism notifies data center support staff of events based on their severity and type in real time through a trap or email. The descriptive events help IT staff identify bottlenecks and error conditions on the network in real time, leading to quicker root-cause analysis and long-term fixes.
- Configuration and provisioning:
 - Wizard- and template-based configuration and provisioning facilitates deployment and maintenance of Cisco MDS 9000 Family and Cisco Nexus switches. IT staff can configure the network components in a few minutes across multiple switches.
- Reporting:
 - The reporting feature of Cisco DCNM consists of preset reports as well as the capability to generate custom reports summarizing the health and performance of the fabric. These reports can be exported as comma-delimited files for use in Microsoft Excel or as HTML pages. The reports can also be scheduled to run at certain times and forwarded through email.
- Back up, compare, and restore:
 - Cisco DCNM serves as a configuration backup repository for Cisco Nexus and MDS 9000 Family switches with the capability to compare, edit, and copy switch configurations. This feature simplifies recovery of the switch configuration files and the pushing of saved configurations to newly deployed switches, accelerating deployments.
- Licensing:
 - Cisco DCNM can be licensed as Cisco DCNM for SAN or DCNM for LAN.
 - Cisco Fabric Manager Server (FMS) licenses continue to be supported, so there is no need to move to a Cisco DCNM license model if the customer already purchased Cisco FMS licenses. However, as of mid-2011, for Cisco NX-OS Software Release 5.2 and later, Cisco DCNM does not support any new purchase of Cisco FMS licenses.
- Integration:
 - Cisco DCNM is a highly integrated solution that provides Storage Management Initiative Specification (SMI-S) and web services application programming interfaces (APIs) for integration with other management applications. In addition, Cisco DCNM publishes its database schema for direct extract, load, and transform (ETL) into other databases and business intelligence solutions.
- Scalability:
 - The Cisco DCNM converged solution is highly scalable through the use of the federation and server load balancing. On the SAN side, the solution can scale up to 200 switches or 15,000 ports per server, for a total of 150,000 ports when deployed in a federated mode.

Offering an exceptional level of visibility and control through a single pane for Cisco Nexus switches, the Cisco MDS 9000 Family, and Cisco UCS products, Cisco DCNM is the solution Cisco recommends for operating mission-critical data centers.

Selected Part Numbers and Ordering Information

DCNM-NXACC-100-K9	DCNM for LAN Essential Edition (FREE) for up to 100 Nexus Access Series Switches (N1K through N5K).
DCNM-NXACC-250-K9	DCNM for LAN Essential Edition (FREE) for up to 250 Nexus Access Series Switches (N1K through N5K).
DCNM-NXACC-K9	DCNM for LAN Essential Edition (FREE) for Nexus Access Series Switches (N1K through N5K).
DCNM-N7K-K9	DCNM for LAN Advanced Edition for Nexus 7000 Series Switches
DCNM-SAN-M91-K9	DCNM for SAN Advanced Edition for MDS 9100 Series Switches
DCNM-SAN-M92-K9	DCNM for SAN Advanced Edition for MDS 9200 Series Switches
DCNM-SAN-M95-K9	DCNM for SAN Advanced Edition for MDS 9500 Series Switches
DCNM-SAN-N7K-K9	DCNM for SAN Advanced Edition for Nexus 7000 Series Switches
DCNM-SAN-N5K-K9	DCNM for SAN Advanced Edition for Nexus 5000 Series Switches

Cisco Application Control Engine Products

The Cisco Application Control Engine (ACE) delivers the next generation of application switches for increasing availability, acceleration, and security of data center applications.

Cisco ACE solutions allow enterprises to accomplish four primary IT application delivery objectives:

- Increase application availability
- Accelerate application performance
- Secure the data center and critical business applications
- Facilitate data center consolidation through the use of fewer servers, load balancers, and firewalls

Cisco ACE helps achieve these goals through a broad set of intelligent Layer 4 load-balancing and Layer 7 content-switching technologies integrated with leading-edge acceleration and security capabilities. A crucial design element of Cisco ACE is the capability to use virtualized architecture and role-based administration capabilities that streamline and reduce the cost of operations involved in deploying, scaling, accelerating, and protecting applications.

The unique virtualization capabilities of Cisco ACE enable IT to provision and deliver a broad range of applications from a single appliance or module, increasing the scalability of data center application provisioning.

Cisco ACE increases application availability with best-in-class application switching algorithms coupled with highly available system software and hardware.

Server efficiency increases with Cisco ACE through flexible application traffic management as well as offloading of CPU-intensive tasks such as Secure Sockets Layer (SSL) encryption and decryption processing and TCP session management.

Cisco ACE is designed to serve as the last line of defense for servers and applications in data centers, with deep packet inspection and blocking of malicious attacks. Integrated security helps secure high-value applications in the data center and facilitates consolidation.

For More Information

<http://www.cisco.com/go/ace>

Data Center Converged Infrastructure Solutions

Converged infrastructure solutions include prevalidated, presized, and fully tested virtualized data center resources for computing, storage, virtualization, networking, and management.

Converged infrastructure solutions are well suited for customers who want to accelerate their move to pervasive virtualization and cloud computing. Customers can use converged infrastructure solutions to quickly, efficiently, and predictably deploy best-in-class data center infrastructure.

Cisco's philosophy is to help ensure that our customers always have a choice of solutions, so we work with a range of best-in-class partners to provide a range of converged infrastructure solutions designed to enhance the advantages of the Cisco Unified Computing System (Cisco UCS), Cisco Unified Networking Services, and Cisco Unified Fabric.

Vblock Infrastructure Packages

The Virtual Computing Environment (VCE) coalition integrates industry-leading virtualization, networking, computing, storage, security, and management technologies to deliver Vblock Infrastructure Packages: a unique, converged infrastructure that supports a wide range of business-critical applications. Vblock Infrastructure Packages revolutionize IT by unifying industry-leading technology from Cisco, VMware, and EMC to dramatically reduce IT costs while improving time to market.

- Fast and available: A standardized infrastructure for business-critical applications delivers the level of availability and performance that customers need. The fully redundant, autonomous system of the platform contains and manages failure scenarios. Advanced storage technology dynamically optimizes performance and servers adapt to application demands and intelligently scale energy use. Integrated product roadmaps help ensure interoperability and balanced I/O, bandwidth, and storage performance at scale.
- Secure: Security is designed in at every level of the stack. Interoperability of the security configurations of each individual component is confirmed prior to shipping. Hardened configurations and best practices help ensure that Vblock Infrastructure Packages support third-party, validated secure solutions such as Payment Card Industry (PCI) Data Security Standards (DSS) compliance.
- Simple: IT Infrastructure Library (ITIL)-based management and inherent scalability simplify operations and protect investments. With Vblock Infrastructure Packages, customers can:
 - Configure resources using a common user interface
 - Implement service catalogs and self-service portals
 - Access components for troubleshooting and fault management
 - Configure to achieve compliance, availability, and fault-isolation objectives
 - Aggregate resources into a single pool of shared capacity or segment resources into isolated pools
 - Expand from hundreds to tens of thousands of virtual machines



Vblock Infrastructure Packages are fundamentally changing data centers operations.

For More Information

<http://www.vce.com/solutions/vblock/>

FlexPod

FlexPod is a prevalidated data center solution built on a flexible, shared infrastructure that can scale easily; be optimized for a variety of mixed application workloads; or be configured for virtual desktop or server infrastructure, secure multitenancy, or cloud environments.

FlexPod is a predesigned, base configuration built on leading computing, networking, storage, and infrastructure software components from Cisco, NetApp and VMware. It provides an excellent virtualized data center solution through:

- Validated technologies from three industry leaders in computing, storage, networking, and server virtualization
- A single platform, built from unified computing, fabric, and storage technologies, plus the most popular and trusted software virtualization platform
- Integrated components that enable you to centrally manage all your infrastructure pools
- An open design management framework that integrates with your existing third-party infrastructure management solutions

FlexPod can scale up for greater performance and capacity or scale out for environments that need consistent, multiple deployments. Customers can size and optimize FlexPod to accommodate different use cases, including application workloads such as:

- Microsoft SQL Server
- Microsoft Exchange 2010
- Microsoft SharePoint
- Virtual desktop infrastructure (VDI; VMware View)
- Secure multitenancy (SMT) environments

For More Information

<http://www.netapp.com/us/technology/flexpod/>

Storage Reference Architecture

The Storage Reference Architecture from Cisco, Hitachi, and VMware is a tested, flexible, cost-effective framework for creating cloud-ready, virtualized infrastructure solutions. It consists of storage from Hitachi Data Systems (HDS), computing and networking components from Cisco, and virtualization from VMware. As industry leaders in storage, server, network, and virtualization infrastructure software solutions, Hitachi, Cisco, and VMware have the expertise to create a comprehensive virtualization solution that can be deployed quickly and effectively.

The Storage Reference Architecture gives customers the opportunity to take advantage of products from these industry leaders in a tested configuration. This solution speeds deployment and reduces risk, all while providing the performance, resilience, and scalability needed to handle large, dense, and growing virtual machine workloads.

The Storage Reference Architecture incorporates the following products from Hitachi, Cisco, and VMware:

- Hitachi provides a scalable, high-performance, high-availability storage system:
 - Hitachi Adaptable Modular Storage (AMS) 2500
- Cisco provides a data center platform that unites computing, networking, and storage access in a single system; and switches for physical, virtual, and storage networks:
 - Cisco Unified Computing System (Cisco UCS)
 - Cisco Nexus Family switches
 - Cisco MDS 9000 Family switches
- VMware provides the industry's most complete virtualization platform and a scalable platform for virtualization management
 - VMware vSphere 4.1
 - VMware vCenter Server



For More Information

<http://www.cisco.com/go/hds>

Data Center Professional Services

Cisco Data Center Services

Cisco Data Center Services help you transform and optimize your data center infrastructure so you can reduce costs, deliver high availability and application performance, and better meet your service-level agreements (SLAs). Cisco services help you plan, build, and manage your data center infrastructure.

Plan Your Data Center Infrastructure

Cisco helps you develop a strategy, assess your network and infrastructure, and develop a design that lays the foundation for your data center initiative.

Build Your Data Center Infrastructure

After you have your plan in place, Cisco and our partners can help you build your desired infrastructure and integrate operations management products and tools. We help you validate, deploy, and migrate your solution and applications.

Manage Your Data Center Infrastructure

As your data center evolves, you need to ensure that your infrastructure and processes evolve to support business growth and deliver next-generation services. Cisco and our partners offer services to help you maintain performance, resolve problems, optimize your infrastructure, and enhance operations.

- Increase uptime and quickly resolve problems with Mission-Critical Support Service: Get Cisco's highest level of data center support, which can include personalized technical account management, expedited technical support, and expert field engineering support.
- Optimize your IT infrastructure as your data center evolves with Data Center Optimization Services: Evolve your Cisco data center solutions to support business growth, deliver next-generation services, and maintain competitive advantage. Cisco offers optimization services for data center technologies and end-to-end architecture that can increase the agility and performance of your data center infrastructure.

For more information about Cisco Data Center Services, visit

<http://www.cisco.com/go/dcservices>.

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Chapter 7: Video and Broadband Cable

This chapter provides only a subset of Cisco products and part numbers.

Video and Broadband Cable At-a-Glance		
Product	Features	Page
Video		
Cisco Videoscape™ portfolio	<ul style="list-style-type: none"> The Cisco Videoscape™ solution is a comprehensive, open, and flexible platform for managing cloud-based video delivery of live TV, on-demand, and other content and applications to managed and unmanaged client devices. It consists of a suite of products spanning the cloud, network, and client aspects of deploying and managing a video service, including Origination and Acquisition suites, Media suite, Security suite, Advertising suite, Videoscape Distribution suite, and Videoscape Clients. Service providers can enable compelling multiscreen and whole home video experiences with Cisco Videoscape™ solutions. 	7-2
Cisco Digital Media Suite	<ul style="list-style-type: none"> This comprehensive suite of webcasting and video sharing, digital signage, and business Internet Protocol Television (IPTV) applications can help transform how organizations learn, grow, communicate, and collaborate. The suite comprises Cisco Digital Signs, Cisco Show and Share video sharing application, and Cisco Cast solutions. It provides support from the broad Cisco partner ecosystem of deployment, solution-development, and content-creation partners to help ensure a successful digital media implementation. 	7-4
Cisco Digital Media Encoders	<ul style="list-style-type: none"> These encoders provide integrated components of the Cisco Digital Media Suite for the Cisco Show and Share video sharing application. The encoders provide live and on-demand streaming digital media across an IP network. Note: Cisco Digital Media Encoder 1100 is a portable encoder, and Cisco Digital Media Encoder 2200 is a multiprocessor, studio-quality audio and video encoding appliance. 	7-5
Cisco Digital Media Manager	<ul style="list-style-type: none"> This manager provides an integrated component of the Cisco Digital Media Suite for webcasting and video sharing, digital signage, and business IPTV applications This web-based application allows content authors to easily manage and publish content to Cisco Show and Share broadcasts, Cisco Digital Signs, Cisco Cast, or other endpoints. 	7-6
Cisco Digital Media Players	<ul style="list-style-type: none"> These players provide highly reliable, IP-based hardware endpoints that enable digital signage and business IPTV through the ability to play high-definition live and on-demand video, motion graphics, web, and dynamic content on digital displays. 	7-7
Cisco LCD Professional Series Displays	<ul style="list-style-type: none"> These large-format professional-quality displays are ideally suited for digital signage and business IPTV solutions. The displays offer 32-, 42-, 47-, and 55-inch models and full 1080p resolution. 	7-10
Cisco Show and Share video sharing application	<ul style="list-style-type: none"> This application is an integrated component of the Cisco Digital Media Suite for webcasting and video sharing. It provides the ability to create live and on-demand video content and define who can watch specific content. It offers viewer collaboration tools such as commenting, rating, and word tagging; and it provides comprehensive access reporting. 	7-11
Cisco Enterprise Content Delivery System (EDCS)	<ul style="list-style-type: none"> This system offers a solution for distributing and delivering video across the network that helps organizations easily scale live and on-demand delivery over their existing WAN infrastructure. 	7-13
Cisco Media Delivery Engine	<ul style="list-style-type: none"> This engine offers flexible form factors for the deployment of the Cisco Enterprise Content Delivery System. It can be combined with Cisco Wide Area Application Services (WAAS) for a complete WAN optimization solution. 	7-17
Cisco Unified Communications	Note: For product information about Cisco Unified Communications products, refer to Chapter 4, "Collaboration".	See 4-46
Cisco TelePresence conferencing	Note: For product information about Cisco TelePresence products, refer to Chapter 4, "Collaboration".	See 4-70
Cisco WebEx meeting applications	Note: For product information about Cisco WebEx products, refer to Chapter 4, "Collaboration".	See 4-13
Cisco Physical Security	Note: For product information about Cisco Video Surveillance products, refer to Chapter 5, "Security".	See 5-40
Media Experience and Analytics		
Cisco TelePresence Content Server	<ul style="list-style-type: none"> This network appliance enables organizations to record and stream meetings and multimedia presentations. It allows organizations to share knowledge and enhance communication through high-quality, user-generated video content. 	7-19

Cisco MXE 3500 Series Media Experience Engine	<ul style="list-style-type: none"> This advanced media-processing appliance enables media sharing from any source to any type of endpoint. It offers postproduction capabilities that enable in-house video teams to perform many of the expensive processing tasks that are normally outsourced to video professionals. It includes an option for Cisco Pulse Video Analytics, which makes video more navigable and searchable with speaker identification and keyword tagging. 	7-21
Cisco MXE 5600 Series Media Experience Engine	<ul style="list-style-type: none"> This modular, highly scalable media processing platform combines advanced media-processing features with high performance and scalability to extend the reach of collaboration. It enables integration of collaboration tools, such as the WebEx application, and recording and streaming into meetings between diverse video endpoints. 	7-23
Broadband Cable		
Cisco uBR7225 Series Universal Broadband Router	<ul style="list-style-type: none"> This low-cost entry and midlevel Cable Modem Termination System (CMTS) offers cable operators, multiunit businesses, and Internet service providers (ISPs) an excellent and cost-effective platform for the delivery of high-speed data, voice, and video services. 	7-24
Cisco uBR7246VXR Universal Broadband Router	<ul style="list-style-type: none"> This modular, standards-based communications-grade CMTS integrated router is ideal for high-growth broadband cable deployments. 	7-26
Cisco uBR10012 Universal Broadband Router	<ul style="list-style-type: none"> This router delivers the services, performance, scale, and carrier-class reliability that large cable operators and ISPs demand. 	7-26
Cisco uBR3x10 RF Switch	<ul style="list-style-type: none"> This router delivers the services, performance, scale, and carrier-class reliability that large cable operators and ISPs demand. 	7-30
Services		
Realize the full business value of your video technology investments faster with smart, personalized services from Cisco and our partners.		7-31
For More Information		
Product Ordering		
To place an order, visit: http://www.cisco.com/en/US/ordering/index.shtml .		
End-of-Life and End-of-Sale Information		
Please visit the end-of-life and end-of-sale website for a complete and up-to-date listing of products that are no longer being sold or supported, what replacement products are available, and information about product support: http://www.cisco.com/en/US/products/prod_end_of_life.html .		
Note: This chapter provides only a subset of Cisco products and part numbers. For the most up-to-date and comprehensive information, refer to the Cisco website at http://www.cisco.com , the Cisco ordering website at http://www.cisco.com/en/US/ordering/index.shtml , or reference the URL listed in the 'For More Information' section of each product.		

Video

Cisco Videoscape Portfolio

The Cisco Videoscape™ Media Suite lets service providers bring together content from pay TV, online, and on-demand sources. They can then combine content with social media, communications, and mobility to create a "better than being there" video experience for consumers. The Cisco Videoscape™ Suite consists of the following products:

- **Origination Suite:** This suite includes video receivers, encoders for ingestion and distribution of video on demand (VoD) and live content (TV and Internet), conditional access systems PowerVu and ROSA, and the Cisco DCM Digital Content Manager Gateway Series. The ROSA Network Management System offers a comprehensive management solution capable of monitoring and controlling nearly all aspects of service management, network management, and element management of broadband networks. The Cisco DCM Series D9901 IP Video Gateway provides simultaneous transport of uncompressed standard-definition (SD), high-definition (HD), and third-generation high-definition (3G-HD) Serial Data Input (SDI) video, as well as compressed video using JPEG2000. At the transmitter site, the DCM IP video gateway enables SDI video to be carried over 1 or 10 Gigabit Ethernet. At the receiving site, the DCM IP video gateway converts the IP-encapsulated stream back to a baseband SDI video signal.
- **Acquisition Suite:** This suite includes Cisco Multiformat processor cards, a media processor, encapsulator, and transcode manager. The Cisco DCM Series Multiformat Processor Card (MFP card) adds high-density, high-quality advanced processing of MPEG-2 and H.264 (AVC), HD and SD video, and audio to the DCM Series platform. The Cisco Media Processor Family provides best-in-class quality for live and real-time media such as live sports, 24-hour programming, web streaming, broadband TV, and IPTV. This affordable and ready-to-use solution offers the best possible streaming, award-winning quality, and professional, reliable results. The Cisco Media Encapsulator offers a remote management user interface

to allow the selection and processing of live multicast transport streams from the encoder to construct a live Adaptive Bit Rate (ABR) channel. The Cisco Transcode Manager is the automated way to expand the revenue potential of content delivered to any device. It is a high volume files based transcoding system that is scalable and automated and supports all popular streaming formats.

- **Media Suite:** This suite includes unified content management, catalog management, and offer and business management systems. It is a single unified content management system for all digital media types; it can be integrated with linear and on-demand third-party electronic-program-guide (EPG) catalogs, and it offers enhanced metadata presentation. The Offer and Business Management system enables packaging, monetizing, and publishing content through services and offers such as linear TV, VoD, catch-up TV, DVR, etc., and implements different business models such as subscription, pay-per-view, or ad support. It also includes support for discovery and recommendations that enable unified search across linear, on-demand, and DVR content from any screen, and integration with multiple third-party recommendation engines.
- **Advertising Suite:** This suite includes advertising-related management tools such as Profile Manager, Audience Measurement, Playlist Manager, and Ad Decision Manager, which allow addressable advertising down to device level; second-by-second measurement of viewing; creation of playlists for dynamic advertising insertion and replacement in linear and on-demand content; and management of the execution of addressable ads across screens and media formats, including preparation, trafficking, delivery, and decision request from multiple ad decision servers.
- **Security Suite:** This suite includes the world's leading conditional access solution such as VideoGuard from NDS, now part of Cisco. In addition, Cisco PowerKEY and support for certain third-party conditional access and digital-rights-management (DRM) solutions are available. Also included is Security Shield, a consistent set of front-end interfaces that various Videoscape services can use when communicating between clients and server, optimized for the protection capabilities of the endpoint. Security Shield provides various authentication and encryption methods that allow usage of any communication protocols that use transitional or persistent connections.
- **Video Distribution Suite (VDS):** VDS consists of several server components related to distributing content such as the Origin Server (VDS-OS), Video Recorder (VDS-VR), Optimization Engine (VDS-OE), Service Manager and Service Broker (VDS-SM and VDS-SB), content-delivery-network (CDN) federation, VDS Internet and TV streaming servers (VDS-IS and VDS-TV), and Transparent Caching (VDS-TC), with tighter integration with the Cisco hardware such as the Cisco UCS data center solution and Cisco routers and switches. VDS-OS converts all incoming content into a common file that simplifies HTTP ABR and MPEG formatted distribution. VDS-VR recorder enables cloud-directed recording of live and time-shifted content. VDS-OE offloads Radio Access Network (RAN) and packet core traffic. VDS-SM provides real-time analytics, service provisioning, and diagnostics, whereas VDS-SB consists of a service selector per caching node and CDN interconnect capabilities required for CDN federation. VDS-TC optimizes unmanaged over-the-top (OTT) content from the network core to the edge. VDS-IS and VDS-TV delivers live and time-shifted content to managed devices such as set-top boxes or multiscreen gateways, from the Internet originated for CDN and Live TV sources, respectively.
- **Videoscape Clients:** Cisco provides a broad range of residential and multiscreen and media gateways, set-top boxes, and soft clients. The Cisco Videoscape™ 9800 Series Multiscreen Gateway expands the entertainment experience by transcoding and distributing IP video or QAM-based live, on-demand, online, and DVR video services to other devices within the home. The Cisco TES301 IP Managed Services Gateway is ideal for cable, telco, and wireless service providers seeking to expand the value of existing Internet services through new revenue-generating offerings. This application-centric gateway integrates voice, linear, and online video, High-Speed Data (HSD), mobility, and routing. The Cisco DRG 7000 Series IP Video Gateway is video-centric and enhances on-network IP video capabilities with services such as built-in, intelligent content caching to the edge. It is designed for cable service providers, incorporating DOCSIS® 3.0 channel bonding, Multimedia over Coax Alliance (MoCA), and Digital Living Network Alliance (DLNA) standards. The next-generation IP set-top box solutions range from sophisticated HD IP set-top boxes that can distribute content more securely to next-generation HD models with digital video recording (DVR) options and whole home video capabilities, with optional digital video broadcasting (DVB) tuners for specific geographies. In addition, the Videoscape portfolio includes several NDS products that are now part of Cisco, such as the popular client middleware MediaHighway that brings broadcast, broadband, DVR, on-demand, and interactive services for enhanced user experience on low-end set-top boxes or high-end unified gateways; award-winning user interface Snowflake; and OpenRG, a residential gateway software. The Videoscape client software platform supports HTML5 engine, the application programming interface (API)/Software Development Kit (SDK) for third-party applications and soft clients.

Main Features and Benefits

The cloud represents the evolution of the video headend to a common data center architecture. This next-generation media platform uses high-performance Cisco data center, CDN, and command-and-control technologies to deliver multiscreen experiences to the consumer, at home and when mobile.

Cisco Videoscape cloud components include:

- Cisco Unified Computing System (Cisco UCS) and the Cisco Nexus Family
- Cisco Videoscape Media Suite
- Cisco Videoscape CDN Analytics
- Cisco Conductor Back Office
- Cisco Media Processor and Transcode Manager

In addition, Cisco Videoscape Clients include the following:

- Cisco Videoscape Multiscreen Gateways
- Cisco Videoscape Media Gateways
- Cisco Videoscape Set-Top Boxes
- Cisco Videoscape Soft Clients

The future of TV and media entertainment is here, powered by the cloud. With the Cisco Videoscape solution, you can reinvent the TV experience for your customers and position your network as the essential provider of tomorrow's immersive, ubiquitous media experiences.

For More Information

To learn more about the Cisco Videoscape™ solution, visit <http://www.cisco.com/go/videoscape>.

Cisco Digital Media Suite

The Cisco Digital Media Suite (DMS) is a comprehensive offering of webcasting and video sharing, digital signage, and business Internet Protocol Television (IPTV) applications that can help transform how organizations learn, grow, communicate, and collaborate. Support from the broad Cisco partner ecosystem of deployment, solution-development, and content-creation partners helps ensure a successful digital media implementation.

Digital Signage: Cisco Digital Signs

Cisco Digital Signs provides scalable, centralized management and publishing of high-quality content to networked, on-premises displays.

As part of the Cisco Digital Media Suite, Cisco Digital Signs uses the same hardware and management platform and can interoperate with Cisco Cast, or can operate as a standalone application.

Business IPTV: Cisco Cast

Cisco Cast is an interactive application that enables organizations to deliver on-demand video and broadcast live TV channels over an IP network to digital displays.

On-screen menus and program guides give users access to Cisco Cast content, and organizations can customize lineups and create their own content libraries. Users can navigate through channel menus and select from on-demand content with a remote control or other remote devices.

Built on the power of the Cisco Digital Media Suite, Cisco Cast uses the same hardware and management platform and can interoperate with Cisco Digital Signs, or can operate as a standalone application.

Webcasting and Video Sharing: Cisco Show and Share Video Sharing Application

The Cisco Show and Share solution is a webcasting and video sharing application that helps enterprise organizations create highly secure video communities to share ideas and expertise. It provides the ability to create live and on-demand video content and define who can watch specific content. It offers viewer collaboration tools such as commenting, rating, and word tagging, and it provides comprehensive access reporting.

Main Features and Benefits

- Communicate richly and effectively with targeted customers, investors, partners, and media. In addition, deliver crucial information and training to employees, suppliers, and partners.
- Target consumers with tailored content directly to their desktop or mobile devices.
- Offer live and on-demand events and content to geographically dispersed audiences.

The Cisco Digital Media Suite (DMS) provides applications and solutions for a variety of industries, including financial services, retail, education, and healthcare.

Integrated Components of the Cisco Digital Media Suite

The Cisco Digital Media Suite includes:

- Creation with Cisco Digital Media Encoders (DMEs)
- Management with the Cisco Digital Media Manager (DMM)
- Content publishing to the Cisco Digital Media Players (DMPs)
- Access through the Cisco Show and Share video sharing application
- Display with the Cisco LCD Professional Series Displays

In addition to the products in the Cisco DMS product line, the Cisco Media Experience Engine (MXE) allows you to further extend the reach of your media content. As a complementary solution to your DMS deployment, the MXE enables any-to-any media transformation in the network, enabling you to create content once to be played on all DMS applications as well as mobile devices.

For More Information

<http://www.cisco.com/go/dms>

Cisco Digital Media Encoders

Cisco Digital Media Encoders (DMEs) provide live and on-demand streaming digital media across an IP network. Organizations can schedule and manage live events from multiple encoders from a single administration interface. The encoders can be locally managed or remotely managed through the Cisco Digital Media Manager. The Cisco Digital Media Encoder can be used as a standalone encoder or as an integrated component of the overall Cisco Digital Media Suite for the Cisco Show and Share video sharing application.



The studio-level (Cisco DME 2200) and portable (Cisco DME 1100) encoders provide live and on-demand streaming digital media across an IP network in a variety of encoding formats, inputs, and monitoring functions.

Main Features and Benefits

The Cisco Digital Media Encoder 1100 offers the following features:

- Ideal for outdoor venues, classrooms, and conference rooms because it can extend webcasting “outside of the studio”; rugged-design lightweight encoder is designed for both professionals and novices
- Lightweight, single channel
- Encoding of video live for live network distribution
- Local management, or remote management through the Cisco Digital Media Manager

The Cisco Digital Media Encoder 2200 offers the following features:

- Ideal for advanced users who require multiple audio and video input options and a variety of encoding formats and functions
- Studio-level, dual channel— a good choice for the corporate office or data center
- Live encoding and transcoding of media from analog and digital sources into standard formats (WMV, FLV, H.264, and so on)
- Local management through an embedded LCD, or remote management through the Cisco Digital Media Manager

Specifications

Feature	Cisco Digital Media Encoder 1100	Cisco Digital Media Encoder 2200
Supported live streaming formats	Microsoft Windows Media 9 MPEG-4/H.264	Microsoft Windows Media 9 MPEG-4/H.264 Product parameter—Supported live-streaming formats for the DMM Live Event Manager (PC only) Specification—Microsoft Windows Media
Supported on-demand formats	Adobe Flash (.flv) Microsoft Windows Media MPEG-4/H.264	Adobe Flash (.flv) Microsoft Windows Media MPEG-4/H.264
Video inputs	Composite; S-Video	2 composite; 2 S-Video; 2 SDI (SMPTE - 259M) Video with embedded audio inputs (AES/EBU)
Audio inputs	1 balanced stereo (XLR3) Unbalanced stereo (RCA)	2 balanced stereo (XLR); 2 Unbalanced stereo (RCA); 2 digital audio (AES/EBU) inputs through SDI inputs
Ethernet ports	1 GB; 10/100 Mb	2 10/100/1000 Mbps
Hard disk space	100 GB	100 GB
RAM	1 GB	4 GB
Processor	Single 2.119-GHz Intel Core 2 Duo CPU	Dual AMD Opteron Quad Core, 2.2 GHz
Additional ports	2 USB 2.0 and VGA monitor	2 USB 2.0 and VGA monitor
Dimensions (H x W x D)	4.5 x 7.75 x 12 in. (11.43 x 19.67 x 30.48 cm)	3.5 x 19 x 23 in. (8.89 x 48.26 x 58.42 cm)
Weight	75 lb. (3.41 kg)	48.62 lb. (19.05 kg)
Power	110-220V; 50-60 Hz	110-220V; 50-60 Hz

Selected Part Numbers and Ordering Information

DMS-DME-1100	Cisco Digital Media Encoder 1100
DMS-DME-2200	Cisco Digital Media Encoder 2200

For More Information

<http://www.cisco.com/go/dms>

Cisco Digital Media Manager

The Cisco Digital Media Manager (DMM) allows content authors to manage, schedule, and publish compelling digital media for live or on-demand playback across digital signage displays for Cisco Digital Signs and Cisco Cast, and to the Cisco Show and Share application for social video. An integrated part of the Cisco Digital Media Suite, the web-based Cisco Digital Media Manager is the single, central management application for all Cisco Digital Media Suite products.

Content managers can:

- Manage content assets and create playlists for Cisco Digital Signs and Cisco Show and Share broadcasts
- Schedule instant and future content deployments and playback schedules for Cisco Digital Signs, Cisco Cast, and the Cisco Show and Share application
- Report on playback schedules for Cisco Digital Signs and on video usage for Cisco Show and Share broadcasts
- Manage Q&A for live Cisco Show and Share broadcasts
- Synchronize slides for both live and video-on-demand (VoD) events

Content designers can:

- Customize signage screen layouts and zones for Cisco Digital Signs
- Customize and brand Cisco Cast, skins, and menus
- Customize and brand the Cisco Show and Share interface

IT users can:

- Manage user accounts for role-based access control, and configure user-specific content restrictions for Cisco Show and Share users through Lightweight Directory Access Protocol (LDAP) or Microsoft Active Directory
- Configure and manage Cisco Digital Media Encoders for Cisco Show and Share broadcasts
- Remotely configure, manage, and monitor digital signage networks
- Manage event-based alerts and server appliances

Specifications

Features	Cisco Digital Media Manager
Product compatibility	Compatible with Cisco Application and Content Networking System (ACNS), the Cisco Wide Area Application Services (WAAS) Network Module, Cisco Show and Share and the Cisco Show and Share Reports tool, Cisco Digital Media Players, and Cisco Digital Media Encoders
Programming interface	Web-based management
Requirements	Cisco Digital Media Manager Client
Browser	Microsoft Windows — Internet Explorer 7.0 or 8.0 recommended, or Firefox 3.6x required; Apple Macintosh—Safari 2.0 minimum; Safari 2.0 or Firefox 1.5 through 3.x recommended

Selected Part Numbers and Ordering Information

Part Number	Product Name	Required or Optional
DMM-BASE-52-K9	Cisco Digital Media Manager	Required
DMM-SVR-C210-K9	Cisco UC Server Appliance	Required
DMM-SIGNSM52-K9	Cisco Digital Signs Module	Required for Cisco Digital Signs implementations
DMM-DVM52-K9	Cisco Show and Share Module	Required for Cisco Show and Share implementations
DMM-CAST52-K9	Cisco Cast Module	Required for Cisco Cast implementations
DMM-LEM52-K9	Cisco Show and Share Live Event Module	Optional
DMM-SNMP52-K9	Cisco DMM SNMP Module	Optional
Software Upgrades and Add-Ons		
DMM-DVM52-K9=	DMM Show and Share Module V5.2 Perpetual Software License, Spare	
DMM-SIGNSM52-K9=	DMM Digital Signs Module V5.2 Perpetual Software License, Spare	
DMM-LEM52-K9=	DMM Show and Share Module Live Event Module Perpetual Software License	
DMM-SNMP52-K9=	Digital Media Manager Ver. 5.2 SNMP Module Perpetual Software License	
DMM51-U52-K9	Cisco Digital Media Manager V5.2, Upgrade from V5.1	
DMP-SW52-U-K9	Digital Media Player V5-V5.2 Perpetual Software Upgrade	
DV-WKGP-U52-K9	Show and Share Module 5.2, Upgrade from V5.1 - Workgroup	
DV-ENT-U52-K9	Show and Share Module 5.2, Upgrade from V5.1 - Enterprise	
DMP-FL-10=	Cisco Digital Media Manager, Feature License for Up To 10 DMPs	

DMP-FL-50=	Cisco Digital Media Manager, Feature License for Up To 50 DMPs
DMP-FL-500=	Cisco Digital Media Manager, Feature License for Up To 500 DMPs
DMP-FL-1000=	Cisco Digital Media Manager, Feature License for Up To 1000 DMPs

For More Information

<http://www.cisco.com/go/dms>

Cisco Digital Media Players

Cisco Digital Media Players (DMPs) are highly reliable, IP-based hardware endpoints that enable Cisco Digital Signs and Cisco Cast through the ability to play high-definition live and on-demand video, motion graphics, web, and dynamic content on digital displays. The DMP hardware options include support for standard-definition (SD) and high-definition (HD) MPEG-2 and MPEG-4/H.264, Flash, RSS, and other web formats and dynamic data.



Using the Cisco Digital Media Manager, part of the Cisco Digital Media Suite, organizations can flexibly and remotely publish centralized content over the web to networked digital signs. Cisco Digital Media Players can be attached to virtually any on-premises digital signage display at any location, including branch-office banks, retail stores, break rooms, or lobbies, helping organizations reach their primary audiences anywhere, anytime.

Cisco Digital Media Players deliver flexible and real-time publishing; low ongoing operational costs and ease of use; and speed of deployment; they take advantage of the scalability and power of the network.

The Cisco DMP 4305G Digital Media Player includes such features as:

- Support for MPEG 1/2/4 Part 2 video in SD and HD as well as graphics, web content, Adobe Flash 7 or less, animation, MP3 audio, and tickers
- 2-GB local storage for reliability and performance
- IP-enabled delivery of live broadcasting and on-demand video content
- Small form factor: 7.5 x 5 x 1.5 in. at 1 lb
- Low power consumption
- IP-enabled delivery of live broadcasting and on-demand video content

The Cisco DMP 4310G includes such features as:

- Support for MPEG 1/2/4 Part 10 in SD and HD as well as graphics, web content, Adobe Flash Lite animations, Windows Media 9 and VC-1, MP3 audio, and rolling and scrolling tickers
- 32-GB local storage for reliability and performance
- Touchscreen technology support
- 802.11af Power over Ethernet (PoE)
- Small form factor: 7.5 x 5 x 1.5 in.; weighs 1 lb
- Low power consumption
- IP-enabled delivery of live broadcasting and on-demand video content

The Cisco DMP 4400G includes such features as:

- Support for MPEG 1/2/4 Part 10 video in SD and HD as well as graphics, web content, and Adobe Flash 9 animation, Windows Media 9 and VC-1, MP3 audio, and tickers
- 4-GB local storage for reliability and performance
- Touchscreen technology support
- 802.11 B/G wireless network support
- Small form factor: 10 x 8 x 2 in.; weighs 4.5 lb
- Low power consumption
- IP-enabled delivery of live broadcasting and on-demand video content

Integrated with the Cisco Digital Media Manager, the Cisco Digital Media Players provide:

- Remote management of display (on and off, volume, contrast, and brightness)
- Full-screen video playback or "on-screen zoning" of multiple content types on a single display
- Customizable onscreen presentation templates and playlists

Specifications

Feature	Cisco Digital Media Player 4305G	Cisco Digital Media Player 4310	Cisco Digital Media Player 4400G
Supported protocols	<ul style="list-style-type: none"> FTP and secure FTP (SFTP) HTTP and HTTPS User Datagram Protocol (UDP); Real-Time Transport Protocol (RTP) over Real-Time Streaming Transport Protocol (RTSP) 	<ul style="list-style-type: none"> FTP and Secure FTP (SFTP) HTTPS (for management interface) User Datagram Protocol (UDP) Real-Time Transport Protocol (RTP) over Real Time Streaming Protocol (RTSP) 	<ul style="list-style-type: none"> FTP and secure FTP (SFTP) HTTP and HTTPS User Datagram Protocol (UDP); Real-Time Transport Protocol (RTP) over Real-Time Streaming Transport Protocol (RTSP)
Video containers	MPEG Transport Stream (TS, TP, TRP, M2T, M2TS, and MTS)	MPEG Transport Stream (TS, TP, TRP, M2T, M2TS, and MTS) ASF : WMV	MPEG Transport Stream (TS, TP, TRP, M2T, M2TS, and MTS); ASF; WMV
Video codecs	<ul style="list-style-type: none"> Video MPEG 1 Video MPEG 2: Main Profile at High Level Video MPEG 4 part 2: Advanced Simple Profile at Level 5 Aspect ratio: 4:3 and 16:9 HD (up to 1080 at 16:9) progressive and interlace video resolution Video data rate up to 82 Mbps Overall delay 1–3 sec <p>Note: Please consult other Cisco documentation or your Cisco representative for exact audio codec, video codec, resolution, bit rate, and encapsulation combinations.</p>	<ul style="list-style-type: none"> Video MPEG1 Video MPEG2: Main Profile at High Level Video MPEG4 Part 10 Baseline and Main profiles Video Windows Media 9 and VC-1 - VoD only Aspect ratio: 4:3 and 16:9 HD (up to 1080p at 16:9) progressive and interlace video resolution Video data rate up to 28 Mbps Internal Hardware Decoder delay configurable to < 1 sec 	<ul style="list-style-type: none"> Video MPEG 1 Video MPEG 2: Main Profile at High Level Video MPEG 4 part 10 Baseline and Main profiles; Video Windows Media 9 and VC-1 VoD only Aspect ratio: 4:3 and 16:9 HD (up to 1080P at 16:9) progressive and interlace video resolution Video data rate up to 28 Mbps Overall delay 1–3 sec <p>Note: Please consult other Cisco documentation or your Cisco representative for exact audio codec, video codec, resolution, bit rate, and encapsulation combinations.</p>
Audio codecs	<ul style="list-style-type: none"> Audio MPEG 1 Layers 1 and 2 mp3; MPEG 4 AAC Low Complexity AC-3 Audio data rate: 64–320 kbps <p>Note: Please consult other Cisco documentation or your Cisco representative for exact audio codec, video codec, resolution, bit rate, and encapsulation combinations.</p>	<ul style="list-style-type: none"> Audio MPEG1 Layers 1 and 2 MP3 MPEG4 AAC Low Complexity AC-3 Audio data rate: 64-320 kbps 	<ul style="list-style-type: none"> Audio MPEG 1 Layers 1 and 2 mp3; MPEG 4 AAC Low Complexity AC-3 Audio data rate: 64–320 kbps <p>Note: Please consult other Cisco documentation or your Cisco representative for exact audio codec, video codec, resolution, bit rate, and encapsulation combinations.</p>
Remote control	Transmitter Type and Maximum Supported Distance —Infrared (IR), 15 ft.	Transmitter Type and Maximum Supported Distance —Infrared (IR), 15 ft.	Transmitter Type and Maximum Supported Distance —Infrared (IR), 15 ft.
Flash memory	<ul style="list-style-type: none"> 32 MB for OS 2 GB for internal storage 	<ul style="list-style-type: none"> 32 GB for local storage 	4GB CF-card with endurance of 1,000,000 Write/Erase Cycles for OS and application storage
Physical connectors	<p>Ethernet copper 10/100 BASE-T, RCA Video, S-Video, RCA Audio Left, RCA Audio Right, HDMI, and RS-232 and USB</p> <p>Cable Type* and Maximum Supported Length— Composite/RCA cable, 10 ft.</p> <ul style="list-style-type: none"> HDMI 1.1**, 16 ft. S-Video, 10ft. <p>* Cable quality can be a factor **An HDMI extender product can be used to extend the cable to 150 ft.</p>	<p>Ethernet copper 10/100 BASE-T, RCA Video, S-Video, Mini 3.5 mm Stereo Audio Jack, HDMI, and RS-232 Mini 3.5mm and USB</p> <p>Cable Type* and Maximum Supported Length</p> <ul style="list-style-type: none"> HDMI 1.3, 16 ft. S-Video, 10ft. USB 2.0, 15 ft. 	<p>Ethernet copper 10/100 BASE-T, RCA Video, S-Video, Mini 3.5 mm Stereo Audio Jack, HDMI, and RS-232 and USB</p> <p>Cable Type* and Maximum Supported Length</p> <ul style="list-style-type: none"> Composite/RCA cable, 10 ft. HDMI 1.1**, 16 ft. S-Video, 10ft. USB 2.0 (2), 15 ft. SPDIF, 10 ft. <p>* Cable quality can be a factor **An HDMI extender product can be used to extend the cable to 150 ft.</p>
Wireless connectivity			Wireless Radio: 802.11 B/G; Security protocols: WPA, WPA2, EAP+FSST, and WEP

<p>Touchscreen support</p>			<p>Vendor: 3M Supported Systems: Touchscreen Sensor and Systems:</p> <ul style="list-style-type: none"> • 3M Micro Touch • ClearTek II touch sensor • 3M MicroTouch System SCT3250CX • 3M Micro Touch Sensor SCT7650 • 3M MicroTouch System SCT3250SX • 3M Micro Touch Capacitive TouchSense System • 3M MicroTouch DST touch system <p>Display Systems: 3M Micro Touch Display M1500SS (15 in.)</p> <ul style="list-style-type: none"> • 3M MicroTouch Display M1700SS (17 in.) • 3M MicroTouch CT150 15-in. LCD Touch Monitor • 3M MicroTouch ChassisTouch 17 in. LCD Touch Monitor <p>Vendor: ELO Supported Systems: All Acoustic Pulse Recognition systems</p> <p>Vendor: Zytronic Supported Systems: Zybrid Screen systems</p> <p>Vendor: General Touch Supported Systems: All systems supported by the ST6001S controller</p>
<p>Power</p>	<p>Input voltage—5V Input current—3 ADC Power consumption—Peak: 12W; average: 5W</p>	<p>Power consumption: 12W</p>	<p>Input voltage.—12V Input current—3 ADC Power consumption—Peak: 30W; average: 15W</p>
<p>Environmental</p>	<p>Operating temperature—41°F to 122°F (5 to 50°C); Passed 500-hour test of the uninterrupted video playback in 125.6°F (52°C) dry-heat environment Humidity—20 to 80% noncondensing</p>		<p>Operating temperature—41°F to 104°F (5 to 50°C)</p> <ul style="list-style-type: none"> • Passed 500-hour test of the uninterrupted video playback in 125.6°F (52°C) dry-heat environment <p>Humidity—20 to 80% noncondensing</p>
<p>Functional</p>	<p>Video in—MPEG 1, MPEG 2, and MPEG 4 part 2 Audio in: Transport stream: Up to 6 audio packet IDs (part numbers) in transport stream Video out: Analog video (composite, S-Video)</p> <ul style="list-style-type: none"> • Digital video (HDMI) <p>Audio out: Analog unbalanced audio (mono and stereo)</p> <ul style="list-style-type: none"> • MPEG 1 Layer 2: Selected; packet IDs in transport stream (1 of 6) <p>MPEG 4 AAC and AC-3 —Selected elementary audio (1 of 6)</p>		<p>Video in: MPEG 1, MPEG 2, and MPEG 4 part 10. Windows Media 9, and VC-1 Audio in: Transport stream: Up to 6 audio packet IDs (part numbers) in transport stream</p> <ul style="list-style-type: none"> • mp3 <p>Video out: Analog video (composite, S-Video)</p> <ul style="list-style-type: none"> • Digital video (HDMI 1:1) <p>Audio out: Analog unbalanced audio (mono and stereo); MPEG 1 Layer 2: Selected; packet IDs in transport stream (1 of 6) MPEG 4 AAC and AC-3</p> <ul style="list-style-type: none"> • Selected elementary audio (1 of 6)

Selected Part Numbers and Ordering Information

DMP-4305G-52-K9	Cisco Digital Media Player 4305G (Note: Includes Cables Accessory Kit)
DMP-SW52-K9	Digital Signage User Lic. for DMP 4305G
DMP-RM-K9=	Cisco Digital Media Player Remote Spare
DMP-SW52-U-K9	Digital Media Player V5-V5.1 Perptl. SW Upgrade
DMP-ACC-KIT	Cisco Digital Media Player 4305G, Cables Accessory Kit, Spare, (Note: A Cables Accessory Kit is already included with the Cisco Digital Media Player 4305G. This Spare Kit is an additional cost.)
DMP-RM-K9=	Cisco Digital Media Player Remote Spare
DMP-4310G-52-K9	Cisco Digital Media Player 4310G (Note: Includes Cables Accessory Kit)
DMO-4310G-SW52-K9	Digital Signage User Lic. For DMP 4310G
DMP-RM-K9	Cisco Digital Media Player Remote Spare
DMP-4310G-PWR	Digital Media Player 4310G Power Brick
DMP-4400G-52-K9	Cisco Digital Media Player 4400G (Note: Includes Cables Accessory Kit)
DMP-SW52-K9	Digital Signage User Lic. for DMP 4400G
DMP-RM-K9=	Cisco Digital Media Player Remote Spare
DMP-SW52-U-K9	Digital Media Player V5-V5.1 Perptl. SW Upgrade
DMP4400-ACC-KIT	Cisco Digital Media Player 4400G, Cables Accessory Kit, Spare. (Note: A Cables Accessory Kit is already included with the Cisco Digital Media Player 4305G. This Spare Kit is an additional cost.)
DMP-RM-K9=	Cisco Digital Media Player Remote Spare

For More Information

<http://www.cisco.com/go/dms>

Cisco LCD Professional Series Displays

Cisco LCD Professional Series Displays form an integral part of the overall Cisco Digital Media Suite (DMS) suite of products. Offering a complete end-to-end solution for digital signage and business Internet Protocol Television (IPTV), these displays are available in 32-, 42-, 47-, and 55-inch models and offer full 1080p resolution.

Cisco LCD Professional Series Displays offer:

- An end-to-end Cisco solution
- Centralized, remote management through the Cisco Digital Media Manager (on and off, volume, contrast, and brightness)
- Cisco support and service offerings

Specifications

Feature	Cisco LCD 100L Pro 32N	Cisco LCD 110L PRO 42	Cisco LCD 110L PRO 47	Cisco LCD 110Q PRO 55
Diagonal Size	32 inches	42 inches	47 inches	55 inches
Native Resolution	1366 x 768 (WXGA) 1920 x 1080 (HDMI)	1080p (1920*1080)	1080p (1920*1080)	1080p (1920*1080)
Resolutions Supported	180p, 1080i, 720p	1080p, 1080i, 720p	1080p, 1080i, 720p	1080p, 1080i, 720p
Brightness	500 cd/m ²	700 cd/m ²	700 cd/m ²	700 cd/m ²
Contrast Ratio	3000:1 (Dynamic Contrast Ratio)	1200:1	1300:1	1300:1
Viewing Angle (H/V)	178/178 degrees	178/178 degrees	178/178 degrees	178/178 degrees
Response Time (G-to-G)	8 ms	10 ms	10 ms	10 ms
Video Inputs	HDMI, VGA, and DVI (composite, component, and S-video also exist)	HDMI, RGB, Composite, and Component	HDMI/DVI, RGB, Composite, and Component	HDMI, DVI, RGB, Composite, S-Video, and Component
Power Supply	AC 100 - 240 V, 50/60 Hz	100~240V, 50/60 Hz	100~240V, 50/60 Hz	100~240V, 50/60Hz
VESA Mount	200 x 200 mm	600 x 400 mm	800 x 400 mm	400 x 400mm
Weight (Set/Package)	31.7/39.2 Kg	18.64kg/21.87kg	22.2kg/29.6kg	376kg/470kg

Dimension	31.61 x 19.41 x 3.93 mm	96.7 x 55.98 x 12.37 cm	107.95 x 62.46 x 12.29 cm	125.21 x 72.29 x 13.01 cm
Bezel Width	40 mm	16.9 mm	17.9 mm	19.5 mm

Selected Part Numbers and Ordering Information

LCD-110Q-PRO-55	Cisco LCD Q-Series 55" Display, 1080p, w/Remote Control
LCD-110-PRO-52S	Cisco LCD 52" Display, 1080p, Bezel S, w/Remote Control
LCD-100-PRO-STD	Leg Stand for Displays (Note: Optional)
LCD-100L-PRO-47	Cisco LCD L-Series 47" Display, 1080p, w/Remote Control
LCD-100L-PRO-42	Cisco LCD L-Series 42" Display, 1080p, w/Remote Control
LCD-100-PRO-40N	Cisco LCD 40" Display, 1080p, Bezel N, w/Remote Control
LCD-100L-PRO-32N	Cisco LCD L-Series 32" Display, 1080p, Bezel N, w/Remote Control

For More Information

<http://www.cisco.com/go/dms>

Cisco Show and Share Video Sharing Application

An integrated component of the Cisco Digital Media Suite for webcasting and video sharing, the Cisco Show and Share video sharing application helps organizations create secure video communities to share ideas and expertise, optimize global video collaboration, and personalize the connection between customers, employees, and students with user-generated content. The application provides the ability to create live and on-demand video content and define who can watch specific content; it offers viewer collaboration tools such as commenting, rating, and word tagging; and it provides comprehensive access reporting.

The Cisco Show and Share video sharing application fits into your organization's existing IP network and helps ensure that your video content is stored securely within your IT infrastructure. It supports established video formats including Windows Media, Flash, and the MPEG-4/H.264 standard for video-on-demand (VoD) files. The Windows Media format is supported for PC playback for live streams.

When a Cisco MXE 3500 is available on the network, the Cisco Show and Share application provides the ability to have all files that it has uploaded automatically transcoded to an optimal window size and bit rate through the Flash format. These files are automatically sent from the Cisco Show and Share server to the Cisco MXE 3500, where they are transcoded and then retrieved by the Cisco Show and Share application for editing and publishing.

Main Features and Benefits

- **Creating:**
 - Capture of video directly with Cisco Show and Share application: You do not need to install any special software on your PC or Macintosh. The Cisco Show and Share application works with Adobe Flash player to support a wide variety of built-in and USB-based cameras and microphones that you can use to capture video.
 - Assigned authors: Cisco Show and Share systems administrators can define by username those who can capture and upload content. Organizations can provide initial access to a small set of content authors and add additional authors as needed.
- **Publishing:**
 - Content viewing security: Publishers can define "who can watch what" for each video for secure content viewing needs.
 - Optional viewer collaboration—commenting, rating, and tagging: Publishers can choose per title what type of collaboration functions are available, such as commenting, rating, and tagging.
- **Browsing and search:**
 - Public and private categories: Viewers can browse both private and public categories based on their login credentials.
 - Keyword tags: Viewers can use popular keyword tags that are displayed to help them find content.
- **Viewing and sharing:**
 - Video playback controls: Viewers have complete playback controls for on-demand content, including start and stop controls.
 - Commenting options: Authors can optionally provide the ability for viewers to leave multiparty comments and collaborate with other viewers with two levels of commentary: page comments can be created for general commentary, and timeline comments can be placed at any point in the video timeline for topical discussions. Viewers can report abusive comment language, and systems administrators can search for and delete offensive comments.

- Live webcasting:
 - Managed webcast: Live webcast authors can set up and produce real-time streaming webcasts for events such as executive presentations, conferences, teacher lectures, and so on.
 - View questions: Viewers can optionally post text-based questions to the live webcast authors at any time during an event.
- Reporting:
 - Systemwide reporting: Systems administrators have access to a wide variety of activity and content usage reports across the entire Cisco Show and Share content catalog, including sitewide traffic, page views, unique visitors, and video content viewing activity. Report options include date ranges, viewers, authors, and content titles.

For a full listing of product features, refer to the Cisco Show and Share data sheet at: http://www.cisco.com/en/US/prod/collateral/video/ps9339/ps6681/data_sheet_c78-565776.html.

Cisco Show and Share Reports is an integrated function within the Cisco Show and Share application that allows you to track the access and use of video content by end users. With this tool you can:

- Specify time periods: Run reports based on specific dates.
- Analyze content use: Access unique traffic metrics and repeat traffic metrics for each available video or as an aggregated total.
- Monitor referrals: Track top referring pages and links with the corresponding views they generate.
- Understand visitors: Acquire vital statistics about visitors, including operating system, browser, and media plug-in used.
- Receive viewer usage details: Identify what videos have been played by individual users and videos.

With the Cisco Show and Share Reports tool, Cisco Digital Media Suite (DMS) administrators and Cisco Show and Share authors can access a variety of usage information that can facilitate tracking content effectiveness and required user access as part of a larger training compliancy effort, and help shape future content development based on content trends.

Support and Compatibility

The Cisco Show and Share video sharing application is shipped with the software preloaded on select Cisco server appliances and models. Upgrade and server support information is available at <http://www.cisco.com> in the Cisco Show and Share Upgrade Guides.

Licensing

The Cisco Show and Share application is purchased as a perpetual license with no restrictions on the number of potential viewers. The application introduces new authoring capabilities that require enabling licenses for each system user defined as an author. The base Cisco Show and Share system has five preinstalled Author licenses. You can purchase additional licenses with various options, including:

- Cisco Show and Share Feature License for up to 10 Authors
- Cisco Show and Share Feature License for up to 50 Authors
- Cisco Show and Share Feature License for up to 500 Authors
- Cisco Show and Share Feature License for up to 1000 Authors
- Cisco Show and Share Feature License for up to 25,000 Authors

You can purchase additional licenses and install them after the initial implementation.

Specifications

Cisco Show and Share Viewer Requirements	
Browser software	<ul style="list-style-type: none"> • Windows • Internet Explorer 7.0 or 8.0 • Mozilla 3.6.3 • Apple Macintosh (support only for Flash and MPEG4/Part 10 VOD files only. Windows Media format not currently supported with the Apple Macintosh). • Safari 3.1.2 • minimum • Safari 3.1.2 or Firefox 3.5.3 or later recommended
Adobe Flash plug-in	Adobe Flash v.9, upgrade 3 plug-in or later recommended, v. 10 recommended
Windows Media plug-in	Windows Media 9 or later (required if Windows Media content is offered)
Java Client	v. J1.6.0_13 or later
Minimum supported resolution	1024 x 768
Cisco Show and Share Content Format Support	
Windows Media	Content encoded in the Windows Media format through the Cisco Live Event Module or other third-party applications can be uploaded and viewed with Cisco Show and Share. This content is decoded and played by the Windows Media plug-in. Third-party applications are required to edit content encoded with the Windows Media format. Windows Media content is not currently supported with the Apple Macintosh.

Adobe Flash (.flv)	Content encoded in the Adobe Flash (flv) format can be uploaded and viewed with Cisco Show and Share. This content is decoded and played by the Adobe Flash plug-in. The integrated Cisco Show and Share Video Editor can be used to edit uploaded Adobe Flash (flv) content. Content created with the Cisco Show and Share Record a Video function is encoded in the Adobe Flash (flv) format and is also editable with the Cisco Show and Share Video Editor.
MPEG4/Part 10 (also known as MPEG4/H.264)	Content encoded in the MPEG4/Part 10 format can be uploaded and viewed with Cisco Show and Share. This content is decoded and played by the Adobe Flash plug-in. Additional MPEG4 file support playable by the Adobe Flash player can be obtained at http://www.adobe.com . Third-party applications are required to edit content encoded with the MPEG4/Part 10. File types supported include .mp4, .m4v, and .mp4v.
Cisco Show and Share Server Appliance Options	
Workgroup	The Cisco Show and Share Workgroup server appliance supports up to 50 simultaneous authors and is ideal for a variety of use cases that feature smaller workgroups within an organization.
Enterprise	The Cisco Show and Share Enterprise server appliance supports organizations that want to enable large numbers of authors to create and publish a variety of content that will be accessed organization-wide.

Selected Ordering Information

Cisco Digital Media Manager	
Cisco Digital Media Manager	Required
Cisco UCS C210 M2 Server Appliance (DMS-specific model)	Required
Cisco Show and Share Live Event Module	Optional
Cisco DMM SNMP Module	Optional
Cisco Show and Share Workgroup	
Cisco Show and Share Workgroup	Required
Cisco UCS C-200 M2 Server Appliance (DMS-specific model)	Required
Cisco Show and Share Reports	Required
Cisco Show and Share Enterprise	
Cisco Show and Share Enterprise	Required
Cisco MCS 7835-H3 Server Appliance	Required
Cisco Show and Share Reports	Required

For More Information

<http://www.cisco.com/go/dms>

Cisco Enterprise Content Delivery System

As the demand for enterprise video technologies increases, organizations are facing more demands on their network capacity and complexity in delivering video applications.

The Cisco Enterprise Content Delivery System (ECDS) is a media delivery system that helps organizations easily scale video and media delivery over their existing WAN infrastructure. For both data and video optimization, Cisco ECDS can be deployed with Cisco Wide Area Application Services (WAAS), providing a complete WAN optimization solution.

Cisco ECDS helps customers:

- Scale delivery of applications such as e-learning, training, corporate communications, live webcasts, and digital signage, among others, for large audiences and remote sites
- Deliver live and video-on-demand (VoD) media in various formats to multiple endpoints throughout the enterprise network
- Reduce capital spending in large-scale streaming server and data center infrastructure
- Reduce operational costs through integration with media applications and also optimize storage requirements and bandwidth for streaming
- Extend the reach and quality of the media experience through the enterprise while maintaining a predictable WAN network behavior

Cisco ECDS consists of a distributed system of components, including the Service Engine, the Content Delivery System Manager (CDS Manager), and the Service Router, to efficiently provide live video streaming scalability, video on demand (VoD), content prepositioning, and dynamic caching of video content over the corporate WAN to remote sites.

Cisco ECDS is a versatile media delivery platform with support for Adobe Flash, Windows Media, Apple QuickTime, and the H.264 video compression standard. With support for smooth scalability and resiliency through its service routing capability, Cisco ECDS offers various choices to support a range of sites, from those with fewer than 25 users to large campuses with thousands of users.

Cisco Enterprise Content Delivery System Applications

The Cisco ECDS consists of three main applications:

- **Service Engine:** The Service Engine provides edge content streaming, caching, and download to various endpoint devices such as PCs, Macs, and digital signs, among others. Content streaming support includes live and VoD for Adobe Flash, Windows Media, Apple QuickTime, and H.264 formats. The Service Engine also provides the point of entry into ECDS for ingesting live streams. Through the optional content acquisition subsystem, the platform dynamically fetches content on demand using prefetch and prepositioning options.
- **Service Router:** The Service Router mediates requests from the endpoint clients. It is responsible for choosing the most appropriate service engine based on location and load conditions of individual service engines.
- **Content Delivery System Manager:** This graphical, browser-based application is designed to manage the elements of a Cisco ECDS network. It offers a workflow-based approach, automating and centralizing the major system management functions, including configuration, monitoring, troubleshooting, system reporting, and maintenance.

Main Features and Benefits

- Scales bandwidth-heavy media applications without the need to upgrade the WAN network
- Scales across the enterprise without the need to turn on multicast
- Provides centralized management and system reporting
- Supports various endpoints and formats through a single-vendor solution
- Provides service-routing-based architecture to support hierarchical deployments, load balancing, and redundancy
- Provides protocol-based redirects without requiring any configuration on routers and end clients
- Offers minimal operation complexity in scaling number of sites or number of users on a site
- Supports out-of-band access to devices and comes integrated with recovery image
- Supports Adobe Flash, Windows Media, and Apple QuickTime (live and video on demand [VoD])
- Supports Real-Time Streaming Protocol (RTSP) over User Datagram Protocol/ Transmission Control Protocol (UDP/TCP)
- Supports live stream splitting for Adobe Flash, Windows Media Video (WMV), Apple QuickTime, and MPEG2-Transport Stream/Real-Time Transport Protocol (MPEG2-TS/RTSP)
- Supports unicast-to-multicast streaming conversion and conversely for Windows Media and QuickTime
- Supports dynamic pull caching for objects by HTTP and RTSP
- Supports content prefetch and prepositioning through HTTP, Secure HTTP (HTTPS), FTP, or Common Internet File System (CIFS)
- Supports service-routing-based, scalable, hierarchical distribution topology
- Supports Cisco Digital Signs for delivering VoD content
- Supports Cisco Show and Share video sharing application
- Compatible with other Cisco video solutions

Specifications

Feature	Specification
Protocols	Content acquisition: <ul style="list-style-type: none">• HTTP/HTTPS• FTP• CIFS• RTSP/RTMP Content delivery: <ul style="list-style-type: none">• Web content via HTTP• Adobe Flash streaming via RTMP (E)• Windows Media VC-1 via RTP/RTSP, via MMS over HTTP, or via HTTP Progressive Download• Streaming MP3, MP4 (H.264), MOV and M4V, content via RTP/RTSP
Components	Cisco ECDS components involved in a minimal setup: <ul style="list-style-type: none">• CDSM• Service Router• Service Engine with or without Content Acquirer Optional components include: <ul style="list-style-type: none">• Standby CDSM• Additional Cisco Service Routers for load balancing and failover• Additional Cisco Content Acquirer or Service Engines for load balancing and failover
MIBS	<ul style="list-style-type: none">• Supports SNMP v1, v2, v3• Supports ENTITY-MIB, CISCO-ENTITY-ASSET-MIB, CISCO-CONFIG-MAN-MIB, EVENT-MIB, HOST-RESOURCES-MIB, CISCO-SMI & v2-SMI, SNMP-FRAMEWORK-MIB, MIB-II, sr-tc, v2-TC, SR-COMM, v2-ADM, v2-MIB, v2-ARCH, v2-tm, Coex, v3-ACM, V3-MPD, V3-proxy

Network management	<p>Cisco CDS Manager, which supports:</p> <ul style="list-style-type: none"> • Secure GUI over HTTPS • Configuration of ECDS component applications and devices • Provisioning of delivery services • Provisioning of managed live programs • Traffic statistics and system health monitoring • Authentication, authorization, and accounting (AAA) and role-based management • Management failover using a warm standby • Device group for easy management of thousands of Cisco Service Engines • Centralized system upgrade manager for easy upgrading of thousands of Service Engines • Out of band platform access and integrated remote system recovery
Integration	<p>Supports integration using XML-based "Manifest" files that describe content ingest tasks. APIs are provided to:</p> <ul style="list-style-type: none"> • Check the content replication and listing status • Provision the delivery system • Obtain statistics • Protocol: HTTPS • Input: URL and XML body • Output: XML response
Service routing	<p>Service Router supports the following routing methods:</p> <ul style="list-style-type: none"> • Load-based routing (least loaded) • Service-aware routing • Content-aware routing • Last resort (when all eligible streamers are overloaded or for requests from outside the defined coverage zone) <p>Service Router avoids routing to Service Engines with:</p> <ul style="list-style-type: none"> • Disk failure • Application failure • CPU, memory, and disk overload <p>Service Router supports multiple redirection methods based on the protocol and the user-agent of the client:</p> <ul style="list-style-type: none"> • HTTP ASX Redirection • HTTP 302 Redirection • RTSP 302 Redirection • RTSP REDIRECT Redirection • RTMP Redirection
Web engine	<ul style="list-style-type: none"> • Progressive rendering of MPEG, Advanced Systems Format (ASF), and QuickTime movie format files • Wi-Fi streaming via HTTP Progress Download • Option to support pre-ingested content delivery and dynamic caching • Flexible rules template for cache policies and rules • Service rules • Option to support hierarchical caching
Flash streaming	<ul style="list-style-type: none"> • Adobe Flash streaming • Precreated application for VoD • Multiple bit-rate streaming over RTMP for live streaming and VoD • H.264 VoD and live streaming • Content authorization using URL Signing • HTTP-based hierarchical caching • Support for RTMP, RTPME. • Formats: Sorenson Spark, On2 VP, Nellymoser, MP3, AMF0, AMF3 • Client-side playlist
Cisco Movie Streamer	<ul style="list-style-type: none"> • Support for content delivery using RTP/RTSP • Clients: QuickTime, 3GPP-compatible, VLC • Codecs: MPEG1/2, H.264, H.263, AMR, AAC, MP3 • Container files: MOV, MP4, 3GPP • Support for live streaming application • Managed live events and rebroadcast of scheduled events • Encoder failover • SMIL-based client-side playlists • Live-stream splitting, including: <ul style="list-style-type: none"> ◦ Multicast in and multicast out ◦ Multicast in and unicast out ◦ Unicast in and multicast out ◦ Unicast in and unicast out • Hierarchical caching proxy

Content acquisition and storage	<p>Acquisition modes supported:</p> <ul style="list-style-type: none"> • Pre-ingest of content ahead of the delivery time • Dynamic ingest of content the end-user requests • Pre-ingest via HTTP, HTTPS, FTP, CIFS • Dynamic ingest via HTTP and RTSP <p>Centralized content removal Distribution modes supported:</p> <ul style="list-style-type: none"> • Hierarchical live streaming routing within Cisco ECDS • Option for caching proxy from the origin server • Option of hierarchical caching within Cisco ECDS
Windows Media	<ul style="list-style-type: none"> • Windows Media Technology (WMT) server and proxy: <ul style="list-style-type: none"> ◦ Codec WM 7, WM 8, WM 9, VC-1 • Protocols: <ul style="list-style-type: none"> ◦ RTP/RTSP UDP ◦ RTP/RTSP TCP ◦ MMS over HTTP, or HTTP progressive download • Container files: ASF, WMV, WMA • Client-side playlist • Fast start and fast cache • Managed live events • Live channel priming • Live channel fast start • Live-stream splitting, including: <ul style="list-style-type: none"> ◦ Multicast in and unicast out ◦ Unicast in and multicast out ◦ Unicast in and unicast out • Option to support hierarchical caching • Encoder failover • Pass-through authentication • Wi-Fi streaming of VC-1

The ECDS solution is currently available in an appliance form factor called the Cisco Media Delivery Engine (MDE) in the following models:

- Cisco Media Delivery Engine 50 WVB
- Cisco Media Delivery Engine 1100
- Cisco Media Delivery Engine 3100

Solution Requirements

At a minimum, a Cisco ECDS deployment requires the following:

- Service Engine
- Content Delivery System Manager
- Service Router

The MDEs may be used to run any of the three main applications listed previously. Please note that Content Acquisition is an additional license that is required for using a Service Engine as a Content Acquirer.

Selected Parts and Ordering Information

Ordering information for the Media Delivery Engine can be found on the respective data sheet.

For More Information

<http://www.cisco.com/go/ecds>

Cisco Media Delivery Engine

Cisco Media Delivery Engines (MDEs) are flexible form factors of the Cisco Enterprise Content Delivery System (ECDS) for media distribution and delivery. The MDEs are available as hardware appliances or as software running on the Cisco Wide Area Application Services (WAAS) on a virtual-blade environment.



Using the Cisco MDE, organizations can run the three main applications for Cisco ECDS: Service Engine, Content Delivery System Manager, and Service Router.

Main Features and Benefits

Feature	Cisco MDE 3100	Cisco MDE 1100	Cisco MDE 50WVB
Live stream splitting	Offers ability to efficiently split a single stream entering the Cisco ECDS network to serve multiple users, allowing the administrator to offer live streaming in a manner that scales	Allows efficient splitting of a single media stream entering the Cisco ECDS network to serve multiple users, thereby allowing the administrator to offer live streaming in a manner that scales	Enables scalable live video delivery over non-multicast-enabled WAN
Content prepositioning	Uses off-hours bandwidth and delivers a consistent experience for video and other applications	Uses off-hours bandwidth and delivers consistent experience for video and other applications	Uses off-hours bandwidth and delivers consistent experience for video and other applications
Content ingest	Ingests content for live video, video on demand (VoD), and other web components for efficient media delivery and offloading of the origin server	Ingests content for live video, VoD, and other web components for efficient media delivery and offloading of the origin server	–
Dynamic caching	Reduces the WAN usage for Longtail video and other content over HTTP	Reduces the WAN usage for Longtail video and other content over HTTP	Reduces WAN usage for media that is not prepositioned earlier
Dedicated Cisco Integrated Management Controller (IMC) port for device management	Manages the hardware and device environment specifics through a dedicated Cisco IMC port	Manages the hardware and device environment specifics through a dedicated Cisco IMC port	–
Built-in storage for hosting recovery software	Uses 4 GB of internal memory to support recovery of the system and configuration from a remote, centralized management station	Uses 4 GB of internal memory to support recovery of the system and configuration from a remote, centralized management station	–
Footprint	Provides a robust 2-rack-unit (2RU) footprint that is ideal for data center and campus deployments	Provides a small 1RU footprint that is ideal for remote location deployments	Uses existing investment in Cisco WAAS technology at remote sites for comprehensive WAN optimization solution

Specifications

Feature	Cisco MDE 3100	Cisco MDE 1100	Cisco MDE 50WVB
Size	2RU (fits standard Telco racks with additional kit)	1RU (fits standard Telco racks with additional kit)	n/a
Weight (set)	~35 lbs	14.6 Kg	n/a
Dimensions (H x W x D)	3.45 x 17.2 x 28.4 in. (8.76 x 43.69 x 72.14 cm)	1.7 x 16.9 x 27.8 in. (4.3 X 42.9 X 70.6 cm)	n/a
CPU	2.40GHz Xeon E5620 x2	Intel 213GHz Xeon E5506 80W	n/a
Hard drive	Eight 500-GB Serial Advanced Technology Attachment (SATA), 7200 rpm	Two 500-GB SATA 72K RPM	100 GB on Cisco WAVE 574 200 GB on Cisco WAE-674
Total HDD bays	16	Four	n/a
Memory	16-GB DDR3	8-GB DDR3	Maximum memory on Cisco Wave 574 and Cisco WAE-674 required
Redundant Array of Independent Disks (RAID)	No	No	no
Data network interfaces	Four Gigabit Ethernet ports	Two Gigabit Ethernet ports	Virtual (two Gigabit Ethernet)

Other interfaces	One serial console; Cisco Integrated Management Console	One serial console; Cisco Integrated Management Console	None
Power	650W PSU	650W PSU	n/a
Backup power supply	Yes (optional)	Yes (optional)	n/a
Power rating	100 to 240 VAC, 10 to 5A, 50 or 60 Hz	100 to 240 VAC, 10A to 5A, 50/60 Hz	n/a
CD-ROM or DVD drive	Yes	Yes	n/a
Internal USB drive	4 GB	4 GB	n/a
Operating temperature	50 to 95°F (10 to 35°C)	50 to 95°F (10 to 35°C)	n/a
Nonoperating temperature	-40 to 149°F (-40 to 65°C)	-40 to 149°F (-40 to 65°C)	n/a
Operating altitude	0 to 10,000 ft (0 to 3000m); maximum ambient temperature. Decreases by 1°C per 300m) (984 ft)	0 to 10,000 ft (0 to 3000m); maximum ambient temperature. Decreases by 1°C per 300m) (984 ft)	n/a
Nonoperating altitude	40,000 ft (12,000m)	40,000 ft (12,000m)	n/a
Operating humidity	5 to 93% noncondensing	5 to 93% noncondensing	n/a
Nonoperating humidity	5 to 93% noncondensing	5 to 93% noncondensing	n/a

Selected Part Numbers and Ordering Information

MDE-3100-K9	Media Delivery Engine 3100, 2RU, 16GB, HW
MDE-HDDSTA2-500GB	500 GB Hard Drive for MDE 3100, 2 RU
MDE-3100-SW253-K9	ECDS Software for MDE 3100, 2 RU
MDE-3100-ML1G-2000	ECDS Base Media license for MDE 3100 - 1 Gbps/2000 concurrent connections
MDE-3100-CALIC	Optional Content Acquisition license for MDE 3100
MDE-MGMTSW-LIC	Management Software License for ECDS System, MDE 3100
MDE-3100-CALIC-UP	Optional Media Acquirer Software License Upgrade for MDE 3100
MDE-3100-ML1G-3000	ECDS Media License MDE-3100- 1Gbps/3000 streams upgrade License
MDE-1100-K9	Media Delivery Engine 1100, 1RU, 8GB, HW
MDE-HDDSTA-500GB	500 GB Hard Drive for MDE 1100, 1 RU
MDE-1100-SW253-K9	ECDS Software for MDE 1100, 1 RU
MDE-1100-ML100-200	ECDS Base Media license for MDE 1100 - 100 Mbps/200 streams
MDE-1100-CALIC	Optional Content Acquisition license for MDE 1100
MDE-MGMTSW-LIC	Management Software License for ECDS System, MDE 1100
MDE-1100-CALIC-UP	Optional Media Acquirer Software License Upgrade for MDE 1100
MDE-1100-ML100-300	ECDS Media License MDE-1100- 100Mbps/300 streams upgrade license
MDE-50WVB-K9	Media Delivery Engine 50WVB on WAAS VB
MDE-50WVB-SW253-K9	Media Delivery Engine 50WVB Base Software
MDE-50WVB-ML50-200	Media Delivery Engine 50WVB Media License 50 Mbps/200 concurrent users

For More Information

<http://www.cisco.com/go/ecds>

Cisco Media Experience and Analytics

Cisco Media Experience and Analytics (MXA) solutions help organizations capture, transform, and share rich media.

Cisco MXA powers breakthrough video experiences by connecting people and media across any device and application. As enterprises grow and become more geographically distributed, the need to effectively communicate across all boundaries—geography, organizational, or medium—is increasingly important.

Media transformation delivers:

- Any-to-any video communication and media transformation at scale and in real time
- The ability to extend investments in video communications devices to new use cases
- Media search and analytics services to unlock the business value of video
- An open platform to enable video ecosystems and accelerate revenue growth

Cisco MXA delivers the benefits of embedding the intelligence for unfettered collaboration into the fabric of the network. Information in any form or format—person, video, or documents—is discovered in real time and transparently shared across the enterprise.

Cisco TelePresence Content Server

The Cisco TelePresence Content Server (Content Server) is a network appliance that enables organizations to share knowledge and enhance communication by recording their videoconferences and multimedia presentations for live and on-demand access.



The Cisco TelePresence Management Suite (Cisco TMS) can automatically include the Content Server in any scheduled or impromptu event. The Cisco TelePresence Content Server workflow automatically produces high-quality videos of any standards-based conference from a multipoint control unit (MCU), from a Cisco TelePresence Server, or directly from a Cisco TelePresence System endpoint, including the video participants and any secondary content, such as a presentation.

Main Features and Benefits

- Creates business-quality multimedia content easily from any H.323 or Session Initiation Protocol (SIP) videoconferencing endpoint
- Supports live and on-demand streaming
- Manages and distributes live or recorded content to any PC and leading portable media devices in Flash, Microsoft Windows Media, MPEG-4, and Real Media formats.
- Compatible with major distribution servers and leading corporate and education Web 2.0 portals
- Streamlines the production and distribution of professional video podcasts across the organization
- Integrates with the Cisco Show and Share video sharing application and the Cisco MXE 3500

Specifications

Storage	Large-capacity internal storage (500-GB hard disk) Support for external network storage using network-attached storage (NAS)
Language support	English, French, Chinese, and Japanese
Power	100-240 VAC, 50-60 Hz, 350W maximum
Approvals and compliance	<ul style="list-style-type: none">• CE Declaration to EU Low Voltage Directive 2006/95/EC (Europe - EN60950-1)• Directive 89/336/EEC (EMC Directive)• Standard EN 55022, Class A• Standard EN 55024• Standard EN 61000-3-2/-3-3• Approved according to UL 60950-1 and CAN/CSA C22.2 No. 60950-1-03• Compliance with FCC15B Class A
Environmental Operating Ranges	
Temperature	50 to 86°F (10 to 30°C) Storage and transport temperature: -4 to 140°F (20 to 80°C) (noncondensing)
Relative humidity	10 to 90% relative humidity (RH)
Altitude	10,000 ft (3000m); this value may be limited by the type and number of options installed; maximum allowable altitude change rate is 1500 ft/min (457m/min)
Shock	2 Gs
Vibration	Random vibration at 0.000075 G ² /Hz, 10 to 300 Hz, (0.15 Gs nominal)
Acoustic noise	40 dBA

Video and Audio Specifications	
Bandwidth	H.323 and SIP up to 4 Mbps
Video standards	<ul style="list-style-type: none"> • H.261 • H.263 • H.263+ • H.264
Live video resolutions	<ul style="list-style-type: none"> • QCIF (176 x 144 pixels) • CIF (352 x 288 pixels) • VGA (640 x 480) • 4CIF (704 x 576) • SVGA (800 x 600) • XGA (1024 x 768) • 448p (576 x 448) • w288p (512 x 288) • w448p (768 x 448) • w576p (1024 x 576) • 720p (1280 x 720): Supported for H.264 only
Audio standards	<ul style="list-style-type: none"> • G.711 • G.722 • G.722.1 • AAC-LD
Frame rates	Up to 60 frames per second (requires premium resolution option)
Network, Security, and Management Specifications	
System management and scheduling	<ul style="list-style-type: none"> • Allows for easy configuration using serial port management console • Allows for total management through embedded web server • Provides application programming interface (API) for customized integration • Allows for one click to record scheduled conferences with Cisco TelePresence Management Suite • Allows for simple addition of audio-only outputs for recording of scheduled conferences with Microsoft Outlook or IBM Lotus Notes • Uses Cisco TelePresence Management Suite to monitor Content Server status, such as free disk space • Allows administrators to set maximum streaming bandwidth limits to fit their network rules
Network interfaces	• Two Ethernet (10/100/1000 Mbps) (one for future use)
Firewall traversal	<ul style="list-style-type: none"> • Cisco TelePresence Expressway technology • Auto Network Address Translation (NAT) • H.460.18 • H.460.19 Firewall Traversal
Quality of service (QoS)	<ul style="list-style-type: none"> • Dynamic jitter buffering • Packet-loss concealment
Security features	<ul style="list-style-type: none"> • Secure management through Secure HTTP (HTTPS) • Integration with Active Directory through LDAP for access • Password-protected conferences • Full access control lists (ACLs) on all content library items
Physical Specification	
Form factor	1 rack unit (1RU) - Rack-mount
Dimensions (H x W x D)	1.7 x 16.9 x 20 in. (44 x 430 x 508 mm)
Weight	13.89 lbs (6.30 kg); packaging and accessories weight 6.39 lbs (2.9 kg); total shipping weight 20.28 lbs (9.2 kg)

Selected Part Numbers and Ordering Information

CTI-TCS-PROBUN-K9	Cisco TelePresence Content Service Premium Resolution bundle (hardware and software)
LIC-TCS-CLUSTER	Cisco TelePresence Content Service cluster option
LIC-TCS-PRO	Cisco TelePresence Content Service Premium Resolution Option (software only)

For More Information

<http://www.cisco.com/go/mxe>

Cisco MXE 3500 Media Experience Engine

The Cisco MXE 3500 Media Experience Engine (Cisco MXE 3500) is a powerful media-processing platform that helps organizations streamline operating costs associated with live media streaming, production, and distribution by delivering a rich set of any-to-any media-processing broadcasts. For live media streaming, the Cisco MXE 3500 delivers a scalable and reliable way to easily use an organization's existing IP infrastructure to broadcast live events. It does so by delivering live transcoding and transrating to live IP streams and pushing the processed content out to a variety of Content Delivery Network (CDN) devices for scalable distribution. Comprehensive live and video on demand (VoD)-based transcoding services allow you to share video content across your network to virtually any type of endpoint.



The Cisco MXE 3500 offers:

- Innovative postproduction features that transform ordinary video content into studio-quality output
- Cutting-edge speech-to-text transcription services
- Cisco Pulse Video Analytics to make video searchable and navigable
- Innovative collaboration with other applications delivered by the Cisco suite of media products

The result is a powerful media-processing platform that allows IT administrators to significantly streamline operating costs associated with live media streaming, media production, and distribution.

Main Features and Benefits

- Exceptionally high-quality media transcoding and transrating for file-based and live multimedia assets for any-to-any capture and playback on the network and end devices
- Powerful workflow automation for processing source multimedia streams and files
- Professional array of video and audio enhancement options including studio-quality editing, graphic overlays, and watermarking
- Cisco Pulse Video Analytics for finding videos based on what is spoken and who is speaking
- An easy-to-use browser-based interface for managing content that makes it easy for end users to transform videos without training or administrative assistance
- Clustering option for high scalability and transcoding redundancy
- Support for live streaming formats including Windows Media and live MPEG-2 Transport Stream (MPEG-2 TS) so users can deliver live streams content to Cisco Digital Signs for communications, training, events, or other applications

Specifications

Supported input formats	Editing systems <ul style="list-style-type: none"> • Avid • Final Cut Pro • Adobe Premiere AVI • DVD VoB (Video over Broadband) files • QuickTime: All supported formats • MPEG-1: Elementary Stream, System Stream, and Layer II Audio • MPEG-2: Elementary, Program, and Transport Stream; PCM Audio; Layer II Audio; and AC3 Audio • MPEG-4: 3GPP and 3GPP2 • AVI: Limited supported formats • DirectShow: All supported formats, WAV, Windows Media, VC-1, and H.264 • Live input formats: MPEG2ts • Speech-to-text audio formats: wav, mp3, mp4, H264, and QuickTime
Supported output formats	<ul style="list-style-type: none"> • Windows Media: V7, V8, V9, MPEG-4V3, and ISO-MPEG4-V1 • Windows Media Audio: V2/V7/V8, ACELPnet, RealVideo10, RealVideo 9, RealVideo 8, and RealAudio 10 • RealAudio 8 QuickTime: All supported codecs, MPEG-4, On2 Flash 8, MP3, and WAV • Live output formats: WMV, FLV, and Real Media • Speech-to-text output formats: Text-only transcripts, text with time stamps transcripts, and XML
Preprocessing and media preparation	<ul style="list-style-type: none"> • Video: Blur, bumpers, and trailers; color space conversion; contrast enhancement; cropping; de-interlacing and interlacing; fade-in; and fade-out • In/out trimming: Field frame control, gamma correction, hue rotation, inverse telecine, noise reduction, saturation, support for 16 x 9 and other aspect ratios, add and remove letter boxing and curtaining, temporal smoothing, video frame-rate conversion and resizing with anti-alias filtering watermarking, automated thumbnail extraction, and speech-to-text captioning

Workflow automation	<ul style="list-style-type: none"> • Job submission: <ul style="list-style-type: none"> ◦ Profile building: An automated system that allows you to quickly apply customized processing settings to new jobs ◦ Monitoring: A summary screen that provides insight into the status of queued jobs ◦ Automated Folder Attendant: A program that facilitates integration between external systems and the Cisco MXE 3500 platform
Dimensions and Environmental Operating Ranges	
Physical dimensions (H x W x D)	(1 rack unit (1RU)) 1.7 x 16.9 x 27.8 in. (4.3 X 42.9 X 70.6)cm
Operating temperature	50 to 95°F (10 to 35°C)
Nonoperating temperature	-40 to 149°F (-40 to 65°C)
Operating humidity	5 to 93% noncondensing
Nonoperating humidity	5 to 93% noncondensing
Operating altitude	0 to 10,000 ft (0 to 3,000m); maximum ambient temperature decreases by 1°C per 300m (984 ft)
Nonoperating altitude	40,000 ft (12,000m)
Regulatory and Standards Compliance	
Safety	<ul style="list-style-type: none"> • UL 60950-1 No. 21CFR1040 • CAN/CSA-C22.2 No. 60950-1 • NOM-NYCE • NOM-10-SCFI-10993 • IRAM IEC60950-1 • CB IEC60950-1 • EN 60950-1 • IEC 60950-1 • GOST IEC60950-1 • SASO • SABS/CB IEC6095-1 • CCC*/CB GB4943-1995 • CNS14336 • CB IEC60950-1 • AS/NZS 60950-1 • GB4943
EMC: Emissions	<ul style="list-style-type: none"> • 47CFR Part 15 (CFR 47) Class A • AS/NZS CISPR22 Class A • CISPR2 2 Class A • EN55022 Class A • ICES003 Class A • VCCI Class A • EN61000-3-2 • EN61000-3-3 • KN22 Class A • CNS13438 Class A
EMC: Immunity	<ul style="list-style-type: none"> • EN50082-1 • EN61000-6-1 • EN55024 • CISPR24 • EN300386 • KN 61000-4 Series

Selected Part Numbers and Ordering Information

MXE-3500-K9	Cisco MXE 3500 Media Experience Engine Appliance (hardware only)
MXE-3500-3.0LIC-K9	Cisco MXE 3500 Media Experience Engine Software Version 3.0 (software only)
Optional Software Add-Ons	
MXE-3500-GR-LIC	Graphics
MXE-3500-STT-LIC	Speech to Text
MXE-3500-LIV-LIC	Live Ingest
MXE-3500-LIC-BUN	Graphics, Speech to Text & Live Bundle
MXE-3500-RM-LIC	Resource Manager
MXE-3500-RN-LIC	Resource Node

The Cisco MXE 3500 has limited availability and a New Product Hold (NPH) process has been implemented. The details of the NPH process are as follows:

- MPBU and Worldwide Channels have implemented a New Product Hold on MXE products.
- NPH is an instrument for MPBU to understand orders and focus resources appropriately on target markets.
- NPH was chosen over ATP or Restricted Specialization programs to reduce sales cycles while ensuring successful deployments.
- NPH does **not** signal quality or supply chain problems.
- NPH will be released when orderability assurance and supportability requirements are met.

For More Information

<http://www.cisco.com/go/mxe>

Cisco MXE 5600 Media Experience Engine

The Cisco MXE 5600 Media Experience Engine (Cisco MXE 5600) is a modular media-processing platform that combines advanced media-processing features with high performance and scalability to extend the reach of collaboration.

Based on the latest digital-signal-processor (DSP) and CPU architectures, the Cisco MXE 5600 comprises a modular architecture that allows you to grow your media-processing infrastructure incrementally as your needs increase. The modular design allows easy integration of new services and capabilities. The result is high-performance, high-density, highly scalable, and cost-effective processing of live media.

Main Features and Benefits

- Standards compliance: The media-processing capabilities of the Cisco MXE 5600 support a broad range of media codecs and formats, complying with industry standards to simplify interoperability with a range of systems and endpoints. The Cisco MXE 5600 supports standard Session Initiation Protocol (SIP) signaling for use in diverse communication and collaboration scenarios.
- Flexible transcoding: Both video and audio are converted among different standards, depending on the use case and the requirements of the source and destination endpoints. Using state-of-the-art DSP technologies, the Cisco MXE 5600 performs real-time transcoding of media, adapting to network bandwidth and endpoint requirements, while introducing negligible latency and maintaining the quality of the user experience even in live, interactive use cases.
- Automatic detection of endpoint capabilities: The Cisco MXE 5600 can detect the media format requirements (for example, codec, encapsulation, bit rate, frame rate, and so on) of a given endpoint without having to manually specify this information.
- Broad use-case support: As a network-based system, the Cisco MXE 5600 can be accessed by endpoints and applications anywhere in the network. Support for a rich set of media and signaling standards allows you to use the Cisco MXE 5600 in a broad range of applications and use cases.
- Gateway functions: The Cisco MXE 5600 can connect diverse sets of video endpoints, Cisco TelePresence systems, videoconferencing endpoints, and unified communications devices into shared environments while maintaining a consistent viewing experience.
- Media quality improvements: Through unique algorithms and the use of digital signal processor (DSP)-based architecture, the Cisco MXE 5600 can digitally upscale standard-definition (SD) video streams to help ensure consistent video quality and experience across video endpoints.
- Cisco TelePresence WebEx OneTouch support: The Cisco MXE 5600 extends Cisco TelePresence WebEx OneTouch to bring Cisco TelePresence System endpoints and standards-based videoconferencing endpoints into a WebEx meeting. Not only can endpoints such as WebEx, Polycom, lifesize room systems, and a host of other standards-based codecs hear WebEx participants and see the content they share, but these endpoints can also be seen and heard by the WebEx participants, and can initiate a content-sharing session with them.

Specifications

Note: Product features and specifications are subject to change.

Supported Standards	Description
Media Codecs	
H.264 base profile	Industry-standard video codec, high quality at low bit rates, commonly used in video conferencing
H.264 enhanced	As implemented by Cisco TelePresence conferencing application
Advanced Audio Codec (AAC) LD	Industry-standard low-bit rate audio codec; very low delay
G.711 (a- and mu-law)	Telephony-standard audio codec
G.722	Low-bit rate, high-quality audio codec

Transport Protocols	
RTP (RFC 3550)	Real-Time Transport Protocol: Standard video transport protocol
HTTP/HTTPS (RFCs 2616 and 2818)	Hypertext Transport Protocol (Secure)
TLS (RFC 5246)	Transport Layer Security
Signaling and Control Protocols	
SIP (RFC 3261)	Call-control signaling protocol for control of rich-media sessions
RTCP (RFC 3550)	Real-Time Control Protocol for media control

Selected Part Numbers and Ordering Information

The Cisco MXE 5600 has limited availability. Please check the website for the latest orderability information.

For More Information

<http://www.cisco.com/go/mxe>

Broadband Cable

Cisco uBR7225VXR Universal Broadband Router

The Cisco uBR7225VXR Universal Broadband Router is a low-cost entry to a midlevel Cable Modem Termination System (CMTS) in a 2-rack-unit (2RU) modular chassis, offering cable operators, multiunit businesses, and Internet service providers (ISPs) an excellent and cost-effective platform for the delivery of high-speed data, voice, and video services. This CMTS platform requires exceptionally low capital investment and minimal setup time, and it supports up to 5000 subscribers. The Cisco uBR7225VXR is a service-enabling, communications-grade CMTS that offers high reliability, modular scalability, and significant investment protection. It can easily be upgraded to DOCSIS® 3.0 with the latest Cisco uBR-MC88V line card.



Ideal for Companies That Need These Features

- Low entry-level pricing
- Modularity for capacity growth and minimal setup time
- A higher-capacity platform without the need for the additional capacity of the Cisco uBR10012 or the larger form factor of the Cisco uBR7246VXR

Main Features and Benefits

- The Cisco uBR7225 Universal Broadband Router supports PacketCable™ 1.1, DOCSIS® 1.1, Euro-DOCSIS 2.0, and PacketCable™ Multimedia, increasing return on investment (ROI) for converged services and speeding deployment of advanced IP services.
- The Cisco uBR7225 supports DOCSIS® 3.0 and Euro-DOCSIS® 3.0 through the use of an 8- x 8-inch line card.
- This low-cost entry-level Cable Modem Termination System (CMTS) makes efficient use of capital expenditures (CapEx) while maintaining modularity for capacity growth.
- The Cisco uBR7225 provides up to 4 downstream and 16 upstream ports in a 2-rack-unit (2RU) form factor.
- The router provides DOCSIS®, Euro-DOCSIS®, and J-DOCSIS® support on one line card for operational savings and lower CapEx.

Specifications

Compact Design suitable for rack-mount (2-RU) or desktop installation	Dimensions: H x W x D 3.5 x 17.32 x 21.8 in. (8.89 x 44.9 x 55.37 cm); 45 lb (20.4 kg) Front, mid, and rear mountable in a 19 in. EIA standard rack Depth fully loaded from the tip of cable management bracket to the tip of the UBR-NPE-G1 handle is 26.1 in. (66.29 cm)
Modulation	Downstream—64-QAM, 256-QAM Upstream—QPSK 8-, 16-, 32-, 64-QAM
Downstream frequency range	uBR-MC88V (uBR7200 Series MC88V Broadband Processing Engines): DOCSIS—6 MHz Annex B, 70–1G Hz; Euro-DOCSIS—8 MHz Annex A, 70–1G Hz uBR-MC28U (uBR7200 Series MC28U Broadband Processing Engines): DOCSIS—6 MHz Annex B, 88–860 MHz; Euro-DOCSIS—8 MHz Annex A, 85–860 MHz; J-DOCSIS—6 MHz Annex B extension, 70–860 MHz

Upstream frequency range	<p>UBR-MC88V: DOCSIS—6 MHz Annex B, 5–42 MHz; Euro-DOCSIS—8 MHz Annex A, 5–65 MHz</p> <p>UBR-MC28U: DOCSIS—6 MHz Annex B, 5–42 MHz; Euro-DOCSIS—8 MHz Annex A, 5–65 MHz; J-DOCSIS—6MHz Annex B extension, 5–55 MHz</p>
Included AC power supply	<p>Single or dual redundant power supplies</p> <ul style="list-style-type: none"> • 100 to 240 VAC input, 50/60 Hz frequency • 5.5 A maximum AC input current • 300W (maximum) output DC or 25 @ 11.28V; AC-input cable: 18-OEG4 3-wire cable with 3-lead IEC-320 receptacle on power supply end and country-dependent plug on power source end
Software Compatibility	<p>The Cisco uBR7225VXR is supported in Cisco IOS Software Release 12.2SB, which includes PacketCable™ Multimedia Specification (PCMM), admission control, advanced-mode DOCSIS® Set-Top Gateway (DSG), and Cisco Service Independent Intercept (SII) features.</p>
Compatible Cisco Network Processing Engines (NPEs)	<p>The Cisco uBR7225VXR must contain one uBR7200-NPE-G2 processor that must have at least 1 GB of DRAM; there is an upgrade option of a 2GB memory module that can be configured to be shipped with uBR7200-NPE-G2 to ensure best performance. FE/GE ports availability—3 GE ports (UBR-NPE-G2). Cisco UBR-MC88V is only supported by UBR-NPE-G2.</p>
Line cards with integrated upconverters/modulators (cable plant interfaces)	<p>Line cards supported:</p> <ul style="list-style-type: none"> • UBR-MC88V <p>Physical:</p> <ul style="list-style-type: none"> • Occupies a single slot in the Cisco uBR7225VXR chassis • Maximum 2 line cards per uBR7225VXR chassis • Hot-swappable; no slot dependency • Dimensions (H x W x D): 1.4 x 15.154 x 11.531 in. (3.55 x 38.49 x 29.29 cm) <p>Weight:</p> <ul style="list-style-type: none"> • 6.06lbs (2.749 kg) <p>Power consumption:</p> <ul style="list-style-type: none"> • 90 watts (307 BTUs per hour) at 25°C • Integrated upconverter specifications • High-level output—+62 dBmV • Optimized for 64 and 256 quadrature amplitude modulation (QAM) • Software configurable from 52 to 62 dBmV output power in units of dBmV <ul style="list-style-type: none"> • uBR-MC28U <p>Physical:</p> <ul style="list-style-type: none"> • Occupies a single slot in the Cisco uBR7225VXR chassis • Maximum 2 line cards per uBR7225VXR chassis • Hot-swappable; no slot dependency • Dimensions (H x W x D): 1.4 x 15.154 x 11.531 in. (3.55 x 38.49 x 29.29 cm) <p>Weight:</p> <ul style="list-style-type: none"> • 6lbs (2.72 kg) <p>Power consumption:</p> <ul style="list-style-type: none"> • 80 watts (273 BTUs per hour) at 25°C • Integrated upconverter specifications • High-level output—+61 dBmV • Optimized for 64 and 256 quadrature amplitude modulation (QAM)

For More Information

<http://cisco.com/en/US/products/ps8474/index.html>

Cisco uBR7246XVR Universal Broadband Router

The Cisco uBR7246VXR Universal Broadband Router, a member of the Cisco uBR7200 Series, provides a single, Layer 3 routing, multiservice, scalable platform that gives cable companies the ability to deliver IP data, voice, and video services to DOCSIS®, Euro-DOCSIS®, and PacketCable™-compliant cable modems, set-top boxes, and multimedia terminal adapters.

The Cisco uBR7246VXR can easily be upgraded to DOCSIS® with the latest Cisco uBR-MC88V line card.



Ideal for Companies That Need These Features

- Cisco uBR7246VXR**
 - Flexible port expansion for multiservice deployment options
 - Service support for up to 10,000 subscribers per chassis with 3.2-Gbps back plane (Numbers are for reference only. Actual numbers for specific systems will vary depending on network and service loading, traffic, and other parameters)
 - Powerful processor and edge intelligence; field-proven and carrier-class reliability
 - Support for multimedia services
 - High tolerance to hybrid-fiber-coaxial (HFC) network and spectrum noise

Main Features and Benefits

- Modular design: 1,000 to 10,000 subscribers supported based on different configurations
- High availability for low-cost maintenance
- Advanced physical layer (PHY)
- Full DOCSIS® 3.0 and Euro-DOCSIS® 3.0 compliance; Euro-DOCSIS® 2.0 (A-TDMA only); DOCSIS® 1.1 qualified, and PacketCable™ 1.1 qualified; tComLabs qualified to Euro-DOCSIS 1.0, 1.1, and 2.0 (A-TDMA only) specifications; also supports Advanced Mode DSG
- Powerful Layer 3 routing intelligence and sophistication
- Upgrade path to DOCSIS® 3.0 through the use of the Cisco uBR-MC88V line card

Specifications

Number of Cable Line Card Slots	4
Supported Cable Line Cards (Cable Plant Interfaces)	uBR7200 Series MC28U Broadband Processing Engines uBR7200 Series MC88V Broadband Processing Engines
Port Adapter Slots (LAN/WAN Interfaces)	2
Supported PA categories	Ethernet Serial, HSSI, ATM, POS, DPT
Power Supply Slots	2
Input/Output (I/O) controller	uBR7200-I/O-2FE/E, not required if uBR7200-NPE-G1 or uBR-NPE-G2 are installed in the system
I/O flash options for PCMCIA slots	Flash disk (48 MB); Flash disk (128 MB)
Network Processing Engines (NPE)	uBR7200-NPE-G2
Add-on processor memory options	1 GB or 2 GB for uBR7200-NPE-G2
Router Bandwidth	3.2 Gbps

For More Information

<http://www.cisco.com/en/US/products/hw/cable/ps2217/index.html>

Cisco uBR10012 Universal Broadband Router

The Cisco uBR10012 Universal Broadband Router addresses the volume, capacity, and complexity of large cable headends or distribution hubs. The router delivers the highest level of service availability and capacity of any production Cable Modem Termination System (CMTS) available today. It employs a mix of distributed, centralized, and parallel processing to facilitate consistently high, real-world performance. The Cisco uBR10012 is CableLabs qualified to PacketCable™ 1.1 and DOCSIS® 2.0 specifications. The product is also qualified for Euro-DOCSIS 2.0, DOCSIS® 3.0 Bronze specifications, and full DOCSIS® 3.0 compliance.

The Cisco uBR10012 Universal Broadband Router powers the world's largest DOCSIS® 3.0 downstream channel bonding install base, with more than 1 million revenue-



generating subscribers and counting. The combination of the 20 downstream cards, 20 upstream RF cards, the 24 downstream channel bonding cards (wideband shared port adapter [SPA]), and the DOCSIS® Timing Interface (DTI) card on the Cisco uBR10012 allows the deployment of DOCSIS® 1.1 and 2.0 modems along with the new DOCSIS® 3.0 modems for downstream channel bonding over low-cost video-on-demand (VoD) edge quadrature-amplitude-modulation (QAM) ports.

The new Cisco uBR-MC3GX60V Broadband Processing Engine (BPE) is a high-capacity, DOCSIS® 3.0-capable line card for the Cisco uBR10012 Universal Broadband Router. With 72 DOCSIS® downstream and 60 upstream channels per card, the Cisco uBR-MC3GX60V BPE sets new expectations for scalable, faster, and cost-effective DOCSIS® 3.0 CMTS solutions. With the addition of the Cisco uBR-MC3GX60V BPE, the Cisco uBR10012 platform scales to an unprecedented 576 modular DOCSIS® downstream channels and 480 upstream channels, or approximately 24 Gbps of downstream throughput and 14.4 Gbps of upstream throughput in a single, carrier-class chassis.

The Cisco uBR10012 CMTS with the Cisco uBR-MC3GX60V BPE delivers 10 times the capacity and 20 times the speed of DOCSIS® 2.0 solutions at only a fraction of the cost. Because it bonds 24 DOCSIS® channels (or 18 Euro-DOCSIS® channels) per bonding group, the solution allows cable operators to deliver ultra-broadband services with maximum downstream speeds approaching 1.0 Gbps per subscriber. A fully loaded Cisco uBR10012 CMTS with the Cisco uBR-MC3GX60V BPE can deliver 500 high-definition television (HDTV) channels, video on demand (VoD), and ultra-broadband services to 20,000 homes.

With new hardware support of the Cisco 10000 Performance Routing Engine 4 (PRE4) processor, the 10 Gigabit Ethernet WAN card, and the 6-wideband SPA carrier starting in January 2009, the Cisco uBR10012 Universal Broadband Router provides a maximum of 304 downstream ports per chassis to meet ever-increasing IP data, voice, and video bandwidth needs.

Ideal for Companies that Need These Features

- Cisco uBR10012**
- For companies with large subscriber bases that need:
 - Edge routing or aggregation of DOCSIS® traffic
 - High-end throughput, capacity, and service handling
 - Advanced multimedia service delivery
 - Sophisticated Layer 3 routing intelligence
 - Complex network interface configurations

Main Features and Benefits

- Powerful processing and throughput
- Five 9's availability
- Highest density and capacity—5,000 to 64,000 subscribers
- Scalable, real-world proven performance
- A-TDMA and DOCSIS® 2.0 support
- S-CDMA and full DOCSIS® 3.0 and Euro-DOCSIS 3.0 support
- Advanced intelligence features
- Pay-as-you-grow flexibility with software licensing for downstream channels (0DS, 5DS, 10DS, 15DS, and 20DS software licenses are offered)

Specifications

Modular Slots	Flash—48 MB; System—128 MB
Supported Cards	Cisco MC5X20H Broadband Processing Engine (BPE); Cisco MC20X20H Broadband Processing Engine (BPE); Cisco 24-port Wideband Downstream Shared Port Adapter; Cisco 5-Port Gigabit Ethernet Shared Port Adapter; Cisco 1-Port 10GE LAN-PHY Shared Port Adapter, and Gigabit Ethernet Half-Height (HH-1GE) network uplink card
Processor Type	Parallel Express Forwarding (PXF)
Flash Memory	64 MB (default); 128 MB (maximum)
DRAM Memory	1 GB DRAM minimum
Software Supported	Cisco IOS Software Release 12.2(33)SCD recommended; Cisco IOS Software Release 12.2(33)SCC; Cisco IOS Software Release 12.3(9)BC minimum to support the Cisco PRE-2. Cisco IOS Software Release 12.3(13)BC minimum to support the Cisco Gigabit Ethernet Half-Height Line Card. Cisco IOS Software Release 12.3(17)BC2 minimum to support the Cisco MC5X20H BPE; Cisco IOS Software Release 12.2(33)SCB minimum to support the Cisco Performance Routing Engine 4. Cisco 10000 Series SPA Interface Processor-600, Cisco 5-Port Gigabit Ethernet Shared Port Adapter, and Cisco 1-Port 10GE LAN-PHY Shared Port Adapter.
Power Supply	DC, AC

Hot-Swappable	Yes
Backplane Capacity	51.2 Gbps
Dimensions (H x W x D)	31.25 x 17.2 x 22.75 in. (79.4 x 43.7 x 57.8 cm)—18 rack units (RU) Mounting: 19 in. rack mountable (front or rear), 2 units per 7 ft. rack Note: Mounting in 23 in. racks is possible with optional third-party hardware
Weight	235 lb. (106.6 kg) fully-configured chassis

With the uBR-MC3GX60V line card, Cisco provides true cost flexibility for operators with licensing options that offer a pay-as-you-grow model. The software licensing capability combined with the adaptability of the modular CMTS architecture allows a customer to turn up and move ports and bandwidth to different service groups as needed, without fear of stranding downstream or upstream ports. The base hardware and 16 upstream and 16 downstream channel licenses constitute the minimum configuration supported. Additional optional licenses are available for purchase up to the full capacity of 72 DOCSIS® downstream (or 54 Euro DOCSIS® downstream) and 60 upstream channels

Specifications

Physical	Occupies a single slot in the Cisco uBR10012 chassis Interface: line card single mode with intermediate reach connector Hot-swappable: no slot dependency Weight: 11.6 lb (5.26 kg) Dimensions (H X W X D): 21.5 x 1.38 x 17 in. (54.61x 3.51 x 431.8 cm)
Environmental	Operating altitude: -197 to 13123 ft (-60 to 4000m) Storage temperature: -4 to 149°F (-20 to 65°C) Operating temperature, nominal: 41 to 104°F (5 to 40°C) Storage relative humidity: 5 to 95% Operating relative humidity: 10 to 90% Max heat dissipation: 190W, or 648 BTU/hr
Reliability and availability	Designed for five 9s of availability
Power	Unit Power: 246W
Software Release	Cisco IOS Software Release 12.2(33)SCE or later
LED	One power LED (green) One status LED (green/yellow): solid green indicates the processor has booted and passed its diagnostics; LED blinks green on a protect card, yellow when in one of the booting states Maintenance (yellow): indicates the line card can be removed One upstream-enabled LED on each upstream port (green): upstream path is configured and able to pass traffic One downstream-enabled LED on GE0 through GE5 (green): DEPI port is configured and able to pass traffic LK/ACT0-LK/ACT5 LED (blinking green) indicates port enabled with DEPI traffic and LED (Solid Green) indicates port enabled with no DEPI traffic Front panel display for licenses: First two digits signify downstream licenses and next two digits signify upstream licenses installed
Power Supply	Dual AC or DC PEMs must be installed at all times
Supported SFP	SFP-GE-T (1000BASE-T) GLC-SX-MM (1000BASE-SX) GLC-LH-SM (1000BASE-LX/LH) GLC-ZX-SM (1000BASE-ZX)
Hardware	Dual Cisco UBR10-DTCC are required
Flash Memory	At least 1 GB of Flash memory is required for Cisco IOS Software

Selected Part Numbers and Ordering Information

Cisco uBR10012 Series Chassis Bundles	
U10012-ID5X20H-C	UBR10012 with PRE-2, DTCC and 1 MC5X20H card
U10012-IM5X20H-C	UBR10012 with PRE-2, TCC and 1 MC5X20 Cards
U10012-2M5X20H-HA	UBR10012 with 2 PRE-2, 2 TCC and 2 MC5X20 Cards
U10012-2D5X20H-HA	UBR10012 with 2 PRE-2, 2 DTCC and 2 MC5X20H cards
Cisco uBR10012 Series Pricing Bundles	
UBR10-P2TG	Bundle incl. 1 PRE2, 1 TCC+, 1 HH-1GE, 1 HH-CARRIER
UBR10-P2TG-HA	Bundle incl. 2 PRE2, 2 TCC+, 2 HH-1GE, 1 HH-CARRIER
UBR10-P2DTG	Bundle incl. 1 PRE2, 1 DTCC+, 1 HH-1GE, 1 HH-CARRIER
UBR10-P2DTG-HA	Bundle incl. 2 PRE2, 2 DTCC, 2 HH-1GE, 1 HH-CARRIER
UBR10-P2DT5G	Bundle incl. 1 PRE2, 1 DTCC+, 1 4-SPA SIP, 1 5x1 GE SPA

UBR10-P2DT5G-HA	Bundle incl. 2 PRE2, 2 DTCC, 2 4-SPA SIP, 2 5x1 GE WAN SPA
UBR10-P4DT5G	Bundle incl. 1 PRE4, 1 DTCC+, 1 4-SPA SIP, 1 5x1 GE WAN SPA
UBR10-P4DT5G-HA	Bundle incl. 2 PRE4, 2 DTCC, 2 4-SPA SIP, 2 5x1 GE WAN SPA
UBR10-P4DT10G	Bundle incl. 1 PRE4, 1 DTCC+, 1 4-SPA SIP, 1 1x10 GE WAN SPA
UBR10-P4DT10G-HA	Bundle incl. 2 PRE4, 2 DTCC, 2 4-SPA SIP, 2 1x10 GE WAN SPA
UBR-5G-SIP-D3SPA	UBR10K bundle, includes 1 5 GE SPA, 1 DS SPA, 1 SPA carrier
UBR-10G-SIP-D3SPA	UBR10K bundle, includes 1 10 GE SPA, 1 DS SPA, 1 SPA carrier
UBR-4MC20X20V-5D	4 for 3 Bundle for 5x20V. Must order with 10K chassis
UBR-4MC20X20V-20D	4 for 3 Bundle for 20x20V. Must order with 10K chassis
Cisco uBR10012 Series Line Cards	
SPA-24XDS-SFP=	24-port uBR10012 Wideband Downstream Shared Port Adapter
UBR10-2XDS-SIP	Cisco uBR10012 Wideband Downstream-only SPA Carrier Card
UBR10-2XDS-SIP=	Cisco uBR10012 Wideband Downstream-only SPA Carrier Card
SPA-24XDS-SFP	24-port uBR10012 Wideband Downstream Shared Port Adapter
UBR10-MC5X20H-D	uBR10K High-Performance Card, 5DS w/upx, 20US, Spec An
UBR10-MC5X20H-D=	uBR10K High-Performance Card, 5DS w/upx, 20US, Spec An
UBR10-4MC5X20H-D	4 UBR10-MC5X20H-D Line cards
UBR-MC20X20V-20D	Cisco 20x20V DOCSIS® 3.0 Broadband Processing Engine—Base hardware + 20 downstream and 20 upstream license
UBR-MC20X20V-5D	Cisco 20x20V DOCSIS® 3.0 Broadband Processing Engine—Base hardware + 5 downstream and 20 upstream license
UBR-MC20X20V-0D	Cisco 20x20V DOCSIS® 3.0 Broadband Processing Engine—Base hardware + 0 downstream and 20 upstream license
L-UBR-SWLIC-5DS	+5 downstream upgrade license
L-UBR-SWLIC-15DS	+15 downstream upgrade license
L-UBR-SWLIC-20DS	+20 downstream upgrade license
L-UBR-SWLIC-5DS	+5 downstream upgrade license
10000-SIP-600	Cisco 10000 Series SPA Interface Processor-600
10000-SIP-600=	Cisco 10000 Series SPA Interface Processor-600
SPA-5X1GE-V2	Cisco 5-Port Gigabit Ethernet Shared Port Adapter
SPA-5X1GE-V2=	Cisco 5-Port Gigabit Ethernet Shared Port Adapter
SPA-1X10GE-L-V2	Cisco 1-Port 10GE LAN-PHY Shared Port Adapter
SPA-1X10GE-L-V2=	Cisco 1-Port 10GE LAN-PHY Shared Port Adapter
Cisco uBR10012 Series Processors	
ESR-PRE2/R	Performance Routing Engine, 1GB DRAM, 64MB Flash
ESR-PRE2=	Performance Routing Engine
ESR-PRE4	Performance Routing Engine 4
ESR-PRE4=	Performance Routing Engine 4
Cisco uBR10012 Series Coax Cables	
CAB-RFSW520QTIMF2	Quad-shield RF cable bundle, MC520 to HFC plant, 3m
CAB-RFSW520QTIMF2=	Spare quad-shield RF cable bundle, MC520 to HFC plant, 3m
CAB-RFSW520QTPMF2	RF cable bundle, MC520/RFSW to HFC plant, 3m, with UCH2
CAB-RFSW520QTPMF2=	Spare RF cable bundle, MC520/RFSW to HFC plant, 3m, with UCH2
CAB-RFSW520QTIMM2	Quad-shield RF cable bundle, MC520 to RF switch, 1m, with UCH2
CAB-RFSW520QTIMM2=	Spare quad-shield RF cable bundle, MC520 to RF switch, 1m, with UCH2
Cisco uBR10012 3G60 Series RF Line Cards	
UBR-MC3GX60V(=)	Cisco 3GX60V DOCSIS® 3.0 Broadband Processing Engine; Base HW
SWLIC-MC3GX60V-DS	1 Count of DS license (minimum 16)
SWLIC-MC3GX60V-US	1 Count of US license (minimum 16)
Cable Kits for 3G60 RF Line Cards	
CABRFSW3G60QTIMF2	3G60 to RF Plant
CABRFSW3G60QTIMF2=	3G60 to RF Plant
CABRFSW3G60QTPMF2	RF Switch to HFC Plant
CABRFSW3G60QTPMF2=	RF Switch to HFC Plant
CABRFSW3G60QTIMM2	3G60 to RF Switch
CABRFSW3G60QTIMM2=	3G60 to RF Switch

For More Information

<http://www.cisco.com/en/US/products/hw/cable/ps2209/index.html>

Cisco uBR 3x10 RF Switch

The Cisco uBR 3x10 RF Switch is an integral part of the Cisco uBR10012 High-Availability solution. It offers a fully redundant system that helps cable operators exceed PacketCable™ system availability, minimize service disruptions, and simplify operations.



Ideal for Companies that Need These Features

- Cisco uBR 3x10 RF**
- Advanced services such as voice over IP (VoIP), DOCSIS® Set-Top Gateway (DSG) set-top-box (STB) deployments, and highly available commercial services
 - Carrier-class N+1 network and service architecture
 - High-density high-availability service support
 - Scalability to tens of thousands of subscribers

Main Features and Benefits

- N + 1 redundancy
- Hot-swap capability of all RF switch modules with no RF service disruption
- Support for DOCSIS® and Euro-DOCSIS® RF performance specifications
- Comprehensive set of high-availability features
- Redundancy Readiness Verification, for proactive redundancy health monitoring and reporting
- Fully passive working path
- Position-sensing latching relays
- Unmatched port density and flexibility

Specifications

Input Power Requirements	<ul style="list-style-type: none">• AC—100 to 240 VAC, 50 to 60 Hz, operating range: 90 to 254 VAC• DC—-48 to -60 VDC, operating range: 140.5 to -72 VDC, 200 mVpp ripple/noise
Unit Control	<ul style="list-style-type: none">• 10BaseT Ethernet—SNMP• Switching time from active (working) to standby (protect)—150 mS maximum after SNMP command
Connectors	<ul style="list-style-type: none">• RF connectors—MCX• AC power—IEC320 type• DC power—Three terminal block• Ethernet—RJ-45• RS-232 Bus—9-pin male D
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: +/- 11 dB from CMTS to cable plant; +/- 2.1 dB from protect to cable plant; 5.5 dB from working to output; 8.0 dB from protect to output Downstream insertion loss flatness: +/- 11 dB from CMTS to cable plant; +/- 2.1 dB from protect to cable plant Downstream output return loss: > 15.0dB at <450 MHz, > 12.0 dB at >= 450 MHz; Downstream input return loss: > 15.0 dB; Downstream isolation: > 60 dB from channel to channel in working mode; > 52 dB from CMTS to protect when in protect mode; Upstream frequency range: 5 to 70 MHz; Typical upstream insertion loss: 4.1 dB from cable plant to CMTS; 5.2 dB from cable plant to protect; Upstream insertion loss flatness: +/- 0.4 dB from cable plant to CMTS; +/- 0.6 dB from cable plant to protect; Upstream input return loss: > 16 dB; Upstream isolation: >60 dB from channel to channel in working mode; > 60 dB from CMTS to protect when in protect mode; Protect mode: CMTS return loss > 10 dB, cable plant return loss: > 10 dB
Reliability	41,000 MTBF @ +50C as calculated by BellCore 5, 80 percent confidence factor
Dimensions (H x W x D)	5.25 x 175 x 14.8 in. (13.335 x 44.45 x 37.592 cm)
Environmental	<ul style="list-style-type: none">• Operational temperature range—0 to +40C• Operating temperature range—-5 to +55C
Weight	36 lbs.

Selected Part Numbers and Ordering Information

Cisco RF Switch Series	
UBR-RFSW	N+1 RF Switch for CMTS Routers
Cisco RF Switch Series Cables	
CAB-RFSW520QTPMF2	Cisco RF cable bundle, MC520/RFSW to HFC plant, 3m. with UCH2
CAB-RFSW520QTPMF2=	Spare RF cable bundle, MC520/RFSW to HFC plant, 3m. with UCH2
CAB-RFSW520QTIMM2	Quad-shield RF cable bundle, MC520 to RF switch, 1m. with UCH2
CAB-RFSW520QTIMM2=	Spare quad-shield RF cable bundle, MC520 to RF switch, 1m. with UCH2

For More Information

<http://www.cisco.com/en/US/products/hw/cable/ps2929/index.html>

Cisco Services

Realize the full business value of your video technology investments faster with smart, personalized services from Cisco and our partners.

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Chapter 8: Optical Networking

This chapter provides only a subset of Cisco products and part numbers.

Optical Networking At-a-Glance

Product	Features	Page
Cisco ONS Multiservice Transport Platform	<ul style="list-style-type: none">• Delivers integrated, intelligent dense wavelength-division multiplexing (DWDM) functions, including fully reconfigurable optical add/drop multiplexer (ROADM) technology for metropolitan, regional, and long-haul networks (from 32 to 80 wavelengths)• Offers a compact 40-wavelength ROADM solution for 2 or 4 degrees, based on Single-Module ROADM technology and 2- or 6-slot compact chassis• Offers multiservice time-division multiplexing (TDM) and data aggregation over 2.5- and 10-Gbps wavelengths• Offers video services including D1 and high-definition television (HDTV)	8-6
Cisco ONS 15216 Metropolitan/Regional DWDM System	<ul style="list-style-type: none">• Supports 80 ITU-grid wavelengths launched by the Cisco ONS 15454 MSTP, ONS 15454 MSPP, ONS 15600, ONS 15310, or alien wavelengths• Supports optical add/drop multiplexer (OADM)• Offers compact, modular design	8-5
Cisco ONS Multiservice Provisioning Platforms	<ul style="list-style-type: none">• Integrates the functions of traditional SONET or SDH network elements with next-generation SONET/SDH transport and multiservice interfaces• Combines multiplexing, optical networking, and switching functions for customer premises equipment (CPE) and access, metro edge, and metro core topologies while dramatically reducing initial turn-up costs• Provides switching, grooming, aggregation, and bandwidth-management capacity in a single shelf• Combines the functions of multiple metro systems, including SONET/SDH multiplexers and digital cross-connect network elements• Provides carrier-class availability, serviceability, and management• Includes Cisco ONS 15600, ONS 15454 Multiservice Provisioning Platform (MSPP), ONS 15310-MA, ONS 15310-CL, and ONS 15305	8-6
Cisco Carrier Packet Transport (CPT)	<ul style="list-style-type: none">• Provides Carrier-Class Packet Transport technology• Offers technology agility: Multiprotocol Label Switching-Transport Profile (MPLS-TP), IP/MPLS, and Carrier Ethernet in a single platform• Provides point-to-point and point-to-multipoint services• Offers industry-leading Ethernet access density of up to 880 Gigabit Ethernet per system	8-9

Cisco ONS 15454 Multiservice Transport Platform

The Cisco ONS 15454 Multiservice Transport Platform (MSTP) sets the industry standard for dense wavelength-division multiplexing (DWDM) solutions, delivering simple, fast, and intelligent DWDM capabilities and lowering capital and operating expenditures.

The Cisco ONS 15454 MSTP provides capital and operational efficiency by addressing the increasing demand for multiple services, greater transport capacity, networking flexibility, multiple distance options, and management simplicity in a single platform. With innovative technology, Cisco ONS 15454 MSTP introduces intelligence to DWDM transmission, thus allowing the optimization of next-generation networks across multiple layers and removing costly optical-electrical-optical (OEO) devices for network segmentation or regeneration.

The Cisco ONS 15454 MSTP provides features such as multilayer graphical network, node, and card visibility; comprehensive network-based service provisioning; and graphical software wizards to simplify and speed user operations for such tasks as initial network turn-up; service provisioning; and network, node, and bandwidth upgrades. The Cisco ONS 15454 MSTP uses the embedded software architecture and control plane to introduce a level of operational simplicity exceptional in DWDM networks.



Ideal for Companies That Need These Features

Cisco ONS 15454-M12 MSTP • 12-slot chassis

Cisco ONS 15454-M6 MSTP • 6-slot chassis

Cisco ONS 15454-M2 MSTP • 2-slot chassis

Main Features and Benefits

- Scalable C-band wavelength count (1–80) for superior cost-growth trade-off on the same fiber pair
- Transport of 150-Mbps to 100-Gbps wavelength services, as well as aggregated time-division multiplexing (TDM), Ethernet, and storage data services, for maximum service flexibility and bandwidth optimization
- Multiple chassis options: The classic 12-slot (17 slots total), 48-VDC, small-footprint M12 chassis is available with AC or DC power supply. The M6 chassis provides 6 available slots for traffic (8 slots total). Like the M12 chassis, it supports a multishelf configuration to extend the total node capacity. The M2 chassis provides 2 slots for traffic (3 slots total). The M2 runs with a single node controller.
- Efficient Gigabit Ethernet and 10-Gigabit Ethernet transport over dense wavelength-division multiplexing (DWDM) with Cisco XPonder service blades
- Multiservice Provisioning Platform (MSPP)-on-a-Blade Card, combining 10-Gbps add/drop multiplexer (ADM) and transport functions using multirate Small Form-Factor Pluggable (SFP) (client) and 10 Gigabit Ethernet (XFP)
- Flexible transmission capability up to 2000 miles (more than 3200 km) through the use of advanced Erbium-Doped Fiber Amplifier (EDFA) amplification, joint Raman and EDFA amplification, and FEC or Enhanced FEC (EFEC) technologies to support a wide range of networking applications
- Fully reconfigurable reconfigurable optical add/drop multiplexers (ROADMs) for superior network flexibility and reduced complexity
- Mesh and multiring topology support in the optical domain with the capacity to manage nodes facing up to 8 degrees
- Single-module ROADM solutions that dramatically improve system density and flexibility to support Degree-2 or mesh node configurations up to Degree-4 through the integration of ROADM and optical amplification into single-slot units
- Omnidirectional and colorless support for ROADM nodes to allow service creation and restoration in a fully automated manner
- Fully automatic node and network setup with the capacity to use the intuitive DWDM network design tool (Cisco TransportPlanner) for PC-aided design, installation, commissioning, and evolution of the network
- Network topology autodiscovery support directly at the network element level (Craft interface), allowing Element Manager System (EMS)-like functions directly through the platform-embedded software
- Network- and node-level alarm correlation performed directly by the embedded network element software to allow a simpler and faster reaction to fault situations by providing only the root cause of the problem to the management interface
- Virtual transponder operation for routers such as the Cisco CRS Carrier Routing System and the Cisco ASR 9000 Aggregation Services Router equipped with IP-over-DWDM interfaces, allowing end-to-end service provisioning between routers through the complete DWDM network directly from Cisco Transport Controller
- Network-level functional view to give Cisco ONS 15454 MSTP customers the capability to manage and monitor optical circuits between source and destination nodes
- Support for Cisco Transport Planner, an easy-to-use but powerful network design tool; the planner is a user-friendly, Java-based application for modeling and optimizing DWDM networks based on the user's network parameters; it also reduces operational expenditures by simplifying network deployments

Specifications

Feature	Cisco ONS 15454 M12 MSTP	Cisco ONS 15454 M6 MSTP	Cisco ONS 15454 M2 MSTP
Service Slots	12	6	2
Maximum Capacity	Line cards: 6x 40Gb/s (240Gb/s) Ethernet: 120 GE's + 12x 10GE's	Line cards: 6x 100Gb/s (600Gb/s) Ethernet: 60 GE's + 6x 10GE's	Line cards: 2x 100Gb/s Ethernet: 20 GE's + 2x 10GE's
Redundant Processor card	Yes, dual redundant	Yes, dual redundant	No, single, has a built-in memory module to back up the software package
Internal Power Supply	No	AC or DC, dual option	AC or DC, dual option
Redundant Power Supply	Yes, dual DC	Yes, dual AC or DC	No, redundant A and B feeds
Power Requirements	Typical/Maximum Watts Terminal node 253W/403W 2-degree ROADM node 461W/641W 8-degree ROADM node 809W/1118W 2-degree SMROADM node 265W/447W 4-degree SMROADM node 313W/561W Line Amplifier node 200W/307W	Fan tray 120W AC power module 500W DC power module 40W	Fan tray 40W AC power module 300W DC power module 30W

Chassis Height	ANSI 11 RU ETSI 14 RU	6 RU	2 RU
Rack Mountable	Yes, up to 3 per rack	Yes, up to 7 per rack	Yes, up to 21 per rack
Dimensions (H x W x D)	ANSI: 18.5 x 17.6 x 12 in. (469.9 x 447 x 304.8 mm) ETSI: 24.3 x 17.5 x 11 in. (616.5 x 445 x 280 mm)	10.5 x 17.5 x 11 in. (265.4 x 443.3 x 280 mm)	3.5 x 17.2 x 11 in. (87.9 x 436.4 x 280 mm)

Selected Part Numbers and Ordering Information

Cisco ONS 15216	
15454-SA-HD= 15454-SA-HD-DDR= 15454E-SA-ETSI=	Shelf assembly, Cisco ONS 15454
15454-TCC3-K9= 15454E-TCC3-K9=	Timing, Communications, and Control Card, Version 3 (TCC3), I-Temp, 15454 chassis Timing, Communications, and Control Card, Version 3 (TCC3), I-Temp, 15454E chassis
15454-CC-FTA= 15454E-CC-FTA= 15454E-FTA-48V=	Controlled cooling fan-tray assembly, includes fan-tray filter
15454E-CTP-MIC48V=	Mechanical interface card, craft, timing, and power inputs, ETSI
15454E-AP-MIC48V=	Mechanical interface card, alarm, and power inputs, ETSI
15454-AIR-RAMP= 15454E-AIR-RAMP=	Air ramp (ships with ANSI 19-in. and 23-in. and ETSI 600mm mounting brackets)
15454-AIC-I= 15454E-AIC-I=	Alarm Interface Controller, international card
15454-BLANK= 15454E-BLANK= 15454E-BLANK-FMEC=	Shelf slot-filler panel, fits any slot in Cisco ONS 15454 ANSI shelf assembly Shelf slot-filler panel, fits any slot in Cisco ONS 15454 ETSI shelf assembly Shelf FMEC slot-filler panel, fits Cisco ONS 15454 ETSI shelf assembly
Cisco ONS 15454 M6 MSTP—Common Equipment	
15454-M6-SA=	6-service-slot MSTP shelf, includes M-SHIPKIT, M6-FTF
15454-M6-DC=	6-service-slot MSTP chassis DC power filter
15454-M6-AC=	6-service-slot MSTP chassis AC power supply
15454-M6-DR=	6-service-slot MSTP chassis door
Cisco ONS 15454 M6 MSTP—Common Equipment	
15454-M2-SA=	2-service-slot MSTP shelf, includes M-SHIPKIT, M2-FTF
15454-M2-DC=	2-service-slot MSTP chassis DC ANSI filter with memory
15454-M2-DC-E=	2-service-slot MSTP chassis DC ETSI filter with memory
15454-M2-AC=	2-service-slot MSTP chassis AC power supply with memory
15454-M2-DR=	2-service-slot MSTP chassis door
Cisco ONS 15454 M6 and M2 MSTP—Common Equipment	
15454-M-TNC-K9= 15454-M-TSC-K9=	Transport Node Controller for M2 and M6 chassis Transport Shelf Controller for M2 and M6 chassis
Common Equipment	
15454-PP-80-LC=	80-port fiber patch-panel shelf, 2RU high, LC-to-LC connectors, 40 duplex LC adapters, includes 10 MPO to 8x LC 2.3-meter cable assemblies (pre-cabled). Ships with ANSI 19-in. and 23-in. and ETSI 600 mm mounting brackets.
15454-PP-MESH-4= 15454-PP-MESH-8=	Degree-4 mesh patch panel, 2RU high, 1x LC and 1x MPO adapter per direction. Ships with ANSI 19-in. and 23-in. and ETSI 600 mm mounting brackets. Degree-8 mesh patch panel, 2RU high, 1x LC and 1x MPO adapter per direction. Ships with ANSI 19-in. and 23-in. and ETSI 600 mm mounting brackets.
15454-PP-4-SMR=	Degree-4 mesh patch panel for single-mode ROADM, 1RU high, 1x MPO adapter per direction. Ships with ANSI 19-in. and 23-in. and ETSI 600 mm mounting brackets.
15454-FBR-STRG=	Fiber-storage shelf, supports eight 2-meter ribbon cables (8-fiber) plus 40 2-meter 2-mm fiber cables. Ships with ANSI 19-in. and 23-in. and ETSI 600 mm mounting brackets.
Service Interfaces	
15454-M-100G-LC-C=	100G OTU-4 ITU-T CP-DQPSK Full C Band Tunable LC
15454-M-10X10G-LC=	10x10G Multi rate Client Line Card
15454-M-CFP-LC=	2 x 100G CFP Line Card
15454-AR-XP=	ONS 15454 Any-Rate Xponder
15454-AR-MXP=	ONS 15454 Any-Rate Muxponder

15454-ADM-10G=	10Gbps E-FEC ADM-On-A-Blade, 16x SFP-based client interfaces, 1x XFP-based interconnection interface, 2x XFP-based trunk interfaces
15454-GE-XPE=	GE E-FEC Ethernet Enhanced Crossponder, 20x SFP-based client interfaces, 2x XFP-based trunk interfaces
15454-OTU2-XP=	4x OTN E-FEC Multirate Xponder, 2x XFP-based trunk/client FEC interfaces, 2x XFP-based trunk/client E-FEC interfaces
15454-40E-MXP-C=	4x10GE/OC192/STM64/OTU2 Muxponder CP-DQPSK Extended Performance
15454-40ME-MXP-C=	4x10GE/OC192/STM64/OTU2 Muxponder CP-DQPSK Metro Edge Performance
15454-40E-TXP-C=	OC-768/STM-256/40GE Transponder CP-DQPSK Extended Performance
15454-40ME-TXP-C=	OC-768/STM-256/40GE Transponder CP-DQPSK Metro Edge Performance
Optical Transmission Elements	
15454-40-WXC-C=	40-channel wavelength cross connect 100-GHz, C-band, Odd grid, MPO connector for interconnection with Mesh Patch Panel, LC connectors for interconnection, includes one 2m LC/LC fiber-optic cable
15454-80-WXC-C=	80-channel wavelength cross connect 50-GHz, C-band, Odd and Even grid, LC connectors
15454-40-SMR1-C=	40-channel single-module ROADM, 100-GHz, C-band, LC connectors for interconnection and add path, includes one 2-meter LC/LC fiber-optic cable and one 0-dB LC/LC loopback (to be used if DCU is not required). Combines the OSC add/drop filter, a preamplifier and a 2x1 WSS-based ROADM core into a single slot unit.
15454-40-SMR2-C=	40-channel single-module ROADM, 100-GHz, C-band, LC connectors for interconnection, MPO connector for interconnection with Mesh Patch Panel, includes one 0-dB LC/LC loopback (to be used if DCU is not required). Combines the OSC add/drop filter, PRE and BST amplifiers and a 4x1 WSS-based ROADM core.
15216-MD-40-ODD=	40-Channel Multiplexer and Demultiplexer Passive Patch Panel, 100-GHz, C-band – Odd, 2RU high, 40 duplex LC add and drop ports, 3 duplex LC ports for internal and monitor connections, USB port for passive inventory, Ships with ANSI 19-in. and 23-in. and ETSI 600mm mounting brackets.
15454-OPT-AMP-17C=	Optical amplifier, 17dBm output power, 17dB gain, can be configured as preamplifier or booster, C-band, 80-channel, 50-GHz compatible, LC connectors, includes two 2-meter LC/LC fiber-optic cables
15454-OPT-AMP-C=	Enhanced optical amplifier, 20dBm output power, can be configured as preamplifier or booster, C-band, 80-channel, 50-GHz compatible, LC connectors, midstage access, includes one LC/LC loopback (to be used if DCU is not required) and two 2m LC/LC fiber-optic cables
15454-OPT-PRE=	Optical preamplifier, 17dBm output power, C-band, 80-channel, 50-GHz compatible, LC connectors, midstage access, includes one 4-dB LC/LC attenuated loopback (to be used if DCU is not required)
15454-OPT-RAMP-CE=	Extended Performance Optical Raman amplifier with embedded EDFA, 500mW total counter-propagating Raman pump power, 3 pump wavelengths, 20dBm EDFA output power, C-band, 80-channel, 50-GHz compatible, LC connectors, midstage access, includes one LC/LC loopback (to be used if DCU is not required) and two 2m LC/LC fiber-optic cables
15454-M-RAMAN-CTP	High Power Counter-Propagating, 1W optical pump output power, C-band, 96 channel 50GHz Raman unit with 2 LC-LC 2m cables and 2 ES 2000 PS LC 2m cables.
15454-M-RAMAN-COP	High Power Co-Propagating, 1W optical pump output power, C-band, 96 channel 50GHz Raman unit with 2 ES 2000 PS PC 2m cables.
15454-OPT-EDFA-17	Enhanced C-band 96 channel low cost amplifier 17 dB max gain, 50 GHz compatible, LC connector
15454-OPT-EDFA-24	Enhanced C-band 96 channel low cost amplifier 24 dB max gain, 50 GHz compatible, LC connector
15454-OSCM=	Optical service channel card, 1510-nm, LC connectors, includes two 2m LC/LC fiber-optic cables
15454-PSM=	Protection Switching Module, LC connectors

For More Information

<http://www.cisco.com/en/US/products/hw/optical/ps2006/ps5320/index.html>

Cisco ONS 15216 Metropolitan/Regional DWDM System

The Cisco ONS 15216 DWDM System is a suite of products that provide auxiliary passive optical networking functions to the Cisco ONS 15454 MSTP, as well as cost-effective standalone edge and data center dense wavelength-division multiplexing (DWDM) functions.



Ideal for Companies That Need These Features

Cisco ONS 15216 Mux/Demux Patch Panels

The Cisco ONS 15216 Mux/Demux Patch Panel Series uses a-thermal arrayed waveguide grating (AWG) technology, which enables passive dense wavelength-division multiplexing (DWDM) systems to have the same optical performance as active-temperature-controlled AWGs. This technology breakthrough enables enterprises and service providers to deploy up to 96 channels of DWDM capacity in a reduced footprint while consuming zero electricity.

Cisco ONS 15216 Edge Optical Add/Drop Multiplexers

The Cisco ONS 15216 Edge Product Family is a suite of products that enable the Cisco ONS 15454 Multiservice Transport Platform (MSTP) product line to address the edge of the optical network as well as enterprise and data center applications cost-effectively without sacrificing operational ease of use. The Cisco ONS 15216 Edge product line includes the following filter options:

- 4-channel optical add/drop multiplexer (OADM)
- 8-channel coarse wavelength-division multiplexing (CWDM) multiplexer/ demultiplexer
- Optical Supervisory Channel (OSC) OADM

This mix of filter options enables the Cisco ONS 15454 MSTP to address edge DWDM network applications such as point-to-point data center networks, enabling WDM into cell sites and extending wavelength services to customer premises.

Cisco ONS 15216 100-GHz FlexLayer Filter Solution

- The FlexLayer architecture allows for deployment of point-to-point, point-to-multipoint, ring, bus, and tree-and-branch architectures. These networks can be deployed as unprotected or protected networks, and they may also be deployed in transmit-only applications for broadcast networks. This flexibility is inherent in the design of the FlexLayer architecture.

Main Features and Benefits

- Cost-effective for both dense wavelength-division multiplexing (DWDM) and coarse wavelength-division multiplexing (CWDM) applications
- Up to 968 C-band 100-GHz DWDM channels
- No electrical power requirements
- Low optical insertion loss for improved distance and performance
- USB port for passive inventory through Cisco Transport Controller when used with the Cisco ONS 15454-M6
- Cisco Transport Planner support for efficient network design verification

Selected Part Numbers and Ordering Information

ONS 15216 Mux/Demux Patch Panels	
15216-MD-40-ODD=	ONS 15216 40ch Mux Demux Patch Panel Odd
15216-MD-40-EVEN=	ONS 15216 40ch Mux Demux Patch Panel Even
15216-MD-ID-50=	Mux/Demux Plugin Interleaver Module
15216-EF-40-ODD=	ONS 15216 40ch Mux/DeMux Exposed Faceplate Patch Panel Odd
15216-EF-40-EVEN=	ONS 15216 40ch Mux/DeMux Exposed Faceplate Patch Panel Even
15216-MD-48-ODD=	ONS 15216 48ch Mux/DeMux Exposed Faceplate Patch Panel Odd
15216-MD-48-EVEN=	ONS 15216 48chMux/DeMux Exposed Faceplate Patch Panel Even
15216-MD-48-CM=	ONS 15216 Mux/Demux Plugin Coupler/De-Interleaver Module
ONS 15216 Edge Optical Add/Drop Multiplexers	
15216-HD-EXT-PNL=	ONS 15216 Edge Mounting Bracket
15216-FLD-4-30.3=	Edge 4-Ch Bi-Directional OADM Mod 1530.33 to 1532.68
15216-FLD-4-33.4=	Edge 4-Ch Bi-Directional OADM Mod 1533.47 to 1535.82
15216-FLD-4-36.6=	Edge 4-Ch Bi-Directional OADM Mod 1536.61 to 1538.98
15216-FLD-4-39.7=	Edge 4-Ch Bi-Directional OADM Mod 1539.77 to 1542.14
15216-FLD-4-42.9=	Edge 4-Ch Bi-Directional OADM Mod 1542.94 to 1545.32
15216-FLD-4-46.1=	Edge 4-Ch Bi-Directional OADM Mod 1546.12 to 1548.51
15216-FLD-4-49.3=	Edge 4-Ch Bi-Directional OADM Mod 1549.32 to 1551.72
15216-FLD-4-52.5=	Edge 4-Ch Bi-Directional OADM Mod 1552.52 to 1554.94
15216-FLD-4-55.7=	Edge 4-Ch Bi-Directional OADM Mod 1555.75 to 1558.17

15216-FLD-4-58.9=	Edge 4-Ch Bi-Directional OADM Mod 1558.98 to 1561.42
15216-FLC-CWDM-8=	Edge 8-Ch CWDM Mux/Demux Module
15216-FLD-OSC=	Edge Optical Service Channel Add / Drop
ONS 15216 100-GHz FlexLayer Filter Solution	
15216-FLD-4-30.3=	Edge 4-Ch Bi-Directional OADM Mod 1530.33 to 1532.68
15216-FLD-4-33.4=	Edge 4-Ch Bi-Directional OADM Mod 1533.47 to 1535.82
15216-FLD-4-36.6=	Edge 4-Ch Bi-Directional OADM Mod 1536.61 to 1538.98
15216-FLD-4-39.7=	Edge 4-Ch Bi-Directional OADM Mod 1539.77 to 1542.14
15216-FLD-4-42.9=	Edge 4-Ch Bi-Directional OADM Mod 1542.94 to 1545.32
15216-FLD-4-46.1=	Edge 4-Ch Bi-Directional OADM Mod 1546.12 to 1548.51
15216-FLD-4-49.3=	Edge 4-Ch Bi-Directional OADM Mod 1549.32 to 1551.72
15216-FLD-4-52.5=	Edge 4-Ch Bi-Directional OADM Mod 1552.52 to 1554.94
15216-FLD-4-55.7=	Edge 4-Ch Bi-Directional OADM Mod 1555.75 to 1558.17
15216-FLD-4-58.9=	Edge 4-Ch Bi-Directional OADM Mod 1558.98 to 1561.42
15216-FL-SA=	FlexLayer 4 Slot Shelf Assembly

For More Information

<http://www.cisco.com/en/US/products/hw/optical/ps1996/index.html>

Cisco ONS Multiservice Provisioning Platforms

Cisco's range of SONET and SDH time-division multiplexing (TDM) multiservice provisioning and aggregation platforms provides a critical building block in today's optical networks. These platforms are capable of aggregating traditional facilities including DS-1, DS-3, STS-1, OC-3/STM-1, OC-12/STM-4, and OC-48/STM-16 along with data services onto a single optical transport facility through OC-48/STM-16, OC-48/STM-16 dense wavelength-division multiplexing (DWDM), and OC-192/STM-64 line interfaces.

The Cisco ONS Multiservice Provisioning Platforms consist of the ANSI/SONET products Cisco ONS 15310-CL, Cisco ONS 15310-MA, Cisco ONS 15454, and Cisco ONS 15600, and the ETSI/SDH products Cisco ONS 15310-ME, Cisco ONS 15454-E, and Cisco ONS 15600-E.



Ideal for Companies That Need These Features

- Cisco ONS 15310-CL**
 - An economical, ultracompact (1-rack-unit [1RU]) delivery platform supporting Plesiochronous Digital Hierarchy (PDH) and Ethernet termination and optimized for use as the last network element at the customer location (CL) or in a service provider's network, or for use as an end node in enterprise or campus environments
- Cisco ONS 15310-MA**
 - High-density Electrical PDH, Ethernet, or optical interface termination in a very compact 6RU chassis that optimizes use of expensive real estate at the central office or remote terminal cabinet
 - Efficient switching of Ethernet and time-division multiplexing (TDM) traffic to allow traffic aggregation at a central office or service collection at the customer premises
- Cisco ONS 15454**
 - Supercharged transport capability: traditional services for DS-1, DS-3, STM-1, OC-3, STM-1, OC-12, STM-4, OC-48, and STM-64; and data services for 10BASE-T, 100BASE-T, or Gigabit Ethernet, with aggregation and support to and from OC-48, OC-48 dense wavelength-division multiplexing (DWDM), and OC-192 line interfaces; flexibility that enables drastically improved efficiencies in the transport layer and breakthrough cost savings for initial and lifecycle deployment
- Cisco ONS 15600**
 - A high-capacity platform to simplify bandwidth management in the metro core by allowing service providers to integrate their metro core and metro edge networks, providing carrier-class availability, serviceability, software, and management throughout the network

Main Features and Benefits

- The Cisco ONS Multiservice Provisioning Platforms enable service provider and enterprise customers to build robust, scalable, multiservice transport networks to support their metro or regional, public, and private communication needs. Common management and features across the product family allow the realization of transparent transport networks from the customer premises to the core. The product family is ideal for the realization of:
 - Multiservice, SONET/SDH/WDM intra-office networks

- Business access networks
- Managed services networks
- Bandwidth manager at interexchange carrier (IXC) offices
- Voice switch interface
- DSL access multiplexer (DSLAM) trunk aggregation and transport
- High-speed router or ATM switch link extender
- Wireless cell site traffic aggregation and transport
- Cable TV backbone data and voice network
- Storage transport networks
- Flexible optical networking: Many factors, including access to physical media (that is, fiber, coaxial, etc.), capital budget, time to market, etc. influence the final design of a network. To accommodate the wide deployment needs, the Cisco ONS Multiservice Provisioning Platforms are designed with flexible, ready-to-use card architecture and comprehensive optical operating software, enabling support for multiple capabilities from a single platform type.
- Resilient transport: SONET and SDH provide carrier-class circuit protection with sub-50-millisecond (ms) restoration and multilayer performance-monitoring statistics, which enable proactive maintenance and reduced communication downtime.
- Flexible bandwidth: Network bandwidth can be matched to user demand with plug-in optical cards, with support from 155 Mbps to 10 Gbps for SONET/SDH and 1.5 Mbps to 1 Gbps for Ethernet cards. In-service bandwidth upgrades help ensure that the network will meet current and future demands.
- Integrated multiservice aggregation: Cisco ONS Multiservice Provisioning Platforms consolidate SONET/SDH, dense wavelength-division multiplexing (DWDM) transmission, Layer 2 and Layer 3 packet-processing functions, and storage area network (SAN) transport with the intelligence of an IP-based management plane in a single, cost-effective family.
- Integrated element management: Each of the Cisco ONS Multiservice Provisioning Platforms offers operational simplicity through an integrated, network-based GUI, the Cisco Transport Controller, which simplifies the setup, provisioning, and maintenance of the transport network.

Specifications

Feature		ANSI/SONET			
		15310CL	15310MA	15454	15600
Throughput (Gbits)		1.2	5	80	320
Rack units		1	6	13.5	14.5
Max. Ports	DS-1	21	336	224	
	DS-3	3	12	192	
	EC-1	3	12	192	
	FE	8	32	96	
	GE		24	20	128
	OC-3	2	2	32	128
	OC-12	2	2	32	128
	OC-48		2	24	128
	OC-192			4	32
Feature		ETSI/SDH			
		15310ME	15454E	15600	
Throughput (Gbits)		5	60	320	
Rack units		6	13.5	14.5	
Max. Ports	E1	252	252		
	E3	12	96		
	DS-3	12	96		
	FE	32	96		
	GE	24	20	128	
	STM-1	2	32	128	
	STM-4	2	32	128	
	STM-16	2	24	128	
	STM-64		4	32	

Selected Part Numbers and Ordering Information

Cisco ONS 15310CL	
15310-CL-DC-K9	ONS 15310 customer-located DC chassis subassembly
15310-CL-AC-K9	ONS 15310 customer-located AC chassis subassembly
15310-ML-100T-8	15310-CL ML series 8-port 10/100 Ethernet
15310-CL-100T-8	15310-CL CL series 8-port 10/100 Ethernet
Cisco ONS 15310MA	
15310-MA-SA	Metro access chassis, backplane, common BIC
15310-CTX-2500-K9	MA control, sync, x-connect 480 STS-1, 2128 VT1.5
15310-MA-FTA	Shelf Fan Tray Assembly, Includes Fan Tray Filter
15310-84WBE-3BBE	84-port DS1 and 3-port DS3E/EC-1
15310-28WBE-3BBE	28-port DS1 and 3-port DS3E/EC-1
15310-P-ML-100T-8	15310-CL & 15310-MA ML series 8 port 10/100 Ethernet
15310-P-CE-100T-8	15310-CL & 15310-MA CE series 8-port 10/100 Ethernet
15310-EXP-FILLER	15310 blank expansion module
Cisco ONS 15454	
15454-SA-HD	15454 SA HD NEBS3 ANSI w/ RCA and Ship Kit
15454-TCC3-K9	Timing, Communications, Control Three, I-Temp, 15454 chassis
15454-XC-VXC-10G	Cross-Connect Module, High Cap. Tributary
15454-AEP	15454 Alarm Expansion Panel - ANSI support only
15454-AIC-I	Alarm Interface Card Enh Intl, I-Temp
15454-CC-FTA	Shelf Controlled Cooling Fan Tray, ANSI, HPCFM, I-Temp
15454-10G-XR	10G, Any Reach, XFP compatible (Ordered Separately)
15454-MRC-I-12	OC3/12/48, 12 ports, IOF
15454-ML-MR-10	ML2 10-pt Multi-rate L2/RPR Card
15454-MRC-2.5G4	OC3/12/48, 2.5G Max, 4 ports, IOF
15454-ML100T-12	10/100Mbps Ethernet, 12 Ckt, L2/L3
15454-ML100X-8	100Mbps Fiber Ethernet ML-Series, 8 SFP Ckt, L2/L3
15454-CE-MR-10	Carrier Ethernet card - 10 port Multirate 10/100/1000 Mbps
15454-CE-100T-8	8x10/100T Carrier Ethernet
15454-FC-MR-4	Fibre Channel/FICON, 1-/2-Gbps, 4-Ckt, SL-Series
15454-DS1-14	DS1, 14 Ckt., I-Temp
15454-DS1E1-56	DS1/ E1, 1:N, 56 ports, I-Temp
15454-DS1N-14	DS1, 1:N, 14 Ckt, I-Temp
15454-DS3-12E	DS3, Enhanced PM, 12 Ckt, I-Temp
15454-DS3EC1-48	DS3, 48 Ckt., reqs SA-HD shelf assembly
15454-DS3N-12E	DS3, 1:N, Enhanced PM, 12 Ckt, I-Temp
15454-DS3XM-12	DS3, Transmux, 12 Ckt, I-Temp
15454-BLANK	Empty slot Filler Panel
Cisco ONS 15600	
15600-SA	Main Shelf Assembly
15600-PDU	Power Distribution Unit includes, PS-A, PS-B and Alarm
15600-FTA2	Fan Tray Assembly
15600-CAP2	Customer Access Panel
15600-SSXC	New SSXC Core Cross Connect, 6144 STS1
15600-TSC	Timing Shelf Controller
15600-ASAP-CC	Any Slot Any Port Carrier Card, plugs into any IO slots
15600-ASAP-IPIO	Single Any Slot, Any Port, IO Board w/ 1 Entry XFP/PPM
15600-ASAP-4PIO	Single Any Slot Any Port IO board with 4 empty SFP/PPM slots
15600-IO-FILLER	Input-Output filler card
Cisco ONS 15310ME	
15310E-MA-SA	15310E MA CHASSIS WITH 120 OHMS BITS TERMINATION
15310E-CTX-K9	MA CONTROL, SYNC, XCONNECT 160 AU4 5G LO
15310-MA-FTA	Shelf Fan Tray Assembly, Includes Fan Tray Filter

15310E-84WBE-3BBE	15310E E1/E3/DS3 TRIBUTARY CARD-HIGH DENSITY PORTS
15310E-28WBE-3BBE	15310E E1/E3/DS3 TRIBUTARY CARD-LOW DENSITY PORTS
15310E-P-CE-100T-8	15310E 8 PORT 10/100 ETHERNET L1 ONLY, ETSI VERSION
15310-EXP-FILLER	15310 blank expansion module
Cisco ON 15454E	
15454E-SA-ETSI	ONS 15454 SDH ETSI Chassis and Ship-Kit
15454E-TCC3-K9	Timing, Communications, Control Three, I-temp,15454E chassis
15454E-XC-VXC-10G	SDH HO/LO XC, 60G VC-4, 5G VC-12/11 - ANSI/ETSI Support
15454E-CC-FTA	48V Controlled Cooling Fan Tray with filter for ETSI Chassis
15454E-AIC-I	SDH Alarm Interconnect module - ANSI/ETSI Support
15454E-AP-MIC48V	ONS15454SDH Alarm, -48V PwrMgmt IF Conn
15454E-CTP-MIC48V	ONS15454SDH Craft, Timing, -48V PwrMgmt IF Conn
15454E-10G-XR	10G, Any Reach, XFP compatible (Ordered Separately)
15454E-MRC-I-12	STM1/4/16, 12 ports, IOF - ANSI/ETSI Support
15454E-MRC-2.5G12	STM1/4/16, 2.5G Max, 12 ports, IOF
15454E-ML-MR-10	ML2 10-pt Multi-rate L2/RPR Card
15454E-ML100T-12	Ethernet, 12Ckt.- ANSI/ETSI Support
15454E-ML100X-8	100Mbps Fiber Ethernet, 8 SFP Ckt, L2/L3- ANSI/ETSI Support
15454E-CE-MR-10	Carrier Ethernet card - 10 port Multirate 10/100/1000 Mbps
15454E-CE-100T-8	8x10/100T Carrier Ethernet - ANSI/ETSI Support
15454E-FC-MR-4	Fibre Channel/FICON, 1-/2-Gbps, 4-Ckt. - ANSI/ETSI Support
15454E-E1-42	15454 International ETSI chassis 42 part E1 module
15454E-E1-120PROA	HD E1 120 ohm FMEC, 1:3 protection Side A
15454E-E1-120PROB	HD E1 120 ohm FMEC, 1:3 protection Side B
15454E-E1-120NP	HD E1 120 ohm FMEC, No Protection
15454E-E3-12	12 port E3 Module (1:1 only) - need FMEC
15454E-DS3IN-12	12 port DS3 Module (1:N<=4) - need FMEC
15454E-E3DS3-FMEC	12 port E3/DS3 75ohm FMEC (T54)
15454E-BLANK	15454 ETSI Blank Module (Slot Filler)
15454E-BLANK-FMEC	15454 ETSI Blank Module for FMEC (Slot Filler)

For More Information

<http://www.cisco.com/go/optical>

Cisco Carrier Packet Transport 600 Series, Cisco Packet Transport 256G, Four 10-Gigabit Ethernet Fabric, Cisco Packet Transport Module, and Four 10 Gigabit Ethernet



The Cisco Carrier Packet Transport (CPT) 50, CPT 200, and CPT 600 set the industry standard as a carrier-class converged access and aggregation platform for Cisco Unified Packet Transport architectures. The Cisco CPT product family represents an exciting new paradigm in the world of packet transport, with exceptional pay-as-you-grow scalability, carrier-class reliability, incredible flexibility, and time-division multiplexing (TDM)-like ease of packet service provisioning, operations, administration, and maintenance (OA&M) and protection capability.

The CPT platform has great revenue potential for service providers by providing TDM-like Ethernet private lines as well as multipoint capabilities for business, residential, mobile backhaul, data center, and video services. These next-generation services can be readily deployed at low operational costs using the Cisco Transport Controller and Cisco Transport Manager tools that allow fast and simple network turn-up, A-to-Z provisioning, and OA&M features. This platform is first to market with advanced standards-based

Multiprotocol Label Switching-Transport Profile (MPLS-TP) management for Ethernet aggregation and transport, which combines the feature richness of MPLS with the simplicity of transport operational models. The Cisco CPT 200 and CPT 600 can be configured with integrated DC or AC power inputs. The DC power module has inputs for redundant A and B feeds. The integrated AC power module has a single input, and is universal in that it accepts a power input ranging from 110 to 240 VAC, 50 to 60 Hz. With its front-facing connections, the Cisco CPT 200 and CPT 600 are ideal for cabinet installations and ETSI front connection requirements, making this platform truly global.

In addition to MPLS-TP the CPT product portfolio can support IP/MPLS and native Ethernet-based transport solutions, giving customers data- and control-plane flexibility as the network evolves. Its small form, simplicity, unique set of integrated features, and low power consumption reduce capital and operational expenditures. The Cisco CPT Family reduces total cost of ownership (TCO) based on its innovative satellite architecture that centralizes the management and allows scalable Ethernet fan-out.

The Cisco CPT 50 Series satellite panel can be an extension of the Cisco CPT 200 or CPT 600 Packet Transport Fabric and Modules, thereby extending the service interface by a factor of 10. The Cisco CPT architecture is designed to provide a-la-carte options to deploy packet transport, Multiservice Transport Platform (MSTP), or Optical Transport Network (OTN) switched networks, allowing the customer to reduce day-one costs and grow capabilities as required.

Ideal for Companies That Need These Features

Cisco Carrier Packet Transport 600	<ul style="list-style-type: none"> • 6-slot chassis • Edge Ethernet access and aggregation using Packet Transport • Small footprint and simplicity • Unique set of integrated features: Multiprotocol Label Switching-Transport Profile (MPLS-TP), IP/MPLS, and Carrier Ethernet with dense wavelength-division multiplexing (DWDM) integration • Low power consumption • High-speed backplane for future applications
Cisco Carrier Packet Transport 200	<ul style="list-style-type: none"> • 2-slot chassis • Edge Ethernet access and aggregation using Packet Transport • Small footprint and simplicity • Unique set of integrated features: MPLS-TP, IP/MPLS, and Carrier Ethernet with DWDM integration • Low power consumption • High-speed backplane for future applications
Cisco Packet Transport 256G, four 10 Gigabit Ethernet Fabric	<ul style="list-style-type: none"> • Ability to fit in with Cisco CPT 600 and CPT 200 platforms • Edge Ethernet access and aggregation using Packet Transport • Small footprint and simplicity • Unique set of integrated features: MPLS-TP, IP/MPLS, and Carrier Ethernet with DWDM integration • Low power consumption • Low-cost 10-Gigabit Ethernet Small Form-Factor Pluggable Plus (SFP+) interfaces • High-speed backplane for future applications
Cisco Packet Transport, four 10 Gigabit Ethernet Module	<ul style="list-style-type: none"> • Ability to fit in with Cisco CPT 600 and CPT 200 platforms • Edge Ethernet access and aggregation using Packet Transport • Small footprint and simplicity • Unique set of integrated features: MPLS-TP, IP/MPLS, and Carrier Ethernet with DWDM integration • Low power consumption • Low-cost 10 Gigabit Ethernet SFP+ interfaces • High-speed backplane for future applications

Main Features and Benefits

- Carrier-class Packet Transport technology
- Technology agility: Multiprotocol Label Switching-Transport Profile (MPLS-TP), IP/MPLS, and Carrier Ethernet in a single platform
- Industry-first MPLS-TP-capable platform
- Point-to-point and point-to-multipoint services
- Industry-leading Ethernet access density up to 880 Gigabit Ethernet
- Cisco CPT control card features: Multilayer graphical network, node, and card visibility; A-to-Z network-based service provisioning; and graphical software wizards to simplify and speed user operations for such tasks as initial network turn-up, service provisioning, and management of satellite panels
- Cisco CPT platform and card features: Provide both dense hierarchical quality of service (QoS) and support for Layer 2 services and features, using MPLS-TP, MPLS, or Layer 2 Ethernet-based technologies
- Up to 64,000 queues per card, 16,000 service interfaces, and 256,000 MAC addresses in a 6-rack-unit (6RU) Network Equipment Building Standards (NEBS)/ETSI compliant chassis

- Platform and control cards: Contain synchronization circuitry, a Stratum-3 clock, and dedicated backplane timing traces, enabling transport-class network timing and support for network-synchronized services and applications such as mobile backhaul and migration of time-division multiplexing (TDM) services
- Cisco CPT 600 chassis: Two slots for redundant control cards and 6 slots for service cards; these 6 line-card slots connect across the backplane to provide redundant aggregation and switching capability
- Cisco CPT 600: Can be configured with integrated and redundant DC or AC power inputs; a single power module could be used for low-power and low-cost configurations
- Cisco CPT 200 chassis: One slot for software and database backup in the LCD panel and 2 slots for service cards; these two line-card slots connect across the backplane to provide redundant aggregation and switching capability
- Cisco CPT 200: Can be configured with integrated and 0:1 nonredundant DC or AC power inputs

Specifications

Feature	Carrier Packet Transport 600	Carrier Packet Transport 200
Service Slots	6	2
Maximum Capacity	Line cards: 3x 40Gb/s (120Gb/s) Ethernet: 60 GE's + 6x 10GE's	Line cards: 2x 40Gb/s (120Gb/s) Ethernet: 176 GE's + 4x 10GE's
Redundant Processor card	Yes, dual redundant	0:1 Redundant
Internal Power Supply	AC or DC, dual option	AC or DC, dual feeds
Redundant Power Supply	Yes, dual AC or DC	Yes, dual AC or DC
Power Requirements	Fan tray 120W AC power module 500W DC power module 40W	Fan tray 40W AC power module 300W DC ANSI power module 30W DC ETSI power module 30W
Chassis Height	6 RU	2 RU
Rack Mountable	Yes, up to 7 per rack	Yes, up to 7 per rack
Dimensions (H x W x D)	10.5 x 17.5 x 11 in. (265.4 x 443.3 x 280 mm)	3.46 in. (H) x 17.18 in. (W) x 11.02 in. (D) 879 mm (H) x 436.4 mm (W) x 280 mm (D)
Description	Specification	
Interface Support		
Pluggable SFP+ (PTM) and XFP (PTF) Interfaces	SFP+ interfaces provide mix/match interface types across a single line card. For a complete list of supported interfaces, please see the Cisco CPT pluggable configuration guide.	
Scalable and Integrated Multiservice Support		
Layer 2	Combined Carrier Ethernet, MPLS-Transport Profile (TP), & IP/MPLS	
Point to Point Ethernet Virtual Circuit (EVC)	16K Point to Point EVC	
Point to Multi-Point Ethernet Virtual Circuit (EVC)	4K Point to Multi-Point EVC with 8K members	
Multicast Groups	2K	
MAC Address	256K	
MPLS-Transport Profile (TP) Tunnels	4K	
Point to Point MPLS-Transport Profile (TP) Circuits	8K	
VPLS Pseudowires over MPLS-TP LSP	8K	
MPLS-Transport Profile (TP) LSPs	4K	
MPLS-TP & MPLS-TE Multi-Segment Pseudowires	4K	
Virtual Forwarding Instances (VFI's)	4K	
Policers	8K Policers 2-rate 3-color (2R3C)	
Egress queues	64K Queues (3-level H-QoS)	
Evolutionary Monitoring		
Carrier-class Operations, Administration, and Maintenance (OA&M)	IETF MPLS-TP Continuity Checks (CC) Bidirectional Forwarding Detection (BFD) (RFC5860) IETF MLS-TP Continuity Verification (CV) LSP Ping and LSP Traceroute IP/MPLS OAM Virtual Circuit Connectivity Verification (VCCV), Ping, and Traceroute	

Network Timing & Synchronization	
Synchronous Ethernet	Derive and provide synchronization from BITS and Ethernet interfaces on CPT 200 and 600
IEEE 1588v2	Derive, provide, and transparently passes timing and frequency information on all CPT 200 and 600 Ethernet interfaces
Functionality, Benefits, and Specifications	
Cisco Transport Software Support	<ul style="list-style-type: none"> • Cisco Transport Controller: End-to-End Network Point and Click Provisioning, Maintenance, & Alarm Correlation. • Integrated Robust Command Line Interface (CLI)
MPLS-Transport Profile (TP)	<p>IEETF Standard Based MPLS-Transport Profile:</p> <ul style="list-style-type: none"> • RFC 5317 • RFC 5654 • RFC 5921 • RFC 5880 • RFC 5960 • RFC 5586 • RFC 5951 • RFC 5950
Flexible Ethernet services	<ul style="list-style-type: none"> • Ethernet Virtual Connections (EVCs): Ethernet services are supported using individual EVCs to carry traffic belonging to a specific service type or end user through the network. EVC-based services can be used in conjunction with MPLS-based L2VPNs and native Ethernet switching deployments. • Flexible VLAN classification: VLAN classification into Ethernet flow points (EFPs) includes single-tagged VLANs, double-tagged VLANs (QinQ and 802.1ad), contiguous VLAN ranges, and noncontiguous VLAN lists. • IEEE Bridging: The line cards support native bridging based on IEEE 802.1Q, IEEE 802.1ad, and QinQ VLAN encapsulation mechanisms. • Resilient Ethernet protocol (REP): The REP provides a resilient, fast-convergence mechanism for aggregating and connecting to Ethernet-based access rings.
L2VPN services	<ul style="list-style-type: none"> • MPLS-TP Circuit with Ethernet over MPLS-TP (EoMPLS-TP): EoMPLS-TP transports Ethernet frames across an MPLS-TP LSPs using pseudowires. Individual EFPs or traffic from an entire port can be transported over an MPLS-TP network using pseudowires to an egress interface or sub-interface. • Virtual Private LAN Services (VPLS): These services are included in a class of VPN that supports the connection of multiple sites in a single bridged domain over a MPLS-TP network. VPLS presents an Ethernet interface to customers, simplifying the LAN and WAN boundary for service providers and customers, and enabling rapid and flexible service provisioning, because the service bandwidth is not tied to the physical interface. All services in a VPLS appear to be on the same LAN, regardless of location. • Pseudowire redundancy: Pseudowire redundancy supports the definition of a backup pseudowire to protect a primary pseudowire in case of failure. • Multi-segment pseudowire stitching: Multi-segment pseudowire stitching is a method for interworking two pseudowires together to form a cross-connect relationship.
Multicast	<ul style="list-style-type: none"> • IGMP v2 and v3 snooping: This Layer 2 mechanism efficiently tracks multicast membership on an L2VPN network. Individual IGMP joins are snooped at the VLAN level or pseudowire level. In residential broadband deployments, this scenario enables the network to send only channels that are being watched to downstream users. • Multicast VLAN Registration (MVR): MVR optimizes the control plane (IGMP) load between the router and switch. MVR feature enables switch to aggregate different JOINs received on different VLANs (from the receivers) into one JOIN (on a single VLAN, which could be the same as or different from the VLANs of the receiving ports) towards the router. The switch then distributes (replicate) the received content into the relevant ports.
OA&M	<ul style="list-style-type: none"> • IP/MPLS OA&M: Virtual Circuit Connectivity Verification (VCCV), Ping, and Traceroute • MPLS-TP OAM: The line cards support MPLS-TP OAM with GACH/GAL support, MPLS-TP BFD OAM Support. • Ethernet OAM will be supported in a follow-up release as a software upgrade.
High Availability	<ul style="list-style-type: none"> • MPLS-TP: 1:1 MPLS TP LSP delivers Layer 1 protection switching for networks with sub-50ms APS switching for link, node, path failures. • Bidirectional Forwarding Detection (BFD): BFD is a detection protocol that is designed to provide fast forwarding path-failure detection times for all media types, encapsulations, topologies, and routing protocols. • 802.3ad Link Aggregation Bundles: The line cards support a bundle of multiple links to provide added resiliency and the ability to load balance traffic over multiple member links.

Manageability	<p>Cisco Transport Manager is the industry's most advanced optical transport domain manager. It delivers the full power of the Cisco Carrier Packet Transport System products to a customer's operation personnel and back office systems alike.</p> <ul style="list-style-type: none"> • A carrier-class Element Management System (EMS), Cisco Transport Manager: Lowers network operations, administration, maintenance, and provisioning costs • Provides fault, configuration, performance, and user access security management capabilities • Features a comprehensive client/server-based platform that scales to manage the equivalent of 3000 CPT50, CPT200, CPT600 network elements and up to 100 simultaneous user sessions • Offers network provisioning, surveillance, and performance monitoring features that help customers rapidly deploy and maintain revenue-generating services that are built on Cisco Optical Networking and Voice Gateway Systems <p>The intelligent Cisco Transport Manager High Availability Agent is designed to automatically detect problems, attempt to restart processes, and fail over to a secondary Sun UNIX server if required.</p> <p>The Cisco Transport Manager High Availability solution:</p> <ul style="list-style-type: none"> • Significantly reduces the risk of losing data • Optimizes the Cisco Transport Manager platform to provide continuous service in the event of a failure does occur • Helps ensure constant visibility in a customer's network
Security	<ul style="list-style-type: none"> • Cisco Transport Software—Cisco Transport Software provides comprehensive network security features, including access control lists (ACLs), control-plane protection; authentication, authorization, and accounting (AAA) and RADIUS; Secure Shell (SSH) Protocol; SNMPv3; and Hypertext Transfer Protocol Secure (HTTPS); • Security—Many critical security features are supported: <ul style="list-style-type: none"> ◦ 802.1ad Layer 2 Control Protocol (L2CP) and bridge-protocol-data-unit (BPDU) filtering ◦ MAC limiting per EFP or bridge domain ◦ Unicast, multicast, and broadcast storm-control blocking on any interface or port ◦ Unknown Unicast Flood Blocking (UUFb)
Connectivity	4x10-Gbps 802.3 Ethernet SFP+ Ports
Memory	2 GB DRAM
CPT 600 Environmental & Compliance Standardization	
Physical dimensions (H x W x D);	13.035 x .975 x 10.085 inches—2.30 pounds (US)
Weight	513.1990 x 2.4765 x 25.6159 centimeters —1.04kg
Power	Max Power 128 Watts Nominal Power 89 Watts
Network Equipment Building Standards (NEBS)	GR-1089 Issue 5, GR-63 Issue 3
CPT 200 Environmental & Compliance Standardization	
Physical dimensions (H x W x D);	13.035 x .975 x 10.085 inches—2.30 pounds (US)
Weight	513.1990 x 2.4765 x 25.6159 centimeters—1.04kg
Power	Max Power 128 Watts Nominal Power 89 Watts
Network Equipment Building Standards (NEBS)	GR-1089 Issue 5, GR-63 Issue 3
CPT 50 Environmental & Compliance Standardization	
Physical dimensions (H x W x D)	AC: 1.560 in. x 17.417 in. x 9.095 in. DC ANSI: 1.560 in. x 17.417 in. x 9.095 in. DC ETSI: 1.560 in. x 17.417 in. x 9.095 in.
Weight	4.22 Kg
Power	Max Power 210 Watts Nominal Power 159Watts
Operating temperature (nominal)	5C to 55C
Operating humidity (nominal) (relative humidity)	5-85% noncondensing, operation is guaranteed up to 95% noncondensing
Storage temperature	-40C to 70C
Storage (relative humidity)	93% noncondensing
Operating altitude	4000 meters / 13,123.36 feet

Selected Part Numbers and Ordering Information

Cisco CPT 600—Common Equipment	
CPT-600	Carrier Packet Transport 600 Platform
Packet Transport Fabric 256G Fabric Card w/ 4x10GE	CPT-PTF-256-10Gx4
Packet Transport Module 4 x 10GE	CPT-PTM-10Gx4
Cisco CPT 200—Common Equipment	
CPT-200	Carrier Packet Transport 200 Platform
Packet Transport Fabric 256G Fabric Card w/ 4x10GE	CPT-PTF-256-10Gx4
Packet Transport Module 4 x 10GE	CPT-PTM-10Gx4
Cisco CPT 50—Common Equipment	
CPT-50	
CPT-50-44GE-48A=	CPT-50 w/ 44xGE -48v Pwr ANSI
CPT-50-44GE-48E=	CPT-50 w/ 44xGE -48v Pwr ETSI
CPT-50-44GE-24A=	CPT-50 w/ 44xGE -24v Pwr ANSI
CPT-50-44GE-AC=	CPT-50 w/ 44xGE AC Pwr

For More Information

<http://www.cisco.com/en/US/products/ps11348/index.html>

Chapter 9: Network Management and Operations Support Systems

This chapter provides only a subset of Cisco products and part numbers.

Network Management and OSS At-a-Glance		
Product	Features	Page
Cisco Prime Modular Management Portfolio		
Cisco Prime portfolio	Cisco Prime is a strategic and innovative portfolio of management products that help simplify and accelerate customer adoption of market transitions to enable the delivery of new applications, services, and end-user experiences. It delivers integrated suites of management functionality built on a set of common attributes automating the day-to-day management and lifecycle processes needed to maintain and operate the network. Improved usability, common components, and day-one device support increase management efficiency, lower overall operating expenses (OpEx), and improve network availability.	9-5
Cisco Prime for IT	The Cisco Prime for IT portfolio of management products empowers IT organizations to more effectively manage their networks and the services they deliver—during any phase of the network transformation. Cisco Prime for IT management products deliver integrated lifecycle management and help assure the delivery of applications and services for Borderless Network, Data Center, and Collaboration architectures.	9-5
Cisco Prime for Service Provider	Cisco Prime for Service Provider management offerings empower service providers to more effectively manage their networks and the services they deliver. Built on a service-centered foundation, Cisco Prime supports integrated lifecycle management through an intuitive workflow-oriented user experience—providing A-to-Z management for IP Next-Generation Networks (IP NGNs), mobility, video, and cloud services.	9-5
Cloud Automation		
Cisco Network Services Manager	Cisco Network Services Manager offers a flexible, policy-directed approach to managing and controlling cloud computing network services. Through a configuration user interface, it helps administrators dynamically define and control an array of behaviors in their cloud computing environment. Cisco Network Services Manager: <ul style="list-style-type: none"> Organizes network resources with multiservice data center infrastructure Integrates with existing IT operational tools and processes Uses sophisticated network containers to reduce network operating costs Optimizes capacity use and accelerates service delivery Deploys flexible, policy-directed management 	9-6
Cisco Prime Data Center Network Manager	Cisco Prime Data Center Network Manager (DCNM) provides LAN and storage area network (SAN) management capability for the Cisco Nexus and MDS Families of switches. DCNM provides a GUI that lowers OpEx over traditional command-line interface (CLI) methods and allows efficient operations control, monitoring, provisioning, and troubleshooting of your NX-OS based devices. <p>Highlights include:</p> <ul style="list-style-type: none"> Unified Fabric visibility and topology display with VMware vSphere integration shows connectivity from VM to ESX Host to switch and storage array. Event aggregation and filtering avoids information overload and helps you quickly identify network problems. Deployment wizards and user-modifiable templates help implement best practices. Role-based access control (RBAC) secures devices and provides appropriate delegation. Integrated domain dashboards, health monitoring, reporting, change tracking, and user auditing provide comprehensive management capabilities. Trend monitoring of ports and traffic allow you to optimize your existing resources and anticipate new resource requirements. <p>For the Cisco Nexus and MDS Families of switches, DCNM provides the end-to-end capability to effectively manage NX-OS Unified Fabric devices.</p>	9-6
Carrier Management		
Cisco Prime Central	Cisco Prime Central provides a centralized user interface for Cisco Prime Carrier Management components, including Cisco Prime Provisioning, Cisco Prime Network, Cisco Prime Performance Manager, and Cisco Prime Optical. <p>Capabilities include:</p> <ul style="list-style-type: none"> Secure, single sign-on access to integrated, cross-domain operator workflows with point-and-click capabilities for provisioning, troubleshooting, and performance analysis Standards-based northbound interfaces and integration “probes” <p>As a key component of the Cisco Prime Carrier Management suite, Cisco Prime Central helps accelerate the time-to-value of Cisco architectures including IP NGNs and next-generation mobility, while easing the deployment and management of multivendor networks.</p>	9-7

Cisco Prime Network	<p>Cisco Prime Network is a comprehensive and feature-rich device operation, administration, and network fault management solution for IP NGNs.</p> <p>It provides GUI-based device component configuration and hundreds of prebuilt and downloadable scripts. Operators achieve efficiencies through real-time display of network event, state, and configuration changes, as well as topology-guided troubleshooting, automatic root-cause identification, and alarm reduction through de-duplication. It supports a standards-based northbound interface (NBI), Software Development Kits (SDKs), and partner and third-party applications including InfoVista Vistalsight for Networks and IBM Tivoli Netcool.</p> <p>As a component of Cisco Prime Carrier Management suite, this solution helps accelerate the time to value of Cisco architectures while easing the deployment and management of multivendor networks.</p>	9-7
Cisco Prime Provisioning	<p>Cisco Prime Provisioning automates design, fulfillment, and auditing of network services across core, aggregation, access, and edge devices.</p> <p>It helps accelerate the time to value of Cisco equipment deployed in IP NGNs through automated resource management and profile-based planning and provisioning. Policy-directed workflows help accelerate reliable service deployments across Multiprotocol Label Switching (MPLS), Carrier Ethernet, and Radio Access Network (RAN) backhaul networks.</p> <p>It simplifies configuration and management of MPLS tunnels. Workflow-based troubleshooting and diagnosis and traffic-engineering management helps decrease mean time to repair (MTTR) and enable service providers to meet stringent service-level agreements (SLAs).</p> <p>As a component of the Cisco Prime Carrier Management suite, this solution helps accelerate the time to value of Cisco architectures while easing the deployment and management of multivendor networks.</p>	9-8
Cisco Prime Optical	<p>Cisco Prime Optical is an advanced optical domain management solution supporting today's fast-evolving converged IP and optical networks consisting of legacy Time-division multiplexing (TDM) and dense wavelength-division multiplexing (DWDM) technologies.</p> <p>It supports the Cisco ONS and Carrier Packet Transport (CPT) product families and enables highly resilient, scalable, and flexible transport networks. The GUI-based management system makes advanced management capabilities such as A-to-Z circuit provisioning easy to learn and use. The solution is cost-effective, running on both Oracle Sun Solaris and Linux Red Hat Distribution; no additional third-party software is required because the Oracle database is embedded in the application.</p> <p>Cisco Prime Optical can be easily integrated with third-party operations-support-systems (OSSs) tools with its TeleManagement Forum (TMF) 814 standard northbound interface options.</p> <p>As a component of the Cisco Prime Carrier Management suite, this solution helps accelerate the time to value of Cisco architectures while easing the deployment and management of multivendor networks.</p>	9-8
Cisco Prime Performance Manager	<p>Cisco Prime Performance Manager is an extensible and highly scalable performance management solution for next-generation architectures, supporting Carrier Ethernet, mobile backhaul, and IP/ MPLS networks.</p> <p>It generates prepackaged reports on a wide range of network services, technologies, and devices to enable detailed visibility into network and service performance across the entire network. When used together with Cisco Prime Network, this application enables proactive service assurance by providing real-time access to critical network information and performance statistics.</p> <p>It is easy to integrate this application with the OSS through CSV files for bulk statistics and Simple Network Management Protocol (SNMP) traps for fault indications.</p> <p>As a component of the Cisco Prime Carrier Management suite, this solution helps accelerate the time to value of Cisco architectures while easing the deployment and management of multivendor networks.</p>	9-9
IT Management		
Cisco Prime Infrastructure	<p>Cisco Prime Infrastructure delivers comprehensive lifecycle management of the wired and wireless access, campus, and branch-office networks, and rich visibility into end-user connectivity and application performance assurance problems.</p> <p>Cisco Prime Infrastructure accelerates the rollout of new services and provides secure access and management of mobile devices, making bring-your-own-device (BYOD) workspaces a reality for corporate IT. Tightly coupling client awareness with application performance visibility and network control, Cisco Prime Infrastructure helps ensure uncompromised end-user quality of experience (QoE). Deep integration with the Cisco Identity Services Engine (ISE) further extends this visibility across security and policy-related problems, presenting a complete view of client access problems with a clear path to solving them.</p> <p>Cisco Prime Infrastructure provides:</p> <ul style="list-style-type: none"> • All of the existing Cisco Prime Network Control System (NCS) capabilities for converged user access visibility, wireless lifecycle management, troubleshooting, radio frequency planning, and optimization • Wired lifecycle management functions from Cisco Prime LAN Management Solution (LMS), such as inventory, configuration, and image management; compliance reporting; integrated best practices; and reporting • End-to-end network visibility of applications and services to quickly isolate and troubleshoot performance problems • Configuration compliance auditing against best practices baselines or regulatory standards such as the Payment Card Industry Data Security Standard • Powerful Representational State Transfer (REST)- based application programming interfaces (APIs) to gather and distribute network information for operations, capacity planning, and business intelligence 	9-10

Routing and Switching Management		
Cisco Multicast Manager	<p>Cisco Multicast Manager simplifies multicast monitoring and troubleshooting. This web-based network management application is ideal for:</p> <ul style="list-style-type: none"> • Enterprise customers who employ multicast for financial market data • Cable operators that use multicast to transport video over IP • Service providers that need to manage a multicast VPN (MVPN) environment 	9-11
Network Analysis Module (NAM) Products		
Cisco Catalyst 6500 Network Analysis Modules (NAMs)	<p>Integrated in the Cisco Catalyst 6500 Series Switches, the Cisco NAM Service Modules can provide high-performance traffic monitoring, deep insightful packet captures, and accurate performance analytics. Prepackaged dashboards, interactive reports, and intuitive workflows enhance operational efficiency and accelerate problem resolution. The NAM-1 and NAM-2 modules are also supported on Cisco 7600 Series Routers.</p>	9-11
Cisco Prime Network Analysis Module (NAM) for ISR G2 Services-Ready Engine (SRE)	<p>Cisco Prime Network Analysis Module Software for the Cisco Integrated Services Routers Generation 2 (ISR G2) is a software option for the Cisco ISR G2 Services-Ready Engine (SRE). The software allows you to remotely manage a branch office using a built-in web-based user interface. The purpose-built workflows provide integrated visibility into end-user experience, traffic statistics, and packet capture analysis, essential to manage committed service levels.</p>	9-11
Cisco NAM 2000 Series Appliances	<p>As next-generation, purpose-built appliances, Cisco NAM 2300 Series Appliances offer an optimal blend of application visibility, performance, and usage analytics along with continuous packet-capture capabilities. These appliances offer the maximum deployment flexibility to meet monitoring and troubleshooting needs at different places in the network. They can be deployed in data center, campus, WAN edge, and service provider networks.</p>	9-11
Cisco Prime Network Analysis Module (NAM) for Cisco Nexus 1100 Series Appliance	<p>Integrated with the Cisco Nexus 1010 and Nexus 1110 Series Appliance, Cisco Prime Network Analysis Module (NAM) offers a dedicated solution that extends visibility into the virtual-machine network with Cisco Nexus 1000V switch deployments. It helps to identify performance bottlenecks, troubleshoot performance problems, and optimize the use of virtual-machine network resources.</p>	9-11
Core Services		
Cisco Prime Home	<p>Cisco Prime Home is a feature-rich remote management and provisioning solution based on the Broadband Forum's TR-069 suite of protocols, providing visibility into the home network, reducing operating costs, and improving the subscriber experience with:</p> <ul style="list-style-type: none"> • Zero-touch provisioning, remote configuration and software upgrades • Real-time problem diagnosis and troubleshooting • Easy-to-use web portal for both subscribers and service providers • Consumer services, including managed Wi-Fi, managed firewall, parental controls, and bandwidth monitoring • An analytics engine for greater visibility into home network usage and characteristics 	9-12
Cisco Prime Network Registrar	<p>Cisco Prime Network Registrar provides fast, scalable, and reliable Domain Name System (DNS), Dynamic Host Configuration Protocol (DHCP), and IP-address-management (IPAM) services for both IPv4 and IPv6. It provides the following:</p> <ul style="list-style-type: none"> • Reliability with avalanche prevention to reduce downtime after network outages, DHCP safe failover, support for high-availability DNS, IPAM database replication for backup of IPAM data • Speed and scalability: It can assign more than 47000 DHCP leases per second and significantly accelerate DNS queries—and can provide DHCP services for more than 50 million devices in a single customer deployment. • Centralized, automated management of IP address space and DHCP servers that results in significant operational efficiencies and elimination of IP conflicts and configuration errors. • IPv6 support helps automate and manage the transition from IPv4 to IPv6 with dual-stack deployments on a single server. • Domain Name System Security Extension (DNSSEC) support helps prevent cache poisoning and other common DNS vulnerabilities. 	9-13
Cisco Broadband Access Center	<p>Cisco Broadband Access Center is a centralized, automated platform that controls and configures residential gateways and IP devices. It provides:</p> <ul style="list-style-type: none"> • Recognition of all devices coming into the service provider network • Generation and distribution of the appropriate IP lease and configuration files based on the service provider business policies • Distributed architecture with central management and single point of integration • Support for tens of millions of devices and avalanche protection to limit downtime after network outages • Support for DOCSIS, PacketCable, CableHome, and TR-069 device types 	9-13
Cisco Prime Access Registrar	<p>Cisco Prime Access Registrar is a high-performance carrier-class RADIUS and Diameter solution for authentication, authorization, and accounting (AAA) access control services. Capabilities include:</p> <ul style="list-style-type: none"> • One common server platform with support for a wide range of network access technologies, including DSL, dialup, Code Division Multiple Access (CDMA), General Packet Radio Service (GPRS), Universal Mobile Telecommunications Service (UMTS), wireless LAN (WLAN), public WLAN, WiMAX, femtocell, and others • Speed and scalability to support large service deployments and millions of simultaneous active sessions 	9-14

	<ul style="list-style-type: none"> • Extensibility that allows providers to meet unique business, regulatory, and technical requirements • Broad integration with an extensive variety of external data stores, provisioning and billing systems, and multivendor network access servers • Session and resource management tools that attract user sessions and dynamically allocate resources such as IP addresses and user or group session limits 	
Operational Support Systems		
Cisco Prime Fulfillment	<p>Cisco Prime Fulfillment is a comprehensive, end-to-end service-fulfillment solution that promotes highly efficient coordination of business and operational processes for service design, creation, and delivery. The solution converts customer orders into live services through efficient resource management and communications with systems, partners, and other entities within today's highly complex telecommunications service ecosystem. The Cisco Prime Fulfillment solution also enables optimization of the entire product lifecycle management process—from initial design to the provisioning of the new product or service. It is designed to promote continuous improvements in operational efficiencies to help service providers achieve their business goals while meeting demanding subscriber expectations. Cisco Prime Fulfillment provides the following benefits:</p> <ul style="list-style-type: none"> • Faster revenue generation of new services • Compatibility with existing systems for delivery of new, value-added services • Efficient reuse of resources and intelligence • Highly secure alignment of order processing, inventory management, and network activation before new service launches • Automated provisioning of next-generation services across multiple architectures 	9-15
Voice and Video Collaboration		
Cisco Prime Collaboration	<p>Cisco Prime Collaboration provides simplified, unified management for Cisco Unified Communications and Cisco TelePresence systems, including accelerated Cisco voice provisioning and real-time monitoring and troubleshooting of Cisco voice and video. It provides:</p> <ul style="list-style-type: none"> • Automated processes for initial Cisco Unified Communications deployments and day-2 moves, adds, and changes and deletions help accelerate site rollouts and maintenance and lower operating expenses. • Policy-based automation aligns with enterprise rules, workflow, and delegation. • Tracking of all provisioning changes expedites auditing and troubleshooting. • A single pane of glass for comprehensive monitoring and troubleshooting of Cisco Unified Communications and Cisco TelePresence networks includes dashboard summaries to view network status at a glance and quickly identify potential problems. • Event correlation facilitates event notification reduction. • Proactive fault detection and rapid isolation using purpose-built diagnostic tools to simulate traffic and test circuits and endpoints help expedite operator resolution of problems before they affect end users. 	9-15
Cisco Media Gateway Controller Node Manager	<p>The Cisco Media Gateway Controller Node Manager is an element manager for the fault, configuration, performance, and security management of the Cisco PGW 2200 Softswitch gateway.</p>	9-16
Video, Cable, and Content-Delivery Management		
Cisco Broadband Troubleshooter	<p>Cisco Broadband Troubleshooter provides a diagnostic tool for RF technicians to quickly and easily isolate problems in the cable plant. It performs the following functions:</p> <ul style="list-style-type: none"> • Analyzes and sorts RF conditions into specific categories such as attenuation, provisioning, and noise or packet corruption (cyclic redundancy check [CRC]) errors • Provides dashboard views of network health, cable modem termination system (CMTS), and cable modem statistics and snapshots • Correlates cable modem to subscriber information • Works with an optional tool to map cable modems and status to subscriber street-level views 	9-17
Wireless Management		
Cisco Mobile Wireless Transport Manager	<p>Cisco Mobile Wireless Transport Manager provides monitoring and management capabilities for the Cisco RAN Optimization Solution for GSM and UMTS backhaul, Cisco IP RAN solutions, Cisco IP Transfer Point (TP) networks, and Cisco Mobile Internet solutions.</p>	9-17
Lifecycle Services for Network Management Products and Solutions	<p>Cisco and our authorized partners provide a comprehensive portfolio of services for your network management solutions across the plan, build, and manage phases of the Cisco Lifecycle Services approach.</p>	9-17
Technical Services for Operating Network Management Products	<p>These technical support services can help you maximize the availability, security, and performance of your Cisco network management products.</p>	9-18

For More Information

Product Ordering

To place an order, visit: <http://www.cisco.com/en/US/ordering/index.shtml>.

Cisco Services

Cisco Services can be ordered directly or through our global network of certified partners, visit: <http://www.cisco.com/web/services/order-services/index.html>

End-of-Life and End-of-Sale Products

Please visit the end-of-life and end-of-sale website for a complete and up-to-date listing of products that are no longer being sold or supported, the replacement products that are available, and information about product support:

http://www.cisco.com/en/US/products/prod_end_of_life.html.

Note: This chapter provides only a subset of Cisco products and part numbers. For the most up-to-date and comprehensive information, refer to the Cisco website at <http://www.cisco.com/go/nms>, the Cisco ordering website at <http://www.cisco.com/en/US/ordering/index.shtml>, or the URL listed in the “For More Information” section of each product.

Cisco Prime Modular Management Portfolio

Cisco Prime for IT Management

To effectively address the multidimensional problems created by the transforming network environment, IT organizations need an integrated management solution that unifies disparate networks, supports all phases of the network lifecycle, automates best practices, and delivers simplified network operations.

Cisco Prime for IT management products empower IT organizations to more effectively manage their networks and the services they deliver—during any phase of the network transformation. These products deliver integrated lifecycle management and help to assure the delivery of applications and services for Borderless Network, Data Center, and Collaboration architectures. The Cisco Prime for IT products help IT organizations achieve:

- Improved operational efficiencies: Reduce network errors, speed troubleshooting, and improve the delivery of services while making the network more predictable.
- Reduced operating expenses: Speed deployments, minimize IT staffing, and reduce training times with easy-to-use tools, workflows, and automated operations that simplify network management.
- Lowered capital expenditures (CapEx): Maximize the value of the existing network investment through unified management across architectures, networks, and services with cross-integration to existing operational systems, processes, and northbound management systems.

For More Information

<http://www.cisco.com/en/US/prod/netmgtsw/prime.html>

Cisco Prime for Service Provider

Service providers face many challenges introducing new services and evolving existing ones. The volume of services and the pace of innovation are accelerating, and Next-Generation Network (NGN) service architectures are increasingly complex to operate. Today, service providers require a network management solution that provides a comprehensive approach to managing transport, packet, and older technologies throughout the service lifecycle.

The Cisco Prime portfolio of service provider management offerings empowers operators to more effectively manage their networks and the services they deliver. Built on a service-centered foundation, these products support integrated lifecycle management through an intuitive workflow-oriented user experience—providing A-to-Z management for IP Next-Generation Networks (IP NGNs), mobility, video, and managed services.

The Cisco Prime portfolio helps to automate the management of network services, decreasing costs and increasing efficiencies. Service providers can:

- Accelerate service deployment: Significantly reduce the time required to get new equipment and services into operation through automated fulfillment.
- Lower capital expenditures (CapEx): Maximize the value of the existing investment in network infrastructure through intelligent management.
- Reduce operating expenses (OpEx): Lessen the reliance on expensive network management resources through the automation for fulfillment, inventory, and assurance.
- Deliver improved quality of service (QoS): Eliminate outages and service degradation caused by operational errors and massively reduce the effect of system failures through rapid fault isolation and repair.
- Improve operational efficiencies: A consistent definition of network services enables cross-functional collaboration.

For More Information

<http://www.cisco.com/en/US/prod/netmgtsw/prime.html>

Cloud Automation

Cisco Network Services Manager

Cisco Network Services Manager is designed to enable customers to organize their network resources into a flexible multitenant infrastructure that integrates the network with their existing IT operational tools and processes.

Ideal for Companies That Need These Features

- Cisco Network Services Manager**
- Flexible, policy-led approach to how network services are managed and controlled
- Ability to define and control the behavior and characteristics of the network to support a multitenant data center

Main Features and Benefits

The Cisco Network Services Manager network abstraction layer helps you provision and deploy numerous individual network components as sophisticated network "containers". You can create these containers:

- Across single and multipod cloud computing deployments
- Much more easily and quickly than with template- and script-based systems

These containers:

- Dramatically reduce network operational costs and potential misconfiguration
- Optimize capacity use and accelerate service delivery

Cisco Network Services Manager offers a flexible, policy-directed approach to managing and controlling cloud computing network services. Through a configuration user interface, Network Services Manager helps administrators dynamically define and control an array of behaviors in their cloud computing environment, including:

- Creating different levels of service capability or "service tiers" for tenant use
- Defining the capabilities and resources available in each tier
- Structuring a system of "containment" tailored to tenant application and deployment model needs

For More Information

<http://www.cisco.com/go/nsm>

Cisco Prime Data Center Network Manager

Cisco Prime Data Center Network Manager (DCNM) is designed to help you efficiently implement and manage virtualized data centers. It includes a feature-rich, customizable dashboard that provides visibility and control through a single pane of glass to Cisco Nexus and MDS products.

Ideal for Companies That Need These Features

- Cisco Prime Data Center Network Manager**
- Overall uptime and reliability of your data center infrastructure
- Improved business continuity

Main Features and Benefits

This advanced management product:

- Automates provisioning of data center LAN and storage area network (SAN) elements
- Proactively monitors the SAN and LAN, and detects performance degradation
- Helps secure the data center network
- Eases diagnosis and troubleshooting of data center outages
- Simplifies operational management of virtualized data centers

The primary benefits of Cisco DCNM follow:

- Faster problem resolution
- Intuitive domain views that provide a contextual dashboard of host, switch, and storage infrastructures
- Real-time and historical performance and capacity management for SANs and LANs
- Virtual-machine-aware path analytics and performance monitoring
- Easy-to-use provisioning of Cisco NX-OS features with preconfigured, customized templates
- Customized reports that can be scheduled at certain intervals

For More Information

<http://www.cisco.com/go/dcnm>

Carrier Management

Cisco Prime Central

Cisco Prime Central functions as the centralized user portal for the Cisco Prime Carrier Management components, including Cisco Prime Provisioning, Cisco Prime Network, Cisco Prime Performance Manager, and Cisco Prime Optical. It enables highly intelligent, end-to-end management of today's complex, converged networks—from access all the way to the core.

Ideal for Customers That Need:

Cisco Prime Central Comprehensive and centralized management for IP NGNs, next generation mobile internet, cloud and video networks and have already deployed one or more Cisco Prime Carrier Management suite components

Main Features and Benefits

Customers can achieve operational value, increased efficiencies, and lower costs by taking advantage of the following important features:

- Out-of-the-box integration with Cisco Prime Carrier Management suite components
- Single sign-on access to integrated, cross-domain operator workflows with point-and-click capabilities for provisioning, troubleshooting, and performance analysis
- Secure administrative access, management, and control
- Support for standards-based northbound interfaces and integration "probes"
- Flexible rate of adoption for Cisco Prime Carrier Management components

For More Information

www.cisco.com/go/primecentral

Cisco Prime Network

Cisco Prime Network is a comprehensive and feature-rich device operation, administration, and fault-management solution specifically designed to help meet the cost, quality of service (QoS), and operational scalability requirements of today's networks. Its flexible and extensible architecture is designed to support the multivendor environment, helping service providers meet the challenging demands of today's highly complex and fast-evolving networks. The Cisco Prime Network complements all Cisco Prime Carrier Management components including Cisco Prime Provisioning, Cisco Prime Performance Manager, and Cisco Prime Optical, all of which seamlessly integrate with Cisco Prime Central to enable centralized and integrated management of Next-Generation Networks (NGNs).

Ideal for Customers That Need:

Cisco Prime Network

- Efficient device operation, administration, and fault management of IP Next-Generation Networks (IP NGNs) that consist of Carrier Ethernet, Unified Radio Access Network (RAN) backhaul (including device management of the Cisco ASR 5000 Series Aggregation Services Router platforms), and IP/Multiprotocol Label Switching (IP/MPLS) deployments
- Support for multivendor devices deployed across their networks

Main Features and Benefits

Customers can achieve operational cost-efficiency, enhanced customer satisfaction, and lower costs by taking advantage of the following important features:

- Comprehensive, graphical view of entire network from topology down to the device level with centralized inventory, status, and fault information
- GUI-based device component configuration with more than 200 prebuilt and downloadable scripts
- Up-to-date display of network event, state, and configuration changes
- Topology-guided troubleshooting, automatic root-cause identification, and alarm reduction through deduplication
- Optimized for multitechnology networks and enabled for multivendor network scenarios, supporting major device types and device configurations deployed in the service provider network
- Preintegrated application component of Cisco Prime for IP Next-Generation Network (IP NGN), supporting complete lifecycle management of next-generation services including voice, video, mobile, and cloud services
- Standards-based northbound interface (NBI), Software Development Kits (SDKs), and support for partner and third-party applications including InfoVista Vistalnsight for Networks and IBM Tivoli Netcool

For More Information:

www.cisco.com/go/primenetwork

Cisco Prime Provisioning

Cisco Prime Provisioning accelerates consistent and reliable deployments by providing automated resource management, rapid profile-based provisioning, and powerful workflow-based diagnostics tools. It provides fulfillment of services across the entire network, including the core, aggregation, access, and edge. Cisco Prime Provisioning complements the Cisco Prime Carrier Management components including Cisco Prime Network, Cisco Prime Performance Manager, and Cisco Prime Optical, all of which integrate with Cisco Prime Central to enable centralized and integrated management of IP Next-Generation Networks (IP NGNs), next-generation mobile Internet, and cloud architectures.

Ideal for Companies That Need

Cisco Prime Provisioning

- Efficient solution to deploy and manage Multiprotocol Label Switching (MPLS), Carrier Ethernet, and Radio Access Network (RAN) backhaul networks in support of fixed, mobile, video, and cloud services
- Reduced costs for managing their networks and providing VPN services to internal departments or third parties
- Simplicity and ease of use, and increased extensibility for device management

Main Features and Benefits

Customers can increase operational cost-efficiency, enhance customer satisfaction, and lower costs by taking advantage of the following features:

- Multiprotocol Label Switching (MPLS) VPN management: Automates the provisioning, configuration, and functional audits of MPLS VPNs using predefined service profiles
- Layer 2 VPN (L2VPN) and Carrier Ethernet management: Helps validate service deployments through automated configuration and functional audits, supporting Carrier Ethernet VPNs, Any Transport over ATM (AToM) VPNs, Radio Access Network (RAN) backhaul, and MPLS Transport Profile (MPLS-TP) networks
- MPLS VPN troubleshooting: Provides an automated, workflow-based troubleshooting and diagnosis mechanism
- MPLS Traffic Engineering management: Provides an optional solution for managing the configuration of Cisco MPLS Traffic Engineering tunnels, including:
 - Autoroute Announce
 - Auto-Bandwidth
 - DiffServ-Aware Traffic Engineering
 - Fast Reroute (FRR)

Cisco Prime Provisioning Traffic Engineering management computes and configures primary tunnels to meet user-specified constraints and computes FRR bypass tunnels for network element protection (node, links, or shared-risk link groups [SRLGs]), helping to ensure connectivity and bandwidth.

- MPLS Transport Profile (MPLS-TP) management: Discovers MPLS-TP-enabled devices as well as calculating and visually displaying the working and protected paths in the network; the design, path calculation, and provisioning and audit of MPLS-TP tunnels are provided through a single automated process

For More Information

<http://www.cisco.com/go/primeprovisioning>

Cisco Prime Optical

Cisco Prime Optical is a simplified, yet complete management solution for converged IP and optical networks, supporting both legacy TDM and dense wavelength-division multiplexing (DWDM) technologies. Through automated and advanced mechanisms for configuration, provisioning, and troubleshooting, this solution helps operators efficiently execute end-to-end circuit creation and manage every point within the converged network with unprecedented accuracy and scale. Cisco Prime Optical complements the Cisco Prime Carrier Management components including Cisco Prime Network, Cisco Prime Performance Manager, and Cisco Prime Provisioning, all of which seamlessly integrate with Cisco Prime Central to enable centralized and integrated management of IP Next-Generation Networks (IP NGNs), next-generation mobile Internet, and cloud architectures.

Ideal for Customers That Need

Cisco Prime Optical

- A scalable, carrier-class management solution for their converged IP and optical transport networks, with support for fault, configuration, accounting, performance, and security (FCAPS) functions
- A solution that monitors the health of the network 24 hours a day
- A robust optical network system: Customers in the public sector, such as the Defense Information Systems Agency (DISA, www.disa.mil/) and the Federal Aviation Administration (FAA, www.faa.gov/) can benefit from this solution.
- A flexible optical management solution that can help ease the operational and network transitions taking place as a result of explosive demands in subscriber bandwidth capacity

Main Features and Benefits

Customers can increase operational cost-efficiency, enhance customer satisfaction, and lower costs by taking advantage of the following key capabilities:

- Multitechnology support, integrating inventory, performance, and configuration management functions in a single application
- Automatic selection of optimal routes that use resource diversity on working and standby paths
- GUI-based user interface with automated configuration and provisioning
- Support for time-division multiplexing (TDM), Wavelength Switched Optical Networks (WSO), dense wavelength-division multiplexing (DWDM), and Synchronous Optical Networks Synchronous Digital Hierarchy (SONET/SDH)
- Detailed topology maps with comprehensive navigation, displaying both optical and packet network devices
- Support for thousands of optical network elements
- Redundant software and hardware support for high availability (HA), supporting Linux
- Standards-compliant (CORBA TMF 814 v3) information model and northbound interface (NBI) for operations-support-system (OSS) integration
- Support for Linux and the Cisco Unified Computing System (Cisco UCS), with embedded Oracle options

For More Information

<http://www.cisco.com/go/transport>

Cisco Prime Performance Manager

Cisco Prime Performance Manager is an extensible, highly scalable, and easy-to-use performance management solution that enables the proactive management of Next-Generation Networks (NGNs) including service assurance and capacity planning. This solution complements the Cisco Prime Carrier Management components including Cisco Prime Network, Cisco Prime Optical, and Cisco Prime Provisioning, all of which seamlessly integrate with Cisco Prime Central to enable centralized and integrated management of IP Next-Generation Networks (IP NGNs), next-generation mobile Internet, and cloud architectures.

Ideal for Customers That Need:

- **Cisco Prime Performance Manager** • A powerful performance management solution supporting Cisco devices including the Cisco 7600, Cisco CRS Carrier Routing System, Cisco ASR 9000 Aggregation Services Routers, Cisco ME 3000 Series Ethernet Access Switches and Cisco ASR 5000 and ASR 5500 platforms
- A performance management solution supporting both Cisco and multivendor devices

Main Features and Benefits

Customers can increase operational cost-efficiency, enhance customer satisfaction, and lower costs by taking advantage of the following key capabilities:

- Easy installation on single or multiple servers with an embedded database for faster deployment time
- Intuitive web-based interface to performance reports with flexible navigation options for more detail
- Dynamic loading of new reports, extensions to existing reports, or the addition of new devices to the network, including third-party equipment
- GUI-driven integration with Cisco Prime Central and Cisco Prime Network and centralized access to essential network information
- Instant visibility into performance problems through user-defined threshold crossing alerts.
- Capability to manage 30,000 devices and up to 5 million interfaces.
- Prepackaged reports on a wide range of network services, technologies, and devices, providing more visibility into the network and service performance characteristics
- Standards-based data collection can be easily applied to any Simple Network Management Protocol (SNMP)-enabled device. You can generate 5-minute, 15-minute, hourly, and daily summarized reports.
- Extensive support for a wide variety of network services, technologies, and devices. Cisco Prime Performance Manager facilitates proactive service assurance and detection of network congestion.

For More Information

<http://www.cisco.com/go/performance>

IT Management

Cisco Prime Infrastructure

Cisco Prime Infrastructure delivers comprehensive lifecycle management of the wired and wireless access, campus, and branch-office networks, and rich visibility into end-user connectivity and application performance-assurance problems.

Combining the wireless functions of Cisco Prime Network Control System (NCS) with the wired functions of the Cisco Prime LAN Management Solution (LMS), Cisco Prime Infrastructure simplifies and automates many of the day-to-day tasks associated with maintaining and managing the end-to-end network infrastructure from a single pane of glass. The new converged solution delivers all of the existing wireless capabilities for RF management, user access visibility, reporting, and troubleshooting along with wired lifecycle functions such as discovery, inventory, configuration and image management, automated deployment, compliance reporting, integrated best practices, and reporting. A new operational model based on lifecycle processes aligns the product functions with the way network operators do their jobs.

Cisco Prime Infrastructure empowers network managers with service-assurance visibility to more effectively manage their networks as well as the services their networks deliver. Converging device lifecycle management with service-assurance monitoring workflows enables a holistic, multidimensional view of the user, application, and network. This powerful combination of application awareness and network savvy helps IT organizations realize operational efficiencies that include improved responsiveness to business needs, faster problem identification and remediation, and lower incident and problem rates.

Cisco Prime Infrastructure empowers network managers with service-assurance visibility to more effectively manage their networks as well as the services their networks deliver. Converging device lifecycle management with service-assurance monitoring workflows enables a holistic, multidimensional view of the user, application, and network. This powerful combination of application awareness and network savvy helps IT organizations realize operational efficiencies that include improved responsiveness to business needs, faster problem identification and remediation, and lower incident and problem rates.

Cisco Prime Infrastructure enables embedded Cisco instrumentation and industry-standard technologies, such as NetFlow, Network-Based Application Recognition (NBAR), medianet, Cisco Performance Agent, and Simple Network Management Protocol (SNMP), to deliver networkwide application-aware visibility. It provides operations monitoring and quality-of-experience (QoE) workflows that reduce instrumentation configuration and data collection complexity to quickly and easily gain insight into network and application performance. It also integrates with the Cisco Prime Network Analysis Module (NAM) to permit the collection and correlation of granular flow- and packet-based data from one NAM or many, helping enable deeper analysis and troubleshooting to rapidly solve challenging application and network problems.

Ideal for Companies That Need These Features

Cisco Prime Infrastructure

- Single-pane-of-glass solution for complete end-to-end infrastructure management, reducing the need for multiple tools and lowering operating expenses (OpEx) and training costs
- Comprehensive wireless LAN RF planning and optimization tools
- Plug-and-Play functionality to simplify the rollout of new devices and sites, accelerating service availability
- Centralized monitoring of branch-office, campus, and wireless LAN (WLAN) access networks to help maintain robust performance and an optimal access connectivity experience
- Integrated workflows and tools to help IT administrators quickly assess service disruptions, receive notices about performance degradation, research resolutions, and take action to remedy nonoptimal situations
- Robust predefined compliance rules engine that provides customizable compliance auditing based on Cisco and industry best practice rules

Main Features and Benefits

- Consolidation and extensibility: Reduces operating expenses (OpEx) and maximizes ROI
- Accelerates application and service rollout and reduces downtime
- Offers consistent end-user quality of experience (QoE)
- Maximizes the network investment
- Quickly and proactively identifies and fixes network problems before they affect end users or services
- Supports configuration backup, software image management, compliance, and change management required to maintain and update network devices
- Provides complete and thorough inventory of all Cisco equipment details, including chassis, module, and interface
- Manages lifecycle of Cisco value-added technologies, including dynamic multipoint VPN (DMVPN), Group Encrypted Transport VPN, access control lists (ACLs), ScanSafe, and Zone-Based Firewall

For More Information

<http://www.cisco.com/go/primeinfrastructure>

Routing and Switching Management

Cisco Multicast Manager

Cisco Multicast Manager is a web-based network-management application that simplifies the holistic discovery, visualization, monitoring, and troubleshooting of multicast networks to help ensure business continuity. This solution is appropriate for enterprise customers who employ multicast for financial market data, for multiple system operators (MSOs) that use multicast to transport video over IP, and for service providers that need to manage their multicast VPN (MVPN) environments.

Ideal for Companies That Need These Features

- Cisco Multicast Manager**
- As enterprise customers, the ability to employ multicast for financial market data
 - As a cable operator, the ability to use multicast to transport video over IP
 - As a service provider, the ability to manage a multicast VPN (MVPN) environment

Main Features and Benefits

- Video operations solution: Provides monitoring support for video probes to detect poor-quality video
- Enhanced address management database: Indicates which video channels are being affected when problems with specific multicast groups are detected
- Monitoring and diagnostics for multicast VPNs (MVPNs)
- Support for one-time passwords with TACACS
- Support for the Cisco Carrier Routing System (CRS) and Cisco Aggregation Services Routers (ASRs)

For More Information

<http://www.cisco.com/go/cmm>

Network Analysis Module (NAM) Products

Cisco Prime Network Analysis Module Family

The Cisco Prime Network Analysis Module (NAM) delivers application-aware traffic and performance analysis capabilities that integrate with Cisco switching and routing platforms to simplify operational manageability. It empowers network administrators with actionable visibility to quickly troubleshoot performance problems, ensure optimal use of network resources, and deliver a consistent end-user experience. The Cisco NAM product portfolio includes cost-effective form-factor choices ranging from integrated service blades to virtual service blades and standalone appliances. The portfolio offers deployment flexibility, helping ensure consistent performance visibility across the network while at the same time addressing troubleshooting and optimization demands specific to the places in the network, namely branch office, campus, WAN, and data center.

The Cisco NAM Family includes:

- Cisco Catalyst 6500 Series Network Analysis Module (NAM-3)
- Cisco Catalyst 6500 Series/Cisco 7600 Series Network Analysis Modules NAM-1 and NAM-2
- Cisco NAM 2000 Series Appliances
- Cisco Prime Network Analysis Module (NAM) for ISR G2 Services-Ready Engine (SRE)
- Cisco Prime Network Analysis Module (NAM) for Cisco Nexus 1100 Series Appliances

Ideal for Companies That Need These Features

- Cisco Prime Network Analysis Modules (NAM) Family**
- Solution for endemic or sporadic application performance problems such as outages, slow response time, and poor voice quality
 - Improved application performance when deploying or planning to deploy Cisco Wide Area Application Services (WAAS) solution
 - Visibility into virtual-machine network in the virtual data center with the Cisco Nexus 1000V Switch
 - Help when planning any large-scale IT changes such as technology refreshes, data center consolidation, or voice application rollout
 - Help with challenges in terms of reducing budget and improving operational efficiency

Main Features and Benefits

- Interactive reports with advanced filters and contextual navigation allow quick access to critical network information to improve operational efficiency and boost productivity.
- Site-based monitoring facilitates tracking site-specific service-level objectives, resolving performance problems, or enforcing optimization policies.

- Application performance intelligence helps characterize the end-user experience and isolate application response-time problems.
- Cisco Performance Agent reporting enables multi-branch-office performance visibility from centralized network-analysis-module (NAM) deployment.
- Flow- and packet-based traffic monitoring combines a broader network performance view with deeper packet analysis for rapid troubleshooting.
- Historical analysis with an embedded performance database helps address unanticipated performance problems and assess optimization needs.
- Web-based packet capture, decode, and error scan expedite resolution of complex performance problems.
- Representational State Transfer (REST) or XML-based application programming interface (API)-based integration preserves investments in existing management assets.

For More Information

<http://www.cisco.com/go/nam>

Core Services

Cisco Prime Home

Cisco Prime Home is a feature-rich, standards-based remote management and provisioning solution that provides visibility into the home network, reduces operating costs, and improves the subscriber experience. Powerful customer support tools, an intuitive consumer portal, and extensive analytics combine to make the home network easier to set up and support.

Ideal for Companies That Need These Features

- | | |
|-------------------------|--|
| Cisco Prime Home | <ul style="list-style-type: none"> • Remote provisioning and management of in-home devices, including real-time problem diagnosis and troubleshooting • Visibility into the home network including all in-home connected devices • Simplified, automated mass management of in-home devices • Consumer services such as managed Wi-Fi, managed firewall, parental control applications, and bandwidth monitoring |
|-------------------------|--|

Main Features and Benefits

- **Multidevice management:** The TR-069-compliant auto-configuration server provides management from the network to the gateway and into the home, including IP set-top boxes, next-generation converged IP set-top boxes, network attached storage (NAS), femtocells, IP phones, power-line adapters, IP cameras, and more.
- **Automated remote device management functions,** including zero-touch provisioning, remote configuration and configuration updates, software (including firmware) upgrades, real-time problem diagnosis, and troubleshooting of common home networking and bulk operations.
- **Actionable information:** Cisco Prime Home discovers detailed information about the devices in the home such as online/offline status, wireless signal strength, and device manufacturer and abstracts this information into both service provider and subscriber easy-to-use web portals. This, in turn, reduces support calls and truck rolls, lowering operating expenses (OpEx).
- **An intuitive consumer portal for real-time problem diagnosis and troubleshooting** helps eliminate a majority of support calls, promote customer satisfaction, and lower churn
- **High-value consumer services:** Cisco Prime Home enables the quick rollout of new services that promote customer satisfaction and service provider revenue, including: managed Wi-Fi, managed firewall, parental control applications (dynamic content filtering and time blocking), and bandwidth monitoring.
- **Cisco Prime Home Analytics** provides greater visibility into home network usage and activity, home network characteristics, and service usage. This information can help service providers proactively analyze and address support problems globally for new business-model creation.
- **Web-based application programming interfaces (APIs)** promote ease of integration into service provider operations support systems and business support systems (OSSs and BSSs, respectively).

For More Information

<http://www.cisco.com/go/prime-home>

Cisco Prime Network Registrar

Cisco Prime Network Registrar is a full-featured solution that provides scalable, reliable, high-performance Domain Name System (DNS), Dynamic Host Configuration Protocol (DHCP), and IP address management (IPAM) services for both IPv4 and IPv6. For cable providers, Cisco Prime Network Registrar also forms the basis of a DOCSIS cable modem provisioning system.

Ideal for Companies That Need These Features

- Scalability and high speed
- Automated support for the transition from IPv4 to IPv6
- Multitenancy for managed service providers to enable cloud-based Dynamic Host Configuration Protocol (DHCP) and Domain Name System (DNS) services
- Centralized, automated IP address management for significant operational efficiencies

Main Features and Benefits

- Fast and scalable: Cisco Prime Network Registrar can assign more than 47,000 DHCP leases per second and support more than 50 million devices in a single customer deployment. The recursive, extremely fast, DNS caching server offers significant acceleration of DNS queries.
- Reliable: The solution offers multiple levels of redundancy with DHCP safe failover, support for High-Availability DNS (HA-DNS), and IPAM database replication for backup of IP address management (IPAM) data. A patent-pending discriminating rate limiter provides unsurpassed DHCP avalanche prevention to reduce downtime after network outages.
- Consolidated IP address management: The solution includes full lifecycle management for IPv4 and IPv6 and allows dual-stack deployments on a single server.
- Cloud support: Multitenant capabilities enable cloud-based DHCP and DNS services by providing subscribers with secure IP address management and self-service control.
- Centralized, automated management of IP address space and DHCP servers: Automation of IP address discovery, tracking, allocation, assignment, and reclaim promotes significant operational efficiencies and elimination of IP conflicts and configuration errors—reducing downtime of DHCP and DNS services and lowering network operating expenses (OpEx).
- Easy to deploy and low risk: Cisco Prime Network Registrar can be deployed as a preconfigured virtual appliance; it will run on any VMware ESXi-capable server—simplifying installation, lowering deployment risks, and reducing startup costs.

For More Information

<http://www.cisco.com/go/networkregistrar>

Cisco Broadband Access Center

Cisco Broadband Access Center is a distributed and highly scalable application that allows for automated flow-through provisioning of subscriber services and management of subscriber devices. Cisco BAC provides a centralized and automated platform for service providers to control and configure residential home gateways and the IP devices behind the gateways.

Cisco Broadband Access Center automatically recognizes devices, assigns the appropriate class of service (CoS), dynamically creates and generates device configuration files, and activates subscribers. The solution provides a single device-management platform to support multiple technologies including DOCSIS and PacketCable.

As service provider infrastructure increases rapidly in size and complexity, management systems that simplify the task of operating the network and its services become more essential. Cisco Broadband Access Center addresses this need by automating the configuration and provisioning of subscriber devices based on the service provider's business policies. Cisco Broadband Access Center allows service providers to implement either one or both of the following workflow models:

- Preprovisioning: Devices are assigned to subscribers and recorded in advance in the provisioning application. When subscribers plug them in, Cisco Broadband Access Center automatically assigns the appropriate service level and activates them.
- Autoprovisioning: When subscribers self-register for a service, subscriber devices are captured and recorded in the provisioning application. Upon completion, Cisco Broadband Access Center configures the device and activates the service.

Ideal for Companies That Need These Features

- As a service provider, the ability to provision subscriber services and manage subscriber customer-premises-equipment (CPE) devices for cable and DSL networks

Main Features and Benefits

- **Reliability:** Cisco Broadband Access Center provides high reliability and high availability, supporting autonomous headends and multiple distributed device provisioning engines (DPEs), each of which includes its own data-caching repository, a Trivial File Transfer Protocol (TFTP) server, and a time-of-day (ToD) server. During central server outages or communication problems, the solution provides continued service to existing registered subscribers.
- **Scalability and performance:** Cisco Broadband Access Center can support up to 60 million devices in distributed deployments. It uses multiple distributed device management and caching engines to balance processing of device requests.
- **Integration with current systems:** Cisco Broadband Access Center integrates with existing service provider systems, such as billing systems, operations support systems (OSSs), and other customer management systems, through a Java provisioning application programming interface (API).
- **Extendable technology support:** Cisco Broadband Access Center supports DOCSIS cable modems and set-top boxes for high-speed data provisioning, PacketCable voice provisioning of media termination adapters (MTAs), and DOCSIS cable modems. It also can be extended to support other Dynamic Host Configuration Protocol (DHCP)-based devices, including non-DOCSIS cable modems.

For More Information

<http://www.cisco.com/go/bac>

Cisco Prime Access Registrar

Cisco Prime Access Registrar is a carrier-class, standards-based RADIUS and Diameter solution for access services. Designed for high performance, extensibility, and integration with external data stores and systems, it supports multiple access technologies (dial, wholesale dial, broadband, mobile wireless, wireless LAN [WLAN] and public wireless LAN, Cisco Service Selection Gateway [SSG], voice over IP [VoIP], cable, and WiMAX) with a single authentication, authorization, and accounting (AAA) platform.

Ideal for Companies That Need These Features

Cisco Prime Access Registrar • High-performing, reliable, scalable, and extensible authentication, authorization, and accounting (AAA) servers for service provider networks

Main Features and Benefits

- Supports a broad range of wireline and wireless access technologies and corresponding authentication protocols on a common authentication, authorization, and accounting (AAA) server platform, delivering operating expenses (OpEx) and capital expenditures (CapEx) savings while providing flexibility to the service provider regarding choice in AAA services
- Provides extensive subscriber data store support including an internal database and integration with existing external databases such as Oracle, MySQL, Microsoft Active Directory (AD), and Open Lightweight Directory Access Protocol (OpenLDAP); integration is schema-independent, simplifying deployment and day-to-day operations and providing OpEx savings by using existing infrastructure
- Provides scalability to support large service deployments; an external session manager allows tens of millions of simultaneous active sessions, and performance scales with additional CPUs
- Offers industry-leading RADIUS performance to handle the busiest networks

For More Information

<http://www.cisco.com/go/car>

Operations Support Systems

Cisco Prime Fulfillment

Cisco Prime Fulfillment is an end-to-end service-fulfillment solution that promotes highly efficient coordination of business and operational processes for service design, creation, and delivery. This management solution helps automate complex provisioning and diagnostic tasks using policy-directed workflows to produce consistent and reliable service deployments of Multiprotocol Label Switching (MPLS) and Carrier Ethernet technologies. In adopting new technologies quickly, it allows service providers to deliver revenue-generating services rapidly to their customers.

Ideal for Companies That Need These Features

- **Cisco Prime Fulfillment**
 - Scalable and reliable architecture for large-scale operations
 - Capability to enable customer self-service and service configuration
 - Single-server solution and web GUI open application programming interfaces (APIs) and operations-support-system (OSS) interfaces that help:
 - Integrate IP VPN services into existing infrastructure
 - Integrate Cisco fault-management products with independent software vendor products for VPN-aware performance reporting
 - Continuous business-process improvement through trend analysis

Main Features and Benefits

- **MPLS VPN management:** Automate processes and enforce policy-based workflows to accelerate deployment and time to value.
- **Carrier Ethernet and Layer 2 VPN management:** Provide fast, reliable provisioning to accelerate deployment and time to value.
- **Reduce costs** with automated resource management and rapid profile-based planning and provisioning.

Multiple Sales Packages

Cisco Prime Fulfillment is provided in three different offerings, depending on your business needs:

- **Cisco Prime Order Fulfillment offering:** Cisco Prime Fulfillment is offered as a single package and provides end-to-end service fulfillment with three primary capabilities, including:
 - Cisco Prime Active Catalog
 - Cisco Prime Order Management
 - Cisco Prime Service Inventory
- **Cisco Prime Active Catalog offering:** Cisco Prime Active Catalog is offered as an individual package; it provides product lifecycle management and cross-domain orchestration over existing service delivery systems.
- **Cisco Prime Provisioning offering:** Cisco Prime Provisioning is offered as an individual package; it provides automated resource management and rapid, profile-based provisioning capabilities, supporting Cisco devices. (Refer to full product description under “Carrier Management” section of this chapter.)

For More Information

<http://www.cisco.com/go/fulfillment>

Voice and Video Collaboration

Cisco Prime Collaboration

Cisco Prime Collaboration is an integrated platform for simplified, unified management of voice and video collaboration networks that provides automated and accelerated voice provisioning and continuous, real-time monitoring and proactive troubleshooting across Cisco voice and video collaboration systems. Provisioning features include automated processes for Cisco Unified Communications initial deployments and for day-2 moves, adds, changes, and deletions (MACDs). With these capabilities, Cisco Prime Collaboration significantly accelerates site rollouts and dramatically reduces the time required for ongoing changes, resulting in exceptional productivity gains and lower operating expenses (OpEx). The solution allows delegation of moves, adds, and changes—allowing organizations to optimize IT resources and further reduce total cost of ownership (TCO).

Cisco Prime Collaboration provides efficient, integrated service-assurance management through a single, consolidated view of the Cisco voice and video collaboration environment. The solution proactively notifies operators of problems and facilitates their speedy resolution through proactive fault detection and rapid isolation using purpose-built diagnostic tools. As a result, Cisco Prime Collaboration expedites operator resolution of service-quality problems before they affect end users—for a superior end-user collaborative experience.

Ideal for Companies That Need These Features

Cisco Prime Collaboration

- Automated provisioning processes for Cisco Unified Communications initial deployments and ongoing maintenance to accelerate site rollouts and ongoing maintenance
- Delegation of provisioning changes to help desk personnel
- Policy control of provisioning management and services
- Real-time monitoring across voice and video collaboration networks with at-a-glance views of network status
- Proactive fault detection and rapid isolation using purpose-built diagnostic tools
- Real-time, unified views of all Cisco TelePresence sessions in progress
- End-to-end visibility into media paths for each Cisco TelePresence session

Main Features and Benefits

- Automated processes for initial Cisco Unified Communications deployments and day-2 moves, adds, and changes and deletions that accelerate site rollouts and maintenance for Cisco Unified Communications services and help eliminate provisioning errors for significant productivity improvements, lower operating expenses (OpEx), and greater end-user satisfaction
- Delegation of provisioning tasks to help desk personnel, freeing IP communications personnel for more strategic activities and further lowering OpEx
- Policy-based automation to align with enterprise rules, workflow, and delegation
- Tracking of all provisioning changes for expedited auditing and troubleshooting
- Single pane of glass for comprehensive monitoring and troubleshooting of Cisco Unified Communications and Cisco TelePresence networks with dashboard summaries to view network status at a glance and quickly identify potential problems
- Event correlation that facilitates event notification reduction
- Proactive fault detection and rapid isolation using purpose-built diagnostic tools to simulate traffic and test circuits and endpoints
- Superior end-user experience by expediting operator resolution of service-quality problems before they affect end users

For More Information

<http://www.cisco.com/go/primecollaboration>

Cisco Media Gateway Controller Node Manager

Cisco Media Gateway Controller (MGC) Node Manager is a Cisco element manager for fault, configuration, and performance management of the Cisco PGW 2200 Softswitch. It integrates management access to all node components, effectively representing them as a single entity to the network operator. The software provides views of individual managed devices and logical objects, such as trunk groups and signaling links, making it easier to manage the components that make up a voice-over-IP (VoIP) media gateway control node.

Ideal for Companies That Need These Features

Cisco Media Gateway Controller Node Manager

- Network surveillance
- Cisco MGC Node Manager Diagnostic Tools
- Provisioning and configuration
- User access and performance

For More Information

<http://www.cisco.com/en/US/products/sw/netmgtsw/ps1912/index.html>

Video, Cable, and Content-Delivery Management

Cisco Broadband Troubleshooter

Cisco Broadband Troubleshooter is an easy-to-use tool that gives network administrators and technicians a GUI that streamlines RF problem resolution. The tool dynamically monitors RF characteristics on a per-modem or per-upstream basis, provides a measurement interface for the upstream that has a design similar to a spectrum analyzer, decentralizes RF monitoring and analysis, and automatically sorts and categorizes RF problem conditions. The product provides a fault-analysis tool that facilitates isolation of performance, cable plant, and Cisco Unified Communications Manager problems and characterizes upstream and downstream trouble patterns. Operators can quickly discern customer-premises-equipment (CPE) connectivity impairments by identifying noise, attenuation, provisioning, and packet-corruption problems.

For More Information

<http://www.cisco.com/en/US/products/sw/netmgtsw/ps530/index.html>

Wireless Management

Cisco Mobile Wireless Transport Manager

With the Cisco Mobile Wireless Transport Manager (MWTM), Cisco offers monitoring and management capabilities for the Cisco Global System for Mobile Communications (GSM) Radio Access Network (RAN) Optimization solution, Cisco IP Transfer Point (ITP) networks, and Cisco Mobile Service Exchange Framework (mSEF).

Ideal for Companies That Need These Features

Cisco Mobile Wireless Transport Manager • Easy navigation through the various management and troubleshooting tasks required to support the Cisco Global System for Mobile Communications (GSM) backhaul infrastructure

Main Features and Benefits

- Performs real-time updates of any system changes such as inventory, events, and performance counters
- Accelerates time to service by providing GUI-based editing
- Allows the operator to immediately view events from the Cisco Radio Access Network (RAN) Optimization solution, Cisco IP RAN, Cisco IP Transfer Point (ITP) networks, and the Cisco Mobile Internet solution
- Improves network serviceability by allowing operators to proactively assess the readiness and general health of network elements
- Enables easier network problem identification and troubleshooting
- Provides northbound XML application programming interfaces (APIs)
- Helps maintain system integrity by preventing accidental or malicious operations from unauthorized users

For More Information

<http://www.cisco.com/go/mwtm>

Lifecycle Services for Network Management Products and Solutions

Cisco and our authorized partners provide a comprehensive portfolio of services for your network management solutions across the plan, build, and manage phases of the Cisco Lifecycle Services approach.

IT Operations and Network Management Services include:

Cisco Network Management Architecture Services

Robust network management solutions provide your IT operations team with visibility to what is going on in your network. Your network management architecture typically requires adaptations or changes after you have integrated new solutions or technologies, so that your team can maintain a high level of process automation, effectively support your network-based infrastructure services, and respond quickly to services

incidents. Network Management Architecture Services support these objectives through assessments, recommendations, and support for implementing and integrating network management systems.

Network Management Architecture Assessment Service

Review your existing tool capabilities for operating the network with the Network Management Architecture Assessment Service. It provides a management architecture roadmap that aligns with network operations leading practices and future operations requirements so your IT operations team can achieve and maintain a high level of tool-based process automation.

Network Management Systems Planning and Design Service

Plan and design your network management architecture and systems for fault, configuration, performance, and device-security management so your IT operations team can effectively operate a new network solution or technology. The service also supports the implementation and integration of network management systems based on your existing, documented network management architecture.

Cisco IT Operations Planning and Design Services

Help your IT operations team to take over a new solution or technology from your engineering team and prepare to support cost-effective day-by-day operations.

IT Operations Support Planning Service

Prepare your IT operations team for the operations tasks necessary to support a new solution or technology. This service helps define staffing, expertise, roles, and responsibilities; and to develop tools, skills, and detailed processes that will enable smooth transfer of new technologies and solutions into IT operations.

Operations Gap Resolution Service

Gap resolution helps you implement operational capabilities to improve your operations environment, based on gaps identified through IT operations support planning.

- Cisco Software Application Support Service
 - Strengthen application availability, functions, and reliability with the Software Application Support Service.
 - Cisco Network Availability and Operations Optimization Service
- Effectively adopt, manage, and scale technologies and applications in your converged network environment by optimizing your operational processes and network management tools.

Technical Services for Operating Network Management Products

Cisco and our authorized partners offer technical support services that can help you maximize the availability, security, and performance of your Cisco network management products. These services are available through your Cisco account manager or your local authorized partner.

Application Support

Application software support services are essential to keeping business-critical applications available, secure, and operating at optimal performance. They can help you reduce security, operational, and business risk by simplifying the process of keeping software releases current and supporting your staff with Cisco expertise and online tools.

Cisco Application Support for Network Management products include Software Application Support (SAS) and Software Application Support plus Upgrades (SASU).

Cisco Software Application Support provides:

- Twenty-four-hour global access to certified Cisco Technical Assistance Center (TAC) engineers with specialized expertise in application software problems
- Unrestricted access to the extensive Cisco.com knowledge base, automated troubleshooting tools, and online support communities
- Access to ongoing application software updates for your licensed applications
- Software Application Support plus Upgrades, including all the deliverables of SAS plus access to major software application upgrades on your licensed applications, which can include significant new features and network management functions

Hardware Support

Cisco SMARTnet Service delivers rapid problem resolution, flexible device-by-device coverage, and premium service options to help maximize operational efficiency. The Cisco IOS SP Base image provides similar device-level support tailored specifically for service provider customers.

Cisco SMARTnet Service and the Cisco IOS SP Base image provide:

- Twenty-four-hour global access to the Cisco Technical Assistance Center (TAC)
- Registered access to the extensive Cisco.com knowledge base and tools
- Next-business-day advance hardware replacement (premium options available for business-critical devices, such as 2-hour replacement and onsite parts replacement and installation)
- Access to ongoing operating system software updates and upgrades

- Cisco operating system (Cisco IOS Software) software support to extend the life of Cisco devices with improved security, increased performance, bandwidth management, new protocol support, and greater interoperability
- Proactive diagnostics and real-time alerts on select devices with Smart Call Home

For More Information

<http://www.cisco.com/en/US/products/sw/netmgtsw/services.html>

<http://www.cisco.com/web/services/portfolio/product-technical-support/sp-base/index.html>

To find the specific technical services available for your hardware product or software application, visit the Cisco Service Finder tool at <http://www.cisco-servicefinder.com>.

To find a Cisco partner near you, visit: <http://www.cisco.com/go/partnerlocator>.

Technical Support Offerings	Application Support: SAS or SASU	Hardware Support: Cisco SMARTnet or SP Base Service
Cisco Catalyst 6500/7600 Series Network Analysis (NAM) Modules 1, 2 and 3		Cisco SMARTnet or SP Base Service
Cisco NAM 2000 Series Appliances		Cisco SMARTnet or SP Base Service
Cisco Prime Network Analysis Module (NAM) for ISR G2 SRE	SASU	
Cisco Prime Network Analysis Module (NAM) for Nexus 1010	SAS	
Cisco Network Services Manager	SAS	
Cisco Prime Data Center Network Manager	SASU	
Cisco Prime Optical	SAS	
Cisco Prime Provisioning	SAS	
Cisco Prime Fulfillment	SAS	
Cisco Prime Performance Manager	SAS	
Cisco Prime Network	SAS	
Cisco Multicast Manager	SAS	
Cisco Prime Infrastructure	Software Subscription Services	
Cisco Collaboration	Software Subscription Services	
Cisco Media Gateway Controller Node Manager	SAS*	Cisco SMARTnet or SP Base Service*
Cisco Prime Home	SAS	
Cisco Broadband Access Center	SAS	
Cisco Broadband Troubleshooter	SAS and SASU	
Cisco Prime Access Registrar	SAS	
Cisco Prime Network Registrar	SAS	
Cisco Mobile Wireless Transport Manager	SAS	

* Products with SAS or SASU and Cisco SMARTnet or SP Base Service have hardware devices and software applications. Cisco SMARTnet or SP Base Service is the support service for the hardware and OS and SAS is the support for the software application. Both are required to ensure that the product is completely covered.

Chapter 10: Cisco Services

Realize the full value of your network, IT, and communications investments faster with technical and professional services from Cisco together with our partners. Whether you are looking to evolve your network to support business continuity and growth, increase operational efficiency, reduce costs, enable a more reliable customer experience, or mitigate risk, we have a service that can help you.

Cisco Services uniquely deliver innovative solutions, unmatched expertise, and smart service capabilities using a collaborative partner approach. Smart service capabilities enable better visibility, better information, and better understanding to fuel performance, efficiency, and innovation throughout the network and IT lifecycle:



Services from Cisco and our partners help you succeed at every phase of your network and IT lifecycle

Put Cisco expertise to work for you:

- **Innovative solutions** delivered using a proven architectural approach that aligns your technology investments with your business objectives
- **Unmatched expertise** that gives you access to more than 25 years of networking innovation and leadership, best practices, methodologies, and tools
- **A collaborative partner approach** that delivers customized services and holistic solutions to meet your needs through the combined expertise of our company and our global partner ecosystem
- **Smart services** that enable better visibility, information, and understanding to fuel performance, efficiency, and innovation

Plan

Develop an architectural strategy, transformational roadmap, and designs map in alignment with your business requirements. Smart service capabilities enable you to better understand what you have running in your IT environment so you can more effectively evaluate what needs to change and how to achieve transformation.

- **Strategy and Analysis Services:** Effectively support new and future business requirements by creating architectural strategies and roadmaps for transforming your network architecture and operations management.
- **Assessment Services:** Reduce deployment costs and delays by determining network and IT infrastructure readiness to support a new technology, application, architecture, or solution.
- **Design Services:** Improve infrastructure performance, security, and scalability by establishing a flexible, resilient, scalable architectural foundation.

Build

Validate that the solutions you have designed are ready for your production network, and then implement or migrate new solutions and applications. As you build your network, smart service capabilities provide continuous visibility into the overall state of your network, putting you in a better position to successfully manage deployment and migration.

- **Validation Services:** Mitigate risks, accelerate time to market, and improve availability by confirming your solution meets your requirements before implementation.
- **Deployment Services:** Reduce costly delays, risk, and rework by receiving expert assistance to deploy new solutions or applications.
- **Migration Services:** Control costs, improve efficiency, and mitigate risk while managing refresh by taking a systematic, holistic, efficient approach to upgrading your infrastructure.

Manage

Optimize your infrastructure, applications, and service management approach, and monitor and manage your infrastructure. In day-to-day operations, smart service capabilities provide visibility into your infrastructure, delivering the intelligence you need to preempt potential problems, quickly resolve those that arise, and simplify network management and support processes. They enable a more reliable network so you can turn your focus to initiatives that bring greater value to the business.

Product Support Services: Increase operational efficiency, lower support costs, and manage risk with automated network-equipment inventory management and award-winning support.

Solution Support Services: Quickly resolve problems within complex multivendor solutions through priority access to dedicated and focused resources.

Optimization Services: Improve performance, availability, and resiliency of services by optimizing your infrastructure, applications, and service management.

Operations Management Services: Simplify network operations, lower the total cost of network ownership, and accelerate adoption of advanced technologies securely while retaining visibility and control.

Product Support Services

- Cisco Smart Net Total Care Service: Streamline the management of your network devices and data, resolve problems more quickly, and reduce operating expenses. More effectively monitor and manage your network and mitigate risk with comprehensive visibility to device status and problems.
- Cisco SMARTnet Service: Improve network and IT infrastructure product availability by giving your IT staff direct, anytime access to Cisco engineers, the Cisco Technical Assistance Center (TAC), and an extensive range of online resources. Cisco SMARTnet Service provides expert technical support, flexible hardware coverage, and smart, proactive diagnostics and immediate alerts on devices enabled with Smart Call Home. The Cisco SMARTnet Onsite Service option provides a field engineer at your location for replacement parts installation. Smart Call Home, an embedded support feature, provides proactive diagnostics, alerts, and remediation capabilities for call-home-enabled devices.
- Cisco Focused Technical Support Services: Get personalized support from Cisco network experts who have comprehensive knowledge of your network. To be eligible for Cisco Focused Technical Support Services, a valid Cisco SMARTnet, Smart Net Total Care, or SP Base Service support contact is required for the entire network. Cisco Focused Technical Support Services are available for all network sizes, ranging from relatively small to large, mission-critical networks.
- Cisco Smart Care Service: Get proactive support for your entire Cisco network in a single contract. This service increases network visibility; supports continuous improvement; and verifies network security, reliability, and functions. Available only from certified partners, Cisco Smart Care Service is for small and medium-sized businesses.
- Cisco Smart Foundation Service: Small and medium-sized businesses can receive cost-effective network support for select devices.
- Cisco Software Application Support Services: Strengthen the availability, functions, and security of your Cisco software applications with Cisco Software Application Support Service, Cisco Software Application Support plus Upgrades Service, and Cisco Unified Communications Essential Operate Service.
- Cisco SP Base Service: Improve network availability with a service focused on service provider needs. You get anytime access to Cisco engineers and Cisco.com resources to help ensure the fast, expert response needed to resolve critical network problems. Smart Call Home, an embedded support feature, provides proactive diagnostics, alerts, and remediation capabilities for call-home-enabled devices. The Cisco SP Base Onsite option adds the services of a trained field engineer to install replacement parts on location.

Cisco Product Support Services also include the following technology-specific services:

- Cisco Unified Communications Operate Services: Maintain high availability, security, and operational efficiency of your Cisco Unified Communications Solutions.
- Cisco TelePresence Essential Operate Service: Maintain a reliable, high-quality Cisco TelePresence meeting experience with technical support that safeguards critical components.
- Cisco Services for IPS: Keep your Cisco Intrusion Prevention System (IPS) solution current on the latest threats so malicious or damaging traffic is accurately identified, classified, and stopped.
- Cisco Security IntelliShield Alert Manager Service: Get easy access to customized, timely, accurate, vendor-neutral security intelligence to prevent, mitigate, and quickly remediate potential attacks.

To find the right service for any Cisco product, use the Service Finder tool at:

<http://www.cisco-servicefinder.com>.

Enter a product description or SKU or search by product series family for a list of suggested services and support coverage options.

For More Information

- Cisco customers: Contact your Cisco representative or Cisco Authorized Partner to discuss recommended services to protect and extend your technology investment. To learn more about Cisco Services, visit: <http://www.cisco.com/go/services>.
- Locate a Cisco Partner: For customers looking for a Cisco Partner who will help you with specialized network design, consultation, installation, and support services, visit: <http://www.cisco.com/go/partnerlocator>.
- Cisco Authorized Partners: If you are an authorized partner, find information and resources to help you develop, sell, and deliver services for Cisco products and solutions at: <http://www.cisco.com/go/partnerservices>.



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