

Chapter 6: Data Center

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

Data Center At-a-Glance		
Product	Features	Page
APPLICATION NETWORKING SERVICES		
Cisco Application Control Engine (ACE) Family	<ul style="list-style-type: none"> Cisco ACE Family of application control engines simplify the way applications and business services are deployed, secured, and managed across the enterprise Cisco ACE products provide 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 within the 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 	6-3
Cisco Wide Area Application Services (WAAS) Family *NEW UPDATES*	<ul style="list-style-type: none"> Cisco WAAS Family of products is a comprehensive set of WAN-optimization solutions that accelerate applications over the WAN, deliver video to the branch office, and provide local hosting of branch-office IT services WAN-optimization products within the Cisco WAAS Family include: <ul style="list-style-type: none"> Cisco Wide Area Application Services (WAAS) Cisco Wide Area Application Services (WAAS) Mobile Cisco Wide Area Application Engines Cisco Wide Area Virtualization Engine (WAVE) Cisco Application and Content Networking System (ACNS) Software 	6-5
DATA CENTER SECURITY		
Cisco ASA 5500 Adaptive Security Appliance	<ul style="list-style-type: none"> Easy-to-deploy solutions that integrate world-class firewall, unified communications (voice and video) security SSL and IPSec VPN, intrusion prevention systems (IPSs), content security services, and secure unified communications in a flexible, modular product family 	See 5-4
Cisco Catalyst 6500 Series Firewall Services Module (FWSM)	<ul style="list-style-type: none"> High-speed, integrated firewall module for Cisco Catalyst 6500 Switches and Cisco 7600 Series Routers Provides the fastest firewall data rates in the industry: 5-Gbps throughput, 100,000 cells per second (CPS), and 1 million concurrent connections Up to four FWSMs can be installed in a single chassis, providing scalability to 20 Gbps per chassis Based on Cisco PIX Firewall technology, the Cisco Catalyst 6500 FWSM offers large enterprises and service providers unmatched security, reliability, and performance 	See 5-12
Cisco ACE Web Application Firewall	<ul style="list-style-type: none"> Combines deep Web application analysis with high-performance Extensible Markup Language (XML) inspection and management to address the full range of these threats Secures and protects Web applications from common attacks such as identity theft, data theft, application disruption, fraud, and targeted attacks 	See 5-23
Cisco Secure Access Control System (ACS)	<ul style="list-style-type: none"> Controls network access based on dynamic conditions and attributes Next-generation platform for centralized network identity and access control Simple yet powerful, rule-based policy model and a new, intuitive management interface designed for optimum control and visibility 	See 5-15
Cisco Security Monitoring, Analysis, and Response System (MARS)	<ul style="list-style-type: none"> Centralized monitoring, event-correlation, and attack-mitigation system 	See 5-33
DATA CENTER SWITCHING		
Cisco Nexus 7000 Series Switches	<ul style="list-style-type: none"> Designed specifically for the data center Offers exceptional scalability, continuous systems operation, and transport flexibility Modular data center-class switching system designed for 10-Gigabit Ethernet networks Cisco Nexus architecture scales beyond 15 terabits per second, with future availability of 40- and 100-Gigabit Ethernet and unified fabric I/O modules 	6-8
Cisco Nexus 5000 Series Switches *NEW UPDATES*	<ul style="list-style-type: none"> Delivers an architecture built on high-performance Ethernet unified fabric Platform consolidates separate Local Area Network (LAN), Storage Area Network (SAN) and server cluster network environments into a single unified fabric 	6-9
Cisco Nexus 4000 Series Switches *NEW PRODUCT*	<ul style="list-style-type: none"> Cisco Nexus 4001l Switch Module for the IBM BladeCenter product is a 10 Gigabit Ethernet switch module that you install in an IBM BladeCenter enclosure Cisco Nexus 4000 Series offers a solution for high-end data centers where server virtualization and I/O consolidation are required 	6-10

Cisco Nexus 2000 Series Fabric Extenders *NEW UPDATES*	<ul style="list-style-type: none"> Provides a universal server-access platform that scales across a range of Gigabit Ethernet, 10 Gigabit Ethernet, unified fabric, rack, and blade-server environments 	6–10
Cisco Nexus 1000V Series Switches	<ul style="list-style-type: none"> Intelligent software virtual switch implementation for VMware ESX hypervisor environments Supports Cisco VN-Link server virtualization technology, and provides: <ul style="list-style-type: none"> Policy-based virtual-machine (VM) connectivity Mobile virtual-machine security and network policy Nondisruptive operational model for server virtualization and networking teams 	6–11
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, energy control and minimizes total cost of ownership with features such as GOLD, OBFL, SmartCallHome, Energywise Delivers comprehensive features for operational management, integrated services, QoS, and high availability Integrates services through its portfolio of service modules 	See 2–4
Cisco Catalyst 4900M Series Switches	<ul style="list-style-type: none"> Optimized for small-to-medium aggregation Supports up to 24 ports with 10 Gigabit Ethernet interfaces Supports up to 32 ports with 1 Gigabit Ethernet Provides up to 320 Gbps forwarding capacity Supports critical routing protocols and IPv6 in hardware including multicast Features hot-swappable, redundant power supply and fans 	See 2–12
UNIFIED COMPUTING		
Cisco Unified Computing System *NEW UPDATES*	<ul style="list-style-type: none"> Next-generation data center platform that unites compute, network, storage access, and virtualization 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 	6–11
Cisco UCS B-Series Blade Servers *NEW PRODUCT*	<ul style="list-style-type: none"> Based on Intel Xeon 5500 and 5600 series processors, adapt to application demands, intelligently scale energy use, and offer best-in-class virtualization Cisco's innovative memory-expansion technology substantially increases the memory footprint, improving performance and capacity for demanding virtualization and large-data-set workloads Technology offers a more cost-effective memory footprint for less-demanding workloads. The blade-server offerings include: <ul style="list-style-type: none"> Cisco UCS B440 M1 High-Performance Blade Server Cisco UCS B250 M2 Extended Memory Blade Server Cisco UCS B200 M2 Blade Server 	6–12
Cisco UCS C-Series Rack Mount Servers *NEW PRODUCT*	<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, the series incorporates standards-based unified network fabric, Cisco VN-Link virtualization support, and Cisco Extended Memory technology Supports an incremental deployment model with a future migration path to unified computing The portfolio includes: <ul style="list-style-type: none"> Cisco UCS C460 M1 High-Performance Rack-Mount Server Cisco UCS C250 M2 Extended-Memory Rack-Mount Server Cisco UCS C210 M2 General-Purpose Rack-Mount Server Cisco UCS C200 M2 High-Density Rack-Mount Server 	6–13
STORAGE NETWORKING—FIBRE CHANNEL SWITCHING		
Cisco MDS 9500 Series Multilayer Directors *NEW UPDATES*	<ul style="list-style-type: none"> Share a common architecture, the Cisco MDS 9000 SAN-OS operating system, and switching and services modules that are backward- and forward-compatible throughout all Cisco MDS 9500 Series Multilayer Directors and MDS 9200 Series Multilayer Fabric Switches The portfolio includes: <ul style="list-style-type: none"> Cisco MDS 9513 Multilayer Director Cisco MDS 9509 Multilayer Director Cisco MDS 9506 Multilayer Director 	6–14
Cisco MDS 9200 Series Multilayer Switches *NEW PRODUCT*	<ul style="list-style-type: none"> Delivers state-of-the-art multiprotocol and distributed multiservice convergence, offering high-performance storage-area-network (SAN) extension and disaster-recovery solutions, intelligent fabric services, and cost-effective multiprotocol connectivity The portfolio includes: <ul style="list-style-type: none"> Cisco MDS 9222i Multiservice Modular Switch 	6–16

Cisco MDS 9100 Series Multilayer Fabric Switches *NEW PRODUCT*	<ul style="list-style-type: none"> • Cost-effective, scalable, easy-to-install, and highly configurable Fibre Channel switches are ideal for small to medium-sized businesses • Available as blade-switch form factors for market-leading blade servers, including IBM and HP blade servers • The portfolio includes: <ul style="list-style-type: none"> - Cisco MDS 9148 Multilayer Fabric Switch - Cisco MDS 9134 Multilayer Fabric Switch - Cisco MDS 9124 Multilayer Fabric Switch 	6-16
Cisco MDS 9000 Series Intelligent Fabric Applications *NEW PRODUCT*	<ul style="list-style-type: none"> • Applications such as continuous data replication, Cisco Storage Media Encryption (SME), Cisco MDS Data Mobility Manager (DMM), and network-based volume management address customer concerns related to storage provisioning, security, data migration and replication, backup and recovery, storage usage, and increasing storage costs • The portfolio includes: <ul style="list-style-type: none"> - Cisco MDS 9000 XRC Acceleration - Cisco MDS 9000 Storage Media Encryption - Cisco MDS 9000 Family I/O Accelerator (IOA) - Cisco MDS Data Mobility Manager (DMM) - Cisco Nexus OS operating system 	6-17
Cisco Catalyst Blade Switch 3000 and 3100 Series	<ul style="list-style-type: none"> • Includes Cisco Catalyst Ethernet blade switches and Cisco MDS Fibre Channel blade switches for blade servers • Supports blade-server network services that extend from the blade-server edge to clients at the network edge • Provides a virtualized data center infrastructure that can help lower total cost of ownership • Family includes: <ul style="list-style-type: none"> - Cisco Catalyst Blade Switch 3100 Series for Dell—Specifically designed to meet the rigors of blade-server application infrastructure - Cisco Catalyst Blade Switch 3000 Series—Designed to support the HP Blade-System c-Class 	6-19

SERVICES

Cisco Data Center Services Cisco 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.	6-20
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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	
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.	

Cisco Application Control Engine (ACE) Family

Enhance the application performance and availability of your virtual data center with Cisco Application Control Engine (ACE) products. The ACE application delivery services platform features a virtualized architecture and addresses many of the core challenges of the virtual data center. The products help improve scale and availability while improving the utilization of infrastructure resources.

Key Features And Benefits

- Virtual machine (VM) intelligence for visibility into the state of VM applications and underlying infrastructure
- Automation that allows dynamic changes in the network
- Performance and scale to address the demands of enterprises and service providers

For More Information

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

Cisco Application Control Engine (ACE) Series Module

The Cisco ACE Application Control Engine Module for Cisco Catalyst 6500 Series Switches and Cisco 7600 Series Routers is a next-generation load-balancing and application-delivery solution. These products ensure application availability, accelerate application performance, and protect applications while reducing data center costs. Cisco ACE also defends servers and applications in data centers. The Cisco ACE Module performs deep packet inspection and blocks malicious attacks. Highly Scalable Integrated Security enables IT professionals to

comprehensively secure high-value applications in the data center and facilitates consolidation in the data center.

Key Features and Benefits

- Maximized application availability—Ensures end users can access network services in an efficient, reliable and consistent manner. Cisco ACE takes advantage of highly scalable Layer 4 load balancing and Layer 7 content switching to optimize the transmission of network services.
- Accelerated application performance—Cisco ACE uses patented technologies to accelerate and compress application data, improving application responsiveness. Offloading and caching Secure Sockets Layer (SSL), TCP, and Extensible Markup Language (XML) each help improve server performance.
- Comprehensive application security—The Cisco ACE protects against application threats and denial-of-service (DoS) attacks with features such as Deep Packet Inspection, network and protocol security, highly scalable access-control capabilities, and a powerful XML firewall.

Selected Part Numbers and Ordering Information

WS-C6509E-ACE20-K9	Cisco ACE20 6509 Bundle with 8 Gbps Throughput License (I/O module sold separately)
WS-C6504E-ACE20-K9	Cisco ACE20 6504 Bundle with 4 Gbps Throughput License (I/O module sold separately)
C6509E-ACE20-8-K9	Cisco ACE20 8G 6509E SUP720-10G Bundle
WS-C6509-E-ACE-K9	Cisco ACE10 6509 Bundle with 8 Gbps Throughput License (I/O module sold separately)
WS-C6504-E-ACE-K9	Cisco ACE10 6504 Bundle with 4 Gbps Throughput License (I/O module sold separately)
ACE20-MOD-K9	Cisco ACE20 Service Module for Cisco Catalyst 6500 Series and Cisco 7600 Series—Includes 1000 SSL TPS and 5 Virtual Devices
ACE10-6500-K9	Cisco ACE10 Service Module for Cisco Catalyst 6500 Series and Cisco 7600 Series, Includes 1000 SSL TPS and 5 Virtual Devices
ACE-16G-LIC	16Gbps Throughput License for Cisco ACE20
ACE-08G-LIC	8-Gbps Throughput License for Cisco ACE 10 and Cisco ACE20
ACE-04G-LIC	4-Gbps Throughput License for Cisco ACE10 and Cisco ACE20
ACE-VIRT-250	250 Virtual Contexts License for Cisco ACE10 and Cisco ACE20
ACE-VIRT-100	100 Virtual Contexts License for Cisco ACE10 and Cisco ACE20
ACE-VIRT-050	50 Virtual Contexts License for Cisco ACE10 and Cisco ACE20
ACE-VIRT-020	20 Virtual Contexts License for Cisco ACE10 and Cisco ACE20

For More Information

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

Cisco ACE 4710 Appliance

The Cisco ACE 4710 supports multimedia load balancing for RTSP and SIP protocols, allowing customers to deploy a wider range of applications via the common application infrastructure. Services are delivered over a virtualized architecture to minimize power and cooling needs, as well as reduce provisioning time and capital expense. Cisco ACE 4710 Appliance provides application acceleration using patented flash forward, delta encoding, and compression technologies. It uses a full range of Cisco application switching technologies, including Layer 4 load balancing and Layer 7 content switching, server offload with SSL, caching, and TCP processing. It reduces the volume of data transferred, thus enhancing the overall end-user experience.

Ideal for Companies That Need These Features

- Cisco ACE 4710 Appliance**
- Availability, acceleration, and security of data center applications
 - Secure data center and critical business applications
 - Data center consolidation through the use of fewer servers, load balancers, and firewalls

Selected Part Numbers and Ordering Information

ACE-4710-1F-K9	License Bundle: ACE 4710, 1 Gbps Throughput, 5,000 SSL TPS, 500 Mbps Compression, 5 Virtual Devices, Application Acceleration License, Embedded Device Manager
ACE-4710-2F-K9	License Bundle: ACE 4710, 2 Gbps Throughput, 7500 SSL TPS, 1Gbps Compression, 5 Virtual Devices, Application Acceleration License, Embedded Device Manager
ACE-4710-4F-K9	License Bundle: ACE 4710, 4 Gbps Throughput, 7500 SSL TPS, 2Gbps Compression, 5 Virtual Devices, Application Acceleration License, Embedded Device Manager
ACE-4710-05F-K9	One ACE 4710 Hardware, 0.5Gbps, 100 SSL, 100Mbps, Comp-5VC, 50 Application Acceleration

ACE-4710-BAS-2PAK	Two units of ACE 4710 Hardware, 1Gbps, 1K SSL, 100Mbps Comp, 5VC, 50 Application Acceleration
ACE-AP-01-LIC	1 Gbps License
ACE-AP-SW-3.2	Software Version 3.2

For More Information

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

Cisco ACE Global Site Selector (GSS) 4400 Series

The Cisco ACE GSS (Global Site Selector) 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 maximizes availability, acceleration, and security for data center applications.

The Cisco GSS 4492R Global Site Selector is part of the Cisco ACE Application Control Engine product line and a crucial component of any data center architecture that requires an appliance-based, security-focused, universal global load balancer. Using 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 Application Control Engine Module. It is deployed on a Cisco ACE Application Control Engine Modules.

Key Features and Benefits

- Provides resilient architecture critical for disaster recovery and multisite web applications deployments.
- Optional software supports full Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) services, allowing the 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 the 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 31
SF-GSS-DDOSLIC	DDoS Mitigation software license

For More Information

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

Cisco Wide Area Application Services (WAAS)

Cisco Wide Area Application Services (WAAS) is a comprehensive WAN-optimization and application-acceleration solution that is a critical component of Cisco Borderless Networks and data center and virtualization architectures.



Cisco WAAS accelerates applications and data over the WAN, optimizes bandwidth, empowers cloud computing, and provides local hosting of branch-office IT services—all with industry-leading network integration. Cisco WAAS allows IT organizations to centralize applications and storage while maintaining productivity for branch-office and mobile users.

Key Features and Benefits

- Cisco WAAS mitigates WAN latency. Applications perform better. Data is transferred faster.
- Cisco WAAS reduces bandwidth consumption and its associated bandwidth costs.
- Cisco WAAS delivers increased business agility by enabling IT consolidation and enhanced application rollouts. Added flexibility is available with the Cisco Integrated Services Routers Generation 2 (ISR G2) and the Cisco Services Ready Engine (SRE), offering WAN optimization “on demand” as business needs arise.
- Cisco WAAS enhances business continuity by shrinking backup windows and achieving recovery-point objectives for storage administrators.
- Cisco WAAS offers superior end-user rich-media and collaborative application experiences across the WAN.

Cisco WAAS offers the most choices for WAN optimization with the broadest portfolio ranging from:

- Cisco WAAS offers software-based WAN-optimization solutions.
- Cisco WAAS software on Cisco Integrated Services Routers G2 (ISR G2) provides router-integrated on-demand WAN optimization for branch offices. The software can be integrated with first- and second-generation Cisco Integrated Services Routers (ISRs). The Cisco Services Ready Engine (SRE) on the ISR G2 platforms can deliver WAN optimization as an “on-demand” service.
- Cisco WAAS Mobile delivers bidirectional compression, application-specific accelerators, and flow optimizers for deployment on mobile and desktop platforms where neither an appliance nor a branch-office router is available or practical, or for public cloud environments that cannot support an appliance.
- Cisco WAAS software is generally bundled on Cisco Wide Area Application Engine (WAE) and Cisco Wide Area Virtualization Engine (WAVE) appliances and modules.
- The Cisco WAAS appliance portfolio supports WAN optimization with application acceleration, virtualization for local hosting of branch-office IT services, and bandwidth optimization for rich-media and TelePresence delivery across a wide range of deployment scenarios and price points.
- Cisco WAAS offers a proven end-to-end architectural approach with validated designs to lower cost of ownership and ease deployment challenges. Validated designs assist customers by incorporating IT infrastructure such as Cisco switches, routers, security devices, and servers.
- Cisco WAAS transparently integrates with Cisco routing and security solutions, with industry-leading application traffic transparency, resulting in fully preserved quality-of-service (QoS), voice-over-IP (VoIP), and firewall services. Cisco WAAS operates without tunnels, reducing complexity, protecting investments in applications and network tools, and minimizing operations costs.

For More Information

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

Cisco Wide Area Application Services (WAAS) 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 minimizes 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 Wide Area Application Engine (WAE)

The Cisco Wide Area Application Engine (WAE) platforms are a portfolio of powerful, scalable network appliances that host Cisco WAN-optimization and application-acceleration solutions that enable branch-office server consolidation and



performance improvements for centralized applications and provide remote users with LAN-like access to applications, storage, and content across the WAN.

The Cisco WAE appliances provide a unified platform for hosting Cisco application-acceleration and WAN-optimization solutions, including Cisco Wide Area Application Services (WAAS) Software and Cisco Application and Content Networking System (ACNS) Software.

Cisco WAE Appliances Deployed with Cisco WAAS

Cisco WAAS is a powerful application-acceleration and WAN-optimization solution that accelerates the performance of any TCP-based application delivered across a WAN. Deployed as Cisco WAE appliances or as network modules integrated with the branch-office router, Cisco WAAS solves the following IT challenges:

- Overcoming poor application performance over the WAN
- Consolidating branch-office IT infrastructure into data centers while helping ensure near-LAN application performance over the WAN
- Controlling continuous growth in bandwidth requirements
- Improving data protection, backup, and replication for remote offices and between data centers

Key Features and Benefits

By accelerating the performance of any TCP-based application over the WAN, Cisco WAAS offers the following benefits:

- Cost savings through consolidation of branch-office infrastructure in data centers
- Increased employee productivity by providing near-LAN performance for all enterprise applications
- Improved data protection and regulatory compliance by eliminating the need for less-secure tape-based backup at remote offices

In addition to the benefits of WAN optimization described previously, Cisco WAAS provides the lowest total-cost-of-ownership (TCO) solution, transparently preserves all existing network services, helps ensure reliable voice deployments, and innovatively interoperates with Cisco firewalls to secure accelerated traffic. For detailed information about Cisco WAAS, please visit <http://www.cisco.com/go/waas>.

Selected Part Numbers

WAE-674-K9	<ul style="list-style-type: none">• 4 or 8 GB RAM• 600 GB storage• Redundant, hot-swappable power supplies as an upgrade option• Hot-swappable HDD replacement supported with Cisco WAAS
WAE-7341-K9	<ul style="list-style-type: none">• 12 GB RAM• 900 GB Storage• Redundant, hot-swappable power supplies• Hot-swappable HDD replacement supported with Cisco WAAS
WAE-7371-K9	<ul style="list-style-type: none">• 24 GB RAM• 1.5 terabytes (TB) storage• Redundant, hot-swappable power supplies• Hot-swappable HDD replacement supported with Cisco WAAS

For More Information

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

Cisco Wide Area Virtualization Engine (WAVE)

The Cisco Wide Area Virtualization Engine (WAVE) is a branch-office appliance that provides WAN optimization, embedded virtualization for local hosting, and branch-office video delivery. It allows IT organizations to centralize applications and storage in the data center while maintaining LAN-like application performance and delivering local branch-office IT services.

Cisco WAVE appliances are designed to 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.

Key Features and Benefits

- Improves employee productivity by enhancing the user experience for important business applications delivered over the WAN.
- Reduces the cost of branch-office operations by centralizing IT resources in the data center and lowering the cost of WAN bandwidth.
- Increases IT agility by reducing the time and resources required to deliver new IT services to the branch office.
- Simplifies branch-office data protection for regulatory compliance purposes.

Selected Part Numbers and Ordering Information

WAVE-274-K9	Cisco WAVE-274 with chassis with 3 GB SDRAM, 250-GB hard disk drive (HDD), 2-port inline module, and AC power supply; Cisco WAAS Enterprise license included
WAVE-474-K9	Fixed hardware SKU with 1 X 250GB HDD, 3GB DRAM, 2-port inline card and Cisco WAAS Enterprise License included
WAVE-574-K9	Cisco WAVE-574 with chassis with 3 GB SDRAM, 500-GB HDD, and AC power supply; Cisco WAAS Enterprise license included

For More Information

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

Cisco Application and Content Networking System (ACNS) Software

The Cisco Application and Content Networking System (ACNS) is a powerful digital media delivery solution that greatly reduces redundant digital media streaming traffic traversing a WAN from the data center to branch offices over satellite and terrestrial networks. With Cisco ACNS, organizations can deliver effective and large-scale corporate communications, on-demand training, and digital signage to remote branch offices, schools, and stores, with high-quality and minimal effect on the network, while taking advantage of investments in converged IP WANs. Cisco ACNS combines the technologies of transparent on-demand caching, scheduled repositioning, and live digital broadcasting to minimize the effect over the WAN.

Key Features and Benefits

- Cisco ACNS provides live broadcasts and video on demand (VoD). Stream splitting at the edge delivers streams to hundreds of user desktops or TV displays.
- Cisco ACNS integrates with the Cisco Digital Media System (DMS).
- Cisco ACNS offers unicast and IP Multicast delivery. It delivers only one unicast video stream per digital media streaming source.
- Cisco ACNS offers continuous and transparent media content distribution with policy-based bandwidth throttling.
- Cisco ACNS has a multilayer hierarchy for high scalability and redundancy across the delivery path to thousands of user desktops, digital signs, kiosks, and so on.
- Cisco ACNS supports multi video formats, including Microsoft Windows Media, Real, Flash, H.264, and QuickTime.

Selected Part Numbers and Ordering Information

SF-ACNS-5.5-SA-K9	Cisco ACNS Software v.5.5 (SATA)
SF-ACNS-5.5-SC-K9	Cisco ACNS Software v.5.5 (SCSI)
SF-ACNS-5.5-SS-K9	Cisco ACNS Software v.5.5 (SAS)

For More Information

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

Cisco Nexus 7000 Series Switches

The Cisco Nexus 7000 Series Switches are the first switches designed specifically to meet data center-class requirements. Built to meet the most mission-critical data center requirements, it delivers continuous system operation and virtualized, pervasive services. The Cisco Nexus 7000 Series is a modular line of switches designed for highly scalable end-to-end 10-Gigabit Ethernet data center networks. It features a fabric architecture that scales beyond 15 terabits per second (Tbps), with future support for 40 and 100 Gigabit Ethernet.

The Cisco Nexus 7000 Series is based on a proven operating system (Cisco NX-OS), with enhanced features to deliver real-time system upgrades with exceptional manageability and serviceability. Its innovative design is built to support end-to-end data center connectivity, consolidating IP, storage, and Interprocess-communication (IPC) networks on a single Ethernet fabric.



Ideal for Companies That Need These Features

Cisco Nexus 7000 Series

- Infrastructure scalability
- Optimized CPU resources
- Scalable security with link-layer encryption, security-group access control lists, and role-based access control
- Operational continuity for lossless, nondisruptive upgrades and zero service downtime
- A connectivity management processor (CMP) to provide integrated out-of-band management access
- Transport flexibility
- Virtualized control-plane and data-plane forwarding results in optimized performance
- Virtual device contexts (VDCs) to maximize software and hardware resource usage while providing strong security and software fault isolation

Key Features and Benefits

- The Cisco Nexus 7000 supports up to two hundred fifty-six 10-Gigabit Ethernet or three hundred eighty-four 10/100/1000 Ethernet ports in a single 10-slot chassis.
- The Cisco Nexus 7000 has a fully modular and fully redundant 10-slot chassis with front-to-back airflow and integrated cable management.
- Dual dedicated supervisor modules provide exceptional high-availability features with no service interruptions, even during hardware and software upgrades.
- A highly scalable fabric architecture supports up to five fabric modules for load-balanced, fault-tolerant operation; the switch is designed to deliver 230 Gbps per slot of bandwidth at release, with future support for more than 500 Gbps per slot.
- The switch provides virtual output queuing and fabric arbitration, delivers quality of service (QoS) and fairness across all ports, even during congestion, and provides the basis for future unified I/O.
- The switch offers integrated security hardware support for Cisco TrustSec, providing data confidentiality while simplifying and scaling access control.
- The switch has fully distributed forwarding engines, providing scalable packet processing and forwarding.
- Three load-sharing power supply modules allow either 110- or 220-VAC inputs. With 220-VAC inputs these power supplies will deliver fault tolerance for a fully loaded chassis with worst-case N+1 and grid redundancy.

Selected Part Numbers and Ordering Information

N7K-C7010	Cisco Nexus 7000 Series 10 Slot Chassis-includes cable management and fans, does not include Power Supplies
N7K-C7010-FAB-1	Cisco Nexus 7000 10 Slot Fabric Module-46Gbps per slot
N7K-C7018	Cisco Nexus 7000 Series 18-Slot chassis including fan trays, no power supply
N7K-SUP1	Cisco Nexus 7000 Series Supervisor Module-includes external 8GB Log Flash, does not include optional external 2GB Expansion Flash
N7K-LAN1K9	Cisco Nexus 7000 LAN Enterprise License (L3 protocols)
N7K-M132XP-12	Cisco Nexus 7000 Series 32 Port 10Gb Ethernet Module (requires SFP+ Optic Modules)
N7K-M148GT-11	Cisco Nexus 7000 Series 48 Port 10/100/1000 Ethernet Module
N7K-M148GS-11	Cisco Nexus 7000 Series 48 Port 1 Gigabyte SFP

For More Information

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

Cisco Nexus 5000 Series Switches

The Cisco Nexus 5000 Series is a family of line-rate, low-latency, lossless 10 Gigabit Ethernet, Cisco Data Center Ethernet, and Fibre Channel over Ethernet (FCoE) switches for data center applications. With low latency, front-to-back cooling, and rear-facing ports, the Cisco Nexus 5000 Series is designed for data centers transitioning to 10 Gigabit Ethernet as well as for those ready to deploy a unified fabric that can handle their LAN, SAN and server cluster, networking all over a single link (or dual links for redundancy).



Key Features and Benefits

- High-performance, low-latency 10 Gigabit Ethernet, delivered by a cut-through switching architecture, for 10 Gigabit Ethernet server access in next-generation data centers
- Cisco Data Center Ethernet, a main component of Cisco Data Center 3.0 architecture, with features, including Layer 2 multipathing, which increases scalability in the data center
- Unified fabric with Fibre Channel over Ethernet (FCoE) for I/O consolidation, reducing power and cabling requirements and simplifying data center networks especially for SAN consolidation Fibre Channel

- Virtual machine optimized services for higher asset utilization, simplified server connections, rapid server provisioning, security, and quality of service (QoS)

Selected Part Numbers and Ordering Information

N5K-C5010P-BF	Cisco Nexus 5000 1RU Chassis no PS, 2 Fan Modules, 20 ports (req SFP+)
N5K-C5020P-BF	Cisco Nexus 5000 2RU Chassis no PS, 5 Fan Modules, 40 ports (req SFP+)
N5K-C5020P-BFS	Cisco Nexus 5020 2RU Chassis, Storage Enabled
N5K-M1600(=)	Cisco Nexus 5000 1000 Series Module 6-port 10 GE (req SFP+)
N5K-M1-BLNK(=)	Cisco Nexus 5000 1000 Series Expansion Module Blank

For More Information

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

Cisco Nexus 4000 Series Switches

The Cisco Nexus 4001l Switch Module for IBM BladeCenter is a blade-switch solution for the IBM BladeCenter H and HT chassis providing the server I/O solution. It is a line-rate, low-latency, nonblocking, Layer 2, 10-Gigabit Ethernet blade switch. At the core of the Cisco Nexus 4001l is the unified switch application-specific integrated circuit (ASIC), a new, high-performance, line-rate switch ASIC that delivers extremely low and consistent latency across all packet sizes independent of the configured networking features. This design supports standard Ethernet as well as Priority Flow Control (PFC) and Enhanced Transmission Selection (ETS), required for lossless Ethernet transmission. LAN and storage-area-network (SAN) networking protocols are delivered through Cisco NX-OS Software, a modular, fault-tolerant, highly available operating system designed specifically to support unified fabric data center networks.



Key Features and Benefits

- Fourteen fixed 10-Gigabit Ethernet server-facing downlinks (autosensing ports; can also operate in Gigabit Ethernet mode)
- Six fixed 10-Gigabit Ethernet Small Form-Factor Pluggable Plus (SFP+) uplinks (autosensing ports; can also operate in Gigabit Ethernet mode)
- Three management interfaces: One external 10/100/1000BASE-T port (mgmt 0), one internal port for advanced-management-module (AMM) connectivity (mgmt 1), and one in-band management interface using the interface-vlan feature
- One RS-232 serial console port

Selected Part Numbers and Ordering Information

N4K-4001l-XPX	Cisco Nexus 4001l Switch Module chassis for IBM Blade Center
N4K-4001l-SSK9	Cisco Nexus 4001l Storage Protocol Services Software License

For More Information

<http://www.cisco.com/go/nexus4000>

Cisco Nexus 2000 Series Fabric Extenders

The Cisco Nexus 2000 Series Fabric Extender (FEX) is a category of data center products that provide a universal server-access platform that scales across a range of Gigabit Ethernet, 10 Gigabit Ethernet, unified fabric, rack, and blade-server environments. It is designed to simplify data center architecture and operations.



The Cisco Nexus 2248TP provides 48 Fast Ethernet and Gb Ethernet (100/1000BASE-T) server ports and four 10 Gb Ethernet uplink ports in a compact 1 rack unit (1RU) form factor.

The Cisco Nexus 2232PP 10G provides 32 10 Gb Ethernet and Fibre Channel Over Ethernet (FCoE) Small Form-Factor Pluggable Plus (SFP+) server ports and eight 10 Gb Ethernet and FCoE SFP+ uplink ports in a compact 1 rack unit (1RU) form factor

The Cisco Nexus 2148T provides 48 Gigabit Ethernet server ports and four 10 Gigabit Ethernet uplink ports in a compact one rack unit (1RU) form factor.

Working in conjunction with Cisco Nexus 5000 Switches, the Cisco Nexus 2000 Fabric Extender delivers a cost-effective and highly scalable way to support Gb Ethernet environments while facilitating migration to 10 Gb Ethernet, virtual machine-aware, and unified fabric technologies.

Selected Part Numbers and Ordering Information

N2K-C2148T-1GE	Cisco Nexus 2000 Series 1GE Fabric Extender, 1PS, 1 Fan Module, 48x1G-BaseT + 4x10GE (req SFP+)
N2K-C2248TP-1GE	Cisco Nexus 2000 Series 1GE Fabric Extender, 2PS, 1 Fan Module, 48x100/1000-BaseT + 4x10GE (req SFP+)
N2K-C2248TF-1GE	Cisco Nexus 2000 Series 1GE Fabric Extender, 2PS, 1 Fan Module, 48x100/1000-BaseT + 4x10GE (includes 8 Fabric Extender Transceivers for N5K-to-N2K interconnect)
N2K-C2232PP-10GE	Cisco Nexus 2000 Series 10GE Fabric Extender, 2PS, 1 Fan Module, 32x10GE (req SFP+) + 8x10GE (req SFP+)
N2K-C2232PF-10GE	Cisco Nexus 2000 Series 10GE Fabric Extender, 2PS, 1 Fan Module, 32x10GE (req SFP+) + 8x10GE (includes 16 Fabric Extender Transceivers for N5K-to-N2K interconnect)

For More Information

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

Cisco Nexus 1000V Series Switches

The Cisco Nexus 1000V virtual machine access switch is an intelligent software switch implementation for VMware ESX environments. Running inside of the VMware ESX hypervisor, the Cisco Nexus 1000V supports Cisco VN-Link server virtualization technology, providing:

- Policy-based virtual machine (VM) connectivity
- Mobile VM security and network policy
- Non-disruptive operational model for your server virtualization, and networking teams

With the Cisco Nexus 1000V Series Switches, you can have a consistent networking feature set and provisioning process all the way from the virtual machine (VM) to the access, aggregation, and core switches. Your virtual servers can use the same network configuration, security policy, tools, and operational models as physical servers. Virtualization administrators can leverage predefined network policy that follows the nomadic VM and focus on virtual machine administration. This comprehensive set of capabilities helps you to deploy server virtualization faster and realize its benefits sooner.

The Cisco Nexus 1000V switch has two major components: the Virtual Ethernet Module (VEM) that executes inside the hypervisor, and the external Virtual Supervisor Module (VSM) that manages the VEMs.

Selected Part Numbers and Ordering Information

L-N1K-VLCPU-01	Nexus 1000V eDelivery CPU license Qty 1
L-N1K-VLCPU-04=	Nexus 1000V eDelivery CPU license Qty 4
L-N1K-VLCPU-16=	Nexus 1000V eDelivery CPU license Qty 16
N1K-VLCPU-16=	Nexus 1000V Paper CPU License Qty 16
L-N1K-VLCPU-32=	Nexus 1000V eDelivery CPU license Qty 32
N1K-VLEM-UCS-1	Nexus 1000V license PAK for 1 virtual Ethernet module on UCS

Note: Cisco Nexus 1000v software and licenses can also be ordered directly from your VMware reseller.

For More Information

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

Cisco Unified Computing System

The Cisco Unified Computing System is a next-generation data center platform that unites compute, network, storage access, and virtualization into a cohesive system designed to reduce Total Cost of Ownership (TCO) and increase business agility. The system integrates a low-latency, lossless 10GE 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.



The UCS is managed as a single system whether it has 1 server or 320 servers with thousands of virtual machines, this approach decouples scale from complexity. The Cisco Unified Computing System accelerates the delivery of new services simply, reliably, and securely through end-to-end provisioning and migration support for both virtualized and non-virtualized systems.

The Cisco Unified Computing System is designed to deliver:

- 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 non-virtualized environments

- A seamless integrated system that is managed, serviced, and tested as a whole
- Scalability through a design for up to 320 discrete servers and thousands of virtual machines, and the ability to scale I/O bandwidth to match demand
- Industry standards supported by a partner ecosystem of industry leaders

Cisco UCS Product Family of Products

The Cisco Unified Computing System is built from the following components:

- Cisco UCS 6100 Series Fabric Interconnects is a family of line-rate, low-latency, lossless, 10-Gbps Cisco Data Center Ethernet and FCoE interconnect switches that consolidate I/O within the system. Both 20-port 1RU and 40-port 2RU versions accommodate expansion modules that provide Fibre Channel and/or 10 Gigabit Ethernet connectivity.
- Cisco UCS 5100 Series Blade Server Chassis supports up to eight blade servers and up to two fabric extenders in a 6RU enclosure without the need for additional management modules.
- Cisco UCS 2100 Series Fabric Extenders bring unified fabric into the blade-server chassis, providing up to four 10-Gbps connections each between blade servers and the fabric interconnect, simplifying diagnostics, cabling, and management.
- Cisco UCS C-Series Rack-Mount Servers offer a rack mount form factor. Cisco C-Series Servers may also be deployed as stand-alone computing devices in traditional environments while providing a variety of innovative features. C-Series Servers provide IT with increased flexibility and confidence to take advantage of Cisco's Unified Computing architecture.
- Cisco UCS Network Adapters are offered in a mezzanine-card form factor. 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.

Key Features and Benefits

- Reduced total cost of ownership 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 non-virtualized environments
- Enable scalability through a design for up to 320 discrete 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
N20-X00001	CPU Kits—2.93GHz Xeon X5570 95W CPU/8MB cache/DDR3 1333MHz (NOTE: other options include 2.53GHz, 2.26GHz, and 2.26GHz Xeon configurable CPU selections)
N01-M302GB1	Memory Kits—2GB DDR3-1333MHz RDIMM/PC3-10600/single rank 1Gb DRAMs (NOTE 4GB & 8GB memory options are available during configuration)
N20-AI0002	Mezzanine Cards—UCS 82598KR-CI 10-Gigabit Ethernet Adapter/PCle/2-port 10Gb (NOTE Emulex, QLogic, and Virtual interface card options are available during configuration)
N20-D073GB	Hard Drive Options—73GB SAS 15K RPM SFF HDD/hot plug/B-series drive sled (NOTE 146GB option available during configuration)
Operation systems	UCS blade servers can be preconfigured with Red Hat, Novell, Microsoft, or VMware operating systems

For More Information

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

Cisco UCS B-Series Blade Servers

The 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, 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 maximize performance, energy efficiency, and flexibility for demanding virtualized and nonvirtualized applications. These 2-socket blade servers are based on Intel Xeon 5500 and Xeon 5600 Series processors.

- The Cisco UCS B200 M1 and UCS B200 M2 Blade Servers balance simplicity, performance, and density for production-level virtualization and other mainstream data center workloads.
- The Cisco UCS B250 M1 and UCS B250 M2 Extended Memory Blade Servers maximize performance and capacity for demanding virtualization and large-dataset workloads with up to 384 GB of industry-standard memory. They also offer a more cost-effective memory footprint for less-demanding workloads.

The Cisco UCS B-Series 4-socket servers extend the agility and cost benefits of unified computing to a wider range of workloads.

- The Cisco UCS B440 M1 Blade Server is powered by the scalable performance and reliability features of up to four Intel Xeon 7500 Series processors, and it easily handles compute-intensive, enterprise-critical applications.

Key Features and Benefits

- Autodiscovery—Automatic recognition and configuration of blades by Cisco UCS Manager
- Remote management through an integrated service processor that also executes policy established in Cisco UCS Manager software
- Service profile support—Embedded integration with Cisco UCS Manager for all infrastructure policies required to deploy applications and provision servers
- 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)

Selected Part Numbers and Ordering Information

N20-B6740-2	Cisco UCS B440 M1 Blade Server w/o CPU, memory, HDD, mezzanine
N20-B6625-2	Cisco UCS B250 M2 Blade Server
N20-B6620-2	Cisco UCS B250 M1 Blade Server w/o CPU, memory, HDD, mezzanine
N20-B6625-1	Cisco UCS B200 M2 Blade Server
N20-B6620-1	Cisco UCS B200 M1 Blade Server w/o CPU, memory, HDD, mezzanine.

For More Information

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

Cisco UCS C-Series Rack-Mount Servers

The Cisco UCS C-Series Rack-Mount Servers extend the capabilities of the Cisco Unified Computing System, using Intel's latest Xeon 5600 Series multicore processors to deliver even better performance and efficiency. Each product in the series is designed to address varying workload challenges through a balance of processing, memory, I/O, and internal storage resources. The series includes the following models:



- The Cisco UCS C200 server is a high-density, 2-socket, 1-rack unit (1RU) rack-mount server. It is built for production-level network infrastructure, web services, and mainstream data centers; and branch- and remote-office applications.
- The Cisco UCS C210 server is a general-purpose, 2-socket, 2RU rack-mount server designed to balance performance, density, and efficiency for storage-intensive workloads. This server is built for applications such as network file and appliances, storage, database, and content delivery.
- The Cisco UCS C250 server is a high-performance, memory-intensive, 2-socket, 2RU rack-mount server designed to increase performance, and it has the capacity for demanding virtualization and large-dataset workloads. The server also can reduce the cost of smaller memory footprints.

The Cisco UCS C460 is a 4-socket, 4RU rack-mount server for compute-intensive, enterprise-critical standalone applications and virtualized workloads.

Key Features and Benefits

- 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 Integrated Management Controller
- Offers agent and agentless management with third-party tools through in-band, data-plane connections
- Provides Serial Advanced Technology Attachment (SATA) or Single Attachment Station (SAS) disk-drive types
- Helps reduce total cost of ownership (TCO) and increase business agility
- Balances simplicity, performance, and density for production-level virtualization, web infrastructure, and data center workloads
- Extends unified computing innovations and benefits to rack-mounted servers
- Houses up to 16 internal disk drives for up to 8 terabytes of storage

Selected Part Numbers and Ordering Information

R460-4640810	Cisco UCS C460 M1 Rack Server with DVD-RW and 1 PSU. CPUs, memory, HDD, PCIe cards, Rail Kit and Redundant PSU must be ordered below.
R250-2480805	Cisco UCS C250 M1 Rack Server with DVD-RW and 1 PSU. CPUs, memory, HDD, PCIe cards, Rail Kit and Redundant PSU must be ordered below.

R250-2480805W	Cisco UCS C250 M2 Rack Server with DVD-RW and 1 PSU
R210-2121605W	Cisco UCS C210 M2 Rack Server with 1 Power Supply
R210-2121605	Cisco UCS C210 M1 Rack Server with 1 Power Supply, CPUs, memory, HDD, PCIe cards, Rail Kit and Redundant PSU must be ordered below.
R200-1120402W	Cisco UCS C200 M2 Rack Server with DVD-RW and 1 Power Supply
R200-1120402	Cisco UCS C200 M1 Rack Server with DVD-RW and 1 Power Supply, CPUs, memory, HDD, PCIe cards, Rail Kit and Redundant PSU must be ordered below.

For More Information

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

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 the highest-performance storage area networks (SANs), with the lowest total cost of ownership (TCO) in the industry. Layering a rich 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. The Cisco NX-OS is included at no charge with every Cisco MDS 9000 Multilayer SAN Switch, and is the underlying system software that powers the MDS solution.

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 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]):

- Supports maximum of 24 10-Gbps Fibre Channel ports per chassis
- Supports maximum of 60 Small Computer System Interface over IP (iSCSI) and Fibre Channel over IP (FCIP) ports per chassis
- Supports maximum of 528 1-, 2-, or 4-Gbps Fibre Channel ports per chassis
- Offers 13 available slots
- Supports 8-Gbps Fibre Channel: 24-, 48-, and 4/44-port 8-Gbps Fibre Channel switching modules
- Supports 4-Gbps Fibre Channel: 12-, 24-, and 48-port 4-Gbps Fibre Channel switching modules
- Supports IP and storage services: 18/44-port multiservice modules and 16-port storage services node
- Supports 10-Gbps Fibre Channel: 4-port 10-Gbps Fibre Channel switching module

Cisco MDS 9509 Multilayer Director

The Cisco MDS 9509 supports up to 336 ports of 1-, 2-, 4-, 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 layers a rich 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-, or 4-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
- Advanced management tools for overall lowest TCO
- Backward-compatible for investment protection
- Unified SAN management

Cisco MDS 9506 Multilayer Director

The Cisco MDS 9506 Multilayer Director supports up to 336 ports of 1-, 2-, 4-, 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 layers a rich 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-, or 4-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-, and 4- and 10-Gbps Fibre Channel switching
- Advanced management tools for overall lowest TCO
- Backward-compatible for investment protection
- 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
Cisco MDS 9200 Base Configuration	
DS-C9222i-K9	Cisco MDS 9222i 18-port FC and 4-port GE + 1-slot Modular Switch
Cisco MDS 9100	
DS-C9124-K9	Cisco MDS 9124 8-port base

DS-C9134-K9	Cisco MDS 9134 16-port base
DS-C9134-1K9	Cisco MDS 9134 32-port base
DS-C9134-8-K9	Cisco MDS 9134 with 32 FC ports enabled
DS-2C9134-K9	2x Cisco MDS 9134s stacked as a bundle via copper CX4 with 48-port enabled
DS-2C9134-1K9	2x Cisco MDS 9134s stacked as a bundle via copper CX4 with 64-port enabled

For More Information

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

Cisco MDS 9200 Series Multilayer Switches

The Cisco MDS 9222i Multiservice Modular Switch 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 ideal 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 provides for 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 18 4-Gbps Fibre Channel ports and 4 Gigabit Ethernet IP storage services ports, and an expansion slot to host Cisco MDS 9000 Family switching and services modules—allowing it to scale up to a 66-port Fibre Channel switch with the Cisco MDS 9000 Family 48-port 4-Gbps Fibre Channel Switching Module 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 Family 32-port Storage Services Module. The Cisco MDS 9222i is also capable of high-density connectivity through 8-Gbps Fibre Channel ports—the Cisco MDS 9222i also supports the 4/44-port 8-Gbps host-optimized Fibre Channel switching module. The switch:

- Scales up to 66 Fibre Channel ports
- Offers 18 4-Gbps Fibre Channel interfaces for high-performance SAN connectivity
- Offers 4 Gigabit Ethernet IP storage services ports
- Supports iSCSI, Fibre Channel, and Fiber Connection (FICON)

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 ideal for small to medium-sized businesses. The fabric switches are also available as blade-switch form factors for market-leading blade servers, including IBM and HP blade servers.



The Cisco 9100 Series portfolio includes:

- Cisco MDS 9148 Multilayer Fabric Switch
- Cisco MDS 9134 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 one-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 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 for easy deployment in any size network. The Cisco MDS 9148 is competitively priced with enterprise-class capabilities: virtual storage area networks (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 granularity is 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 FlexAttach technology to enable transparent server deployment without the need to reconfigure the SAN.
- Offers N-Port Virtualization (NPV) technology and N-port ID virtualization (NPIV) support for virtual environments
- Supports 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 role-based access control (RBAC) for comprehensive security controls
- Like all MDS switches and directors, blocks corrupted and malformed frames from entering a fabric, protecting servers and applications

Cisco MDS 9134 Multilayer Fabric Switch

The Cisco MDS 9134 Multilayer Fabric Switch is designed for midrange storage environments and provides flexibility, high availability, security, and ease of use in a compact 1-rack unit (1RU) form factor. With line-rate 4- and 10-Gbps ports and the ability to expand from 24 to 32 ports, the switch is ideal for top-of-the-rack switch and edge connectivity in enterprise storage area networks (SANs). In addition, you can stack the Cisco MDS 9134 in pairs to form a 48- or 64-port 4-Gbps Fibre Channel switch. The switch offers:

- Up to 32 4-Gbps ports and 2 10-Gbps ports per chassis
- 24-port base configuration
- Up to 48 or 64 ports (stacked pair)
- 352 ports aggregate bandwidth
- Integrated IBM Fiber Connection (FICON) connectivity
- On-demand port activation
- Two optional 10-Gbps ports
- Quick Configuration wizard that eliminates complexity

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: virtual storage area networks (VSANs), PortChannels, nondisruptive code upgrade and comprehensive security (authentication, authorization, and accounting [AAA], role-based access control [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 for easy deployment in any size network. The "on-demand" port activation license makes port activation faster.

- Offers 1-, 2-, and 4-Gbps performance
- Scales up to 24 Fibre Channel ports
- Offers simplified management
- Offers easy configuration and deployment
- Provides highly available platform for mission-critical deployments
- Provides comprehensive security framework

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. Support disaster recovery, security, data mobility, and other heterogeneous storage requirements without adding appliances or using host or array resources. The Cisco MDS 9000 Family Services Nodes provide network-hosted services to Cisco storage networks such as storage-area-network (SAN) extension (Fibre Channel over IP [FCIP]), 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 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 and the Cisco MDS 9222i Multiservice Modular Switch. It requires Cisco MDS 9000 NX-OS Software Version 4.2 or later.

- XRC Acceleration maximizes parallelism by supporting multiple system data movers (SDMs) and multiple readers within each SDM. IBM Parallel Access Volumes (PAVs) and HyperPAVs are supported. Fibre Connection (FICON) Data Access Storage Devices (DASDs) from IBM, 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 MDS switches

provide. Many customers experience compression ratios of 4:1 or better, 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 MDS 9000 Storage Media Encryption (SME)

The Cisco MDS 9000 Family Storage Media Encryption (SME) provides encryption as a 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 rewiring or reconfiguring SANs or installing 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.

- The Cisco MDS 9000 SME provides simple, non-disruptive installation and provisioning. Neither rewiring nor SAN reconfiguration is required.
- Encryption engines are integrated on Fibre Channel switching modules.
- The 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 (IOA)

Cisco MDS 9000 Family I/O Accelerator (IOA) software improves remote I/O performance and bandwidth usage over MAN and WAN links. This fabric-based acceleration service is implemented on the Cisco SSN-16 Storage Services Node, Cisco MDS 9000 18/4-Port Multiservice Module, and Cisco MDS 9222i Multiservice Modular Switch. It requires Cisco MDS 9000 NX-OS Software Version 4.2 or later.

- IOA speeds up Small Computer System Interface (SCSI) disk writes and tape reads and writes over MANs and LANs.
- IOA service nodes can be located anywhere in the fabrics on each side of the remote link.
- 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 Fabric Manager wizard simplifies configuring the infrastructure on each side of the MAN or WAN link.
- Insertion of the acceleration service into the data path is transparent and non-disruptive.
- Installation and provisioning are simple and non-disruptive. Neither rewiring nor SAN reconfiguration is required.
- Encryption engines are integrated on Fibre Channel switching modules.
- The 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= M95IOA184=	Cisco MDS 9000 Family I/O Accelerator Package license for MSM-18/4 on Cisco MDS 9200 Cisco MDS 9000 Family I/O Accelerator Package license for MSM-18/4 on Cisco MDS 9500
M92IOASSN= M95IOASSN=	Cisco I/O Accelerator license (1 engine) for SSN-16 on Cisco MDS 9200 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/storagenetworking>

Cisco MDS Data Mobility Manager (DMM)

The Cisco Data Mobility Manager (DMM), a fabric-based data migration solution that transfers block data non-disruptively across heterogeneous storage volumes and across distances, irrespective of whether the host is online or offline, is such a solution. 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.

It is implemented on the Cisco MDS 9000 18/4-Port Multiservice Module, Cisco MDS 9222i Multiservice Modular Switch, and Cisco Storage Services Module (SSM) line cards of Cisco MDS 9000 Series Switches. SSM cards require Cisco MDS 9000 SAN-OS Software Version 3.2 or later. The Cisco MDS 9000 18/4-Port Multiservice Module and MDS 9222i Multiservice Modular Switch require Cisco MDS 9000 NX-OS Software Version 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 NX-OS Software

Cisco MDS 9000 NX-OS Software is designed to create a strategic SAN platform with superior reliability, performance, scalability, and features. Formerly known as Cisco SAN-OS, Cisco MDS 9000 NX 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 of Fibre Channel storage switches
- Cisco UCS 6100 Series Fabric Interconnects of the Cisco Unified Computing System

By allowing you to implement a single operating system across network, storage, and compute infrastructure, Cisco NX-OS greatly simplifies data center operations, producing a direct, positive effect on operation 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. Finally, because it is built on a modular, adaptable architecture, Cisco NX-OS provides forward investment protection with an inherent ability to easily incorporate additional innovations and new technologies.

For More Information

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

Cisco Catalyst Blade Switch 3000 and 3100 Series

Cisco Catalyst Blade Switch 3100 Series and the Cisco Catalyst Blade Switch 3000 Series are specifically designed to meet the rigors of blade server application infrastructure. The Cisco Catalyst Blade Switch 3000 Series provides cost-effective gigabit Ethernet connectivity, while the Cisco Catalyst Blade Switch 3100 series provides high performance 10Gb Ethernet connectivity and innovative Virtual Blade Switch (VBS) technology. The Cisco Catalyst Blade Switches help address the problems of server sprawl within the data center infrastructure.

These servers allow mixing and matching of Gigabit Ethernet and 10 Gigabit Ethernet switches, providing customers with a cost-effective migration path. Switch capacity can be incrementally upgraded as server needs demand. Cisco blade switches are optimized for IBM, HP, Dell, and FSC storage environments. These products introduce an innovative new technology called the virtual blade switch (VBS), which allows up to 8 physical switches to be combined into a single logical switch. These products represent the foundation of the many additional functions that the Cisco Catalyst Blade Switch 3100 Series delivers.



Key Features and Benefits

- The VBS is self-managing and self-configuring—When switches are added or removed, the master switch automatically loads the Cisco IOS Software version running on the VBS to the new switch, loads the global configuration parameters, and updates all the routing tables to reflect changes. Upgrades are applied universally and simultaneously to all members of the VBS.
- The VBS is highly resilient—Each switch can operate both as master controller and as forwarding processor. Each switch in the VBS can serve as a master, creating a 1:N availability scheme for network control. In the unlikely event of a single-unit failure, all other units continue to forward traffic and maintain operation.
- The VBS offers industry-leading mechanisms for marking, classification, and scheduling to deliver superior performance for data, voice, and video traffic, all at wire speed.
- The VBS supports a comprehensive set of security features for connectivity and access control, including access control lists (ACLs), authentication, port-level security, and identity-based network services with IEEE 802.1x and extensions. This set of features not only helps prevent external attacks, but also defends the network against “man-in-the-middle” attacks. The VBS-enabled switch also supports the Cisco Network Admission Control (NAC) security framework.
- The VBS-enabled switch is managed as a single object and has a single IP address.

Selected Part Numbers and Ordering Information

WS-CBS3125G-S	Cisco Catalyst Blade Switch 3125G for HP w/ IP Base
WS-CBS3125X-S	Cisco Catalyst Blade Switch 3125X for HP w/ IP Base
WS-CBS3020-HPQ	Cisco Catalyst Blade Switch 3020 for HP
WS-CBS3130G-S	Cisco Catalyst Blade Switch 3130G for Dell M1000e with IP Base
WS-CBS3130X-S	Cisco Catalyst Blade Switch 3130X for Dell M1000e with IP Base
WS-CBS3032-DEL	Cisco Catalyst Blade Switch 3032 for Dell M1000e
WS-CBS3012-IBM-I	Cisco Catalyst Switch Module 3012 for IBM
WS-CBS3110G-S-I	Cisco Catalyst Switch Module 3110G for IBM BladeCenter w/ IP Base
WS-CBS3110X-S-I	Cisco Catalyst Switch Module 3110X for IBM BladeCenter w/ IP Base
WS-CBS3040-FSC	Cisco Catalyst Blade Switch 3040 for FSC

For More Information

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

Cisco Data Center Services

Cisco Data Center Services Cisco 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.

Accelerate Data Center Transformation

Today, the data center is a strategic asset in a world that demands better integration among people, information, and ideas. Your business and your data center work better when technology products and services are aligned with your business needs and opportunities. Using a unique network-based perspective and a unified view of data center assets, Cisco and our industry-leading partners deliver services that accelerate the transformation of your data center.

Achieve Business Success Through an Architectural Approach

In collaboration with your team and our partner ecosystem, we take an architectural approach to help you create a more intelligent, responsive, integrated data center infrastructure. Through a robust portfolio of services, we can help you align IT to the needs of your business, unify data center silos, and create a flexible architecture optimized for your organization. We can help you assess readiness to support proposed solutions, integrate new capabilities, and help keep the data center secure, available, and operating reliably.

Optimize Your IT Infrastructure As Your Data Center Evolves

Data centers must continually evolve to meet business needs. Cisco's Data Center Optimization Service provides expertise, best practices and knowledge transfer to help your IT organization respond to business changes, deliver next generation services, and stay ahead of the competition.

Together with our rich diverse ecosystem of partners, Cisco Services helps you deploy and optimize a data center solution that is customized for your unique business needs. Our focus is on your success today and tomorrow.

For more information about Cisco Data Center Services, visit <http://www.cisco.com/go/dcservices>.