



Cisco Switch Guide

Scalable, intelligent LAN switching for campus, branch,
and data center networks of all sizes

Cisco® Nexus 7000, Catalyst® 6500 and
Catalyst 4500 Series Modular Switches

Cisco Nexus 5000, Nexus 3000, Catalyst 4900, Catalyst 3750-X, Catalyst 3750, Catalyst 3560-X,
Catalyst 3560, Catalyst 2960-S, Catalyst 2960, and Fixed-Configuration Switches, Cisco Nexus
2000 Fabric Extender, Nexus 4000 Blade Switches, Nexus 1000V Virtual Switches, and Optics

Cisco's Portfolio of LAN Switches

Scalable, intelligent LAN switching for Campus, Branch, and Data Center networks of all sizes.

This is your guide to Cisco's portfolio of switches, the industry's most advanced and versatile portfolio of modular, fixed-configuration, blade, and virtual LAN switches for your campus, branch, or data center.

Individually, these switches offer the performance and features required for nearly any deployment, from traditional small workgroups, wiring closets, and network cores, to highly virtualized and converged corporate data centers. Working together, they are the building blocks of an integrated network that delivers scalable and intelligent services protecting, optimizing, and growing your network as your business needs evolve.

The network is the platform delivering business agility and efficiency. However, the proliferation of connected devices coupled with new requirements around secure application delivery, bandwidth-intensive rich media applications, energy efficiency, as well as the need to deliver access to these applications anywhere, anytime, has left networks, and network managers, looking for holistic and simple solutions to their business challenges.

Cisco, the worldwide leader in networking systems for organizations of every size, offers an architectural approach to networking that makes it easy for organizations to adapt and grow within and across geographic boundaries. Through a secure and intelligent infrastructure that delivers non-stop application availability and performance coupled with seamless scalability, supporting a growing number of connected devices, rich media applications, as well as physical and virtual resources in a converged infrastructures is made simple.

Cisco Switches

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Series Overview

Intelligent Switching for the Integrated Network

Modular Switches



Cisco Nexus 7000 Series

Cisco Nexus 7000 Series Switches are Cisco's Flagship modular switching platform for data center Unified Fabric deployments and for highly scalable campus core deployments. They are designed for exceptional 10 GE, 40 GE and 100 GE scalability with the industry's highest resiliency features and unmatched deployment flexibility for the data center core, aggregation, access and campus core. It's industry leading NX-OS innovations and robust feature set enable you to build the next generation network fabrics for both data centers and campus.

System Scalability:

Designed for up to 17Tbps of switching capacity and high density 10 GE, 40 GE and 100 GE, the modular 9, 10- or 18-slot chassis scales up to 768 1 GE ports or 768 10 GE ports or 96/32 40/100GE ports. Paired with the Nexus 2000 Series, the Nexus 7000 can scale to 32 fabric extenders, supporting up to 1536 Gigabit Ethernet servers per Cisco Nexus 7000 chassis.

Network Scalability:

Beyond the system scalability, the Nexus 7000 offers several features to scale the network itself. Cisco FabricPath enables customers to massively scale Layer 2 networks up to 160+ Tbps without the use of spanning-tree. For IP network scalability, Location/ID Separation Protocol (LISP), enables IP portability and dynamic IP route look-up significantly increasing the scalability of layer 3 IP networks.

Operational Continuity:

Designed from the ground up with the goal of delivering continuous operations, the Nexus 7000 and NX-OS deliver a predictable and highly resilient switching platform for the most demanding network environments. With granular process modularity, automatic fault isolation and containment, the industry's only true hitless In Service Software Upgrade (ISSU) capability and tightly integrated hardware resiliency features, the Nexus 7000 running NX-OS delivers the industry's most reliable operating system for operational continuity.

Network Consolidation and Segmentation:

The Nexus 7000 offer numerous industry leading innovations for converging and segmenting the network infrastructure, LANs and WANs, significantly lowering TCO. Virtual Device Contexts (VDC), virtualize a single physical switch into multiple secure (PCI certified) logical switches for infrastructure consolidation. FCoE enables LAN and SAN network consolidation from server to storage, reducing network sprawl while increasing network agility. Other key features that enable WAN and LAN segmentation and convergence include MPLS, OTV, and VRF.

Virtualization and Cloud Enablement:

The Nexus 7000 and NX-OS innovations enable highly scalable virtualization deployments for both intra and inter data center deployments, essentially allowing any workload, any location at any scale. FabricPath enables a highly scalable fabric for large virtualized server deployments, enabling workload mobility across the data center. OTV and LISP allow seamless workload mobility between geographically separated data centers and also for bursting workloads to cloud providers. These and other features on the Nexus 7000 establish the foundation for large scale virtualization and cloud enablement.

From edge to core, Cisco switches provide a complete range of services for all levels of application intelligence, unified network services, integrated security, virtualization, non-stop communications and operational manageability.



Cisco Catalyst 6500 Series

- Flagship Catalyst switching services platform for core-distribution deployments
- Virtual Switching System bolsters availability and scales to 4-terabit capacity
- Up to 160 gigabits per slot; 100 Gigabit Ethernet ready
- Simplifies creation of separate logical networks with Easy Virtual Network (EVN)
- Integrated services modules enhance security, manageability, and wireless control

Efficiently scale, virtualize, secure, and manage your network remotely with Cisco Catalyst 6500 Series Switches. Offering a high-performance, feature-rich platform suitable for deployment in campus, data center, WAN, and Metro Ethernet networks, the Cisco Catalyst 6500 Series provides a strong foundation for Borderless Networks, so you can connect anyone, anywhere, at any time.

Scale Performance and Network Services

- 2 terabits per second (Tbps) fabric delivers 80 Gbps switching capacity per slot and scales to 4 Tbps system capacity with Cisco Catalyst Virtual Switching System (VSS)
- 40G-capable system supports up to 360 10G ports and 1068 1G ports per VSS system
- Supervisor Engine 2T supports up to 720 mpps of IPv4 and 390 mpps of IPv6
- Provides large table sizes for scalable deployment with protected control plane.

Virtual Switching System

- Activates all available bandwidth across redundant Catalyst 6500 systems and eliminates asymmetric routing
- Supports interchassis stateful failover and provides deterministic subsecond recovery
- Provides single point of management
- Eliminates need for First-Hop Resiliency Protocol (FHRP), supports simplified loop-free topologies

Network Virtualization

- Offers infrastructure consolidation by providing segmentation, path isolation, privacy, limited fate sharing, membership definition, and address space separation technologies
- Delivers end-to-end network virtualization using IP/MPLS technologies.

Security

- Identifies (802.1x suite), tags (SGT), encrypts (MacSec), and enforces (Security Group Access Control List) with Cisco TrustSec
- Supports network device admission control (NDAC) and endpoint admission control (EAC)
- Provides investment protection with ingress/egress TrustSec Reflector

Integrates Services and Operational Efficiency

- Helps unify, simplify, and economize your network with next-generation integrated services modules
- Facilitates multiple generations of components on one chassis through a modular design
- Monitors switches across the network with Switched Port Analyzer (SPAN)/Remote Switched Port Analyzer (RSPAN) and virtually connects an analyzer to almost any port on the network with Encapsulated Remote SPAN (ERSPAN)
- Provides application visibility through flexible, egress, sampled Netflow, and CPU Preserving Netflow Export
- Offers image recovery and console logging through the Connectivity Management Processor (CMP)
- Delivers onboard packet capture with Mini Port Analyzer

Series Overview

Intelligent Switching for the Integrated Network

Modular Switches (continued)



Cisco Catalyst 4500 Series

Cisco Catalyst 4500-E Series modular switches enable a high performance, mobile, and secure user experience. The Catalyst 4500-E Series is Cisco's lead access and collapsed access/aggregation platform for Borderless Networks. Offering up to 848 Gbps in switching capacity and 250 Mpps in throughput, Catalyst 4500 E-series switches are optimized for unified communication with high density POE and POE+, embedded security with Cisco TrustSec and enable maximum uptime for voice, video and critical applications with services like Stateful Switchover, non-stop Forwarding, and In-service software upgrades.

Unified Communications:

Cisco pre-standard and IEEE 802.3af PoE Support, 20w PoE support for 802.11n access points. Up to 60 watts per port with E-Series line cards. Extensive QoS features with up to 8 user configurable queues per port.

Non-stop Communications:

Redundant supervisor engines with In Service Software Upgrade (ISSU), non-stop Forwarding/Stateful Switchover (NSF/SSO) offering 50 ms failover; Application visibility with WireShark, Campus virtualization with EVN (Easy Virtual Network); redundant power supplies with power circuit redundancy; hot-swappable fan trays with redundant fans.

Simplified Operations:

Minimize network operational time with ISSU, EEM, AutoQoS, Smartports RSPAN; TDR, OIR, Flexible NetFlow for application visibility, Cisco Prime, and LMS.

Comprehensive Security:

Integrated Network Admission Control (NAC) and Comprehensive security with Cisco TrustSec and 802.1x, H/W-based Control Plane Policing (CoPP); integrated man-in-the-middle and DoS attack mitigation; NetFlow; access control lists for IPv4 and IPv6 at wire rate and SSH.

Flexible Options:

3,6,7 and 10-slot chassis supporting numerous connectivity configurations with up to 48 Gbps per slot capacity, 10/100, 10/100/1000 (PoE or non-PoE), GE SFP Fiber and 10 GE line cards. Mix and match classic line cards with high performance E-Series line cards for maximum flexibility.

High Port Density:

Up to 384 Fast Ethernet or Gigabit Ethernet Ports (PoE or non PoE) and up to 100 10 Gigabit Ethernet (10 GBE) ports.

Investment Protection:

Evolutionary centralized modular Architecture, media flexibility, and scalability of the Catalyst 4500 Series delivers maximum investment protection with backward and forward compatibility across several generations dating back to 1999.



Series Overview (continued)

Fixed-Configuration Switches



Cisco Nexus 5000 Series

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 the Unified Ports functionality you can help enable any transport over Ethernet, including Layer 2 and Layer 3 traffic, and storage traffic, all on one common data center-class platform.

- Based on the Cisco® NX-OS operating system, that is resilient, efficient, virtualized and extensible
- High performance, low latency system with up to 1.92 Tbps switching fabric and 1428 Mpps forwarding rate
- Front-to-back cooling supports efficient data center hot- and cold-aisle designs
- Unified ports provides flexibility in choosing SAN and LAN port options consistent with the virtualized data center and offer a migration path to FCoE
- LAN and SAN Convergence ready through FCoE-based unified fabric and Fibre Channel support in a lossless Ethernet service platform. Energy efficiency achieved with the convergence of the networks
- Virtualization-aware networking through virtualization optimized services and mobility by mapping virtual machines to network profiles
- Supports the extension of the fabric extender technology into the servers and virtual machines via Adapter FEX and VM-FEX technologies. Nexus 5000 Series Switches acts as the single point of network management for these servers and virtual machines
- Pair with Nexus 5000 for up to 24 fabric extenders per Cisco Nexus 5548P switch



Cisco Nexus 3000 Series

Cisco Nexus 3064 Switch is a high performance, high density, sub-micro-second latency ethernet switch, which is part of the brand new Cisco Nexus 3000 Series Switches. This compact 1RU form factor 10GbE switch provides wire-rate L2 and L3 switching and future-proofs networks with 40GbE standards-based technologies while also being backward compatible with 1GbE. Cisco Nexus 3064 is ideal for financial co-location deployments requiring support for advanced unicast and multicast routing protocol features at ultra-low latency. Cisco Nexus 3000 Series Switches extends the comprehensive proven innovations of Cisco Data Center Business Advantage into the HFT market too. The switch does so by delivering functionalities such as ultra-low latency and wire-rate L2/L3 switching on data center class NX-OS operating system.

The key challenges addressed by the Cisco Nexus 3000 series include:

- Increased application sensitivity to network latency
- Increasing bandwidth requirements due to increasing application workloads
- Need for supporting advanced routing protocols with resiliency
- Need to measure network latency between servers

Key highlights of Cisco Nexus 3000 Series Switches:

- Ultra Low Latency
- Cisco Nexus 3000 Series Switches delivers ultra-low latency that translates to faster data transactions thereby resulting in increased revenue for the financial companies.
- Wire-rate 10 Gigabit Ethernet Switching on all 64 10GbE ports
- Layer 2/3 switching up to 1.2Tbps, over 950Mpps (Million Packets per second) in a compact 1RU form factor switch.
- Future-proof with 40GbE standards-based support

- Purpose-built on NX-OS operating system with comprehensive, proven innovations
- Modular OS built from the ground up for resiliency
- Full L3 routing protocol suites including BGP, OSPF, EIGRP, RIPv2
- Integration with Cisco DCNM and XML management tools
- Support for Precision Time Protocol (IEEE-1588) to synchronize system clocks with nanosecond accuracy



Cisco Catalyst 4500-X Series

The Cisco Catalyst® 4500-X Series offers best-in-class Layer 2 and Layer 3 services in a small form factor for space-constrained LAN aggregation in campus and branch-office deployments. The switch simplifies aggregation deployments using the new Cisco IOS® XE Software Operating System with several important innovations such as virtualization, application visibility, and hosted applications such as Wireshark.

- Layer 2–4 switching and intelligent services with 250-Mpps IPv4 and 125-Mpps IPv6
- Rich IP Multicast, quality of service (QoS), and security
- Flexible NetFlow and Wireshark
- Simplified virtualization and application monitoring
- Wire-rate performance delivering 800 Gbps
- Configurations from sixteen to forty 10 Gigabit Ethernet ports
- Every port configurable in 1 or 10 Gigabit Ethernet mode
- Resilient with dual hot-swappable internal AC or DC power supplies
- Hot-swappable fans with N + 1 redundancy



Cisco Catalyst 4900 Series

Fixed-configuration switches offering high-performance and highest availability in 1–2RU configuration, optimized for data center top of rack server aggregation and for space constrained branch collapsed core/distribution LAN aggregation.

Standalone fixed-configuration for low-latency and wire-speed switching

Wire-rate performance with 96-320 Gbps non-blocking switching fabric

Layer 2–4 switching and intelligent services with dynamic IP routing and IPv6

Configurations from 48 10/100/1000 ports to 24 10 GBE ports

TwinGig converter module for migrating from 1 Gigabit Ethernet (SFP) to 10 GBE (X2) on 4900M

Dual, hot-swappable internal AC or DC power supplies

Hot-swappable fan trays



Cisco Catalyst 3750-X Series

Enterprise-class stackable switches with innovative features such as Cisco StackPower, Power over Ethernet Plus (PoE+), and MAC security, for enterprise branch offices and mid-market organizations.

24 and 48 10/100/1000 PoE+ and non-PoE models with optional four 1 GB Ethernet SFP or two 10 GB Ethernet SFP+ uplink network modules

PoE+ with 30W power on all ports in 1 rack unit (RU)

Cisco StackPower: Innovative, industry-first feature for sharing power among stack members

Cisco StackWise Plus for ease of use and resiliency with 64 Gbps throughput

Backward compatibility with Catalyst 3750 Series

Enhanced limited lifetime warranty

MAC security hardware-based encryption

Multicast routing, IPv6 routing, and access control list in hardware

Support LAN Base, IP Base and IP Services configurations



Cisco Catalyst 3750V2 Series

Stackable switches offering multilayer switching and Cisco StackWise™ technology for enterprise branch offices and mid-market organizations.

Stackable fixed-configuration switches featuring Cisco StackWise technology, a 32 Gbps interconnect for a unified, resilient system of up to nine switches

Layer 2–4 switching and intelligent services with dynamic IP routing and IPv6

Fast Ethernet connectivity

Up to 48 10/100 ports plus four SFP ports per stackable switch

Integrated PoE (Cisco pre-standard and IEEE 802.3af); up to 24 ports with 15.4 watts or 48 ports with 73 watts

AC power supply failure protection with external power supply

Series Overview (continued)

Fixed-Configuration Switches



Cisco Catalyst 3560-X Series

Fixed configuration switches with PoE+, optional 10 GE uplinks and MAC security for enterprise LAN and branch access.

24 and 48 10/100/1000 PoE+ and non-PoE models with optional four 1 GE SFP or two 10 GE SFP+ uplink network modules

PoE+ with 30W power on all ports in 1 rack unit (RU) form factor

Dual redundant, modular power supplies and fans

Enhanced limited lifetime warranty

MAC security hardware-based encryption

Multicast routing, IPv6 routing, and access control list in hardware

Support LAN Base, IP Base and IP Services configurations



Cisco Catalyst 3560V2 Series

Fixed-configuration switches combining Fast Ethernet connectivity and PoE for enterprise LAN access and branch offices.

Standalone fixed-configuration switches

Layer 2–4 switching and intelligent services with dynamic IP routing and IPv6

Fast Ethernet connectivity

Up to 48 10/100/1000 ports plus four SFP ports

Integrated PoE (Cisco pre-standard and IEEE 802.3af); up to 24 ports with 15.4 watts or 48 ports with 7.3 watts

AC power supply failure protection with external power supply



Cisco Catalyst 2960-S Series

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

24 or 48 ports of Gigabit Ethernet desktop connectivity with optional four 1 Gigabit Ethernet SFP or two 10 Gigabit Ethernet SFP+ Uplinks

Industry first PoE+ with up to 30W per port

Cisco FlexStack stacking module with 40 Gbps of throughput, allowing ease of operation with single configuration and simplified switch upgrade

Catalyst Smart Operations allows for zero touch deployment

Cisco Smart Install to have the switch immediately active after installation

Cisco Auto Smartports enables automatic configuration by connected device type

Superior Layer 2 threat defense capabilities

Enhanced Cisco EnergyWise to measure, report and reduce energy usage across the entire organization

Pay for functions and services only as needed

Enhanced Limited Lifetime Warranty



Cisco Catalyst 2960 Series

Fixed-configuration switches offering Fast Ethernet connectivity with enhanced LAN services for mid-market and branch office networks.

Standalone fixed-configuration switches

Layer 2 switching with intelligent Layer 2–4 services

Fast Ethernet connectivity

Up to 48 10/100 ports

Power over Ethernet: 24 full PoE port and 24-port (PoE supported on 8 ports) configurations

AC power supply failure protection with external power supply

Fixed-configuration LAN Lite switches offering Fast Ethernet connectivity with Basic LAN services for mid-market and branch office networks.

Standalone fixed-configuration switches

Layer 2 switching with Basic Layer 2–4 services

Fast Ethernet connectivity

Up to 48 10/100 ports



Cisco Catalyst Compact (2960C/3560C) Series

Small Form Factor Gigabit and Fast Ethernet Ethernet switches designed to extend the network and IT services outside the wiring closet.

8 and 12 port fan-less models

Extend a highly secure, intelligent, managed Cisco Catalyst infrastructure with a single Ethernet cable or fiber from the wiring closet

Support for advanced security and services, including voice, video, and Cisco Borderless Network services, to remote endpoints

Power over Ethernet (PoE) pass-through enables the compact switch to draw power from the wiring closet and pass it to end devices (selected models)

Attractive, small form factor and fanless operation fit in confined spaces where multiple cable runs could be challenging

Easy to deploy, manage and extend the network loop free

Enhanced limited lifetime hardware warranty

Series Overview (continued)

Fabric Extender



Cisco Nexus 2000 Series

The Cisco Nexus® 2000 Series Fabric Extenders (FEX) behave as remote line cards for a parent Cisco Nexus 5000 Series or 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.

- Up to 48 100/1000 BASE-T ports plus 4 10 GE uplinks, 32 1/10 GE/FCoE with 8 10 GE uplinks and 32 1/10GBASE-T with 8 10 GE uplinks configurations
- Up to 24 Fabric Extenders per Cisco Nexus 5000 parent switch (Homogeneous policies across 1152 1G ports and 768 10G/FCoE ports)
- Up to 32 Fabric Extenders per Cisco Nexus 7000 parent switch (Homogeneous policies across 1536 1G ports and 1024 10G ports)
- Rich Layer 2-4 switching features and intelligent services inherited from parent switch
- Ideal to support today's traditional Gigabit Ethernet while allowing transparent migration to 10 Gigabit Ethernet, virtual machine-aware, unified fabric technologies
- Operational simplicity at scale for datacenter point of delivery (POD) access level design
- Front-to-back cooling compatible with data center hot-aisle and cold-aisle design, forward and reversed airflow options, AC/DC power supply options

Series Overview (continued)



Cisco Nexus 4000 Series

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 non-virtualized x86 computing architectures.

- Line-rate, extremely low-latency, nonblocking, Layer 2, 10 Gigabit Ethernet blade switch
- Fully compliant with the INCITS Fibre Channel over Ethernet (FCoE) and IEEE 802.1 Data Center Bridging (DCB) standards
- Unified Fabric architecture provides a significant reduction in the number of switches, network interface cards, cabling, and power requirements.
- Supports 14 fixed 1 or 10 Gigabit Ethernet server-facing downlinks and 6 fixed 1 or 10 Gigabit Ethernet uplinks

Series Overview (continued)

Virtual Switches



Cisco Nexus 1000V Series

Cisco Nexus 1000V Series Switches are virtual software switches that ensure secure network connectivity for all the VMs in the datacenter. The solution is based on the standard IEEE 802.1Q and is integrated with VMware vSphere. Cisco Nexus 1000V Series Switches deliver highly secure multitenant services by adding virtualization intelligence to the data center network. Nexus 1000V comprises 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 for virtual machines in concert with the VEM

Nexus 1000V can optimize the use of layer 4–7 services in a virtual machine environment through Cisco vPath architecture services.

- Cisco vPath technology is aware of all L4–7 policies associated with individual virtual machines. Once 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 Nexus 1000V Switch provides trusted multitenant access with granular zone-based security policies for virtual machines. VSG delivers security policies across multiple servers, supporting virtual machine mobility across physical servers for workload balancing, availability, or scale for business growth in cloud computing.
- Cisco vWAAS, a WAN optimization solution, integrated with Nexus 1000V Switch, 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 vSphere features.

Cisco Campus Feature Comparison

Intelligent Switching for the Evolving Network

Modular Switches

Model/Series	Nexus 7000	Catalyst 6500	Catalyst 4500
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LAN Switching Features

Connectivity and Filtering

EtherChannel®/802.3ad	.	.	.
Jumbo Frames—GBE on Copper	.	.	*
Jumbo Frames—GBE on Fiber	.	.	*
Broadcast Suppression	.	.	.
Multicast Suppression	.	.	.
Unicast Flood Suppression	.	.	.
Flexible Packet Matching		.	

Layer 2

ISL/802.1Q	.	.	.
Private VLAN Edge	.	.	.
Private VLAN	.	.	.
Voice VLAN		.	.
VLAN Trunking Protocol (VTP)	.	.	.
GVRP		.	
GARP		.	
URT/VMPS		.	.
VTP v3		.	.
VTP Bomb Protection		.	.
VMPS Server		.	.
Number of Active VLANs	4096 per VDC	4096	4096
Number of VLAN IDs	4096 per VDC	4096	4096

Layer 3

H/W-based MPLS/EoMPLS	.	.	.
EIGRP	.	.	.
EIGRP Stub	.	.	.
VPLS/H-VPLS		.	
MPLS L3 VPNs	.	.	.
MPLS Traffic Engineering (TE)	.	.	.
OSPF	.	.	.

Fixed-Configuration Switches

Catalyst 4500-X	Catalyst 4900	Catalyst 3750-X
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4096	4096	1005
4096	4096	4096
.	.	IP Services
.	.	IP Base
.	.	IP Services (OSPF for Routed Access on IP Base)

Cisco Campus Feature Comparison (continued)

Modular Switches

Model/Series	Nexus 7000	Catalyst 6500	Catalyst 4500
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LAN Switching Features (continued)

Layer 3 (continued)

BGP	.	.	.
Equal Cost Load Balancing	.	.	.
RIP, RIPv2	.	.	.
Static Routes	.	.	.
IS-IS	.	.	.
H/W-based IPv6 Routing	.	.	.
H/W-based Policy Routing IPv4	.	.	.
H/W-based Policy Routing IPv6	.	.	.
Multiprotocol Routing (IPX, AppleTalk)	.	.	.
Cisco Express Forwarding (CEF)	.	.	.
H/W FIB Entries	Up to 1,000,000	Up to 1,000,000	Up to 256,000
VRF Lite	Base	IP Services	Enhanced Layer 3

Integrated Security

Access Control Lists

Reflexive ACL	.	.	.
Port ACL	.	.	.
Time-based ACL	.	.	.
Router ACL	.	.	.
VLAN ACL	.	.	.
VACL with Redirect/Capture/Logging of Denied Traffic	.	.	.
Context-based Access Control	.	.	.
H/W-based Access Control Entry	.	.	.
(ACE) Counters	.	.	.
Order-dependent ACL Merge	.	.	.
Dedicated Hardware Resources for Security ACLs	.	.	.
ACL Scalability (ACE Entries)	64,000	256,000	128,000

Attack Mitigation

Flexible Packet Matching	.	.	.
Control Plane Policing (Multiple CPU Rate Limiters)	.	.	.
Rate Limiters	.	.	.
IP Source Guard	.	.	.

Fixed-Configuration Switches		
Catalyst 4500-X	Catalyst 4900	Catalyst 3750-X
.	.	IP Services
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Up to 256,000	Up to 200,000	Up to 20,000
Enhanced Layer 3	IP Services	IP Services
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.	.*	Capture and Logging
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32,000	32,000	2000
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Cisco Campus Feature Comparison (continued)

Modular Switches

Model/Series	Nexus 7000	Catalyst 6500	Catalyst 4500
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Integrated Security (continued)

Attack Mitigation (continued)

DHCP Snooping/Option 82	•	•	•
Dynamic ARP Inspection	•	•	•
MAC Address Notification	•	•	•
Port Security	•	•	•
H/W-based uRFP Check	•	•	•
H/W-based MAC Learning	•	•	
H/W-assisted MAC Aging	•	•	
Routing Protocol Pass Through		•	
ARP Policing	•	•	•
H/W-based Directed Broadcast		•	

Trust and Identity Management

802.1x Identity-based			
Networking Port Authentication		•	•
802.1x with VLAN Assignment		•	•
802.1x with Guest VLAN		•	•
802.1x with Aux. VLAN Support		•	•
802.1x Port Description		•	•
TACACS+/RADIUS	•	•	•
Web Authentication Proxy		•	•
MAC Authentication		•	•
Unidirectional Control Port		•	•
Inaccessible Authentication		•	•

Secure Connectivity

Media Access Control Security (MACsec)	•		
H/W-based NAT/PAT		•	
MD5 Route Authentication	•	•	•
Multilevel Account Privilege	•	•	•

Cisco Campus Feature Comparison (continued)

Modular Switches

Model/Series	Nexus 7000	Catalyst 6500	Catalyst 4500
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Availability and Resiliency

Switch Redundancy

Virtual Switching System (VSS)		.	
Virtual Port Channel (vPC)	.		
Software Modularity	.	.	
Non-stop Forwarding/Stateful Switchover (NSF/SSO)	.	.	.
NSF-aware	.	.	.
Redundant Power Supplies	.	.	.
Redundant Fans	.	.	.
Redundant Fan Trays	.	.	.
Redundant Supervisors	.	.	.
Generic Online Diagnostics (GOLD)	.	.	.
Basic Support for GOLD Services	.	.	.
Power Supply Failure Redundancy	.	.	.
Power Circuit Failure Redundancy	.	.	.
StackWise Plus		N/A	
StackPower		N/A	

Network Protocols

Unidirectional Link Detection (UDLD)	.	.	.
Gateway Load Balancing Protocol (GLBP)	.	.	.
Hot Standby Routing Protocol (HSRP)	.	.	.
Virtual Router Redundancy Protocol (VRRP)	.	.	.
UplinkFast		.	.
Backbone Fast		.	.
RSTP (802.1w)	.	.	.
PortFast	.	.	.
Per VLAN STP (PVSTP)	.	.	.
Per VLAN RSTP (PVRSTP)	.	.	.
Multiple Instance STP (MISTP)	.	.	.
MSTP (802.1s)	.	.	.
STP Root Guard	.	.	.
BDPU Guard	.	.	.
Loop Guard	.	.	.

Fixed-Configuration Switches

Catalyst 4500-X	Catalyst 4900	Catalyst 3750-X
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.	.	YEs for redundant fans
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Cisco Campus Feature Comparison (continued)

Modular Switches

Model/Series	Nexus 7000	Catalyst 6500	Catalyst 4500
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Availability and Resiliency (continued)

Network Protocols (continued)

IP Event Dampening		.	*
Bidirectional Forwarding Detection	.	.	
Digital Optical Monitoring	.	.	.
Flex Link		.	.
Link State Tracking	.		*

Delivery Optimization

Stateful Application Intelligence

Network-based Application Recognition		.	
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Quality of Service

Number of Queues per Port	Up to 8	Up to 8	Up to 8
Congestion Avoidance	.	.	.
L2–L3 Rewrite/Mapping	.	.	.
Ingress Queuing	.	.	
Ingress Strict Priority	.	.	
Egress Queuing	.	.	.
Egress Strict Priority	.	.	.
Traffic Classification	.	.	.
IP Service Level Agreement		.	.

Policers

H/W-based Policing	.	.	.
Per-port Policers	.	.	.
Per-VLAN Policers	.	.	.
H/W-based Aggregate Policers	.	.	.
Hierarchical Policers		.	.
User-based (Source IP) Rate Limiting	.	.	.
Shaped Round Robin	.	.	

Multicast

H/W-based IPv6 Multicast	.	.	.
H/W-based IPv4 Multicast	.	.	.
H/W-based Bidirectional PIM	.	.	.
Multicast Routing Manager		.	

Fixed-Configuration Switches

Catalyst 4500-X	Catalyst 4900	Catalyst 3750-X
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Up to 8	Up to 8	
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	N/A	.
	N/A	.
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Cisco Campus Feature Comparison (continued)

Modular Switches

Model/Series	Nexus 7000	Catalyst 6500	Catalyst 4500
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Delivery Optimization (continued)

Multicast (continued)

Source Specific Multicast (SSM)	.	.	.
Multicast NSF/SSO	.	.	.
PIM Sparse	.	.	.
PIM Dense	.	.	.
PIM Sparse/Dense	.	.	.
PIM Snooping	.	.	.
PIM Accept Register—Rogue Multicast Server Protection	.	.	.
IGMP v1/v2	.	.	.
IGMP v3	.	.	.
CGMP	.	.	.
RGMP	.	.	.
DVMRP Interoperability	.	.	.
Number of Multicast Routes	32,000	256,000	32,000
IGMP Snooping	.	.	.
IGMP Querier	.	.	.
SSM Mapping	.	.	.
H/W-based Multicast Tunneling	.	.	.
mVRF Lite	.	.	.
Multicast VPN (mVPN)	.	.	.
mVPN Extranet	.	.	.

Tunneling Protocols

H/W-based GRE	.	.	In Software
H/W-based Multipoint GRE	.	.	.
H/W-based IPv4 in IPv6	.	.	In Software
H/W-based IP in IP	.	.	In Software

Enhanced Manageability

Link Layer Discovery Protocol (LLDP)	.	.	.
Time Domain Reflectometry (TDR)	.	.	.
Time Domain Reflectometry (TDR) Interface 10/100/1000	.	.	.
Cisco Network Assistant (CNA)	(DCNM)	.	.
Auto Smartports	.	.	.
Smart Install	.	.	.

Fixed-Configuration Switches

Catalyst 4500-X	Catalyst 4900	Catalyst 3750-X
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32,000	28,000	1000
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In Software	In Software	
In Software	In Software	
In Software	In Software	
In Software	In Software	
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Cisco Campus Feature Comparison (continued)

Modular Switches

Model/Series	Nexus 7000	Catalyst 6500	Catalyst 4500
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Enhanced Manageability (continued)

Smartports		.	.
NetFlow	.	.	.
NetFlow Data Export	.	.	.
Syslog	.	.	.
Switch TopN		.	
SNMP	.	.	.
RMON		.	.
SPAN	.	.	.
RSPAN	.	.	.
ERSPAN	.	.	
L2-Traceroute		.	.
SSH v2	.	.	.
AutoQoS		.	.
E-911 MIB Support		.	.
Out of Band Management (Serial)—RJ-45	.	.	.
Out of Band Management (Serial)—USB		.	.
USB Drive Support	.		.*
Remote Power Cycle and Shutdown	.	.	.
Compact Flash	.	.	.
Configuration Rollback	.	.	.
Call Home	.	.	.
Digital Optical Monitoring	.	.	.

NetFlow

Integrated H/W-based NetFlow	.	.	.
NetFlow Top Talkers		.	.
Sampled NetFlow	.	.	
NetFlow v9	.	.	.
Multicast NetFlow	.	.	
Per Interface NetFlow Data Export	.	.	.
Bridged IP Flows	.	.	.
NetFlow v5	.	.	.
NetFlow v8	.	.	.
Microflow Policing		.	.

Cisco Campus Feature Comparison (continued)

Modular Switches			
Model/Series	Nexus 7000	Catalyst 6500	Catalyst 4500
NetFlow (continued)			
Flexible NetFlow	.	.	.
Flexible NetFlow for L2 Ports	.	.	.
Flexible NetFlow with Embedded Event Manager Integration	.	.	.
Flexible NetFlow with TCP Flags as Non-key Fields	.	.	.
Flexible NetFlow for IPv4	.	.	.
Flexible NetFlow for IPv6	.	.	.
Software Modularity			
Subsystem In Service Software Upgrade (ISSU)	.	.	.
Fault Containment	.	.	.
Memory Protection	.	.	.
Process Restartability	.	.	.
Application, Security, and Management Modules			
Virtualized Firewall Module	.	.	.
Network Analysis Module	.	.	.
Wireless WISM-2 Service Module	.	.	.
ACE-30 Load Balancing Services Module	.	.	.
IPT Solution			
802.1at 30W PoE+	.	.	.
802.3af—15W on 48 Ports in a Modular/Fixed Switch	.	.	.
802.3af—7W on 48 Ports in a Modular/Fixed Switch	.	.	.
802.3af—15W on 24 Ports in a Modular/Fixed Switch	.	.	.
802.3af Modular PoE Daughter Card	.	.	.
Subsystem In Service Software Upgrade (ISSU)	.	.	.

Fixed-Configuration Switches

Catalyst 4500-X	Catalyst 4900	Catalyst 3750-X
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Cisco Campus Feature Comparison (continued)

Modular Switches

Model/Series	Nexus 7000	Catalyst 6500	Catalyst 4500
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IPT Solution (continued)

Fast Link Failure Detection (Bidirectional Forwarding Detection)	.	.	.
Redundant Supervisors with Stateful Switchover	.	.	.
Redundant Power Supply	.	.	.
Redundant Power Circuit	.	.	.
Communication Media Module	.	.	.
AutoQoS	.	.	.
Cisco Discovery Protocol (CDP)	.	.	.
Link Layer Discovery Protocol (LLDP)	.	.	.
Encapsulated RSPAN	.	.	.
IP Service Level Agreement	.	.	.
VoIP Quality Monitoring with Network Analysis Module	.	.	.

System Scalability

Switching Fabric (Gbps)	3.7 Tbps - 178 Tbps	0.720 – 2.0 Tbps	136–848
Packets per Second (Mpps)	840-11520	720	48–250
Modular Memory Upgrade	.	.	.

Fixed-Configuration Switches		
Catalyst 4500-X	Catalyst 4900	Catalyst 3750-X
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800	96–320	64
250	72–250	6.5–39

Cisco Campus Family Feature Comparison

Fixed-Configuration Switches

Model/Series	Catalyst 3560-C	Catalyst 3560-X
FlexStack Stacking		
10 Gig SFP+ Support		•
EtherChannel®/802.3ad	•	•
Jumbo Frames—GBE on Copper	•	•
Jumbo Frames—GBE on Fiber	•	•
Broadcast Suppression	•	•
Multicast Suppression	•	•
Unicast Flood Suppression		
Flexible Packet Matching		
ISL/802.1Q	•	•
Private VLAN Edge	•	•
Private VLAN	•	•
Voice VLAN	•	•
VLAN Trunking Protocol (VTP)	•	•
GVRP		
GARP		
URT/VMPS	•	•
VTP v3	•	•
VTP Bomb Protection		
VMPS Server		
Number of Active VLANs	255	1005
Number of VLAN IDs	4000	4096
H/W-based MPLS/EoMPLS		
EIGRP		IP Services
EIGRP Stub	IP Base	IP Base
VPLS/H-VPLS		
MPLS L3 VPNs		
MPLS Traffic Engineering (TE)		
OSPF		P Services (OSPF for routed access in IP Base)

Catalyst 3560V2	Catalyst 2960	Catalyst 2960-C	Catalyst 2960-S
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L2 Only	L2 Only	.	L2 Only
L2 Only	L2 Only	.	L2 Only
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.	802.1Q Only	.	802.1Q Only
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1005	255	255	255
4096	4096	4000	4096
IP Services			
IP Base			
IP Services			

Cisco Campus Family Feature Comparison (continued)

Fixed-Configuration Switches

Model/Series	Catalyst 3560-C	Catalyst 3560-X
BGP		IP Services
Equal Cost Load Balancing	•	•
RIP, RIPv2	•	•
Static Routes	•	•
IS-IS		
H/W-based IPv6 Routing	•	•
H/W-based Policy Routing IPv4	•	•
H/W-based Policy Routing IPv6	•	•
Multiprotocol Routing (IPX, AppleTalk)		
Cisco Express Forwarding (CEF)	•	•
H/W FIB Entries	•	Up to 11,000
VRF Lite		IP Services
Reflexive ACL		
Port ACL	•	•
Time-based ACL	•	•
Router ACL	•	•
VLAN ACL	•	•
VACL with Redirect/Capture/Logging of Denied Traffic		Capture and Logging
Context-based Access Control		
H/W-based Access Control Entry (ACE) Counters		
Order-dependent ACL Merge		
Dedicated Hardware Resources for Security ACLs		
ACL Scalability (ACE Entries)	2000	2000
Flexible Packet Matching		
Control Plane Policing (Multiple CPU Rate Limiters)		
IP Source Guard	•	•

Catalyst 3560V2	Catalyst 2960	Catalyst 2960-C	Catalyst 2960-S
IP Services			
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Up to 11,000	16	.	16
IP Services			
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Capture and Logging			
2000	512	2000	512
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Cisco Campus Family Feature Comparison (continued)

Fixed-Configuration Switches

Model/Series	Catalyst 3560-C	Catalyst 3560-X
DHCP Snooping/Option 82	.	.
Dynamic ARP Inspection	.	.
MAC Address Notification	.	.
Port Security	.	.
H/W-based uRFP Check	.	.
H/W-based MAC Learning	.	.
H/W-assisted MAC Aging	.	.
PIM Accept Register—Rogue Multicast Server Protection	.	.
Routing Protocol Pass Through		
ARP Policing		
H/W-based Directed Broadcast		
802.1x Identity-based Networking Port Authentication	.	.
802.1x with VLAN Assignment	.	.
802.1x with Guest VLAN	.	.
802.1x with Aux. VLAN Support	.	.
802.1x Port Description	.	
TACACS+/RADIUS	.	.
Web Authentication Proxy	.	.
MAC Authentication	.	.
Unidirectional Control Port	.	
Inaccessible Authentication		.
Media Access Control Security (MACsec)	.	.
H/W-based NAT/PAT		
MD5 Route Authentication	.	.
Multilevel Account Privilege	.	.

Catalyst 3560V2	Catalyst 2960	Catalyst 2960-C	Catalyst 2960-S
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Cisco Campus Family Feature Comparison (continued)

Fixed-Configuration Switches

Model/Series	Catalyst 3560-C	Catalyst 3560-X
IOS Software Modularity		
Non-stop Forwarding/Stateful Switchover (NSF/SSO)		
NSF-aware		•
Redundant Power Supplies		•
Redundant Fans		•
Redundant Fan Trays		
Redundant Supervisors		
Generic Online Diagnostics (GOLD)	•	•
Basic Support for GOLD Services	•	•
Power Supply Failure Redundancy		•
Power Circuit Failure Redundancy		
StackWise Plus		
StackPower		
Unidirectional Link Detection (UDLD)	•	•
Gateway Load Balancing Protocol (GLBP)		
Hot Standby Routing Protocol (HSRP)	•	•
Virtual Router Redundancy Protocol (VRRP)		
UplinkFast	•	•
Backbone Fast	•	•
RSTP (802.1w)	•	•
PortFast	•	•
Per VLAN STP (PVSTP)	•	•
Per VLAN RSTP (PVRSTP)	•	•
Multiple Instance STP (MISTP)	•	•
MSTP (802.1s)	•	•
STP Root Guard	•	•
BDPU Guard	•	•
Loop Guard	•	•
IP Event Dampening		
Bidirectional Forwarding Detection		

Cisco Campus Family Feature Comparison (continued)

Fixed-Configuration Switches

Model/Series	Catalyst 3560-C	Catalyst 3560-X
Digital Optical Monitoring		
Flex Link	•	•
Link State Tracking	•	•
Network-based Application Recognition		
Number of Queues per Port	4	4
Congestion Avoidance	WTD	WTD
L2–L3 Rewrite/Mapping	•	•
Ingress Queuing	•	•
Ingress Strict Priority	•	•
Egress Queuing	•	•
Egress Strict Priority	•	•
Traffic Classification	•	•
IP Service Level Agreement	Responder	•
H/W-based Policing		•
Per-port Policers	•	•
Per-VLAN Policers	•	•
H/W-based Aggregate Policers	•	•
Hierarchical Policers		
User-based (Source IP) Rate Limiting		
Shaped Round Robin	•	•
H/W-based IPv6 Multicast	No PIM	No PIM
H/W-based IPv4 Multicast	•	•
H/W-based Bidirectional PIM		
Multicast Routing Manager		
Source Specific Multicast (SSM)	•	•
Multicast NSF/SSO		

Catalyst 3560V2	Catalyst 2960	Catalyst 2960-C	Catalyst 2960-S
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Up to 8	4	4	4
WTD	WTD	WTD	WTD
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No PIM	.	.	.
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Cisco Campus Family Feature Comparison (continued)

Fixed-Configuration Switches

Model/Series	Catalyst 3560-C	Catalyst 3560-X
PIM Sparse		.
PIM Dense		.
PIM Sparse/Dense		.
PIM Snooping		
PIM Accept Register—Rogue Multicast Server Protection		.
IGMP v1/v2	.	.
IGMP v3	.	.
CGMP	.	.
RGMP		
DVMRP Interoperability	.	.
Number of Multicast Routes	1000	1000
IGMP Snooping	.	.
IGMP Querier	.	.
SSM Mapping		
H/W-based Multicast Tunneling		
mVRF Lite		
Multicast VPN (mVPN)		
H/W-based GRE		
H/W-based Multipoint GRE		
H/W-based IPv4 in IPv6		
H/W-based IP in IP		
Link Layer Discovery Protocol (LLDP)	.	.
Time Domain Reflectometry (TDR)	.	.
Time Domain Reflectometry (TDR) Interface 10/100/1000	.	.
Cisco Network Assistant (CNA)	.	.
Auto Smartports	.	.
Smart Install	.	.
Smartports	.	.

[Dark Blue Header Bar]			
[Light Blue Header Bar]			
Catalyst 3560V2	Catalyst 2960	Catalyst 2960-C	Catalyst 2960-S
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Cisco Campus Family Feature Comparison (continued)

Fixed-Configuration Switches

Model/Series	Catalyst 3560-C	Catalyst 3560-X
NetFlow		Yes- with Service Module
NetFlow Data Export		Yes- with Service Module
Syslog	.	.
Switch TopN		
SNMP	.	.
RMON	.	.
SPAN	.	.
RSPAN	.	.
ERSPAN		
L2-Traceroute	.	.
SSH v2	.	.
AutoQoS	.	.
E-911 MIB Support	.	.
Out of Band Management (Serial)—RJ-45	.	.
Out of Band Management (Serial)—USB		
USB Drive Support		
Remote Power Cycle and Shutdown		
Compact Flash		
Configuration Rollback	.	.
Call Home		
Digital Optical Monitoring		
Integrated H/W-based NetFlow		
NetFlow Top Talkers		Yes- with Service Module
Sampled NetFlow		Yes- with Service Module
NetFlow v9		Yes- with Service Module
Multicast NetFlow		
Per Interface NetFlow Data Export		
Bridged IP Flows		
NetFlow v5		.
NetFlow v8		.
Microflow Policing		

Cisco Campus Family Feature Comparison (continued)

Fixed-Configuration Switches

Model/Series	Catalyst 3560-C	Catalyst 3560-X
Subsystem In Service Software Upgrade (ISSU)		
Fault Containment		
Memory Protection		
Process Restartability		
Virtualized Firewall Module		
Intrusion Detection and Prevention Module		
VPN: IPsec, SSL Module		
Anomaly Detection and Guard Module		
Network Analysis Module		
Communication Media Module		
Wireless LAN Service Module		
Content Switching and SSL Module		
Application-oriented Network Module		
802.1at 30W PoE+		
802.3af—15W on 48 Ports in a Modular/Fixed Switch		.
802.3af—7W on 48 Ports in a Modular/Fixed Switch		.
802.3af—15W on 24 Ports in a Modular/Fixed Switch		.
802.3af Modular PoE Daughter Card		
Subsystem In Service Software Upgrade (ISSU)		
Fast Link Failure Detection (Bidirectional Forwarding Detection)		
Redundant Supervisors with Stateful Switchover		
Redundant Power Supply		.
Redundant Power Circuit		
Communication Media Module		
AutoQoS	.	.
Cisco Discovery Protocol (CDP)	.	.

Cisco Campus Family Feature Comparison (continued)

Fixed-Configuration Switches

Model/Series	Catalyst 3560-C	Catalyst 3560-X
Link Layer Discovery Protocol (LLDP)	.	.
Encapsulated RSPAN		
IP Service Level Agreement	.	.
VoIP Quality Monitoring with Network Analysis Module		
Switching Fabric (Gbps)	10	64
Packets per Second (Mpps)	13.2	6.5–39
Modular Memory Upgrade		

Catalyst 3560V2	Catalyst 2960	Catalyst 2960-C	Catalyst 2960-S
.		.	
32	32	10	88
15-400	48-250	13.2	42-101
.	.		

For more product information on Cisco Catalyst Switches, go to: <http://www.cisco.com/en/us/products/hw/switches/index.html>

Cisco Data Center Switching Solutions

Intelligent Switching for the Evolving Network

Modular Switches

Model/Series	Nexus 7000 Series	Catalyst 6500 Series
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System Scalability

Switching Fabric (Gbps)	3.7 Tbps - 178 Tbps	720Gbps– 2.0 Tbps 4.0 Tbps with VSS
Packets per Second (Mpps)	840-11520	720 mpps of IPv4 and 390 mpps of IPv6
Modular Memory Upgrade	.	.

LAN Switching Features

Connectivity and Filtering

EtherChannel®/802.3ad	.	.
LACP Fast Rate	.	.
Jumbo Frames—GbE on Copper	.	.
Jumbo Frames—GbE on Fibre	.	.
Broadcast Suppression	.	.
Multicast Suppression	.	.
Unicast Flood Suppression	.	.
Number of Member Links in Port Channel	Up to 16	Up to 16

Layer 2

ISL/802.1Q	.	.
Private VLAN Edge	.	.
Private VLAN	.	.
VLAN Trunking Protocol (VTP)	.	.
VTP Transperant VTP Transperant	.	.
VTP Client /Server	.	.
VLAN Trunking Protocol Pruning	.	.
Number of Active VLANs	4096 per VDC	4096
Number of VLAN IDs	4096 per VDC	4096
MAC Entries	128,000	128,000

Layer 3

Static Routes	.	.
RIP, RIPv2	.	.
EIGRP	.	.
EIGRP Stub	.	.
OSPF v2	.	.
BGP	.	.

Fixed-Configuration Switches

Nexus 5000 Series	Nexus 3000 Series	Catalyst 4948E/4900M
520 Gbps-1.92 Tbps	1.28 Tbps	176-320 Gbps
384-1428 Mpps	950 Mpps	131-250 Mpps
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Up to 16	Up to 16	Up to 8
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4013	4013	4096
4096	4096	4096
32,000	128,000	55,000
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Cisco Data Center Switching Solutions (continued)

Modular Switches

Model/Series	Nexus 7000 Series	Catalyst 6500 Series
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LAN Switching Features (continued)

Layer 3 (continued)

IS-IS	.	.
Equal Cost Load Balancing	.	.
VRF Lite	.	.
DHCP Relay	.	.
Hot Standby Routing Protocol (HSRP)	.	.
Virtual Router Redundancy Protocol (VRRP)	.	.
Gateway Load Balancing Protocol (GLBP)	.	.
Hot Standby Routing Protocol v6 (HSRPv6)	.	.
Bidirectional Forwarding Detection	.	.
EIGRP v6	.	.
OSPF v3	.	.
BGP v6	.	.
H/W-based IPv6 Routing	.	.
H/W-based Policy Routing IPv4	.	.
H/W-based Policy Routing IPv6	.	.
MPLS L3 VPNs	.	.
MPLS Traffic Engineering (TE)	.	.
MPLS PE/CE Routing	.	.
6PE	.	.
6VPE	.	.
H/W FIB Entries	Up to 1,000,000	Up to 1,000,000
ARP Entries/Adjacency	350,000	50,000

Multicast

H/W-based IPv4 Multicast	.	.
H/W-based IPv6 Multicast	.	.
mVRF Lite	.	.
IGMP v1/v2	.	.
IGMP v3	.	.
IGMP Snooping	.	.
IGMP Querier	.	.
CGMP	.	.
RGMP	.	.
PIM Accept Register—Rogue Multicast Server Protection	.	.

Cisco Data Center Switching Solutions (continued)

Modular Switches

Model/Series	Nexus 7000 Series	Catalyst 6500 Series
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Multicast (continued)

PIM Sparse	•	•
Source Specific Multicast (SSM)	•	•
SSM Mapping	•	•
PIM Dense		•
PIM Sparse/Dense		•
H/W-based Bidirectional PIM	•	•
Multicast Routing Monitor		•
Multicast NSF/SSO	•	•
DVMRP Interoperability		•
H/W-based Multicast Tunneling		•
Multicast VPN (mVPN)	•	•
Multicast Service Reflection in Hardware		•
Number of Multicast Routes	32,000	32,000

Tunneling Protocols

H/W-based GRE	•	•
H/W-based Multipoint GRE		•
H/W-based IPv4 in IPv6		•
H/W-based IP in IP		•
HW-based Multicast over GRE	•	•

LAN and SAN Convergence

FibreChannel		
FibreChannel over Ethernet	•	
iSCSI	•	•
NAS	•	•
Unified (SAN/LAN) Ports		

Virtualization

Virtual Device Context

VDC Support	•	
Number of VDCs	4	
Storage VDC	•	

Overlay Transport Virtualization

Overlay Transport Virtualization	•	
OTV Unicast Transport Support	•	
OTV Site IPv6 Traffic	•	

Cisco Data Center Switching Solutions (continued)

Modular Switches

Model/Series	Nexus 7000 Series	Catalyst 6500 Series
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Locator-ID Separation Protocol (LISP)

LISP VM-Mobility	-	
LISP Map Server/Resolver	-	
LISP xTR and PxTR	-	

Fabric Extender

Nexus 2000	-	
Supported Number	32	
Host vPC with Nexus 2000	-	
VTP Client /Server	-	
Port Channel on Nexus 2000	-	
Nexus 2000 vPC to Parent Switch		
FCoE on FEX Ports		
Adapter Fabric Extender		
Virtual Machine Fabric Extender		

FabricPath

Layer 2 - 16 Way ECMP	-	
Conversational MAC Address Learning	-	
Multiple Topology Support for Multicast	-	
vPC+	-	

Availability and Resiliency

In-Service Software Upgrade (ISSU)

	(Hitless)	(EFSU)
ISSU Support (Minimal Packet Loss)		
Hitless ISSU (Zero Packet Loss) for Layer 2 Protocols	-	
Hitless ISSU (Zero Packet Loss) for Layer 3 Protocols	-	
Hitless ISSU for Storage Traffic (FC/FCoE)	-	

Switch Redundancy

Virtual PortChannel (vPC)	-	
Enhanced vPC (EvPC)		
Virtual Switching System (VSS)		-
Preemptive CPU Scheduler	-	
Stateful Process Restart	-	
NSF-aware	-	-
Non-stop Forwarding/Stateful Switchover (NSF/SSO)	-	-
Multicast HA	-	-

Cisco Data Center Switching Solutions (continued)

Modular Switches

Model/Series	Nexus 7000 Series	Catalyst 6500 Series
Redundant Power Supplies	•	•
Redundant Fans	•	•
Generic Online Diagnostics (GOLD)	•	•
Power Supply Failure Redundancy	•	•
Power Circuit Failure Redundancy	•	•
Redundant Fan Trays	•	•
Redundant Supervisors	•	•
Hot-Swappable Redundant Fabric Modules	•	

Network Protocols

Unidirectional Link Detection (UDLD)	•	•
Aggressive UDLD	•	•
UplinkFast		•
Backbone Fast		•
RSTP (802.1w)	•	•
PortFast	•	•
Per VLAN STP (PVSTP)		•
Per VLAN RSTP (PVRSTP)	•	•
Multiple Instance STP (MISTP)	•	•
MSTP (802.1s)	•	•
STP Root Guard	•	•
BPDU Guard	•	•
Loop Guard	•	•
Bridge Assurance	•	•
Dispute Mechanism	•	
Flexlink		•
Link State Tracking	•	
IP Event Dampening		•

Software Modularity

Subsystem in Service Software Upgrade (ISSU)	•	•
Software Modularity	•	•
Granular Feature Modularity	•	
Conditional Services	•	
Fault Containment	•	•
Memory Protection	•	•
Process Restartability	•	•

Cisco Data Center Switching Solutions (continued)

Modular Switches

Model/Series	Nexus 7000 Series	Catalyst 6500 Series
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Integrated Security

Access Control Lists

H/W-based Access Control Entry	.	.
Dedicated Hardware Resources for Security ACLs	.	.
(ACE) Counters	.	.
Router ACL	.	.
VLAN ACL	.	.
Port ACL	.	.
Port ACL (for IPv6)	.	.
Role Based ACL	.	.
Reflexive ACL	.	.
Time-based ACL	.	.
VACL with Redirect/Capture/Logging of Denied Traffic	.	.
Context-based Access Control	.	.
Order-dependent ACL Merge	.	.
ACL Scalability (ACE Entries)	128,000	256,000
IPv6 RA Guard	.	.
IPv6 URPF	.	.

Attack Mitigation

Control Plane Policing (Multiple CPU Rate Limiters)	.	.
IP Source Guard	.	.
DHCP Snooping/Option 82	.	.
Dynamic ARP Inspection	.	.
MAC Address Notification	.	.
Port Security	.	.
H/W-based uRPF Check	.	.
H/W-based MAC Learning	.	.
H/W-assisted MAC Aging	.	.
Routing Protocol Pass Through	.	.
ARP Policing	.	.
H/W-based Directed Broadcast	.	.
ACL Dry Run and Atomic Commit	.	.

Cisco Data Center Switching Solutions (continued)

Modular Switches

Model/Series	Nexus 7000 Series	Catalyst 6500 Series
Secure Connectivity		
TACACS+/RADIUS	•	•
TACACS+ for IPv6	•	•
MD5 Route Authentication	•	•
Multilevel Account Privilege	•	•
Security Group Tags (SGT)	•	•
Media Access Control Security (MACsec)	•	•
H/W-based NAT/PAT		•
Delivery Optimization		
Quality of Service		
Number of Queues per Port	Up to 8	Up to 8
Packet Buffer	Up to 172 MB Per Port	
Dynamic Queue Resizing		
Congestion Avoidance	•	•
L2–L3 Rewrite/Mapping	•	•
Traffic Classification	•	•
Egress Queuing	•	••
Egress Strict Priority	•	•
Ingress Queuing	•	•
Ingress Strict Priority	•	•
IP Service Level Agreement		•
DCBX Capabilities	•	
Priority Flow Control(PFC)	•	
Policers		
H/W-based Policing	•	•
Per-port Policers	•	•
Per-VLAN Policers	•	•
Per-Port-per-VLAN Policing		
H/W-based Aggregate Policers	•	•
Hierarchical Policers		•
User-based (Source IP) Rate Limiting	•	•
Shaped Round Robin	•	•

Cisco Data Center Switching Solutions (continued)

Modular Switches

Model/Series	Nexus 7000 Series	Catalyst 6500 Series
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Enhanced Manageability

Onboard Failure Logging (OBFL)	.	.
Link Layer Discovery Protocol (LLDP)	.	.
Syslog	.	.
SNMP	.	.
NETCONF/XML	.	.
RMON	.	.
Mini Protocol Analyzer/WireShark	.	.
SSH v2	.	.
Configuration Rollback	.	.
Call Home	.	.
Digital Optical Monitoring	.	.
Network Port Profiles	.	.
USB Drive Support	.	.
Out of Band Management (Serial)—USB	.	.
Out of Band Management (Serial)—RJ-45	.	.
Connectivity Management Processor	.	.
EEM 3.0	.	.
Hardware Rate Limiters (HWRL)	.	.
Time Domain Reflectometry (TDR)	.	.
Time Domain Reflectometry (TDR) Interface 10/100/1000	.	.
NetFlow	.	.
NetFlow Data Export	.	.
Switch TopN	.	.
L2-Traceroute	.	.
AutoQoS	.	.
Remote Power Cycle and Shutdown	.	.
Compact Flash	.	.
IEEE 1588 Time-stamps	.	.
NTPv4 for IPv6	.	.
Power On Auto Provisioning (PoAP)	.	.

Cisco Data Center Switching Solutions (continued)

Modular Switches

Model/Series	Nexus 7000 Series	Catalyst 6500 Series
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Switched Port Analyzer (SPAN)

SPAN	•	•
RSPAN	•	•
ERSPAN	•	•
SPAN/RSPAN Sessions	2	2

NetFlow

Integrated H/W-based NetFlow	•	•
NetFlow Top Talkers		•
Sampled NetFlow	•	•
NetFlow v9	•	•
Multicast NetFlow	•	•
Per Interface NetFlow Data Export	•	•
Bridged IP Flows	•	•
NetFlow v5	•	•
NetFlow v8	•	•
Microflow Policing		•
Flexible NetFlow	•	•
Flexible NetFlow for L2 Ports	•	
Flexible NetFlow with Embedded Event Manager Integration		•
Flexible NetFlow with TCP Flags as Non-key Fields	•	•
Flexible NetFlow for IPv4	•	•
Flexible NetFlow for IPv6	•	•
Flexible Netflow CPU Yield		•
Distributed FNF Export		•

Application, Security, and Management Modules

Virtualized Firewall Module		•
Intrusion Detection and Prevention Module		•
VPN: IPsec, SSL Module		•
Anomaly Detection and Guard Module		•
Network Analysis Module		•
Wireless LAN Service Module		•
Content Switching and SSL Module		•
Application-oriented Network Module		•

Cisco Switching Transition Guide

Intelligent Switching for the Evolving Network

For customers seeking to extend their investment in existing Catalyst switching architecture, this migration guide identifies the optimal transition for in-family product upgrades. For details on migration guidance to Cisco Nexus Series Switches for next generation Unified Fabric or high performance campus core solutions, please contact your local Cisco account manager or partner.

www.cisco.com/go/hexus

Current Product	Recommended Product
Modular Switches: Cisco Catalyst 6500 Series Switches	
Chassis	
WS-C6503	WS-C6503-E WS-C6504-E
WS-C6506	WS-C6506-E
WS-C6509-NEB	WS-C6509-V-E
WS-C6509-NEB-FAN	WS-C6509-V-E-FAN
WS-6509-NEB-UPGRD=	WS-C6509-V-E
WS-C6006	WS-C6506-E
WS-C6006-1000AC=	WS-C6506-E + WS-CAC-3000W
WS-C6006-1300AC=	WS-C6506-E + WS-CAC-3000W
WS-C6009	WS-C6509-E
WS-C6009-1300AC=	WS-C6509-E + WS-CAC-3000W
WS-C6009-2500AC=	WS-C6509-E + WS-CAC-3000W
Power Supplies	
WS-CAC-4000W-US	WS-CAC-6000W
WS-CAC-4000W-INT	WS-CAC-6000W
WS-CAC-2500W	WS-CAC-3000W
	WS-CAC-6000W
	WS-CAC-8700W-E
WS-CAC-1300W	WS-CAC-2500W
	WS-CAC-3000W
	WS-CAC-6000W
WS-CAC-1000W	WS-CAC-8700W-E
	WS-CAC-3000W

Current Product	Recommended Product
Modular Switches: Cisco Catalyst 6500 Series Switches (continued)	
Fan Trays	
PWR-950-AC	PWR-1400-AC PWR-1400-AC (for WS-C6503-E) PWR-2700-AC/4 (for WS-C6504-E)
PEM-15A-AC	PEM-20A-AC+
FAN-MOD-3	WS-C6503-E-FAN (for WS-C6503-E Chassis) WS-C6503-E-FAN (for WS-C6503-E Chassis) FAN-MOD-4HS (for WS-C6504-E Chassis)
FAN-MOD-3HS	WS-C6503-E-FAN (for WS-C6503-E Chassis) FAN-MOD-4HS (for WS-C6504-E Chassis)
WS-C6K-6SLOT-FAN	WS-C6506-E-FAN (for WS-C6506-E Chassis)
WS-C6K-9SLOT-FAN	WS-C6509-E-FAN (for WS-C6509-E Chassis)
WS-C6K-13SLOT-FAN	WS-C6K-13SLT-FAN2
WS-C6K-6SLOT-FAN2	WS-C6506-E-FAN (for WS-C6506-E Chassis)
WS-C6K-9SLOT-FAN2	WS-C6509-E-FAN (for WS-C6509-E Chassis)
Recommended Service Modules for Migration	
WS-SVC-WLAN-1-K9	WS-SVC-WISM-1-K9
WS-X6502-FULL-CVR	No Replacement
ACE30-MOD	Application Control Engine Module (ACE30)
WS-SVC-ASA-SM1-K9	Adaptive Security Services Module (Firewall Services Module)(ASA-SM)
WS-SVC-NAM-3	Network Analysis Module (NAM3) for 10G
WS-SVC-WISM2-1-K9	Wireless Services Module 2 (WiSM2)
WS-SVC-WISM2-3-K9	
WS-SVC-WISM2-5-K9	
Optical Modules	
WS-G6488	No Replacement
WS-G6483	No Replacement
Supervisors	
WS-F6K-GE48-AF=	WS-F6K-48-AF=

Cisco Catalyst Switching Transition Guide (continued)

Current Product	Recommended Product
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Modular Switches: Cisco Catalyst 6500 Series Switches (continued)	
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Supervisors (continued)	
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WS-F6K-VPWR-GE=	WS-F6K-48-AF= WS-X6148A-45AF WS-X6148A-GE-45AF
WS-X6148X2-45AF	WS-X6196-21AF
WS-X6148X2-RJ-45	WS-X6196-RJ-21
WS-X6516-GE-TX	WS-X6748-GE-TX
WS-X6K-S2U-MSFC2	VS-S2T-10G VS-S2T-10G-XL VS-S720-10G-3C VS-S720-10G-3CXL
WS-X6K-S2-MSFC2	VS-S2T-10G VS-S2T-10G-XL VS-S720-10G-3C VS-S720-10G-3CXL
WS-X6K-S2-PFC2	VS-S2T-10G VS-S2T-10G-XL VS-S720-10G-3C VS-S720-10G-3CXL
WS-X6K-S1A-MSFC2	VS-S720-10G-3CXL VS-S720-10G-3C
WS-X6K-SUP1A-MSFC	VS-S720-10G-3CXL VS-S720-10G-3C
WS-X6K-SUP1A-PFC	VS-S720-10G-3CXL
WS-X6K-SUP1A-2GE	VS-S720-10G-3CXL VS-S720-10G-3C
WS-X6K-SUP1-2GE	VS-S720-10G-3CXL VS-S720-10G-3C

Line Cards and Daughter Cards	
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WS-F6K-GE48-AF=	WS-F6K-48-AF=
WS-F6K-VPWR-GE=	WS-F6K-48-AF=
WS-F6K-VPWR=	WS-X6148-21AF WS-X6148A-45AF WS-X6148A-GE-45AF
WS-X6148X2-45AF	WS-X6196-21AF
WS-X6148X2-RJ-45	WS-X6196-RJ-21

Current Product**Recommended Product****Modular Switches: Cisco Catalyst 6500 Series Switches (continued)****Line Cards and Daughter Cards (continued)**

WS-X6516-GE-TX	WS-X6748-GE-TX
WS-X6548-RJ-21	WS-X6148-RJ-21
WS-X6548-RJ-45	WS-X6748-GE-TX
WS-X6548V-GE-TX	WS-X6548-GE-45AF
WS-X6816-GBIC	WS-X6724-SFP WS-X6748-SFP N7K-M148GS-11 N7K-M148GS-11L
WS-X6248A-TEL	WS-X6148-21AF
WS-X6316-GE-TX	WS-X6748-GE-TX WS-X6548-GE-TX WS-X6148-GE-TX WS-X6516-GE-TX
WS-X6348-RJ21V	WS-X6148-21AF WS-X6196-21AF
WS-X6348-RJ-45	WS-X6148A-RJ-45 WS-X6148A-GE-TX WS-X6548-GE-TX
WS-X6348-RJ45V	WS-X6148A-45AF WS-X6148A-GE-45AF
WS-X6148-RJ45V	WS-X6148A-45AF WS-X6148A-GE-45AF
WS-X6416-GBIC	WS-X6516A-GBIC WS-X6724-SFP (Requires Catalyst 6500 Series Supervisor Engine 720)
WS-X6148-RJ-45	WS-X6148A-RJ-45 WS-X6148A-GE-TX
WS-X6148-45AF	WS-X6148A-45AF WS-X6148A-GE-45AF
WS-X6148-GE-TX	WS-X6148A-GE-TX
WS-X6148V-GE-TX	WS-X6148A-GE-45AF
WS-X6148-GE-45AF	WS-X6148A-GE-45AF
WS-X6516-GBIC	WS-X6516A-GBIC N7K-M148GS-11 N7K-M148GS-11L
WS-X6148A-RJ-45	WS-X6148A-GE-TX
WS-X6148A-45AF	WS-X6148A-GE-45AF
WS-X6548-RJ-45	WS-X6148A-GE-45AF

Cisco Catalyst Switching Transition Guide (continued)

Current Product	Recommended Product
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Modular Switches: Cisco Catalyst 6500 Series Switches (continued)	
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Line Cards and Daughter Cards (continued)	
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WS-C6500-SFM	VS-S720-10G-3CXL
	VS-S720-10G-3C
WS-X6500-SFM2	VS-S720-10G-3CXL
	VS-S720-10G-3C
WS-F6K-MSFC2=	VS-S720-10G-3CXL
	VS-S720-10G-3C
WS-X6502-10GE	WS-X6704-10GE

Modular Switches: Cisco Catalyst 4500 Series Switches	
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Chassis	
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WS-C4003	WS-C4503-E
WS-C4006	WS-C4506-E
	WS-X4507R+E
	WS-C4510R+E

Supervisors	
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WS-X4012 (SUP I)	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X45-SUP7-E
	WS-X4516-10GE
WS-X4013 (SUP II)	WS-X45-SUP6L-E (SUP6L-E)
WS-X4013+	WS-C4503E-S6L-48V+
	WS-X45-SUP6L-E
WS-X4013+/2	WS-C4503E-S6L-48V+
	WS-X45-SUP6L-E
WS-X4013+10GE	WS-X45-SUP6L-E
WS-X4013+10GE/2	WS-X45-SUP6L-E
WS-X4013+10GE=	WS-X45-SUP6L-E
WS-X4013+=	WS-C4503E-S6L-48V+
	WS-X45-SUP6L-E
WS-X4013+TS	WS-C4503E-S6L-48V+
	WS-X45-SUP6L-E

Current Product**Recommended Product****Modular Switches: Cisco Catalyst 4500 Series Switches (continued)****Supervisors (continued)**

WS-X4013+TS=	WS-C4503E-S6L-48V+
	WS-X45-SUP6L-E
WS-X4014 (SUP III)	WS-X4516-10GE (SUP V-10GE)
	WS-X45-SUP6-E (SUP6-E)
	WS-X45-SUP6L-E
	WS-X45-SUP7-E
WS-X4032-L3	WS-X4516-10GE (SUP V-10GE)
	WS-X45-SUP6-E (SUP6-E)
	WS-X45-SUP6L-E
	WS-X45-SUP7-E
WS-X4515	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E
WS-X4515/2	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E
WS-X4515=	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E
WS-X4516	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E
WS-X4516/2	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E
WS-X4516=	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E

Cisco Catalyst Switching Transition Guide (continued)

Current Product	Recommended Product
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Modular Switches: Cisco Catalyst 4500 Series Switches (continued)	
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Line Cards and Daughter Cards	
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WS-U4504-FX-MT	WS-X4232-GB-RJ
WS-U4504-FX-MT=	WS-X4232-GB-RJ=
WS-X4124-FX-MT	WS-X4148-FX-MT
WS-X4124-FX-MT=	WS-X4148-FX-MT=
WS-X4124-RJ45	WS-X4148-RJ
WS-X4124-RJ45=	WS-X4148-RJ=
WS-X4148-RJ21	WS-X4148-RJ
WS-X4148-RJ21=	WS-X4148-RJ=
WS-X4224-RJ45V	WS-X4248-RJ45V
WS-X4224-RJ45V=	WS-X4248-RJ45V=
WS-X4232-GB-RJ	WS-X4148-RJ
WS-X4232-GB-RJ=	WS-X4148-RJ=
WS-X4232-RJ-XX	WS-X4232-GB-RJ
	WS-X4648-RJ45V-E
	WS-X4648-RJ45V+E
	WS-X4606-X2-E
WS-X4232-RJ-XX=	WS-X4232-GB-RJ=
	WS-X4648-RJ45V-E
	WS-X4648-RJ45V+E
	WS-X4606-X2-E
WS-X4248-RJ21V	WS-X4248-RJ45V
WS-X4248-RJ21V=	WS-X4248-RJ45V=
WS-X4302-GB	WS-X4306-GB
WS-X4302-GB=	WS-X4306-GB=
WS-X4424-GB-RJ45	WS-X4548-GB-RJ45
	WS-X4648-GB-RJ45
WS-X4424-GB-RJ45=	WS-X4548-GB-RJ45=
	WS-X4648-GB-RJ45
WS-X4524-GB-RJ45V	WS-X4548-RJ45V+
	WS-X4648-RJ45V+E
	WS-X4748-RJ45V+E
WS-X4524-GB-RJ45V=	WS-X4548-RJ45V+=
	WS-X4648-RJ45V+E=
	WS-X4748-RJ45V+E

Current Product**Recommended Product****Modular Switches: Cisco Catalyst 4500 Non-E-Series Switches****Chassis**

C4K-SLOT-CVR	There is currently no replacement product available for this product
C4K-SLOT-CVR=	There is currently no replacement product available for this product
C4K-UPLINK-CVR	There is currently no replacement product available for this product
C4K-UPLINK-CVR=	There is currently no replacement product available for this product
WS-C4503	WS-C4503-E
WS-C4503-E-S2+48	WS-C4503E-S6L-48V+
WS-C4503-E-S2+48V	WS-C4503E-S6L-48V+
WS-C4503-S2+48	WS-C4503E-S6L-48V+
WS-C4506	WS-C4506-E
WS-C4506-S2+96	WS-C4506E-S6L-96V+
WS-C4506-S4-AP25	There is currently no replacement product available for this product
WS-C4506-S4-AP50	There is currently no replacement product available for this product
WS-C4506E-GE-96V	WS-C4506E-S6L-96V+
WS-C4507R	WS-C4507R+E
WS-C4507R-E-S2+96	There is currently no replacement product available for this product
WS-C4507R-E-S2+96V	WS-C4507RES6L-96V
WS-C4510R	WS-C4510R+E
WS-X4503-23CNTR=	There is currently no replacement product available for this product
WS-X4506-23CNTR=	There is currently no replacement product available for this product
WS-X4507-23CNTR=	There is currently no replacement product available for this product
WS-X4510-23CNTR=	There is currently no replacement product available for this product
WS-X4581=	There is currently no replacement product available for this product
WS-X4582=	There is currently no replacement product available for this product
WS-X4583=	There is currently no replacement product available for this product
WS-X4584=	There is currently no replacement product available for this product
WS-X4585=	There is currently no replacement product available for this product
WS-X4586=	There is currently no replacement product available for this product
WS-X4587=	There is currently no replacement product available for this product
WS-X4588=	There is currently no replacement product available for this product
WS-X4590=	There is currently no replacement product available for this product

Cisco Catalyst Switching Transition Guide (continued)

Current Product**Recommended Product**

Modular Switches: Cisco Catalyst 4500 Non-E-Series Switches (continued)

Chassis (continued)

WS-X4593=	There is currently no replacement product available for this product
WS-X4596=	There is currently no replacement product available for this product
WS-X4597=	There is currently no replacement product available for this product
WS-X4598=	There is currently no replacement product available for this product

Supervisors

WS-X4013+	WS-C4503E-S6L-48V+
	WS-X45-SUP6L-E
WS-X4013+/2	WS-C4503E-S6L-48V+
	WS-X45-SUP6L-E
WS-X4013+10GE	WS-X45-SUP6L-E
WS-X4013+10GE/2	WS-X45-SUP6L-E
WS-X4013+10GE=	WS-X45-SUP6L-E
WS-X4013+=	WS-C4503E-S6L-48V+
	WS-X45-SUP6L-E
WS-X4013+TS	WS-C4503E-S6L-48V+
	WS-X45-SUP6L-E
WS-X4013+TS=	WS-C4503E-S6L-48V+
	WS-X45-SUP6L-E
WS-X4515	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E
WS-X4515/2	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E
WS-X4515=	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E
WS-X4516	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E

Current Product**Recommended Product****Modular Switches: Cisco Catalyst 4500 Non-E-Series Switches (continued)****Supervisors (continued)**

WS-X4516/2	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E
.....	
WS-X4516=	WS-X45-SUP6-E
	WS-X45-SUP6L-E
	WS-X4516-10GE
	WS-X45-SUP7-E

Line Cards and Daughter Cards

WS-X4148-RJ21	WS-X4148-RJ
.....	
WS-X4148-RJ21=	WS-X4148-RJ=
.....	
WS-X4224-RJ45V	WS-X4248-RJ45V
.....	
WS-X4224-RJ45V=	WS-X4248-RJ45V=
.....	
WS-X4232-GB-RJ	WS-X4148-RJ
.....	
WS-X4232-GB-RJ=	WS-X4148-RJ=
.....	
WS-X4248-RJ21V	WS-X4248-RJ45V
.....	
WS-X4248-RJ21V=	WS-X4248-RJ45V=
.....	
WS-X4302-GB	WS-X4306-GB
.....	
WS-X4302-GB=	WS-X4306-GB=
.....	
WS-X4424-GB-RJ45	WS-X4548-GB-RJ45
	WS-X4648-GB-RJ45
.....	
WS-X4424-GB-RJ45=	WS-X4548-GB-RJ45=
	WS-X4648-GB-RJ45
.....	
WS-X4524-GB-RJ45V	WS-X4548-RJ45V+
	WS-X4648-RJ45V+E
	WS-X47W8-RJ45V+E
.....	
WS-X4524-GB-RJ45V=	WS-X4548-RJ45V+=
	WS-X4648-RJ45V+E=
	WS-X47W8-RJ45V+E

Cisco Catalyst Switching Transition Guide (continued)

Current Product**Recommended Product****Modular Switches: Cisco Catalyst 4500 Non-E-Series Switches (continued)****Fixed-Configuration Switches: Cisco Catalyst 4948-10GE, 4928-10GE, ME4924-10GE, 3750, 3500, 3500XL, and 2950 Series Switches**

WS-C3750G-24TS-S	WS-C3750G-24-TS-S1U
	WS-C3750E-24TD-S
	WS-C3750X-24T-S
WS-C3750G-24TS-E	WS-C3750G-24-TS-E1U
	WS-C3750E-24TD-E
	WS-C3750X-24T-S with IP Services Upgrade
WS-C3750G-16TD-E	WS-C3750E-24TD-E
	WS-C3750X-24T-S with 10G Uplink and IP Services Upgrade
WS-C3750G-16TD-S	WS-C3750E-24TD-S
	WS-C3750X-24T-S with 10G Uplink
WS-C3550-12G	WS-C3750G-12S-S
	WS-C3750G-12S-E
WS-C3550-12T	WS-C3560G-24TS-S
	WS-C3560G-24TS-E
	WS-C3560E-24TD-S
	WS-C3560E-24TD-E
	WS-C3750G-24T-S
	WS-C3750G-24T-E
	WS-C3750G-24TS-S1U
	WS-C3750G-24TS-E1U
	WS-C3750E-24TD-S
	WS-C3750E-24TD-E
WS-C3750X-24T-S	
WS-C3550-24-SMI	WS-C3560V2-24TS-S
	WS-C37502-24TS-S
	WS-C3560E-24TD-S
	WS-C3750E-24TD-S
	WS-C3750X-24T-S

Fixed-Configuration Switches: Cisco Catalyst 3750, 3500, 3500XL, and 2950 Series Switches

WS-C3560E-12SD-E	WS-C3750X-12S-E
WS-C3560E-12SD-E=	WS-C3750X-12S-E
WS-C3560E-12SD-S	WS-C3750X-12S-S
WS-C3560E-12SD-S=	WS-C3750X-12S-S
WS-C3560E-24PD-E	WS-C3560X-24P-E

Current Product	Recommended Product
WS-C3560E-24PD-S	WS-C3560X-24P-S
WS-C3560E-24TD-E	WS-C3560X-24T-E
WS-C3560E-24TD-S	WS-C3560X-24T-S
WS-C3560E-24TD-SD	WS-C3560X-24T-S
WS-C3560E-48PD-E	WS-C3560X-48P-E
WS-C3560E-48PD-EF	WS-C3560X-48PF-E
WS-C3560E-48PD-S	WS-C3560X-48P-S
WS-C3560E-48PD-SF	WS-C3560X-48PF-S
WS-C3560E-48TD-E	WS-C3560X-48T-E
WS-C3560E-48TD-S	WS-C3560X-48T-S
WS-C3560E-48TD-SD	WS-C3560X-48T-S
WS-C3560G-24PS-E	WS-C3560X-24P-E
WS-C3560G-24PS-S	WS-C3560X-24P-S
WS-C3560G-24TS-E	WS-C3560X-24T-E
WS-C3560G-24TS-S	WS-C3560X-24T-S
WS-C3560G-48PS-E	WS-C3560X-48P-E
WS-C3560G-48PS-S	WS-C3560X-48P-S
WS-C3560G-48TS-E	WS-C3560X-48T-E
WS-C3560G-48TS-S	WS-C3560X-48T-S
WS-C3750E-24PD-E	WS-C3560X-24P-E
WS-C3750E-24PD-S	WS-C3750X-24P-S
WS-C3750E-24TD-E	WS-C3750X-24T-E
WS-C3750E-24TD-S	WS-C3750X-24T-S
WS-C3750E-24TD-SD	WS-C3750X-24T-S
WS-C3750E-48PD-E	WS-C3750X-48P-E
WS-C3750E-48PD-EF	WS-C3750X-48PF-E
WS-C3750E-48PD-S	WS-C3750X-48P-E
WS-C3750E-48PD-SF	WS-C3750X-48PF-E
WS-C3750E-48TD-E	WS-C3750X-48T-E
WS-C3750E-48TD-S	WS-C3750X-48T-S
WS-C3750E-48TD-SD	WS-C3750X-48T-S
WS-C3750G-12S-E	WS-C3750X-12S-E
WS-C3750G-12S-S	WS-C3750X-12S-S
WS-C3750G-12S-SD	WS-C3750X-12S-S
WS-C3750G-24PS-E	WS-C3750X-24P-E
WS-C3750G-24PS-S	WS-C3750X-24P-S

Cisco Catalyst Switching Transition Guide (continued)

Current Product	Recommended Product
WS-C3750G-24T-E	WS-C3750X-24T-E
WS-C3750G-24T-S	WS-C3750X-24T-S
WS-C3750G-24TS-E1U	WS-C3750X-24T-E
WS-C3750G-24TS-S1U	WS-C3750X-24T-S
WS-C3750G-48PS-E	WS-C3750X-48P-E
WS-C3750G-48PS-S	WS-C3750X-48P-S
WS-C3750G-48TS-E	WS-C3750X-48T-E
WS-C3750G-48TS-S	WS-C3750X-48T-S
WS-C2950G-48-EI	WS-C3560V2-48PS-S
	WS-C3560V2-48TS-S
	WS-C2960-48TC-L
WS-C2950G-24-EI	WS-C3560V2-24PS-S
	WS-C3560V2-24TS-S
	WS-C2960-24TC-L
WS-C2950G-12-EI	WS-C3560V2-24PS-S
	WS-C3560V2-24TS-S
	WS-C2960-24TC-L
WS-C2950-12	WS-C2960-24TT-L
	WS-C2960-24-S
WS-C2950-24	WS-C2960-24TT-L
	WS-C2960-24-S
WS-C2950C-24	WS-C2960-24TC-L
	WS-C2960-24TC-S
WS-C2950SX-24	WS-C2960-24TC-L
	WS-C2960-24TC-S
WS-C2950SX-48-SI	WS-C2960-48TC-L
	WS-C2960-48TC-S
Based on EOL6608	
WS-C2940-8TF-S	WS-C2960-8TC-S
WS-C2940-8TT-S	WS-C2960-8TC-S
Based on EOL6926	
WS-C2950G-24-EI-DC	WS-C3560V2-24TS-SD
WS-C3550-24-DC-SMI	WS-C3560V2-24TS-SD
WS-C3560-24PS-E	WS-C3560V2-24PS-E
WS-C3560-24PS-S	WS-C3560V2-24PS-S

Current Product	Recommended Product
WS-C3560-24TS-E	WS-C3560V2-24TS-E
WS-C3560-24TS-S	WS-C3560V2-24TS-S
WS-C3560-48PS-E	WS-C3560V2-48PS-E
WS-C3560-48PS-S	WS-C3560V2-48PS-S
WS-C3560-48TS-E	WS-C3560V2-48TS-E
WS-C3560-48TS-S	WS-C3560V2-48TS-S
WS-C3750-24PS-E	WS-C3750V2-24PS-E
WS-C3750-24PS-S	WS-C3750V2-24PS-S
WS-C3750-24TS-E	WS-C3750V2-24TS-E
WS-C3750-24TS-S	WS-C3750V2-24TS-S
WS-C3750-48PS-E	WS-C3750V2-48PS-E
WS-C3750-48PS-S	WS-C3750V2-48PS-S
WS-C3750-48TS-E	WS-C3750V2-48TS-E
WS-C3750-48TS-S	WS-C3750V2-48TS-S

Based on EOL8212

ME-4924-10GE	ME-3600X-24FS-M
	ME-3800X-24FS-M
	WS-C4500X-32SFP+
	WS-C4500X-F-32SFP+
WS-C4928-10GE	ME-3600X-24FS-M
	ME-3800X-24FS-M
	WS-C4500X-32SFP+
	WS-C4500X-F-32SFP+
WS-C4948-10GE	WS-C4948E
	WS-C4948E-F
	WS-C4948E-E
	WS-C4948E-F-E
WS-C4948-10GE-S	WS-C4948E-F-S
WS-C4948-10GE-S	WS-C4948E-S

Cisco Modular Switches

Cisco modular switches include the Cisco Catalyst 4500-E Series and Cisco Catalyst 6500 Series Switches for the campus and Cisco Nexus 7000 Series Switches for the data center. With a broad selection of supervisors, line cards, service modules (Catalyst 6500), fabric modules (Nexus 7000), and power supplies, these intelligent platforms deliver optimal flexibility to meet ever-changing requirements for deploying numerous, concurrent intelligent services without degrading the overall performance of the switch.

These extensive product portfolios allow customers to build an infrastructure that can be scaled cost-effectively with energy, budget, and resource efficiency. Customers can simplify the transition to 10, 40, and 100 Gigabit Ethernet, handle architectural changes to support virtualization, mobility, video, and cloud computing as well as support converged applications in a secure architecture.

Cisco modular switches support features such as the Cisco Virtual Switching System and virtual device contexts to simplify management and deliver operational continuity with high availability and near zero downtime. Critical redundant hardware and software features deliver the highest resiliency for all places in the network. Modular switches also provide the highest levels of investment protection, allowing cost effective incremental upgrades to supervisors, line cards and fabric modules while minimizing the need for disruptive fork-lift upgrades.



Cisco Nexus 7000 Series

Cisco's flagship modular data center-class product line: Designed to meet the requirements of the most mission-critical networks, the Cisco Nexus™ 7000 Series delivers continuous system operation and virtualized pervasive services. The Cisco Nexus 7000 Series is based on the highly resilient NX-OS operating system, with enhanced features to deliver real-time system upgrades with exceptional manageability and serviceability. Its innovative design is purpose-built to support end-to-end data center unified fabrics for consolidating LAN and SAN traffic over a single network and for high-performance campus core deployments.

The Cisco Nexus 7000 Series is designed for highly scalable 1, 10, 40 and 100 Gigabit Ethernet networks. With over 17 terabits per second (Tbps) switching capacity and 550Gbps per slot, the Nexus 7000 Series provides a flexible and scalable switching platform for Enterprises and Service Provider of all sizes.

Powered by Cisco NX-OS, the Nexus 7000 Series offers a self-healing, robust and rich feature set with a variety of Cisco innovations. Cisco's NX-OS provides customers with an intelligent and scalable network operating system that offers numerous industry-leading innovations such as OTV, FabricPath, VDCs, LISP, and hitless ISSU for continuous availability, setting the standard for mission-critical environments. NX-OS delivers exceptional operational flexibility through a single operating system that is leveraged across all Nexus platforms, the Cisco MDS 9000 family of storage switches and the Cisco UCS 6100 Series of Fabric Interconnects of the Cisco Unified Computing System. This provides for consistent operations across physical, virtualized, and converged environments allowing you to implement a single operating system across network, storage, and compute infrastructures, simplifying data center operations and resulting in a positive effect on operational costs.

IP routing and multicast: Supports state-of-the-art implementations of IPv4 and IPv6 services, routing protocols, and IP multicast features to optimize and enhance network scalability and performance, reducing capital expenditures (CapEx) and operating expenses (OpEx).

Hardware Features			
	N7K-C7009	N7K-C7010	N7K-C7018
Slots	9	10	18
Air Flow	Side to Side	Front to Back	Side to Side
1 Gigabit Ethernet Density	336	384	768
10/100/1000 (RJ45) Density	336	384	768
10 GBE Port Density	336	384	768
Performance	5.04 Bpps (IPv4 unicast)	5.76 Bpps (IPv4 unicast)	11.5 Bpps (IPv4 unicast)
Mean Time Between Failure (MTBFs)	318,572 (hours)	264,552 (hours)	206,038 (hours)
AC Internal (Redundant Mode)	Yes	Yes	Yes
DC Internal (Redundant Mode)	Yes	Yes	Yes
Dimension (H x W x D) Inches	24.5 x 17.3 x 24	36.5 x 17.3 x 33.1	43.5 x 17.3 x 33.1
Dimension (H x W x D) Centimeters	62.2 x 43.9 x 61	92.7 x 43.9 x 84.1	110.5 x 43.9 x 84.1
Rack Unit (RU)	14	21	25
Unit Weight	<ul style="list-style-type: none"> · Chassis only: 100 lb (45 kg) · Fully configured: 300 lb (136 kg) 	<ul style="list-style-type: none"> · Chassis only: 200 lb (90 kg) · Fully configured: 507 lb (230 kg) 	<ul style="list-style-type: none"> · Chassis only: 187 lb (85 kg) · Fully configured: 684 lb (311 kg)

Cisco Nexus 7000 Series: Supervisor Engine			
Hardware Features	N7K-SUP1	N7K-SUP2	N7K-SUP2E
Chassis Supported	All	All	All
Number of cores	Dual core	Quad core	2 quad cores
Speed	1.66 GHz	2.13 GHz	2.13 GHz
Memory	<ul style="list-style-type: none"> · DRAM: Up to 8 GB, Flash Memory: 2 GB · NVRAM: 2 MB battery backup 	<ul style="list-style-type: none"> · DRAM: Up to 12 GB, Flash Memory: 2 GB · NVRAM: 16 MB battery backup 	<ul style="list-style-type: none"> · DRAM: Up to 32 GB, Flash Memory: 2 GB · NVRAM: 16 MB battery backup
Flash memory	Compact flash memory	USB flash memory	USB flash memory

Cisco Nexus 7000 Series: Supervisor Engine (continued)

Hardware Features	N7K-SUP1	N7K-SUP2	N7K-SUP2E
Interfaces	<ul style="list-style-type: none"> • Supervisor management port: 10/100/1000-Mbps Ethernet port • CMP management port: 10/100/1000-Mbps Ethernet port • Console serial port: RJ45 connector • Auxiliary serial port: RJ45 connector • 3 USB ports: 2 host and 1 device port for peripheral 	<ul style="list-style-type: none"> • Supervisor management port: 10/100/1000-Mbps Ethernet port • Console serial port: RJ45 connector • 4 USB ports: 2 host and 2 device port for peripheral devices 	<ul style="list-style-type: none"> • Supervisor management port: 10/100/1000-Mbps Ethernet port • Console serial port: RJ45 connector • 4 USB ports: 2 host and 2 device port for peripheral devices

Features

Nexus 7000 Series Supervisor Modules

- The Cisco Nexus 7000 Series Supervisor Modules deliver a comprehensive set of features to address the needs of the most demanding data center deployments:
- Continuous system operation
 - Active and standby supervisors
 - 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
- Upgradeable architecture
 - No hardware or software forwarding
 - Independent supervisor and fabric modules in a distributed architecture, enabling independent upgrades of supervisor and fabric modules
 - Transparent upgrade capacity and capability; designed to support high-density 40 Gigabit and 100 Gigabit Ethernet
- Superior operating efficiency
 - System locator and beacon LEDs for simplified operations
 - On-board failure logging (OBFL) flash memory
- Control-plane and virtualization features such as:
 - Virtual device contexts (VDCs)
 - Fabric extender control plane
 - Cisco® Overlay Transport Virtualization (OTV) control plane
 - Layer 3 protocol learning
 - Spanning Tree Protocol processing
 - Internet Group Management Protocol (IGMP) processing for multicast

Nexus 7000 Series Supervisor 2E Module

With 2 Quad-Core processors, the Sup2E delivers the highest feature scalability and faster control plane and management processing making it ideal for medium to large data center and campus core deployments. In addition it provides

- Increased scalability for features such as VDC, FEX, VRF
- FCoE support for F2 Modules
- CPU Shares to allocate and guarantee CPU for highest priority VDCs

Nexus 7000 Series Supervisor 2 Module

With a Quad-Core processor, the Sup2 delivers scalable and faster control plane and management processing making it ideal for small to medium sized data center and campus core deployments. In addition it provides

- FCoE support for F2 Modules
- CPU Shares to allocate and guarantee CPU for highest priority VDCs

Nexus 7000 Series Supervisor 1 Module

With one dual-core processor, the Sup1 delivers scalable control plane and management functions ideal for small data center and campus core deployments

Nexus 7000 Series I/O Modules

Cisco Nexus 7000 M2-Series 100GE Module with XL Option

The new M2-Series module provides high-performance, full-feature Layer 2 and Layer 3 functionality.

- Two 100GE non-blocking ports with 120 Mpps and 200 Gbps of throughput
- Up to 32 non-blocking 100GE ports per Cisco 7018 chassis
- Comprehensive Layer 2 and Layer 3 forwarding and OTV, MPLS, and IPv4/v6 support
- Large FIB table size supporting up to 1 million IPv4 routes

Nexus 7000 M2-Series 6 port 40GE Module with XL Option

The second-generation M2-Series module delivers high-performance, full-feature Layer 2 and Layer 3 functionality.

- Six 40G non-blocking ports with 120 Mpps and 240 Gbps of throughput
- Up to 96 non-blocking 40GE ports per chassis
- Comprehensive Layer 2 and Layer 3 forwarding and OTV, MPLS, and IPv4/v6 support
- Large FIB table size supporting up to 1 million IPv4 routes

Cisco Nexus 7000 M2-Series 24 port 10 Gigabit Ethernet Module with XL Option

- Twenty-four 10G non-blocking ports with 120 Mpps packet forwarding capacity and 240 Gbps of throughput
- Comprehensive Layer 2 and Layer 3 forwarding including OTV, MPLS, IEEE1588 PTP and IPv4/v6 support
- Enhanced data security with IEEE 802.1AE MACsec encryption and Cisco TrustSec
- Nexus 2000 (FEX) support for scalable top of rack deployments
- Support a wide variety of 10G SFP+ optics including DWDM and ZR
- Large FIB table size supporting up to 1 million IPv4 routes

Nexus 7000 M1-Series 32-port 10 Gigabit Ethernet Module with XL Options

- Full support for Layer 2 and Layer 3 IPv4/IPv6 protocols, Netflow, and MPLS
- XL mode enables larger forwarding table (up to 1M routes) for increased scalability
- Flexibility to run in non-XL or XL without requiring a hardware change or upgrade
- Downstream connection to Cisco Nexus 2224TP, 2248TP, 2232PP Fabric Extender, offering a cost-effective, scalable server connectivity solution
- Powerful security capabilities through hardware integrated support for Cisco TrustSec

Nexus 7000 M1-Series 8-port 10 Gigabit Ethernet Module with XL Option

- Full support for Layer 2 and Layer 3 IPv4/IPv6 protocols, Netflow, and MPLS
- XL mode enables larger forwarding table (up to 1M routes) for increased scalability
- Wire speed on all ports, 120 Mpps L2/L3, 80 Gps
- Flexibility to run in non-XL or XL without requiring a hardware change or upgrade
- Powerful security capabilities through hardware integrated support for Cisco TrustSec

Features (continued)

Nexus 7000 M1-Series 48-port Gigabit Ethernet Modules

- Full support for Layer 2 and Layer 3 IPv4/IPv6 protocols, Netflow, and MPLS
- Ideal for access layer connectivity delivering a high density, high performance, and continuous operation solution
- Interface flexibility through support for 10/100/1000 RJ45 connectivity or fiber (SFP) connectivity
- Highly scalable solution with up to 768 ports of Gigabit Ethernet on the Nexus 7018 and 384 on the Nexus 7010 Chassis
- 60 Mpps of Layer 2 and Layer 3 IPv4 of Unicast forwarding

Nexus 7000 F2-Series 48 port 1/10 GE Line rate Ethernet Module

- Comprehensive Layer 2 and Layer 3 forwarding functionality
- Line rate on all 48 ports with 720 Mpps (IPv4 or IPv6) and 480 Gbps of data throughput
- Cisco Nexus 2000 fabric extender support provides ToR flexibility for high density 1/10GE deployments
- FabricPath support for highly reliable, flexible and scalable Layer 2 networks
- FCoE support for LAN and SAN convergence over a single Ethernet Network
- Dual speed 1G/10G on a per port basis [in both SFP and SFP+ media options] for easy migration to 10GE

Nexus 7000 F1-Series 32-port 1 and 10 Gigabit Ethernet Module

- Powered by the F1 Forwarding Engine, delivers Layer 2 forwarding rate of 480 Mpps and up to 320 Gbps of data throughput
- Up to 256/512 10 Gigabit Ethernet ports per Nexus 7000 10-slot/18-slot switches respectively
- Interface flexibility through support for Gigabit and 10 Gigabit Ethernet on a per-port basis in both SFP and SFP+ media options
- Support for Fibre Channel over Ethernet and the IEEE's Data Center Bridging technologies
- Highly scalable 100+ Tbps Layer 2 networks with Cisco FabricPath

Scalable Architectural Design

- End-to-end solution for data center core, aggregation, 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 10 GE, 40 GE and 100 GE scalability to more than 15 Tbps for ongoing investment protection.
- Multicore, multi-threaded, highly modular OS to optimize CPU resources and offload tasks to processors distributed across the modules.
- Virtual Device Context (VDC) Virtualizes a single physical Nexus 7000 switch into multiple logical switches for infrastructure consolidation and segmentation (PCI certified).
- Nexus 7000 in conjunction with the Nexus 2000 scales up to 1,500 ports per Nexus 7000 with a single point of management, significantly simplifying management.

Operational Continuity

- Based on 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 ISSU for non-disruptive upgrades.
- Highest resiliency with no single point of failure in the system hardware and a modular operating system.

Industry leading Innovations

- **Overlay Transport Virtualization (OTV)**—Extend 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 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 Nexus 7000 switch into multiple logical switches for infrastructure consolidation and segmentation (PCI certified).
- **Fibre Channel of Ethernet (FCoE)**—Allows consolidation for LAN and SAN traffic over a single converged network minimizing network sprawl and maximizing network agility.
- **Location/ID Separation Protocol (LISP)**—Provides global IP address portability significantly increasing routing scalability and enabling scalable virtualization, multi-tenancy, cloud enablement, and IPv6 transition.
- **In Service Software Upgrade (ISSU)**—Industry's only truly hitless ISSU, eliminating maintenance network outages.
- **Virtual Port Channel (vPC)**—Enables deployment of active/active uplinks for high availability and double network bandwidth.

Product Overview

Product Number	Product Description
Cisco Nexus 7000 Series Common Equipment Bundle – SUP 1/ FAB1	
N7K-C7010-BUN	Nexus 7010 Bundle (Chassis, SUP1, (3)FAB1, (2)AC-KW PSU)
N7K-C7010-BUN-R	Nexus 7010 Bundle (Chassis, (2)SUP1, (3)FAB1, (3)AC-6KW PSU)
Cisco Nexus 7000 Series Common Equipment Bundle – SUP 1 / FAB 2	
N7K-C7009-BUN2-P1	Nexus 7009 Bundle (Chassis, SUP1, (3)FAB2, (2)AC-6KW PSU)
N7K-C7009-BUN2	Nexus 7009 Bundle (Chassis, SUP1, (5)FAB2, (2)AC-6KW PSU)
N7K-C7009-BUN2-R	Nexus 7009 Bundle (Chassis, (2)SUP1, (5)FAB2, (2)AC-6KW PSU)
N7K-C7010-BUN2	Nexus 7010 Bundle (Chassis, SUP1, (5)FAB2, (2)AC-6KW PSU)
N7K-C7010-BUN2-R	Nexus 7010 Bundle (Chassis, (2)SUP1, (5)FAB2, (3)AC-6KW PSU)
Cisco Nexus 7000 Series Common Equipment Bundle – SUP 2 / FAB 2	
N7K-C7009-B2S2	Nexus 7009 Bundle (Chassis, SUP2, (5)FAB2, no PS)
N7K-C7009-B2S2-R	Nexus 7009 Bundle (Chassis, (2)SUP2, no PS)
N7K-C7010-B2S2	Nexus 7010 Bundle (Chassis, SUP2, (5)FAB2, no PS)
N7K-C7010-B2S2-R	Nexus 7010 Bundle (Chassis, (2)SUP2, (5)FAB2, no PS)
Cisco Nexus 7000 Series Common Equipment Bundle – SUP2E / FAB2	
N7K-C7009-B2S2E	Nexus 7009 Bundle (Chassis, SUP2E, (5)FAB2, no PS)
N7K-C7009-B2S2E-R	Nexus 7009 Bundle (Chassis, (2)SUP2E, (5)FAB2, no PS)
N7K-C7010-B2S2E	Nexus 7010 Bundle (Chassis, SUP 2E, (5)FAB2, no PS)
N7K-C7010-B2S2E-R	Nexus 7010 Bundle (Chassis, (2)SUP2E, (5)FAB2, no PS)
Cisco Nexus 7000 Series Chassis	
N7K-C7009 N7K-C7009=	Cisco Nexus 7000 Series 9-Slot Chassis, No Power Supply, Includes Fan (and Spare)
N7K-C7010 N7K-C7010=	Cisco Nexus 7000 Series 10-Slot Chassis, No Power Supply, Includes Fan (and Spare)
N7K-C7018 N7K-C7018=	Cisco Nexus 7000 Series 18-Slot Chassis, No Power Supply, Includes Fan (and Spare)
Cisco Nexus 7000 Series Fabric 1 Modules	
N7K-C7010-FAB-1 N7K-C7010-FAB-1=	Cisco Nexus 7000 Series – 10 Slot Chassis – 46 Gbps/Slot Fabric Module (and Spare)
N7K-C7018-FAB-1 N7K-C7018-FAB-1=	Cisco Nexus 7000 Series – 18 Slot Chassis – 46 Gbps/Slot Fabric Module (and Spare)

Product Number	Product Description
Cisco Nexus 7000 Series Fabric 2 Modules	
N7K-C7009-FAB-2 N7K-C7009-FAB2=	Cisco Nexus 7000 Series – 9 Slot Chassis – 110 Gbps/Slot Fabric Module (and Spare)
N7K-C7010-FAB-2 N7K-C7010-FAB-2=	Cisco Nexus 7000 Series – 10 Slot Chassis – 110 Gbps/Slot Fabric Module (and Spare)
N7K-C7018-FAB-2 N7K-C7018-FAB-2=	Cisco Nexus 7000 Series – 18 Slot Chassis – 110 Gbps/Slot Fabric Module (and Spare)
Cisco Nexus 7000 Series Supervisors	
N7K-SUP1 N7K-SUP1=	Cisco Nexus 7000 Series – Supervisor, Includes External 8GB Flash (and Spare)
N7K-SUP2 N7K-SUP2=	Cisco Nexus 7000 Series – Supervisor 2, Includes External 12GB Flash (and Spare)
N7K-SUP2E N7K-SUP2E=	Cisco Nexus 7000 Series – Supervisor 2E, Includes External 32GB Flash (and Spare)
Cisco Nexus 7000 Series Power Supplies	
N7K-AC-6.0KW N7K-AC-6.0KW=	Cisco Nexus 7000 Series – 6.0KW AC Power Supply Module (and Spare)
N7K-AC-7.5KW-US NK-AC-7.5KW-US=	Cisco Nexus 7000 Series – 7.5KW AC Power Supply Module US (and Spare)
N7K-AC-7.5KW-INT N7K-AC-7.5KW-INT=	Cisco Nexus 7000 Series – 7.5KW AC Power Supply Module INT (and Spare)
N7K-DC-6.0KW N7K-DC-6.0KW=	Cisco Nexus 7000 Series – 6.0KW DC Power Supply Module (and Spare)
Cisco Nexus 7000 Series M-Modules	
N7K-M108X2-12L N7K-M108X2-12L=	Cisco Nexus 7000 Series – 8 port 10GbE with XL option, req. X2 (and Spare)
N7K-M132XP-12 N7K-M132XP-12=	Cisco Nexus 7000 Series – 32 Port 10GbE, 80G Fabric, req. SFP+ (and Spare)
N7K-M132XP-12L N7K-M132XP-12L=	Cisco Nexus 7000 Series – 32 Port 10GbE with XL Option, 80G Fabric, req. SFP+ (and Spare)
N7K-M148GS-11 N7K-M148GS-11=	Cisco Nexus 7000 Series – 48 Port 1G, SFP (and Spare)
N7K-M148GS-11L N7K-M148GS-11L=	Cisco Nexus 7000 Series – 48 Port GE Module with XL Option, req. SFP (and Spare)
N7K-M148GT-11 N7K-M148GT-11=	Cisco Nexus 7000 Series – 48 Port 10/100/1000, RJ-45 (and Spare)
N7K-M148GT-11L N7K-M148GT-11L=	Cisco Nexus 7000 Series – 48 Port 10/100/1000 Module with XL Option (and Spare)
N7K-M224XP-23L N7K-M224XP-23L=	Cisco Nexus 7000 Series – 24 Port 10GE SFP+ Module with XL Option (and Spare)
N7K-M206FQ-23L N7K-M206FQ-23L=	Cisco Nexus 7000 Series – 6 Port 40GE QSFP Module with XL Option (and Spare)
N7K-M202CF-22L N7K-M202CF-22L=	Cisco Nexus 7000 Series – 2 Port 100GE CFP Module with XL Option 9 (and Spare)

Product Overview (continued)

Product Number	Product Description
Cisco Nexus 7000 Series F-Modules	
N7K-F132XP-15 N7K-F132XP-15=	Cisco Nexus 7000 Series – 32 Port 1G/10G Ethernet Module, SFP/SFP+ (and Spare)
N7K-F248XP-25 N7K-F248XP-25=	Cisco Nexus 7000 Series – 48 Port 10GbE, req. SFP+ (and Spare)
Cisco Nexus 7000 Series NX-OS Base Images	
N7KS1K9-42	Cisco Nexus 7000 NX-OS Release 4.2
N7KS1K9-50	Cisco Nexus 7000 NX-OS Release 5.0
N7KS1K9-51	Cisco NX-OS Release 5.1
N7KS1NPEK9-50	Cisco NX-OS 5.0 No Payload Encryption (no CTS) for N7K-SUP1
N7KS1NPEK9-51	Cisco NX-OS 5.1 No Payload Encryption (no CTS) for N7K-SUP1
N7KS1NPEK9-60	Cisco NX-OS 6.0 No Payload Encryption (no CTS) for N7K-SUP1
Cisco Nexus 7000 Series NX-OS Licenses	
N7K-LAN1K9 N7K-LAN1K9= L-N7K-LAN1K9=	Nexus 7000 LAN Enterprise License – L3 Protocols (Spare and eDelivery)
N7K-ADV1K9 N7K-ADV1K9= L-N7K-ADV1K9=	Nexus 7000 Advanced Enterprise License - VDC, CTS ONLY (Spare and eDelivery)
N7K-TRS1K9 N7K-TRS1K9= L-N7K-TRS1K9=	Nexus 7000 Transport Services License – OTW/LISP (Spare and eDelivery)
N7K-EL21K9 N7K-EL21K9= L-N7K-EL21K9=	Nexus 7000 Enhanced Layer 2 License – Fabric Path (Spare and eDelivery)
N7K-SAN1K9 N7K-SAN1K9= L-N7K-SAN1K9=	Nexus 7000 SAN Enterprise License (Spare and eDelivery)
N7K-VDC1K9 N7K-VDC1K9= L-N7K-VDC1K9=	Nexus 7000 +4 VDC Upgrade License (Spare and eDelivery)
N7K-FCOEF-132XP N7K-FCOEF-132XP= L-N7K-FCOEF-132XP=	FCoE License for Nexus 7000 32-port 10G SFP+ F1 Module (Spare and eDelivery)
N7K-FCOEF-248XP N7K-FCOEF-248XP= L-N7K-FCOEF-248XP=	FCoE License for Nexus 7000 48-port 10G bE SFP+ F2 Module (Spare and eDelivery)
N7K-MPLS1K9 N7K-MPLS1K9= L-N7K-MPLS1K9=	Nexus 7000 MPLS License (Spare and eDelivery)
N7K-C7009-XL N7K-C7009-XL= L-N7K-C7009-XL=	Nexus 7009 Scalable Feature License (Spare and eDelivery)
N7K-C7010-XL N7K-C7010-XL= L-N7K-C7010-XL=	Nexus 7010 Scalable Feature License (Spare and eDelivery)

Product Number	Product Description
Cisco Nexus 7000 Series NX-OS Licenses (continued)	
N7K-C7018-XL N7K-C7018-XL= L-N7K-C7018-XL=	Nexus 7018 Scalable Feature License (Spare and eDelivery)
DCNM-N7K-K9 DCNM-N7K-K9= L-DCNM-N7K-K9=	DCNM for LAN Enterprise License for one Nexus 7000 Chassis (Spare and eDelivery)
DCNM-SAN-N7K-K9	DCNM for SAN Advanced Edition for Nexus 7000
DCNM-N7K-PAK=	DCNM LAN Enterprise License for a Pack of Nexus 7000 Chassis
Cisco Nexus 7000 100 Gigabit Ethernet Optics	
CFP-100G-LR4 CFP-100G-LR4=	Cisco 100GBASE-LR4 CFP Module for SMF (and Spare)
Cisco Nexus 40 Gigabit Ethernet Optics	
QSFP-40G-SR4 QSFP-40G-SR4=	Cisco 40GBASE-SR4 QSFP+ Module for MMF (and Spare)
Cisco Nexus 7000 Series 10 Gigabit Ethernet SFP+ Optics	
SFP-10G-SR SFP-10G-SR=	10GBASE-SR SFP+ Module (and Spare)
SFP-10G-LR SFP-10G-LR=	10GBASE-LR SFP+ Module (and Spare)
SFP-10G-LRM SFP-10G-LRM=	10GBASE-LRM SFP+ Module (and Spare)
SFP-10G-ER SFP-10G-ER=	10GBASE-ER SFP+ Module (and Spare)
SFP-H10GB-CU1M SFP-H10GB-CU1M=	10GBASE-CU SFP+ Cable 1 Meter (and Spare)
SFP-H10GB-CU3M SFP-H10GB-CU3M=	10GBASE-CU SFP+ 3 Meter (and Spare)
SFP-H10GB-CU5M SFP-H10GB-CU5M=	10GBASE-CU SFP+ 5 Meter (and Spare)
SFP-H10GB-ACU7M SFP-H10GB-ACU7M=	Active Twinax cable assembly, 7m (and Spare)
SFP-H10GB-ACU10M SFP-H10GB-ACU10M=	Active Twinax cable assembly, 10m (and Spare)
Cisco Nexus 7000 Series 10 Gigabit Ethernet X2 Optics	
X2-10GB-SR X2-10GB-SR=	10GBASE-SR X2 Module (and Spare)
X2-10GB-LR X2-10GB-LR=	10GBASE-LR X2 Module (and Spare)
X2-10GB-LRM X2-10GB-LRM=	10GBASE-LRM-X2 Module (and Spare)
X2-10GB-ER X2-10GB-ER=	10GBASE-ER X2 Module (and Spare)
X2-10GB-ZR X2-10GB-ZR=	10GBASE-ZR X2 Module (and Spare)

Product Overview (continued)

Product Number	Product Description
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Cisco Nexus 7000 Series 10 Gigabit Ethernet X2 Optics (continued)

X2-10GB-LX4 X2-10GB-LX4=	10GBASE-LX4 X2 Module (and Spare)
X2-10GB-CX4 X2-10GB-CX4=	10GBASE-CX4 X2 Module (and Spare)
DWDM-X2-xx.xx=* CVR-X2-SFP10G CVR-X2-SFP10G=	DWDM-X2 xx.xx nm X2 (100 GHz ITU grid) X2 to SFP+ Adaptor Module (and Spare)

* Also offered in other wavelengths. See the DWDM SFP optics data sheet for additional product numbers and information:
http://cisco.com/en/US/prod/collateral/modules/ps5455/ps6576/product_data_sheet0900aecd80582763.html.

Cisco Nexus 7000 Gigabit Ethernet Optics

SFP-GE-S SFP-GE-S=	1000BASE-SX SFP, DOM (and Spare)
SFP-GE-L SFP-GE-L=	1000BASE-LX/LH SFP, DOM (and Spare)
SFP-GE-Z SFP-GE-Z=	1000BASE-ZX Gigabit Ethernet SFP, DOM (and Spare)
SFP-GE-T SFP-GE-T=	1000BASE-T SFP, NEBS 3 ESD (and Spare)
GLC-SX-MM GLC-SX-MM=	GE SFP, LC connector, SX transceiver (and Spare)
GLC-SX-MMD GLC-SX-MMD=	1000BASE-SX SFP Transceiver Module, MMF, 850nm, DOM
GLC-LH-SM GLC-LH-SM=	GE SFP, LC connector, LX/LH Transceiver (and Spare)
GLC-LH-SMD GLC-LH-SMD=	1000Base-LX/LH SFP Transceiver Module, MMF/SMF, 1310nm, DOM (and Spare)
GLC-ZX-SM GLC-ZX-SM=	1000BASE-ZX SFP (and Spare)
GLC-T GLC-T=	1000BASE-T-SFP (and Spare)
GLC-BX-D GLC-BX-D=	1000Base-BX10 SFP Module, SMF, 1490nm, TX/1310nm RX (and Spare)
GLC-BX-U GLC-BX-U=	1000BASE-BX10 SFP Module, SMF, 1310nm TX/1490nm RX (and Spare)
CWDM-SFP-6061=* DWDM-SFP-4453=**	Coarse Wavelength Division Multiplexing (CWDM) SFP Dense Wavelength Division Multiplexing (DWDM) SFP

* Also offered in other wavelengths. See the CWDM SFP optics data sheet for additional product numbers and information: http://cisco.com/en/US/prod/collateral/modules/ps5455/ps6575/product_data_sheet09186a00801a557c.html.

** Also offered in other wavelengths. See the DWDM SFP optics data sheet for additional product numbers and information:
http://cisco.com/en/US/prod/collateral/modules/ps5455/ps6576/product_data_sheet0900aecd80582763.html.

Product Number**Product Description****Cisco Nexus 7000 Optional Equipment and Spares**

N7K-DC-PIU N7K-DC-PIU=	Nexus 7000 – DC Power Interface Unit (and Spare)
N7K-DC-CAB=	Nexus 7000 – DC 48V-48V Cable
N7K-SUP1-8GBUPG N7K-SUP1-8GBUPG=	Nexus 7000 Supervisor 1 8GB Memory Upgrade Kit (and Spare)
N7K-CPF-8GB=	Nexus Compact Flash Memory 2GB, Log Flash
N7K-CPF-2GB N7K-CPF-2GB=	Nexus Compact Flash Memory 2GB, Expansion Flash – Slot 0 (and Spare)
N7K-C7010-AFLT N7K-C7010-AFLT=	Nexus 7010 Air Filter (and Spare)
N7K-C7009-FD-MB N7K-C7009-FD-MB=	Nexus 7009 Front Door Kit (and Spare)
N7K-C7010-FD-MB N7K-C7010-FD-MB=	Nexus 7010 Front Door Kit (and Spare)
N7K-C7018-FD-MB N7K-C7018-FD-MB=	Nexus 7018 Front Door Kit (and Spare)
N7K-SUP-BLANK=	Nexus 7000 Supervisor Blank Slot Cover
N7K-MODULE-BLANK=	Nexus 7000 Module Blank Slot Cover
N7K-CLK-BLANK=	Nexus 7000 Network Clock Module Blank
N7K-C7009-F-BLANK=	Nexus 7000 Network Clock Module Blank
N7K-C7009-F-BLANK=	Nexus 7009 Fabric Module Blank
N7K-C7010-F-BLANK=	Nexus 7010 Fabric Module Blank
N7K-C7018-F-BLANK=	Nexus 7018 Fabric Module Blank
N7K-PS-BLANK=	Nexus 7010 Chassis Power Supply Blank Slot Cover
N7K-PS-BLANK-H=	Nexus 7018 Chassis Power Supply Blank with Handle
N7K-BSK=	Nexus 7000 Bottom Support Kit
N7K-C7009-BSK=	Nexus 7009 Bottom Support Kit
N7K-C7018-BSK=	Nexus 7018 Bottom Support Kit
N7K-RMK=	Nexus 7000 Rack Mount Kit
N7K-C7009-RMK=	Nexus 7009 Rack Mount Kit
N7K-C7018-RMK=	Nexus 7018 Rack Mount Kit
N7K-C7009-CMK=	Nexus 7009 Center Mount Kit
N7K-C7009-CAB-TOP=	Nexus 7009 Front Top Section and Cable Mgmt Kit
N7K-C7009-ACC-KIT=	Nexus 7009 Accessory Kit
N7K-C7010-ACC-KIT=	Nexus 7010 Accessory Kit
N7K-C7018-ACC-KIT=	Nexus 7018 Accessory Kit
N7K-C7010-LEDS=	Nexus 7010 Chassis LED Replacement Kit
N7K-C7018-LEDS=	Nexus 7018 Chassis LED Replacement Kit
N7K-C7010-EMI-SC=	Nexus 7010 – EMI Inlet Screen Kit

Product Overview (continued)

Product Number	Product Description
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Cisco Nexus 7000 Optional Equipment and Spares (continued)

N7K-C7009-FAN=	Nexus 7000 – 9 Slot Fan
N7K-C7010-FAN-S=	Nexus 7000 – 10 Slot System Fan
N7K-C7010-FAN-F=	Nexus 7000 – 10 Slot Fabric Fan
N7K-C7018-FAN=	Nexus 7000 – 18 Slot Fan
N7K-C7009-SHPPKG=	Nexus 7009 Shipping Packaging
N7K-C7010-SHPPKG=	Nexus 7010 Shipping Packaging
N7K-C7018-SHPPKG=	Nexus 7018 Shipping Packaging



Cisco Catalyst 6500 Series

The flagship Catalyst switching platform offers the highest levels of application intelligence, unified network services, integrated security, non-stop communications, operational manageability, and virtualization for enterprises, medium-sized businesses, and service providers.

The Cisco Catalyst 6500 Series continues to be the industry's most innovative switching platform, delivering the highest levels of service. The latest Supervisor 2T offers customers the latest technology for Campus core and distribution. In addition the VS-Sup720-10G also provides with Supervisor 2T, the feature-richness, density and scalability of this product line sets the standard for converged data, voice, and video networks. In addition, its flexibility enables deployments in wiring closet, campus distribution, core, data center, Internet access and WAN (Supervisor 720 only) service aggregation, environments, and enables maximum operational efficiency and investment protection through hardware and software consistency.

The Cisco Catalyst 6500 Series offers integrated service modules that provide high-speed advanced services such as integrated wireless, firewalling, intrusion detection, application control, SSL termination, and network analysis services. With a choice of 3-, 4-, 6-, 9-, and 13-slot chassis, the Cisco Catalyst 6500 Series scales to support the highest port densities for Power over Ethernet (PoE) and Enhanced Power over Ethernet (ePoE), PoE Plus, 10/100 Fast Ethernet and 10/40 Gigabit Ethernet, 10 Gigabit Ethernet (10 GBE), 40 Gigabit Ethernet, 10GBase-T and DS0 to OC-192 WAN interfaces. The Cisco Catalyst 6500 Series switch also offers the investment protection of backwards compatibility, enabling new services and functions on older line cards by simply upgrading a supervisor to the latest generation.

Scale Performance and Network Services

- 2 terabits per second (Tbps) fabric delivers 80 Gbps switching capacity per slot and scales to 4 Tbps system capacity with Cisco Catalyst Virtual Switching System (VSS)
- 40G-capable system supports up to 360 10G ports and 1068 1G ports per VSS system
- Supervisor Engine 2T supports up to 720 mpps of IPv4 and 390 mpps of IPv6
- Provides large table sizes for scalable deployment with protected control plane

Hardware Features		
	WS-C6503-E	WS-C6504-E
Slots	3	4
Gigabit Ethernet SFP Density (Supervisor 2T configuration)	32/98	48/144
Two Chassis configured as a Virtual Switching System (SFP Only)	99	147
10 GBE X2 / SFP+ Port Density	198	294
10 GBE Two Chassis configured as a Virtual Switching System	34 / 34	50 / 50
10/100/1000 Density	64	96
10/100/1000 Two Chassis configured as a Virtual Switching System	96	144
40 GBE CFP Port Density	192	288
40 GBE Two Chassis configured as a Virtual Switching System	8	12
10 Gigabit Ethernet RJ-45 port density	16	24
	32	48
Maximum Watt Power Consumption (Redundant Mode)		
AC Internal (Redundant Mode)	1400	2700
DC Internal (Redundant Mode)	950	2700
Maximum Number of Class 3 Devices (15.4W) Maximum Power Supplies		
AC Internal (Redundant Mode)	48	110
DC Internal (Redundant Mode)	31	110
Dimension (H x W x D) Inches	7 x 17.37 x 21.75	8.75 x 17.5 x 21.75
Dimension (H x W x D) Centimeters	178 x 44.1 x 55.2	22.2 x 44.5 x 55.2
Rack Unit (RU)	4	5
Unit Weight Pounds (Kilograms) (Chassis Only)	33 (15.0)	40 (18.1)

WS-C6506-E	WS-C6509-E	WS-C6509-V-E	WS-C6513-E
6	9	9	13
243	387	387	534
486	774	774	1068
82 / 82	130 / 130	130 / 130	180 / 180
160	256	256	352
240	384	384	528
480	768	768	1056
20	32	32	44
40	64	64	88
80	128	128	178
8700	8700	8700	6000
4000	4000	4000	4000
284	288	215	281
173	184	206	176
19.2 x 175 x 18.2	24.5 x 175 x 18.2	33.3 x 172 x 18.1	33.3 x 173 x 18.1
48.8 x 44.5 x 46.0	62.2 x 44.5 x 46.0	84.6 x 43.7 x 46.0	84.6 x 43.7 x 46.0
12	15	21	20
50 (22.7)	60 (27.3)	55 (24.9)	98 (45.0)

Supervisor Engines Hardware Features

	Virtual Switching Supervisor 720-10G VS-S720-10G-3CXL VS-S720-10G-3C	Supervisor 2T
Chassis Supported	All	All
Bandwidth per Slot (Gbps)	40	80
Total Bandwidth (Gbps)	720	2048
Packets per Second (Mpps)	432	720
MAC Addresses Supported	96K	128K
Routes Supported	1,000,000 (3CXL) 256,000 (3C)	1,000,000 (2T-XL) 256,000 (2T)
Onboard Memory (DRAM)	1 GB (SP), 1 GB (RP)	Up to 1 GB (SP), 1 GB (RP)
Uplinks	2 x 10 GBE, 3 x GBE (2 SFP, 1 10/100/1000)	2 x GBE (SFP) or 1 x GBE (SFP) + 1 x GBE (10/100/1000)

Features

Catalyst 6500 Supervisor Common Features

- Supports next generation performance of 40/10/1 Gigabit, Power over Ethernet, Enhanced Power over Ethernet, and Power over Ethernet Plus interfaces
- Compatible with all three generations of Catalyst 6500 series interfaces and service modules
- Advanced automation with Smart CallHome and Embedded Event Manager
- User-based rate limiting enforcing up to 64 policy rates
- High performance features in hardware
- IPv4 and IPv6 forwarding
- Layer 2 and Layer 3 MPLS, VPLS, EVN, and EoMPLS
- Virtual Route Forwarding Lite (VRF-Lite)
- Generic Route Encapsulation (GRE)
- Advanced security features
- Trustsec 802.1x, MacSec, and NAC features
- Access Control Lists (ACLs)
- Virtual LANs (VLANs)
- Port Security
- CPU rate limiting
- Multi-path uRFP

Flexible Netflow

- Services Advertisement Framework (SAF)

SUP 32 WS-SUP32-10GE-3B WS-SUP32-GE-3B	SUP 32-PISA WS-SUP32-10GE-PISA WS-SUP32-GE-PISA
All	All
32 Gbps Shared	32 Gbps Shared
15	15
64K	64K
256,000	256,000
Up to GB	Up to GB
(-10 GE) : 2 x 10 GBE + 1 x 10/100/1000 (-GE) : 8 x 1 GBE (SFP) + 1 x 10/100/1000	(-10 GE) : 2 x 10 GBE + 1 x 10/100/1000 (-GE) : 8 x 1 GBE (SFP) + 1 x 10/100/1000

Features

Virtual Switching Supervisor 720-10G

- Scales to 1.4 Terabits with **Virtual Switching System 1440**
- Integrated 720 Gbps switch fabric
- Two 10 Gigabit and two Gigabit Ethernet uplinks
- 3CXL Policy Feature Card expands routing, MPLS, and NetFlow capacity

Catalyst Supervisor Engine 720

- Optimized for maximum services scalability
- Integrated 720 Gbps switch fabric
- 3BXL Policy Feature Card expands routing, MPLS, and NetFlow capacity

Cisco Catalyst 6500 Series Spotlight

The key enabler of a VSS Virtual Switching Supervisor 720-10G and Supervisor 2T. Any two Cisco Catalyst 6500 Series Switches with these supervisor engines can be pooled together into a VSS system. The two switches are connected with 10 GBE links called Virtual Switch Links (VSLs). Once a VSS is created it acts as a single virtual Cisco Catalyst 6500 switch delivering the following benefits:

Operational Manageability:

Two Catalyst 6500s shares a single point of management, single gateway IP address, and single routing instance—eliminating the dependence on First Hop Redundancy Protocols (FHRP) and Spanning Tree Protocol.

Non-Stop Communications:

Delivers deterministic, sub-200 millisecond Layer 2 link recovery through inter-chassis stateful failovers and the predictable resilience of Etherchannel.

Scales to 4.0Tbps:

Scales system bandwidth capacity to 4.0 Tbps by activating all available bandwidth across redundant Catalyst 6500 switches.

PoE Scalability

The Cisco Catalyst 6500 Series provides industry leading levels of power scalability (up to 420 Class 3 devices) needed to support high-density PoE deployments. It also offers Enhanced Power over Ethernet (ePoE) for devices that require more than 30 Watts per port. The enhanced 6- and 9-slot chassis (WS-C6506-E and WS-C6509-E models) are designed to scale beyond the current 8700W power supplies. Continuing this product line's tradition of unmatched investment protection, all existing supervisors, line cards, switch fabrics, and software releases are supported in the E series chassis.

¹See Virtual Switching System 1440 on the Catalyst 6500 Series White Paper for complete requirements.

²Per EOS announcement, last day to order is September 8, 2010.

³Subsystem ISSU aka Patching has been deprecated starting 12.2(33)SX13.

Product Overview

Product Number	Product Description
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Catalyst 6500 Chassis: Top Sellers

WS-C6503-E	6500 Enhanced 3-slot Chassis, 4RU, no Power Supply, no Fan Tray
WS-C6504-E	6500 Enhanced 4-slot Chassis, 5RU, no Power Supply, no Fan Tray
WS-C6506-E	6500 Enhanced 6-slot Chassis, 12RU, no Power Supply, no Fan Tray
WS-C6509-E	6500 Enhanced 9-slot Chassis, 15RU, no Power Supply, no Fan Tray
WS-C6509-V-E	6500 Enhanced 9-slot Chassis, 21RU, no Power Supply, no Fan Tray
WS-C6513-E	6500 13-slot Chassis, 20RU, no Power Supply, with Fan Tray
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

Catalyst 6500 Advanced Technology Bundles: Top Sellers

WS-C6504-E-VPN+K9	6504E IPsec VPN SPA Security System
WS-C6506-E-VPN+K9	6506E IPsec VPN SPA Security System
WS-C6509-E-VPN+K9	6509E IPsec VPN SPA Security System
WS-C6513-VPN+K9	6513 IPsec VPN SPA Security System
WS-C6503-E-FWM-K9	6503E Firewall Security System
WS-C6506-E-FWM-K9	6506E Firewall Security System
WS-C6509-E-FWM-K9	6509E Firewall Security System
WS-C6513-FWM-K9	6513 Firewall Security System
WS-C6504-E-ACE-K9	ACE 4G 6504 Bundle
WS-C6509-E-ACE-K9	ACE 8G 6509 Bundle
WS-C6504-E-WISM	6504-E WiSM Bundle (SUP720-3B, WiSM, Fan Tray, Two Power Supplies)

Product Overview (continued)

Product Number Product Description

Catalyst 6500 Advanced Technology Bundles: Top Sellers (continued)

WS-C6509-E-WISM	6509-E WiSM Bundle (SUP720-3B, WiSM, Fan Tray, no Power Supply)
WS-C6503E-CSM	CSM, 6503, SUP720 Bundle
WS-C6503E-CSMS-K9	CSM-S, 6503, SUP720 Bundle
WS-C6509E-CSM	CSM, 6509, SUP720 Bundle
WS-C6509E-CSMS-K9	CSM-S, 6509, SUP720 Bundle
WS-C6513-CSM	CSM, 6513, SUP720 Bundle
WS-C6513-CSMS-K9	CSM-S, 6513, SUP720 Bundle
WS-SVC-SSL-CSM-K9=	6500 SSL and CSM Bundle

Catalyst 6500 Service Module Bundles: Top Sellers

DSN09E-VS720-AC-K9	Cisco Catalyst 6509E Data Center Services Bundle (6509-E Chassis, Dual AC Power, Sup720-10G, 3x FWSM, 1x ACE, 6704)
DSN09E-VS720-DC-K9	Cisco Catalyst 6509E Data Center Services Bundle (6509-E Chassis, Dual AC Power, Sup720-10G, 3x FWSM, 1x ACE, 6704)
DSN06E-VS720-AC-K9	Cisco Catalyst 6506E Data Center Services Bundle (6506-E Chassis, Dual AC Power, Sup720-10G, 3x FWSM, 1x ACE, 6704)
DSN06E-VS720-DC-K9	Cisco Catalyst 6506E Data Center Services Bundle (6506-E Chassis, Dual DC Power, Sup720-10G, 3x FWSM, 1x ACE, 6704)
DSN9VE-VS720-AC-K9	Cisco Catalyst 6509VE Data Center Services Bundle (6509-VE Chassis, Dual AC Power, Sup720-10G, 3x FWSM, 1x ACE, 6704)
DSN9VE-VS720-DC-K9	Cisco Catalyst 6509VE Data Center Services Bundle (6509-VE Chassis, Dual DC Power, Sup720-10G, 3x FWSM, 1x ACE, 6704)
C6509E-ACE30-8X-K9	Cisco Catalyst 6509-E Application Control Engine (ACE) 30 8G Bundle
WS-C6509-E-NAM3-K9	Catalyst 6500 Series Cisco Prime NAM-3 Bundle

Catalyst 6500 AC Power Supplies: Top Sellers

PWR-1400-AC	1400W AC Power Supply for 7603 and WS-C6503 Chassis
PEM-20A-AC+	Power Entry Module Use with 1400W AC Power Supply for 7603/6503
PWR-2700-AC/4	2700W AC Power Supply for 7604/6504-E
WS-CAC-3000W	6500 3000W AC Power Supply
WS-CAC-6000W	6500 6000W AC Power Supply

Product Number**Product Description****Catalyst 6500 DC Power Supplies: Top Sellers**

PWR-950-DC	950W DC Power Supply for 7603/6503
PEM-DC/3	DC Power Entry Module for 7603/6503
PWR-2700-DC/4	2700W DC Power Supply for 7604/6504-E
WS-CDC-2500W	6000 2500W DC Power Supply
PWR-4000-DC	4000W DC PS for 7609-S/7609/13, 6509/13

Catalyst 6500 Supervisor Engines: Top Sellers

WS-SUP32-GE-3B	6500 SUP32 with 8 GBE Uplinks and PFC3B
VS-SUP720-10G-3CXL	6500 Virtually Switching Supervisor 720 with 10 GE Uplinks, MSFC3, PFC3CXL
VS-SUP720-10G-3CXL	6500 Virtually Switching Supervisor 720 with 10 GE Uplinks, MSFC3, PFC3C
WS-SUP720-3BXL	6500/7600 SUP720 Fabric MSFC3 PFC3BXL
WS-SUP720-3B	6500/7600 SUP720 Fabric MSFC3 PFC3B

Catalyst 6500 10 Gigabit Ethernet: Top Sellers

WS-X6716-10G-3CXL	16-port 10 Gigabit Ethernet Module with DFC3CXL (Requires X2)
WS-X6716-10G-3C	16-port 10 Gigabit Ethernet Module with DFC3C (Requires X2)
WS-X6708-10G-3CXL	8-port 10 Gigabit Ethernet Module with DFC3CXL (Requires X2)
WS-X6708-10G-3C	8-port 10 Gigabit Ethernet Module with DFC3C (Requires X2)
WS-X6704-10GE	4-port 10 Gigabit Ethernet Module (Requires XENPAKs)
WS-X6716-10G-T-3C	6-port 10 Gigabit Ethernet Copper Module with DFC3C
WS-X6716-10GT-3CXL	16-port 10 Gigabit Ethernet Copper Module with DFC3CXL

Catalyst 6500 Gigabit Ethernet: Top Sellers

WS-X6408A-GBIC	6000 8-port Gigabit Ethernet Module, Enhanced QoS (Requires GBICs)
WS-X6516A-GBIC	6500 16-port Gigabit Ethernet Module, Fabric-enabled (Requires GBICs)
WS-X6724-SFP	6500 24-port Gigabit Ethernet Module, Fabric-enabled (Requires SFPs)
WS-X6748-SFP	6500 48-port Gigabit Ethernet Module, Fabric-enabled (Requires SFPs)

Product Overview (continued)

Product Number **Product Description**

Catalyst 6500 10/100/1000: Top Sellers

WS-X6148A-GE-TX	6500 48-port 10/100/1000, Jumbo Frame, RJ-45
WS-X6148A-GE-45AF	6500 48-port PoE 802.3af 10/100/1000, Jumbo Frame
WS-X6548-GE-TX	6500 48-port Fabric-enabled 10/100/1000 Module
WS-X6548-GE-45AF	6500 48-port PoE 802.3af 10/100/1000 (RJ-45) CEF256 Card
WS-X6748-GE-TX	6500 48-port 10/100/1000 GBE Module, Fabric-enabled, RJ-45
WS-X6148E-GE-TX	6500 48-port 10/100/1000 Base-T
WS-X6148E-GE-45AT	6500 48-port PoE+ 802.3at 10/100/1000 Base-T Ethernet Card with TDR

Catalyst 6500 10/100: Top Sellers

WS-X6148A-RJ-45	6500 48-port 10/100 with TDR, Upgradable - PoE 802.3af
WS-X6148A-45AF	6500 48-port PoE 802.3af 10/100 Line Card with TDR
WS-X6148-RJ-21	6500 48-port 10/100 Upgradable to Voice, RJ-21
WS-X6148-21AF	6500 48-port PoE 802.3af 10/100, (RJ-21) Line Card
WS-X6196-RJ-21	6500 96-port 10/100 Upgradable - PoE 802.3af
WS-X6196-21AF	6500 96-port, PoE 802.3af 10/100 - RJ-21
WS-F6700-DFC3BXL	6500 Dist Fwd Card-3BXL for WS-X67xx
WS-F6700-DFC3B	6500 Dist Fwd Card, 256K Routes for WS-X67xx
WS-F6K-DFC3BXL	6500 Dist Fwd Card-3BXL for 65xx, 6816 Modules
WS-F6K-DFC3B	6500 Dist Fwd Card-3B for 65xx, 6816 Modules
WS-F6K-PFC3BXL	SUP720 PFC-3BXL Plus 2x1 Gigabit Memory
WS-F6K-PFC3B	SUP720 Policy Feature Card-3B

Catalyst 6500 Service Modules: Top Sellers

ACE30-MOD	Application Control Engine Module (ACE30)
WS-SVC-FWM-1-K9	Firewall Blade for 7600/6500, VFW License Separate
WS-SVC-ASA-SM1-K9	Adaptive Security Services Module (Firewall Services Module)(ASA-SM)
7600-SSC-400	7600/6500 Services SPA Carrier Card
SPA-IPSEC-2G	7600/6500 IPsec VPN SPA - DES/3DES/AES
SPA-IPSEC-SSC400-1	7600/6500 IPsec VPN SPA Bundle 1 (System Only)
SPA-IPSEC-SSC400-2	7600/6500 IPsec VPN SPA Bundle 2 (System Only)
WS-SVC-ADM-1-K9	6500 Anomaly Detection Module
WS-SVC-AGM-1-K9	6500 Anomaly Guard Module

Product Number**Product Description****Catalyst 6500 Service Modules: Top Sellers (continued)**

WS-SVC-NAM-3	Network Analysis Module (NAM3) for 10G
WS-SVC-WISM2-1-K9	6000 Content Switching Module
WS-SVC-WISM2-3-K9	
WS-SVC-WISM2-5-K9	

Catalyst 6500 802.3af Upgrades: Top Sellers

WS-F6K-48-AF=	C6500 802.3af PoE Daughter Card - 6 x 48 x-GBE-TX , 6148A-RJ-45
WS-F6K-FE48X2-AF=	6500 PoE 802.3af Voice Card (WS-X6148X2-RJ-45 and -RJ-21)
WS-X6148-45AF-UG=	6500 802.3af Upgrade for 6148-RJ-45 (Trade-in Order Only)
WS-X6148-21AF-UG=	6500 - PoE 802.3af Upgrade, 6148-RJ-21
WS-F6K-48-AT	6500 802.3af PoE Daughter Card

Catalyst 6500 FlexWAN/OSM: Top Sellers

WS-X6582-2PA	7600/6500 Enhanced FlexWAN, Fabric-enabled
7600-SIP-200	7600 Series SPA Interface Processor-200
7600-SIP-400	7600 Series SPA Interface Processor-400
WS-C6503-E-FAN	6503-E Chassis Fan Tray
WS-C6506-E-FAN	6506-E Chassis Fan Tray
WS-C6509-E-FAN	6509-E Chassis Fan Tray
WS-C6509-V-E-FAN	Catalyst 6509-V-E Fan Tray
WS-C6K-13SLT-FAN2	High-speed Fan Tray for 6513/7613
FAN-C6524	Fan Tray for ME6524 Switch
FAN-MOD-4HS	High-speed Fan Module for 7604/6504-E

Catalyst 6500 Optics: Top Sellers

GLC-FE-100LX	100BASE-LX SFP for FE Port
GLC-FE-100BX-U	100BASE-BX10-U SFP
GLC-FE-100BX-D	100BASE-BX10-D SFP
GLC-FE-100EX	100BASE-EX SFP (40 km)
GLC-FE-100ZX	100BASE-ZX SFP (80 km)
GLC-LH-SM	GBE SFP, LC Connector LX/LH Transceiver
GLC-SX-MM	GBE SFP, LC Connector SX Transceiver
GLC-ZX-SM	1000BASE-ZX SFP
GLC-T	1000BASE-T SFP

Product Overview (continued)

Product Number	Product Description
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Catalyst 6500 Optics: Top Sellers (continued)

GLC-T24	24 GLC-T SFP
WS-G5484	1000BASE-SX Short Wavelength GBIC (Multimode Only)
WS-G5486	1000BASE-LX/LH Long-haul GBIC (Single-mode or Multimode)
WS-G5487	1000BASE-ZX Extended-reach GBIC (Single-mode)
XENPAK-10GB-CX4	10GBASE-CX4 XENPAK Module
XENPAK-10GB-ER+	10GBASE-ER XENPAK Module with DOM Support
XENPAK-10GB-LR	10GBASE-LR XENPAK Module
XENPAK-10GB-LX4	10GBASE-LX4 XENPAK Module
XENPAK-10GB-SR	10GBASE-SR XENPAK Module
XENPAK-10GB-ZR	10GBASE-ZR XENPAK Module
XENPAK-10GB-LW	10GBASE-LW XENPAK Module
X2-10GB-SR	10GBASE-SR X2 Module
X2-10GB-LR	10GBASE-LR X2 Module
X2-10GB-ER	10GBASE-ER X2 Module
X2-10GB-LX4	10GBASE-LX4 X2 Module
X2-10GB-CX4	10GBASE-CX4 X2 Module
SFP-10G-LRM	10GBASE-LRM SFP
CVR-X2-SFP10G	OneX Converter Module
Cable supported with OneX Converter	SFP-H10GB-CU1M=Cisco 10GBASE-CU SFP+ Cable, 1 Meter (Version -02) SFP-H10GB-CU3M=Cisco 10GBASE-CU SFP+ Cable, 3 Meter (Version -02) SFP-H10GB-CU5M=Cisco 10GBASE-CU SFP+ Cable, 5 Meter (Version -02) SFP-10G-SR=Cisco 10GBASE-SR SFP+ Module for MMF

Catalyst 6500 Rack-mount Kits: Top Sellers

KIT-MNTG-CG-3=	Mounting Kit and Cable Guide For 7603/6503 Chassis
KIT-MNTG-CG-4=	Mounting Kit and Cable Guide For 7604/6504-E
WS-C6X06-RACK=	6x06 Rack-mount Kit and Cable Organizer, Spare
WS-C6X09-RACK=	6x09 Rack-mount Kit and Cable Organizer, Spare
WS-C6509-E-RACK=	6509-E Rack-mount Kit
WS-C6513-RACK=	6513 Rack-mount Kit and Cable Organizer, Spare
WS-C6597=	6506/9 (E and Non-E) 23in Center Rack-mount Kit

Product Number

Product Description

Catalyst 6500 Rack-mount Kits: Top Sellers (continued)

WS-6513-RACK-MNT=	23-inch Rack-mount Kit for 6513
KIT-MNTG-09=	Mounting Kit For 7609/6509-NEB-A Chassis
CABLETRAY-09=	Cable Tray Assembly for 7609/6509-NEB-A

Catalyst 6500 Accessories: Top Sellers

WS-F6K-48X2-SPLTR=	Spare Y-Type Splitter Bar for WS-X6148X2-RJ-45
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Catalyst 6500 Removable Storage: Top Sellers

MEM-C6K-CPTFL128M	SUP720 Compact Flash Memory 128MB
MEM-C6K-CPTFL256M	SUP720 Compact Flash Memory 256MB
MEM-C6K-CPTFL512M	SUP720 Compact Flash Memory 512MB

Catalyst 6500 FlexWAN: Top Sellers

WS-X6582-2PA	7600/6500 Enhanced FlexWAN, Fabric-enabled
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Cisco Service Modules

The modular design of the Cisco Catalyst 6500 Series allows organizations to scale their networks and adapt to changing needs, without having to redesign the network or add additional devices. Cisco integrated services modules enable network administrators to quickly and easily deploy the industry's most advanced, high-performance network services.

Wireless Services Module (WiSM-2)

This module enables scalable wireless LAN network deployments without requiring special client devices or changes to the underlying wireline infrastructure, providing an ideal solution for enterprises, mid-market businesses, universities, and service providers.

- Delivers centralized security policies, IPS, RF management, QoS, and Layer 3 fast secure roaming for WLAN deployments of all sizes.
- Provides automated recovery from failures of Cisco Aironet® lightweight access points, Cisco WiSMs, and Cisco Catalyst 6500 Series Supervisor Engine 720, maximizing the availability of the wireless network.
- Creates an intelligent RF control plane for self-configuration, self-healing, and self-optimization.
- Deploys without manually configuring access points or modifying existing network infrastructures.
- Adapts to changing corporate security needs with flexible policies and features, including integrated wireless intrusion protection to ensure the integrity of sensitive data.
- Allows user to roam between access points and across bridged and routed subnets without requiring changes to the underlying infrastructure.
- Enables better visibility and control of the air space, reducing operational costs.

Applications Control Engine Module-30

This module is Cisco's next-generation application delivery solution, providing the industry's highest throughput (up to 16 Gigabits per second), rich multilayer security, and unique virtual partitioning capabilities. The ACE multiservice module offers many new capabilities, including hundreds of virtual partitions, per-partition resource allocation, role-based access control, and an XML management API.

- Partitions network for up to 250 logical devices that can be managed and operated separately. Role-based access control capabilities enable IT to delegate management tasks to distributed IT teams, guarantee resource levels for each logical partition, and apply desired functions to each partition separately.
- Allows IT to control the infrastructure centrally while delegating application administration to separate operational teams. Also simplifies application infrastructures, shortens the workflow necessary to bring applications and business services online, and shortens time-to-deployment of applications.
- Also consolidates functionality such as server load balancing and off-load, application acceleration, and application-layer security.
- Supports 4, 8, or 16 Gbps of data throughput and up to 345,000 sustained connection setups per second. Several ACE modules can be deployed in a Catalyst 6500 chassis for even higher throughput.

Cisco Security Service Modules

- Cisco Catalyst 6500 Series switches support a variety of high-performance security modules that protect networks from the full range of threats, while also simplifying management and reducing overhead by consolidating security services into the switching chassis.

IPsec VPN Shared Port Adapter

This module delivers scalable and cost-effective VPN performance with Data Encryption Standard (DES), Triple Data Encryption Standard (3DES), plus next-generation Advanced Encryption Standard (AES) technology, including all key sizes (128-, 192-, and 256-bit keys) for ultimate in IPsec VPN security and interoperability.

- Provides up to 2.5 Gbps of AES and 3DES IPsec throughput with large packets and 1.6 Gbps with Internet mix (IMIX) traffic.
- Up to 10 Cisco IPsec VPN SPAs can be installed in a system, scaling to 25 Gbps of total throughput for wire-speed security transport for native 10 Gigabit Ethernet (10 GBE) interfaces.
- Using the Cisco Services SPA Carrier-400, each slot of the Cisco Catalyst 6500 supports up to two IPsec VPN SPAs, increasing total performance per slot.

Network Analysis Module-3

This module provides traffic monitoring services for visibility into network and application usage, helping network managers troubleshoot delivery issues, improve the utilization of network resources, and ease the deployment of new network services. The NAM is available in two hardware versions, NAM-1 and NAM-2, to meet diverse network analysis needs in scalable switching environments.

- Includes an embedded, web-accessible Traffic Analyzer interface that presents both configuration menus and real-time and historical reports.
- Provides visibility into what applications are running on the network and how they're performing, tracking response times and identifying whether issues are server- or network-related.
- Offers web-based captures and decodes for anytime, anywhere troubleshooting.
- Analyzes the performance of IP-based services, including VoIP, video, and QoS.

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. With twice the performance and four times the session count of competitive network security modules, it supports up to:

- 20 Gbps maximum firewall throughput (max)
- 16 Gbps of maximum firewall throughput (multi-protocol)
- 300,000 connections per second
- 10 million concurrent connections
- 250 security contexts
- 1,000 VLANs

Ethernet Services 40G Line Card (ES40)

Supervisor 720 systems also support ES40 WAN cards for Data Center Interconnect deployments:

- 76-ES+XT-4TG3C
- 76-ES+XT-4TG3CXL
- 76-ES+XT-2TG3C
- 76-ES+XT-2TG3CXL
- 7600-ES+4TG3C
- 7600-ES+4TG3CXL
- 7600-ES+2TG3C
- 7600-ES+2TG3CXL



Cisco Catalyst 4500 Series

The leading high performance modular switches for unified communications designed for unparalleled resiliency and simplified operations while enabling virtualization for Enterprise access layer and price-performance campus aggregation.

The Cisco Catalyst 4500 Series is a high-density modular switch delivering robust intelligent services that enable high performance and security for both the mobile and desktop user. The Catalyst 4500 Series optimizes application performance through deep visibility with Flexible NetFlow and pervasive security with Cisco TrustSec while the centralized forwarding architecture enables collaboration, virtualization, and operational manageability. The simple centralized architecture, media flexibility, and scalability of the Catalyst 4500 Series delivers maximum investment protection with backward and forward compatibility across several generations dating back to 1999, maximizing return on investment while minimizing recurring operational expenses.

The Catalyst 4500 Series extends intelligence, resiliency and operational simplicity to the network edge (wiring closet) with intelligent network services, including sophisticated quality of service (QoS), predictable performance, advanced security, up to 60 watts of UPOE (Universal PoE), 30 watts of PoE plus with IEEE 802.3at and comprehensive management features. The Catalyst 4500 series delivers the highest levels of integrated resiliency in both hardware and software minimizing costly downtime for both planned and unplanned network outages helping maximizing workforce productivity.

The Catalyst 4500 Series includes four chassis: the Catalyst 4510R+E (10 slots), the Catalyst 4507R+E (7 slots), Catalyst 4506-E (6 slots), and Catalyst 4503-E (3 slots). A broad selection of supervisor engines meet the needs of networks of all sizes while delivering up to 848 Gbps of Layer 2–4 switching. The series supports an extensive set of line cards, providing up to 384 10/100 or 10/100/1000 ports with integrated Power over Ethernet Plus (PoEP). The Catalyst 4500 Series switches also support 1 GE and 10 GE fiber line cards for price-performance campus aggregation.

Features

Supervisor 7-E

- Highest performance Layer 2/3/4 Supervisor
- 848 Gbps switching capacity
- 384 10/100/1000 copper port density
- Supports 48 Gbps per slot capacity
- IPv6 in hardware
- Four wire-rate 10 GE/ 1 GE uplinks (SFP/SFP+)
- Flexible NetFlow
- Maximum investment protection
- High-performance, high density access layer
- Price-performance distribution

Supervisor 7L-E

- Highest performance Layer 2/3/4 Supervisor
- 520 Gbps switching capacity
- 240 10/100/1000 copper port density
- Supports 48 Gbps per slot capacity
- IPv6 in hardware
- Two wire-rate 10 GE and four wire-rate1 GE uplinks (SFP/SFP+)
- Flexible NetFlow
- Maximum investment protection
- High-performance, high density access layer
- Price-performance distribution

Supervisor 6-E

- High performance Layer 2/3/4 Supervisor
- 320 Gbps switching capacity
- 384 10/100/1000 copper port density
- Supports 24 Gbps per slot capacity
- IPv6 in hardware
- Two wire rate 10 GE or four 1 GE uplinks (via Cisco TwinGig Module)
- Maximum investment protection
- High-performance, high density access layer
- Price-performance distribution

Supervisor 6L-E

- High performance Layer 2/3/4 Supervisor
- 280 Gbps switching capacity
- 240 10/100/1000 copper port density
- Supports 24 Gbps per slot capacity
- IPv6 in hardware
- Two wire rate 10 GE or four GE uplinks (via TwinGig Module)
- Maximum investment protection
- High-performance, high density access layer

Borderless Services

- Security through Cisco TrustSec.
- Mobility services through converged wired and wireless location.
- Optimized application performance through deep visibility with Flexible NetFlow supporting rich Layer 2/3/4 information (MAC, VLAN, TCP Flags) and synthetic traffic monitoring with IP SLA.
- Medianet capabilities to simplify video quality of service, monitoring, and security.
- Universal PoE (UPOE) provides up to 60W to power VDI thin clients.
- Energy efficient design with Cisco EnergyWise technology to manage network, PoE end points, and PC/server/laptop power.

Infrastructure Services

- Maximum resiliency with redundant components, non-stop Forwarding/Stateful Switchover (NSF/SSO) and In Service Software Upgrade (ISSU) support.
- Network virtualization EVN (Easy Virtual Network) and Multi-VRF technology for Layer 3 segmentation.
- Automation through Embedded Event Manager (EEM), Cisco Smart Call Home, AutoQoS, and Auto Smartports for fast provisioning, diagnosis, and reporting.
- IOS XE Modular Operating System that has the capability to run 3rd Party Services.

Performance/Scalability

- Non-blocking 48 Gbps slot and total system bandwidth of 848 Gbps with the new Supervisor Engine 7-E, ready with four 1 G/10 G uplinks.
- Power over Ethernet scalability for the next generation workspace with non-blocking 48-port 10/100/1000 PoEP line card and highly efficient 6000W power supply with real current monitoring and remote power cycle capability.
- High densities of up to 384 ports of 10/100/1000, 192 line rate ports of Gbps SFP, or 96 ports of 10 Gbps SFP+.
- Scalable routing (IPv4, IPv6, and multicast) tables, Layer 2 tables, and ACL and QoS entries to ensure 8 queues per port and comprehensive security policies per port.

Investment Protection and Reduced TCO

- Full backward compatibility for Supervisor Engine 7-E with 6 Gbps, 24 Gbps, and 48 Gbps per slot line card support.
- LAN Base, IP Base, and Enterprise Services software options for base, standard, and advanced borderless services deployments and pay as you grow licensing model.
- Limited Lifetime Warranty with free software update policy on LAN Base and IP Base.
- Full set of Cisco and partner support options.

Hardware Features		
	WS-C4503-E	WS-C4506-E
Slots	3	6
Redundant Supervisor Option	No	No
Gigabit Ethernet GBIC/SFP Density	100	244
10 GE X2 Port Density	28	64
10/100/1000 Density	96	240
10/100 Density	96	240
100BASE-FX, LX-10, BX-D Density	96	240
Backplane Capacity (Gbps)	136	280
Maximum Watt Power Consumption (Redundant Mode)		
AC Internal (Redundant Mode)	6000	6000
AC External Power Shelf (N+1)	7500	7500
DC Internal (Redundant Mode)	7500	7500
Maximum Number of Class 3 Devices (15.4W) Maximum Power Supplies		
AC Internal (Redundant Mode)	108	240
AC External Power Shelf (N+1)	108	240
DC Internal (Redundant Mode)	108	240
Dimension (H x W x D) Inches	12.25 x 17.31 x 12.50	17.38 x 17.31 x 12.50
Dimension (H x W x D) Centimeters	311.2 x 43.97 x 31.70	44.13 x 43.97 x 31.70
Rack Unit (RU)	7	10
Unit Weight Pounds (Kilograms) (Chassis Only)	32.25 (14.63)	40.5 (18.37)

WS-C4507R+E		WS-C4510R+E	
7		10	
Yes		Yes	
244		388	
64		100	
240		384	
240		384	
240		384	
280		320	
6000		6000	
7500		7500	
7500		7500	
240		270	
240		384	
240		384	
19.19 x 17.31 x 12.50		24.35 x 17.31 x 12.50	
48.74 x 43.97 x 31.70		61.84 x 43.97 x 31.70	
11		14	
44.50 (2019)		54.50 (24.73)	

Cisco Catalyst 4500 Series: Supervisor Engines

Hardware Features	SUP 7-E WS-X45-SUP7-E	SUP 7L-E WS-X45-SUP7L-E	SUP 6-E WS-X45-SUP6-E	SUP 6L-E WS-X45-SUP6L-E
Chassis Supported	All	All	All	3-, 6- and 7-slot Chassis
Enhanced Layer 3 Option	Yes	Yes	Yes	Yes
Total Bandwidth (Gbps)	848	520	320	280
Packets per Second (Mpps)	250	225	250	225
Uplinks	4 10 GE/1 GE	2x10 GE or 4 GE	2x10 GE or 4 GE (TwinGig)	2x10 GE or 4 GE (TwinGig)
Line Card Support (E-Series/Classic)	E-Series/Classic	E-Series/Classic	E-Series/Classic	E-Series/Classic
CPU MHz	1500	1500	1300	1000
NetFlow	Yes	Yes	No	No
Flexible NetFlow	Yes	Yes	No	No
Onboard Memory (DRAM)	2 GB	2 GB	512 MB	512 MB

Product Overview

Product Number Product Description

Catalyst 4500 E-Series Chassis

WS-C4503-E	Catalyst 4500 E-Series 3-slot Chassis, Fan, no Power Supply
WS-C4506-E	Catalyst 4500 E-Series 6-slot Chassis, Fan, no Power Supply
WS-C4507R+E	Catalyst 4500 E-Series 7-slot Chassis, Fan, no Power Supply, Redundant Power Supply Capable
WS-C4510R+E	Catalyst 4500 E-Series 10-slot Chassis, Fan, no Power Supply, Redundant Power Supply Capable
WS-C4503E-S7L+48V+	Catalyst 4500 E-Series POE+ Bundle, 1x3-slot Chassis, 1 x Sup7L-E, 1X WS-X4648-RJ45V+E
WS-C4506E-S7L+96V+	Catalyst 4500 E-Series POE+ Bundle, 1x6-slot Chassis, 1 x Sup7L-E, 2 X WS-X4648-RJ45V+E
WS-C4507RE+96V+	Catalyst 4500 E-Series POE+ Bundle, 1x7-slot Chassis, 1 x Sup7L-E, 2 X WS-X4648-RJ45V+E
WS-C45010RE-S7+96V+	Catalyst 4500 E-Series POE+ Bundle, 1x10-slot Chassis, 1 x Sup7L-E, 2 X WS-X4648-RJ45V+E
BN-CF2-SBA-K9	Borderless Network Smart Business Arch Core 1 X AIR-CT5508-50-K9, 1x7-slot Chassis, 1 X SUP6L-E, 1 X WS-X4624-SFP-E

Catalyst 4500 PoE Enabled Power Supplies

PWR-C45-6000ACV	4500 6000W AC Dual Input Power Supply (Data and PoE)
PWR-C45-6000ACV/2	4500 6000W AC Dual Input Power Supply (Data and PoE)
PWR-C45-6000ACV=	4500 6000W AC Dual Input Power Supply (Data and PoE)
PWR-C45-4200ACV	4500 4200W AC Dual Input Power Supply (Data and PoE)
PWR-C45-4200ACV/2	4500 4200W AC Dual Input Power Supply (Data and PoE)
PWR-C45-4200ACV=	4500 4200W AC Dual Input Power Supply (Data and PoE)
PWR-C45-2800ACV	4500 2800W AC Power Supply (Data and PoE)
PWR-C45-2800ACV=	4500 2800W AC Power Supply (Data and PoE)
PWR-C45-2800ACV/2	4500 2800W AC Power Supply (Data and PoE)
PWR-C45-1300ACV	4500 1300W AC Power Supply (Data and PoE)
PWR-C45-1300ACV/2	4500 1300W AC Power Supply (Data and PoE)
PWR-C45-1300ACV=	4500 1300W AC Power Supply (Data and PoE)
PWR-C45-1400DC-P	4500 1400W DC Power Supply with Int PEM
PWR-C45-1400DC-P=	4500 1400W DC Power Supply with Int PEM (Spare)
PWR-C45-1400DC-P/2	4500 1400W DC Power Supply Redundant with Int PEM

Product Number	Product Description
Catalyst 4500 Non-PoE Power Supplies	
PWR-C45-1400AC	4500 1400W AC Power Supply (Data Only)
PWR-C45-1400AC/2	4500 1400W AC Power Supply Redundant (Data Only)
PWR-C45-1400AC=	4500 1400W AC Power Supply (Data Only) Spare
PWR-C45-1000AC	4500 1000W AC Power Supply (Data Only)
PWR-C45-1000AC=	4500 1000W AC Power Supply (Data Only) Spare
PWR-C45-1000AC/2	4500 1000W AC Power Supply Redundant (Data Only)
PWR-C45-1400DC	4500 1400W DC Triple Input SP Power Supply (Data Only)
PWR-C45-1400DC=	4500 1400W DC Triple Input SP Power Supply (Data Only)
PWR-C45-1400DC/2	4500 1400W DC Triple Input SP Power Supply (Data Only)

Catalyst 4500 E-Series Supervisor Engines	
WS-X45-SUP7-E	Catalyst 4500 E-Series Supervisor 7-E, 4x10 GE (SFP/SFP+)
WS-X45-SUP7-E/2	Catalyst 4500R E-Series Supervisor 7-E, 4x10 GE (SFP/SFP+)
WS-X45-SUP7-E=	Catalyst 4500 E-Series Supervisor 7-E, 4x10 GE (SFP/SFP+)
WS-X45-SUP7L-E	Catalyst 4500 E-Series Supervisor 7L-E, 2x10 GE (SFP/SFP+)
WS-X45-SUP7L-E/2	Catalyst 4500 E-Series Supervisor 7L-E, 2x10 GE (SFP/SFP+)
WS-X45-SUP7L-E=	Catalyst 4500 E-Series Supervisor 7L-E, 2x10 GE (SFP/SFP+)
WS-X45-SUP6-E	Catalyst 4500 E-Series Supervisor 6-E, 2x10 GE (X2) with TwinGig
WS-X45-SUP6-E/2	Catalyst 4500R E-Series Supervisor 6-E, 2x10 GE (X2) with TwinGig
WS-X45-SUP6-E=	Catalyst 4500 E-Series Supervisor 6-E, 2x10 GE (X2) with TwinGig
WS-X45-SUP6L-E	Catalyst 4500 E-Series Supervisor 6L-E, 2x10 GE (X2) with TwinGig
WS-X45-SUP6L-E/2	Catalyst 4500 E-Series Supervisor 6L-E, 2x10 GE (X2) with TwinGig
WS-X45-SUP6L-E=	Catalyst 4500 E-Series Supervisor 6L-E, 2x10 GE (X2) with TwinGig

Catalyst 4500 Supervisor Engines	
WS-X4516-10GE	4500 Supervisor V-10 GE, 2x10 GE (X2) and 4 x 1 GE (SFP)
WS-X4516-10GE=	4500 Supervisor V-10 GE, 2x10 GE (X2) and 4 x 1 GE (SFP)
WS-X4516-10GE/2	4500R Supervisor V-10 GE, 2x10 GE (X2) and 4 x 1 GE (SFP)

Catalyst 4500 10/100 Line Cards	
WS-X4148-RJ	4500 10/100 Auto Module, 48-port (RJ-45)
WS-X4148-RJ=	4500 10/100 Auto Module, 48-port (RJ-45) (Spare)
WS-X4248-RJ45V	4500 PoE 802.3af 10/100, 48-port (RJ-45)
WS-X4248-RJ45V=	4500 PoE 802.3af 10/100, 48-port (RJ-45)

Product Overview (continued)

Product Number	Product Description
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Catalyst 4500 10/100/1000 Line Cards

WS-X4748-UPOE+E	Catalyst 4500 E-Series 48-port Premium UPOE 10/100/1000 (RJ-45)
WS-X4748-UPOE+E=	Catalyst 4500 E-Series 48-port Premium UPOE 10/100/1000 (RJ-45)
WS-X4748-RJ45-E	Catalyst 4500 E-Series 48-port Premium Data 10/100/1000 (RJ-45)
WS-X4748-RJ45-E=	Catalyst 4500 E-Series 48-port Premium Data 10/100/1000 (RJ-45)
WS-X4648-RJ45V-E	Catalyst 4500 E-Series 48-port PoE 802.3af 10/100/1000 (RJ-45)
WS-X4648-RJ45V+E	Catalyst 4500 E-Series 48-port Premium PoE 10/100/1000
WS-X4648-RJ45V+E=	Catalyst 4500 E-Series 48-port Premium PoE 10/100/1000
WS-X4648-RJ45-E	Catalyst 4500 E-Series 48-port 10/100/1000 (RJ-45)
WS-X4648-RJ45V-E=	Catalyst 4500 E-Series 48-port PoE 802.3af 10/100/1000 (RJ-45)
WS-X4548-GB-RJ45V+	Catalyst 4500 48-port Premium PoE 10/100/1000
WS-X4548-GB-RJ45V+=	Catalyst 4500 48-port Premium PoE 10/100/1000
WS-X4548-GB-RJ45	4500 Enhanced 48-port 10/100/1000 Base-T (RJ-45)
WS-X4548-GB-RJ45=	4500 Enhanced 48-port 10/100/1000 Base-T (RJ-45)
WS-X4506-GB-T	4500 6-port 10/100/1000 PoE or SFP (Optional)
WS-X4506-GB-T=	4500 6-port 10/100/1000 PoE or SFP (Optional)

WS-X4506-GB-T=

WS-X4248-FE-SFP	4500 48-port 100BASE-X (SFPs Optional)
WS-X4248-FE-SFP=	4500 48-port 100BASE-X (SFPs Optional)
WS-X4148-FX-MT	4500 FE Switching Module, 48-100FX MMF (MTRJ)
WS-X4148-FX-MT=	4500 FE Switching Module, 48-100FX MMF (MTRJ) (Spare)

Catalyst 4500 1000 Base-X GE and 10 GE Line Cards

WS-X4712-SFP-E	4500 E-Series 10 Gigabit Ethernet Module, 12-port
WS-X4712-SFP-E=	4500 E-Series 10 Gigabit Ethernet Module, 12-port
WS-X4640-CSFP-E	4500 E-Series Gigabit Ethernet Module, 80-port with CSFP
WS-X4640-CSFP-E=	4500 E-Series Gigabit Ethernet Module, 80-port with CSFP
WS-X4624-SFP-E	4500 E-Series Gigabit Ethernet Module, 24-port
WS-X4624-SFP-E=	4500 E-Series Gigabit Ethernet Module, 24-port
WS-X4612-SFP-E	4500 E-Series Gigabit Ethernet Module, 12-port
WS-X4612-SFP-E=	4500 E-Series Gigabit Ethernet Module, 12-port
WS-X4306-GB	4500 Gigabit Ethernet Module, 6-port (GBIC)
WS-X4306-GB=	4500 Gigabit Ethernet Module, 6-port (GBIC) (Spare)
WS-X4506-GB-T	4500 6-port 10/100/1000 PoE or SFP (Optional)
WS-X4506-GB-T=	4500 6-port 10/100/1000 PoE or SFP (Optional)
WS-X4418-GB	4500 GBE Module, Server Switching 18-port (GBIC)
WS-X4418-GB=	4500 GBE Module, Server Switching 18-port (GBIC)
WS-X4448-GB-SFP	4500 48-port 1000Base-X (SFPs Optional)
WS-X4448-GB-SFP=	4500 48-port 1000Base-X (SFPs Optional)

Product Number	Product Description
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Catalyst 4500 Fan Trays

WS-X4593-E=	Catalyst 4503-E Fan Tray (Spare)
WS-X4596-E=	Catalyst 4506-E Fan Tray (Spare)
WS-X4597+E=	Catalyst 4507R+E Fan Tray (Spare)
WS-X4582+E=	Catalyst 4510R+E Fan Tray (Spare)

Catalyst 4500 Transceiver Modules

WS-G5483=	1000BASE-T GBIC
WS-G5484	1000BASE-SX Short Wavelength GBIC (Multimode Only)
WS-G5486	1000BASE-LX/LH Long-haul GBIC (Single-mode or Multimode)
WS-G5487	1000Base-ZX Extended-reach GBIC (Single-mode)
GLC-T	1000BASE-T SFP
GLC-SX-MM	GBE SFP, LC Connector SX Transceiver
GLC-LH-SM	GBE SFP, LC Connector LX/LH Transceiver
GLC-FE-100BX-D48	48 Units of GLC-FE-100BX-D
GLC-FE-100BX-D	100BASE-BX10-D SFP
GLC-FE-100BX-U	100BASE-BX10-U SFP
GLC-FE-100FX	100BASE-FX SFP for FE Port
GLC-BX-D	1000BASE-BX SFP, 1490 nm
GLC-BX-U	1000BASE-BX SFP, 1310 nm
GLC-ZX-SM=	1000BASE-ZX SFP
X2-10GB-CX4	10GBASE-CX4 X2 Module
X2-10GB-SR	10GBASE-SR X2 Module
X2-10GB-ER=	10GBASE-ER X2 Module
X2-10GB-LX4	10GBASE-LX4 X2 Module
X2-10GB-LR	10GBASE-LR X2 Module
SFP-10G-SR	10GBASE-SR, SFP+ Module
SFP-H10GB-CU1M	10GBASE-Copper, SFP+ Module 1M
SFP-H10GB-CU3M	10GBASE-Copper, SFP+ Module 3M
SFP-H10GB-CU5M	10GBASE-Copper, SFP+ Module 5M
SFP-H10GB-CU7M	10GBASE-Copper, SFP+ Module 7M
SFP-10G-LR	10GBASE-LR, SFP+ Module
SFP-10G-LRM	10GBASE-LRM, SFP+ Module
GLC-2BX-D	Dual-channel 1000BASE-BX10 SFP module for single-strand SMF
GLC-EX-SMD	1000BASE-EX SFP transceiver module for SMF
GLC-GE-100FX	100BASE-FX SFP module for Gigabit Ethernet ports

Product Overview (continued)

Product Number **Product Description****Catalyst 4500 Compact Flash**

USB-X45-4GB-E	4 GB USB Key for Supervisor 7-E
MEM-X45-2GB-E	2 GB Secure Digital Memory Card for Supervisor 7-E
MEM-C4K-FLD64M	4500 IOS-based Supervisor, Compact Flash, 64MB Option
MEM-C4K-FLD64M=	4500 IOS-based Supervisor, Compact Flash, 64MB Spare
MEM-C4K-FLD128M	4500 IOS-based Supervisor, Compact Flash, 128MB Option
MEM-C4K-FLD128M=	4500 IOS-based Supervisor, Compact Flash, 128MB Spare
MEMC4K-512D-SDRAM=	512 DIMM DRAM for Supervisor V-10 GBE

Catalyst 4500 Accessories

WS-X4593=	4503 Fan Tray (Spare)
WS-X4596=	4506 Fan Tray (Spare)
WS-X4597=	4507R Fan Tray (Spare)
WS-X4598=	4510R 23-inch Rack-mount
WS-X4581=	4510R 19-inch Rack-mount
WS-X4582=	4510R Fan Tray (Spare)
WS-X4583=	4503 19-inch Rack-mount
WS-X4584=	4503 23-inch Rack-mount
WS-X4585=	4506 19-inch Rack-mount
WS-X4586=	4506 23-inch Rack-mount
WS-X4587=	4507R 19-inch Rack-mount
WS-X4588=	4507R 23-inch Rack-mount
WS-X4K-CLOCK=	4507R/4510R Clock Module (Spare)
WS-X4590=	4507R/4510R Fabric Redundancy Module
WS-X4503-23CNTR=	4503 Center Mount 23-inch Rack Kit L/R
WS-X4503-FILTER=	4503 Center Mount 23-inch Filter (1 Set)
WS-X4506-23CNTR=	4506 Center Mount 23-inch Rack Kit L/R
WS-X4506-FILTER=	4506 Center Mount 23-inch Filter (1 Set)
WS-X4507-23CNTR=	4507R Center Mount 23-inch Rack Kit L/R
WS-X4507-FILTER=	4507R Center Mount 23-inch Filter (1 Set)
WS-X4510-23CNTR=	4510R Center Mount 23-inch Rack Kit L/R
WS-X4510-FILTER=	4510R Center Mount 23-inch Filter (1 Set)
C4K-SLOT-CVR=	4000 Family Slot Cover (Spare)
C4K-UPLINK-CVR	4000 Uplink Cover

Product Number	Product Description
Catalyst 4500 Accessories (continued)	
C4K-UPLINK-CVR=	4000 Uplink Cover (Spare)
CAB-AC-2800W-EU	Europe Power Cord
CAB-AC-2800W-EU=	Europe Power Cord
CAB-AC-2800W-INT	International Power Cord
CAB-AC-2800W-INT=	International Power Cord
CAB-AC-2800W-TWLK	U.S. Power Cord, Twist Lock, NEMA 6-20 Plug
CAB-AC-2800W-TWLK=	U.S. Power Cord, Twist Lock, NEMA 6-20 Plug
CAB-AC-2800W-6-20	Non-locking NEMA Cord for the 2800WAC Power Supply
CAB-AC-2800W-6-20=	Non-locking NEMA Cord for the 2800WAC Power Supply
CAB-US5 15P-C19-US	NEMA 5-15 to IEC-C19 13-foot US
CAB-US5 15P-C19-US=	NEMA 5-15 to IEC-C19 13-foot US
CAB-L520P-C19-US	NEMA L5-20 to IEC-C19 6-foot US
CAB-L520P-C19-US=	NEMA L5-20 to IEC-C19 6-foot US
CAB-L620P-C19-US	NEMA L6-20 to IEC-C19 14-foot US
CAB-L620P-C19-US=	NEMA L6-20 to IEC-C19 14-foot US
CAB-US620P-C19-US	NEMA 6-20 to IEC-C19 13-foot US
CAB-US620P-C19-US=	NEMA 6-20 to IEC-C19 13-foot US
CAB-CEE77-C19-EU	CEE 7/7 to IEC-C19 13-foot Europe
CAB-CEE77-C19-EU=	CEE 7/7 to IEC-C19 13-foot Europe
CAB-I309-C19-INT	IEC-309 to IEC-C19 13-foot International
CAB-I309-C19-INT=	IEC-309 to IEC-C19 13-foot International
CAB-A3112-C19-AUS	AS-3112 to IEC-C19 14-foot Australia
CAB-A3112-C19-AUS=	AS-3112 to IEC-C19 14-foot Australia
CAB-C2316-C19-IT=	CEI 23-16 to IEC-C19 14-foot Italy
CAB-C2316-C19-IT	CEI 23-16 to IEC-C19 14-foot Italy
CAB-BS1363-C19-UK	BS-1363 to IEC-C19 14-foot UK
CAB-BS1363-C19-UK=	BS-1363 to IEC-C19 14-foot UK

Product Overview (continued)

Product Number	Product Description
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Catalyst 4500 Accessories (continued)

CAB-4502AC-EU	AC Power Cord for PWR-4502 (Europe)
CAB-4502AC-EU=	AC Power Cord for PWR-4502 (Europe)
CAB-4502AC-UK=	AC Power Cord for PWR-4502 (UK)
CAB-4502AC-US	L6-20 AC Power Cord for PWR-4502 (North America)
CAB-4502AC-US=	AC Power Cord for PWR-4502 (North America)
WS-X4571=	4500 Connection Strap for Auxiliary Power Shelf
CAB-ACS-10	AC Power Cord (Swiss) 10A
CAB-ACS-10=	AC Power Cord (Swiss) 10A
CAB-ACS-16	AC Power Cord (Swiss) 16A
CAB-ACS-16=	AC Power Cord (Swiss) 16A
CAB-S132-C19-ISRL	S132 to IEC-C19 14-foot (Israel)
CAB-S132-C19-ISRL=	S132 to IEC-C19 14-foot (Israel)
CAB-SABS-C15-IND	SABS 164-1 to IEC-C15 (India)
CAB-SABS-C15-IND=	SABS 164-1 to IEC-C15 (India)
CAB-SABS-C19-IND	SABS 164-1 to IEC-C19 (India)
CAB-SABS-C19-IND=	SABS 164-1 to IEC-C19 (India)
WS-X4500-PS01=	Plastic Cover for 4500 Power Shelf (WS-P4502-1)
WS-X4K-CLOCK-E=	Catalyst 4507R-E/4510R-E Clock Module (Spare)
WS-X4590-E=	Catalyst 4507R-E/4510R-E Fabric Redundancy Module
C4K-SLOT-CVR-E	Catalyst 4500 E-Series Family Slot Cover
C4K-SLOT-CVR-E=	Catalyst 4500 E-Series Family Slot Cover (Spare)
WS-X4503E-23CNTR=	C4503 E Center Mount 23-inch Rack Kit L/R C
WS-X4506E-23CNTR=	C4506 E Center Mount 23-inch Rack Kit L/R C
WS-X4507E-23CNTR=	C4507R E Center Mount 23-inch Rack Kit L/R C
WS-X4510E-23CNTR=	C4510R E Center Mount 23-inch Rack Kit L/R C

Product Number	Product Description
CWDM GBIC Solution for Catalyst 4500	
CWDM-GBIC-1470=	1000BASE-CWDM 1470 nm GBIC (Single-mode Only)
CWDM-GBIC-1490=	1000BASE-CWDM 1490 nm GBIC (Single-mode Only)
CWDM-GBIC-1510=	1000BASE-CWDM 1510 nm GBIC (Single-mode Only)
CWDM-GBIC-1530=	1000BASE-CWDM 1530 nm GBIC (Single-mode Only)
CWDM-GBIC-1550=	1000BASE-CWDM 1550 nm GBIC (Single-mode Only)
CWDM-GBIC-1570=	1000BASE-CWDM 1570 nm GBIC (Single-mode Only)
CWDM-GBIC-1590=	1000BASE-CWDM 1590 nm GBIC (Single-mode Only)
CWDM-MUX8A=	8-channel CWDM Multiplexer/Demultiplexer Module
CWDM-OADM1-1470=	Dual Single-channel OADM Module (1470 nm)
CWDM-OADM1-1490=	Dual Single-channel OADM Module (1490 nm)
CWDM-OADM1-1510=	Dual Single-channel OADM Module (1510 nm)
CWDM-OADM1-1530=	Dual Single-channel OADM Module (1530 nm)
CWDM-OADM1-1550=	Dual Single-channel OADM Module (1550 nm)
CWDM-OADM1-1570=	Dual Single-channel OADM Module (1570 nm)
CWDM-OADM1-1590=	Dual Single-channel OADM Module (1590 nm)
CWDM-OADM1-1610=	Dual Single-channel OADM Module (1610 nm)
CWDM-OADM4-1=	4-channel CWDM OADM Module (1470, 1490, 1510, 1530)
CWDM-OADM4-2=	4-channel CWDM OADM Module (1550, 1570, 1590, 16100)
WDM-1300-1550-S=	1300 nm/1550 nm WDM Splitter Cable
WDM-1300-1550-S=	1300 nm/1550 nm WDM Splitter Cable
CWDM-CHASSIS-2=	2-slot Chassis for CWDM Multiplexer Plug-in Modules
WDM-SFP-2CH-CONV=	2-channel WDM SFP-based Transponder
CWDM-MUX-4-SF1=	Single Fiber 4-channel Multiplexer/Demultiplexer
CWDM-MUX-4-SF2=	Single Fiber 4-channel Multiplexer/Demultiplexer
EWDM-MUX8=	8-channel EWDM MUX/DEMUX Module
EWDM-OADM4=	4-channel EWDM OADM Module
EWDM-OADM2=	2-channel EWDM OADM Module
EWDM-OA=	EWDM Optical Amplifier

Cisco Fixed-Configuration Switches

The Cisco fixed configuration portfolio of switches includes the industry's widest and most versatile selection of fixed-configuration switches, enabling customers to deploy an ideal platform to support their growing business needs.

Unlike point solutions, these switches offer the feature-rich networking functionality of Cisco IOS and NX-OS software with strong security and efficient manageability, providing a firm foundation for converged data, voice, and video services as well as for virtualization and cloud computing solutions with unmatched performance and resiliency.

The Cisco Nexus 5000 and 3000 Series and Cisco Catalyst 4900, 3750-X, 3750, 3560-X, 3560, 2960-S, and 2960 offer an array of connectivity options, from Fast Ethernet to 10 Gigabit Ethernet. They range from small, standalone switches to stackable models as well as top-of-rack or end-of-row solutions for the Campus and Data Center networks. And many models are available with a choice of software images with security, application visibility and operational simplicity, allowing customers to dictate the level of intelligent network services based on individual needs.



Nexus 5000 Series Switches

As a part of the Unified Fabric pillar of the Cisco Data Center Business Advantage architectural framework, the Cisco Nexus® 5000 Series Switches deliver an innovative architecture to simplify data center transformation by enabling a high-performance, standards-based, Ethernet fabric. The platform consolidates separate LAN, SAN, and server cluster network environments into a single Ethernet fabric. Backed by a broad system of industry-leading technology partners, the Cisco Nexus 5000 Series is designed to meet the challenges of next-generation data centers, including dense multi-socket, multi-core, virtual machine–optimized services, in which infrastructure sprawl and increasingly demanding workloads are commonplace.

The Cisco Nexus 5000 Series features a high-performance, low-latency 10 Gigabit Ethernet cut-through switching architecture for 10 Gigabit Ethernet server access in next-generation data centers. With connectivity options ranging from Ethernet, Fibre Channel, and Fibre Channel over Ethernet (FCoE), this platform delivers flexible connectivity as your data center evolves while creating a lossless Ethernet service with no-drop flow control.

Nexus 5000 Series Switch Spotlight

Total Cost Reduction with Unified Fabric

The Cisco Nexus 5000 Series provides a unified fabric over 10 Gigabit Ethernet for LAN, SAN, and cluster traffic. This unification enables consolidation and greater utilization of previously separate infrastructure and cabling, reducing by up to 50 percent the adapters and cables required and eliminating redundant switches. This infrastructure displacement also lowers power and cooling costs significantly, especially for rack-optimized servers similar to blade servers.

Investment Protection and Operational Best Practices

The Cisco Nexus 5000 Series lets customers take advantage of the cost and functional benefits of a unified fabric while protecting their investments in existing network, storage, and server assets. The Cisco Nexus 5000 Series can be easily inserted into an existing data center network to provide immediate benefits without causing disruption or reworking of existing design and operational best practices.

Scalability with Simplified Management

The Cisco Nexus 5000 Series in conjunction with the Cisco Nexus 2000 Series Fabric Extenders delivers a unified fabric solution that scales server and storage connectivity while maintaining simplified management traffic. Convergence at the server access layer provides cost benefits through infrastructure reduction (CapEx savings) and infrastructure simplification (OpEx savings).

Virtual Machine–Optimized Services

Cisco Nexus 5000 Series Switches are designed to support virtualization and virtual machine mobility by mapping virtual machines to network profiles, allowing network services allocation at per-virtual machine granularity centrally from the unified fabric. This capability to move virtual machines and network profiles together eases manageability, improves network isolation, and enables consistent network and security policies.

Product Number

Product 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

Fan Modules

N5548P-FAN(=)	Cisco Nexus 5548P/5548UP Fan Module, Front-to-Back Airflow, Spare
N5548UP-FAN-B(=)	Cisco Nexus 5548UP Fan Module, Back-to-Front Airflow, Spare
N5596UP-FAN(=)	Cisco Nexus 5596UP Fan Module, Front-to-Back Airflow, Spare
N5596UP-FAN-B(=)	Cisco Nexus 5596UP Fan Module, Back-to-Front Airflow, Spare

Power Supplies

N55-PAC-750W(=)	Cisco Nexus 5548P/5548UP PSU Front-to-Back Airflow module spare, A/C, 100-240V, 750W
N55-PAC-750W-B(=)	Cisco Nexus 5548UP PSU Back-to-Front Airflow module spare, A/C, 100-240V, 750W
N55-PDC-750W(=)	Cisco Nexus 5548P/5548UP PSU Front-to-Back Airflow module spare, D/C, -40 to -72VDC, 750W
N55-PAC-1100W(=)	Cisco Nexus 5596UP PSU Front-to-Back Airflow module spare, A/C, 100-240V, 1100W
N55-PAC-1100W-B(=)	Cisco Nexus 5596UP PSU Back-to-Front Airflow module spare, A/C, 100-240V, 1100W

Series Features Overview

Product Number	Product Description
Miscellaneous	
N55-M-BLNK(=)	Cisco Nexus 5500 Blank module cover
N5KUK9-513N2.1(=)	Cisco Nexus 5000 Base OS Software Release 51(3)N2(1)
N55-8P-SSK9(=)	Cisco Nexus 5500 8-Port Storage Protocol Services License
N5000FMS1K9(=)	Cisco Nexus 5000 Series Fabric Manager Server License
N55-LAN1K9(=)	Cisco Nexus 5500 Layer 3 Enterprise Software License
N55-BAS1K9(=)	Cisco Nexus 5500 Layer 3 Base Software License
Expansion Modules and Daughter Card	
N55-M16P(=)	16-port 1/10GE Ethernet/FCoE module (Requires SFP+ for 8Gbps or SFP for 4Gbps operation)
N55-M8P8FP(=)	8-port FC (8/4/2/1G) + 8-port Eth/FCoE Module
N55-M16UP(=)	16-port Unified Port Expansion Module
N55-D160L3(=)	Nexus 5548 Layer 3 Daughter Card
N55-D160L3-V2(=)	Nexus 5548 Layer 3 Daughter Card, version 2
N55-M160L3(=)	Nexus 5596 Layer 3 Expansion Module
N55-M160L3-V2(=)	Nexus 5596 Layer 3 Expansion Module, version 2
Cables and Optics	
SFP-10G-SR(=)	10GBASE-SR SFP+ Module
SFP-10G-LR(=)	10GBASE-LR SFP+ Module
SFP-10G-ER(=)	10GBASE-ER-SFP+ Module
SFP-H10GB-CU1M(=)	10GBASE-CU SFP+ Cable 1 Meter
SFP-H10GB-CU3M(=)	10GBASE-CU SFP+ Cable 3 Meter
SFP-H10GB-CU5M(=)	10GBASE-CU SFP+ Cable 5 Meter
SFP-H10GB-ACU7M(=)	Active Twinax cable assembly, 7m
SFP-H10GB-ACU10M(=)	Active Twinax cable assembly, 10m
GLC-T(=)	1000BASE-T SFP
GLC-SX-MM(=)	GE SFP, LC connector SX transceiver
GLC-SX-MMD(=)	GE SFP, LC connector SX transceiver with Digital Optical Monitoring (DOM) and Extended Temperature Range
GLC-LH-SM(=)	GE SFP, LC connector LX/LH transceiver
GLC-LH-SMD(=)	GE SFP, LC connector LX/LH transceiver with Digital Optical Monitoring (DOM) and Extended Temperature Range
SFP-GE-T(=)	1000BASE-T SFP, Extended Temperature Range
SFP-GE-S(=)	GE SFP, LC connector SX transceiver, with Digital Optical Monitoring (DOM) and Extended Temperature Range
SFP-GE-L(=)	GE SFP, LC connector LX/LH transceiver, with Digital Optical Monitoring (DOM) and Extended Temperature Range

Product Overview

Product Number	Product 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
Fan Modules	
N5548P-FAN=	Cisco Nexus 5548P/5548UP Fan Module, Front-to-Back Airflow, Spare
N5596UP-FAN=	Cisco Nexus 5596UP Fan Module, Front-to-Back Airflow, Spare
Power Supplies	
N55-PAC-750W(=)	Cisco Nexus 5548P/5548UP PSU Front-to-Back Airflow Module Spare, A/C, 100-240V, 750W
N55-PAC-1100W(=)	Cisco Nexus 5596UP PSU Front-to-Back Airflow Module Spare, A/C, 100-240V, 1100W
Miscellaneous	
N55-M-BLNK(=)	Cisco Nexus 5500 Blank Module Cover
Software	
N55-8P-SSK9(=)	Cisco Nexus 5500 8-Port Storage Protocol Services License
N5000FMS1K9(=)	Cisco Nexus 5000 Series Fabric Manager Server License
N55-LAN1K9(=)	Cisco Nexus 5500 Layer 3 Enterprise Software License
N55-BAS1K9(=)	Cisco Nexus 5500 Layer 3 Base Software License
N5KUK9-513N2.1(=)	Cisco Nexus 5000 Base OS Software Release 5.1(3)N2(1)
Expansion Modules and Daughter Card	
N55-M16P(=)	16-port 1/10 GE Ethernet/FCoE Module (Requires SFP+ for 8 Gbps or SFP for 4 Gbps Operation)
N55-M8P8FP(=)	8-port FC (8/4/2/1G) + 8-port Eth/FCoE Module
N55-M16UP(=)	16-port Unified Port Expansion Module
N55-D160L3(=)	Nexus 5548 Layer 3 Daughter Card
N55-M160L3(=)	Nexus 5596 Layer 3 Expansion Module
N55-M160L3-V2(=)	Nexus 5596 Layer 3 Expansion Module, version 2
Cables and Optics	
SFP-10G-SR(=)	10GBASE-SR SFP+ Module
SFP-10G-LR(=)	10GBASE-LR SFP+ Module
SFP-H10GB-CU1M(=)	10GBASE-CU SFP+ Cable 1 Meter

Product Number	Product Description
Cables and Optics (continued)	
SFP-H10GB-CU3M(=)	10GBASE-CU SFP+ Cable 3 Meter
SFP-H10GB-CU5M(=)	10GBASE-CU SFP+ Cable 5 Meter
SFP-H10GB-ACU7M(=)	Active Twinax cable assembly, 7m
SFP-H10GB-ACU10M(=)	Active Twinax cable assembly, 10m
GLC-T(=)	1000BASE-T SFP
GLC-SX-MM(=)	GE SFP, LC connector SX transceiver
GLC-SX-MMD(=)	GE SFP, LC connector SX transceiver with Digital Optical Monitoring (DOM) and Extended Temperature Range
GLC-LH-SM(=)	GE SFP, LC connector LX/LH transceiver
GLC-LH-SMD(=)	GE SFP, LC connector LX/LH transceiver with Digital Optical Monitoring (DOM) and Extended Temperature Range
SFP-GE-T(=)	1000BASE-T SFP, Extended Temperature Range
SFP-GE-S(=)	GE SFP, LC connector SX transceiver, with Digital Optical Monitoring (DOM) and Extended Temperature Range
SFP-GE-L(=)	GE SFP, LC connector LX/LH transceiver, with Digital Optical Monitoring (DOM) and Extended Temperature Range
DS-SFP-FC4G-SW(=)	4Gbps Fibre Channel-SW SFP, LC
DS-SFP-FC4G-LW(=)	4Gbps Fibre Channel-LW SFP, LC
DS-SFP-FC8G-SW(=)	8Gbps Fibre Channel-SW SFP+, LC
DS-SFP-FC8G-LW(=)	8Gbps Fibre Channel-LW SFP+, LC
DS-CWDM4G1470(=)	1470 nm CWDM 1/2/4-Gbps Fibre Channel SFP (Color: Grey)
DS-CWDM4G1490(=)	1490 nm CWDM 1/2/4-Gbps Fibre Channel SFP (Color: Violet)
DS-CWDM4G1510(=)	1510 nm CWDM 1/2/4-Gbps Fibre Channel SFP (Color: Blue)
DS-CWDM4G1530(=)	1530 nm CWDM 1/2/4-Gbps Fibre Channel SFP (Color: Green)
DS-CWDM4G1550(=)	1550 nm CWDM 1/2/4-Gbps Fibre Channel SFP (Color: Yellow)
DS-CWDM4G1570(=)	1570 nm CWDM 1/2/4-Gbps Fibre Channel SFP (Color: Orange)
DS-CWDM4G1590(=)	1590 nm CWDM 1/2/4-Gbps Fibre Channel SFP (Color: Red)
DS-CWDM4G1610(=)	1610 nm CWDM 1/2/4-Gbps Fibre Channel SFP (Color: Brown)
Power Cords	
CAB-250V-10A-AR	AC Power Cord - 250V, 10A - Argentina (2.5 meter)
CAB-9K10A-AU	Power Cord, 250VAC 10A 3112 Plug, Australia (2.5 meter)
CAB-250V-10A-BR	AC Power Cord - 250V, 10A - Brazil(2.1 meter)
CAB-250V-10A-CN	AC Power Cord - 250V, 10A - PRC (2.5 meter)

Product Overview (continued)

Product Number	Product Description
Power Cords (continued)	
CAB-9K10A-EU	Power Cord, 250VAC 10A CEE 7/7 Plug, EU (2.5 meter)
CAB-IND-10A	10A Power cable for India (2.5 meter)
CAB-250V-10A-IS	AC Power Cord - 250V, 10A - Israel (2.5 meter)
CAB-9K10A-IT	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy (2.5 meter)
CAB-250V-10A-ID	AC Power Cord - 250V, 10A, South Africa(2.5 meter)
CAB-9K10A-SW	Power Cord, 250VAC 10A MP232 Plug, SWITZ (2.5 meter)
CAB-9K10A-UK	Power Cord, 250VAC 10A BS1363 Plug (13 A fuse), UK (2.5 meter)
CAB-9K12A-NA	Power Cord, 125VAC 13A NEMA 5-15 Plug, North America (2.5 meter)
CAB-AC-250V/13A	North America, NEMA L6-20 250V/20A plug-IEC320/C13 receptacle (2.0 meter)
CAB-N5K6A-NA	Power Cord, 200/240V 6A North America (2.5 meter)
CAB-C13-CBN	Cabinet Jumper Power Cord, 250 VAC 10A, C14-C13 Connectors (0.7 meter)
CAB-C13-C14-2M	Power Cord Jumper, C13-C14 Connectors, 2 Meter Length (2 meter)
CAB-C13-C14-AC	Power cord, C13 to C14 (recessed receptacle), 10A (3 meter)
Accessory Kit	
N5548-ACC-KIT=	Accessory Kit for Nexus 5548 Chassis
N5596-ACC-KIT=	Accessory Kit for Nexus 5596 Chassis
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
Fan Modules	
N5548P-FAN=	Cisco Nexus 5548P/5548UP Fan Module, Front-to-Back Airflow, Spare
N5596UP-FAN=	Cisco Nexus 5596UP Fan Module, Front-to-Back Airflow, Spare
Power Supplies	
N55-PAC-750W(=)	Cisco Nexus 5548P/5548UP PSU Front-to-Back Airflow Module Spare, A/C, 100-240V, 750W
N55-PAC-1100W(=)	Cisco Nexus 5596UP PSU Front-to-Back Airflow Module Spare, A/C, 100-240V, 1100W
Miscellaneous	
N55-M-BLNK(=)	Cisco Nexus 5500 Blank Module Cover

Product Number	Product Description
Software	
N5KUK9-502N1.1(=)	Cisco Nexus 5000 Base OS Software Release 5.0(2)N1(1)
N5KUK9-503N1.1(=)	Cisco Nexus 5000 Base OS Software Release 5.0(3)N1(1)
N55-8P-SSK9(=)	Cisco Nexus 5500 8-Port Storage Protocol Services License
N5000FMS1K9(=)	Cisco Nexus 5000 Series Fabric Manager Server License
N55-LAN1K9(=)	Cisco Nexus 5500 Layer 3 Enterprise Software License
N55-BAS1K9(=)	Cisco Nexus 5500 Layer 3 Base Software License
Expansion Modules and Daughter Card	
N55-M16P(=)	16-port 1/10 GE Ethernet/FCoE Module (Requires SFP+ for 8 Gbps or SFP for 4 Gbps Operation)
N55-M8P8FP(=)	8-port FC (8/4/2/1G) + 8-port Eth/FCoE Module
N55-M16UP(=)	16-port Unified Port Expansion Module
N55-D160L3(=)	Nexus 5548 Layer 3 Daughter Card
N55-M160L3(=)	Nexus 5596 Layer 3 Expansion Module
Cables and Optics	
SFP-10G-SR(=)	10GBASE-SR SFP+ Module
SFP-10G-LR(=)	10GBASE-LR SFP+ Module
SFP-H10GB-CU1M(=)	10GBASE-CU SFP+ Cable 1 Meter
SFP-H10GB-CU3M(=)	10GBASE-CU SFP+ Cable 3 Meter
SFP-H10GB-CU5M(=)	10GBASE-CU SFP+ Cable 5 Meter
SFP-H10GB-ACU7M(=)	Active Twinax cable assembly, 7m
SFP-H10GB-ACU10M(=)	Active Twinax cable assembly, 10m
GLC-T(=)	1000BASE-T SFP
GLC-SX-MM(=)	GE SFP, LC Connector SX Transceiver
GLC-LH-SM(=)	GE SFP, LC Connector LX/LH Transceiver
SFP-GE-T(=)	1000BASE-T SFP, Extended Temperature Range
SFP-GE-S(=)	GE SFP, LC Connector SX Transceiver, with Digital Optical Monitoring (DOM) and Extended Temperature Range
SFP-GE-L(=)	GE SFP, LC connector LX/LH Transceiver, with Digital Optical Monitoring (DOM) and Extended Temperature Range
DS-SFP-FC4G-SW(=)	4 Gbps Fibre Channel-SW SFP, LC
DS-SFP-FC4G-LW(=)	4 Gbps Fibre Channel-LW SFP, LC
CVR-X2-SFP10G	OneX Converter Module

Product Specifications

Performance

- Cisco Nexus 5548P and 5548UP: Layer 2 hardware forwarding at 960 Gbps or 714.24 mpps; Layer 3 performance of up to 160 Gbps or 240 mpps
- Cisco Nexus 5596UP: Layer 2 hardware forwarding at 1920 Gbps or 1428 mpps; Layer 3 performance of up to 160 Gbps or 240 mpps
- MAC address table entries: 32,000
- Low-latency cut-through design that provides predictable, consistent traffic latency regardless of packet size, traffic pattern, or enabled features on 10 Gigabit Ethernet interfaces
- Line-rate traffic throughput on all ports

Interfaces

- Cisco Nexus 5548P: 32 fixed 1 and 10 Gigabit Ethernet and FCoE ports; additional interfaces through one expansion module
- Cisco Nexus 5548UP: 32 fixed ports configurable as 1 and 10 Gigabit Ethernet and FCoE or 8/4/2/1-Gbps native Fibre Channel; additional interfaces through one expansion module
- Cisco Nexus 5596UP: 48 fixed ports configurable as 1 and 10 Gigabit Ethernet and FCoE or 8/4/2/1-Gbps native Fibre Channel; additional interfaces through up to three expansion modules
- Expansion modules
- 16-port 1 and 10 Gigabit Ethernet and FCoE module
- 8-port 8/4/2/1-Gbps Fibre Channel plus 8-port 1 and 10 Gigabit Ethernet and FCoE module
- Unified port module consisting of 16 ports configurable as 8/4/2/1-Gbps Fibre Channel or 1 and 10 Gigabit Ethernet and FCoE
- Layer 3 module (Cisco Nexus 5596UP only; one per system)
- Layer 3 daughter card (Cisco Nexus 5548P and 5548UP only; one per system)
- Extension through the Cisco Nexus 2000 Series

Power Supply Properties

AC Power Supply Properties	Cisco Nexus 5548P and 5548UP	Cisco Nexus 5596UP
Typical operating power	390W	660W
Maximum power (Layer 2)	600W (without Layer 3 daughter card)	882W (without Layer 3 expansion module)
Maximum power (Layer 3)	730W (with Layer 3 daughter-card)	972W (with 3x Layer 3 expansion module)
Input voltage	100 to 240 VAC	100 to 240 VAC
Frequency	50 to 60 Hz	50 to 60 Hz
Efficiency	95 to 98% (50 to 100% load)	95 to 98% (50 to 100% load)

Power Supply Properties

AC Power Supply Properties	Cisco Nexus 5548P and 5548UP	Cisco Nexus 5596UP
RoHS compliance	Yes	Yes
Hot swappable	Yes	Yes
Heat dissipation	1998 BTU/hr (600W)	3010 BTU/hr (882W)
Front to Back air flow Power Supply	Yes	Yes
Back to Front air flow Power Supply	Yes (Only on 5548UP, need fan tray as well)	No (on roadmap)

Environment Properties

Property	Cisco Nexus 5548P and 5548UP	Cisco Nexus 5596UP
Physical (height x width x depth)	1.72 x 17.3 x 29.5 in. (4.4 x 43.9 x 74.9 cm)	3.47 x 17.3 x 29.5 in. (8.8 x 43.9 x 74.9 cm)
Operating temperature	32 to 104°F (0 to 40°C)	32 to 104°F (0 to 40°C)
Non operating (storage) temperature	-40 to 158°F (-40 to 70°C)	-40 to 158°F (-40 to 70°C)
Humidity	5 to 95% (non condensing)	5 to 95% (non condensing)
Altitude	0 to 10,000 ft (0 to 3000m)	0 to 10,000 ft (0 to 3000m)



Cisco Catalyst 4500-X Series

The Cisco Catalyst® 4500-X Series offers best-in-class Layer 2 and Layer 3 services in a small form factor for space-constrained LAN aggregation in campus and branch-office deployments. The switch simplifies aggregation deployments using the new Cisco IOS® XE Software Operating System with several important innovations such as virtualization, application visibility, and hosted applications such as Wireshark.

- Wire-rate performance delivering 800 Gbps
- Layer 2-4 switching and intelligent services with 250-Mpps IPv4 and 125-Mpps IPv6
- Rich IP Multicast, quality of service (QoS), and security
- Flexible NetFlow and Wireshark
- Simplified virtualization and application monitoring
- Uncompromised Video Experience with Medianet
- Configurations from sixteen to forty 10 Gigabit Ethernet ports
- Every port configurable in 1 or 10 Gigabit Ethernet mode
- Resilient with dual hot-swappable internal AC or DC power supplies
- Hot-swappable fans with N + 1 redundancy

Hardware Features			
	WS-C4500X-32SFP+	WS-C4500X-F-32SFP+	WS-C4500X-40X-ES
Environmental			
Height	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)
Power Redundancy	1+1 AC or DC	1+1 AC or DC	1+1 AC or DC
Unit Weight Pounds (Kilograms)	24 (10.89)	24 (10.89)	24 (10.89)
Hot Swappable Fans (N+1 redundancy)	Yes	Yes	Yes
Avg/Max Power Consumption	330/400 Watts	330/400 Watts	330/400 Watts
Airflow	Front to Back	Back to Front	Front to Back
Rack Mounting Options	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
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
Ports			
Maximum Gigabit Ether- net (Fiber) Ports	32	32	40
Maximum 10 Gigabit Ethernet (Fiber) Ports	32	32	40
Performance/Scalability			
Switching Capacity	800 Gbps	800 Gbps	800 Gbps
Throughput	250 Mpps for IPv4 125 Mpps for IPv6	250 Mpps for IPv4 125 Mpps for IPv6	250 Mpps for IPv4 125 Mpps for IPv6
Routes Supported	256K for IPv4 128K for IPv6	256K for IPv4 128K for IPv6	256K for IPv4 128K for IPv6
MAC Addresses	55K	55K	55K
Per VLAN Spanning Tree (PVST) Protocol and VLAN IDs	4094	4094	4094
Switched Virtual Interfaces (SVIs)	4094	4094	4094
Active VLANs	4094	4094	4094
Multicast Routes	32K	32K	32K
Security and Quality-of- Service (QoS) Hardware Entries	64K Ingress 64K Egress	64K Ingress 64K Egress	64K Ingress 64K Egress

	WS-C4500X-32SFP+	WS-C4500X-F-32SFP+	WS-C4500X-40X-ES
Switched Port Analyzer (SPAN)	8 Bi-directional	8 Bi-directional	8 Bi-directional
Shared Buffer	32 MB	32 MB	32 MB
CPU	Dual Core 1.5GHZ	Dual Core 1.5GHZ	Dual Core 1.5GHZ
Synchronous Dynamic RAM (SDRAM)	4 GB	4 GB	4 GB
IPv6 Support	Hardware Switched	Hardware Switched	Hardware Switched
USB Port	Up to 4GB	Up to 4GB	Up to 4GB
Optional SD Card	Yes	Yes	Yes
System Reset Button	Yes	Yes	Yes

* SFP-10G-ZR modules are not supported on ports 1 to 32 in the back-to-front airflow model. They are supported on the uplink module ports instead. In the back-to-front airflow configuration, limit usage of ZR optics to the uplink module only.

Cisco Catalyst 4500-X Series Spotlight

Wire-Speed Performance

The Cisco Catalyst 4500-X Series delivers wire-speed throughput on all ports up to 800 Gbps with a performance of 250 Mpps for both Layer 2 and Layer 3 (IPv4). Switching performance is guaranteed regardless of the number of route entries or Layer 2 and 3 services enabled. The hardware-based Cisco Express Forwarding routing architecture on the new Cisco IOS XE Software allows for increased scalability and performance.

Key Innovations

In addition to the wide range of unicast and multicast Layer 2 and Layer 3 services that are available on the Cisco Catalyst 4500-X, several major Cisco innovations such as Flexible NetFlow, Cisco® Easy Virtual Network (EVN), and Cisco TrustSec® security offer significant value propositions such as simplified virtualization, application visibility with enhanced monitoring, and robust Control Plane Policing.

Exceptional Resiliency

The Cisco Catalyst 4500-X Series offers redundant hot-swappable internal AC or DC power supplies for nonstop operation. The 1 + 1 power supply design provides A-to-B failover when power supplies are connected to different circuits. AC and DC power supplies can be mixed in the same unit for maximum deployment flexibility. The Cisco Catalyst 4500-X Series also features five hot-swappable fans with N+1 redundancy for additional serviceability.

Product Overview

Product Number	Product Description
Catalyst 4500-X Switches	
WS-C4500X-32SFP+	Catalyst 4500-X 32 Port 10GE IP Base, Front-to-Back Cooling i.e. Port Side to Power Supply Cooling (includes 1 AC 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 (includes 1 AC P/S)
WS-C4500X-40X-ES	Catalyst 4500-X 40 Port 10G Enterprise Services with Dual AC Power Supply
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-IP-ES	Catalyst 4500-X IP BASE to Enterprise Services upgrade license
L-C4500X-LIC=	Catalyst 4500-X Base product ID for software upgrade licenses (electronic delivery)
L-C4500X-IP-ES	Catalyst 4500-X IP BASE to Enterprise Services upgrade license (electronic delivery)
Catalyst 4500-X Transceiver Modules	
GLC-T	1000BASE-T SFP
GLC-SX-MM	GBE SFP, LC Connector SX Transceiver
GLC-SX-MMD	GBE SFP, LC Connector SX Transceiver(New)
GLC-LH-SM	GBE SFP, LC Connector LX/LH Transceiver
GLC-LH-SMD	GBE SFP, LC Connector LX/LH Transceiver(New)
GLC-BX-D	1000BASE-BX SFP, 1490 nm
GLC-BX-U	1000BASE-BX SFP, 1310 nm
GLC-ZX-SM	1000BASE-ZX SFP
CWDM/DWDM	TBD
SFP-10G-SR	10GBASE-SR SFP+ Module
SFP-10G-LR	10GBASE-LR SFP+ Module
SFP-10G-ER	10GBASE-ER SFP+ Module
SFP-10G-LRM	10GBASE-LRM SFP+ Module
SFP-10G-ZR	10GBASE-ZR SFP+ Module
SFP-H10GB-CU1M	10GBASE-CU SFP+ Cable 1 Meter, Passive SFP+ Module
SFP-H10GB-CU3M	10GBASE-CU SFP+ Cable 3 Meter, Passive SFP+ Module
SFP-H10GB-CU5M	10GBASE-CU SFP+ Cable 5 Meter, Passive CX1 SFP+ Module

Product Number	Product Description
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Catalyst 4500-X Accessories	
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C4KX-PWR-750AC-F/2	Catalyst 4500-X 750W AC Back-to-Front Cooling Power Supply Redundant
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C4KX-PWR-750AC-R/2	Catalyst 4500-X 750W AC Front-to-Back Cooling Power Supply Redundant
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C4KX-PWR-750DC-F/2	Catalyst 4500-X 750W DC Back-to-Front Cooling Power Supply Redundant
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C4KX-PWR-750DC-R/2	Catalyst 4500-X 750W DC Front-to-Back Cooling Power Supply Redundant
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C4KX-FAN-F=	Catalyst 4500-X Back-to-Front Cooling Fan
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C4KX-FAN-R=	Catalyst 4500-X Front-to-Back Cooling Fan
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WS-X4948E-19CNTR=	Center Mount 19 Inch Rack Kit L/R
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WS-X4948E-23CNTR=	Center Mount 23 Inch Rack Kit L/R
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C4948-BKT-KIT=	Front and Rear Mount Brackets Kit
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Nexus 3000 Series

Ultra-Low Latency, High-Density Layer 2/3 Switches

Cisco Nexus 3000 Series Switches extend the proven innovations of Cisco Unified Fabric innovations to the High-Frequency Trading (HFT) market and Big Data environments.

Feature and Capabilities

- Ultra-low latency
 - Line-rate Layer 2/Layer 3 switching at ultra-low latencies enables customers to implement high-performance infrastructures for HFT workloads
- Identical switch architecture for 1GE, 10GE, and 40GE connectivity
 - Ideal for large-scale implementations that need consistency
 - Identical software feature set across the Cisco Nexus 3000 Series
 - Shared memory architecture
 - Low power consumption
- Easy to deploy and configure
 - Modular and resilient Cisco NX-OS operating system
 - Robust and proven software that is deployed in thousands of data centers worldwide
 - Unrivaled feature set that includes key data center innovations such as Virtual Port Channel, Precision Time Protocol (IEEE 1588) Boundary Clock, Configurable Control Plane Policing, ERSPAN and other extensive routing protocols
 - Simplified management with support for Python scripting, EEM, and other XML manageability tools

Hardware Features

Description	Specification																				
Nexus 3064 Switch																					
Physical	<ul style="list-style-type: none"> • 1RU fixed form-factor switch • 64 10 Gigabit Ethernet ports (48 SFP+ and 4 QSFP+) • 48 SFP ports support 1 and 10 Gigabit Ethernet • 4 QSFP ports support 4 x 10 Gigabit Ethernet or 40 Gigabit Ethernet each • 2 redundant power supplies • 1 fan tray with redundant fans • 1 I/O module with management, console, and USB flash memory ports 																				
Performance	<ul style="list-style-type: none"> • 1.28-Tbps switching capacity • Forwarding rate of 960 mpps • Line-rate traffic throughput (both Layer 2 and 3) on all ports • Configurable maximum transmission units (MTUs) of up to 9216 bytes (jumbo frames) 																				
Hardware Tables and Scalability	<table border="1"> <tbody> <tr> <td>MAC addresses</td> <td>128,000</td> </tr> <tr> <td>Number of VLANs</td> <td>4096</td> </tr> <tr> <td>Spanning-tree instances</td> <td> <ul style="list-style-type: none"> • Rapid Spanning Tree Protocol (RSTP): 512 • Multiple Spanning Tree (MST) Protocol: 64 </td> </tr> <tr> <td>Access control list (ACL) entries</td> <td>2000 ingress 1000 egress</td> </tr> <tr> <td>Routing table</td> <td>16000 prefixes and 16000 host entries* 8000 multicast routes*</td> </tr> <tr> <td>Number of EtherChannels</td> <td>64 (with vPC)</td> </tr> <tr> <td>Number of ports per EtherChannel</td> <td>16</td> </tr> <tr> <td>Buffers</td> <td>9 MB shared</td> </tr> <tr> <td>Boot flash memory</td> <td>2 GB</td> </tr> <tr> <td></td> <td>Power</td> </tr> </tbody> </table>	MAC addresses	128,000	Number of VLANs	4096	Spanning-tree instances	<ul style="list-style-type: none"> • Rapid Spanning Tree Protocol (RSTP): 512 • Multiple Spanning Tree (MST) Protocol: 64 	Access control list (ACL) entries	2000 ingress 1000 egress	Routing table	16000 prefixes and 16000 host entries* 8000 multicast routes*	Number of EtherChannels	64 (with vPC)	Number of ports per EtherChannel	16	Buffers	9 MB shared	Boot flash memory	2 GB		Power
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Description	Specification	
Cooling	Forward and reversed airflow schemes:	
	· Forward airflow: Port-side exhaust (air enters through fan-tray and power supplies and exits through ports)	
	· Reversed airflow: Port-side intake (air enters through ports and exits through fan-tray and power supplies)	
	· Single fan tray with redundant fans	
	· Hot swappable (must swap within 1 min)	
Environment	Dimensions (height x width x depth)	1.72 x 17.3 x 19.7 in. (4.4 x 43.9 x 50.5 cm)
	Weight	20.5 lbs (9.3 kgs)
	Operating temperature	32 to 104° F (0 to 40°C)
	Storage temperature	-40 to 158° F (-40 to 70°C)
	Operating relative humidity	10 to 85% noncondensing
	Storage relative humidity	Up to 5 days at max (85%) humidity
	Altitude	Recommend ASHRAE data center Environment

Nexus 3048 Switch

Physical	· 1RU fixed form-factor switch	
	· 48 10/100/1000 Mbps RJ-45 ports	
	· 4 1/10 Gbps SFP+ uplink ports	
	· 2 redundant power supplies	
	· 1 fan tray with redundant fans	
	· 1 I/O module with management, console, and USB flash memory ports	
Performance	· 176 Gbps switching capacity	
	· Forwarding rate of 132 mpps	
	· Line-rate traffic throughput (both Layer 2 and 3) on all ports	
	· Configurable maximum transmission units (MTUs) of up to 9216 bytes (jumbo frames)	
Hardware tables and scalability	MAC addresses	128,000
	Number of VLANs	4096
	Spanning-tree instances	· RSTP: 512 · MSTP: 64
	ACL entries	2000 ingress 1000 egress
	Routing table	16,000 prefixes and 16,000 host entries* 8000 multicast routes*
	Number of EtherChannels	52 (with vPC)
	Number of ports per EtherChannel	16
	Buffers	9 MB shared
	Boot flash memory	2 GB
		Power

Hardware Features

Description	Specification		
Power	Number of power supplies	2 (redundant)	
	Typical operating power	120 watts (W) (48p of 1G and 4p of 10G/SR at 100% load, with 2 power supply units [PSUs])	
	Maximum power	124 Watts	
	Input voltage	100 to 240 VAC	
	Frequency	50 to 60 Hz	
	Power supply efficiency	89 to 91% at 220V	
	Typical heat dissipation	409 BTU/hr (48p of 1G and 4p of 10G/SR at 100% load, with 2 PSUs)	
	Maximum heat dissipation	423 BTU/hr	
Cooling	<ul style="list-style-type: none"> Forward and reversed airflow schemes Forward airflow: Port-side exhaust (air enters through fan-tray and power supplies and exits through ports) Reversed airflow: Port-side intake (air enters through ports and exits through fan tray and power supplies) Single fan tray with redundant fans Hot swappable (must swap within 1 minute) 		
	Environment	Dimensions (height x width x depth)	1.72 x 17.3 x 19.7 in. (4.4 x 43.9 x 50.5 cm)
		Weight	20.5 lb (9.3 kg)
		Operating temperature	32 to 104° F (0 to 40°C)
		Storage temperature	-40 to 158° F (-40 to 70°C)
Operating relative humidity		<ul style="list-style-type: none"> 10 to 85% noncondensing Up to 5 days at maximum (85%) humidity Recommend ASHRAE data center environment 	
Storage relative humidity	5 to 95% noncondensing		
Altitude	0 to 10,000 ft (0 to 3000m)		

Nexus 3016 Switch

Physical	<ul style="list-style-type: none"> 1RU fixed form-factor switch 16 QSFP ports: each supports native 40 Gigabit Ethernet and 4 x 10 Gigabit Ethernet modes 2 redundant power supplies 1 fan tray with redundant fans 1 I/O module with management, console, and USB flash memory ports 		
	Performance	<ul style="list-style-type: none"> 1.28-Tbps switching capacity Forwarding rate of 960 mpps Line-rate traffic throughput (both Layer 2 and 3) on all ports Configurable maximum transmission units (MTUs) of up to 9216 bytes (jumbo frames) 	

Description	Specification	
Hardware tables and scalability	MAC addresses	128,000
	Number of VLANs	4096
	Spanning-tree instances	<ul style="list-style-type: none"> • RSTP: 512 • MSTP: 64
	Access control list (ACL) entries	<ul style="list-style-type: none"> • 2000 ingress • 1000 egress
	Routing table	<ul style="list-style-type: none"> • 16,000 prefixes and 16000 host entries* • 8000 multicast routes*
	Number of EtherChannels	64 (with vPC)
	Number of ports per EtherChannel	16
	Buffers	9 MB shared
	Boot flash memory	2 GB
	Power	Number of power supplies
Power supply types		<ul style="list-style-type: none"> • AC (forward and reversed airflow) • DC (forward and reversed airflow)
Typical operating power		<ul style="list-style-type: none"> • 172 Watts (with Twinax at 100% load; 2 power supply units [PSUs]) • 174 Watts (with short-reach optics at 100% load; 2 PSUs)
Maximum power		227 Watts
Input voltage		100 to 240 VAC
Frequency		50 to 60 Hz
Power supply efficiency		89 to 91% at 220V
Typical heat dissipation		<ul style="list-style-type: none"> • 587 BTU/hr (16p with Twinax at 100% load; 2 PSU) • 594 BTU/hr (16p with SR4 optics at 100% load; 2 PSU)
Maximum heat dissipation		775 BTU/hr
Cooling		<ul style="list-style-type: none"> • Forward and reversed airflow schemes • Forward airflow: Port-side exhaust (air enters through fan tray and power supplies and exits through ports); supported with AC and DC power supplies • Reversed airflow: Port-side intake (air enters through ports and exits through fan tray and power supplies); supported with AC power supply only • Single fan tray with redundant fans • Hot swappable (must swap within 1 minute)

Hardware Features (continued)

Description	Specification
Environment	Dimensions (height x width x depth) 1.72 x 17.3 x 19.7 in. (4.4 x 43.9 x 50.5 cm)
	Weight 20.5 lb (9.3 kg)
	Operating temperature 32 to 104° F (0 to 40°C)
	Storage temperature -40 to 158° F (-40 to 70°C)
	Operating relative humidity <ul style="list-style-type: none"> · 10 to 85% noncondensing · Up to 5 days at maximum (85%) humidity · Recommend ASHRAE data center environment
	Storage relative humidity 5 to 95% noncondensing
	Altitude 0 to 10,000 ft (0 to 3000m)

Software Features

Description	Specification
Nexus 3064 Switch	
Layer 2	<ul style="list-style-type: none">• Layer 2 switch ports and VLAN trunks• IEEE 802.1Q VLAN encapsulation• Support for up to 4096 VLANs• Rapid Per-VLAN Spanning Tree Plus (PVRST+) (IEEE 802.1w compatible)• Multiple Spanning Tree Protocol (MSTP) (IEEE 802.1s): 64 instances• Spanning Tree PortFast• Spanning Tree Root Guard• Spanning Tree Bridge Assurance• Cisco EtherChannel technology (up to 16 ports per EtherChannel)• Link Aggregation Control Protocol (LACP): IEEE 802.3ad• Advanced PortChannel hashing based on Layer 2, 3, and 4 information• Virtual Port Chanel (vPC)• Jumbo frames on all ports (up to 9216 bytes)• Storm control (unicast, multicast, and broadcast)• Private VLANs
Layer 3	<ul style="list-style-type: none">• Layer 3 interfaces: Routed ports on interfaces, switch virtual interfaces (SVIs), PortChannels, and subinterfaces (Total 1024)• 64-way Equal-Cost Multipath (ECMP)• 2000 ingress and 1000 egress ACL entries• IPv6 Routing: Static, OSPFv3 and BGPv6• Routing protocols: Static, RIP v2, EIGRP, OSPF, and BGP• Bi-directional Flow Detection (BFD) for BGP and OSPF• Hot Standby Router Protocol (HSRP) and Virtual Router Redundancy Protocol (VRRP)• ACL: Routed ACL with Layer 3 and 4 options to match ingress and egress ACLs• Virtual Route Forwarding (VRF): VRF-lite (IP VPN), VRF-aware unicast (BGP, OSPF, and RIP), and VRF-aware multicast• Unicast Reverse-Path Forwarding (uRPF) with ACL: strict and loose modes• Jumbo frame support (up to 9216 bytes)
Multicast	<ul style="list-style-type: none">• Multicast: Protocol Independent Multicast Version 2 (PIMv2), sparse mode (PIM-SM), and Source-Specific Multicast (SSM)• Bootstrap router (BSR), Auto-RP, and Static RP• Multicast Source Discovery Protocol (MSDP) and Anycast RP• Internet Group Management Protocol (IGMP) Versions 2 and 3

Software Features (continued)

Description	Specification
Nexus 3064 Switch	
Quality of Service (QoS)	<ul style="list-style-type: none"> · Layer 2 IEEE 802.1p (class of service [CoS]) · 8 hardware queues per port · Per-port QoS configuration · CoS trust · Port-based CoS assignment · Modular QoS CLI (MQC) compliance · ACL-based QoS classification (Layers 2, 3, and 4) · MQC CoS marking · Differentiated services code point (DSCP) marking · Weighted Random Early Detection (WRED) · CoS-based egress queuing · Egress strict-priority queuing · Egress port-based scheduling: Weighted Round-Robin (WRR) · Explicit Congestion Notification (ECN)
Security	<ul style="list-style-type: none"> · Ingress ACLs (standard and extended) on Ethernet · Standard and extended Layer 3 to 4 ACLs include IPv4, Internet Control Message Protocol (ICMP), TCP, and User Datagram Protocol (UDP) · VLAN-based ACLs (VACLs) · Port-based ACLs (PACLs) · Named ACLs · ACL logging and statistics · ACLs on virtual terminals (VTYs) · Dynamic Host Configuration Protocol (DHCP) snooping with Option 82 · DHCP relay · Dynamic Address Resolution Protocol (ARP) inspection · Configurable Control Plane Policing (CoPP)

Description**Specification****Nexus 3064 Switch****Management**

- Power On Auto Provisioning (POAP)
- Python scripting
- EEM
- Switch management using 10/100/1000-Mbps management or console ports
- CLI-based console to provide detailed out-of-band management
- In-band switch management
- Locator and beacon LEDs
- Configuration rollback
- Secure Shell Protocol Version 2 (SSHv2)
- Telnet
- Authentication, authorization, and accounting (AAA)
- AAA with RBAC
- RADIUS
- TACACS+
- Syslog
- Embedded packet analyzer
- SNMP v1, v2, and v3
- Enhanced SNMP MIB support
- XML (NETCONF) support
- Remote monitoring (RMON)
- Advanced Encryption Standard (AES) for management traffic
- Unified username and passwords across CLI and SNMP
- Microsoft Challenge Handshake Authentication Protocol (MS-CHAP)
- Digital certificates for management between switch and RADIUS server
- Cisco Discovery Protocol Versions 1 and 2
- RBAC
- Switched Port Analyzer (SPAN) on physical, PortChannel, and VLAN
- Encapsulated Remote Switched Port Analyzer (ERSPAN)
- Ingress and egress packet counters per interface
- Precision Time Protocol (IEEE 1588) Boundary Clock
- Network Time Protocol (NTP)
- Cisco OHMS
- Comprehensive bootup diagnostic tests
- Call Home
- Cisco DCONM
- Advanced Buffer Utilization Monitoring

Software Features (continued)

Description	Specification
Nexus 3048 Switch	
Layer 2	<ul style="list-style-type: none"> · Layer 2 switch ports and VLAN trunks · IEEE 802.1Q VLAN encapsulation · Support for up to 4096 VLANs · Rapid per-VLAN Spanning Tree Plus (PVRST+) (IEEE 802.1w compatible) · MSTP (IEEE 802.1s): 64 instances · Spanning Tree PortFast · Spanning Tree Root Guard · Spanning Tree Bridge Assurance · vPC · Cisco EtherChannel technology (up to 16 ports per EtherChannel) · LACP: IEEE 802.3ad · Advanced PortChannel hashing based on Layer 2, 3, and 4 information · Virtual Port Channel (vPC) · Jumbo frames on all ports (up to 9216 bytes) · Storm control (unicast, multicast, and broadcast) · PVLANs
Layer 3	<ul style="list-style-type: none"> · Layer 3 interfaces: Routed ports on interfaces, switch virtual interfaces (SVIs), PortChannels, and subinterfaces (total = 1024) · 32-way ECMP · 2000 ingress and 1000 egress ACL entries · Routing protocols: Static, RIP v2, EIGRP, OSPFv2, and BGP · Bi-directional Flow Detection (BFD) for BGP · HSRP and VRRP · ACL: Routed ACL with Layer 3 and 4 options to match ingress and egress ACLs · VRF: VRF-lite (IP VPN), VRF-aware unicast (BGP, OSPF, and RIP), and VRF-aware multicast · uRPF with ACL: strict and loose modes · Jumbo frame support (up to 9216 bytes)
Multicast	<ul style="list-style-type: none"> · Multicast: PIM-SM Version 2 and SSM · Bootstrap router (BSR), Automatic Rendezvous Point (Auto-RP), and Static RP · MSDP and Anycast-RP · Internet Group Management Protocol (IGMP) Versions 2, and 3

Description	Specification
Nexus 3048 Switch	
Quality of service (QoS)	<ul style="list-style-type: none"> · Layer 2 IEEE 802.1p (class of service [CoS]) · 8 hardware queues per port · Per-port QoS configuration · CoS trust · Port-based CoS assignment · Modular QoS CLI (MQC) compliance · ACL-based QoS classification (Layers 2, 3, and 4) · MQC CoS marking · Differentiated services code point (DSCP) marking · Weighted Random Early Detection (WRED) · CoS-based egress queuing · Egress strict-priority queuing · Egress port-based scheduling: Weighted Round-Robin (WRR) · Explicit Congestion Notification (ECN)
Security	<ul style="list-style-type: none"> · Ingress ACLs (standard and extended) on Ethernet · Standard and extended Layer 3 to 4 ACLs: IPv4, Internet Control Message Protocol (ICMP), TCP, User Datagram Protocol (UDP), etc. · VLAN-based ACLs (VACLs) · Port-based ACLs (PACLs) · Named ACLs · ACL logging and statistics · ACLs on vtys · DHCP snooping with Option 82 · DHCP relay · Dynamic Address Resolution Protocol (ARP) inspection · Control Plane Policing (CoPP)

Software Features (continued)

Description	Specification
Nexus 3048 Switch	
Management	<ul style="list-style-type: none"> · Switch management using 10/100/1000-Mbps management or console ports · CLI-based console to provide detailed out-of-band management · In-band switch management · Locator and beacon LEDs · Port-based locator and beacon LEDs · Configuration rollback · SSHv2 · Telnet · AAA · AAA with RBAC · RADIUS · TACACS+ · Syslog · Embedded packet analyzer · SNMP v1, v2, and v3 · Enhanced SNMP MIB support · XML (NETCONF) support · Remote monitoring (RMON) · Advanced Encryption Standard (AES) for management traffic · Unified username and passwords across CLI and SNMP · Microsoft Challenge Handshake Authentication Protocol (MS-CHAP) · Digital certificates for management between switch and RADIUS server · Cisco Discovery Protocol Versions 1 and 2 · RBAC · Cisco Switched Port Analyzer (SPAN) on physical, PortChannel and VLAN interfaces · Encapsulated Remote Switched Port Analyzer (ERSPAN) · Ingress and egress packet counters per interface · Precision Time Protocol (PTP IEEE1588) Boundary clock · Network Time Protocol (NTP) · Cisco OHMS · Comprehensive bootup diagnostic tests · Call Home · Cisco DCNM · Advanced Buffer Monitoring

Description	Specification
Nexus 3016 Switch	
Layer 2	<ul style="list-style-type: none"> • Layer 2 switch ports and VLAN trunks • IEEE 802.1Q VLAN encapsulation • Support for up to 4096 VLANs • Rapid Per-VLAN Spanning Tree Plus (PVRST+) (IEEE 802.1w compatible) • MSTP (IEEE 802.1s): 64 instances • Spanning Tree PortFast • Spanning Tree Root Guard • Spanning Tree Bridge Assurance • Cisco EtherChannel technology (up to 16 ports per EtherChannel) • LACP: IEEE 802.3ad • vPC • Advanced PortChannel hashing based on Layer 2, 3, and 4 information • Jumbo frames on all ports (up to 9216 bytes) • Storm control (unicast, multicast, and broadcast) • Private VLANs
Layer 3	<ul style="list-style-type: none"> • Layer 3 interfaces: Routed ports on interfaces, switch virtual interfaces (SVIs), PortChannels, and subinterfaces (total: 1024) • 64-way Equal-Cost Multipath (ECMP) • 2000 ingress and 1000 egress ACL entries • Routing protocols: Static, RIPv2, EIGRP, OSPFv2, and BGP • Bi-directional Flow Detection (BFD) for BGP • HSRP and VRRP • ACL: Routed ACL with Layer 3 and 4 options to match ingress and egress ACLs • VRF: VRF-lite (IP VPN), VRF-aware unicast (BGP, OSPF, and RIP), and VRF-aware multicast • uRPF with ACL: strict and loose modes • Jumbo frame support (up to 9216 bytes)
Multicast	<ul style="list-style-type: none"> • Multicast: PIM Version 2 Sparse Mode (PIM-SM) and SSM • Bootstrap router (BSR), Automatic Rendezvous Point (Auto-RP) and Static RP • Multicast Source Discovery Protocol (MSDP) and Anycast RP • Internet Group Management Protocol (IGMP) Versions 2, and 3
Quality of service (QoS)	<ul style="list-style-type: none"> • Layer 2 IEEE 802.1p (class of service [CoS]) • 8 unicast and 4 multicast hardware queues per port • Per-port quality-of-service (QoS) configuration • CoS trust • Port-based CoS assignment • Modular QoS CLI (MQC) compliance • ACL-based QoS classification (Layers 2, 3, and 4) • MQC CoS marking • Differentiated services code point (DSCP) marking • Weighted Random Early Detection (WRED) • CoS-based egress queuing • Egress strict-priority queuing • Egress port-based scheduling: Weighted Round-Robin (WRR) • Explicit Congestion Notification (ECN)

Software Features (continued)

Description	Specification
Nexus 3016 Switch	
Security	<ul style="list-style-type: none"> • Ingress ACLs (standard and extended) on Ethernet • Standard and extended Layer 3 to 4 ACLs: IPv4, Internet Control Message Protocol (ICMP), TCP, User Datagram Protocol (UDP), etc. • VLAN-based ACLs (VACLs) • Port-based ACLs (PACLs) • Named ACLs • ACL logging and statistics • ACLs on virtual terminals (vty) • DHCP snooping with Option 82 • DHCP relay • Dynamic Address Resolution Protocol (ARP) inspection • Configurable Control Plane Policing (CoPP)
Management	<ul style="list-style-type: none"> • Switch management using 10/100/1000-Mbps management or console ports • CLI-based console to provide detailed out-of-band management • In-band switch management • Locator and beacon LEDs • Port-based locator and beacon LEDs • Configurable CoPP • Configuration rollback • SSHv2 • Telnet • AAA • AAA with RBAC • RADIUS • TACACS+ • Syslog • Embedded packet analyzer • SNMP v1, v2, and v3 • Enhanced SNMP MIB support • XML (NETCONF) support • Remote monitoring (RMON) • Advanced Encryption Standard (AES) for management traffic • Unified username and passwords across CLI and SNMP • Microsoft Challenge Handshake Authentication Protocol (MS-CHAP) • Digital certificates for management between switch and RADIUS server • Cisco Discovery Protocol Versions 1 and 2 • RBAC • Cisco SPAN on physical, PortChannel, VLAN, and Fibre Channel interfaces • ERSPAN • Ingress and egress packet counters per interface • Precision Time Protocol (IEEE 1588) boundary clock • Network Time Protocol (NTP) • Cisco OHMS • Comprehensive bootup diagnostic tests • Cisco Call Home • Cisco DCNM • Advanced Buffer Monitoring

Ordering Information

Description	Specification
Nexus 3064 Switch	
Chassis	
N3K-C3064PQ-10GX	Nexus 3064-X, 48 SFP+ and 4 QSFP+ ports, with enhanced scale, low latency
N3K-C3064-FAN	Nexus 3064 Fan Module, Forward airflow (port side exhaust)
N3K-C3064-FAN-B	Nexus 3064 Fan Module, Reversed airflow (port side intake)
N2200-PAC-400W	N2K/3K 400W AC Power Supply, Forward airflow (port side exhaust)
N2200-PAC-400W-B	N2K/3K 400W AC Power Supply, Reversed airflow (port side intake)
N2200-PDC-400W	N2K/3K 400W DC Power Supply, Forward airflow (port side exhaust)
N3K-PDC-350W-B	N3K Series 350W DC Power Supply, Reversed airflow (port side intake)
Software Licenses	
N3K-BAS1K9	Nexus 3000 Layer 3 Base License
N3K-LAN1K9	Nexus 3000 Layer 3 LAN Enterprise License (Requires N3K-BAS1K9 License)
Spares	
N3K-C3064-FAN=	Nexus 3064 Fan Module, Forward airflow (port side exhaust), Spare
N3K-C3064-FAN-B=	Nexus 3064 Fan Module, Reversed airflow (port side intake), Spare
N2000-PAC-400W=	N2K/3K 400W AC Power Supply, Forward airflow (port side exhaust), Spare
N2000-PAC-400W-B=	N2K/3K 400W AC Power Supply, Reversed airflow (port side intake), Spare
N2200-PDC-400W=	N2K/3K 400W DC Power Supply, Forward airflow (port side exhaust), Spare
N3K-PDC-350W-B=	N3K Series 350W DC Power Supply, Reversed airflow (port side intake), Spare
N3K-C3064-ACC-KIT=	Nexus 3064PQ Accessory Kit
Bundles	
N3K-C3064-X-FA-L3	Nexus 3064-X, Forward Airflow (port side exhaust), AC P/S, Base and LAN Enterprise License Bundle
N3K-C3064-X-BA-L3	Nexus 3064-X, Reversed Airflow (port side intake), AC P/S, Base and LAN Enterprise License Bundle
N3K-C3064-X-FD-L3	Nexus 3064-X, Forward Airflow (port side exhaust), DC P/S, Base and LAN Enterprise License Bundle
N3K-C3064-X-BD-L3	Nexus 3064-X, Reversed Airflow (port side intake), DC P/S, Base and LAN Enterprise License Bundle
Cables and Optics	
QSFP-40G-SR4(=)	40GBASE-SR4 QSFP Transceiver Module with MPO Connector
QSFP-H40G-CU1M(=)	40GBASE-CR4 Passive Copper Cable, 1m
QSFP-H40G-CU3M(=)	40GBASE-CR4 Passive Copper Cable, 3m
QSFP-H40G-CU5M(=)	40GBASE-CR4 Passive Copper Cable, 5m
QSFP-4SFP10G-CU1M(=)	QSFP to 4xSFP10G Passive Copper Splitter Cable, 1m
QSFP-4SFP10G-CU3M(=)	QSFP to 4xSFP10G Passive Copper Splitter Cable, 3m

Ordering Information (continued)

Description	Specification
QSFP-4SFP10G-CU5M(=)	QSFP to 4xSFP10G Passive Copper Splitter Cable, 5m
SFP-10G-SR(=)	10GBASE-SR SFP+ Module
SFP-10G-LR(=)	10GBASE-LR SFP+ Module
SFP-10G-ER(=)	Cisco 10GBASE-ER SFP+ Module for SMF
SFP-H10GB-CU1M(=)	10GBASE-CU SFP+ Cable 1 Meter
SFP-H10GB-CU3M(=)	10GBASE-CU SFP+ Cable 3 Meter
SFP-H10GB-CU5M(=)	10GBASE-CU SFP+ Cable 5 Meter
SFP-H10GB-ACU7M(=)	Active Twinax Cable Assembly, 7m
SFP-H10GB-ACU10M(=)	Active Twinax Cable Assembly, 10m
GLC-T(=)	1000BASE-T SFP
GLC-SX-MM(=)	GE SFP, LC Connector SX Transceiver
GLC-LH-SM(=)	GE SFP, LC Connector LX/LH Transceiver

Nexus 3048 Switch

Chassis

N3K-C3048TP-1GE	Nexus 3048TP-1GE 1RU 48 1GE and 4 10GE ports
N3K-C3048-FAN	Nexus 3048 Fan Module, Forward airflow (port side exhaust)
N3K-C3048-FAN-B	Nexus 3048 Fan Module, Reversed airflow (port side intake)
N2200-PAC-400W	N2K/3K 400W AC Power Supply, Forward airflow (port side exhaust)
N2200-PAC-400W-B	N2K/3K 400W AC Power Supply, Reversed airflow (port side intake)
N2200-PDC-400W	N2K/3K 400W DC Power Supply, Forward airflow (port side exhaust)
N3K-PDC-350W-B	N3K Series 350W DC Power Supply, Reversed airflow (port side intake)

Software Licenses

N3K-C3048-BAS1K9	Nexus 3048 Layer 3 Base License
N3K-C3048-LAN1K9	Nexus 3048 Layer 3 LAN Enterprise License (Requires N3K-C3048-BAS1K9 License)

Spares

N3K-C3048-FAN=	Nexus 3048 Fan Module, Forward airflow (port side exhaust), Spare
N3K-C3048-FAN-B=	Nexus 3048 Fan Module, Reversed airflow (port side intake), Spare
N2000-PAC-400W=	N2K/3K 400W AC Power Supply, Std airflow (port side exhaust), Spare
N2000-PAC-400W-B=	N2K/3K 400W AC Power Supply, Reversed airflow (port side intake), Spare
N2200-PDC-400W=	N2K/3K 400W DC Power Supply, Forward airflow (port side exhaust), Spare
N3K-PDC-350W-B=	N3K Series 350W DC Power Supply, Reversed airflow (port side intake), Spare
N3K-C3064-ACC-KIT=	Nexus 3000 Accessory Kit

Bundles

N3K-C3048-FA-L3	Nexus 3048, Forward Airflow (port side exhaust), AC P/S, Base & LAN Ent Lic Bundle
N3K-C3048-BA-L3	Nexus 3048, Reversed Airflow (port side intake), AC P/S, Base & LAN Ent Lic Bundle

Description	Specification
N3K-C3048-FD-L3	Nexus 3048, Forward Airflow (port side exhaust), DC P/S, Base & LAN Ent Lic Bundle
N3K-C3048-BD-L3	Nexus 3048, Reversed Airflow (port side intake), DC P/S, Base & LAN Ent Lic Bundle

Cables and Optics

SFP-10G-SR(=)	10GBASE-SR SFP+ Module
SFP-10G-LR(=)	10GBASE-LR SFP+ Module
SFP-H10GB-CU1M(=)	10GBASE-CU SFP+ Cable 1 Meter
SFP-H10GB-CU3M(=)	10GBASE-CU SFP+ Cable 3 Meter
SFP-H10GB-CU5M(=)	10GBASE-CU SFP+ Cable 5 Meter
GLC-T(=)	1000BASE-T SFP
GLC-SX-MM(=)	GE SFP, LC connector SX transceiver
GLC-LH-SM(=)	GE SFP, LC connector LX/LH transceiver

Nexus 3016 Switch

Chassis

N3K-C3016Q-40GE	Nexus 3016, 16 QSFP+ ports, 1RU switch
N3K-C3064-FAN	Nexus 3064 Fan Module, Forward airflow (port side exhaust)
N3K-C3064-FAN-B	Nexus 3064 Fan Module, Reversed airflow (port side intake)
N2200-PAC-400W	N2K/3K 400W AC Power Supply, Forward airflow (port side exhaust)
N2200-PAC-400W-B	N2K/3K 400W AC Power Supply, Reversed airflow (port side intake)
N2200-PDC-400W	N2K/3K 400W DC Power Supply, Forward airflow (port side exhaust)
N3K-PDC-350W-B	N3K Series 350W DC Power Supply, Reversed airflow (port side intake)

Software Licenses

N3K-BAS1K9	Nexus 3000 Layer 3 Base License
N3K-LAN1K9	Nexus 3000 Layer 3 LAN Enterprise License (Requires N3K-BAS1K9 License)

Spares

N3K-C3064-FAN=	Nexus 3064 Fan Module, Forward airflow (port side exhaust), Spare
N3K-C3064-FAN-B=	Nexus 3064 Fan Module, Reversed airflow (port side intake), Spare
N2000-PAC-400W=	N2K/3K 400W AC Power Supply, Forward airflow (port side exhaust), Spare
N2000-PAC-400W-B=	N2K/3K 400W AC Power Supply, Reversed airflow (port side intake), Spare
N2200-PDC-400W=	N2K/3K 400W DC Power Supply, Forward airflow (port side exhaust), Spare
N3K-PDC-350W-B=	N3K Series 350W DC Power Supply, Reversed airflow (port side intake), Spare
N3K-C3064-ACC-KIT=	Nexus 3064PQ Accessory Kit

Bundles

N3K-C3016-FA-L3	Nexus 3016, AC, Forward Airflow (port side exhaust), Base & LAN Ent Lic Bundle
N3K-C3016-BA-L3	Nexus 3016, AC, Reversed Airflow (port side intake), Base & LAN Ent Lic Bundle
N3K-C3016-FD-L3	Nexus 3016, DC, Forward Airflow (port side exhaust), Base & LAN Ent Lic Bundle
N3K-C3016-BD-L3	Nexus 3016, DC, Reversed Airflow (port side intake), Base & LAN Ent Lic Bundle

Ordering Information (continued)

Description	Specification
Cables and Optics	
QSFP-40G-SR4	40GBASE-SR4 QSFP Transceiver Module with MPO Connector
QSFP-H40G-CU1M	40GBASE-CR4 Passive Copper Cable, 1m
QSFP-H40G-CU3M	40GBASE-CR4 Passive Copper Cable, 3m
QSFP-H40G-CU5M	40GBASE-CR4 Passive Copper Cable, 5m
QSFP-4SFP10G-CU1M	QSFP to 4xSFP10G Passive Copper Splitter Cable, 1m
QSFP-4SFP10G-CU3M	QSFP to 4xSFP10G Passive Copper Splitter Cable, 3m
QSFP-4SFP10G-CU5M	QSFP to 4xSFP10G Passive Copper Splitter Cable, 5m



Cisco Catalyst 4900 Series

High-performance small form-factor switching for datacenter top of rack applications and space constrained LAN aggregation in branch deployments.

The Catalyst 4900 Series are a compact form factor (1-2RU) family of switches providing wire speed GE and 10 GBE connectivity and services for top of rack server aggregation in the datacenter and for space constrained branch collapsed core/distribution LAN aggregation. The Catalyst 4900 Series includes six Layer 2 & 3 fixed-configuration switches.

The Catalyst 4948E switch offers 48 ports of wire-speed 10/100/1000BASE-T with four 1 Gbps/10 Gigabit Ethernet (10 GBE) uplinks via optional SFP/SFP+ optics in addition to offering true front-to-back airflow.

The Catalyst 4948E-F switch offers 48 ports of wire-speed 10/100/1000BASE-T with four 1 Gbps/10 Gigabit Ethernet (10 GBE) uplinks via optional SFP/SFP+ optics in addition to offering true back-to-front airflow.

The Cisco Catalyst 4900M is a 320 Gbps, two-rack-unit (2RU) semi-fixed configuration switch with 8 fixed wire-speed 10 GBE ports on the base unit and 2 optional half-card slots for deployment flexibility. Four half-card modules provide additional 10 GBE density or 10/100/1000 copper ports. The 8-port half card supports 1 GE SFPs via the TwinGig adapter.

The Catalyst 4948 switch offers 48 ports of wire-speed 10/100/1000BASE-T with four alternative wired ports that can accommodate optional 1000BASE-X Small Form-factor Pluggable (SFP) optics.

The Catalyst 4948 10 GBE switch offers 48 ports of wire-speed 10/100/1000BASE-T with two wire-speed 10 Gigabit Ethernet (10 GBE) uplinks via optional 10 GBE (X2) optics.

The Catalyst 4928 10 GBE switch offers 28 wire-speed Small Form-Factor Pluggable (SFP) ports with two wire-speed 10 Gigabit Ethernet (10 GBE) uplinks via optional 10 GBE (X2) optics.

All models provide exceptional reliability and serviceability, supporting optional internal AC or DC 1 + 1 hot-swappable power supplies and a hot-swappable fan tray with redundant fans.

These switches are available with either the LAN Base Software image or IP Base Software image or the Enterprise Services Software image. The Enterprise Services Software additionally supports Shortest Path First (OSPF), Intermediate System-to-Intermediate System (IS-IS), Enhanced Interior Gateway Routing Protocol (EIGRP), and Border Gateway Protocol (BGP).

Hardware Features					
	WS-C4948	WS-C4948-10GE	WS-C4928-10GE	WS-4900M	WS-C4948-E/ WS-C4948E-F
Environmental					
Height	1RU	1RU	1RU	2RU	1RU
Dimension (H x W x D) Inches (cm)	1.71(4.3) x 17.3(43.9) x 16.1(40.9)	1.71 (4.3) x 17.3 (43.9) x 16.1 (40.9)	1.71 (4.3) x 17.3 (43.9) x 16.1 (40.9)	3.5 (8.9) x 17.2 (43.7) x 17.9 (45.5)	1.75 (4.4) x 17.5 (44.4) x 19.4 (49.3)
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
Unit Weight Pounds (Kilograms)	16.5 (7.48)	16.5 (7.48)	16.5 (7.48)	34.0 lbs (15.4)	19 lbs (8.62)
Hot Swappable Fan	Yes	Yes	Yes	Yes	Yes
Avg/Max Power Consumption	176/300 Watts	212/300 Watts	300 Watts	300/446 Watts	230/275 Watts
Airflow	Side to Back	Side to back	Side to back	Side to Back	Front to Back (4948E)
Rack Mounting Options	Front and Rear Mount	Front and Rear Mount High Perf Rear Mount	Front and Rear Mount	Four Post Rack Side rail Mount High Performance Mount	Front and Rear Mount High Perf Rear Mount
Uplink Optic Types	4 SFP Optics	Two X2 (10 Gigabit Ethernet) optics	Two X2 (10 Gigabit Ethernet) Optics	Eight X2 (10 Gigabit Ethernet) Optics	SFP/SFP+
Cisco TwinGig Converter Module Support	No	No	Yes	Yes (WS-X4908-10 GE only)	No
Cisco OneX Converter Module Support (X2 to SFP+)*	No	No	Yes	Yes	No
Optics	LH, SX, ZX, CWDM	LR, CX4, LX4, SR, ER, LRM, ZR, DWDM	LR, CX4, LX4, SR, ER, LRM	X2: LR, CX4, LX4, SR, ER, LRM, ZR, DWDM	32
Modular Half-Card Slots	SFP+: SR	CWDM, DWDM, SR, LR, LRM, CX4	0	0	0
Ports					
Maximum 10/100/1000 Ports	48	48	0	40	48

Hardware Features (continued)

	WS-C4948	WS-C4948-10GE	WS-C4928-10GE	WS-4900M	WS-C4948-E/WS-C4948E-F
Ports (continued)					
Maximum Gigabit Ethernet (Fiber) Ports	4	0	28	32 (Cisco TwinGig Converter Module)	4
Maximum 10 Gigabit Ethernet (10GBase-T) Ports	0	0	0	16	0
Maximum 10 Gigabit Ethernet (fiber) Ports	0	2 (X2)	2 (X2) ¹	24 (X2) ¹	4 (SFP+)
Performance/Scalability					
Switching Capacity	96 Gbps	136 Gbps	96 Gbps	320 Gbps	176 Gbps
Throughput	72 Mpps	102 Mpps	72 Mpps	250 Mpps for IPv4 125 Mpps for IPv6	131 Mpps for IPv4 110 Mpps for IPv6
Routes Supported	32K	32K	32K	256K	57K
MAC Addresses	32K	55K	55K	55K	55K
Per VLAN Spanning Tree (PVST) Protocol and VLAN IDs	4094	4094	4094	4094	4094
Switched Virtual Interfaces (SVIs)	2000	2000	2000	4094	4094
Active VLANs	4094	4094	2048	4094	4094
Multicast Routes	28K	28K	28K	28K	28K
Security and Quality-of-Service (QoS) Hardware Entries	32K	32K	32K	128K	32K
Switched Port Analyzer (SPAN)	2 Ingress and 4 Egress	2 Ingress and 4 Egress	2 Ingress and 4 Egress	8 Ingress and 8 Egress	8 Ingress and 8 Egress
Shared Buffer	16 MB	16 MB	16 MB	175 MB	175 MB
CPU	266 MHz	666 MHz	666 MHz	1.3 GHz	1 GHz
Synchronous Dynamic RAM (SDRAM)	256 MB	256 MB	256 MB	512 MB	1 GB
IPv6 Support	Software Switched	Software Switched	Software Switched	Hardware Switched	Hardware Switched
USB Port	No	No	No	Yes	No
Compact Flash Memory Support	No	No	No	Yes	No
System Reset Button	No	No	Yes	Yes	Yes
PoE: Max. 802.3af Class 3 Devices (15.4W)	0	0	0	0	0
PoE: Max. 802.3af Class 2 Devices (7.3W)	0	0	0	0	0

¹ X2 can be converted to SFP+ using OneX Converter Module.

Cisco Catalyst 4900 Series Spotlight

Wire-speed Performance

The Cisco Catalyst 4900 Series delivers wire-speed throughput on all ports from 96 Gbps to 320 Gbps with low-latency for data-intensive applications. Switching performance is guaranteed regardless of the number of route entries or Layer 3 and 4 services enabled. The hardware-based Cisco Express Forwarding (CEF) routing architecture allows for increased scalability and performance.

Exceptional Reliability

The Cisco Catalyst 4900 Series offers redundant hot-swappable internal AC or DC power supplies for non-stop operation. The 1+1 power supply design provides A-to-B failover when power supplies are connected to different circuits. AC and DC power supplies can be mixed in the same unit for maximum deployment flexibility. The Cisco Catalyst 4900 Series also features a hot-swappable fan tray with four redundant fans for additional serviceability and availability.

Product Overview

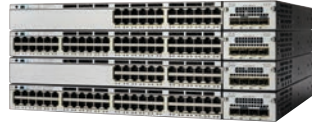
Product Number	Product Description
Catalyst 4900 Switches	
WS-C4948E	4948E, LB S/W, 48-port 10/100/1000+4*1/10 GE (SFP/SFP+) Ports, no Power Supply, Front-to-back Airflow
WS-C4948E-S	4948E, IPB S/W, 48-port 10/100/1000+4*1/10 GE (SFP/SFP+) Ports, AC Power Supply, Front-to-back Airflow
WS-C4948E-E	4948E, ES Image, 48-port 10/100/1000+4*1/10 GE (SFP/SFP+) Ports, AC Power Supply, Front-to-back Airflow
WS-C4948E-F	4948E-F, LB S/W, 48-port 10/100/1000+4*1/10 GE (SFP/SFP+) Ports, no Power Supply, Back-to-front Airflow
WS-C4948E-F-S	Base System with 8-port (X2) and 2 Half Slots
WS-C4948E-F-E	4 Port Wire Speed 10 GBE Card for 4900M
WS-C4900M	8 Port 2:1 10 GBE Card for 4900M
WS-X4904-10GE	20 Port 10/100/1000 RJ-45 Card for 4900M
WS-X4908-10GE	8-port 2:1 10GBASE-T Card for 4900M
WS-X4920-GB-RJ45	4948, Optional S/W, 48-port 10/100/1000+2*10 GBE (X2), no Power Supply
WS-X4908-10G-RJ45	4948, Optional S/W, 48-port 10/100/1000+2*10 GBE (X2), no Power Supply
WS-C4948-10GE	4948, IPB S/W, 48-port 10/100/1000+2*10 GBE (X2), 1 AC Power Supply
WS-C4948-10GE-S	4948, ES Image, 48-port 10/100/1000+2*10 GBE (X2), 1 AC Power Supply
WS-C4948-10GE-E	4948, ES Image, 48-port 10/100/1000+2*10 GBE (X2), 1 AC Power Supply
WS-C4928-10GE	4928, Optional S/S, 28-port 1000Base-X (SFP) +2*10 GBE (X2), no Power Supply
WS-C4948-S	4948, IPB S/W, 48-port 10/100/1000+4 SFP, 1 AC Power Supply
WS-C4948-E	4948, ES S/W 48-port 10/100/1000+4 SFP, 1 AC Power Supply
WS-C4948	4948, Optional S/W, 48-port 10/100/1000+4 SFP no Power Supply

Product Overview (continued)

Product Number	Product Description
Catalyst 4900 Transceiver Modules	
GLC-T	1000BASE-T SFP
GLC-SX-MM	GBE SFP, LC Connector SX Transceiver
GLC-LH-SM	GBE SFP, LC Connector LX/LH Transceiver
GLC-BX-D	1000BASE-BX SFP, 1490 nm
GLC-BX-U	1000BASE-BX SFP, 1310 nm
GLC-ZX-SM	1000BASE-ZX SFP
CWDM-SFP-1470=	CWDM 1470 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1490=	CWDM 1490 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1530=	CWDM 1530 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610 NM SFP Gigabit Ethernet and 1G/2G FC
X2-10GB-CX4	10GBASE-CX4 X2 Module
X2-10GB-ER	10GBASE-ER X2 Module
X2-10GB-ER=	10GBASE-ER X2 Module
X2-10GB-SR	10GBASE-SR X2 Module
X2-10GB-LX4	10GBASE-LX4 X2 Module
X2-10GB-LR	10GBASE-LR X2 Module
SFP-10G-SR	10GBASE-SR SFP+ Module
SFP-10G-LR	10GBASE-LR SFP+ Module
SFP-10G-ER	10GBASE-ER SFP+ Module
SFP-10G-LRM	10GBASE-LRM SFP+ Module
SFP-H10GB-CU1M	10GBASE-CU SFP+ Cable 1 Meter, Passive SFP+ Module
SFP-H10GB-CU3M	10GBASE-CU SFP+ Cable 3 Meter, Passive SFP+ Module
SFP-H10GB-CU5M	10GBASE-CU SFP+ Cable 5 Meter, Passive CX1 SFP+ Module
SFP-H10GB-ACU7M	10GBASE-CU SFP+ Cable 7 Meter, Active SFP+ Module
SFP-H10GB-ACU10M	10GBASE-CU SFP+ Cable 10 Meter, Active SFP+ Module
CVR-X2-SFP	TwinGig Converter Module
CVR-X2-SFP10G	OneX Converter Module

Product Overview (continued)

Product Number	Product Description
Catalyst 4900 Accessories	
PWR-C49E-300AC-R	4948E 300-Watt AC Power Supply
PWR-C49E-300AC-F	4948E-F 300-Watt AC Power Supply
PWR-C49-300DC-F	4948E-F 300-Watt DC Power Supply
PWR-C49M-1000AC	4900M AC Power Supply, 1000W
PWR-C49M-1000AC=	4900M AC Power Supply, 1000W
PWR-C49M-1000AC/2	Redundant AC Power Supply for 4900M
PWR-C49M-1000DC	4900M DC Power Supply
PWR-C49M-1000DC/2	4900M DC Power Supply Redundant
PWR-C49-300AC	4948 300-Watt AC Power Supply
PWR-C49-300AC=	4948 300-Watt AC Power Supply (Spare)
PWR-C49-300AC/2	4948 300-Watt AC Power Supply Redundant
PWR-C49-300DC	4900 300-Watt DC Power Supply
PWR-C49-300DC=	4900 300-Watt DC Power Supply (Spare)
PWR-C49-300DC/2	4900 300-Watt DC Power Supply Redundant
WS-X4993-F	4900E-F Fan Tray
WS-X4992=	4900M Fan Tray (Spare)
WS-X4991=	4948 Fan Tray (Spare)
C4948-ACC-KIT=	4900 Spare Accessory Kit
C4948-BKT-KIT=	4900 Front and Rear Mount Brackets



Cisco Catalyst 3750-X Series

The Cisco Catalyst 3750-X Series Switches are an enterprise-class lines of stackable switches. These switches provide high availability, scalability, security, energy efficiency, and ease of operation with innovative features such as Cisco StackPower, IEEE 802.3at Power over Ethernet Plus (PoE+) configurations, four optional network modules, redundant power supplies, and Media Access Control Security (MACsec) features. The Cisco Catalyst 3750-X Series with StackWise® Plus technology provides scalability, ease of management and investment protection for the evolving business needs. The Cisco Catalyst 3750-X enhances productivity by enabling applications such as IP telephony, wireless, and video for borderless network experience.

Key Features

- 24 and 48 10/100/1000 PoE+, non-PoE models, and 12 and 24 GE SFP port models
- Four optional uplink network modules with GE or 10GE ports
- Industry first PoE+ with 30W power on all ports in 1 rack unit (RU) form factor
- Dual redundant, modular power supplies and fans
- Media Access Control 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, 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 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

Hardware Features

	WS-C3750X-24T	WS-C3750X-48T
Switching Fabric (Gbps)	160	160
Maximum Stack Members	9	9
Clustering	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
Total Bandwidth of Stack (Gbps)	64	64
Packets per Second per Box (Mpps)	65.5	101.2
MAC Addresses Supported	12,000	12,000
Routes Supported	11,000	11,000
Onboard Memory (DRAM MB)	256	256
10 GBE Density	2	2
Gigabit Ethernet GBIC/SFP Density	4	4
10 GBE XENPAK/X2Port Density	0	0
10/100/1000 Density	24	48
10/100 Density	0	0
100BASE-FX Density	0	0
Maximum Watt Power Consumption (100% Forwarding without PoE Load)	93.5	120
PoE+: Maximum 802.3at devices (30W)	0	0
PoE: Maximum 802.3af Class 3 Devices (15.4W)	0	0
PoE: Maximum 802.3af Class 2 Devices (7.3W)	0	0
AC/DC Support	AC and DC Available	AC and DC Available
Redundant Power Supply Support	Yes	Yes
Dimensions (H x W x D) Inches	1.75 x 17.5 x 18.0	1.75 x 17.5 x 18.0
Dimensions (H x W x D) Centimeters	4.45 x 44.5 x 46.0	4.45 x 44.5 x 46.0
Unit Weight Pounds (Kilograms)	15.6 (71)	16.3 (74)

WS-C3750X-24P	WS-C3750X-48P	WS-C3750X-48PF
160	160	160
9	9	9
Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
64	64	64
65.5	101.2	101.2
12,000	12,000	12,000
11,000	11,000	11,000
256	256	256
2	2	2
4	4	4
0	0	0
24	48	48
0	0	0
0	0	0
99.3	133.9	137.2
24	48	48
24	48	48
24	48	48
AC and DC Available	AC and DC Available	AC and DC Available
Yes	Yes	Yes
1.75 x 17.5 x 18.0	1.75 x 17.5 x 18.0	1.75 x 17.5 x 19.5
4.45 x 44.5 x 46.0	4.45 x 44.5 x 46.0	4.45 x 44.5 x 49.5
15.8 (72)	16.5 (75)	16.7 (76)

For further information on the Cisco Catalyst 3750 Metro Ethernet Series, go to: <http://www.cisco.com/en/US/partner/products/hw/switches/ps5532/index.html>

Cisco Catalyst 3750-X Spotlight

Cisco StackPower Technology

The Cisco Catalyst 3750-X Series introduces Cisco StackPower technology, an innovative power interconnect system that allows the power supplies in a stack to be shared as a common resource among all the switches. Cisco StackPower unifies the individual power supplies installed in the switches and creates a pool of power, directing that power where it is needed. This feature is available in all Cisco Catalyst 3750-X Series Switches feature sets*. Up to four switches can be configured in a StackPower stack with the special connector at the back of the switch using the StackPower cable**. StackPower can be deployed in either power sharing mode or redundancy mode. In power sharing mode, the power of all the power supplies in the stack is aggregated and distributed among the switches in the stack. In redundant mode, when the total power budget of the stack is calculated, the wattage of the largest power supply is not included. That power is held in reserve and used to maintain power to switches and attached devices when one power supply fails, enabling the network to operate without interruption. StackPower eliminates the need for an external redundant power system or installation of dual power supplies in all the stack members.

* Available in LAN Base in the 15.0(2)SE software release

** For LAN Base, cables need to be purchased separately

Service Module

The new Cisco Service Module offers enhanced security and Flexible Netflow (FNF) features on the uplink ports of the Catalyst 3750-X and 3560-X. The service module is supported with IP Base or IP Services feature set. It can be used with SFP or SFP+ at 1G or 10G speeds. The new Cisco Service Module has custom dedicated hardware for FNF monitoring, separate from the dedicated hardware for MACSec. Therefore there is no impact on packet forwarding performance & latency. It offers flexibility with the user being able to define flows. The new Cisco Service Module enables the following services:

- Line rate (40G) Flexible NetFlow for Network Monitoring and Security Anomaly Detection
 - Supported version 9
 - 32,000 simultaneous flows
 - 128 of simultaneous active monitors
- Line rate (40G) MACsec encryption (please refer to MACsec section below)

FNF is a networking monitoring technology. A NetFlow table can be used to collect flow statistics. The flow information can be used by customers for a variety of use cases like understanding:

1. Applications running on the network, and identify undesired applications, P2P etc
2. Granular Local and aggregated Campus view (Top N applications, drill down etc).
3. Top talkers (ports, users, applications) for application usage, productivity and asset utilization etc.
4. Security Anomaly Detection by examining flows that do not traverse trust boundaries for inside the perimeter attacks
5. Impacts of network and application changes
6. Compliance conformation
7. Traffic patterns for capacity planning

Enabling FNF at the access switch ensures you get all flows. The access switch is the most logical place in the network for collecting statistics and monitoring all flows. With Netflow, you can obtain MAC-address and access port information associated with the flow, to get directly to the source of the flow. Most collectors are able to leverage the location based on MAC-address and interface port number provided by the access switch to the collector. Thus by enabling FNF at the access switch you are able to get the location information of the flow. The access switch has a variety of identity mechanism for user authentication and adding user awareness is the natural progression that can be developed. Access switches are an order of magnitude greater than distribution and core which makes them scale well for FNF and ensure there are no performance impacts of oversubscription at aggregation and core.

10GB-T Module

The new Cisco 10G Base-T module is hot-swappable and can operate at either 10GE or GE speed (with manual configuration).

MACsec

The Cisco Catalyst 3750-X Series Switches offer exceptional security with integrated hardware support for MACsec defined in IEEE 802.1AE. MACsec provides MAC layer encryption over wired networks using out-of-band methods for encryption keying. The MACsec Key Agreement (MKA) protocol provides the required session keys and manages the keys required for encryption when configured. MKA and MACsec are implemented following successful authentication using 802.1x Extensible Authentication Protocol (EAP) framework. In Cisco Catalyst 3750-X and 3560-X Series Switches both the user/down-link ports (links between the switch and endpoint devices such as a PC or IP phone) and, using the service module, the network/up-link ports can be secured using MACsec. With the service module you can encrypt switch to switch links such as access to distribution, or encrypt dark fiber links within a building or between buildings.

The three feature sets available with all Cisco Catalyst 3750-X Series Switches are:

- **LAN Base:** Enhanced Intelligent Services
- **IP Base:** Baseline Enterprise Services
- **IP Services:** Enterprise Services

The LAN Base feature set offers enhanced intelligent services that includes comprehensive Layer 2 features, with up-to 255 VLANs. The IP Base feature set provides baseline enterprise services in addition to all LAN Base features, with 1K VLANs. IP Base also includes the support for routed access, StackPower (available only on the Catalyst 3750-X), MACsec, and the new Cisco Service Module. The IP Services feature set provides full enterprise services that includes advanced Layer 3 features such as Enhanced Interior Gateway Routing Protocol (EIGRP), Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Protocol Independent Multicast (PIM), and IPv6 routing such as OSPFv3 and EIGRPv6. All software feature sets support advanced security, QoS, and management features.

The Cisco Catalyst 3750-X Series Switches with LAN Base feature set can only stack with other Cisco Catalyst 3750 X Series LAN Base switches. A mixed stack of LAN Base switch with IP Base or IP Services features set is not supported.

Customers can transparently upgrade the software feature set in the Cisco Catalyst 3750-X Series Switches through Cisco IOS® Software activation. Software activation authorizes and enables the Cisco IOS Software feature sets. A special file contained in the switch, called a license file, is examined by Cisco IOS Software when the switch is powered on. Based on the license's type, Cisco IOS Software activates the appropriate feature set. License types can be changed, or upgraded, to activate a different feature set. For detailed information about Software Activation, visit <http://www.cisco.com/go/sa>.

Product Overview

Product Number Product Description

Catalyst 3750-X Series

WS-C3750X-24T-L	Stackable 24 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, LAN Base Feature Set (Stackpower cable isn't included)
WS-C3750X-48T-L	Stackable 48 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, LAN Base Feature Set (Stackpower cable isn't included)
WS-C3750X-24P-L	Stackable 24 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, LAN Base Feature Set (Stackpower cable isn't included)
WS-C3750X-48P-L	Stackable 48 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, LAN Base Feature Set (Stackpower cable isn't included)
WS-C3750X-48PF-L	Stackable 48 10/100/1000 Ethernet PoE+ Ports, with 1100W AC Power Supply 1RU, LAN Base Feature Set
WS-C3750X-24T-S	Stackable 24 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, IP Base Feature Set
WS-C3750X-48T-S	Stackable 48 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, IP Base Feature Set
WS-C3750X-24P-S	Stackable 24 10/100/1000 Ethernet PoE+ ports, with 715W AC power supply 1RU, IP Base Feature Set
WS-C3750X-48P-S	Stackable 48 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, IP Base Feature Set
WS-C3750X-48PF-S	Stackable 48 10/100/1000 Ethernet PoE+ Ports, with 1100W AC Power Supply 1RU, IP Base Feature Set
WS-C3750X-24T-E	Stackable 24 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, IP Services Feature Set
WS-C3750X-48T-E	Stackable 48 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, IP Services Feature Set
WS-C3750X-24P-E	Stackable 24 10/100/1000 Ethernet PoE+ ports, with 715W AC Power Supply 1RU, IP Services Feature Set
WS-C3750X-48P-E	Stackable 48 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, IP Services Feature Set
WS-C3750X-48PF-E	Stackable 48 10/100/1000 Ethernet PoE+ Ports, with 1100W AC Power Supply 1RU, IP Services Feature Set

Network Modules for the Catalyst 3750-X Series

C3KX-NM-1G=	1G Network Module Spare
C3KX-NM-10G=	10G Network Module Spare
C3KX-NM-10GT=	10G-T network module spare
C3KX-SM-10G=	10G Service Module Spare
C3KX-NM-BLANK=	Network Module Blank Spare

Product Number	Product Description
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Power Supplies and Fan for the Catalyst 3750-X Series

C3KX-PWR-350WAC=	350W AC Power Supply
C3KX-PWR-715WAC=	715W AC Power Supply
C3KX-PWR-1100WAC=	1100W AC Power Supply
C3KX-PWR-440WDC=	440W DC Power Supply
C3KX-PWR-BLANK=	Power Supply Blank Spare
C3KX-FAN-23CFM=	Fan Module Spare

eXpandable Power System (XPS) for the Catalyst 3750-X Series

XPS-2200	eXpandable Power System 2200
CAB-XPS-58CM=	XPS Cable 58 cm Spare
CAB-XPS-150CM=	XPS Cable 150 cm Spare
XPS-2200-FAN=	XPS 2200 Fan Module Spare

StackWise and StackPower Cables

CAB-STACK-50CM=	Cisco StackWise 50 cm Stacking Cable
CAB-STACK-1M=	Cisco StackWise 1 m Stacking Cable
CAB-STACK-3M=	Cisco StackWise 3 m Stacking Cable
CAB-STACK-50CM-NH=	Cisco StackWise 50 cm Non-halogen Lead-free Stacking Cable
CAB-STACK-1M-NH=	Cisco StackWise 1 m Non-halogen Lead-free Stacking Cable
CAB-STACK-3M-NH=	Cisco StackWise 3 m Non-halogen Lead-free Stacking Cable
CAB-SPWR-30CM=	Catalyst 3750-X StackPower Cable 30 cm Spare
CAB-SPWR-150CM=	Catalyst 3750-X StackPower Cable 150 cm Spare

SFP+ Transceivers for Catalyst 3750-X Series

SFP-10G-LR=	10GBASE-LR SFP+ Module
SFP-10G-SR=	10GBASE-SR SFP+ Module
SFP-10G-LRM=	10GBASE-LRM SFP+ Module
SFP-10G-CX1=	10GBASE-CX1 SFP Module
SFP-10G-CX3=	10GBASE-CX3 SFP Module
SFP-10G-CX5=	10GBASE-CX5 SFP Module

SFP Transceivers for Catalyst 3750-X Series

GLC-GE-100FX=	100BASE-FX SFP on Gigabit Ethernet SFP Ports
GLC-LH-SM=	Gigabit Ethernet SFP, LC Connector LX/LH Transceiver
GLC-SX-MM=	Gigabit Ethernet SFP, LC Connector SX Transceiver

Product Overview (continued)

Product Number	Product Description
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SFP Transceivers for Catalyst 3750-X Series (continued)

GLC-T=	1000BASE-T SFP
GLC-ZX-SM=	1000BASE-ZX SFP
GLC-BX-D=	1000BASE-BX SFP, 1490 nm
GLC-BX-U=	1000BASE-BX SFP, 1310 nm
CWDM-SFP-1470=	Coarse Wavelength-division Multiplexing (CWDM) 1470 nm SFP Gigabit Ethernet and 1G/2G Fibre Channel (FC)
CWDM-SFP-1490=	CWDM 1490 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510 nm SFP Gigabit Ethernet and 1G/2G FC
GLC-GE-100FX=	100BASE-FX SFP on Gigabit Ethernet SFP Ports
GLC-LH-SM=	Gigabit Ethernet SFP, LC Connector LX/LH Transceiver
GLC-SX-MM=	Gigabit Ethernet SFP, LC Connector SX Transceiver
GLC-T=	1000BASE-T SFP
GLC-ZX-SM=	1000BASE-ZX SFP
GLC-BX-D=	1000BASE-BX SFP, 1490 nm
GLC-BX-U=	1000BASE-BX SFP, 1310 nm
CWDM-SFP-1470=	Coarse Wavelength-division Multiplexing (CWDM) 1470 nm SFP Gigabit Ethernet and 1G/2G Fibre Channel (FC)
CWDM-SFP-1490=	CWDM 1490 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1530=	CWDM 1530 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610 nm SFP Gigabit Ethernet and 1G/2G FC
DWDM-SFP-3033=	Dense Wavelength-division Multiplexing (DWDM) SFP 1530.33 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3112=	DWDM SFP 1531.12 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3190=	DWDM SFP 1531.90 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3268=	DWDM SFP 1532.68 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3425=	DWDM SFP 1534.25 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3504=	DWDM SFP 1535.04 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3582=	DWDM SFP 1535.82 nm SFP (100 GHz ITU Grid)

Product Number**Product Description****SFP Transceivers for Catalyst 3750-X Series (continued)**

DWDM-SFP-3661=	DWDM SFP 1536.61 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3819=	DWDM SFP 1538.19 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3898=	DWDM SFP 1538.98 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3977=	DWDM SFP 1539.77 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4056=	DWDM SFP 1540.56 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4214=	DWDM SFP 1542.14 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4294=	DWDM SFP 1542.94 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4373=	DWDM SFP 1543.73 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4453=	DWDM SFP 1544.53 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4612=	DWDM SFP 1546.12 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4692=	DWDM SFP 1546.92 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4772=	DWDM SFP 1547.72 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4851=	DWDM SFP 1548.51 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5012=	DWDM SFP 1550.12 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5092=	DWDM SFP 1550.92 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5172=	DWDM SFP 1551.72 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5252=	DWDM SFP 1552.52 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5413=	DWDM SFP 1554.13 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5494=	DWDM SFP 1554.94 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5575=	DWDM SFP 1555.75 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5655=	DWDM SFP 1556.55 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5817=	DWDM SFP 1558.17 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5898=	DWDM SFP 1558.98 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5979=	DWDM SFP 1559.79 nm SFP (100 GHz ITU Grid)
DWDM-SFP-6061=	DWDM SFP 1560.61 nm SFP (100 GHz ITU Grid)

Catalyst 3750-X Series Product Activation Keys

C3750X-LIC=	Product Activation Keys for 3750-X Series
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3750-X LAN Base to IP Base Upgrade License

C3750X-24-L-S=	C3750X-24 LAN Base to IP Base Paper License
C3750X-48-L-S=	C3750X-48 LAN Base to IP Base Paper License
L-C3750X-24-L-S=	C3750X-24 LAN Base to IP Base E-License
L-C3750X-48-L-S=	C3750X-48 LAN Base to IP Base E-License
LL-C3750X-24-L-S=	C3750X-24 LAN Base to IP Base E-License for Used Switch
LL-C3750X-48-L-S=	C3750X-48 LAN Base to IP Base E-License for Used Switch

Product Overview (continued)

Product Number **Product Description****3750-X IP Base to IP Services Upgrade**

C3750X-24-IOS-S-E	C3750X-24 IP Base to IP Services Factory IOS Upgrade
C3750X-48-IOS-S-E	C3750X-48 IP Base to IP Services Factory IOS Upgrade
C3750X-24-S-E=	C3750X-24 IP Base to IP Services Paper License
C3750X-48-S-E=	C3750X-48 IP Base to IP Services Paper License
L-C3750X-24-S-E=	C3750X-24 IP Base to IP Services E-License
L-C3750X-48-S-E=	C3750X-48 IP Base to IP Services E-License
LL-C3750X-24-S-E=	C3750X-24 IP Base to IP Services E-License for Used Switch
LL-C3750X-48-S-E=	C3750X-48 IP Base to IP Services E-License for Used Switch

3750-X LAN Base to IP Services Upgrade

C3750X-24-IOS-S-E	C3750X-24 IP Base to IP Services Factory IOS Upgrade
C3750X-48-IOS-S-E	C3750X-48 IP Base to IP Services Factory IOS Upgrade
C3750X-24-S-E=	C3750X-24 IP Base to IP Services Paper License
C3750X-48-S-E=	C3750X-48 IP Base to IP Services Paper License
L-C3750X-24-S-E=	C3750X-24 IP Base to IP Services E-License
L-C3750X-48-S-E=	C3750X-48 IP Base to IP Services E-License
LL-C3750X-24-S-E=	C3750X-24 IP Base to IP Services E-License for Used Switch

Spare Power Cords for the Catalyst 3750-X Series

CAB-3KX-AC=	AC Power Cord for Catalyst 3K-X (North America)
CAB-3KX-AC-AP=	AC Power Cord for Catalyst 3K-X (Australia)
CAB-3KX-AC-AR=	AC Power Cord for Catalyst 3K-X (Argentina)
CAB-3KX-AC-SW=	AC Power Cord for Catalyst 3K-X (Switzerland)
CAB-3KX-AC-UK=	AC Power Cord for Catalyst 3K-X (United Kingdom)
CAB-3KX-AC-JP=	AC Power Cord for Catalyst 3K-X (Japan)
CAB-3KX-AC-EU=	AC Power Cord for Catalyst 3K-X (Europe)
CAB-3KX-AC-IT=	AC Power Cord for Catalyst 3K-X (Italy)
CAB-3KX-AC-IN=	AC Power Cord for Catalyst 3K-X (India)
CAB-3KX-AC-CN=	AC Power Cord for Catalyst 3K-X (China)
CAB-3KX-AC-DN=	AC Power Cord for Catalyst 3K-X (Denmark)
CAB-3KX-AC-IS=	AC Power Cord for Catalyst 3K-X (Israel)

Spare Accessory and Rack-mount Kits for the Catalyst 3750-X Series

C3KX-ACC-KIT=	Accessory Kit for Catalyst 3750-X and 3560-X Series
C3KX-RACK-KIT=	Rack-mount Kit for Catalyst 3750-X and 3560-X Series



Cisco Catalyst 3750v2 Series

Fixed-configuration switches offering multilayer switching and Cisco StackWise™ technology for enterprise branch offices and mid-market organizations.

The Cisco Catalyst 3750v2 Series is an innovative line of multilayer Fast Ethernet switches featuring Cisco StackWise technology, a 32 Gbps stack interconnect that allows customers to build a unified, highly resilient switching system—one switch at a time.

Up to nine Catalyst 3750v2 Series switches can be stacked in any combination, enabling organizations to mix and match to meet specific requirements. Additional 10/100, and Power over Ethernet (PoE) connectivity can be deployed as necessary, offering a simple and cost-effective pay-as-you-go approach to network upgrades.

The Catalyst 3750v2 Series can be purchased with the IP Base or IP Services licenses. The IP Base license offers advanced QoS, rate-limiting, ACLs, and basic routing functionality. The IP Services license provides a richer set of enterprise-class features, including advanced hardware-based IP Unicast and IP Multicast routing as well as Policy-based Routing (PBR), IPv6 routing and advanced IP services.

Cisco Catalyst 3750v2 Series Spotlight

Cisco StackWise Technology

A unique stacking architecture, this technology is designed to respond to additions, deletions, and redeployment while maintaining constant performance. It unites up to nine individual Catalyst 3750V2 switches into a single logical unit, using special interconnect cables and stacking software. The stack is managed as a single switching unit controlled by a master switch elected from one of the member switches. The master switch automatically creates and updates all the switching and routing tables. A working stack can accept new members or delete old members without service interruption.

Addition of IP Communications

Cisco Catalyst 3750V2 Series PoE models support Cisco IP phones and Cisco Aironet® wireless LAN (WLAN) access points, as well as any IEEE 802.3af-compliant end device. The Catalyst 3750V2 24-port models can support 24 simultaneous full-powered PoE ports at 15.4W for maximum powered device support. The 48-port versions can deliver the necessary power to support 24 ports at 15.4W, 48 ports at 7.3W, or any combination in between.

Hardware Features

	WS-C3750V2-24TS	WS-C3750V2-48TS	WS-C3750V2-24PS	WS-C3750V2-48PS
Switching Fabric (Gbps)	32	32	32	32
Maximum Stack Members	9	9	9	9
Clustering	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
Total Bandwidth of Stack (Gbps)	32	32	32	32
Packets per Second per Box (Mpps)	6.5	13.1	6.5	13.1
MAC Addresses Supported	12,000	12,000	12,000	12,000
Routes Supported	11,000	11,000	11,000	11,000
Onboard Memory (DRAM MB)	128	128	128	128
10 GBE Density	0	0	0	0
Gigabit Ethernet GBIC/SFP Density	2	4	2	4
10 GBE XENPAK/X2 Port Density	0	0	0	0
10/100/1000 Density	0	0	0	0
10/100 Density	24	48	24	48
100BASE-FX Density	0	0	0	0
Maximum Watt Power Consumption	39	57	444	458
PoE: Maximum 802.3af Class 3 Devices (15.4W)	0	0	24	24
PoE: Maximum 802.3af Class 2 Devices (7.3W)	0	0	24	48
AC/DC Support	AC Only	AC Only		
Redundant Power Supply Support	Yes	Yes		
Dimensions (H x W x D) Inches	1.73 x 17.46 x 11.62	1.73 x 17.46 x 11.62		
Dimensions (H x W x D) Centimeters	4.4 x 44.3 x 29.5	4.4 x 44.3 x 29.5		
Unit Weight Pounds (Kilograms)	8.2 (3.7)	9.2 (4.2)		

Product Overview

Product Number Product Description

Catalyst 3750v2 Series 10/100 Workgroup Switches

WS-C3750V2-24FS-S	3750v2 24-port 100BaseFX + 2 SFP Standard Multilayer Image
WS-C3750V2-24PS-S	3750v2 24-port 10/100 PoE + 2 SFP Standard Image
WS-C3750V2-24PS-E	3750v2 24-port 10/100 PoE + 2 SFP Enhanced Image
WS-C3750V2-24TS-S	3750v2 24-port 10/100 + 2 SFP Standard Multilayer Image
WS-C3750V2-24TS-E	3750v2 24-port 10/100 + 2 SFP Enhanced Multilayer Image
WS-C3750V2-48PS-S	3750v2 48-port 10/100 PoE + 4 SFP Standard Image
WS-C3750V2-48PS-E	3750v2 48-port 10/100 PoE + 4 SFP Enhanced Image
WS-C3750V2-48TS-S	3750v2 48-port 10/100 + 4 SFP Standard Multilayer Image
WS-C3750V2-48TS-E	3750v2 48-port 10/100 + 4 SFP Enhanced Multilayer Image

Catalyst 3750 Series OADM Modules

CWDM-CHASSIS-2=	2-slot Chassis for CWDM Multiplexer Plug-in Modules
CWDM-MUX8A=	8-channel CWDM Multiplexer/Demultiplexer Module
CWDM-MUX-4-SF1=	Single Fiber 4-channel Multiplexer/Demultiplexer
CWDM-MUX-4-SF2=	Single Fiber 4-channel Multiplexer/Demultiplexer
CWDM-OADM1-1470=	Dual Single Channel OADM Module (1470 nm)
CWDM-OADM1-1490=	Dual Single Channel OADM Module (1490 nm)
CWDM-OADM1-1510=	Dual Single Channel OADM Module (1510 nm)
CWDM-OADM1-1530=	Dual Single Channel OADM Module (1530 nm)
CWDM-OADM1-1550=	Dual Single Channel OADM Module (1550 nm)
CWDM-OADM1-1570=	Dual Single Channel OADM Module (1570 nm)
CWDM-OADM1-1590=	Dual Single Channel OADM Module (1590 nm)
CWDM-OADM1-1610=	Dual Single Channel OADM Module (1610 nm)
CWDM-OADM4-1=	4-channel CWDM OADM Module (1470, 1490, 1510, 1530)
CWDM-OADM4-2=	4-channel CWDM OADM Module (1550, 1570, 1590, 16100)
WDM-SFP-2CH-CONV=	2-channel WDM SFP-based Transponder
WDM-1300-1550-S=	1300 nm/1550 nm WDM Splitter Cable
EWDM-MUX8=	8-channel EWDM Multiplexer/Demultiplexer Module
EWDM-OADM4=	4-channel EWDM OADM Module
EWDM-OADM2=	2-channel EWDM OADM Module
EWDM-OA=	EWDM Optical Amplifier

Product Overview (continued)

Product Number Product Description

IOS Upgrades for the Catalyst 3750v2

CD-3750-EMI=	IP Services Upgrade for the Cisco Catalyst 3750 v2 Series Switches
CD-3750G-EMI=	Enhanced Multilayer Image Upgrade for 24-port 3750 GE Models
CD-3750G-48EMI=	Enhanced Multilayer Image Upgrade for 48-port 3750 GE Models

Cisco StackWise Cables for the Catalyst 3750

CAB-STACK-50CM=	Cisco StackWise 50 cm Stacking Cable
CAB-STACK-1M	Cisco StackWise 1M Stacking Cable
CAB-STACK-1M=	Cisco StackWise 1M Stacking Cable
CAB-STACK-3M	Cisco StackWise 3M Stacking Cable
CAB-STACK-3M=	Cisco StackWise 3M Stacking Cable
CAB-STACK-50CM-NH	Cisco StackWise 50 cm Non-Halogen Lead-free Stacking Cable
CAB-STACK-50CM-NH=	Cisco StackWise 50 cm Non-Halogen Lead-free Stacking Cable
CAB-STACK-1M-NH	Cisco StackWise 1M Non-Halogen Lead-free Stacking Cable
CAB-STACK-1M-NH=	Cisco StackWise 1M Non-Halogen Lead-free Stacking Cable
CAB-STACK-3M-NH	Cisco StackWise 3M Non-Halogen Lead-free Stacking Cable
CAB-STACK-3M-NH=	Cisco StackWise 3M Non-Halogen Lead-free Stacking Cable

SFPs for the Catalyst 3750

GLC-GE-100FX=	100BASE-FX SFP for GE SFP port on 3750v2, 3560v2, 2970, 2960
GLC-LH-SM=	GE SFP, LC Connector LX/LH Transceiver
GLC-SX-MM=	GE SFP, LC Connector SX Transceiver
GLC-T=	1000BASE-T SFP
GLC-ZX-SM=	1000BASE-ZX SFP
CWDM-SFP-1470=	CWDM 1470 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1490=	CWDM 1490 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1530=	CWDM 1530 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610 nm SFP Gigabit Ethernet and 1G/2G FC
DWDM-SFP-3033=	DWDM SFP 1530.33 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3112=	DWDM SFP 1531.12 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3190=	DWDM SFP 1531.90 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3268=	DWDM SFP 1532.68 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3425=	DWDM SFP 1534.25 nm SFP (100 GHz ITU Grid)

Product Number	Product Description
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SFPs for the Catalyst 3750 (continued)

DWDM-SFP-3504=	DWDM SFP 1535.04 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3582=	DWDM SFP 1535.82 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3661=	DWDM SFP 1536.61 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3819=	DWDM SFP 1538.19 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3898=	DWDM SFP 1538.98 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3977=	DWDM SFP 1539.77 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4056=	DWDM SFP 1540.56 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4214=	DWDM SFP 1542.14 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4294=	DWDM SFP 1542.94 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4373=	DWDM SFP 1543.73 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4453=	DWDM SFP 1544.53 AWG SFP (100 GHz ITU Grid)

XENPAKs for the Catalyst 3750

C3-XENPAK10GB-LR=	10GBASE-LR XENPAK Module
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LC to SC Cables for the Catalyst 3750

CSS5-CABLX-LCSC=	CSS11500 10-meter Fiber Single-mode LX LC-to-SC Connectors
CSS5-CABSX-LC=	CSS11500 10-meter Fiber Multimode SX LC Connectors
CSS5-CABSX-LCSC=	CSS11500 10-meter Fiber Multimode SX LC-to-SC Connectors

Right Angle Power Cords for the Catalyst 3750

CAB-AC-RA=	Power Cord, Right Angle
CAB-AC-RA	Power Cord, 110V, Right Angle
CAB-ACA-RA=	Power Cord, Australia, Right Angle
CAB-ACC-RA=	Power Cord, China, Right Angle
CAB-ACE-RA=	Power Cord, Europe, Right Angle
CAB-ACI-RA=	Power Cord, Italy, Right Angle
CAB-ACR-RA=	Power Cord, Argentina, Right Angle
CAB-ACS-RA=	Power Cord, Switzerland, Right Angle
CAB-ACU-RA=	Power Cord, UK, Right Angle
CAB-JPN-RA=	Power Cord, Japan, Right Angle
CAB-JPN-RA	Power Cord, Japan, Right Angle

Product Overview (continued)

Product Number	Product Description
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RPS for the Catalyst 3750

PWR-RPS2300	Cisco RPS 2300 with One Connector Cable
CAB-RPS2300-E=	Spare RPS 2300 Cable for Cisco Catalyst 3560v2, 3750v2, and 2960 PoE Series Switches
C3K-PWR-750WAC=	Spare 750WAC Power Supply for the RPS 2300
C3K-PWR-1150WAC=	Spare 1150WAC Power Supply for the RPS 2300

Spare Rack-mount Kits for the Catalyst 3750

RCKMNT-1RU=	1RU Rack-mount Kit for 3750v2, 3560v2, 3550, 2900-LRE-XL
RCKMNT-REC-1RU=	Recessed 1RU Rack-mount for 3550, 3560, 3750

LC to SC Cables for the Catalyst 3750 Metro

CSS5-CABLX-LCSC=	CSS11500 10-meter Fiber Single-mode LX LC-to-SC Connectors
CSS5-CABSX-LC=	CSS11500 10-meter Fiber Multimode SX LC Connectors
CSS5-CABSX-LCSC=	CSS11500 10-meter Fiber Multimode SX LC-to-SC Connectors

Spare Rack-mount Kits for the Catalyst 3750 Metro

19INCH-BRKT-1RU=	19-inch Brackets for Mounting 1RU Catalyst Switches
RCKMNT-1RU=	1RU Rack-mount Kit for 3750, 3560, 3550, 2900-LRE-XL
RCKMNT-REC-1RU=	Recessed 1RU Rack-mount For 3550, 3560, 3750



Cisco Catalyst 3560-X Series

The Cisco Catalyst 3560-X Series Switches are an enterprise-class lines 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, four optional network modules, redundant power supplies, and Media Access Control Security (MACsec) features. The Cisco Catalyst 3560-X Series provides ease of management and investment protection for the evolving business needs. The Cisco Catalyst 3560-X enhances productivity by enabling applications such as IP telephony, wireless, and video for borderless network experience.

Key Features

- 24 and 48 10/100/1000 PoE+, non-PoE models, and 12 and 24 GE SFP port models
- Four optional uplink network modules with GE or 10GE ports
- Industry first PoE+ with 30W power on all ports in 1 rack unit (RU) form factor
- Dual redundant, modular power supplies and fans
- Media Access Control 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, 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 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

Hardware Features

	WS-C3560X-24T	WS-C3560X-48T
Switching Fabric (Gbps)	160	160
Maximum Stack Members	0	0
Clustering	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
Total Bandwidth of Stack (Gbps)	0	0
Packets per Second per Box (Mpps)	65.5	101.2
MAC Addresses Supported	12,000	12,000
Routes Supported	11,000	11,000
Onboard Memory (DRAM MB)	256	256
10 GBE Density	2	2
Gigabit Ethernet GBIC/SFP Density	4	4
10 GBE XENPAK/X2 Port Density	0	0
10/100/1000 Density	24	48
10/100 Density	0	0
100BASE-FX Density	0	0
Maximum Watt Power Consumption (100% Forwarding without PoE Load)	93.5	120.4
PoE+: Maximum 802.3at Devices (30W)	0	0
PoE: Maximum 802.3af Class 3 Devices (15.4W)	0	0
PoE: Maximum 802.3af Class 2 Devices (7.3W)	0	0
AC/DC Support	AC and DC Available	AC and DC Available
Redundant Power Supply Support	Yes	Yes
Dimensions (H x W x D) Inches	1.75 x 17.5 x 18.0	1.75 x 17.5 x 18.0
Dimensions (H x W x D) Centimeters	4.45 x 44.5 x 46.0	4.45 x 44.5 x 46.0
Unit Weight Pounds (Kilograms)	15.4 (70)	16.1 (73)

WS-C3560X-24P	WS-C3560X-48P	WS-C3560X-48PF
160	160	160
0	0	0
Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
0	0	0
65.5	101.2	101.2
12,000	12,000	12,000
11,000	11,000	11,000
256	256	256
2	2	2
4	4	4
0	0	0
24	48	48
0	0	0
0	0	0
99.3	133.9	137.2
24	48	48
24	48	48
24	48	48
AC and DC Available	AC and DC Available	AC and DC Available
Yes	Yes	Yes
1.75 x 175 x 18.0	1.75 x 175 x 18.0	1.75 x 175 x 19.5
4.45 x 44.5 x 46.0	4.45 x 44.5 x 46.0	4.45 x 44.5 x 49.5
15.7 (71)	16.4 (74)	16.6 (75)

For further information on the Cisco Catalyst 3750 Metro Ethernet Series, go to:
<http://www.cisco.com/en/US/partner/products/hw/switches/ps5532/index.html>

Cisco Catalyst 3560-X Spotlight

Service Module

The new Cisco Service Module offers enhanced security and Flexible Netflow (FNF) features on the uplink ports of the Catalyst 3750-X and 3560-X. The service module is supported with IP Base or IP Services feature set. It can be used with SFP or SFP+ at 1G or 10G speeds. The new Cisco Service Module has custom dedicated hardware for FNF monitoring, separate from the dedicated hardware for MACsec. Therefore there is no impact on packet forwarding performance & latency. It offers flexibility with the user being able to define flows. The new Cisco Service Module enables the following services:

- Line rate (40G) Flexible NetFlow for Network Monitoring and Security Anomaly Detection
- Supported version 9
- 32,000 simultaneous flows
- 128 of simultaneous active monitors
- Line rate (40G) MACsec encryption (please refer to MACsec section below)

FNF is a networking monitoring technology. A NetFlow table can be used to collect flow statistics. The flow information can be used by customers for a variety of use cases like understanding:

1. Applications running on the network, and identify undesired applications, P2P etc
2. Granular Local and aggregated Campus view (Top N applications, drill down etc).
3. Top talkers (ports, users, applications) for application usage, productivity and asset utilization etc.
4. Security Anomaly Detection by examining flows that do not traverse trust boundaries for inside the perimeter attacks
5. Impacts of network and application changes
6. Compliance conformation
7. Traffic patterns for capacity planning

Enabling FNF at the access switch ensures you get all flows. The access switch is the most logical

place in the network for collecting statistics and monitoring all flows. With Netflow, you can obtain MAC-address and access port information associated with the flow, to get directly to the source of the flow. Most collectors are able to leverage the location based on MAC-address and interface port number provided by the access switch to the collector. Thus by enabling FNF at the access switch you are able to get the location information of the flow. The access switch has a variety of identity mechanism for user authentication and adding user awareness is the natural progression that can be developed. Access switches are an order of magnitude greater than distribution and core which makes them scale well for FNF and ensure there are no performance impacts of oversubscription at aggregation and core.

10GB-T Module

The new Cisco 10G Base-T module is hot-swappable and can operate at either 10GE or GE speed (with manual configuration).

MACsec

The Cisco Catalyst 3560-X Series Switches offer exceptional security with integrated hardware support for MACsec defined in IEEE 802.1AE. MACsec provides MAC layer encryption over wired networks using out-of-band methods for encryption keying. The MACsec Key Agreement (MKA) protocol provides the required session keys and manages the keys required for encryption when configured. MKA and MACsec are implemented following successful authentication using 802.1x Extensible Authentication Protocol (EAP) framework. In Cisco Catalyst 3560-X Series Switches both the user/down-link ports (links between the switch and endpoint devices such as a PC or IP phone) and, using the service module, the network/up-link ports can be secured using MACsec. With the service module you can encrypt switch to switch links such as access to distribution, or encrypt dark fiber links within a building or between buildings.

Software Features

The three feature sets available with all Cisco Catalyst 3560-X Series Switches are:

- **LAN Base:** Enhanced Intelligent Services
- **IP Base:** Baseline Enterprise Services
- **IP Services:** Enterprise Services

The LAN Base feature set offers enhanced intelligent services that includes comprehensive Layer 2 features, with up-to 255 VLANs. The IP Base feature set provides baseline enterprise services in addition to all LAN Base features, with 1K VLANs. IP Base also includes the support for routed access, MACsec, and the new Cisco Service Module. The IP Services feature set provides full enterprise services that includes advanced Layer 3 features such as Enhanced Interior Gateway Routing Protocol (EIGRP), Open Shortest Path First (OSPF), Border Gateway Protocol (BGP), Protocol Independent Multicast (PIM), and IPv6 routing such as OSPFv3 and EIGRPv6. All software feature sets support advanced security, QoS, and management features.

Customers can transparently upgrade the software feature set in the Cisco Catalyst 3560-X Series Switches through Cisco IOS® Software activation. Software activation authorizes and enables the Cisco IOS Software feature sets. A special file contained in the switch, called a license file, is examined by Cisco IOS Software when the switch is powered on. Based on the license's type, Cisco IOS Software activates the appropriate feature set. License types can be changed, or upgraded, to activate a different feature set. For detailed information about Software Activation, visit <http://www.cisco.com/go/sa>.

Product Overview

Product Number	Product Description
Catalyst 3560-X Series	
WS-C3560X-24T-L	Standalone 24 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, LAN Base Feature Set
WS-C3560X-48T-L	Standalone 48 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, LAN Base Feature Set
WS-C3560X-24P-L	Standalone 24 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, LAN Base Feature Set
WS-C3560X-48P-L	Standalone 48 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, LAN Base Feature Set
WS-C3560X-48P-L	Standalone 48 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, LAN Base Feature Set
WS-C3560X-48PF-L	Standalone 48 10/100/1000 Ethernet PoE+ Ports, with 1100W AC Power Supply 1RU, LAN Base Feature Set
WS-C3560X-24T-S	Standalone 24 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, IP Base Feature Set
WS-C3560X-48T-S	Standalone 48 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, IP Base Feature Set
WS-C3560X-24P-S	Standalone 24 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, IP Base Feature Set
WS-C3560X-48P-S	Standalone 48 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, IP Base Feature Set
WS-C3560X-48PF-S	Standalone 48 10/100/1000 Ethernet PoE+ Ports, with 1100W AC Power Supply 1RU, IP Base Feature Set
WS-C3560X-24T-E	Standalone 24 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, IP Services Feature Set
WS-C3560X-48T-E	Standalone 48 10/100/1000 Ethernet Ports, with 350W AC Power Supply 1RU, IP Services Feature Set
WS-C3560X-24P-E	Standalone 24 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, IP Services Feature Set
WS-C3560X-48P-E	Standalone 48 10/100/1000 Ethernet PoE+ Ports, with 715W AC Power Supply 1RU, IP Services Feature Set
WS-C3560X-48PF-E	Standalone 48 10/100/1000 Ethernet PoE+ Ports, with 1100W AC Power Supply 1RU, IP Services Feature Set
Network Modules for the Catalyst 3560-X Series	
C3KX-NM-1G=	1G Network Module Spare
C3KX-NM-10G=	10G Network Module Spare
C3KX-NM-10GT=	10G-T network module spare
C3KX-SM-10G=	10G Service Module Spare
C3KX-NM-BLANK=	Network Module Blank Spare

Product Number	Product Description
Power Supplies and Fan for the Catalyst 3560-X Series	
C3KX-PWR-350WAC=	350W AC Power Supply
C3KX-PWR-715WAC=	715W AC Power Supply
C3KX-PWR-1100WAC=	1100W AC Power Supply
C3KX-PWR-440WDC=	440W DC Power Supply
C3KX-PS-BLANK=	Power Supply Blank Spare
C3KX-FAN-23CFM=	Fan Module Spare

eXpandable Power System (XPS) for the Catalyst 3560-X Series	
XPS-2200	eXpandable Power System 2200
CAB-XPS-58CM=	XPS Cable 58 cm Spare
CAB-XPS-150CM=	XPS Cable 150 cm Spare
XPS-2200-FAN=	XPS 2200 Fan Module Spare

SFP+ Transceivers for Catalyst 3560-X Series	
SFP-10G-LR=	10GBASE-LR SFP+ Module
SFP-10G-SR=	10GBASE-SR SFP+ Module
SFP-10G-LRM=	10GBASE-LRM SFP+ Module
SFP-H10GB-CU1M=	10GBASE-CX1 SFP Module
SFP-H10GB-CU3M=	10GBASE-CX3 SFP Module
SFP-H10GB-CU5M=	10GBASE-CX5 SFP Module

SFP Transceivers for Catalyst 3560-X Series	
GLC-GE-100FX=	100BASE-FX SFP on Gigabit Ethernet SFP Ports
GLC-LH-SM=	Gigabit Ethernet SFP, LC Connector LX/LH Transceiver
GLC-SX-MM=	Gigabit Ethernet SFP, LC Connector SX Transceiver
GLC-T=	1000BASE-T SFP
GLC-ZX-SM=	1000BASE-ZX SFP
GLC-BX-D=	1000BASE-BX SFP, 1490 nm
GLC-BX-U=	1000BASE-BX SFP, 1310 nm
CWDM-SFP-1470=	Coarse Wavelength-division Multiplexing (CWDM) 1470 nm SFP Gigabit Ethernet and 1G/2G Fibre Channel (FC)
CWDM-SFP-1490=	CWDM 1490 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510 nm SFP Gigabit Ethernet and 1G/2G FC

Product Overview (continued)

Product Number	Product Description
SFP Transceivers for Catalyst 3560-X Series (continued)	
CWDM-SFP-1530=	CWDM 1530 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610 nm SFP Gigabit Ethernet and 1G/2G FC
DWDM-SFP-3033=	Dense Wavelength-division Multiplexing (DWDM) SFP 1530.33 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3112=	DWDM SFP 1531.12 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3190=	DWDM SFP 1531.90 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3268=	DWDM SFP 1532.68 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3425=	DWDM SFP 1534.25 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3504=	DWDM SFP 1535.04 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3582=	DWDM SFP 1535.82 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3661=	DWDM SFP 1536.61 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3819=	DWDM SFP 1538.19 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3898=	DWDM SFP 1538.98 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3977=	DWDM SFP 1539.77 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4056=	DWDM SFP 1540.56 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4214=	DWDM SFP 1542.14 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4294=	DWDM SFP 1542.94 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4373=	DWDM SFP 1543.73 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4453=	DWDM SFP 1544.53 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4612=	DWDM SFP 1546.12 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4692=	DWDM SFP 1546.92 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4772=	DWDM SFP 1547.72 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4851=	DWDM FP 1548.51 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5012=	DWDM SFP 1550.12 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5092=	DWDM SFP 1550.92 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5172=	DWDM SFP 1551.72 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5252=	DWDM SFP 1552.52 nm SFP (100 GHz ITU Grid)

Product Number	Product Description
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SFP Transceivers for Catalyst 3560-X Series (continued)

DWDM-SFP-5413=	DWDM SFP 1554.13 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5494=	DWDM SFP 1554.94 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5575=	DWDM SFP 1555.75 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5655=	DWDM SFP 1556.55 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5817=	DWDM SFP 1558.17 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5898=	DWDM SFP 1558.98 nm SFP (100 GHz ITU Grid)
DWDM-SFP-5979=	DWDM SFP 1559.79 nm SFP (100 GHz ITU Grid)
DWDM-SFP-6061=	DWDM SFP 1560.61 nm SFP (100 GHz ITU Grid)

Catalyst 3560-X Series Product Activation Keys

C3560X-LIC=	Product Activation Keys for 3560-X Series
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3560-X LAN Base to IP Base Upgrade License

C3560X-24-L-S=	C3560X-24 LAN Base to IP Base Paper License
C3560X-48-L-S=	C3560X-48 LAN Base to IP Base Paper License
L-C3560X-24-L-S=	C3560X-24 LAN Base to IP Base E-License
L-C3560X-48-L-S=	C3560X-48 LAN Base to IP Base E-License
LL-C3560X-24-L-S=	C3560X-24 LAN Base to IP Base E-License for Used Switch
LL-C3560X-48-L-S=	C3560X-48 LAN Base to IP Base E-License for Used Switch

3560-X IP Base to IP Services Upgrade

C3560X-24-IOS-S-E	C3560X-24 IP Base to IP Services Factory IOS Upgrade
C3560X-48-IOS-S-E	C3560X-48 IP Base to IP Services Factory IOS Upgrade
C3560X-24-S-E=	C3560X-24 IP Base to IP Services Paper License
C3560X-48-S-E=	C3560X-48 IP Base to IP Services Paper License
L-C3560X-24-S-E=	C3560X-24 IP Base to IP Services E-License
L-C3560X-48-S-E=	C3560X-48 IP Base to IP Services E-License
LL-C3560X-24-S-E=	C3560X-24 IP Base to IP Services E-License for Used Switch
LL-C3560X-48-S-E=	C3560X-48 IP Base to IP Services E-License for Used Switch

Product Overview (continued)

Product Number	Product Description
3560-X LAN Base to IP Services Upgrade	
C3560X-24-L-E=	C3560X-24 LAN Base to IP Services Paper License
C3560X-48-L-E=	C3560X-48 LAN Base to IP Services Paper License
L-C3560X-24-L-E=	C3560X-24 LAN Base to IP Services E-License
L-C3560X-48-L-E=	C3560X-48 LAN Base to IP Services E-License
LL-C3560X-24-L-E=	C3560X-24 LAN Base to IP Services E-License for Used Switch
LL-C3560X-48-L-E=	C3560X-48 LAN Base to IP Services E-License for Used Switch

Spare Power Cords for the Catalyst 3560-X Series

CAB-3KX-AC=	AC Power Cord for Catalyst 3K-X (North America)
CAB-3KX-AC-AP=	AC Power Cord for Catalyst 3K-X (Australia)
CAB-3KX-AC-AR=	AC Power Cord for Catalyst 3K-X (Argentina)
CAB-3KX-AC-SW=	AC Power Cord for Catalyst 3K-X (Switzerland)
CAB-3KX-AC-UK=	AC Power Cord for Catalyst 3K-X (United Kingdom)
CAB-3KX-AC-JP=	AC Power Cord for Catalyst 3K-X (Japan)
CAB-3KX-AC-EU=	AC Power Cord for Catalyst 3K-X (Europe)
CAB-3KX-AC-IT=	AC Power Cord for Catalyst 3K-X (Italy)
CAB-3KX-AC-IN=	AC Power Cord for Catalyst 3K-X (India)
CAB-3KX-AC-CN=	AC Power Cord for Catalyst 3K-X (China)
CAB-3KX-AC-DN=	AC Power Cord for Catalyst 3K-X (Denmark)
CAB-3KX-AC-IS=	AC Power Cord for Catalyst 3K-X (Israel)

Spare Accessory and Rack-mount Kits for the Catalyst 3560-X Series

C3KX-ACC-KIT=	Accessory Kit for Catalyst 3750-X and 3560-X Series
C3KX-RACK-KIT=	Rack-mount Kit for Catalyst 3750-X and 3560-X Series



Cisco Catalyst 3560V2 Series

Fixed-configuration switches combining Fast Ethernet connectivity and PoE for small enterprise LAN access and branch office deployments.

The Cisco Catalyst 3560V2 Series combines multilayer Fast Ethernet switching with integrated Power over Ethernet (PoE), simplifying the deployment of converged IP telephony, wireless access, video surveillance, and other new applications.

These standalone, fixed-configuration switches offer up to 48 10/100/1000 ports and support network-wide intelligent services such as advanced quality of service (QoS), rate limiting, access control lists (ACLs), multicast management, and high-performance IP routing.

The Catalyst 3560V2 Series can be purchased with the IP Base or IP Services license preinstalled. The IP Base license offers advanced QoS, rate-limiting, ACLs, and basic routing functionality. The IP Services license provides a richer set of enterprise-class features, including advanced hardware-based IP Unicast and IP Multicast routing as well as Policy-based Routing (PBR), IPv6 routing and advanced IP services.

Cisco Catalyst 3560 Series Spotlight

Advanced Services

Cisco Catalyst 3560V2 Series supports Cisco EnergyWise, which is a technology that enables monitoring, reporting, and management of energy consumption by end devices that are EnergyWise enabled. This technology enables companies to reduce their energy costs and carbon footprints. PoE removes the cost of extending wall power to each IP phone, wireless access point, or other PoE devices.

Integrated Security

With a wide range of security features, businesses can protect important information, keep unauthorized people off the network, prevent malicious viruses and worms from infecting the network, guard privacy, and maintain uninterrupted operation. Cisco Network Admission Control (NAC) helps implement network-wide security policies by validating the security posture of hosts seeking to connect to the network. Cisco Identity-based Network Services (IBNS) prevents unauthorized access and helps ensure that users get only their designated privileges. And features like DHCP Snooping, Dynamic ARP Inspection, and IP Source Guard help prevent against man-in-the-middle attacks.

Hardware Features

	WS-C3560V2-24TS	WS-C3560V2-48TS	WS-C3560V2-24PS	WS-C3560V2-48PS	WS-3560V2-24TS-SD
Switching Fabric (Gbps)	32	32	32	32	32
Maximum Stack Members	0	0	0	0	0
Clustering	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
Total Bandwidth of Stack (Gbps)	0	0	0	0	0
Packets per Second per Box (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 MB)	128	128	128	128	128
10 GBE Density	0	0	0	0	0
Gigabit Ethernet GBIC/SFP Density	2	4	2	4	2
10 GBE 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	24
100BASE-FX Density	0	0	0	0	0
Maximum Watt Power Consumption	24	41	435	452	24
PoE: Maximum 802.3af Class 3 Devices (15.4W)	0	0	24	24	0
PoE: Maximum 802.3af Class 2 Devices (7.3W)	0	0	24	48	0
AC/DC Support	AC Only	AC Only	AC Only	AC Only	DC Only
Redundant Power Supply Support	Yes	Yes	Yes	Yes	Yes
Dimensions (H x W x D) Inches	1.73 x 17.46 x 11.62	1.73 x 17.46 x 11.62	1.73 x 17.46 x 11.62	1.73 x 17.46 x 14.62	1.73 x 17.46 x 11.62
Dimensions (H x W x D) Centimeters	4.4 x 44.3 x 29.5	4.4 x 44.3 x 29.5	4.4 x 44.3 x 29.5	4.4 x 44.3 x 29.5	4.4 x 44.3 x 29.5
Unit Weight Pounds (Kilograms)	8.2 (3.7)	9 (4)	10 (4.6)	11 (5)	8 (3.7)

Product Overview

Product Number Product Description

Catalyst 3560 Series 10/100/1000 Workgroup Switches

WS-C3560G-48PS-S	3560 48-port 10/100/1000T PoE + 4 SFP, Standard Image
WS-C3560G-48PS-E	3560 48-port 10/100/1000T PoE + 4 SFP, Enhanced Image
WS-C3560G-24PS-S	3560 24-port 10/100/1000T PoE + 4 SFP, Standard Image
WS-C3560G-24PS-E	3560 24-port 10/100/1000T PoE + 4 SFP, Enhanced Image
WS-C3560G-48TS-S	3560 48-port 10/100/1000T + 4 SFP, Standard Image
WS-C3560G-48TS-E	3560 48-port 10/100/1000T + 4 SFP, Enhanced Image
WS-C3560G-24TS-S	3560 24-port 10/100/1000T + 4 SFP, Standard Image
WS-C3560G-24TS-E	3560 24-port 10/100/1000T + 4 SFP, Enhanced Image

Catalyst 3560v2 Series 10/100 Workgroup Switches

WS-C3560-8PC-S	3560 8 10/100 PoE + 1 T/SFP, Standard Image
WS-C3560V2-48PS-S	3560v2 48-port 10/100 PoE + 4 SFP, Standard Image
WS-C3560V2-48PS-E	3560v2 48-port 10/100 PoE + 4 SFP, Enhanced Image
WS-C3560V2-24PS-S	3560v2 24-port 10/100 PoE + 2 SFP, Standard Image
WS-C3560V2-24PS-E	3560v2 24-port 10/100 PoE + 2 SFP, Enhanced Image
WS-C3560V2-48TS-S	3560v2 48-port 10/100 + 4 SFP, Standard Image
WS-C3560V2-48TS-E	3560v2 48-port 10/100 + 4 SFP, Enhanced Image
WS-C3560V2-24TS-S	3560v2 24-port 10/100 + 2 SFP, Standard Image
WS-C3560V2-24TS-SD	3560v2 24-port 10/100 + 2 SFP, Standard Image, DC Power Supply
WS-C3560V2-24TS-E	3560v2 24-port 10/100 + 2 SFP, Enhanced Image

IOS Upgrades for the Catalyst 3560

CD-3560-EMI=	Enhanced Multilayer Image Upgrade for 3560 10/100 Models
CD-3560G-EMI=	Enhanced Multilayer Image Upgrade for 3560 GE Models

SFPs for the Catalyst 3560

GLC-GE-100FX=	100FX SFP on GBE SFP Ports for DSBU Switches
GLC-LH-SM=	GBE SFP, LC Connector LX/LH Transceiver
GLC-SX-MM=	GBE SFP, LC Connector SX Transceiver
GLC-T=	1000BASE-T SFP
GLC-ZX-SM=	1000BASE-ZX SFP
CWDM-SFP-1470=	CWDM 1470 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1490=	CWDM 1490 nm SFP Gigabit Ethernet and 1G/2G FC

Product Overview (continued)

Product Number Product Description

SFPs for the Catalyst 3560 (continued)

CWDM-SFP-1510=	CWDM 1510 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1530=	CWDM 1530 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610 nm SFP Gigabit Ethernet and 1G/2G FC
CAB-SFP-50CM=	3560 SFP Interconnect Cable, 50 cm
DWDM-SFP-3033=	DWDM SFP 1530.33 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3112=	DWDM SFP 1531.12 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3190=	DWDM SFP 1531.90 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3268=	DWDM SFP 1532.68 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3425=	DWDM SFP 1534.25 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3504=	DWDM SFP 1535.04 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3582=	DWDM SFP 1535.82 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3661=	DWDM SFP 1536.61 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3819=	DWDM SFP 1538.19 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3898=	DWDM SFP 1538.98 nm SFP (100 GHz ITU Grid)
DWDM-SFP-3977=	DWDM SFP 1539.77 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4056=	DWDM SFP 1540.56 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4214=	DWDM SFP 1542.14 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4294=	DWDM SFP 1542.94 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4373=	DWDM SFP 1543.73 nm SFP (100 GHz ITU Grid)
DWDM-SFP-4453=	DWDM SFP 1544.53 nm SFP (100 GHz ITU Grid)

LC to SC Cables for the Catalyst 3560

CSS5-CABLX-LCSC=	CSS11500 10-meter Fiber Single-mode LX LC-to-SC Connectors
CSS5-CABSX-LC=	CSS11500 10-meter Fiber Multimode SX LC Connectors
CSS5-CABSX-LCSC=	CSS11500 10-meter Fiber Multimode SX LC-to-SC Connectors

Right Angle Power Cords for the Catalyst 3560

CAB-AC-RA=	Power Cord, 110V, Right Angle
CAB-AC-RA	Power Cord, 110V, Right Angle
CAB-ACA-RA=	Power Cord, Australia, Right Angle
CAB-ACC-RA=	Power Cord, China, Right Angle
CAB-ACE-RA=	Power Cord, Europe, Right Angle
CAB-ACI-RA=	Power Cord, Italy, Right Angle

Product Number	Product Description
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Right Angle Power Cords for the Catalyst 3560 (continued)

CAB-ACR-RA=	Power Cord, Argentina, Right Angle
CAB-ACS-RA=	Power Cord, Switzerland, Right Angle
CAB-ACU-RA=	Power Cord, UK, Right Angle
CAB-JPN-RA=	Power Cord, Japan, Right Angle
CAB-JPN-RA	Power Cord, Japan, Right Angle

RPS for the Catalyst 3560

PWR-RPS2300	Cisco RPS 2300 with One Connector Cable
CAB-RPS2300-E=	Spare RPS 2300 Cable for Cisco Catalyst 3560v2, 3750v2, and 2960 PoE Series Switches
C3K-PWR-750WAC=	Spare 750WAC Power Supply for the RPS 2300
C3K-PWR-1150WAC=	Spare 1150WAC Power Supply for the RPS 2300

Spare Rack-mount Kits for the Catalyst 3560

RCKMNT-1RU=	1RU Rack-mount Kit for 3750, 3560, 3550, 2900-LRE-XL
RCKMNT-REC-1RU=	Recessed 1RU Rack-mount for 3550, 3560, 3750
RCKMNT-19-CMPCT=	19-inch Rack-mount for 3560, 2960, ME-3400 Compact Switch



Cisco Catalyst 2960-S Series

The Cisco Catalyst 2960-S Series Switches are the leading Layer 2 edge platform, providing improved ease of use, highly secure business operations, improved sustainability, and a borderless network experience. The Cisco Catalyst 2960-S Series Switches include new Cisco FlexStack switch stacking capability with 1 and 10 Gigabit connectivity, and Power over Ethernet Plus (PoE+). The Cisco Catalyst 2960-S Series are fixed-configuration access switches designed for enterprise, midmarket, and branch office networks to provide lower total cost of ownership.

Key Features:

- 10 and 1 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 40 Gbps of throughput, allowing ease of operation and management with single configuration and simplified switch upgrade.
- PoE+ with up to 30W per port that allows support of the latest PoE+ capable devices.
- 740W or 370W fixed power supplies options for PoE+ switches are available.
- 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.
- Limited lifetime hardware warranty, including next-business-day replacement with 90-day service and support.

Hardware Features		
	WS-C2960S-48FPD-L	WS-C2960S-48LPD-L
Switching Fabric (Gbps)	88	88
Maximum Stack Members	4	4
Total Bandwidth of Stack (Gbps)	40	40
Packets per Second per Box (Mpps)	101.2	101.2
MAC Addresses Supported	8000	8000
Routes Supported	16	16
Onboard Memory (DRAM MB)	128	128
10 GBE Density (SFP+)	2	2
Gigabit Ethernet GBIC/SFP Density	2	2
10 GBE XENPAK/X2 Port Density	0	0
10/100/1000BaseT Density	48	48
Maximum Watt Power Consumption (100% Forwarding without PoE Load)	81W	71W
PoE+: Maximum 802.3at devices (30W)	24	12
PoE: Maximum 802.3af Class 3 Devices (15.4W)	48	24
PoE: Maximum 802.3af Class 2 Devices (7.3W)	48	48
AC/DC Support	AC Only	AC Only
Redundant Power Supply Support	Yes with RPS	Yes with RPS
Dimensions (H x W x D) Inches	1.75 x 17.5 x 15.2	1.75 x 17.5 x 15.2
Dimensions (H x W x D) Centimeters	4.5 x 44.5 x 38.6	4.5 x 44.5 x 38.6
Unit Weight Pounds (Kilograms)	13 (5.9)	12.5 (5.7)
Dimensions (H x W x D) Centimeters	4.5 x 44.5 x 38.6	4.5 x 44.5 x 38.6
Unit Weight Pounds (Kilograms)	13 (5.9)	12.5 (5.7)

WS-C2960S-24PD-L	WS-C2960S-48TD-L	WS-C2960S-24TD-L
88	88	88
4	4	4
40	40	40
65.5	101.2	65.5
8000	8000	8000
16	16	16
128	128	128
2	2	2
2	2	2
0	0	0
24	48	24
55W	55W	39W
12	0	0
24	0	0
24	0	0
AC Only	AC Only	AC Only
Yes with RPS	Yes with RPS	Yes with RPS
1.75 x 1.75 x 15.2	1.75 x 1.75 x 11.8	1.75 x 1.75 x 11.8
4.5 x 44.5 x 38.6	4.5 x 44.5 x 29.9	4.5 x 44.5 x 29.9
12.5 (5.7)	9.5 (4.3)	9.5 (4.3)
4.5 x 44.5 x 38.6	4.5 x 44.5 x 29.9	4.5 x 44.5 x 29.9
12.5 (5.7)	9.5 (4.3)	9.5 (4.3)

Hardware Features (continued)		
	WS-C2960S-48FPS-L	WS-C2960S-48LPS-L
Switching Fabric (Gbps)	88	88
Maximum Stack Members	4	4
Total Bandwidth of Stack (Gbps)	40	40
Packets per Second per Box (Mpps)	774	774
MAC Addresses Supported	8000	8000
Routes Supported	16	16
Onboard Memory (DRAM MB)	128	128
10 GBE Density	0	0
Gigabit Ethernet GBIC/SFP Density	4	4
10/100/1000BaseT Density	48	48
Maximum Watt Power Consumption (100% Forwarding without PoE Load)	79W	71W
PoE+: Maximum 802.3at devices (30W)	24	12
PoE: Maximum 802.3af Class 3 Devices (15.4W)	48	24
PoE: Maximum 802.3af Class 2 Devices (73W)	48	48
AC/DC Support	AC Only	AC Only
Redundant Power Supply Support	Yes with RPS	Yes with RPS
Dimensions (H x W x D) Inches	1.75 x 17.5 x 15.2	1.75 x 17.5 x 15.2
Dimensions (H x W x D) Centimeters	4.5 x 44.5 x 38.6	4.5 x 44.5 x 38.6
Unit Weight Pounds (Kilograms)	13 (5.9)	12.5 (5.7)
Dimensions (H x W x D) Inches	1.75 x 17.5 x 15.2	1.75 x 17.5 x 15.2
Dimensions (H x W x D) Centimeters	4.5 x 44.5 x 38.6	4.5 x 44.5 x 38.6
Unit Weight Pounds (Kilograms)	13 (5.9)	12.5 (5.7)

WS-C2960S-24PS-L	WS-C2960S-48TS-L	WS-C2960S-24TS-L
88	88	88
4	4	4
40	40	40
41.7	77.4	41.7
8000	8000	8000
16	16	16
128	128	128
0	0	0
4	4	4
24	48	24
55W	52W	40W
12	0	0
24	0	0
24	0	0
AC Only	AC Only	AC Only
Yes with RPS	Yes with RPS	Yes with RPS
1.75 x 175 x 15.2	1.75 x 175 x 11.8	1.75 x 175 x 11.8
4.5 x 44.5 x 38.6	4.5 x 44.5 x 29.9	4.5 x 44.5 x 29.9
12.5 (5.7)	10.5 (4.8)	10 (4.5)
1.75 x 175 x 15.2	1.75 x 175 x 11.8	1.75 x 175 x 11.8
4.5 x 44.5 x 38.6	4.5 x 44.5 x 29.9	4.5 x 44.5 x 29.9
12.5 (5.7)	10.5 (4.8)	10 (4.5)

Hardware Features (continued)		
	WS-2960S-48TS-S	WS-C2960S-24TS-S
Switching Fabric (Gbps)	50	50
Maximum Stack Members	0	0
Clustering	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
Total Bandwidth of Stack (Gbps)	N/A	N/A
Packets per Second per Box (Mpps)	74.4	38.7
MAC Addresses Supported	8000	8000
Routes Supported	N/A	N/A
Onboard Memory (DRAM MB)	128	128
10 GBE Density	0	0
Gigabit Ethernet GBIC/SFP Density	2	2
10/100/1000BaseT Density	48	24
Maximum Watt Power Consumption (100% Forwarding)	53W	36W
PoE+: Maximum 802.3at devices (30W)	0	0
PoE: Maximum 802.3af Class 3 Devices (15.4W)	0	0
PoE: Maximum 802.3af Class 2 Devices (7.3W)	0	0
AC/DC Support	AC Only	AC Only
Redundant Power Supply Support	N/A	N/A
Dimensions (H x W x D) Inches	1.75 x 17.5 x 11.8	1.75 x 17.5 x 11.8
Dimensions (H x W x D) Centimeters	4.5 x 44.5 x 29.9	4.5 x 44.5 x 29.9
Unit Weight Pounds (Kilograms)	10.5 (4.8)	10 (4.5)

Cisco Catalyst 2960-S Spotlight

Cisco FlexStack Stacking

Cisco FlexStack stacking with the hot-swappable stack module and Cisco IOS® Software provides true stacking as all switches in a stack act as a single switch unit. The Cisco FlexStack provides a unified data plane, unified configuration, and single IP address management for a group of switches. The advantages of true stacking are lower total cost of ownership through simplified management and higher availability. Cisco FlexStack supports cross-stack features including EtherChannel, SPAN and FlexLink technology. A stack module can be added to any Cisco Catalyst 2960-S switch with LAN Base software to quickly upgrade the switch to make it stack capable. Once a new switch is added to a stack the switch will automatically upgrade to the correct Cisco IOS® Software version and transparently become a stack member.

Power over Ethernet Plus

In addition to PoE 802.3af, the Cisco Catalyst 2960-S Series Switches support Power over Ethernet Plus (PoE+) (IEEE 802.3at standard), which provides up to 30W of power per port. The Cisco Catalyst 2960-S Series Switches can provide a lower total cost of ownership for deployments that incorporate Cisco IP phones, Cisco Aironet® wireless LAN (WLAN) access points, or any IEEE 802.3af-compliant end device. PoE removes the need for wall power to each PoE-enabled device and eliminates the cost for additional electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments.

Software Features

- All Cisco Catalyst 2960-S Series Switches ship with the LAN Base image, with the exceptions of WS-2960S-48TS-S and WS-C2960S-24TS-S.
- WS-2960S-48TS-S and WS-C2960S-24TS-S ship with the LAN Lite image and are not upgradeable to LAN Base software.
- Some advanced features, like Cisco FlexStack, PoE+ and SFP+, require a the LAN Base image.

Product Overview

Part Numbers

Description

10 Gigabit Uplinks with 10/100/1000 Ethernet Connectivity

WS-C2960S-48FPD-L

- 48 Ethernet 10/100/1000 PoE+ Ports
- 740W PoE Capacity
- Two 10 Gigabit Ethernet or Two 1 Gigabit Ethernet SFP+ Uplink Ports
- Optional Cisco FlexStack stacking Support
- LAN Base Image

WS-C2960S-24PD-L

- 24 Ethernet 10/100/1000 PoE+ Ports
- 370W PoE Capacity
- Two 10 Gigabit Ethernet or Two 1 Gigabit Ethernet SFP+ Uplink Ports
- Optional Cisco FlexStack Stacking Support
- LAN Base Image

WS-C2960S-48TD-L

- 48 Ethernet 10/100/1000 Ports
- Two 10 Gigabit Ethernet or Two 1 Gigabit Ethernet SFP+ Uplink Ports
- Optional Cisco FlexStack Stacking Support
- LAN Base Image

WS-C2960S-24TD-L

- 24 Ethernet 10/100/1000 Ports
- Two 10 Gigabit Ethernet or Two 1 Gigabit Ethernet SFP+ Uplink Ports
- Optional Cisco FlexStack Stacking Support
- LAN Base Image

1 Gigabit Uplinks with 10/100/1000 Ethernet Connectivity

WS-C2960S-48FPS-L

- 48 Ethernet 10/100/1000 PoE+ Ports
- 740W PoE Capacity
- Four 1 Gigabit Ethernet SFP Uplink Ports
- Optional Cisco FlexStack Stacking Support
- LAN Base Image

WS-C2960S-48LPS-L

- 48 Ethernet 10/100/1000 PoE+ Ports
- 370W PoE Capacity
- Four 1 Gigabit Ethernet SFP Uplink Ports
- Optional Cisco FlexStack Stacking Support
- LAN Base Image

WS-C2960S-48TS-L

- 48 Ethernet 10/100/1000 Ports
- Four 1 Gigabit Ethernet SFP Uplink Ports
- Optional Cisco FlexStack Stacking Support
- LAN Base Image

Product Number**Product Description****1 Gigabit Uplinks with 10/100/1000 Ethernet Connectivity (continued)**

WS-C2960S-24TS-L	<ul style="list-style-type: none"> · 24 Ethernet 10/100/1000 Ports · Four 1 Gigabit Ethernet SFP Uplink Ports · Optional Cisco FlexStack Stacking Support · LAN Base Image
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1 Gigabit Uplinks with 10/100/1000 Ethernet Connectivity (LAN Lite software)

WS-2960S-48TS-S	<ul style="list-style-type: none"> · 48 Ethernet 10/100/1000 · Two 1 Gigabit Ethernet SFP Uplink Ports · LAN Lite Software
WS-C2960S-24TS-S	<ul style="list-style-type: none"> · 24 Ethernet 10/100/1000 · Two 1 Gigabit Ethernet SFP Uplink Ports · LAN Lite Software

Cisco Catalyst 2960-S Series Switches Accessories

CAB-STK-E-0.5M	FlexStack Stacking Cable with a 0.5 m Length
CAB-STK-E-1M	FlexStack Stacking Cable with a 1.0 m Length
CAB-STK-E-3M	FlexStack Stacking Cable with a 3.0 m Length
CAB-CONSOLE-RJ45	Console Cable 6 ft. with RJ-45
CAB-CONSOLE-USB	Console Cable 6 ft. with USB Type A and Mini-B Connectors
CAB-16AWG-AC	AC Power Cord, 16AWG
CAB-ACE	AC Power Cord (Europe), C13, CEE 7, 1.5m
CAB-L620P-C13-US	Power Cord, 250VAC, 15A, NEMA L6-20 to C13, US
CAB-ACI	AC Power Cord (Italy), C13, CEI 23-16, 2.5m
CAB-ACU	AC Power Cord (UK), C13, BS 1363, 2.5m
CAB-ACA	AC Power Cord (China/Australia), C13, AS 3112, 2.5m
CAB-ACS	AC Power Cord (Switzerland), C13, IEC 60884-1, 2.5m
CAB-ACR	AC Power Cord (Argentina), C13, EL 219 (IRAM 2073), 2.5m
CAB-ACC	Power Cord (China) 10A, IEC 320, C13 (APN=CS-PWR-CH)
CAB-JPN-12A	CABASYPOWER CORD, JAPAN 2P, PSE, 12A @ 125VAC
CAB-L620P-C13-JPN	Power Cord (Japan) 250VAC, 15A, NEMA L6-20 to C13, JAPAN
CAB-IND	Power Cord (India)
PWR-RPS2300	Cisco Redundant Power System 2300 and Blower, no Power Supply
BLNK-RPS2300=	Spare Bay Insert for Cisco Redundant Power System 2300 for Cisco Catalyst 2960 and Cisco Catalyst 2960-S Switches
CAB-RPS2300-E=	Spare RPS2300 Cable for Cisco Catalyst 2960-48PST-L, 2960-24PC-L and 2960-24LT-L Switches and Cisco Catalyst 2960-S Switches

Product Overview (continued)

Product Number	Product Description
Cisco Catalyst 2960-S Series Switches Accessories (continued)	
BLWR-RPS2300=	Spare 45 CFM Blower for Cisco Redundant Power System 2300
C3K-PWR-750WAC=	Cisco Catalyst 2960 and Cisco Catalyst 2960-S RPS 2300 750W AC Power Supply Spare
PWR-A=	Power Adapter for Cisco Catalyst 2960PD-8TT-L Compact Switch
CBLGRD-C2960-8TC=	Cable Guard for Cisco Catalyst 2960-8TC Compact Switch
CBLGRD-C2960G-8TC=	Cable Guard for Cisco Catalyst 2960G-8TC Compact Switch
RCKMNT-19-CMPCT=	Rack-mount for Cisco Catalyst 2960-8TC and Cisco Catalyst 2960G-8TC Compact Switches
RCKMNT-1RU=	Spare Rack-mount Kit for Cisco Catalyst 2960 and 2960-S Series for 19- and 24-inch Racks
RCKMNT-REC-1RU=	1RU Recessed rack-mount Kit for Cisco Catalyst 2960 and 2960-S Series
GLC-LH-SM=	1000BASE-LX/LH SFP Transceiver Module for MMF and SMF, 1300-nm Wavelength
GLC-SX-MM=	1000BASE-SX SFP Transceiver Module for MMF, 850-nm Wavelength
GLC-ZX-SM=	1000BASE-ZX SFP Transceiver Module for SMF, 1550-nm Wavelength
GLC-T=	1000BASE-T SFP Transceiver Module for Category 5 Copper Wire
	Not Supported on the Cisco Catalyst 2960-8TC and Cisco Catalyst 2960G-8TC Compact Switches and Cisco Catalyst 2960-S SFP+ Module
GLC-BX-D=	1000BASE-BX10 SFP Transceiver Module for Single-strand SMF, 1490-nm TX/1310-nm RX Wavelength
GLC-BX-U=	1000BASE-BX10 SFP Transceiver Module for Single-strand SMF, 1310-nm TX/1490-nm RX Wavelength
GLC-GE-100FX=	100BASE-FX SFP Module for Gigabit Ethernet Ports, 1310-nm Wavelength, 2 km over MMF
	Not Supported on the Cisco Catalyst 2960-8TC and Cisco Catalyst 2960G-8TC Compact Switches
GLC-FE-100FX=	100BASE-FX SFP Module for 100-Mb Ports, 1310-nm Wavelength, 2 km over MMF
GLC-FE-100LX=	100BASE-LX10 SFP Module for 100-Mb Ports, 1310-nm Wavelength, 10 km over SMF
GLC-FE-100BX-D=	100BASE-BX10-D SFP Module for 100-Mb Ports, 1550-nm TX /1310-nm RX Wavelength, 10 km over Single-strand SMF
GLC-FE-100BX-U=	100BASE-BX10-U SFP Module for 100-Mb Ports, 1310-nm TX/1550-nm RX Wavelength, 10 km over Single-strand SMF
CWDM-SFP-1470=	Cisco CWDM SFP 1470 nm; Gigabit Ethernet and 1G/2G Fibre Channel (FC) (Gray)
CWDM-SFP-1490=	Cisco CWDM SFP, 1490 nm; Gigabit Ethernet and 1G/2G FC (Violet)
CWDM-SFP-1510=	Cisco CWDM SFP, 1510 nm; Gigabit Ethernet and 1G/2G FC (Blue)
CWDM-SFP-1530=	Cisco CWDM SFP, 1530 nm; Gigabit Ethernet and 1G/2G FC (Green)
CWDM-SFP-1550=	Cisco CWDM SFP, 1550 nm; Gigabit Ethernet and 1G/2G FC (Yellow)

Product Number	Product Description
Cisco Catalyst 2960-S Series Switches Accessories (continued)	
CWDM-SFP-1570=	Cisco CWDM SFP, 1570 nm; Gigabit Ethernet and 1G/2G FC (Orange)
CWDM-SFP-1590=	Cisco CWDM SFP, 1590 nm; Gigabit Ethernet and 1G/2G FC (Red)
CWDM-SFP-1610=	Cisco CWDM SFP, 1610 nm; Gigabit Ethernet and 1G/2G FC (Brown)
CAB-SM-LCSC-1M	1m Fiber Single-mode LC-to-SC Connectors
CAB-SM-LCSC-5M	5m Fiber Single-mode LC-to-SC Connectors
SFP-10G-LR=	10GBASE-LR SFP+ Module
SFP-10G-SR=	10GBASE-SR SFP+ Module
SFP-10G-LRM=	10GBASE-LRM SFP+ Module
SFP-H10GB-CU1M=	0GBASE-CU SFP+ Cable 1 Meter
SFP-H10GB-CU3M=	0GBASE-CU SFP+ Cable 3 Meter
SFP-H10GB-CU5M=	0GBASE-CU SFP+ Cable 5 Meter



Cisco Catalyst 2960 Series

Fixed-configuration switches offering Fast Ethernet connectivity with enhanced LAN services for mid-market and branch office networks.

Cisco Catalyst 2960 Series Intelligent Ethernet switches are offered in two categories:

- Cisco Catalyst 2960 Series with LAN Base Software
- Cisco Catalyst 2960 Series with LAN Lite Software

Cisco Catalyst 2960 Series Switches with LAN Base software are a family of fixed-configuration, standalone intelligent Ethernet devices with Power Over Ethernet (PoE) or non-PoE configurations that provide desktop Fast Ethernet connectivity, enabling enhanced LAN services for entry-level enterprise, mid-market, and branch office networks (See Figure 1). The Cisco Catalyst 2960 LAN Base Series offers integrated security, including Network Admission Control (NAC), advanced quality of service (QoS), and resiliency to deliver intelligent services for the network edge.

Cisco Catalyst 2960 Series Switches with LAN Lite software are fixed-configuration, standalone switches that provide desktop Fast Ethernet connectivity for entry-level wiring closet and small branch office networks. The Cisco Catalyst 2960 LAN Lite Series Switches simplify the migration from non-intelligent hubs and unmanaged switches to a fully scalable managed network. The LAN Lite Cisco IOS® Software provides entry-level security, quality of service (QoS), and availability capabilities while lowering the network total cost of ownership.

Cisco Catalyst 2960 Series Spotlight

Enhanced Security

Security is delivered through a wide range of authentication methods, data encryption technologies, and Network Admission Control (NAC) based on users, ports, and MAC addresses. Through these features, the Catalyst 2960 Series offers security to protect users and devices from attack.

Ease of Management and Configuration

Cisco Network Assistant simplifies configuration, Cisco IOS Software updates, and Troubleshooting. Smartports enable fast and easy configuration of Cisco Catalyst intelligent capabilities; Express setup is quick and easy using the Webpage interface. Enhanced troubleshooting for link connectivity issues and cable diagnostics.

Hardware Features

	WS-C296048PST-L	WS-C2960-24TT-L
LAN Base: Fast Ethernet		
Switching Fabric (Gbps)	16	16
Maximum Stack Members	0	0
Clustering	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
Total Bandwidth of Stack (Gbps)	N/A	N/A
Packets per Second per Box (Mpps)	13.3	6.5
MAC Addresses Supported	8000	8000
Routes Supported	16	16
Onboard Memory (DRAM MB)	64	64
10 GBE Density	N/A	N/A
Gigabit Ethernet GBIC/SFP Density	2	0
10 GBE XENPAK/X2 Port Density	N/A	N/A
10/100/1000BaseT Density	2	2
10/100BaseT Density	48	24
Maximum Watt Power Consumption	67	30
PoE: Maximum 802.3af Class 3 Devices (15.4W)	24	N/A
PoE: Maximum 802.3af Class 3 Devices (15.4W)	24	N/A
PoE: Maximum 802.3af Class 2 Devices (7.3W)	48	N/A
AC/DC Support	AC Only	AC Only
Redundant Power Supply Support	PoE	Yes
Dimensions (H x W x D) Inches	1.73 x 17.7 x 13.07	1.73 x 17.5 x 9.3
Dimensions (H x W x D) Centimeters	4.4 x 45 x 23.6	4.4 x 44.5 x 23.6
Unit Weight Pounds (Kilograms)	12 (5.4)	8 (3.6)

Hardware Features (continued)				
WS-C2960-24LT-L	WS-C2960-24TC-L	WS-C2960-24PC-L	WS-C2960-48TT-L	WS-C2960-48TC-L
16	16	16	16	16
0	0	0	0	0
Yes, 16 Switches/ Cluster	Yes, 16 Switches/ Cluster	Yes, 16 Switches/ Cluster	Yes, 16 Switches/ Cluster	Yes, 16 Switches/ Cluster
N/A	N/A	N/A	N/A	N/A
6.5	6.5	6.5	10.1	10.1
8000	8000	8000	8000	8000
16	16	16	16	16
64	64	64	64	64
N/A	N/A	N/A	N/A	N/A
0	2*	2*	0	2*
N/A	N/A	N/A	N/A	N/A
2	2	2	2	2
24	24	24	48	48
175	30	470	45	45
8	N/A	24	N/A	N/A
8	N/A	24	N/A	N/A
8	N/A	24	N/A	N/A
AC Only	AC Only	AC Only	AC Only	AC Only
Yes	Yes	Yes	Yes	Yes
173 x 175 x 13	173 x 175 x 9.3	173 x 175 x 13	173 x 175 x 9.3	173 x 175 x 9.3
4.4 x 44.5 x 33.2	4.4 x 44.5 x 23.6	4.4 x 44.5 x 33.2	4.4 x 44.5 x 23.6	4.4 x 44.5 x 23.6
10 (4.5)	8 (3.6)	12 (5.4)	8 (3.6)	8 (3.6)

*Dual purpose uplinks, only one SFP port or one 10/100/1000 BT port is active at any one time.

	WS-C2960-48PST-S	WS-C2960-24-S
LAN Lite		
Switching Fabric (Gbps)	16	16
Maximum Stack Members	0	0
Clustering	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
Total Bandwidth of Stack (Gbps)	N/A	N/A
Packets per Second per Box (Mpps)	13.3	3.6
MAC Addresses Supported	8000	8000
Routes Supported	N/A	N/A
Onboard Memory (DRAM MB)	64	64
10 GBE Density	N/A	N/A
Gigabit Ethernet GBIC/SFP Density	2	0
10 GBE XENPAK/X2 Port Density	N/A	N/A
10/100/1000BaseT Density	2	0
10/100BaseT Density	48	24
Maximum Watt Power Consumption	52	30
PoE: Maximum 802.3af Class 3 Devices (15.4W)	24	N/A
PoE: Maximum 802.3af Class 2 Devices (7.3W)	48	N/A
AC/DC Support	AC Only	AC Only
Redundant Power Supply Support	No	No
Dimensions (H x W x D) Inches	1.73 x 17.7 x 13	1.73 x 17.5 x 9.3
Dimensions (H x W x D) Centimeters	4.4 x 45 x 33.02	4.4 x 44.5 x 23.6
Unit Weight Pounds (Kilograms)	12 (5.4)	8 (3.6)

Hardware Features (continued)				
WS-C2960-24TC-S	WS-C2960-48TT-S	WS-C2960-48TC-S	WS-C2960-24PC-S	WS-C2960-24LC-S
16	16	16	16	16
0	0	0	0	0
Yes, 16 Switches/ Cluster	Yes, 16 Switches/ Cluster	Yes, 16 Switches/ Cluster	Yes, 16 Switches/ Cluster	Yes, 16 Switches/ Cluster
N/A	N/A	N/A	N/A	N/A
6.5	10.1	10.1	6.5	6.5
8000	8000	8000	8000	8000
N/A	N/A	N/A	N/A	N/A
64	64	64	64	64
N/A	N/A	N/A	N/A	N/A
2*	0	2*	2*	2*
N/A	N/A	N/A	N/A	N/A
2	2	2	2	2
24	48	48	24	24
30	45	45	27	79
N/A	N/A	N/A	24	8
N/A	N/A	N/A	24	24
AC Only	AC Only	AC Only	AC Only	AC Only
No	No	No	No	No
1.73 x 175 x 9.3	1.73 x 175 x 9.3	1.73 x 175 x 9.3	1.73 x 177 x 13	1.73 x 177 x 13
4.4 x 44.5 x 23.6	4.4 x 44.5 x 23.6	4.4 x 44.5 x 23.6	4.4 x 45 x 33.02	4.4 x 45 x 33.02
8 (3.6)	8 (3.6)	8 (3.6)	8 (3.6)	8 (3.6)

Product Overview

Product Number	Product Description
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Catalyst 2960 Workgroup Switches

WS-C2960-48PST-L	Catalyst 2960 48 10/100. (PoE) +2 T/SFP + 2 1000BT LAN Base Image
WS-C2960-48TC-L	Catalyst 2960 48 10/100 + 2 T/SFP LAN Base Image
WS-C2960-48TT-L	Catalyst 2960 48 10/100 + 2 1000BT LAN Base Image
WS-C2960G-24TC-L	Catalyst 2960 24 10/100/1000. 4 T/SFP LAN Base Image
WS-C2960-24LT-L	Catalyst 2960 24 10/100 (8 PoE) + 2 1000BT LAN Base Image
WS-C2960-24PC-L	Catalyst 2960 24 10/100 PoE + 2 T/SFP LAN Base Image
WS-C2960-24TC-L	Catalyst 2960 24 10/100 + 2 T/SFP LAN Base Image
WS-C2960-24TT-L	Catalyst 2960 24 10/100 + 2 1000BT LAN Base Image
WS-C2960G-8TC-L	Catalyst 2960 7 10/100/1000 + 1 T/SFP LAN Base Image
WS-C2960-8TC-L	Catalyst 2960 8 10/100 + 1 T/SFP LAN Base Image
WS-C2960PD-8TT-L	Catalyst 2960 Powered Device 8 10/100 + 1 1000BT LAN Base Image

Catalyst 2960 LAN Lite Switches

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

RPS 2300 for the Catalyst 2960 Series

PWR-RPS2300	Cisco Redundant Power System 2300 and Blower, no Power Supply
ACC-RPS2300=	Spare Accessory Kit for Cisco Redundant Power System 2300
BLNK-RPS2300	Bay Insert for Cisco Redundant Power System 2300
BLNK-RPS2300=	Spare Bay Insert for Cisco Redundant Power System 2300
CAB-RPS2300	RPS 2300 Cable for Devices Other than E Series Switches
CAB-RPS2300=	Spare RPS2300 Cable for Devices Other than E Series Switches
CAB-RPS2300-E	RPS2300 Cable for 2960 Power Switches
CAB-RPS2300-E=	Spare RPS2300 Cable for 2960 Power Switches
BLWR-RPS2300=	Spare 45CFM Blower for Cisco Redundant Power System 2300
C3K-PWR-750WAC=	RPS 2300 750W AC Power Supply (Spare)
C3K-PWR-1150WAC=	RPS 2300 1150W AC Power Supply (Spare)

Spare Rack-mount Kits for the Catalyst 2960

RCKMNT-1RU=	Rack-mount Kit for 1RU for 3750, 3560, 3550, 2900-LRE-XL, 2960
RCKMNT-REC-1RU=	Recessed 1RU Rack-mount for 3550, 3560, 3750, 2960
RCKMNT-19-CMPCT=	19-inch Rack-mount for 3560, 2960, ME-3400 Compact Switch
RCKMNT-HPC=	Rack-mount for HPC for Catalyst 3750, 3560, 2960

Product Overview (continued)

Product Number Product Description

Right Angle Power Cords for the Catalyst 2960 (continued)

CAB-AC-RA=	Power Cord, USA, Right Angle
CAB-ACA-RA=	Power Cord, Australia, Right Angle
CAB-ACC-RA=	Power Cord, China, Right Angle
CAB-ACE-RA=	Power Cord, Europe, Right Angle
CAB-ACI-RA=	Power Cord, Italy, Right Angle
CAB-ACR-RA=	Power Cord, Argentina, Right Angle
CAB-ACS-RA=	Power Cord, Switzerland, Right Angle
CAB-ACU-RA=	Power Cord, UK, Right Angle
CAB-JPN-RA=	Power Cord, Japan, Right Angle

SFPs for Catalyst 2960

GLC-BX-D=	1000BASE-BX SFP, 1490 nm
GLC-BX-U=	1000BASE-BX SFP, 1310 nm
GLC-FE-100BX-D=	100BASE-BX10-D SFP
GLC-FE-100BX-U=	100BASE-BX10-U SFP
GLC-FE-100FX=	100BASE-FX SFP for FE Port
GLC-FE-100LX=	100BASE-LX SFP for FE Port
GLC-GE-100FX=	100BASE-FX SFP for GE SFP Port on 3750, 3560, 2970, 2960
GLC-LH-SM=	GE SFP, LC Connector LX/LH Transceiver
GLC-SX-MM=	GE SFP, LC Connector SX Transceiver
GLC-ZX-SM=	1000BASE-ZX SFP
CWDM-SFP-1470=	CWDM 1470 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1490=	CWDM 1490 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1530=	CWDM 1530 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590 nm SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610 nm SFP Gigabit Ethernet and 1G/2G FC

Catalyst 2960 Relicensing for Used Equipment

LL-C2960G=	Software License for 2960 Gigabit Ethernet Switches
LL-C2960=	Software License for 2960 Fast Ethernet Switches

Power Adaptor for the Catalyst 2960PD

PWR-A=	Power Supply In: 100-240VAC Out: 48VDC 380mA- 2960PD-8TT-
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Cisco Catalyst Compact Switches

The redesigned Cisco® Catalyst® 3560-C and 2960-C Series Switches are the next generation of compact switches from Cisco designed to deliver unified communications, wireless, IP video, and other applications to the retail, hospitality, education, and enterprise customer. These compact switches are designed specifically to be placed outside the wiring closet, and the new compact switches contain numerous innovative features that give customers flexibility in switch placement and end device support with Power over Ethernet (PoE) pass-through, as well as advanced security services and ease-of-management features. These attractive, small-form-factor Gigabit and Fast Ethernet switches are ideal for connecting multiple devices and extending wireless LAN networks: wherever space is at a premium and multiple cable runs could be challenging.

Cisco Catalyst Compact Series Ethernet switches are offered in the following categories:

- Cisco Catalyst 3560-C Series with IP Base Software
- Cisco Catalyst 2960-C Series with LAN Base Software

The Cisco Catalyst 3560-C switch comes with the IP Base version of Cisco IOS Software and other than Layer 2 switching capability adds baseline enterprise services, including support for routed access, Cisco TrustSec, MAC Security (MACsec), Open Shortest Path First (OSPF), and other Cisco Borderless Network Services. The Cisco Catalyst 2960-C Series comes with the LAN Base version of Cisco IOS software and delivers advanced Layer 2 switching with intelligent Layer 2 through 4 services for the network edge, such as voice, video, and wireless LAN services.

Cisco Catalyst Compact Switch Series Spotlight

PoE Pass-Through

PoE pass-through gives users the ability to power PoE and devices, as well as the switch itself, by drawing PoE+ power from a wiring closet switch, providing PoE or deployment flexibility. PoE pass-through technology is ideal for wiring and space-constrained applications. Cisco Catalyst Compact Switches that support PoE pass-through can have either PoE, or PoE+ capable downlink ports with two PoE+ input or uplink ports.

Ease of Management and Configuration

Cisco Catalyst 3560-C and Catalyst 2960-C Compact Switches make deployment and ongoing management easy with Cisco Smart Operations, which enables customers to reduce switch installation, configuration, troubleshooting time, and operational costs. Cisco Auto Smartports provides automatic configuration as devices connect to the switch port, allowing auto detection and automatic operation of the device on the network.

Enhanced Security with Cisco TrustSec Technology

Cisco TrustSec technology secures access to the network and resources, whether wired, wireless, or VPN, making sure that endpoint devices are authorized and healthy. Cisco TrustSec technology enforces security policies across the entire network. The Cisco Catalyst 3560-C Series Switch also offers exceptional security with MACsec defined in IEEE 802.1AE. MACsec provides MAC layer encryption over wired networks using out-of-band methods for encryption keying.

Cisco EnergyWise Technology

Cisco EnergyWise technology is an innovative architecture added to the Cisco Catalyst 3560-C and Catalyst 2960-C Switches that enables the measurement of power consumption in the network infrastructure and network-attached devices. It encompasses a highly intelligent network-based approach to communicate messages that measure and control energy between network devices and endpoints. The network discovers Cisco EnergyWise manageable devices, monitors their power consumption, and takes action based on business rules to reduce power consumption.

Hardware Features

	WS-C3560C-8PC-S	WS-C3560C-12PC-S	WS-C3560CG-8TC-S
3560C IP Base			
Switching Fabric (Gbps)	2.8	3.2	10
Clustering	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
Packets per Second per Box (Mpps)	3.8	4.6	13.2
MAC Addresses Supported	6000	6000	4000
Routes Supported	200	200	200
Onboard Memory (DRAM MB)	128	128	128
10 GBE Density	N/A	N/A	N/A

Gigabit Ethernet GBIC/SFP Density	2	2	2
10/100BaseT Density	8	12	N/A
10/100/1000 Density	2	2	10
Maximum Watt Power Consumption	17	19	20
PoE: Maximum 802.3af Class 3 Devices (15.4W)	8	8	N/A
PoE: Maximum 802.3af Class 2 Devices (73W)	8	8	N/A
AC/DC Support	AC Only	AC Only	AC Only
Redundant Power Supply Support	No	No	No
Dimensions (H x W x D) Inches	1.75 x 10.6 x 9.4	1.75 x 10.6 x 9.4	1.75 x 10.6 x 8.4
Dimensions (H x W x D) Centimeters	4.44 x 26.9 x 21.3	4.44 x 26.9 x 21.3	4.44 x 26.9 x 21.3
Unit Weight Pounds (Kilograms)	4.1 (1.86)	4.1 (1.86)	3.0 (1.35)

	WS-C3560CG-8PC-S	WS-C3560CPD-8PT-S
3560C IP Base		
Switching Fabric (Gbps)	10	10
Clustering	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
Packets per Second per Box (Mpps)	13.2	13.2
MAC Addresses Supported	4000	6000
Routes Supported	200	200
Onboard Memory (DRAM MB)	128	128
10 GBE Density	N/A	N/A
Gigabit Ethernet GBIC/SFP Density	2	2
10/100/1000BaseT Density	10	10
10/100BaseT Density	N/A	N/A
Maximum Watt Power Consumption	24	22
PoE: Maximum 802.3af Class 3 Devices (15.4W)	8	1

Hardware Features (continued)

PoE: Maximum 802.3af Class 2 Devices (7.3W)	8	2
AC/DC Support	PoE Input or AC Adapter	AC Only
Redundant Power Supply Support	No	No
Dimensions (H x W x D) Inches	1.75x10.6x9.4	1.75x10.6x7.6
Dimensions (H x W x D) Centimeters	4.44x26.9x23.8	4.44x26.9x19.4
Unit Weight Pounds (Kilograms)	4.3 (1.92)	3.3(1.50)

	2960C-8TC-L	2960C-8TC-S
2960C: LAN Lite and LAN Base		
Switching Fabric (Gbps)	2.8	2.8
Clustering	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
Packets per Second per Box (Mpps)	3.8	3.8
MAC Addresses Supported	8000	8000
Routes Supported	N/A	N/A
Onboard Memory (DRAM MB)	128	128
10 GBE Density	N/A	N/A
Gigabit Ethernet GBIC/SFP Density	2	2
10/100/1000BaseT Density	2	2
10/100BaseT Density	8	8
Maximum Watt Power Consumption	11	11
PoE: Maximum 802.3af Class 3 Devices (15.4W)	N/A	N/A
PoE: Maximum 802.3af Class 2 Devices (7.3W)	N/A	N/A
AC/DC Support	AC Only	AC Only
Redundant Power Supply Support	No	No
Dimensions (H x W x D) Inches	1.75x10.6x8.4	1.75x10.6x8.4
Dimensions (H x W x D) Centimeters	4.44x26.9x21.3	4.44x26.9x21.3
Unit Weight Pounds (Kilograms)	2.8(1.27)	2.8 (1.27)

2960CPD-8TT-L	2960C-8PC-L	2960CPD-8PT-L
2.8	2.8	2.8
0	0	0
Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
N/A	N/A	N/A
3.8	3.8	3.8
8000	8000	8000
N/A	N/A	N/A
128	128	128
N/A	N/A	N/A
2	2	2
N/A	N/A	N/A
2	2	2
8	8	8
15	17	15
N/A	8	1
N/A	8	2
AC Only	AC Only	AC Only
No	No	No
1.75x10.6x6.8	1.75x10.6x9.4	1.75x10.6x6.8
4.44x26.9x17.2	4.44x26.9x23.8	4.44x26.9x17.2
2.4(1.88)	4.1(1.86)	2.4 (1.08)

Cisco Catalyst Compact Switches: Cisco Catalyst 3560-C and Catalyst 2960-C Series	
2960C-12PC-L	2960CG-8TC-L
3.2	10
0	0
Yes, 16 Switches/Cluster	Yes, 16 Switches/Cluster
N/A	N/A
4.6	13.2
8000	8000
N/A	N/A
64	64
N/A	N/A
2	2
N/A	N/A
2	2
12	10
19	15
8	N/A
8	N/A
AC Only	AC Only
No	No
1.75x10.6x9.4	1.75x10.6x8.4
4.44x26.9x23.8	4.44x26.9x21.3
41 (186)	3.0(135)

Product Overview

Product Number	Product Description
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Catalyst 3560-C Compact Switches

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

Catalyst 2960-C Compact Switches

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

Catalyst 3560-C and 2960-C Series Compact Switch Accessories

CMP-CBLE-GRD=	Cable guard for the 3560-C and 2960-C compact switches
CMP-MGNT-TRAY =	Magnet and Mounting Tray for 3560-C and 2960-C compact switches
PWR-ADPT=	Power Adapter for the 3560-C and 2960-C compact switches
PWR-CLP	Power Clip for the 3560-C and 2960-C compact switches

Cisco Fabric Extender Technology

Cisco Unified Fabric provides the foundational connectivity and unifies storage, data networking and network services delivering architectural flexibility and consistent networking across physical, virtual and cloud environment, enabling convergence, network scale, virtualization awareness, and intelligence through the industry-leading Cisco NX-OS.

As a key component to Cisco Unified Fabric, Cisco Fabric Extender (FEX) Technology comprises of technologies that enable fabric extensibility with simplified management enabling the switching access layer to extend and expand all the way to the server hypervisor as the customer's business grows.

Based on the emerging standard IEEE 802.1BR, Cisco FEX Technology solution comprises of a parent switch that can be a Cisco Nexus 5000 Series Switch, Nexus 7000 Series Switch or a Cisco UCS Fabric Interconnect. The parent switch is then extended to connect to the server either as a remote line card with Nexus 2000 Series Fabric Extenders or logically partition or virtualize adapter ports to connect to any type of servers—rack and/or blades, with Cisco Adapter FEX and VM-FEX technologies.

Nexus 2000 Series



The Cisco Nexus® 2000 Series Fabric Extenders comprise a category of data center products designed to simplify data center access architecture and operations. The Cisco Nexus 2000 Series uses the Cisco® Fabric Extender Technology (IEEE 802.1BR) to provide a highly scalable server-access architecture across a range of 100 Megabit Ethernet, Gigabit Ethernet, 10 Gigabit Ethernet, convergence (FCoE), copper and fiber connectivity, rack, and blade server environments. The platform is ideal to support today's traditional Gigabit Ethernet connectivity while allowing transparent migration to 10 Gigabit Ethernet, virtual machine-aware fabric technologies.

The Cisco Nexus 2000 Series Fabric Extenders behave as remote line cards for a parent Cisco Nexus switch (Cisco Nexus 5000 Series or Nexus 7000 Series Switches). The fabric extenders essentially behave as extensions of the parent Cisco Nexus switch fabric. This architecture enables physical topologies with the flexibility and benefits of both top-of-rack (ToR) and end-of-row (EoR) deployments.

The Cisco Nexus 2000 Series architecture provides the following benefits:

- **Architecture flexibility:** Common, scalable, and adaptive architecture across data center racks that support various server options, connectivity options, physical topologies and evolving needs.
- **Highly scalable server access:** Scalable Gigabit and 10 Gigabit Ethernet server access with no reliance on Spanning Tree.
- **Simplified operations:** One single point of management and policy enforcement using upstream Cisco Nexus switches eases the commissioning and decommissioning of server racks through zero-touch installation and automatic configuration of fabric extenders.
- **Increased business benefits:** Consolidation, cabling reduction, rack space reduction, reduced power and cooling, investment protection through feature inheritance from the parent switch, and the capability to add functions without the need for a major equipment upgrade of server-attached infrastructure all contribute to reduced operating expenses (OpEx) and capital expenditures (CapEx).

Product Overview

Description	Cisco Nexus 2148T	Cisco Nexus 2224TP	Cisco Nexus 2248TP	Cisco Nexus 2248TP-E
Fabric extender host interfaces	48	24	48	48
Fabric extender host interfaces type	100BASE-T ports: RJ-45 connectors	100BASE-T/1000BASE-T ports: RJ-45 connectors	100BASE-T/1000BASE-T ports: RJ-45 connectors	100BASE-T/1000BASE-T ports: RJ-45 connectors
Fabric extender fabric interfaces	4	2	4	4
Fabric extender fabric interfaces type	<ul style="list-style-type: none"> • Fiber: SFP+ optics (SFP-10G-SR and SFP-10G-LR) • Copper: 10 Gigabit Ethernet SFP+ passive Twinax copper cables (SFP-H10GB-CU1M, SFP-H10GB-CU3M, and SFP-H10GB-CU5M) and active Twinax copper cables (SFP-H10GB-ACU7M and SFP-H10GB-ACU10M) • Distance between Cisco Nexus 2000 Series Fabric Extender and Cisco Nexus 5000 Series Switch: Up to 3 km 	<ul style="list-style-type: none"> • Fiber: Cisco Fabric Extender Transceiver (FET-10G) and SFP+ optics (SFP-10G-SR and SFP-10G-LR) • Copper: 10 Gigabit Ethernet SFP+ passive Twinax copper cables (SFP-H10GB-CU1M, SFP-H10GB-CU3M, and SFP-H10GB-CU5M) and active Twinax copper cables (SFP-H10GB-ACU7M, SFP-H10GB-ACU10M) • Distance between Cisco Nexus 2000 Series Fabric Extender and Cisco Nexus 5000 Series Switch: Up to 3 km • Distance between Cisco Nexus 2000 Series Fabric Extender and Cisco Nexus 7000 Series Switch: Up to 10 km 	<ul style="list-style-type: none"> • Fiber: Cisco Fabric Extender Transceiver (FET-10G) and SFP+ optics (SFP-10G-SR and SFP-10G-LR) • Copper: 10 Gigabit Ethernet SFP+ passive Twinax copper cables (SFP-H10GB-CU1M, SFP-H10GB-CU3M, and SFP-H10GB-CU5M) and active Twinax copper cables (SFP-H10GB-ACU7M and SFP-H10GB-ACU10M) • Distance between Cisco Nexus 2000 Series Fabric Extender and Cisco Nexus 5000 Series Switch: Up to 3 km • Distance between Cisco Nexus 2000 Series Fabric Extender and Cisco Nexus 7000 Series Switch: Up to 10 km 	<ul style="list-style-type: none"> • Fiber: Cisco Fabric Extender Transceiver (FET-10G) and SFP+ optics (SFP-10G-SR and SFP-10G-LR) • Copper: 10 Gigabit Ethernet SFP+ passive Twinax copper cables (SFP-H10GB-CU1M, SFP-H10GB-CU3M, and SFP-H10GB-CU5M) and active Twinax copper cables (SFP-H10GB-ACU7M and SFP-H10GB-ACU10M) • Distance between Cisco Nexus 2000 Series Fabric Extender and Cisco Nexus 5000 Series Switch: Up to 3 km
Fabric speed	40 Gbps in each direction (80 Gbps full duplex)	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)
Oversubscription	1.2:1	1.2:1	1.2:1	1.2:1
Performance	Hardware forwarding at 176 Gbps or 131 million packets per second (mpps)	Hardware forwarding at 88 Gbps or 65 mpps	Hardware forwarding at 176 Gbps or 131 mpps	Hardware forwarding at 176 Gbps or 131 mpps
Cisco parent switch	Cisco Nexus 5000 Series	<ul style="list-style-type: none"> • Cisco Nexus 5000 Series • Cisco Nexus 7000 Series 	<ul style="list-style-type: none"> • Cisco Nexus 5000 Series • Cisco Nexus 7000 Series 	Cisco Nexus 5000 Series

Minimum software	Cisco NX-OS Release 4.0(1A)N2(1) (Nexus 5000 Series)	<ul style="list-style-type: none"> • Cisco NX-OS Release 4.2(1)N2(1) (Nexus 5000 Series) • Cisco NX-OS Release 5.2 on the Cisco Nexus 7000 Series 	<ul style="list-style-type: none"> • Cisco NX-OS Release 4.2 (Nexus 5000 Series) • Cisco NX-OS Release 5.1 (Nexus 7000 Series) 	Cisco NX-OS Release 5.1(3)N(1)1 (Nexus 5000 Series)
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Cisco Nexus 2000 Series Gigabit Ethernet Fabric Extenders Environment

Dimensions (height x width x depth)	1.72 x 173 x 20.0 in. (4.37 x 43.94 x 50.8 cm)	<ul style="list-style-type: none"> • 1.72 x 173 x 17.7 in. (4.37 x 43.94 x 44.96 cm) 	1.72 x 173 x 17.7 in. (4.37 x 43.94 x 44.96 cm)	1.72 x 173 x 17.7 in. (4.37 x 43.94 x 44.96 cm)
Weight	<ul style="list-style-type: none"> • 18 lb (8.2 kg) • *Systems are fully loaded with two power supplies and one fan tray 	<ul style="list-style-type: none"> • 16.6 lb (753 kg) • * Systems are fully loaded with two power supplies and one fan tray 	<ul style="list-style-type: none"> • 17.7 lb (8.0 kg) • * Systems are fully loaded with two power supplies and one fan tray 	<ul style="list-style-type: none"> • 17.7 lb (8.0 kg) • * Systems are fully loaded with two power supplies and one fan tray
Indicator and port specification	<ul style="list-style-type: none"> • System status: green (operational), amber (fault), flashing amber (POST boot up), off (no power) • Locator LED: bright blue locator • Port status: green (link established), amber (administratively disabled), flashing amber (fault) • Fan status: green (operational), amber (fault) • Power status: green (operational), amber (fault) 			
Environment	<ul style="list-style-type: none"> • Operating temperature: 32 to 104°F (0 to 40°C) • Nonoperating temperature: -4 to 158°F (-20 to 70°C) • Humidity: 5 to 95 percent (noncondensing) • Altitude: 0 to 10,000 ft (0 to 3000m) 			
Power supply	N2K-PAC-200W	N2200-PAC-400W, N2200-PAC-400W-B, and N2200-PDC-400W	N2200-PAC-400W, N2200-PAC-400W-B, and N2200-PDC-400W	N2200-PAC-400W, N2200-PAC-400W-B, and N2200-PDC-400W
Fan tray	N2K-C2148-FAN	N2K-C2248-FAN and N2K-C2248-FAN-B	N2K-C2248-FAN and N2K-C2248-FAN-B	N2K-C2248-FAN and N2K-C2248-FAN-B
Typical input operating power	150W (Max 165W)	80W (Max 95W)	95W (Max 110W)	95W (Max 110W)
Input current	<ul style="list-style-type: none"> • 1.5A/2.2A (typical/maximum) • Note: Input currents listed for 110V; divide by 2 for 220V • Supply will surge on AC power-up for a fraction of a second beyond this rating 	<ul style="list-style-type: none"> • 0.75A/0.90A (typical/maximum) • Note: Input currents listed for 110V; divide by 2 for 220V • Supply will surge on AC power-up for a fraction of a second beyond this rating 	<ul style="list-style-type: none"> • 1.0A/1.2A (typical/maximum) • Note: Input currents listed for 110V; divide by 2 for 220V • Supply will surge on AC power-up for a fraction of a second beyond this rating 	<ul style="list-style-type: none"> • 1.0A/1.2A (typical/maximum) • Note: Input currents listed for 110V; divide by 2 for 220V • Supply will surge on AC power-up for a fraction of a second beyond this rating
Output current	11.5A/16.7A (typical/maximum)	5A/7A (typical/maximum)	8A/10A (typical/maximum)	8A/10A (typical/maximum)
Heat dissipation	670 BTU/hr	201/282 BTU/hour (typical/maximum)	322/403 BTU/hour (typical/maximum)	322/403 BTU/hour (typical/maximum)

Product Overview

Description	Cisco Nexus 2232PP	Cisco Nexus 2232TM
Fabric extender host interfaces	32	32
Fabric extender host interfaces	1/10 Gigabit Ethernet ports SFP/ SFP+ (Supported transceiver and cables include Twinax SFP-H10GB-CU1M, SFP-H10GB-CU3M, SFP-H10GB-CU5M, SFP-H10GB-ACU7M, and SFP-H10GB-ACU10M, include SFP+ SFP-10G-SR, SFP-10G-LR, and include SFP GLC-T, GLC-SX-MM, GLC-LH-SM, SFP-GE-T, SFP-GE-S, SFP-GE-L)	1/10GBASE-T ports: RJ-45 connectors
Fabric extender fabric interfaces	8	Uplink module: 8 SFP+ (N2K-M2800P)
Fabric extender fabric interfaces	<ul style="list-style-type: none"> · Fiber: Cisco Fabric Extender Transceiver (FET-10G) and SFP+ optics (SFP-10G-SR and SFP-10G-LR) · Copper: 10 Gigabit Ethernet SFP+ passive Twinax copper cables (SFP-H10GB-CU1M, SFP-H10GB-CU3M, and SFP-H10GB-CU5M) and active Twinax copper cables (SFP-H10GB-ACU7M, SFP-H10GB-ACU10M) · Distance between Cisco Nexus 2000 Series Fabric Extender and Cisco Nexus 5000 Series Switch: Up to 3 km (300m for FCoE traffic) 	<ul style="list-style-type: none"> · Fiber: Cisco Fabric Extender Transceiver (FET-10G) and SFP+ optics (SFP-10G-SR and SFP-10G-LR) · Copper: 10 Gigabit Ethernet SFP+ passive Twinax copper cables (SFP-H10GB-CU1M, SFP-H10GB-CU3M, and SFP-H10GB-CU5M) and active Twinax copper cables (SFP-H10GB-ACU7M and SFP-H10GB-ACU10M) · Distance between Cisco Nexus 2000 Series Fabric Extender and Cisco Nexus 5000 Series Switch: Up to 3 km
Fabric speed	80 Gbps in each direction (160 Gbps full duplex)	80 Gbps in each direction (160 Gbps full duplex)
Oversubscription	4:1	4:1
Performance	Hardware forwarding at 560 Gbps or 595 mpps	Hardware forwarding at 560 Gbps or 595 mpps
Cisco parent switch	<ul style="list-style-type: none"> · Cisco Nexus 5000 Series · Cisco Nexus 7000 Series 	Cisco Nexus 5000 Series
Minimum software	<ul style="list-style-type: none"> · Cisco NX-OS Release 4.2 (Nexus 5000 Series) · Cisco NX-OS Release 5.2 (Nexus 7000 Series) 	Cisco NX-OS Release 5.0(3)N2(1) (Nexus 5000 Series)

Product Overview (continued)

Cisco Nexus 2000 Series 10 Gigabit Ethernet Fabric Extenders Environment

Dimensions (height x width x depth)	1.72 x 173 x 177 in. (4.37 x 43.94 x 44.96 cm)	1.72 x 173 x 177 in. 4.37 x 43.94 x 44.96 cm
Weight	18.3 lb1 (8.3 kg2)	18.5 lb2 (8.4 kg2)
Indicator and port specification	<ul style="list-style-type: none"> • System status: green (operational), amber (fault), flashing amber (POST boot up), off (no power) • Locator LED: bright blue locator • Port status: green (link established), amber (administratively disabled), flashing amber (fault) • Fan status: green (operational), amber (fault) • Power status: green (operational), amber (fault) 	
Environment	<ul style="list-style-type: none"> • Operating temperature: 32 to 104°F (0 to 40°C) • Nonoperating temperature: -4 to 158°F (-20 to 70°C) • Humidity: 5 to 95 percent (noncondensing) • Altitude: 0 to 10,000 ft (0 to 3000m) 	<ul style="list-style-type: none"> • Operating temperature: 32 to 104°F (0 to 40°C) • Nonoperating temperature: -4 to 158°F (-20 to 70°C) • Humidity: 5 to 95 percent (noncondensing) • Altitude: 0 to 10,000 ft (0 to 3000m)
Power supply	• N2200-PAC-400W, N2200-PAC-400W-B, and N2200-PDC-400W	• N2200-PAC-400W, N2200-PAC-400W-B, N2200-PDC-400W
Fan tray	N2K-C2232-FAN and N2K-C2232-FAN-B	N2K-C2232-FAN and N2K-C2232-FAN-B
Typical input operating power	225W (Max 270W)	280 to 350W (Max 386W)
Input current	<ul style="list-style-type: none"> • 2.5A/4.1A (typical/maximum) • Note: Input currents listed for 110V; divide by 2 for 220V • Supply will surge on AC power-up for a fraction of a second beyond this rating 	3.18A/3.51A
Output current	20A/33A (typical/maximum)	26A/28.9A
Heat dissipation	806/1330 BTU/hour (typical/maximum)	1176/1297 BTU/hour (typical/maximum)

Product Overview

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-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-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)



Part Number	Description
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Fan Modules

N2K-C2148T-FAN=	Cisco Nexus 2148T FEX Fan Module (Std airflow, port side exhaust), spare
N2K-C2248-FAN=	Cisco Nexus 2224TP, 2248TP, and 2248TP-E FEX Fan Module (Std airflow, port side exhaust), spare
N2K-C2232-FAN=	Cisco Nexus 2232PP and 2232TM FEX Fan Module (Std airflow, port side exhaust), spare
N2K-C2248-FAN-B=	Cisco Nexus 2224TP, 2248TP, and 2248TP-E FEX Fan Module, Back-to-front airflow (Reversed airflow, port side intake), spare
N2K-C2232-FAN-B=	Cisco Nexus 2232PP and 2232TM FEX Fan Module, Back-to-front airflow (Reversed airflow, port side intake), spare

Power Supplies

N2K-PAC-200W(=)	Cisco Nexus 2148T FEX 1GE 200W Power supply (Std airflow, port side exhaust), spare
N2200-PAC-400W=	Cisco Nexus 2200 AC Power supply (Std airflow, port side exhaust), spare
N2200-PAC-400W-B=	Cisco Nexus 2200 AC Power supply, Back-to-front airflow (Reversed airflow, port side intake), spare
N2200-PDC-400W=	Cisco Nexus 2200 DC Power supply (Std airflow, port side exhaust), spare
N2K-P1-BLNK=	Cisco Nexus 2148T FEX 1GE Power supply Blank, spare
N2200-P-BLNK=	Cisco Nexus 2200 Power supply Blank, spare

Transceivers and Cables

SFP-10G-SR(=)	10GBASE-SR SFP+ Module
SFP-10G-LR(=)	10GBASE-LR SFP+ Module
SFP-H10GB-CU1M(=)	10GBASE-CU SFP+ Passive Cable 1 Meter
SFP-H10GB-CU3M(=)	10GBASE-CU SFP+ Passive Cable 3 Meter
SFP-H10GB-CU5M(=)	10GBASE-CU SFP+ Passive Cable 5 Meter
SFP-H10GB-ACU7M(=)	10GBASE-CU SFP+ Active Cable 7 Meter
SFP-H10GB-ACU10M(=)	10GBASE-CU SFP+ Active Cable 10 Meter
GLC-T(=)	1000BASE-T SFP
GLC-SX-MM(=)	GE SFP, LC connector SX transceiver
GLC-LH-SM(=)	GE SFP, LC connector LX/LH transceiver
SFP-GE-T(=)	1000BASE-T SFP, Extended Temperature Range
SFP-GE-S(=)	GE SFP, LC connector SX transceiver, with Digital Optical Monitoring (DOM) and Extended Temperature Range
SFP-GE-L(=)	GE SFP, LC connector LX/LH transceiver, with Digital Optical Monitoring (DOM) and Extended Temperature Range

Accessory Kit

N2K-C2148T-ACC=	Cisco Nexus 2000 FEX 1GE Accessory Kit, spare
N2200-ACC-KIT=	Cisco Nexus 2200 FEX Accessory Kit, spare
NXA-AIRFLOW-SLV=	Nexus 2K/3K airflow extension sleeve
NXA-ACC-KIT-BAV=	Nexus 2K/3K airflow vent accessory kit

Power Cords

CAB-N5K6A-NA(=)	Power Cord, 210/220V 30A North America
CAB-AC-250V13A(=)	Power Cord for North America, 125VAC/13A
CAB-C13-C14-JMPR(=)	Recessed receptacle AC power cord 27
CAB-C13-C14-2M(=)	Power Cord Jumper, C13-C14 Connectors, 2 Meter Length
CAB-C13-C14-AC(=)	Power Cord Jumper, C13-C14 Connectors, 3 Meter Length
CAB-C13-CBN(=)	Cabinet Jumper Power Cord, 250 VAC 16A, C14-C13 Connectors
CAB-9K12A-NA(=)	Power Cord, 125VAC 15A NEMA 5-15 Plug, North America
SFS-250V-10A-AR(=)	SFS Power Cord - 250V, 10A - Argentina
CAB-9K10A-AU(=)	Power Cord, 250VAC 10A 3112 Plug, Australia
SFS-250V-10A-CN(=)	SFS Power Cord - 250V, 10A - PRC
CAB-9K10A-EU(=)	Power Cord, 250VAC 10A CEE 7/7 Plug, EU
SFS-250V-10A-ID(=)	SFS Power Cord - 250V, 10A - South Africa, UAE, India
CAB-IND-10A(=)	10A Power cable for India
SFS-250V-10A-IS(=)	SFS Power Cord - 250V, 10A - Israel
CAB-9K10A-IT(=)	Power Cord, 250VAC 10A CEI 23-16/VII Plug, Italy
CAB-9K10A-SW(=)	Power Cord, 250VAC 10A MP232 Plug, Switzerland
CAB-9K10A-UK(=)	Power Cord, 250VAC 13A BS1363 Plug (13 A fuse), UK

Blade Switches

Cisco Nexus 4000 Series switches are purpose-built to provide the server access foundation required for scale-out virtualized x86 computing architectures built on high density blade servers. The Cisco Nexus 4000 Series is an all 10-Gbps Fibre Channel over Ethernet (FCoE) switch that is fully compliant with the IEEE 802.1 Data Center Bridging specification. Cisco Nexus 4000 Series provides innovative architecture to simplify data center transformation, enabling standards-based, high performance and convergence over 10 Gigabit Ethernet in the blade server environment.



Nexus 4000 Series

Cisco Nexus Blade Switch for IBM

The Cisco Nexus 4001I 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, extremely low-latency, non-blocking, Layer 2, 10 Gigabit Ethernet blade switch. At the core of the Cisco Nexus 4001I is the unified switch ASIC, a new purpose-built, high performance, line-rate switch ASIC that delivers extremely low and consistent latency across all packet sizes independent of the configured networking features. The unified switch ASIC supports standard Ethernet as well as Priority Flow Control (PFC) and Enhanced Transmission Selection (ETS), required for lossless Ethernet transmission.

LAN and SAN networking protocols are delivered through Cisco NX-OS, a modular, fault-tolerant, highly available operating system designed specifically to support unified fabric data center networks.

Nexus 4000 Series Switch Spotlight

Lower total cost of operation (TCO):

Deployment of unified fabric with the Cisco Nexus 4001I at the blade server access enables a significant reduction in the number of switches, LAN and SAN network interface cards (NICs), ports, optic modules, and cables. This consolidation of server access network elements significantly reduces the overall capital and operation costs of the data center network through reduction in the number of network elements that need to be purchased, managed, powered, and cooled.

High performance:

The Cisco Nexus 4001I is a line-rate, feature-rich, extremely low-latency switch capable of enabling server access migration from Gigabit Ethernet to 10 Gigabit Ethernet to lossless 10 Gigabit Ethernet, as well as supporting the demanding latency requirements of high-performance computing (HPC) clusters and high-frequency trading applications.

Enhanced server virtualization

Using unified fabric at the server access with Cisco Nexus 4001I provides the uniform interfaces, simplified cabling, and consistent server access design required to gain the advantages of automated virtual machine mobility. The Cisco Nexus 4001I used in conjunction with the Cisco Nexus 1000V Switch delivers an operationally consistent and transparent server access design for virtual machine deployments, substantially reducing the overhead needed to configure, troubleshoot, and repair the server access link between the virtual NIC (vNIC), virtual switch, and the blade switch.

Increased resilience

The Cisco Nexus 4001I extends Cisco NX-OS to the blade server access, providing a fault-tolerant network with single modular operating system across the data center.

Product Overview

Product Number	Product Description
Chassis	
N4K-4001I-XPX	Cisco Nexus 4001I Switch Module for IBM Blade Center
Software Licenses	
N4K-4001I-SSK9	Cisco Nexus 4001I Storage Protocol Services License
Cables and Optics	
SFP-10G-SR(=)	10GBASE-SR SFP+ Module
SFP-10G-LR(=)	10GBASE-LR SFP+ Module
SFP-H10GB-CU1M(=)	10GBASE-CU SFP+ Cable 1 m
SFP-H10GB-CU3M(=)	10GBASE-CU SFP+ Cable 3 m
SFP-H10GB-CU5M(=)	10GBASE-CU SFP+ Cable 5 m
GLC-T(=)	1000BASE-T SFP
GLC-SX-MM(=)	GE SFP, LC Connector SX Transceiver
GLC-LH-SM(=)	GE SFP, LC Connector LX/LH Transceiver

Hardware Features: Nexus 4000 Series

	N4K-4001I-XPX
Switching Fabric (Gbps)	400
Packets per Second (Mpps)	300
MAC Addresses Supported	8192
Latency (microseconds)	1.5
Maximum Transfer Unit (bytes)	9216 (jumbo frames)
Number of Configurable VLANs	512 (configurable range 1 to 4096)
Onboard Memory	2-GB DDR2 DIMM with ECC
Flash Memory	1-GB eUSB
Hardware Queues per Port	8
1 or 10 GBE Server Facing Ports	14
1 or 10 GBE Uplinks	10
10/100/1000 Management Ports	2
Maximum Watt Power Consumption	12V at 5.75A (69W)
AC/DC Support	AC Only
Redundant Power Supply Support	No
Dimensions (L x W x H) Inches	10.27 x 11.57 x 0.79
Dimensions (L x W x H) Millimeters	260.93 x 293.9 x 20
Unit Weight Pounds (Kilograms)	3.94 (1.79)
Predicted Mean Time Between Failures (MTBF)	Approx. 187265 hours

Virtual Switches

When server virtualization is deployed in the data center, virtual servers typically are not managed the same way as physical servers. Server virtualization is treated as a special deployment, leading to longer deployment time, with a greater degree of coordination among server, network, storage, and security administrators. With the Cisco Nexus 1000V Series, deployment of your virtualized servers allows you to have a consistent networking feature set and provisioning process all the way from the VM access layer to the core of the data center network infrastructure allowing your virtual servers to leverage the same network configuration, security policies, diagnostic tools, and operations models.



Cisco Nexus 1000V Series Switches

The Cisco Nexus 1000V is a switching platform designed to provide:

- Advanced virtual machine networking, such as adding server virtualization intelligence into the network
- Cisco vPath architecture that supports a variety of virtualized network services including Virtual Security Gateway
- Cloud deployment optimization, such as extending the range of vMotion between two physical data centers

The Nexus 1000V has two major components, the Virtual Ethernet Module (VEM) and the Virtual Supervisor Module (VSM).

The VEM is the Cisco software switch inside the VMware ESX or ESXi hypervisor and replaces the VMware Virtual Switch functionality. Its advanced switching features include Quality of Service, Link Aggregation, Access Control List, NetFlow, ERSPAN, and many others. Together, these features allow you to optimize the virtual machine network with more robust connectivity. The VEMs are managed by the VSM, which is an instance of NX-OS. In fact, the VSM manages a collection of VEMs as a single network device.

With Nexus 1000V, network administrator is able to define network policies on the VSM. These policies include network configuration information such as VLANs, Access Control List, Quality of Service and others. These policies appear in the VMware vCenter Server as port groups that can be applied to individual VMs. Therefore, with Nexus 1000V, both the network administrators and server virtualization administrators are able to independently configure the virtual machine network using familiar tools, such as NX-OS and VMware vCenter Server.

Once these policies are attached to the VM, they follow the VM throughout its lifecycle, including vMotion. In fact, during vMotion, VMs can continue traffic monitoring activities, such as ERSPAN and Netflow, because Nexus 1000V moves the entire network state of the VM.

In addition to switching functionalities, Nexus 1000V supports a variety of virtualized Layer 4–7 services through an architecture called vPath.

Cisco vPath can optimize the deployment of a virtual firewall, such as Virtual Security Gateway. If there's a VM that requires firewall services for its data traffic, instead of installing a firewall VM on every physical server, Cisco vPath intelligently redirects traffic to another server that hosts the firewall VM, and provides a much more flexible deployment model.

Cisco vPath also provides decision caching. The VEM caches the virtual firewall decision in a flow table. Hence, future packets in this flow no longer need to be redirected to the external server. Because the Intelligent Traffic Steering and Decision Caching are taking place inside the VEM, their performance is accelerated since VEM is in the hypervisor kernel.

The VSM can be deployed as a VM on VMware vSphere. Or the VSM can be deployed on the Cisco Nexus 1010 Virtual Services Appliance for customers who prefer to have dedicated computing platform. In both deployment options, the VEM continues to be used in the hypervisor.

With the Nexus 1010, customers can enjoy additional functionalities, such as Network Analysis Module and additional Virtual Service Blades. For customers who are considering cloud deployments, Nexus 1000V also enables vMotion between physical data centers and also works with VMware vCloud Director. In summary, Nexus 1000V enables VMs to be treated as a basic building block of the data center that empowers both network and virtualization administrators to manage the VM network with their own familiar tools.

Product Specifications

VMware Product Compatibility

The Cisco Nexus 1000V Series is VMware Ready Certified to be compatible with VMware vSphere as a vNetwork

Distributed Switch with support for VMware ESX and ESXi hypervisors and integration with VMware vCenter Server.

VMware vSphere Feature Compatibility

The Cisco Nexus 1000V Series is supported with the following VMware vSphere features:

- VMware vMotion
- VMware Distributed Resource Scheduler (DRS)
- VMware High Availability (HA)
- VMware Storage vMotion
- VMware Fault Tolerance (FT)
- VMware Update Manager
- VMware vShield Zones

Product Specifications (continued)

Maximum Supported Configurations

- 64 VMware ESX or ESXi hosts per VSM
- 2048 virtual Ethernet ports per VMware vDS, with 216 virtual Ethernet ports per physical host
- 2048 active VLANs
- 2048 Port Profiles
- 32 physical NICs per physical host
- 256 PortChannels per VMware vDS, with 8 PortChannels per physical host

Virtual Machine–Optimized Services

Cisco Nexus 5000 Series Switches are designed to support virtualization and virtual machine mobility by mapping virtual machines to network profiles, allowing network services allocation at per-virtual machine granularity centrally from the unified fabric. This capability to move virtual machines and network profiles together eases manageability, increases isolation, and enables consistent network and security policies.

System Requirements

- Optimized for maximum services scalability
- Cisco Nexus 1000V Series VSM:
- VSM can be deployed as a virtual machine on VMware ESX or ESXi 3.5U2 or higher or ESX or ESXi 4.0
- Hard disk: 3 GB
- RAM: 2 GB
- 1 virtual CPU at 1.5 GHz
- Cisco Nexus 1000V Series VEM
- VMware ESX or ESXi 4.0 or later
- Hard disk space: 6.5 MB
- RAM: 150 MB
- Number of VLANs for Layer 2 connectivity between VSM and VEM: 1
- Server on VMware Hardware Compatibility List (<http://www.vmware.com/go/hcl>)
- Compatible with any upstream physical switches, including all Cisco Nexus and Cisco Catalyst® switches as well as Ethernet switches from other vendors

Product Overview

Product Number	Product Description
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

The Cisco Nexus 1000V Series has a 90-day limited software warranty. For more information about the Cisco Nexus 1000V Series warranty, see http://www.cisco.com/en/US/docs/general/warranty/English/EU1KEN_.html.

Cisco Optics

Cisco offers a comprehensive portfolio of pluggable transceiver modules across Cisco switching and routing platforms. Cisco pluggable transceivers provide a convenient, scalable and modular solution for the adoption of Fast Ethernet, Gigabit Ethernet, 10 Gigabit Ethernet, and 40G/100G Ethernet in data center, campus, storage area, metro access and service provider core networks.

As part of the Cisco end-to-end solution, pluggable transceivers are individually tested and qualified across switching and routing platforms and are an integral part of the overall architecture. Sold as spares or configurable options, transceiver modules benefit from the pay-as-you-populate model they enable. Customers can purchase the exact model and quantity required for their cabling infrastructure and for the number of ports they are planning to utilize. Additionally, customers can rest assured their investment in the Cisco equipment is protected as they will have the opportunity to reconfigure their connectivity scheme with our breadth of offerings. Cisco transceiver modules are fully supported by the Cisco Technical Assistance center and warranty contracts purchased for the Cisco platform where they are used are directly applicable to the transceivers at no extra cost.

Cisco 40 and 100 Gigabit Modules

Cisco offers a range of QSFP+ and CFP modules for 40 Gigabit Ethernet (40 GBE) and 100 Gigabit Ethernet (100 GBE) deployments. To meet ever growing bandwidth requirements in service provider, data center and enterprise networks, 40 and 100 Gigabit Ethernet was officially standardized in July 2010 under IEEE 802.3ba. In response, Cisco's Transceiver Module Group now delivers industry-leading, standard-compliant, multi-source agreement (MSA) compliant 40 GBE and 100 GBE pluggable transceiver modules.

100 GBE CFP modules help provide connectivity options within service provider network and from large data centers to service provider networks. Offered for several reaches and transmission media, these modules are supported in Nexus 7000 series switches, as well as Cisco CRS and ASR 9000 series routers. For further compatibility details including minimum software requirements and line cards support, please refer to the 100-Gigabit compatibility matrix:

http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_23876.pdf

40 GBE QSFP+ and CFP modules address bandwidth growth requirements from server access switches to distribution and core layers of data centers and enterprise, and enable connectivity into service provider networks. Offered for several reaches and transmission media, these modules are supported in Nexus 3000 and 7000, series switches, as well as Catalyst 6500 series switches. For further compatibility details including minimum software requirements and line cards support, please refer to the 40-Gigabit compatibility matrix:

http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_24900.pdf

Cisco 10 Gigabit Modules

Cisco offers a range of XENPAK, X2, XFP, and SFP+ modules for 10 Gigabit Ethernet (10 GBE) deployments. These Cisco transceivers meet Cisco specifications and are compliant with industry standards. Cisco XENPAK, X2, XFP, and SFP+ offer a convenient and cost-effective solution for the adoption of 10 GBE in data center, campus, metropolitan area access, and ring networks.

XENPAK modules are offered for several reaches and transmission media and are supported on the Catalyst 6500, 3750 Series switches, and CRS-1 routers today.

X2 modules are also offered for several reaches and transmission media and are supported on the Catalyst 4500, 4900, and 6500 Series switches, and Nexus 7000 Series switches today.

The Cisco XFP Module offers customers a dual rate interface for 10 GBE and Packet-over-SONET/SDH (POS) connectivity. XFPs are currently supported on Cisco 7600, ASR 1000, ASR 9000, CRS routers, as well as with Shared Port Adapter (SPA) modules across multiple Cisco platforms.

SFP+ is the smallest 10 GBE form factor enabling lowest power consumption per 10G port and highest port density per line card. It is supported in the latest Catalyst 2960-S, 3560X, 3750X, 4948E, and 4500 series switches. It is also supported in Nexus 2000, 3000, 5000, 7000 series Server Access and Datacenter switches and in ASR 9000 routers. Also SFP+ devices can be supported through the OneX X2 to SFP+ converter modules in the X2 ports of Catalyst 4500, 4900, and 6500 Series switches. They are also supported through the FourX CFP to SFP+ converter modules in the CFP ports of Catalyst 6500 and Nexus 7000 series switches.

For further compatibility details including minimum software requirements and exact line cards and switch modules support, please refer to the 10-Gigabit compatibility matrix:

http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_6974.pdf

Cisco Gigabit Ethernet GBIC and SFP Modules

Cisco offers a range of GBIC transceivers and Small Form-factor Pluggable (SFP) transceivers for Gigabit Ethernet and Fibre Channel applications. These small, modular optical interface transceivers offer a convenient and cost-effective solution for the adoption of Gigabit Ethernet and Fibre Channel in data center, campus, metropolitan area access and ring networks, and storage area networks.

Gigabit Ethernet SFP modules are supported across all Cisco switching and routing platforms today, whereas GBIC modules are supported with legacy Cisco line cards and switches.

For compatibility details including minimum software requirements and exact line cards and switch modules support, please refer to the Gigabit Ethernet compatibility matrix:

http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL_6981.pdf

Cisco Fast Ethernet SFP Modules

Cisco offers a range of Fast Ethernet SFP Interface Transceivers. These small, modular optical interface transceivers offer a convenient and cost-effective solution for the adoption of Fast Ethernet over fiber medium in campus, industrial, and small and medium business access networks.

For compatibility information including minimum software requirements and exact line cards and switch modules support, please refer to the Fast Ethernet compatibility matrix:

http://www.cisco.com/en/US/docs/interfaces_modules/transceiver_modules/compatibility/matrix/OL632702.pdf

Cisco CWDM Solution

Cisco Coarse Wave Division Multiplexing (CWDM) Solution allows scalable and easy-to-deploy Gigabit Ethernet (GBE) and Fibre Channel services. The combination of CWDM GBICs and CWDM SFPs and CWDM Optical Add-Drop Modules (OADMs) and Multiplexers enables the design of a flexible and highly available multiservice network.

The Cisco CWDM Solution offers a convenient and cost-effective solution for the adoption of optical Gigabit Ethernet in campus, data center, and metropolitan-area access networks. Cisco CWDM Solution consists of a set of eight different Cisco CWDM GBICs (one for each of the eight different colors or wavelengths), eight different SFPs, a set of eight single wavelength/dual channel OADMs, two four-channel OADM/Multiplexer and an eight-channel Multiplexer along with a CWDM rack-mountable chassis.

Cisco DWDM Transceiver Modules

The Cisco Dense Wave Division Multiplexing (DWDM) transceiver modules allow users to integrate WDM transport directly with Cisco 1 GBE and 10 GBE switches and routers. Cisco offers GBIC and SFP DWDM modules for 1-Gigabit links, and XENPAK, X2, XFP DWDM modules for 10-Gigabit links. The DWDM modules and DWDM optical filter and amplifier products (Cisco ONS 15216 and EWDM series) enable the design of a flexible and highly available multiservice network. The DWDM modules support 100GHz ITU grid and can be used for unamplified and amplified designs to transmit up to 400 Gigabits over one pair of fiber. Tunable DWDM XFP modules support 80 channels on 50GHz ITU grid and can be used to transmit up to 800 Gigabits over one pair of fiber.



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