
Catalyst 3500 Series XL — Stackable 10/100 and Gigabit Ethernet Switches

Product Overview

The Cisco Systems Catalyst 3500 series XL is a scalable line of stackable 10/100 and Gigabit Ethernet switches that deliver premium performance, manageability, and flexibility, with unparalleled investment protection. This line of low-cost, high-performance switching solutions provides next-generation stackable switching. Catalyst 3500 XL stacks allow management of all switched ports from a single IP address and provide interconnected switches with an independent high-speed stack bus that preserves valuable desktop ports.

Cisco Catalyst 3500 series XL switches take stacking to a new level with revolutionary Cisco Switch Clustering technology and GigaStack GBICs. With Cisco Switch Clustering, users can manage over 380 ports from a single IP address, and connect up to 16 switches, regardless of physical location, with a broad range of Ethernet, Fast Ethernet, and Gigabit Ethernet media. Cisco Switch Clustering is supported on all Catalyst 3500 XL, 2900 XL and Catalyst 1900 switches.

All Catalyst 3500 series XL switches feature Cisco IOS software and Cisco Visual Switch Manager (CVSM) software, an easy-to-use Web-based management interface. All high-performance Catalyst 3500 series XL switches are available in either Standard or Enterprise Editions. Enterprise Edition switches offer advanced software features, including complete 802.1Q and ISL VLAN support, TACACS+ security, and fault tolerance through Uplink Fast.

Key Features and Benefits

Exceptional Performance

- 10 Gbps switching fabric and up to 6.5 million packets-per-second forwarding rate, ensuring full-wire speed operation for each 10BaseT/100BaseTX and Gigabit Ethernet port
- 4 MB shared memory architecture, ensures the highest-possible throughput with a design that eliminates head-of-line blocking, minimizes packet loss, and delivers better overall performance in environments with extensive multicast and broadcast traffic
- Full-duplex operation on all ports, delivering up to 200 Mbps on 10/100 ports or 2 Gbps on 1000BaseX ports
- 8 MB DRAM and 4 MB Flash memory onboard, enabling the addition of a continuous stream of feature upgrades
- Two priority forwarding queues on each 10/100 port and eight priority forwarding queues on all Gigabit Ethernet ports, enabling network traffic prioritization and seamless data, voice, and video integration (enabled in future software)

Flexible and Scalable Switch Clustering and Stacking

- GigaStack GBIC delivers a low-cost, independent stack bus with a 1 Gbps forwarding bandwidth in a daisy-chain configuration, with up to nine Catalyst 3500 XL or gigabit-enabled Catalyst 2900 series XL switches or a 2 Gbps forwarding rate in a point-to-point configuration
- Cisco switch clustering technology allows a user to manage up to 16 interconnected Catalyst 3500 XL, 2900 XL, and Catalyst 1900 switches through a single IP address regardless of location
- GBIC-based Gigabit Ethernet ports give customers a choice of 1000BaseSX, 1000BaseLX/LH, or Cisco GigaStack stacking GBICs to fit their connection needs

Integrated Cisco IOS Switching Solution

- Bandwidth aggregation through Fast EtherChannel and Gigabit EtherChannel technology, enhancing fault tolerance and offering from 400 Mbps up to 4 Gbps of aggregated bandwidth between switches, and to routers and individual servers
- Cisco Group Management Protocol (CGMP) Fast Leave support reduces network traffic by allowing a switch to selectively and dynamically forward routed IP multicast traffic to targeted end stations, providing network support for multimedia and minimizing network traffic
- Virtual LAN trunks can be created from any port using either standards-based 802.1Q tagging or the Cisco ISL VLAN architecture

Superior Manageability

- Built-in Web-based Cisco Visual Switch Manager (CVSM) provides easy-to-use Web-based management interface through a standard browser such as Netscape Navigator or Microsoft Explorer
- Simple Network Management Protocol (SNMP) and Telnet interface support deliver comprehensive in-band management, and a CLI-based management console provides detailed out-of-band management
- Manageable through CiscoWorks 2000 network management software on a per-port and per-switch basis, providing a common management interface for Cisco routers, switches, and hubs
- Embedded Remote Monitoring (RMON) software agent supports four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis
- IEEE 802.1p Layer-2 prioritization protocol ready, allowing users to assign data packets to prioritized forwarding queues

Cisco 1000BaseT GBIC—Gigabit Interface Converter

The Cisco 1000BaseT Gigabit Interface Converter (GBIC) is an ideal solution for Catalyst 3500 Series XL and Catalyst 2900 Series XL customers, providing full duplex Gigabit Ethernet connectivity to high-end workstations and between wiring closets over existing copper infrastructures. The GBIC technology leverages the industry's flexible, standards-based 1000BaseX design allowing for a simple and low-cost migration path to Gigabit Ethernet.

The availability of the new 1000BaseT GBIC increases the deployment and application flexibility of the Catalyst 3500 Series XL and 2900 Series XL with a range of media transceivers that include multiple stacking options, short-and long-haul fiber, and copper connectivity (including SX, LX/LH, ZX, TX, and Cisco GigaStack converters).

For more information, see

Specifications

Hardware

Hardware Specifications for the Catalyst 3500 Series XL

Table 21-83: Technical Specifications for the Catalyst 3500 Series XL

Description	Specification
Performance	10.8 Gbps switching fabric 8.8 million packets-per-second forwarding rate (Catalyst 3548 XL) 7.5 million packets-per-second forwarding rate (Catalyst 3508G XL) 6.5 million packets-per-second forwarding rate (Catalyst 3524 XL) 4.8 million packets-per-second forwarding rate (Catalyst 3512 XL) (All forwarding rates for 64-byte packets) 5.4 Gbps max forwarding bandwidth 4 MB shared-memory architecture shared by all ports Packet forwarding rate for 64-byte packets: 14,880 PPS to 10 Mbps ports 148,800 PPS to 100BaseT ports 1,488,000 PPS to 1000BaseX ports 8192 Media Access Control (MAC) addresses 8 MB DRAM and 4 MB Flash memory onboard
Management	IEEE 802.3x full duplex on 10BaseT, 100BaseTX, and 1000BaseX ports IEEE 802.1D Spanning-Tree Protocol IEEE 802.1Q VLAN IEEE 802.3z 1000BaseX specification 1000BaseX (GBIC) 1000BaseSX 1000BaseLX/LH IEEE 802.3u 100BaseTX specification IEEE 802.3 10BaseT specification

Description	Specification
Y2K	Y2K compliant
Connectors and Cabling	10BaseT ports: RJ-45 connectors; two-pair category 3, 4, or 5 unshielded twisted-pair (UTP) cabling 100BaseTX ports: RJ-45 connectors; two-pair Category 5 UTP cabling 1000BaseX GBIC ports: SC fiber connectors, single mode or multimode fiber GigaStack GBIC ports: copper-based Cisco GigaStack cabling Management console port: RJ-45 connector, RS-232 serial cabling
Indicators	Per-port status LEDs - link integrity, disabled, activity, speed, and full-duplex indications System status LEDs - system, RPS, and bandwidth utilization indications
Warranty	Note All units include a lifetime return-to-factory warranty

Table 21-84: Power Requirements for Catalyst 3500 Series

Description	Catalyst 3512 XL	Catalyst 3524 XL	Catalyst 3548 XL	Catalyst 3508G
Power consumption	70W maximum; 239 BTU per hour	70W maximum; 239 BTU per hour	100W maximum; 239 BTU per hour	70W maximum; 239 BTU per hour
AC input voltage	100 to 120/200 to 240 VAC (autoranging) 50 to 60 Hz	100 to 120/200 to 240 VAC (autoranging) 50 to 60 Hz	100 to 120/200 to 240 VAC (autoranging) 50 to 60 Hz	100 to 120/200 to 240 VAC (autoranging) 50 to 60 Hz

Table 21-85: Physical and Environmental Specifications for Catalyst 3500 Series

Description	Catalyst 3512 XL	Catalyst 3524 XL	Catalyst 3548 XL	Catalyst 3508G
Operating temperature	32 to 113°F (0 to 45°C)	32 to 113°F (0 to 45°C)	32 to 113°F (0 to 45°C)	32 to 113°F (0 to 45°C)
Storage temperature	-13 to 158°F (-25 to 70°C)	-13 to 158°F (-25 to 70°C)	-13 to 158°F (-25 to 70°C)	-13 to 158°F (-25 to 70°C)
Operating relative humidity	10 to 85% noncondensing	10 to 85% noncondensing	10 to 85% noncondensing	10 to 85% noncondensing
Operating altitude	Up to 10,000 ft (3000 m)	Up to 10,000 ft (3000 m)	Up to 10,000 ft (3000 m)	Up to 10,000 ft (3000 m)
Weight	10.25 lb (4.6 kg)	10.25 lb (4.6 kg)	10.5 lb (4.7 kg)	12 lb (5.4 kg)
Dimensions (H x W x D)	1.75 x 17.5 x 11.8 in. (4.4 x 44.5 x 30 cm)	1.75 x 17.5 x 11.8 in. (4.4 x 44.5 x 30 cm)	1.75 x 17.5 x 15.3 in. (4.4 x 44.5 x 39 cm)	1.75 x 17.5 x 16 in. (4.4 x 44.5 x 40.6 cm)

Software

For software specification information, access Cisco Connection Online at <http://www.cisco.com>

Ordering Information

Where to buy Cisco products

Visit http://www.cisco.com/public/ordering_info.shtml

Product and Part Numbers

Part Numbers for the Catalyst 3500 Series XL

Part Description	Part Number
Catalyst 3500 Series XL Workgroup Switches	
GigaStack Stacking GBIC and 50cm cable	WS-X3500-XL
Catalyst 3508G XL Enterprise Edition	WS-C3508G-XL-EN
Catalyst 3512 XL Enterprise Edition	WS-C3512-XL-EN
Catalyst 3524 XL Enterprise Edition	WS-C3524-XL-EN
Catalyst 3548 XL Enterprise Edition	WS-C3548-XL-EN
Catalyst 3524-PWR-XL Enterprise Edition	WS-C3524-PWR-XL-EN
Cables for the Catalyst 3500 XL	
1 meter cable for GigaStack GBIC	CAB-GS-1M
50 centimeter cable for GigaStack GBIC	CAB-GS-50CM
Modules for the Catalyst 3500 XL	
GigaStack Stacking GBIC and 50cm cable	WS-X3500-XL
1000BASE-SX	WS-G5484=
1000BASE-LX/LH	WS-G5486=
1000Base-ZX extended reach GBIC(singlemode)	WS-G5487=
Cisco 1000BaseT GBIC Gigabit Interface Converter	WS-G5482
Software for the Catalyst 3500 XL	
Catalyst 3500-XL Enterprise Software	WS-C3500-SA6-EN
Catalyst 3500-XL Enterprise Software, 10-system license	WS-C3500-SA6-10EN
Accessories for the Catalyst 3500 XL	
Rack Mount Kit for 1RU Catalyst 1900,2900XL,3500XL & FastHub	STK-RACKMOUNT-1RU=

Documentation

For part numbers for product specific documentation, visit

http://www.cisco.com/univercd/cc/td/doc/pcat/swdo__d1.htm

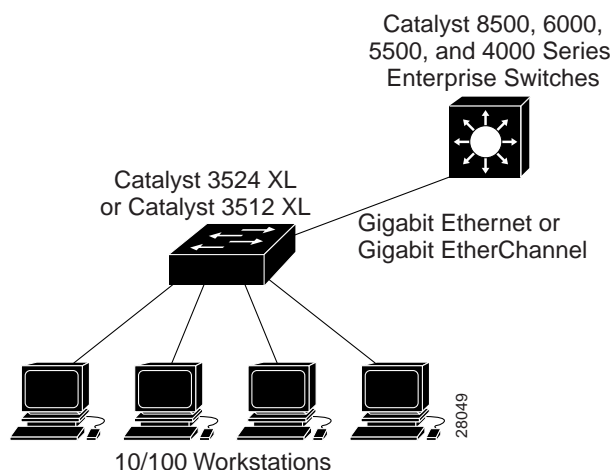
Example Configuration

The three major product applications of the Catalyst 3500 series XL are defined as follows:

10/100 Desktop Connectivity

Catalyst 3500 series XL switches can be deployed for high-performance desktop connectivity providing dedicated 10 or 100 Mbps to workstations (Figure 1-8.). Gigabit Ethernet ports will be used for uplink connections to servers or uplinks to the corporate backbone. The Catalyst 3512 XL offers a low entry price 10/100 solution, while the Catalyst 3524 XL offers the lowest price-per-port.

Figure 21-8: Catalyst 3512 XL or Catalyst 3524 XL for Desktop Connectivity



Stacking/Clustering

The Cisco GigaStack GBIC and Cisco Switch Clustering technology offer customers a wide range of stack and cluster connectivity options. Several Catalyst 3500 XL, 2900 XL, and Catalyst 1900 switches may be deployed in a switch clustering or GigaStack GBIC configuration and managed with a single IP address. The switches are used mostly for desktop connectivity with limited aggregation. Gigabit Ethernet ports will be used for uplinks to corporate backbone or connections to a Gigabit aggregation switch. Illustrated here are three sample configurations: Independent Stack Bus, Point-to-Point Connections, and Cisco Switch Clustering. Performance levels scale from a 1 Gbps forwarding rate in a daisy-chain configuration up to a 2 Gbps forwarding rate in a point-to-point connection.

Figure 21-9: Creating an Independent Stack Bus

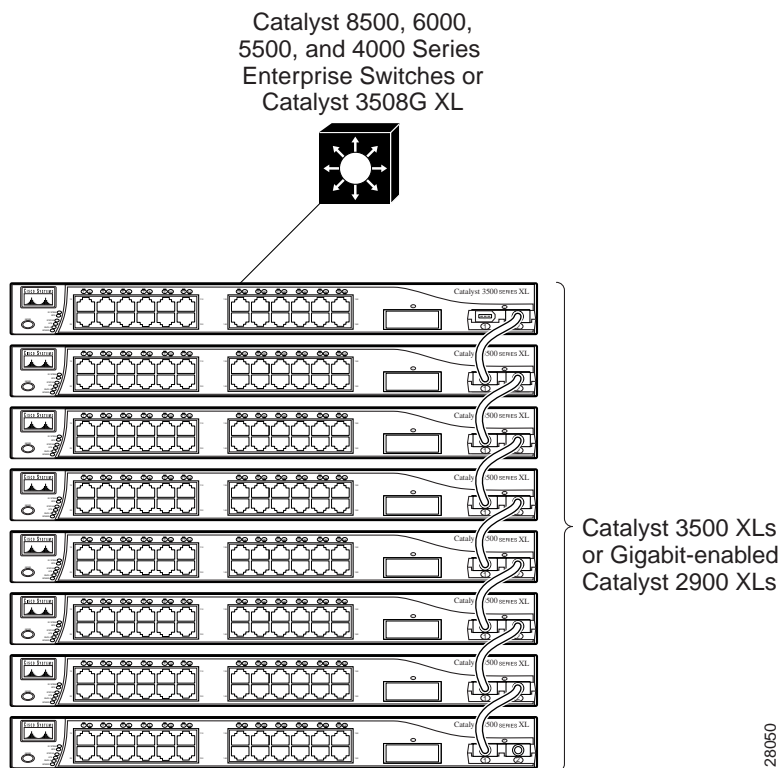


Figure 21-10: Point-to-point stacking

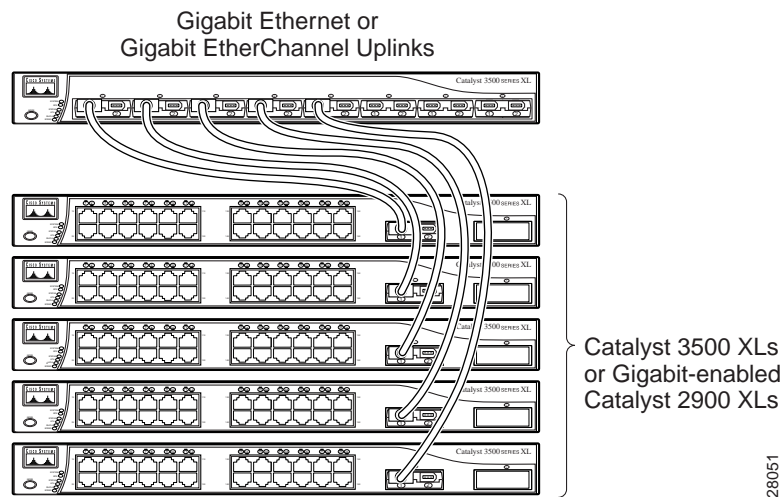
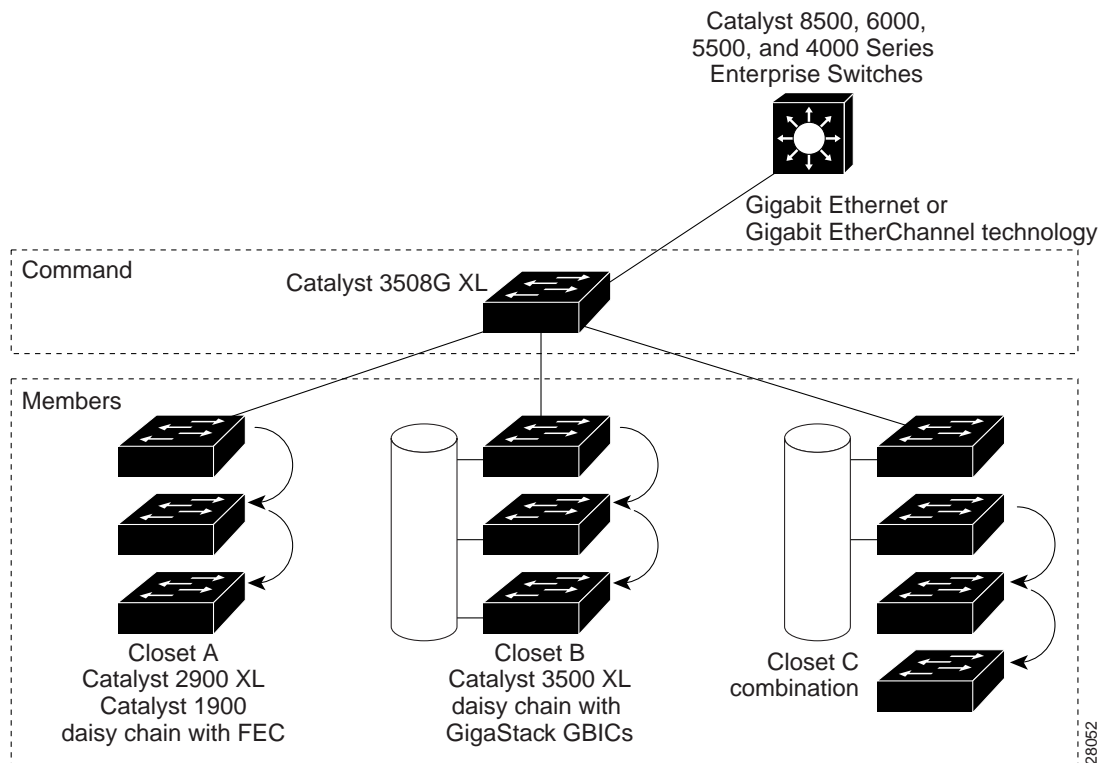


Figure 21-11: Cisco Switch Clustering



Aggregation

The Catalyst 3500 XL switches can be deployed in wiring closets to aggregate workgroup networking devices such as Ethernet and 10/100 switches; 10BaseT and 10/100 hubs; and workgroup servers. The Catalyst 3524 XL and 3512 XL are well suited for customers who need a 10/100 aggregation switch with Gigabit Ethernet uplinks to backbone or servers (as shown in Figure 1-12.). The eight Gigabit Ethernet ports on the Catalyst 3508G XL make the switch ideal for aggregating a group of 10/100 switches with Gigabit Ethernet uplinks and Gigabit Ethernet servers in a high-performance wiring closet aggregation configuration.

Figure 21-12: Enterprise Workgroup Aggregation

