

Catalyst 3508G XL Stackable Gigabit Ethernet Switch

The Catalyst® 3508G XL eight-port stackable Gigabit Ethernet switch is a member of the Cisco Systems Catalyst 3500 Series XL, a scalable line of stackable 10/100 and Gigabit Ethernet switches that delivers best-in-class performance, manageability, and flexibility with unparalleled investment protection.

The Catalyst 3508G XL switch features eight Gigabit Interface Converter (GBIC)-based 1000Base-X ports and a 10-Gbps switching fabric. These features make this switch ideal for either high speed wiring closet stack aggregation or a distribution layer Gigabit Ethernet aggregation switch. The switch is easy to deploy, either on a desktop or in a wiring closet, and features Cisco IOS® software support. Administration of the Cisco desktop Catalyst switches is made even more convenient via Cisco Switch Clustering technology.

Figure 1 The Catalyst 3508G XL is a single RU, stackable Gigabit Ethernet switch with eight GBIC-based Gigabit Ethernet ports. The Catalyst 3508G XL is ideal for aggregating a group of 10/100 and Gigabit Ethernet switches and Gigabit Ethernet servers through Cisco GigaStack™ GBICs or standard 1000Base-X GBICs.



Flexible Stacking with GigaStack Stacking GBIC

The Catalyst 3500 Series XL and Gigabit Ethernet-enabled Catalyst 2900 Series XL switches can be stacked using the low-cost Cisco GigaStack GBIC. The GigaStack GBIC offers a range of highly flexible stacking and performance options. Customers can connect up to nine switches in a star configuration with up to 5-Gbps of stack bandwidth using the Catalyst 3508G Gigabit Ethernet aggregation switch. Network managers may use available GBIC ports to create high-speed uplinks to the network core using standard Gigabit Ethernet or Gigabit EtherChannel® technologies. The GBIC ports support all Cisco GBICs including 1000Base-T, 1000Base-SX, 1000Base-LX/LH, and 1000Base-ZX providing exceptional flexibility for Gig-based network designs. High resiliency can also be implemented by deploying dual redundant Gigabit Ethernet uplinks, Uplink Fast and Cross-Stack Uplink Fast technologies for high-speed uplink and stack interconnection failover, and per VLAN Spanning Tree (PVST+) for uplink load balancing. This Gigabit Ethernet flexibility makes the Catalyst 3500 series XL an ideal complement to the Cisco Catalyst 6500 family of Gigabit Ethernet optimized core LAN switches, and allows today's customer investments to be used in various price-to-performance configurations overtime.



Cisco Switch Clustering

Breakthrough Cisco Switch Clustering technology enables up to sixteen interconnected Catalyst 3500 Series XL, 2900 Series XL, and Catalyst 1900 switches, regardless of geographic proximity, to form a single IP management domain. Cisco Switch Clustering technology supports a broad range of standards-based connectivity options and configurations to deliver levels of performance that are scalable to meet customer requirements. Switch cluster connectivity options for the Catalyst 3500 Series XL include Ethernet, Fast Ethernet, Fast EtherChannel, low-cost Cisco GigaStack GBIC, Gigabit Ethernet, and Gigabit EtherChannel connectivity. Because the technology is not limited by proprietary stacking modules or stacking cables, Cisco Switch Clustering expands the traditional stacking domain beyond a single wiring closet and lets users mix and match interconnections to meet specific management, performance, and cost requirements. Cisco Switch Clustering can be accessed via an embedded Web interface, allowing network administrators to configure, monitor, and manage a switch cluster from anywhere on the network through a standard browser such as Internet Explorer or Netscape Navigator. Catalyst 3500 XL switches can be configured either as command or member switches in a Cisco switch stack or cluster. The command switch serves as the single IP address management point and disburses all management action dictated by the network administrator. Command switches can cluster up to fifteen additional interconnected member switches, regardless of interconnection media. The Catalyst 3508G XL is an optimal command switch when deployed as a high-performance aggregator.

Quality of Service

All Catalyst 3500 Series XL switches support LAN edge quality of service (QoS) based on 802.1p class of service (CoS), as well as port-based prioritization. CoS is used for tagged packets while port-based prioritization is used for untagged packets. Priority scheduling is applied between the queues, which will assure that the high priority queue is always serviced before scheduling the low priority traffic. These features enable users to prioritize mission critical traffic, such as VoIP or ERP applications over regular traffic (such as FTP or generic Web traffic).

Software Management Features

Cisco Catalyst 3500 Series XL switches include several exceptional features to increase network performance, manageability, and security. In order to boost performance, Fast EtherChannel and Gigabit EtherChannel technology offer from 400-Mbps to 4-Gbps high-performance bandwidth between Catalyst switches, routers, and servers. The Cisco Group Management Protocol (CGMP) enhances performance of multimedia applications and reduces network traffic by allowing a switch to selectively and dynamically forward IP multicast traffic to targeted end stations.

Users can also implement higher levels of data security and boost LAN performance by deploying up to 250 virtual LANs (VLANs) per switch. This ensures that data packets are forwarded only to stations within a specific VLAN, creating a virtual firewall between groups of ports on the network and reducing broadcast transmission. VLAN trunks can be created from any port using either 802.1Q trunking or the Cisco Inter-Switch Link (ISL) VLAN architecture. VLANs using standards-based 802.1Q and ISL trunking provide broadcast control and enhanced security, and simplify adds, moves, and changes. PVST+ allows users to implement redundant uplinks while also distributing traffic loads across multiple links—not possible with standard STP implementations. Cisco Uplink Fast technology ensures immediate transfer to the secondary uplink. Cross-Stack Uplink Fast (CSUF) technology provides increased redundancy and network resiliency through fast-spanning tree convergence (less than two seconds) across a stack of switches using Gigastack GBICs.

With the Catalyst 3500 Series XL, network managers can implement high levels of port and console security. Media access control (MAC) address-based port level security prevents unauthorized stations from accessing the switch. Multilevel access security on the switch console prevents unauthorized users from accessing or altering switch configuration. Terminal access controller access control system (TACACS+) authentication enables centralized access control of the switch and restricts unauthorized users from altering the configuration.



Key Features/Benefits

Exceptional Performance

- Eight GBIC-based Gigabit Ethernet ports deliver up to 5-Gbps aggregated forwarding bandwidth to a switch cluster
- 10-Gbps switching fabric and 7.0 million packets-per-second forwarding rate
- 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 delivers up to 2-Gbps on 1000Base-X ports
- Dual-priority forwarding queues on each Gigabit Ethernet port through IEEE 802.1p protocol enable prioritization of mission critical and time sensitive traffic from data, voice, and telephony applications
- Trusted extension settings allows the switch to set trusted port settings for the PC port on Cisco IP phones, ensuring voice traffic receives highest priority
- Bandwidth aggregation up to 4 Gbps through Gigabit EtherChannel technology enhances fault tolerance and offers higher-speed aggregated bandwidth between switches, and to routers and individual servers
- A configurable network port supports unlimited MAC addresses for backbone connectivity
- GigaStack GBIC delivers a low-cost hardware-based, independent stack bus with up to 1-Gbps forwarding bandwidth in a cascade configuration (up to nine Catalyst 3500 XL or gigabit-enabled Catalyst 2900 Series XL switches) or 2-Gbps forwarding rate in a point-to-point configuration
- GBIC-based Gigabit Ethernet ports give customers a choice of 1000Base-T, 1000Base-SX, 1000Base-LX/LH, 1000Base-ZX, or Cisco GigaStack GBICs to fit their connection needs
- Per-port broadcast, multicast, and unicast storm control prevents faulty end stations from degrading overall systems performance

Flexible and Scalable Switch Clustering Architecture

- Cisco Switch Clustering technology allows the user to manage up to sixteen interconnected Catalyst 3500 XL, 2900 XL, and Catalyst 1900 switches through a single IP address, regardless of location
- Common Switch Redundancy allows customers to designate a backup command switch, which takes over cluster management functions in the event of a failure of the primary command switch

Ease of Use and Ease of Deployment

- The cluster software administration feature allows a network manager to quickly and easily upgrade the system software on a group of Catalyst 3500 XL, and 2900 XL, and Catalyst 1900 switches
- IEEE 802.3z-compliant 1000Base-T, 1000Base-SX, 1000Base-LX/LH, and 1000Base-ZX physical-interface support through a field-replaceable GBIC module provides customers unprecedented flexibility in switch deployment
- Autoconfiguration eases deployment of switches in the network by automatically configuring multiple switches across a network via a boot server
- Default configuration stored in Flash memory ensures that the switch can be quickly connected to the network and can pass traffic with minimal user intervention, preserving the configuration in case of a power outage
- Voice VLAN creates a new subnet for use by IP phones in cases where there are not enough free IP addresses in the existing subnets

Integrated Cisco IOS Switching Solution

- Cisco Group Management Protocol (CGMP) enables a switch to selectively and dynamically forward routed IP multicast traffic to targeted multimedia end stations, reducing overall network traffic
- CGMP Fast Leave allows end stations to quickly exit from a multicast session, reducing superfluous traffic on the network
- Virtual LAN trunks can be created from any port using either standards-based 802.1Q tagging or the Cisco ISL VLAN architecture
- IEEE 802.1p Layer 2 prioritization protocol allows users to assign data packets to prioritized forwarding queues



- Cisco Virtual Trunking Protocol (VTP) supports dynamic VLANs and dynamic trunk configuration across all switches
- Command-Line-Interface (CLI) support provides common user interfaces and command sets across all Catalyst series switches and Cisco routers
- Cisco Discovery Protocol (CDP) enables a CiscoWorks network management station to automatically discover the switch in a network topology

Superior Manageability

- Built-in Web-based Cisco Cluster Management Suite (CSM) software provides an 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 delivers comprehensive in-band management, and a CLI-based management console provides detailed out-of-band management
- Manageable through CiscoWorks2000 network management software on a per-port and per-switch basis, providing a common management interface for Cisco routers, switches, and hubs
- 8 MB DRAM and 4 MB Flash memory on board enable the addition of a continuous stream of feature upgrades, maximizing customer investments
- Embedded Remote Monitoring (RMON) software agent supports four RMON groups (History, Statistics, Alarms, and Events) for enhanced traffic management, monitoring, and analysis
- Support for all nine RMON groups through use of a Switch Port Analyzer (SPAN) port that permits traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe
- Domain Name System (DNS) client support provides IP address resolution with user-defined device names
- Trivial File Transfer Protocol (TFTP) reduces the cost of administering software upgrades by downloading from a centralized location
- Network Time Protocol (NTP) provides an accurate and consistent timestamp to all switches within the intranet

- Multifunction LEDs per port for port status, half-duplex/full-duplex indication, switch-level status LEDs for system, redundant power supply (RPS), and bandwidth utilization provide a comprehensive and convenient visual management system
- Spanning Tree Root Guard (STRG) prevents devices not in the network administrator's or service provider's control from becoming STP root nodes by configuring STRG on device ports it does control
- VTP pruning limits broadcasts on VTP trunks. When VTP pruning is enabled, broadcast traffic is flooded only on trunk links required to reach the destination devices

Redundancy

- Cisco Uplink Fast technology ensures quick failover recovery, enhancing overall network stability and reliability
- Cross-Stack Uplink Fast (CSUF) technology provides increased redundancy and network resiliency through fast-spanning-tree convergence (less than two seconds) across a stack of switches using Gigastack GBICs
- IEEE 802.1D Spanning-Tree Protocol support for redundant backbone connections and loop-free networks simplifies network configuration and improves fault tolerance
- Redundant stacking connections support for a redundant loopback connection in top and bottom switches in a stack
- Support for optional Cisco 600-watt redundant AC power system provides a backup power source for up to four units for improved fault tolerance and network uptime

Security

- Support for TACACS+ authentication enables centralized control of the switch and restricts unauthorized users from altering the configuration
- MAC-based port-level security prevents unauthorized stations from accessing the switch
- User-selectable address learning mode simplifies configuration and enhances security
- Multilevel security on console access prevents unauthorized users from altering the switch configurations



- Private VLAN edge provides security and isolation between ports on a switch, ensuring that voice traffic travels directly from its entry point to the aggregation device through a virtual path and cannot be directed to a different port

Technical Specifications

Performance

- 10-Gbps shared memory switching fabric with 5-Gbps peak forwarding bandwidth
- 7.5-Mpps wire-speed forwarding rate for 64-byte packets
- 4 MB memory architecture shared by all ports
- Packet forwarding rate for 64-byte packets: 1,488,000 pps to 1000Base-X ports
- 8 MB DRAM and 4-MB Flash memory
- 8192 MAC addresses

Management

- SNMP Management Information Base (MIB) II, SNMP MIB extensions, bridging MIB (RFC 1493)

Standards

- IEEE 802.3x full duplex
- IEEE 802.1D Spanning-Tree Protocol
- IEEE 802.1p Class of Service Protocol
- IEEE 802.1Q VLAN
- IEEE 802.3z, IEEE 802.3x 1000Base-X specification
- 1000Base-X (GBIC)
 - 1000Base-T
 - 1000Base-SX
 - 1000Base-LX/LH
 - 1000Base-ZX (4 GBICs supported per switch)
- IEEE 802.3ab

Y2K

- Y2K compliant

Connectors and Cabling

- 1000Base-T GBIC ports: RJ-45 connectors; two-pair Category 5 UTP cabling
- 1000Base-SX, -LX/LH, and -ZX GBIC-based ports: SC fiber connectors, single-mode or multimode fiber
- GigaStack GBIC ports: copper-based Cisco GigaStack cabling
- Management console port: RJ-45 connector, EIA/TIA-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

Dimensions and Weight (H x W x D)

- 1.75 x 17.5 x 16 in. (4.4 x 44.5 x 40.6 cm)
- One rack-unit (RU) high
- 12 lb (5.4 kg)

Environmental Conditions and Power Requirements

- Operating temperature: 32 to 113 F (0 to 45 C)
- Storage temperature: –13 to 158 F (–25 to 70 C)
- Operating relative humidity: 10 to 85% noncondensing
- Operating altitude: up to 10,000 ft (3000 m)
- Power consumption: 70W maximum; 239 BTU per hour
- AC input voltage/frequency: 100 to 120/200 to 240 VAC (autoranging) 50 to 60 Hz
- MTBF 150,000 hours

Safety Certifications

- UL 1950
- CSA 22.2 No. 950
- EN 60950
- IEC 950
- AS/NZS 3260, TS001
- CE marking

Electromagnetic Emissions Certifications

- FCC Part 15 Class A
- EN 55022B Class A (CISPR 22 Class A)
- VCCI Class A
- AS/NZS 3548 Class A
- BCIQ
- CE marking

Warranty

- Limited lifetime warranty

Ordering Information

Model Numbers

- WS-C3508G-XL-EN (8-port 1000Base-X, Enterprise Edition)

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