

Catalyst 2912 XL, 2924 XL, and 2924C XL 10/100 Autosensing Fast Ethernet Switches

THE CISCO CATALYST® 2912 XL, 2924 XL, AND 2924C XL 10/100 AUTOSENSING FAST ETHERNET SWITCHES PROVIDE OUTSTANDING PERFORMANCE, EASE OF USE, AND INTEGRATED CISCO IOS® SOFTWARE AT EXTREMELY LOW PER-PORT PRICES. THE SWITCHES ARE IDEAL FOR DELIVERING DEDICATED 10- OR 100-MBPS BANDWIDTH TO INDIVIDUAL USERS AND SERVERS. AVAILABLE IN STANDARD AND ENTERPRISE EDITIONS, CATALYST 2900 SERIES XL SWITCHES ARE UPGRADABLE VIA SOFTWARE, SO YOUR INVESTMENT IS PROTECTED IF YOUR NETWORK GROWS OR CHANGES.

The Cisco Catalyst 2912 XL switch has 12 10BASE-T/100BASE-TX switched ports, the Catalyst 2924 XL has 24 10BASE-T/100BASE-TX ports, and the Catalyst 2924C XL has 22 10BASE-T/100BASE-TX ports and two 100BASE-FX ports. These switches are members of the Catalyst 2900 series XL family and each of them is very easy to deploy, either on a desktop or mounted in a wiring closet within its on-rack-unit-high enclosure.

Cisco Switch Clustering Technology

The Catalyst 2900 XL switches feature Cisco Switch Clustering technology. This breakthrough technology enables up to 16 interconnected Catalyst 2900 XL, 3500 XL, and 1900 switches, regardless of physical proximity, to form a single-IP managed network. Cisco Switch Clustering technology 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.

Catalyst 2900 XL switches can be configured either as command (with a command software upgrade) 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 instructions dictated by the network administrator.

The Catalyst 2912 XL, 2924 XL, and 2924C XL switches are integral components of the complete line of Cisco end-to-end LAN solutions. Integrated Cisco IOS software provides superior functionality for network management, bandwidth aggregation, networked multimedia, and virtual LAN (VLAN) support. (See Figure 1.)

Figure 1 Catalyst 2912 XL, 2924 XL, and 2924C XL 10/100 Autosensing Fast Ethernet Switches



Web-based Switch Management: Cisco Visual Switch Manager

The Catalyst 2924M XL features the Cisco Web-based management tool, Cisco Visual Switch Manager (CVSM), which allows network administrators to view and manage the switch from anywhere on the network through a standard Web browser such as Microsoft Internet Explorer or Netscape Navigator. Launched from the switch itself, CVSM delivers simple network- and device-level management, including port configuration, VLAN setup, network views, and port monitoring. CVSM is an integral part of the Cisco scalable stacking architecture, allowing users to easily configure and manage stacks and switch clusters and to administer software upgrades across multiple switches.

Standard Edition Software

Cisco Catalyst 2900 XL Standard Edition switches include several exceptional features to increase network performance. Fast EtherChannel® or Gigabit EtherChannel technology offers up to 800 Mbps or 4 Gbps of high-performance bandwidth between Catalyst 2900 XL switches and servers. 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. Up to 64 port-based VLANs per switch allow data packets to be forwarded only to stations within a specific VLAN, creating a virtual firewall between groups of ports on the network. CVSM, a Web-browser interface, makes all Catalyst 2900 XL switches exceptionally easy to use and manage. CVSM allows network administrators to view and manage the switch from anywhere on the network through a standard Web browser such as Microsoft Explorer or Netscape Navigator. Multilevel security on the switch console prevents unauthorized users from gaining access and altering the switch configuration. And autoconfiguration eases deployment by automatically configuring multiple switches across a network from a single boot server. All Standard Edition switches can be upgraded with the purchase of an optional Enterprise Edition software upgrade kit.

Enterprise Edition Software

Enterprise Edition software includes all the features of the Standard Edition, and adds enhanced end-to-end VLAN support to your Catalyst 2900 XL switch. VLAN trunks can be created from any port using either 802.1Q protocols or the Cisco Inter-Switch Link (ISL) VLAN architecture. VLANs using standards-based 802.1Q and ISL trunking protocols provide broadcast control and enhanced security, and simplify adds, moves, and changes. An Enterprise Edition switch is the best choice for use in a network with enterprise-wide VLANs spanning multiple Cisco routers, chassis switches, and access servers. Features of both editions are given in Table 1.

Table 1 Standard and Enterprise Features

Standard Edition	Enterprise Edition
CVSM	All Standard Edition Features, plus
Network Time Protocol (NTP)	ISL and 802.1Q VLAN tagging support
Port-based VLANs	VLAN Trunking Protocol (VTP)
CGMP Fast Leave	Uplink Fast
Network Port	TACACS+
Fast EtherChannel and Gigabit EtherChannel technologies	

Key Features/Benefits

Outstanding Performance

- 12 or 24 10BASE-T/100BASE-TX autosensing ports deliver performance where it is needed most—to demanding workgroups and servers—while preserving legacy 10BASE-T connectivity (Catalyst 2912 XL and Catalyst 2924 XL).
- Twenty-two 10BASE-T/100BASE-TX autosensing ports deliver performance where it is needed most—to demanding workgroups and servers—while preserving legacy 10BASE-T connectivity. Two 100BASE-FX ports deliver up to 200 Mbps of bandwidth over an extended distance of up to 2 kilometers (Catalyst 2924C XL).
- A 3.2-Gbps switching fabric and 3.0-million-pps forwarding rate ensure optimal performance on all 10BASE-T/100BASE-TX ports.
- Full-duplex operation on switched 100BASE-T ports delivers up to 200 Mbps of bandwidth to end stations, servers, and between switches.
- A 4-MB shared-memory architecture ensures the highest possible throughput by eliminating head-of-line blocking, minimizing packet loss, and reducing congestion from multicast and broadcast traffic.
- Bandwidth aggregation through Fast EtherChannel technology enhances fault tolerance and offers up to 800 Mbps of bandwidth among switches, routers, and individual servers.
- Up to 12 Fast EtherChannel bandwidth aggregation groups per switch allow each Catalyst 2900 XL switch to aggregate multiple network devices via standard, full-duplex 10/100 Fast EtherChannel links.

- CGMP enables a switch to selectively and dynamically forward routed IP multicast traffic to targeted multimedia end stations, reducing overall network traffic.
- A configurable network port supports unlimited Media-Access-Control (MAC) addresses for backbone connectivity.

Ease of Use and Ease of Deployment

- Cisco Switch Clustering technology allows a user to manage up to 16 interconnected Catalyst 2900 XL, 3500 XL, and 1900 switches through a single IP address, regardless of location.
- CVSM software, a Web-based interface, provides network and stack views of a group of Catalyst 2900 XL switches from any node on the Internet with a Web browser.
- Autosensing on each port detects the speed of the attached device and automatically configures the port for 10- or 100-Mbps operation, easing the deployment of the switch in mixed 10BASE-T and 100BASE-T environments.
- Autonegotiation on all 10/100 ports automatically selects half- or full-duplex transmission mode to optimize bandwidth.
- Default configuration stored in flash memory ensures that the switch can be connected to the network and pass traffic with minimal user intervention, and preserves configuration in case of power outages.

Integrated Cisco IOS Switching Software

- CGMP Fast Leave software allows end stations to quickly exit from a multicast session, reducing superfluous traffic on the network.
- Bandwidth aggregation through Fast EtherChannel technology enhances fault tolerance and offers up to 800 Mbps of bandwidth between switches, routers, and individual servers.
- Per-port broadcast storm control prevents faulty end stations from degrading overall systems performance with broadcast storms.
- Command-line interface (CLI) support provides common user interface and a command set with Catalyst 5000, 5500, and 8500 series switches and all Cisco routers.

Comprehensive Manageability

- Simple Network Management Protocol (SNMP) and Telnet interface support delivers comprehensive in-band management, and the Cisco IOS CLI-based management console provides detailed out-of-band management.
- CVSM, a built-in Hypertext Transfer Protocol (HTTP) server, provides an ease-of-use Web-based management interface through a standard browser such as Netscape Navigator or Microsoft Explorer.
- The switch is manageable through CiscoWorks Windows and CiscoWorks2000 network management software on a per-port and per-switch basis, providing a common management interface for Cisco routers, switches, and hubs.
- Cisco Discovery Protocol (CDP) enables a CiscoWorks network management station to automatically discover the switch in a network topology.
- An embedded Remote Monitoring (RMON) software agent supports four RMON groups (history, statistics, alarms, and events) for enhanced traffic management, monitoring, and analysis.
- Cisco IOS software supports all nine RMON groups through use of a Switched Port Analyzer (SPAN) port, which permits high-performance traffic monitoring of a single port, a group of ports, or the entire switch from a single network analyzer or RMON probe.
- Auto-configuration eases deployment of switches in the network by automatically configuring multiple switches across a network via a boot server.
- Trivial File Transfer Protocol (TFTP) reduces the cost of administering software upgrades by enabling downloads from a centralized location.
- Each port includes a LED for port status, half duplex/full duplex, and 10BASE-T/100BASE-T indications as well as switch-level status LEDs for system, module status, redundant power supply (RPS), and bandwidth utilization, providing a comprehensive and convenient visual management system.

Security and Redundancy

- IEEE 802.1D Spanning-Tree Protocol support for redundant backbone connections and loop-free networks simplifies network configuration and improves fault tolerance.
- MAC-based, port-level security prevents unauthorized stations from accessing a switch.
- User-selectable address learning mode simplifies configuration and enhances security.
- Support for the 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.
- Multilevel security on the console access prevents unauthorized users from altering the switch configuration.

Technical Specifications

- Performance
 - 3.2 Gbps switching fabric
 - 3.0 million-pps forwarding rate for 64-byte packets
 - 1.6 Gbps maximum 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
 - 8-MB DRAM and 4 MB Flash memory
 - 2048 MAC addresses
- Management
 - SNMP Management Information Base (MIB) II, SNMP MIB extensions, Bridging MIB (RFC 1493)
- Standards
 - IEEE 802.3x full duplex on 10BaseT and 100BaseT ports
 - IEEE 802.1D Spanning-Tree Protocol
 - IEEE 802.3u 100BaseTX and 100BaseFX specification
 - IEEE 802.3 10BaseT specification
- Y2K
 - Y2K compliant
- Connectors and Cabling
 - 10BASE-T ports: RJ-45 connectors; two-pair category 3, 4, or 5 unshielded twisted-pair (UTP) cabling
 - 100BASE-TX ports: RJ-45 connectors; two-pair Category 5 UTP cabling
 - 100BASE-FX ports: SC connector, 50/125- and 62.5/125-micron multimode, fiber-optic cabling (Catalyst 2924C XL)
 - Management console port: RJ-45 connector

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)
 - 1.73 x 17.5 x 9.79 in. (4.4 x 44.5 x 24.8 cm)
 - 1 rack unit (RU) high
 - 7 lb (3.2 kg)
 - Environmental Conditions and Power Requirements
 - Operating temperature: 32 to 122 F (0 to 50 C)
 - Storage temperature: –4 to 149 F (–20 to 65 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 180,995 hours
 - Safety Certifications
 - UL 1950
 - CSA 22.2 No. 950
 - EN 60950
 - IEC 950
 - AS/NZS 3260, TS001
 - CE
 - 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
 - Lifetime limited warranty

• Ordering Information

Model Numbers

- WS-C2912-XL-A (12-port, Standard Edition)
- WS-C2912-XL-EN (12-port, Enterprise Edition)
- WS-C2924-XL-A (24-port, Standard Edition)
- WS-C2924-XL-EN (24-port, Enterprise Edition)
- WS-C2924-XL-EN-5P (24-port, Enterprise Edition, Five-Pack)
- WS-C2924C-XL-A (22TX + 2 FX-port, Standard Edition)
- WS-C2924C-XL-EN (22 TX + 2 FX-port, Enterprise Edition)
- WS-C2924C-XL-EN-5P (22 TX + 2 FX-port, Enterprise Edition, Five-Pack)

For more information on Cisco products, contact:

U.S. and Canada: 800 553-NETS (6387)

Europe: 32 2 778 4242

Australia: 612 9935 4107

Other: 408 526-7209

World Wide Web URL: <http://www.cisco.com>



Corporate Headquarters

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 526-4100

European Headquarters

Cisco Systems Europe s.a.r.l.
Parc Evolic, Batiment L1/L2
16 Avenue du Quebec
Villebon, BP 706
91961 Courtaboeuf Cedex
France
<http://www-europe.cisco.com>
Tel: 33 1 69 18 61 00
Fax: 33 1 69 28 83 26

**Americas
Headquarters**

Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
<http://www.cisco.com>
Tel: 408 526-7660
Fax: 408 527-0883

Asia Headquarters

Nihon Cisco Systems K.K.
Fuji Building, 9th Floor
3-2-3 Marunouchi
Chiyoda-ku, Tokyo 100
Japan
<http://www.cisco.com>
Tel: 81 3 5219 6250
Fax: 81 3 5219 6001

Cisco Systems has more than 200 offices in the following countries. Addresses, phone numbers, and fax numbers are listed on the Cisco Connection Online Web site at <http://www.cisco.com/offices>.

Argentina • Australia • Austria • Belgium • Brazil • Canada • Chile • China • Colombia • Costa Rica • Croatia • Czech Republic • Denmark • Dubai, UAE
Finland • France • Germany • Greece • Hong Kong • Hungary • India • Indonesia • Ireland • Israel • Italy • Japan • Korea • Luxembourg • Malaysia
Mexico • The Netherlands • New Zealand • Norway • Peru • Philippines • Poland • Portugal • Puerto Rico • Romania • Russia • Saudi Arabia • Singapore
Slovakia • Slovenia • South Africa • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • Ukraine • United Kingdom • United States • Venezuela