

Catalyst 2900 Series XL Expansion Modules

Catalyst® 2900 Series XL switch modules are high-performance, field-installable expansion cards that enable users to grow their networks, minimize network downtime, and migrate to new technologies as their needs change. The Catalyst 2900 XL modules support virtual LAN (VLAN) trunking with standards-based 802.1Q and Inter-Switch Link (ISL) protocols, enabling superior functionality for end-to-end network management.

Each Catalyst 2912MF XL, Catalyst 2916M XL, and Catalyst 2924M XL switch contains two slots and supports a broad range of expansion modules. The Catalyst 2900 XL switch modules are the ideal solution for workgroups and individual users who need increased performance and expandability at an affordable price. The switch modules provide 10Base-T/100Base-TX, 100Base-FX, 1000Base-X (TX, SX, LX/LH), 1000Base-T, and Asynchronous Transfer Mode (ATM) connectivity to servers and network backbones. These ATM modules are ideal for deployment at the access layer in a campus environment, as an uplink to a high-speed ATM backbone. Deployment as a link on a metropolitan-area network or directly on a SONET/SDH ring is not recommended for this product.

Figure 1 Catalyst 2900 Series XL Fast Ethernet Expansion Modules

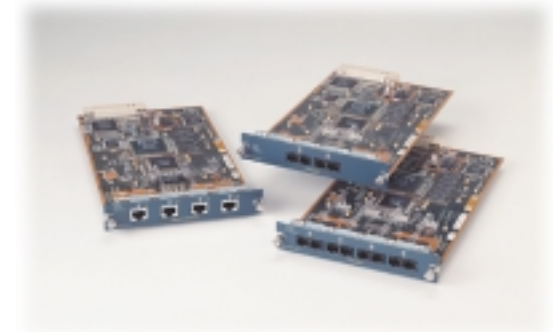


Figure 2 Catalyst 2900 Series XL Gigabit Expansion Module



Figure 3 Catalyst 2900 Series XL 1000Base-T Module





Applications

High-Speed Server Connectivity

Catalyst 2900 XL switch modules support dedicated connections to 10Base-T/100Base-TX, 100Base-FX, and Gigabit Ethernet servers. All modules can be configured to provide high-speed, fault-tolerant Fast EtherChannel® and Gigabit EtherChannel connections to server farms or power users.

Backbone Connectivity

Catalyst 2900 XL modules connect Catalyst 2912MF XL, 2916M XL, and 2924M XL switches directly to 100Base-TX, 100Base-FX, Gigabit Ethernet, and ATM backbones over UTP or fiber cabling. In these configurations, a Catalyst 2900M XL switch can be connected directly to routers, access servers, switches, and workgroup servers.

Flexibility

Any combination of modules can be used in a modular Catalyst 2900M XL switch to meet your network needs. For example, the GBIC module increases deployment and application of the Catalyst 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). A Catalyst 2916M XL or 2924M XL switch with a four-port 10Base-T/100Base-TX module can provide a local 100Base-TX backbone with low-cost connectivity to other switches and servers. A four-port 100Base-FX module in the same switch's second high-speed expansion slot provides fault-tolerant, fiber connectivity to the campus backbone. The Catalyst 2912MF XL switch, with the addition of two four-port 100Base-FX modules, can aggregate a total of 20 separate fiber connections on a campus network.

Finally, the Catalyst 2900 XL switches dual-slot design also provides the ideal bridge between Gigabit Ethernet and ATM in mixed networks.

Key Features/Benefits

- 10Base-T/100Base-TX Module
 - Four-port UTP (switched)
- 100Base-FX Module
 - Two-port fiber (switched)
 - Four-port fiber (switched)
- 1000Base-X Module
 - One GBIC slot
 - 1000BaseT GBIC enables standard Ethernet over copper up to 328 ft (100 m)
 - 1000Base-SX GBIC enables short-wave laser transmission of up to 1804 ft (550 m) on 50-micron multimode fiber
 - 1000Base-LX/LH GBIC enables long-wave laser connectivity of up to 32,790 ft (10 km) on 10-micron single-mode fiber
- 1000Base-T Module
 - One-port UTP (switched)
- ATM Modules
 - 100,000 packets per second performance
 - Supports bridged Ethernet/802.3 and multiple LANE clients
 - Single-port UTP module
 - Single-port multimode fiber
 - Single-port SMF-MR 32,790 ft (10 km)
 - Single-port SMF-LR 131,160 ft (40 km)
- Field-installable and field-upgradable, providing the ability to easily change network configurations and preserve investments.
- Hot-swappable, minimizing network downtime (10/100Base-TX and 100Base-FX modules only).
- Virtual LAN (VLAN) support, including up to 64 port-based VLANs per Catalyst 2900 XL switch.
- On Enterprise Edition Catalyst 2900 XL switches, VLAN trunks can be created from any port using either IEEE 802.1Q protocols or the Cisco Inter-Switch Link (ISL) VLAN architecture.
- Manageable in band and out of band using CiscoWorks management software and Cluster Management Suite (CMS); CMS is Web-based software embedded in the Catalyst 2900 XL switch providing network and stack views of a group of Catalyst 2900 XL switches.
- Choice of media interfaces, providing direct connection to Category 5 UTP or multimode fiber-optic cabling.



Technical Specifications

10Base-T/100Base-TX Module

- Autosensing 10-Mbps and 100-Mbps data rates (200 Mbps with full duplex operation enabled on the Catalyst switch)
- IEEE 802.3u 100Base-T compatible (100Base-TX and 100Base-FX)
- RJ-45 connectors
- Support for two-pair Category 5 UTP wiring
- Maximum cable distance 328 ft (100 m)

100BaseFX Modules

- Module options: two switched ports or four switched ports
- 100Base-FX compatible
- SC connectors
- Support for 50/125- and 62.5/125-micron multimode fiber
- Maximum cable distance up to 6558 ft (2 km) on Catalyst switch (specific cabling guidelines are configuration dependent)

1000BaseX Module

- One-port GBIC based
- IEEE 802.3ab 1000BaseT compatible
- IEEE 802.3z 1000BaseX compatible
- 328 ft (100 m) for Category 5 UTP cabling
- 1804 ft (550 m) for SX multimode fiber
- 32,790 ft (10 km) for LX/LH single-mode fiber

1000BaseT Module

- One-port UTP
- RJ-45 connectors
- Maximum cable distance 328 ft (100m)

ATM Modules

- Module media options: UTP, MMF, SMF-MR, SMF-LR
- Maximum cable length
 - SMF-MR: 32,790 ft (10 km)
 - SMF-LR: 131,160 ft (40 km)
- ATM Forum LANE 1.0
- OC-3 signaling standard

Standards

- IEEE 802.3x full duplex on 10Base-T and 100Base-T ports
- IEEE 802.1D Spanning-Tree Protocol
- IEEE 802.3u 100Base-TX and 100Base-FX specification
- IEEE 802.3 10Base-T specification
- IEEE 802.3z 1000Base-X specification
- IEEE 802.3ab
- IEEE 802.1Q VLAN Trunking Protocol
- ATM Forum LANE 1.0

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 connectors, 50/125- and 62.5/125-micron multimode fiber
- 1000Base-X: -TX, -SX, -LX/LH GBIC
- 1000Base-T: RJ-45 connectors
- ATM UTP RJ-45 connector, SC connectors 50/125- and 62.5/125-micron multimode fiber

Indicators

- Per-port status LEDs—Link integrity, disabled, activity, speed, and full-duplex indications

Dimensions/Weight

- Height: 1.25 in (3.18 cm)
- Width: 5.75 in (14.61 cm)
- Depth: 10.3 in (26.16 cm)
- Weight: 10.1 oz (0.28 kg)

Operating Environment

- 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
- Storage relative humidity: 5 to 95% noncondensing
- Operating altitude: up to 10,000 ft (3000 m)
- Storage altitude: up to 15,000 ft (4570 m)
- MTBF 602,722 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-X2914-XL-V (4-port 100Base-T/100Base-TX)
 - WS-X2922-XL-V (2-port 100Base-FX)
 - WS-X2924-XL-V (4-port 100Base-FX)
 - WS-X2931-XL (1000Base-X Gigabit Ethernet uplink)
 - WS-X2932-XL (1000Base-T Gigabit Ethernet uplink)
 - WS-X2951-XL (ATM-OC-3 UTP)
 - WS-X2961-XL (ATM-OC-3 multimode fiber)
 - WS-X2971-XL (ATM-OC-3 single-mode, medium-reach)
 - WS-X2972-XL (ATM-OC-3 single-mode, long-reach)

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