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Catalyst 2900 Series XL — Autosensing Fast Ethernet Switches

Product Overview

Cisco's Catalyst 2900 Series XL is a full line of 10/100 autosensing Fast Ethernet switches from the leader in networking that combine outstanding performance, ease-of-use and integrated Cisco IOS software. The Catalyst 2900 Series XL includes five models with different port densities, configuration options, and pricing to meet a broad range of network design requirements. Available in Standard and Enterprise Editions, the software embedded in Catalyst 2900 Series XL switches is upgradable so your investment is protected if your network grows or changes.

The modular 24-port Catalyst 2924M XL switch is an excellent aggregation device, as well as the perfect solution for providing dedicated 10 or 100 Mbps bandwidth to individual users. The modular 12-port, all fiber Catalyst 2912MF XL switch is ideal for aggregating small and mid-sized campus networks over 100BaseFX fiber connections. The 12-port Catalyst 2912 XL, 24-port Catalyst 2924 XL and Catalyst 2924C XL switches are ideal for delivering low-cost, high-performance 10 or 100 Mbps bandwidth to individual users and servers.

Catalyst 2900 XL Standard Edition switches include several exceptional features like EtherChannel (TM), Network Time Protocol, and Cisco Visual Switch Manager software to increase network performance at very affordable prices. All Standard Edition switches can be upgraded with the purchase of an optional Enterprise Edition Software Upgrade Kit. 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. Virtual LAN trunks can be created from any port using either 802.1Q protocols or Cisco's ISL VLAN architecture.

Cisco Switch Clustering technology is supported on all Catalyst 2900 XL switches. The Catalyst 2900 XL Command Software upgrade kit is available as an upgrade, allowing users to create a managed network with a single IP address. A switch cluster may contain up to 16 Catalyst 3500 XL, 2900 XL, and 1900 switches, regardless of physical location, connected via standards-based Ethernet, EtherChannel (TM), or Gigastack links. The two-port GigaStack GBIC offers a range of highly flexible stacking and performance options. Users can build stacks of up to nine Catalyst 2924M XL, 2912MF XL, and 3500 XL switches with the GigaStack GBICs in Gigabit Ethernet module slot.

Key Features and Benefits

- Cisco's advanced architecture incorporates a switch fabric of 3.2 Gbps and a forwarding rate of 3.0 million packets per second to deliver wire-speed performance across all ports.
- The two versatile module slots of the Catalyst 2912MF XL and Catalyst 2924M XL provide expansion capabilities, higher-speed connectivity, and support for eight different feature modules, allowing users the flexibility to upgrade their networks and preserve their initial investment.
  - The four-port 10BaseT/100BaseTX, two-port 100BaseFX, and four-port 100BaseFX modules for the Catalyst 2912MF XL and Catalyst 2924M XL allow customers to easily increase port density and provide higher-speed uplinks through bandwidth aggregation.
  - Single-port Gigabit Ethernet and Asynchronous Transfer Mode (ATM) interface modules provide higher-speed links.
  - Each module provides industry-standard 802.1Q and Inter Switch Link (ISL) VLAN trunking support.
- Catalyst 2900 Series XL switches deliver easy-to-use management and advanced security features.
  - A Web-based interface, Cisco Visual Switch Manager, allows users to manage a virtual stack of up to five Catalyst 2900 XL switches from anywhere on the network through a standard browser such as Microsoft Internet Explorer or Netscape Navigator/Communicator.
  - Multilevel security on console access prevents unauthorized users from altering the switch configuration.
  - Autoconfiguration eases deployment by automatically configuring multiple switches across a network from a single boot server.
- Integrated Cisco IOS software provides superior functionality for end-to-end integration, including bandwidth aggregation, intraswitch VLAN support, hot swap modules, and networked multimedia support.
  - Fast EtherChannel technology offers up to 800 Mbps of bandwidth between Catalyst series switches.

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— Support for up to 64 port-based VLANs per Standard Edition switch and Spanning Tree Protocol provides broadcast control, security; and simplified adds, moves and changes.

— Cisco Group Management Protocol (CGMP) Fast Leave support reduces network traffic by allowing a switch to selectively and dynamically forward IP multicast traffic to targeted end stations, providing network support for multimedia and minimizing network traffic.

— Support for up to 64 VLAN trunks using 802.1Q and ISL trunking protocols on Enterprise Edition switches provides broadcast control, security; and simplified adds, moves and changes.

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

Table 21-109: Technical Specifications for the Catalyst 2900 XL Series

Description	Specification
Performance	3.2 Gbps switching fabric
	3.0 million packets-per-second forwarding rate for 64-byte packets
	1.6 Gbps max forwarding bandwidth
	4 MB shared memory architecture shared by all ports
	Packet forwarding rate for 64-byte packets:
	14,880 packets per second (pps) to 10 Mbps ports
	148,800 pps to 100BaseT ports
	8192 Media Access Control (MAC) addresses (Catalyst 2912MF XL and Catalyst 2924M XL)
	2048 MAC addresses (Catalyst 2912 XL, 2924 XL, and 2924C XL)
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
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
	100BaseFX ports: SC connector, 50/125- and 62.5/125-micron multimode fiber-optic cabling (only on Catalyst 2924C and 2-port and 4-port 100BaseFX modules)
	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, Module Status, and Bandwidth Utilization indications

Note All units include a limited lifetime return-to-factory warranty.

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Table 21-110: Power Requirements for the Catalyst 2900 XL Series

Description	Catalyst 2912 XL	Catalyst 2912MF XL	Catalyst 2924 XL	Catalyst 2924C XL	Catalyst 2924M XL
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 (auto-ranging) 50 to 60 Hz	100 to 120/200 to 240 VAC (auto-ranging) 50 to 60 Hz	100 to 120/200 to 240 VAC (autoranging) 50 to 60 Hz
DC input voltages	+5V@8A; +12V@.5A	+5V@12A, +12V@.75A,+5V@24 A, +12V@1A (with 2 modules installed)	+5V@8A; +12V@.5A	+5V@8A; +12V@.5A	+5V@12A, +12V@.75A,+5V@24 A, +12V@1A(with 2 modules installed)
Power consumption	70W	90W; 170W (maximum with 2 modules installed)	70W	70W	90W; 170W (maximum with 2 modules installed)

Table 21-111: Physical and Environmental Specifications for the Catalyst 2900 XL Series

Description	Catalyst 2912 XL	Catalyst 2912MF XL	Catalyst 2924 XL	Catalyst 2924C XL	Catalyst 2924M XL
Operating temperature	32 to 122˚F (0 to 50˚C)	32 to 122˚F (0 to 50˚C)	32 to 122˚F (0 to 50˚C)	32 to 122˚F (0 to 50˚C)	32 to 122˚F (0 to 50˚C)
Storage temperature	-4 to 149˚F (-20 to 65˚C)	-4 to 149˚F (-20 to 65˚C)	-4 to 149˚F (-20 to 65˚C)	-4 to 149˚F (-20 to 65˚C)	-4 to 149˚F (-20 to 65˚C)
Operating humidity	10 to 85% (noncondensing)	10 to 85% (noncondensing)	10 to 85% (noncondensing)	10 to 85% (noncondensing)	10 to 85% (noncondensing)
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)	Up to 10,000 ft (3000 m)
Weight	7 lb (3.2 kg)	13.5 lb (6.12 kg) 15 lb (6.8 kg) with two modules installed	7 lb (3.2 kg)	7 lb (3.2 kg)	13.5 lb (6.12 kg) 15 lb (6.8 kg) with two modules installed
Dimensions (H x W x D)	1.73 x 17.5 x 10 in. (4.4 x 44.5 x 25.4 cm)	3.46 x 17.5 x 12 in. (8.8 x 44.5 x 30.5 cm)	1.75 x 17.5 x 14.25 in (4.4 x 44.5 x 36.2 cm)	1.75 x 17.5 x 14.25 in (4.4 x 44.5 x 36.2 cm)	3.46 x 17.5 x 12 in. (8.8 x 44.5 x 30.5 cm)

Software

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

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Ordering Information

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

Product and Part Numbers

Part Numbers for the Catalyst 2900 Series XL

Part Description	Part Number
Catalyst 2900 Workgroup Switches	
12-port 10/100 Switch (Enterprise Edition)	WS-C2912-XL-EN
12-port 100BaseFX Switch With Two Module Slots (Enterprise E	WS-C2912MF-XL
24-port 10/100 Switch (Enterprise Edition)	WS-C2924-XL-EN
22-port 10/100 + 2 100BaseFX Port Switch (Enterprise Edition	WS-C2924C-XL-EN
24-port 10/100 Switch w/Two Module Slots (Enterprise Edition	WS-C2924M-XL-EN
24-port 10/100 Switch w/ Two Module Slots (DC-Powered)	WS-C2924M-XL-EN-DC
Catalyst 2924 XL Enterprise Edition, 5-Pack	WS-C2924-XL-EN-5P
Catalyst 2924C XL Enterprise Edition, 5-Pack	WS-C2924C-XL-EN-5P
Catalyst 2924M XL Enterprise Edition, 5-Pack	WS-C2924M-XL-EN-5P
One 2924M XL-EN and two 2924 XL-EN, 56-port Stack Pack	WS-C2900-XL-EN-56
One 2924M XL-EN and four 2924 XL-EN, 104-port Stack Pack	WS-C2900-XL-EN-104
Catalyst 2948G Switch,48 10/100TX(RJ-45)+ 2 1000X GBIC Slots	WS-C2948G
Catalyst 2948G-L3 Layer 3 Switch - 48 10/100,2 GBIC Slots	WS-C2948G-L3
3 Catalyst 2948G Switches	WS-C2948G-3PACK
Catalyst 2980G Switch, 80 10/100TX(RJ45)+2 1000X (GBIC Slot)	WS-C2980G
4 Fast EtherChannel cables, Application Note	WS-C2900-XL-EXPKT
Modules for the Catalyst 2900	
4-port 10/100 ISL/802.1Q Switch Module	WS-X2914-XL-V
2-port 100BaseFX ISL/802.1Q Switch Module	WS-X2922-XL-V
4-port 100BaseFX ISL/802.1Q Switch Module	WS-X2924-XL-V
1000BaseX uplink for Catalyst 2900 XL	WS-X2931-XL
1000BaseT uplink for Catalyst 2900 XL	WS-X2932-XL
1000BaseT GBIC Gigabit Interface Converter	WS-G5482

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Part Description	Part Number
Catalyst 2900 XL Series ATM 155 UTP Module	WS-X2951-XL
Catalyst 2900 XL Series ATM 155 Multimode Fiber Module	WS-X2961-XL
Catalyst 2900 XL Series ATM 155 SM Fiber Medium Reach Modul	WS-X2971-XL
Catalyst 2900 XL Series ATM 155 Single Mode Long Reach	WS-X2972-XL
1000BASE-SX "Short Wavelength" GBIC (Multimode only)	WS-G5484
1000BASE-SX	WS-G5484=
1000BASE-LX/LH "long haul" GBIC (singlemode or multimode)	WS-G5486
1000BASE-LX/LH	WS-G5486=
Catalyst 2900 XL Workgroup Switches	
12-port 10/100 Switch (Enterprise Edition)	WS-C2912-XL-EN
12-port 100BaseFX Switch With Two Module Slots (Enterprise E	WS-C2912MF-XL
24-port 10/100 Switch (Enterprise Edition)	WS-C2924-XL-EN
22-port 10/100 + 2 100BaseFX Port Switch (Enterprise Edition	WS-C2924C-XL-EN
24-port 10/100 Switch w/Two Module Slots (Enterprise Edition	WS-C2924M-XL-EN
Catalyst 2924 XL Enterprise Edition, 5-Pack	WS-C2924-XL-EN-5P
Catalyst 2924C XL Enterprise Edition, 5-Pack	WS-C2924C-XL-EN-5P
Catalyst 2924M XL Enterprise Edition, 5-Pack	WS-C2924M-XL-EN-5P
One 2924M XL-EN and two 2924 XL-EN, 56-port Stack Pack	WS-C2900-XL-EN-56
One 2924M XL-EN and four 2924 XL-EN, 104-port Stack Pack	WS-C2900-XL-EN-104
Accessories for the Catalyst 2900 XL	
4 Fast EtherChannel cables, Application Note	WS-C2900-XL-EXPKT
Modules for the Catalyst 2900 XL	
4-port 10/100 ISL/802.1Q Switch Module	WS-X2914-XL-V
2-port 100BaseFX ISL/802.1Q Switch Module	WS-X2922-XL-V
4-port 100BaseFX ISL/802.1Q Switch Module	WS-X2924-XL-V
1000BaseX uplink for Catalyst 2900 XL	WS-X2931-XL
1000BaseT uplink for Catalyst 2900 XL	WS-X2932-XL
Catalyst 2900 XL Series ATM 155 UTP Module	WS-X2951-XL
Catalyst 2900 XL Series ATM 155 Multimode Fiber Module	WS-X2961-XL
Catalyst 2900 XL Series ATM 155 SM Fiber Medium Reach Modul	WS-X2971-XL

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Part Description	Part Number
Catalyst 2900 XL Series ATM 155 Single Mode Long Reach	WS-X2972-XL
GigaStack Stacking GBIC and 50cm cable	WS-X3500-XL
1000BASE-SX "Short Wavelength" GBIC (Multimode only)	WS-G5484
1000BASE-LX/LH "long haul" GBIC (singlemode or multimode)	WS-G5486
Software for the Catalyst 2900 XL	
Catalyst 2900-XL Enterprise Edition Software	WS-C2900-SA6-EN
Catalyst 2900-XL Enterprise Software, 10-system license	WS-C2900-SA6-10EN
Catalyst 2900-XL Cluster Command Software	WS-C2900-SA6-CM
Power Options for the Catalyst 2948G Switch	
600W Redundant AC Power System With DC Power Cables	PWR600-AC-RPS-CAB
600W Redundant AC Power System W/O DC Power Cables	PWR600-AC-RPS-NCAB
RPS 22/08 Two-to-one DC Power Cable (C2500 & MC 3810 only)	CAB-RPSY-2208
RPS 22/08 Two-to-one DC Power Cable	CAB-RPSY-2208=
RPS 22/18 Two-to-one DC Power Cable	CAB-RPSY-2218
RPS 22/18 Two-to-one DC Power Cable	CAB-RPSY-2218=
RPS 22/08 Load Cable (C2500 & MC3810 only)	CAB-RPS-2208
RPS 22/08 Load Cable (C2500 & MC3810 only)	CAB-RPS-2208=
RPS 22/18 Load Cable	CAB-RPS-2218
RPS 22/18 Load Cable	CAB-RPS-2218=
Catalyst 2900 Agent Licenses	
CATALYST 2900 RMON AGENT LICENSE	WS-C2900-EMS-LIC
Catalyst 2926 RMON License	WS-C2926-EMS-LIC
Catalyst 2948G RMON Agent License	WS-C2948G-EMS-LIC
Catalyst 2900 Feature Licenses	
Advanced IP License	FR2948GL3-IP
Advanced IP License	FR2948GL3-IP=
IPX License	FR2948GL3-IPX
IPX License	FR2948GL3-IPX=
Catalyst 2900 Accessories	
Rack Mount Kit for 2RU Catalyst 2820 and 2900XL	STK-RACKMOUNT-2RU=
Rack Mount Kit for 1RU Catalyst 1900,2900XL,3500XL & FastHub	STK-RACKMOUNT-1RU=
Rack Mount Kit for 1.5RU Catalyst 2948G-L3, 4908G-L3	STKRACKMOUNT1.5RU=

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Part Description	Part Number
Catalyst 2980G RMON Agent License (Spare)	WS-C2980-EMS-LIC=
Catalyst 2980G Rack Mount Kit (Spare)	WS-X2980G-RACK=
Catalyst 2948G Rack Mount Kit (spare)	WS-X2948G-RACK=

Documentation

For part numbers for product specific documentation, visit

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

Example Configuration

High Performance Desktop Connectivity (10/100 to the desktop)

The Catalyst 2924M XL, the Catalyst 2912 XL, Catalyst 2924 XL, and Catalyst 2924C XL can all be deployed as high-performance solutions for providing 10/100 directly to the desktop. The Catalyst 2924 XL or Catalyst 2924C XL offer the lowest price per port and Fast EtherChannel uplink capability in a fixed configuration, while the Catalyst 2924M XL offers Fast EtherChannel and a clear migration path to Gigabit Ethernet and ATM. The Catalyst 2924C XL will be used in networks where there is a need to deploy high performance 10/100 desktop connectivity over an extended distance (up to 2 km).

Enterprise Workgroup and Server Aggregation

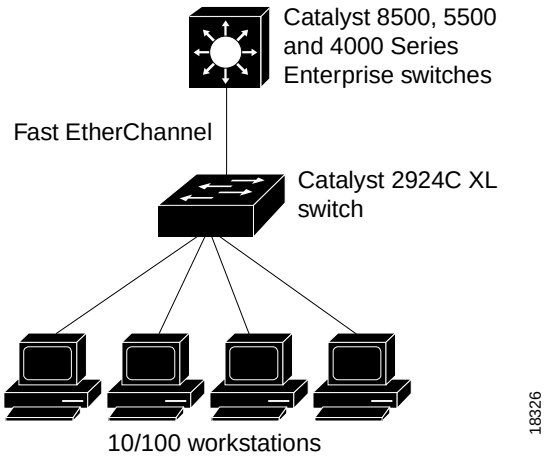
The Catalyst 2924M XL will be deployed in wiring closets to aggregate workgroup networking devices such as Fast Ethernet hubs, Ethernet hubs and switches, and workgroup servers. EtherChannel technology allows customers to logically “bond” multiple Fast Ethernet or Gigabit Ethernet links, creating a high-capacity uplink to the corporate/campus backbone. The Gigabit Ethernet and ATM uplink modules (Catalyst 2912MF XL and 2924M XL only) provide customers with standards-based higher-speed connection.

The Catalyst 2912MF XL is ideal for aggregating geographically disbursed Fast Ethernet workgroups over 100BaseFX fiber connections on a small or midsize campus environment. Two high-speed uplink slots enable users to add up to eight additional 100BaseFX or 10/BaseT/100BaseTX ports.

Workgroup and Server Aggregation for Small- to Medium-sized Networks

Both the Catalyst 2912 XL and the Catalyst 2924M XL will be used as a network backbone for small- to medium-sized network configurations. Either product can be used to aggregate the various network resources in the organization.

Figure 21-13: High-Performance Desktop Connectivity



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Figure 21-14: Enterprise Workgroup and Server Aggregation

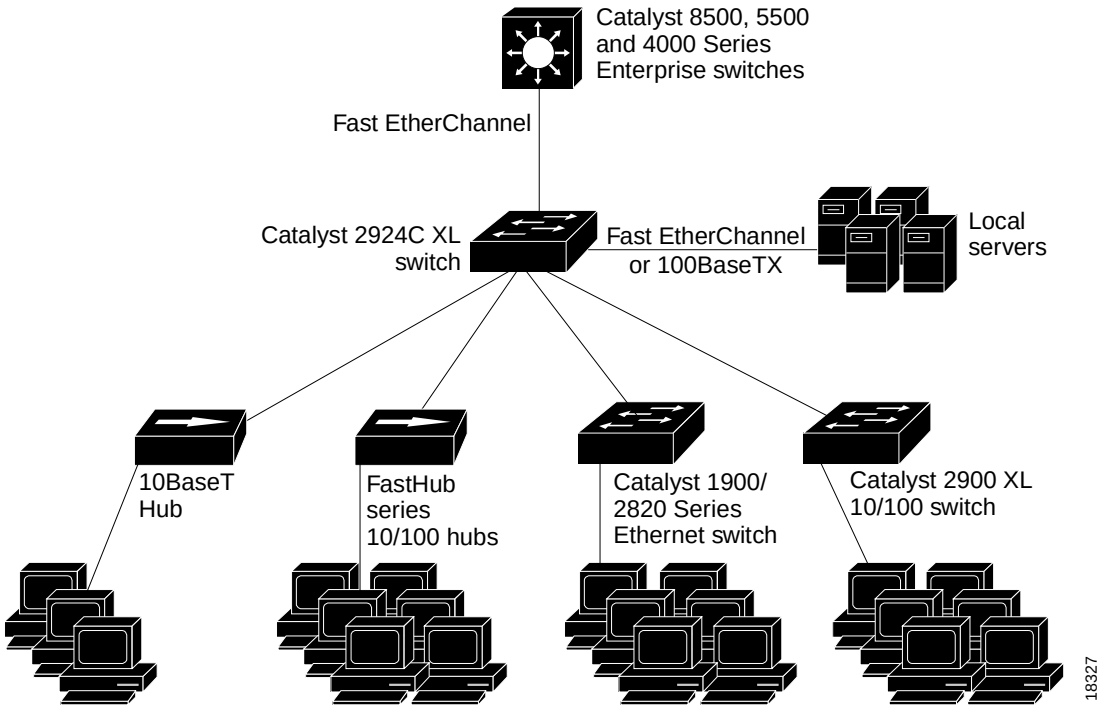
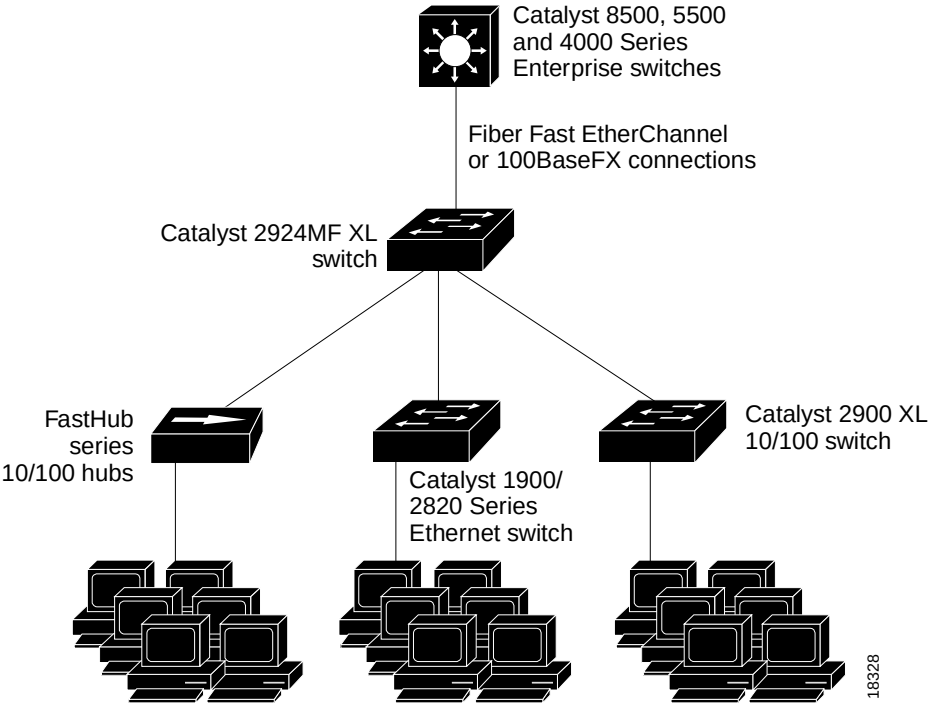
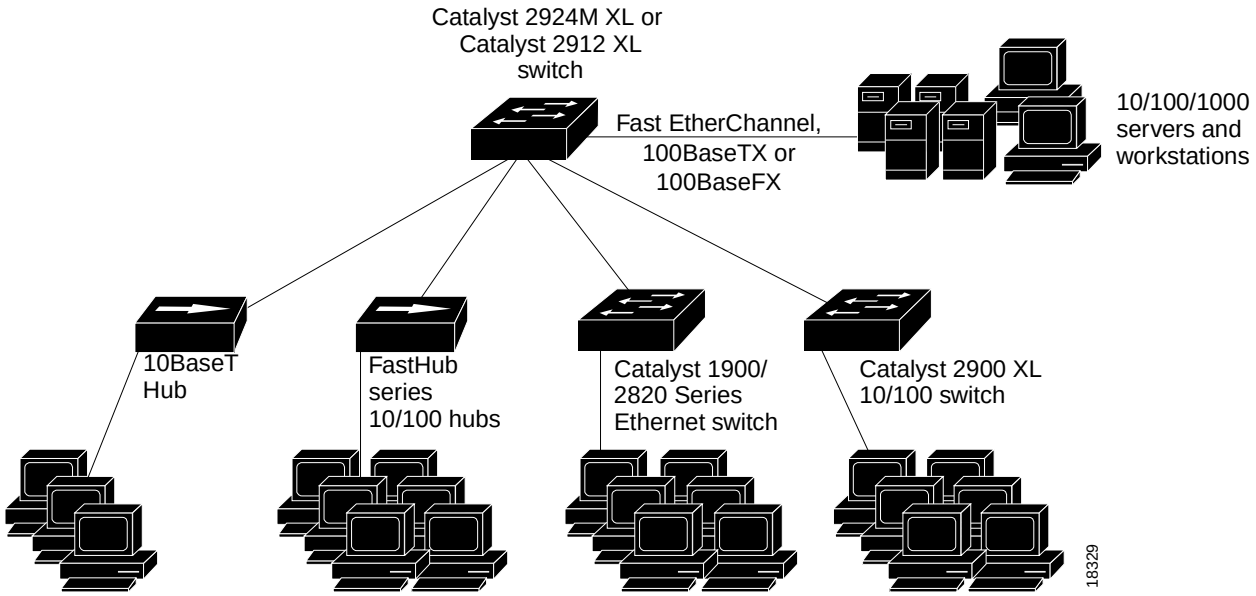


Figure 21-15: Dispersed Small Campus Aggregation



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Figure 21-16: SMB Aggregation Backbone



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