

# Catalyst 4912G Switch

*High-Performance Gigabit Ethernet Aggregator*

## Overview

The Catalyst® 4912G is a 12-port dedicated Gigabit Ethernet switch featuring high-performance Layer 2 switching and intelligent Cisco IOS® network services for high-speed network aggregation. The Catalyst 4912G is the flagship product of the new Catalyst 4900 series, which delivers fixed configuration enterprise platforms providing cost-effective, high-performance solutions for Gigabit networking. The Catalyst 4912G switch provides an advanced enterprise switching solution delivering low-cost, high-density gigabit aggregation with modular Gigabit Interface Converter (GBIC) modular protection. The Catalyst 4912G switch provides intelligent Cisco IOS network services, capable of enhancing LAN scalability, multicasting, security, management and quality of service (QoS). The dedicated gigabit Catalyst 4912G leverages the same feature set with identical software code base and the same enterprise functionality as the Catalyst 5000 family, delivering a consistent end-to-end solution.

The Catalyst 4000 family benefits include:

- Powerful wire-speed performance with 24 Gbps of dedicated bandwidth for nonblocking Gigabit Ethernet concentration
- Consistent and mature Catalyst 5000 family software compatibility
- Future-proof bandwidth protection with broad Gigabit EtherChannel® availability
- GBIC flexibility on fiber port interfaces covering a wide range of cabling distances
- Redundant, hot-swappable external power supply (option) and other fault-tolerant features

The Catalyst 4900 series fixed-configuration gigabit solutions extend and advance the rich Ethernet heritage pioneered by the popular Catalyst 2900 10/100 switches. The Catalyst 4912G leverages the powerful hardware switching fabric (ASICs) of the modular Catalyst 4000 switch family, plus offers the low entry-cost benefit of a fixed configuration form factor. The Catalyst 4912G broadens the Cisco Gigabit product offering, underscoring a continued investment in expanding the scope of Gigabit Ethernet solutions and further reducing the price-per-port of leading Gigabit solutions (now under \$1350 per port list).

The Cisco Catalyst solution provides a greater breadth and depth of switching solutions than ever before to meet your entire network's needs.

The Catalyst 4912G switch is orderable now and available in March 1999.

Figure 1 Catalyst 4912G Dedicated Gigabit Switch



## Introducing the Catalyst 4912G Gigabit Aggregator

### Dedicated 12-port 1000-Mbps Gigabit Ethernet for Nonblocking High-Speed Switching

The Catalyst 4912G is a fixed configuration Layer 2 Ethernet switch with 12 Gigabit Ethernet ports. It was designed to easily handle the most demanding network bandwidth situations with intelligent EtherChannel® technology that scales to 8 Gbps. The Catalyst 4912G supports a high-performance architecture with nonblocking 24 Gbps total capacity; more than 18 million pps throughput; 16,000 MAC addresses; and 1024 Virtual LANs (VLANs).

### Flexible, Full-Duplex Gigabit Uplinks

Each Catalyst 4912G comes standard with 12 gigabit uplink ports that can be configured with a variety of different interfaces depending upon the customer's network requirements. Utilizing advanced GBIC technology, customers can choose either shortwave (1000BaseSX) or longwave (1000BaseLX/LH) gigabit interfaces depending on network configuration requirements. And if, in the future, the customer's gigabit interface requirement changes, they can easily (and inexpensively) change their GBICs. (Note that GBICs are sold separately from the Catalyst 4912G.)

### Industry-leading Intelligent Catalyst System Software

The Catalyst 4912G supports the full set of features found in enterprise Catalyst system software. Not only does this ensure interoperability with other Catalyst switches (such as the Catalyst 4000, 5000, and 6000 Families), but it provides the Catalyst 4912G with the most comprehensive set of Layer 2 features available in the industry. Major software feature categories supported by the Catalyst 4912G include:

- Advanced scalability (such as Gigabit EtherChannel, Dynamic VLANs, 802.1Q Trunking)
- Bandwidth management (QoS, protocol filtering, link load balancing)
- Network resiliency (UplinkFast, PortFast, spanning tree)
- Security (per-port security, authentication, IP permit lists)
- Advanced management (embedded RMON, SNMP, CiscoView, and CiscoWorks2000)

### Small Form Factor Breakthrough

The Catalyst 4912G form factor continues the trend of power in a small package. The switch comes with a small footprint that is only 1.5 rack units high. The chassis is the exact same size as the popular Catalyst 2948G 10/100/1000 Mbps switch for rack or stack deployment.

### Built-In Fault Tolerance

The Catalyst 4912G supports a variety of fault-tolerant features including an available external redundant power supply (sold separately and compatible with the popular Catalyst 2948G switches), support of multiple load sharing trunks (Gigabit EtherChannel), multiple spanning trees, and fast convergence software tools like PortFast and UplinkFast. This wide range of hardware and software fault-tolerant tools enable the Catalyst 4912G to provide the platform resiliency and fault tolerance required in today's mission-critical enterprise networks.

### Comprehensive Network Management of CiscoWorks2000

Catalyst 4912G products are managed by the powerful CiscoWorks2000 network management products (option). These management products are focused on the day-to-day network operations functions such as:

- Checking on device availability and configuration changes
- Provisioning of VLANs across multiple devices concurrently
- The representation of Layer 2 networks both physically and logically.

The Essentials product suite leverages the power of the intranet with browser-based access anywhere within the network. Network managers can walk up to any browser console, simply identify who they are via the access control interface, and immediately begin checking on the up-time of each device and the active software versions that are running the Catalyst 4912G and print a Year 2000 compliant report. For drill-down, real-time device status information, the network operations staff can launch the Cisco award-winning CiscoView application from their fault management station and check on the health of the power supplies, line cards, and the operational status of each port at a glance.

For more sophisticated network-wide information network managers can launch the Cisco Works for Switched Internet work campus product bundle, which automatically discovers the physical and logical representations of the Catalyst switch networks. This object-based discovery system offers detailed information on the location and type of each switch within the network and the type of links that connect the switches together, and displays integrity reports on the configurations between each switch. All of this information is provided graphically within the topology interface with search and location utilities. This topology interface offers a convenient launching point for other applications within CWSI campus including the RMON-based traffic analysis application, the network-wide user location application, and the VLAN application that displays the logical configuration and spanning tree forwarding path information.

Intelligent, embedded agents in the Catalyst 4912G switch include support for Cisco Discovery Protocol (CDP)—delivering network topology discovery and mapping, and Cisco VLAN Trunking Protocol (VTP)—supporting dynamic VLANs and dynamic trunk configurations across all switches. Embedded, intelligent RMON agents on every port deliver powerful traffic monitoring and control—RMON group support includes statistics, history, alarms, and events.

Enhanced Switched Port Analyzer (SPAN) functionality enables the user to mirror traffic from any single port, multiple ports, or VLAN to another Ethernet or Fast Ethernet port for analysis by a remote sniffer or RMON SwitchProbe<sup>®</sup> product. Support for local, out-of-band management is delivered through a terminal or modem attached to the EIA/TIA-232 interface; remote in-band management is available via Simple Network Management Protocol (SNMP), Telnet client, BOOTP, and Trivial File Transfer Protocol (TFTP).

## Benefits

### Performance and Scalability for Today's Network

The Catalyst 4912G is designed to meet all customer performance requirements and expectations, ranging from wire-speed performance on all ports simultaneously to the efficiency of load sharing trunks and flexible Gigabit Ethernet uplinks. With a 24-Gbps switch fabric capacity, the Catalyst 4912G is nonblocking so even when networks migrate to Gigabit Ethernet, the switch capacity will always

be greater than the total bandwidth requirement of all ports. Links scale to 8 Gbps with intelligent Gigabit EtherChannel on every port.

### Consistent Features and Interfaces

Building on the familiar features and interfaces of the award-winning Catalyst 5000 series switches, the Catalyst 4912G software shares the advantage of years of Catalyst 5000 series enterprise feature development by supporting a consistent software feature set. This is a tremendous advantage over competitive products with embryonic or immature Gigabit Ethernet feature sets. The Catalyst 4912G provides easy plug-and-play insertion in your network, with seamless feature linkages to other Catalyst switches in the infrastructure.

### Low Cost of Entry, Easy to Deploy

For customers requiring up to 12 ports of 1000-Mbps Gigabit Ethernet connectivity at an affordable price, the Catalyst 4912G offers an ideal configuration of Gigabit Ethernet for concentration in a single platform. The Catalyst 4912G meets the Layer 2 bandwidth needs of advanced networks and provides a very affordable 1000-Mbps switched Ethernet solution plus enterprise resiliency and management with future-proof growth protection.

### Investment Protection for Future Growth

The Catalyst 4912G not only meets the customer's switching needs today, but is carefully architected to meet the customer's future bandwidth requirements. Many customer networks currently are bandwidth constrained from increasing browser-based application traffic over 100-Mbps Fast Ethernet uplinks. The Catalyst 4912G provides the next-step solution through industry standards-based 1000-Mbps Gigabit Ethernet intelligent switching. Similarly, as customers need to change their Gigabit Ethernet cabling interface connection, the Catalyst 4912G supports GBIC technology so customers can choose either shortwave (1000Base-SX) or longwave (1000Base-LX/LH) interfaces depending on network configuration requirements. And, in the future, if customers' Gigabit interface requirements change, they can easily (and inexpensively) change their GBICs.

Ongoing enhancements to the Catalyst system software delivers one of the most important investment protection features of the Catalyst 4912G. Catalyst software is already the most comprehensive multilayer service solution in the industry. As new Catalyst system software releases become

available, the Catalyst 4912G customer will have immediate access to the latest enhancements in critical areas such as QoS, multicast, load balancing, and security.

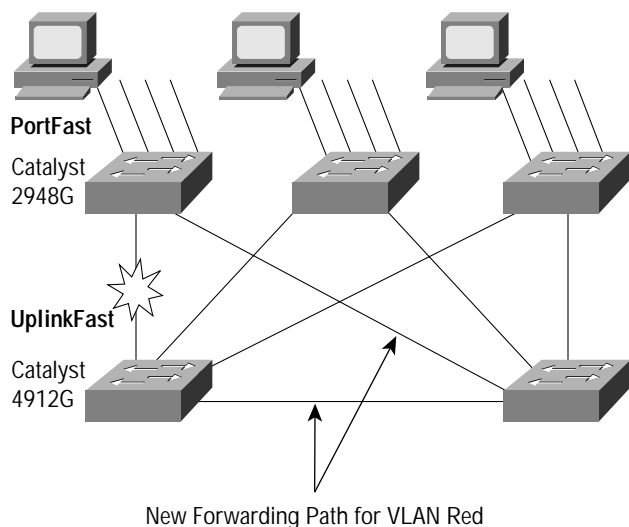
### Network Application Examples

#### Gigabit Aggregation with Network Resilience and High Availability

As more and more PC connections to the network scale to 100-Mbps Fast Ethernet, congestion can occur in the wiring closet. The Catalyst 4912G dedicated Gigabit Ethernet switch is the ideal aggregator device in a Layer 2 distribution design providing optimal, nonblocking performance. With high-performance 24-Gbps switch fabric capacity, the Catalyst 4912G can handle the load with wire-speed performance on every port. In addition, for fast connections to the core backbone network elements, Gigabit EtherChannel can provide up to 8 Gbps links to enhance the most demanding network situations.

The Catalyst 4912G is designed to support Gigabit Ethernet aggregation with very high availability and network resilience. The switch supports an external, redundant power supply, redundant load sharing trunks, and multiple spanning trees. In addition, the Catalyst 4912G supports fast convergence tools such as PortFast and UplinkFast in case of physical link failures outside the switch. UplinkFast enables deterministic spanning tree uplink convergence in less than five seconds and PortFast enables the protection of spanning tree with no convergence delay at power up.

Figure 2 Catalyst 4912G Aggregation and High-Availability Features

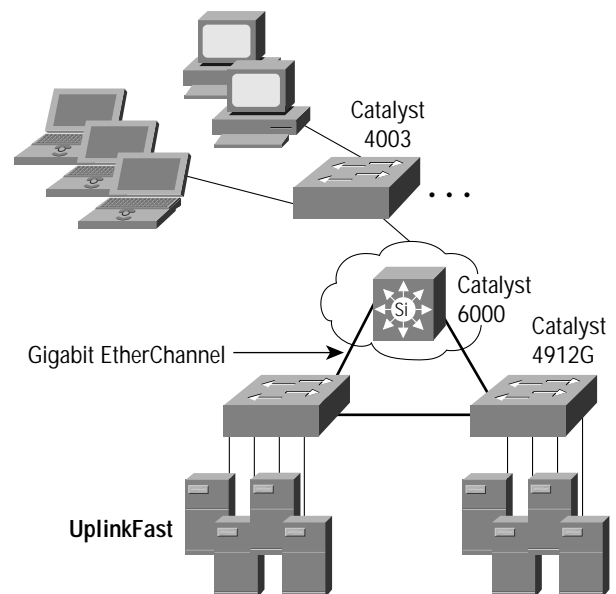


The Catalyst 4912G meets the need for additional bandwidth and complements this with intelligent services for superior resiliency, scalability, network management, and QoS.

#### Server Farm Gigabit Ethernet Aggregator

With the industry moving toward Gigabit Ethernet data center server farms, the need for high-speed connections becomes necessary to protect network infrastructures from rapidly advancing server Network Interface Card (NIC) speed increases. Regardless whether your network is designed using a client/server or portal model, there is a growing need for gigabit speed connections in the data center server farms to meet the requirements of browser-based networking. The Catalyst 4912G is an ideal gigabit speed concentrator for any data center. Providing intelligent bandwidth, this switch is ready to efficiently enhance the multicasting, multimedia, and data convergence needs of large and small server farms. High-speed interconnects to the core backbone are enhanced with EtherChannel links providing load-balancing, fault-detecting, failure recovering connections based on industry standard interfaces (IEEE 802.3z) and protocols (IEEE 802.1D).

Figure 3 Catalyst 4912G Data Center Server Concentration



## Summary

The Catalyst 4912G is a cost-effective, high-performance, feature-rich dedicated Gigabit Ethernet switch ideally suited for customers requiring Layer 2 switching for up to 12 1000-Mbps connections and links that scale to 8 Gbps. This new Catalyst switch has a nonblocking 24-Gbps architecture enabling all ports to operate simultaneously at wire speed. All 12 gigabit uplinks support standard GBIC technology enabling the customer to select and change gigabit interfaces in the Catalyst 4912G quickly, easily, and inexpensively. All interfaces scale intelligently with EtherChannel support.

The Catalyst 4912G features a dedicated configuration of 12 modular Gigabit Ethernet uplink ports. Fully integrated into the Catalyst family of switches, the Catalyst 4912G uses the same Catalyst system software as the industry-leading Catalyst 5000 family, ensuring complete interoperability with existing Catalyst switches. The combination of high port density, wire-speed performance, rich software feature set, and affordable cost per port makes the Catalyst 4912G an excellent choice for high-speed network implementations.

## Ordering Information

Product Number	Description
WS-C4912G	Catalyst 4912G Switch, Fixed 12 ports Switched 1000BaseX (GBIC)
WS-G5484	1000BaseSX GBIC Module
WS-G5486	1000BaseLX/LH GBIC Module
PWR600-AC-RPS-CAB	600W Redundant AC Power System with DC Power Cables
PWR600-AC-RPS-NCAB	600W Redundant AC Power System without DC Power Cables
CAB-RPSY-2208(=)	RPS 22/08 Two-to-One DC Power Cable
CAB-RPSY-2218(=)	RPS 22/18 Two-to-One DC Power Cable
CAB-RPS-2208(=)	RPS-22/08 One-to-One DC Power Cable
CAB-RPS-2218(=)	RPS 22/18 One-to-One DC Power Cable
WS-C4912G-EMS-LIC	Catalyst 4912G RMON Agent License
WS-X4912G-RACK=	Catalyst 4912G Rack-Mount Kit (spare)



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