



Overview

Cisco IOS Release 12.0(5)WC(1) supports the Catalyst 2950 switches. These workgroup Ethernet switches can connect 10BASE-T, 100BASE-TX, 100BASE-FX, and 1000BASE-T devices. The switches can connect to other devices as backbone switches, or they can be used in mixed configurations that connect hubs, servers, and end stations.

[Table 1-1 on page 1-3](#) lists the switches that support this switch in a cluster.

This chapter provides information on the following topics:

- Key features
- Supported hardware
- Management options
- Deployment examples

Key Features

This section describes the key features of this software release. [Table 4-2 on page 4-3](#) lists each of these features with its default setting and a cross-reference to the section describing it. This release has the following key features:

- Automatic discovery of candidates and creation of *clusters* of up to 16 switches that can be managed through a single IP address. The Cluster Management Suite (CMS) supports:
 - Unified monitoring, configuration, and authentication of clustered switches through a web-based interface
 - Management redundancy supported by the Hot Standby Router Protocol (HSRP)
 - Extended discovery of cluster candidates for adding candidates that are not directly connected to the command switch
- Support for IEEE 802.1p class of service (CoS) scheduling for classification and preferential treatment of high-priority voice traffic
- Support for strict priority and weighted round-robin (WRR) CoS policies
- Support for the following virtual LAN (VLAN) options:
 - IEEE 802.1Q trunking support on all ports
 - Support for up to 64 VLANs
- Enhanced Spanning Tree Protocol (STP) features:
 - STP support on a per-VLAN basis
 - STP UplinkFast to accelerate the reconfiguration of STP
 - STP root guard to prevent switches outside the network core from becoming the STP root
- Terminal Access Controller Access Control System Plus (TACACS+) to manage network security through a server
- Unidirectional link detection (UDLD) support on all Ethernet ports to prevent unidirectional links
- Protected Port option for restricting the forwarding of traffic to designated ports on the same switch

- Network Time Protocol (NTP) to provide an external source for time-of-day information
- Internet Group Management Protocol (IGMP) snooping support to limit flooding of IP multicast traffic
- Dynamic Host Configuration Protocol (DHCP)-based autoconfiguration to ensure retrieval of configuration files by unicast TFTP messages

Supported Hardware

When switches are grouped into clusters, one switch is designated as the *command switch*, and the others are *member switches*. The IP address for the entire cluster is assigned to the command switch, and it distributes configuration and management information to the others. All Catalyst 2950 switches can act as either command switches or member switches.

This section lists the switches and modules that support the Catalyst 2950 switches in a cluster environment.



Note

All switches can function as standalone devices.

Table 1-1 Switches Supporting Catalyst 2950 Switches in a Cluster Configuration

Switch Models	Software Release	Member Capable?	Command Capable?
2950 switches	IOS Release 12.0(5)WC(1)	Yes	Yes
3500 XL switches	IOS Release 12.0(5)WC(1)	Yes	Yes
2900 XL switches	IOS Release		
8 MB of DRAM	12.0(5)WC(1)	Yes	Yes
4 MB of DRAM	11.2(8.x)SA6 ¹	Yes	No

Table 1-1 Switches Supporting Catalyst 2950 Switches in a Cluster Configuration (continued)

Switch Models	Software Release	Member Capable?	Command Capable?
2820 switches	Release 9.00(-A)	Yes	No
	Release 9.00(-EN)	Yes	No
1900 switches	Release 9.00(-A)	Yes	No
	Release 9.00(-EN)	Yes	No

1. Original edition software. They can interoperate with this software release, but they cannot be upgraded to it.

Management Options

This software release supports these management options:

- Cisco Cluster Management Suite
- Cisco IOS command-line interface (CLI)
- Simple Network Management Protocol (SNMP)

Cisco Cluster Management Suite

CMS is an integrated set of web-based applications. Use these applications to create clusters of switches, monitor real-time images of the switches, and configure both clustered and standalone switches.

The three CMS applications have the following functions:

- Cluster Manager displays the front panel and LEDs of all cluster switches. Within Cluster Manager, you can point-and-click to configure ports and switches. You can select several ports from the same cluster and configure them all to run with the same settings. All of the device-management features are available through the Cluster Manager menu bar.
- Visual Switch Manager (VSM) displays the front panel of one switch. VSM is the device-management application for individual and standalone switches. When creating a cluster, you use VSM to enable the command switch.

- Cluster Builder controls discovery of cluster candidates and cluster creation. It displays a network map that uses icons to display link speeds, cluster members, cluster candidates, and edge devices. Cluster View displays a network map of the devices that are connected to a cluster, including other clusters.

A browser plug-in is required to access the CMS. For more information, refer to the *Release Notes for the Catalyst 2950 Cisco IOS Release 12.0(5)WC(1)*.

IOS Command-Line Interface

This software release is based on Cisco IOS Release 12.0(5), but it has been enhanced to support a set of desktop-switching features. Those commands that have been added or changed for this software release are documented in this guide and in the *Catalyst 2950 Desktop Switch Command Reference*.

You can access the CLI by connecting a PC or terminal to the switch console port or by using Telnet. [Chapter 2, “Using the Management Interfaces,”](#) describes how to use the IOS CLI.

SNMP Network Management Platforms

You can manage switches by using an SNMP-compatible management station running such platforms as HP OpenView or SunNet Manager. In a cluster configuration, the command switch manages communication between the SNMP management station and all switches in the cluster. The switch supports a comprehensive set of MIB extensions and MIB II, the IEEE 802.1D bridge MIB, and four Remote Monitoring (RMON) groups.

You can configure, monitor, and troubleshoot Catalyst 2950 switches by using the CiscoWorks2000 and CiscoView 5.0 network-management applications.

Deployment Examples

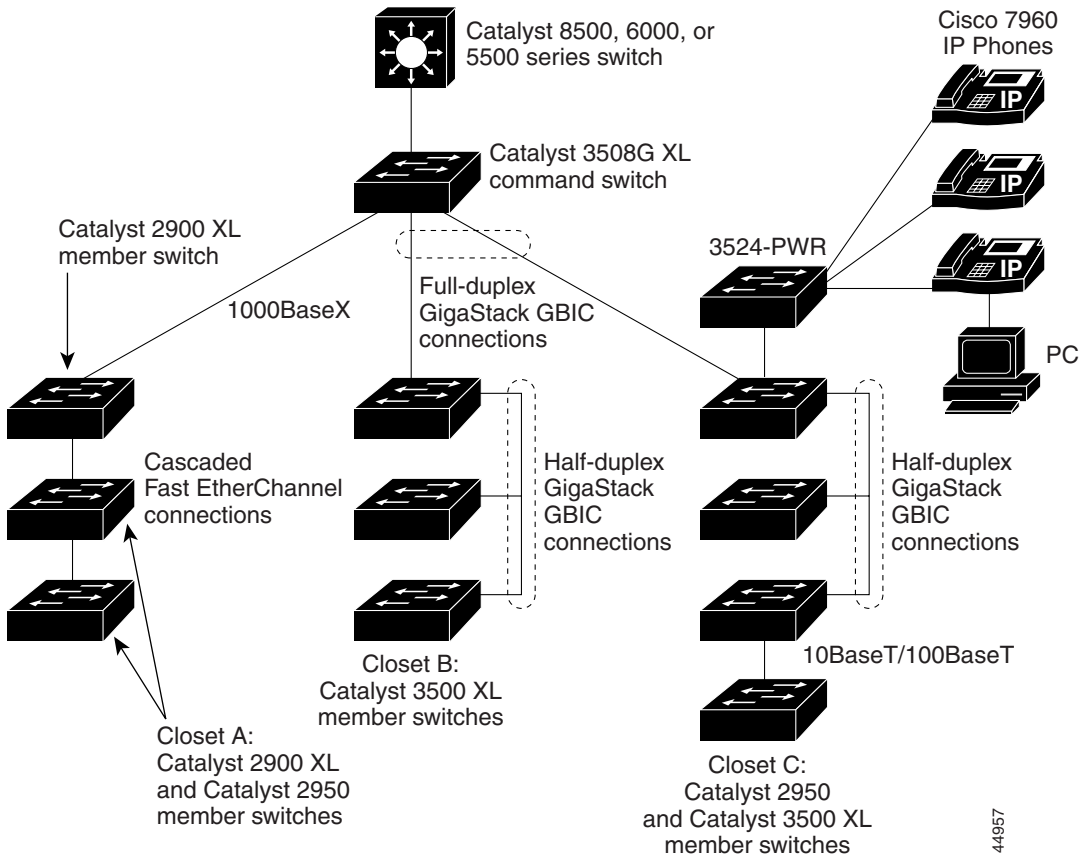
This section describes how you can use this IOS release with the Catalyst 2950 switches.

Enterprise Workgroup Aggregation

A Catalyst 3508G XL switch can be deployed to aggregate workgroup networking devices such as Ethernet 10/100 switches, 10BaseT and 10/100 hubs, workgroup servers, and Cisco 7960 IP Phones. The Catalyst 3508G XL switch can be the command switch for a single management point for the cluster. The command switch is assigned an IP address and manages other member switches (Catalyst 2950, 2900 XL, and 3500 XL) deployed in an interconnected configuration.

[Figure 1-1](#) shows such a configuration.

Figure 1-1 Enterprise Workgroup Aggregation



Small to Medium-Sized Business Workgroup Aggregation

A Catalyst 2950 switch can be used in a small to medium-sized business as a network backbone. It can aggregate Ethernet and Fast Ethernet network resources in the organization and provide 1000BaseTX connections to Gigabit Ethernet servers. [Figure 1-2](#) shows such a configuration.

Figure 1-2 Small to Medium-Sized Business Workgroup Aggregation