CHAPTER 1

Overview

Cisco IOS Release 12.0(5)XU supports the Catalyst 2900 series XL and 3500 series XL switches. These workgroup Ethernet switches can connect 10BaseT, 100BaseT, Gigabit Ethernet, and Asynchronous Transfer Mode (ATM) 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.

You can upgrade legacy switches to this release by downloading a new image from Cisco Connection Online. Table 1-1 on page 1-4 lists the switches that support this software release.

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. The following are the key features of this release:

- Automatic discovery and creation of *clusters* of up to 16 switches that can be managed through a single IP address. The Cluster Management Suite 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 the Catalyst 1900 and 2820 switches as member switches
- Support for IEEE 802.1p class of service (CoS) for classification and preferential treatment of high-priority traffic
- Support for the following virtual LAN (VLAN) options:
  - Inter-Switch Link (ISL) and IEEE 802.1Q trunking support on all ports
  - Support for 64 or 250 VLANs, depending on the switch model
  - VLAN Membership Policy Server (VMPS) for dynamic VLAN membership
  - Virtual Trunk Protocol (VTP) pruning that reduces network traffic by restricting flooded traffic to links destined for stations receiving the traffic
- Support for the Catalyst 3524-PWR XL and associated telephony features such as Voice VLAN (VVID) and detection and control of phone power on a per-port basis
- Enhanced Spanning Tree Protocol (STP) features:
  - STP support on a per-VLAN basis
  - STP UplinkFast feature to accelerate the reconfiguration of STP
  - STP Root Guard feature to prevent switches outside the core of the network from becoming the STP root

- Private VLAN edge option for restricting the forwarding of traffic to designated ports on the same switch
- Terminal Access Controller Access Control System Plus (TACACS+) feature to manage network security through a server
- Network Time Protocol (NTP) to provide an external source for time-of-day information
- Unidirectional link detection (UDLD) support on all Ethernet ports to prevent unidirectional links
- Cisco Group Management Protocol (CGMP) support to limit the flooding of IP multicast traffic and CGMP Fast Leave to accelerate the removal of unused CGMP groups

Supported Hardware

When switches are grouped into clusters, one switch is the *command switch*, and the other switches 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 other switches. This section lists the supported switches and modules in a cluster environment.

Catalyst 2900 and 3500 XL Switches

Table 1-1 describes the 2900 and 3500 XL switches supported by this release and shows those switches that can act as command switches. All switches can function as standalone devices.

Table 1-1 Catalyst 2900 and 3500 XL Switches as Command or Member Switches

Switch Models	IOS Release 12.0(5)XU?	Member Capable?	Command Capable?
3500 XL switches	Yes	Yes	Yes
2900 XL switches (8 MB of DRAM)	Yes	Yes	Yes
2900 XL switches (4 MB of DRAM)[1]	No	Yes	No

1. These switches can act as cluster members if they are running IOS Release 11.2(8.x)SA6 original edition software. They can interoperate with this software release, but they cannot be upgraded to it.

Catalyst 1900 and 2820 Switches

Table 1-2 lists the Catalyst 1900 and 2820 switches and the required software for them to be cluster members.

Table 1-2 Catalyst 1900 and 2820 Switches as Cluster Members

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

Supported Switch Modules

All 2900 XL modules are supported in cluster configurations. For more information, refer to the *Release Notes for the Catalyst 2900 Series XL and Catalyst 3500 Series XL, Cisco IOS Release 12.0(5)XU*.

All Catalyst 2820 modules are supported in cluster configurations. For more information, refer to the *Catalyst 2820 Modules User Guide* and the *Catalyst 2820 ATM Modules Installation and Configuration Guide*.

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

The 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 four 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 Cluster Management Suite. See "Installing the Required Plug-In" section on page 2-3 for more information.

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 *Cisco IOS Desktop Switching Command Reference* (online only).

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 2900 and 3500 XL switches by using the CiscoWorks2000 and CiscoView 5.0 network-management applications.

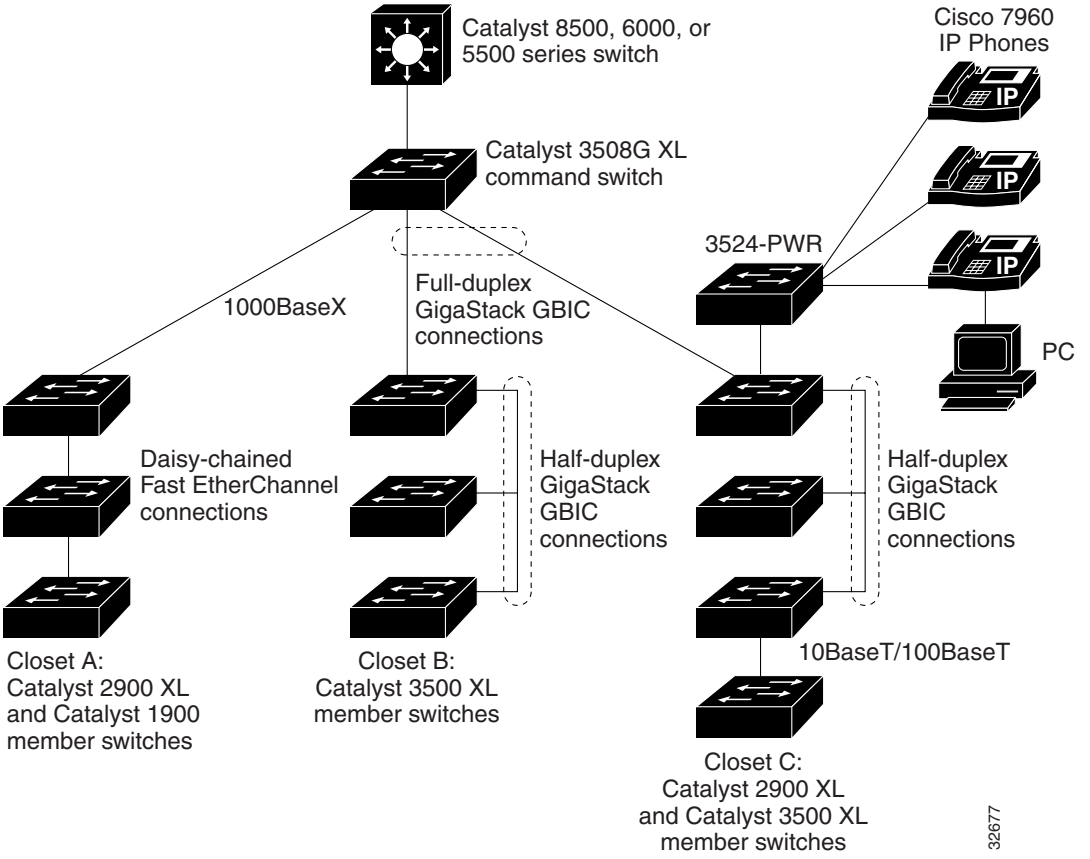
Deployment Examples

This section describes how you can use this IOS release with the 2900 and 3500 XL switches.

Enterprise Workgroup Aggregation

The 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 3508G XL can be designated as the command switch for a single management point for the cluster. The command switch is assigned an IP address and manages other Catalyst 3500 XL, 2900 XL, 1900, and 2820 member switches deployed in an interconnected switch-clustering configuration. Figure 1-1 shows such a configuration.

Figure 1-1 Enterprise Workgroup Aggregation



Small- to Medium-Sized Business Workgroup Aggregation

The 3512 XL 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 1000BaseX connections to Gigabit Ethernet servers. Figure 1-2 shows such a configuration.

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