CHAPTER 2

Getting Started with CMS

This chapter describes the following features and interface components of the Cluster Management Suite (CMS) software:

- Visual Switch Manager (VSM) and Cluster Manager
- Cluster Builder and Cluster View
- CMS window components

This chapter also includes the following topics:

- Accessing CMS
- Saving changes on CMS
- Using different versions of CMS

For system requirements and for browser and Java plug-in configurations, refer to the release notes. For field-level descriptions of the CMS windows and for procedures for using CMS, refer to the online help.

Note This chapter describes the CMS interface used on the Catalyst 2900 XL and Catalyst 3500 XL switches. Refer to the appropriate switch documentation for descriptions of the web-based management software used on other Catalyst desktop switches, such as the Catalyst 2950, Catalyst 1900, and Catalyst 2820 switches.

Features

CMS consists of the following integrated set of Java-based applications for managing switch clusters and individual switches from a standard Web browser such as Netscape Communicator or Microsoft Internet Explorer:

- Cluster Manager and Visual Switch Manager (VSM)—Cluster Manager is the application for configuring and monitoring the switches in a specific cluster. When launched, it displays a front-panel view of all switches in the cluster.

  VSM is the application for configuring and monitoring a standalone switch or a specific switch in a cluster. It is also the application used to enable a cluster command switch. When launched, it displays a front-panel view of a specific switch.

Note You can display VSM for a specific switch from Cluster Builder or Cluster View by selecting **Device > Launch Switch Manager**. You cannot display VSM from Cluster Manager. For more information about accessing CMS, see the "Accessing CMS" section on page 2-35.

- Cluster Builder and Cluster View—Cluster Builder is the application from which you can create and modify a specific switch cluster. When launched, it displays a topology (network map) of the cluster command switch, cluster members, cluster candidates, edge devices, and the link speeds between all cluster members.

  Cluster View is the application from which you can display connected switch clusters and neighboring edge devices in your network.

  You can toggle between Cluster Builder and Cluster View by selecting **View > Toggle Views**. For more information about accessing CMS, see the "Accessing CMS" section on page 2-35.

The CMS windows use a consistent set of components (such as tabs, buttons, drop-down lists, and so on), regardless of the CMS application you use. Each CMS window also includes comprehensive online help, which provides procedures for performing tasks from the window and high-level concepts.

Cluster Manager and VSM

Cluster Manager is the CMS application for configuring the port-, switch-, and cluster-level settings of the switches in a cluster. VSM is the application for configuring switch- and port-level settings for a single switch.

To assist in your configuration and monitoring tasks, both applications provide the following features:

- A display of switch images (Figure 2-1 and Figure 2-2) for visual monitoring of the switches and switch ports. For information about using the switch images, see the "Switch Images" section on page 2-7.
- A menu bar that, except for a few options, provides the same options for managing a single switch and clustered switches. This menu bar is described in the "Menu Bars" section on page 2-14.
- A toolbar that provides buttons for displaying commonly used, switch- and cluster-level configuration windows and for displaying the legends and online help. This toolbar is described in the "Toolbar" section on page 2-17.
- A port-level pop-up menu for displaying windows specific for configuring and monitoring switch ports. This pop-up menu is described in the "Port Pop-Up Menu" section on page 2-18.
- A device-level pop-up menu for displaying the configuration and monitoring windows also available from the menu bar. This pop-up menu is described in the "Device Pop-Up Menu" section on page 2-19.

The toolbar and pop-up menus provide quick ways to access the configuration and monitoring options available from the menu bar.

Figure 2-1 Visual Switch Manager

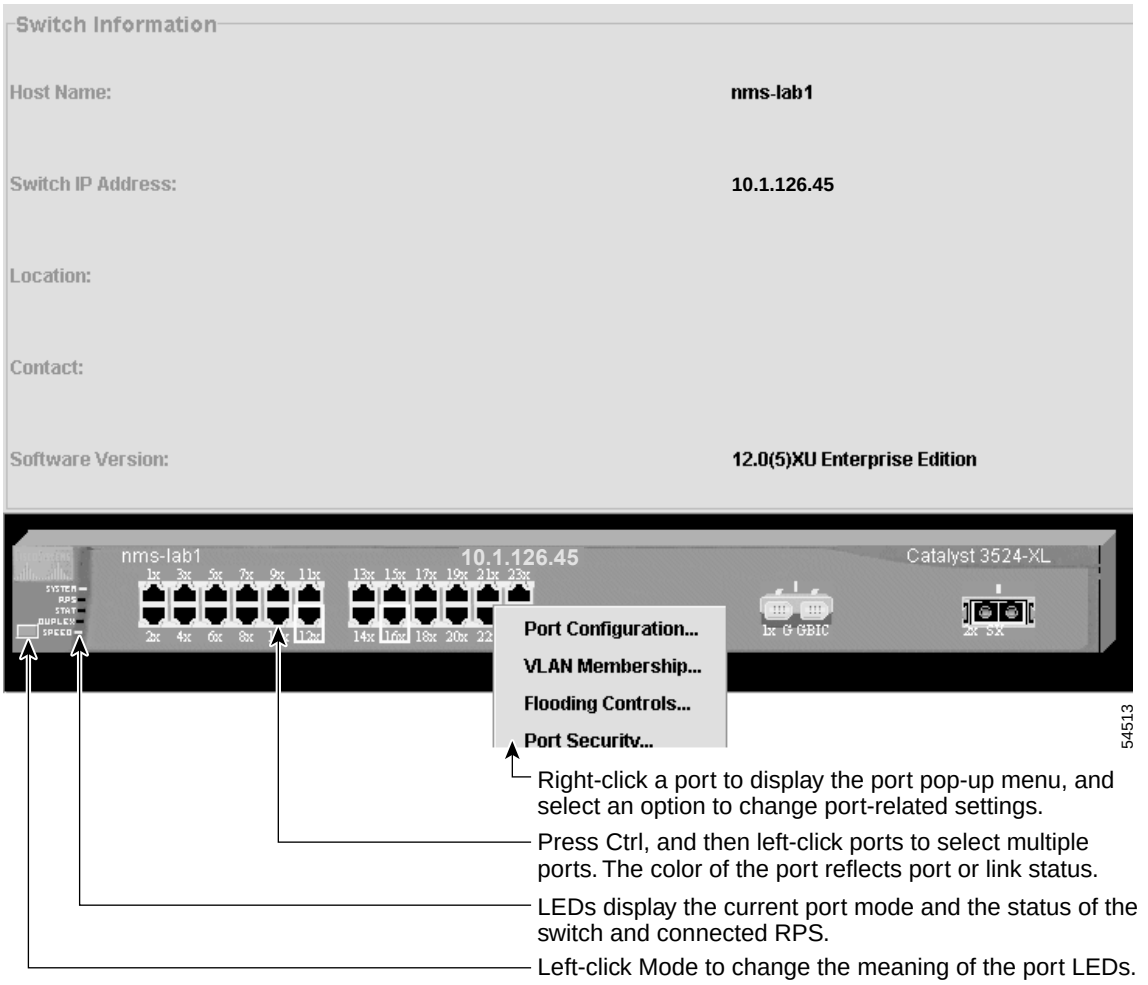
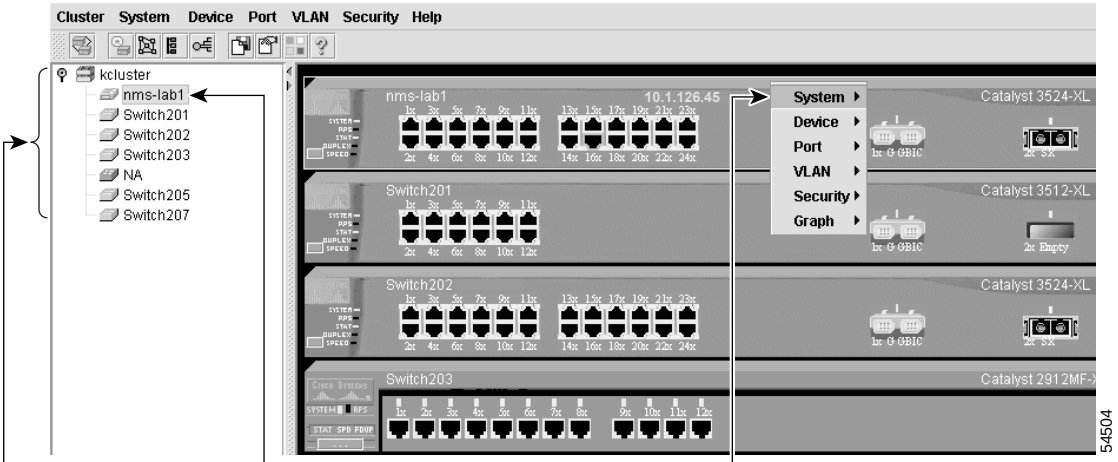


Figure 2-2 Cluster Manager



Cluster tree

Select a switch from the cluster tree. The color of the switch icon reflects switch status.

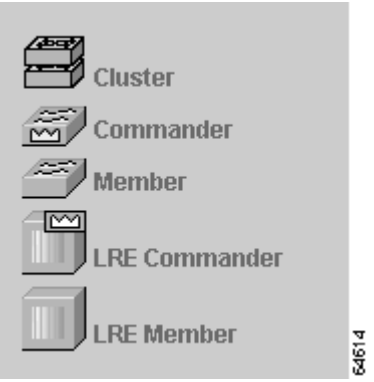
Right-click a switch to display the device pop-up menu, and select an option to change system-related settings.

Cluster Tree

The cluster tree appears in the Cluster Manager left frame (Figure 2-2). It displays a list of the switches in a specific cluster. The sequence of the cluster tree icons mirrors the sequence of the switch front-panel images. Select a cluster-tree icon to select the corresponding switch image. After you select a switch, you can configure switch-wide settings from either the Cluster Manager menu bar options or the device pop-up menu.

The cluster tree uses a subset of the same icons used in the topology displayed in Cluster View and Cluster Builder. Figure 2-3 shows the device icons as they appear in the cluster tree.

Figure 2-3 Cluster Tree Icons



The cluster tree displays the cluster name and the names and the status of cluster members (Table 2-1). For example, a yellow switch icon in the cluster tree means that particular switch is overheating or the fan is broken. Complete descriptions of the icons and icon colors are available by selecting **Help** > **Legend**.

Table 2-1 Cluster Tree Icon Colors

Color	Switch Status
Green	Switch is operating normally.
Yellow	A system fault exists, such as the internal fan is not operating.
Red	Switch is not powered up, has lost power, or the command switch is unable to communicate with the member switch.

Switch Images

Use the front-panel images for visual switch management from a remote station. The LEDs on these images are updated at user-configurable polling intervals, making them as useful as the LEDs on the actual switches themselves. To change the polling intervals, select **System > User Settings** from VSM or **Cluster > User Settings** from Cluster Manager.

The following sections provide complete descriptions of the Catalyst 2900 XL and Catalyst 3500 XL LED images:

- System LED
- RPS LED
- Port LEDs

Summarized descriptions of the LED images are available from the VSM and Cluster Manager menu bar by choosing **Help > Legend**.

System LED

The system LED shows whether the switch is receiving power and functioning properly. Table 2-2 lists the LED colors and their meanings.

Table 2-2 System LED

Color	System Status
Black (off)	System is not powered up.
Green	System is operating normally.
Amber	System is receiving power but is not functioning properly.

Redundant Power System LED

The Redundant Power System (RPS) LED shows the RPS status. Table 2-3 and Table 2-4 list the LED colors and their meanings.

Note The Catalyst 2912 LRE XL, Catalyst 2924 LRE XL, and Catalyst 3524-PWR XL switches use the Cisco RPS 300 (model PWR300-AC-RPS-N1). All other Catalyst 2900 XL and Catalyst 3500 XL switches use the Cisco RPS 600 (model PWR600-AC-RPS). Refer to the appropriate switch documentation for RPS descriptions specific for the switch.

Table 2-3 Cisco RPS 600 LED on the Catalyst 2900 XL and Catalyst 3500 XL Switches Except the Catalyst 2912 LRE, 2924-LRE, and 3524-PWR XL Switches

Color	RPS Status
Black (off)	RPS is off or is not installed.
Green	RPS is operational.
Blinking green	RPS and the switch AC power supply are both powered up. If the switch power supply fails, the switch powers down and after 15 seconds restarts, using power from the RPS. The switch goes through its normal boot sequence when it restarts. **Note** This is not a recommended configuration.
Amber	RPS is connected but not functioning properly. One of the power supplies in the RPS could be powered down, or a fan on the RPS could have failed.

Table 2-4 Cisco RPS 300 LED on the Catalyst 2912 LRE, 2924-LRE, and 3524-PWR XL Switches

Color	RPS Status
Black (off)	RPS is off or is not installed.
Green	RPS is connected and operational.
Blinking green	RPS is backing up another switch in the stack.
Amber	RPS is connected but not functioning. The following conditions could exist: • The RPS could be in standby mode. To put the RPS in Active mode, press the Standby/Active button on the RPS, and the LED should turn green. If it does not, one of these other two conditions could exist. • One of the RPS power supplies could be down. Contact Cisco Systems. • The RPS fan could have failed. Contact Cisco Systems.
Blinking amber	Internal power supply of the switch is down, and redundancy is lost. The switch is operating on the RPS.

Port Modes and LEDs

The port modes (Table 2-5) determine the type of information displayed through the port LEDs. When you change port modes, the meaning of the port LED colors also changes.

Note The bandwidth utilization mode (UTIL LED) is not displayed on the VSM or Cluster Manager switch images. Select **Monitoring > Bandwidth Graph** to display the total bandwidth in use by the switch. Refer to the switch hardware installation guide for information about using the UTIL LED.

To select or change a mode, click **Mode** until the desired mode LED is green.

Table 2-5 Port Modes

Mode LED	Description
STAT	Ethernet link status of the 10/100, 100BASE-FX, or 1000BASE-X switch ports, or the Ethernet link status on the remote CPE. Default mode on all Catalyst 2900 XL and Catalyst 3500 XL switches except the Catalyst 2900 LRE XL switches.
LRE (Catalyst 2900 LRE XL only)	Long-Reach Ethernet (LRE) link status of the LRE ports on the Catalyst 2900 LRE XL switches. Default mode on these switches only. **Note** When the LRE mode is active, the 10/100 switch ports on the Catalyst 2900 LRE XL continue to show Ethernet link status.
FDUP or DUPLX	Duplex setting on the ports. • Default setting is auto on all Catalyst 2900 XL and Catalyst 3500 XL switches and on the 10/100 ports on the Catalyst 2900 LRE XL switches. • Default setting is half-duplex on the LRE ports on the Catalyst 2900 LRE XL switches. **Note** On the Catalyst 2900 LRE XL switches, this LED shows the duplex mode used on the Ethernet link between the remote customer premises equipment (CPE) and Ethernet device.
SPEED or SPD	Speed setting on the ports. Default setting is auto. **Note** On the Catalyst 2900 LRE XL switches, this LED shows the link speed between the remote CPE and Ethernet device.
LINE PWR (Catalyst 3524-PWR XL only)	Inline power setting on the Catalyst 3524-PWR XL 10/100 ports. Default setting is auto.

Table 2-6, Table 2-7, and Table 2-8 explain how to interpret the port LED colors after you change the port mode.

On the modular switches, the 1 or 2 LED is green when a module is installed. Refer to the module documentation for complete information.

Table 2-6 Port LEDs on the Catalyst 2912, 2924C, 2924, 2912MF, and 2924M XL Switches

Port Mode	Port LED Color	Description
STAT	Cyan (off)	No link.
	Green	Link present.
	Blinking green	Activity on the port. Port is transmitting or receiving data.
	Amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication. Port is not forwarding. Port was disabled by management, or by an address violation, or was blocked by Spanning Tree Protocol (STP). **Note** After a port is reconfigured, the port LED can remain amber for up to 30 seconds as STP checks the switch for possible loops.
	Brown	No link and port is administratively shut down.
FDUP	Cyan (off)	Port is operating in half-duplex mode.
	Green	Port is operating in full-duplex mode.
SPD	Cyan (off)	Port is operating at 10 Mbps.
	Green	Port is operating at 100 Mbps.

Table 2-7 LRE Port LEDs on the Catalyst 2900 LRE XL Switches[1]

Port Mode	Port LED Color	Description
LRE[2]	Cyan (off)	No LRE link present on the LRE port.
	Green	LRE link present on the LRE port. Port LED turns green in approximately 10 seconds after the LRE port detects a connection to a Cisco 575 LRE CPE.
	Amber	LRE port on the switch and WALL port on the Cisco 575 LRE CPE unable to establish the rate defined by the assigned profile. Refer to the "Troubleshooting LRE Port Configuration" section on page 9-4.
STAT	Cyan (off)	No Ethernet link present on the 10/100 switch port or on the remote CPE Ethernet port.
	Green	Ethernet link present on the 10/100 switch port or on the remote CPE Ethernet port.
	Blinking green	Activity on the 10/100 switch port or on the remote CPE Ethernet port. Port is transmitting or receiving data.
	Amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication. 10/100 switch port or remote CPE Ethernet port is not forwarding. Port was disabled by management, by an address violation, or was blocked by STP. **Note** After a port is reconfigured, the port LED can remain amber for up to 30 seconds as STP checks the switch for possible loops.
	Brown	No link and port is administratively shut down.
DUPLX	Cyan (off)	10/100 switch port or remote CPE Ethernet port is operating in half-duplex mode.
	Green	10/100 switch port or remote CPE Ethernet port is operating in full-duplex mode.
SPEED	Cyan (off)	10/100 switch port or remote CPE Ethernet port is operating at 10 Mbps.
	Green	10/100 switch port or remote CPE Ethernet port is operating at 100 Mbps.

1. In STAT mode, the LRE ports reflect the Ethernet link between the remote CPE and Ethernet device, such as a PC. The Ethernet link default settings on the LRE ports are different than those on the 10/100 ports. See Table 2-5.
2. In LRE mode, the 10/100 port LEDs continue to reflect Ethernet link status.

Table 2-8 Port LEDs on the Catalyst 3500 XL Switches

Port Mode	Port LED Color	Description
STATUS	Cyan (off)	No link.
	Green	Link present.
	Blinking green	Activity on the port. Port is transmitting or receiving data.
	Amber	Link fault. Error frames can affect connectivity, and errors such as excessive collisions, CRC errors, and alignment and jabber errors are monitored for a link-fault indication. Port is not forwarding. Port was disabled by management, by an address violation, or was blocked by STP. **Note** After a port is reconfigured, the port LED can remain amber for up to 30 seconds as STP checks the switch for possible loops.
	Brown	No link and port is administratively shut down.
DUPLEX	Cyan (off)	Port is operating in half-duplex mode.
	Green	Port is operating in full-duplex mode.
SPEED	**10/100 Ports**	
	Cyan (off)	Port is operating at 10 Mbps.
	Green	Port is operating at 100 Mbps.
	1000BASE-X Ports	
	Cyan (off)	Port is not operating.
	Green	Port is operating at 1000 Mbps.
LINE PWR (Catalyst 3524-PWR XL only)	Cyan (off)	Inline power is off.
	Green	Inline power is on. If the Cisco IP Phone is receiving power from an AC power source, the port LED is off even if the IP phone is connected to the switch port. The LED turns green only when the switch port is providing power.

Menu Bars

The VSM menu bar provides the options for configuring and monitoring a single switch. The Cluster Manager menu bar provides the options for configuring and monitoring a switch or a switch cluster.

The menu bars (Figure 2-1 and Figure 2-2) are similar, but with the following exceptions:

- Some configuration options, such as some system and VLAN options, are arranged slightly differently in VSM and Cluster Manager.
- The option for enabling a command switch is available only from VSM.
- The option for designating a standby group of command switches is available only from Cluster Manager.
- The option for rearranging the switch images is available only from Cluster Manager.

Table 2-9 describes the VSM and Cluster Manager menu bar options and their function and shows where the two menu bars differ.

Table 2-9 VSM and Cluster Manager Menu Bars

Menu Bar Options	Task
Cluster (VSM-specific)	
Cluster Command Configuration	Enable a switch to act as the cluster command switch.
Cluster Management	Display Cluster Manager or Cluster Builder.
Cluster (Cluster Manager-specific)	
Management VLAN	Change the management VLAN for a cluster.
System Time Management	Configure the system time or configure the Network Time Protocol (NTP).
VMPS Configuration	Configure the VLAN Membership Policy Server.
Standby Command Configuration	Create an Hot Standby Router Protocol (HSRP) standby group to provide command-switch redundancy.
Device Position	Rearrange the order in which switches appear in Cluster Manager.
User Settings	Set the polling interval for Cluster Manager, Cluster Builder, and the performance graphs. Set the application to display by default.
Cluster Builder	Display Cluster Builder.
System	
Inventory	Display the device type, software version, IP address, and other information about a switch or a cluster of switches.
IP Management	Configure IP information for a switch.
Software Upgrade	Upgrade the software for the cluster or a switch.
System Time Management (VSM-specific)	Configure the system time or the NTP.
SNMP Management	Enter Simple Network Management Protocol (SNMP) community strings, and configure end stations as trap managers.
Console Baud Rate	Change the baud rate for a switch.
ARP Table	Display the device Address Resolution Protocol (ARP) table.
User Settings (VSM-specific)	Change the polling intervals for clustering and graphing, and enable the display of the splash page when VSM starts.
Save Configuration	Save the configuration.
System Reload	Reboot the software on a switch.

Table 2-9 VSM and Cluster Manager Menu Bars (continued)

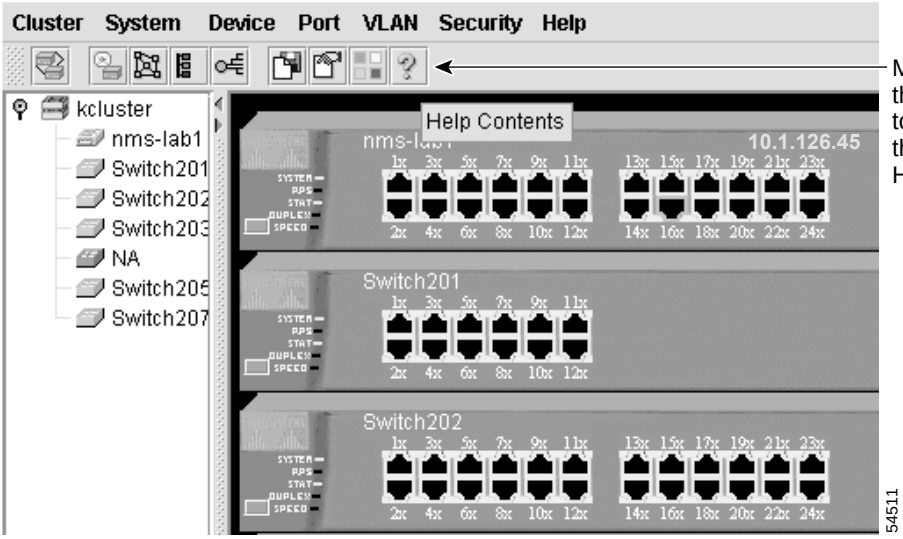
Menu Bar Options	Task
Device	
Cisco Group Management Protocol (CGMP)	Enable and disable the CGMP and the CGMP Fast Leave feature on a switch.
Spanning-Tree Protocol (STP)	Display and configure STP parameters for a switch.
LRE Profile	Display the LRE profile settings for the Catalyst 2900 LRE XL switches, and configure the speed of the LRE link.
Port	
Port Configuration	Display and configure port parameters on a switch.
Port Statistics	Display the Ethernet and LRE link statistics.
Port Search	Search for a port through its description.
Port Grouping (EtherChannel)	Group ports into logical units for high-speed links between switches.
Switch Port Analyzer (SPAN)	Enable SPAN port monitoring.
Flooding Control	Enable broadcast storm control and block unicast and multicast flooding on a per-port basis.
VLAN	
VLAN Membership	Display VLAN membership, assign ports to VLANs, and configure Inter-Switch Link (ISL) and 802.1Q trunks.
Management VLAN (VSM-specific)	Change the management VLAN on the switch.
VTP Management	Display and configure the VLAN Trunk Protocol (VTP) for interswitch VLAN membership.
VMPS Configuration (VSM-specific)	Configure the VLAN Membership Policy Server (VMPS).
Security	
Address Management	Enter dynamic, secure, and static addresses into a switch address table. You can also define the static addresses forwarding behavior.
Port Security	Enable port security on a port.
Help	
Contents	List all of the available online help topics.
Legend	Display the legend that describes the icons, labels, and links.
About	Display the version number of VSM or Cluster Manager.

Toolbar

The VSM and Cluster Manager toolbar (Figure 2-4) buttons display some switch- and cluster-level configuration windows. Hover the cursor over a button to display a pop-up description. From left to right on the toolbar, the following windows can be displayed:

- Cluster Builder (On VSM, this button is not applicable and is therefore disabled.)
- Software Upgrade window
- SNMP Management window
- VLAN Membership window
- Spanning Tree Protocol window
- Save Configuration window
- User Settings window
- Legend that describes the icons, labels, and links
- Online help table of contents

Figure 2-4 Cluster Manager Toolbar



Move the cursor over the icon to display the tool tip. For example, the **?** button displays Help Contents.

Port Pop-Up Menu

You can display all port configuration windows from the Port menu on the menu bar, or you can display a subset of the port configuration windows from the VSM and Cluster Manager port pop-up menu. The port pop-up menu provides options for displaying commonly used port configuration windows (Table 2-10). From the port pop-up menu, you can configure a single port or configure multiple ports to run with the same settings.

To display the port pop-up menu from VSM or Cluster Manager, you can either

- Click a specific port image, and right-click.
- Press the **Ctrl** key, click the port images on a single switch or on different switches, and right-click.

Table 2-10 VSM and Cluster Manager Port Pop-up Menu

Pop-up Menu Option	Task
Port Configuration	Display and configure port parameters on a switch.
VLAN Membership	Define the VLAN mode for a port or ports, and add ports to VLANs. Not available for Catalyst 1900 or Catalyst 2820 switches.
Flooding Controls	Block the normal flooding of unicast and multicast packets, and enable the switch to block packet storms. Not available for Catalyst 1900 or Catalyst 2820 switches.
Port Security	Enable port security on a port. Not available for Catalyst 1900 or Catalyst 2820 switches.
Link Graph	Right-click a port that is green to display the performance graph for the link. You can plot the link utilization percentage and the total packets, bytes, and errors recorded on the link. This feature is not available on Catalyst 1900 and Catalyst 2820 switches. For more information about link graphs, refer to the online help. **Note** This feature is only available when selecting an individual port.

Device Pop-Up Menu

With the exception of the Cluster menu bar options, the VSM and Cluster Manager device pop-up menu displays all of the configuration and monitoring windows (Table 2-11) available from the VSM and Cluster Manager menu bar.

To display the device pop-up menu from VSM, click the switch image, and right-click.

To display the device pop-up menu from Cluster Manager, you can either

- Click a specific switch icon from the Cluster Tree, and right-click.
- Press the **Ctrl** key, click the switch icons from the Cluster Tree, and right-click.

Table 2-11 VSM and Cluster Manager Device Pop-up Menu

Pop-up Menu Options	Task
System	
Inventory	Display the device type, software version, IP address, and other information about a switch or cluster of switches.
IP Management	Configure IP information for a switch.
Software Upgrade	Upgrade the software for a cluster or a switch.
SNMP Management	Enter SNMP community strings, and configure end stations as trap managers.
Console Baud Rate	Change the baud rate for one or more switches.
ARP Table	Manage the Address Resolution Protocol (ARP) table.
Save Configuration	Save the configuration on one or all of the cluster switches.
System Reload	Reboot the software on a switch or a cluster.
Device	
Cisco Group Management Protocol (CGMP)	Enable and disable CGMP and the CGMP Fast Leave feature on a switch.
Spanning Tree Protocol (STP)	Change STP parameters to prevent network loops.
LRE Profile	Display the LRE profile parameters for the Catalyst 2912 LRE and Catalyst 2924 LRE XL switches, and configure the speed of the LRE link between an LRE port and a remote CPE.

Table 2-11 VSM and Cluster Manager Device Pop-up Menu (continued)

Pop-up Menu Options	Task
Port	
Port Configuration	Display and configure port parameters on a switch.
Port Statistics	Display the Ethernet and LRE link statistics.
Port Search	Search for a port through its description.
Port Grouping (EC)	Group ports into logical units for high-speed links between switches.
Switch Port Analyzer (SPAN)	Enable SPAN port monitoring.
Flooding Control	Enable broadcast storm control, and block unicast and multicast flooding on a per-port basis.
VLAN	
VLAN Membership	Display VLAN membership, assign ports to VLANs, and configure ISL and IEEE 802.1Q trunks.
VTP Management	Display and configure the VLAN Trunk Protocol (VTP) for interswitch VLAN membership.
Security	
Address Management	Enter dynamic, secure, and static addresses into a switch address table, and define the forwarding behavior of static addresses.
Port Security	Enable port security on a port.
Monitoring	
Bandwidth Graph	Display a graph that plots the total bandwidth in use by the switch. This feature is not available on the Catalyst 1900 and Catalyst 2820 switches. For more information about bandwidth graphs, refer to the online help.

Cluster View and Cluster Builder

Cluster View (Figure 2-5) and Cluster Builder (Figure 2-6) are the CMS applications for displaying, creating, and modifying switch clusters.

To assist in your cluster configuration and monitoring tasks, both applications provide the following features:

- Cluster View displays a high-level topology where clusters are collapsed and represented as double-switch icons with links to candidate switches, other switch clusters, and edge devices.

  Cluster Builder displays the topology of a specific switch cluster, where switches and cluster- and command-capable devices connected to the command switch display as cluster members or candidates.

  The components used in a topology are described in the "Topology" section on page 2-24.

- A menu bar that provides the options for creating, modifying, monitoring, and displaying switch clusters. This menu bar is further described in the "Menu Bar" section on page 2-26.

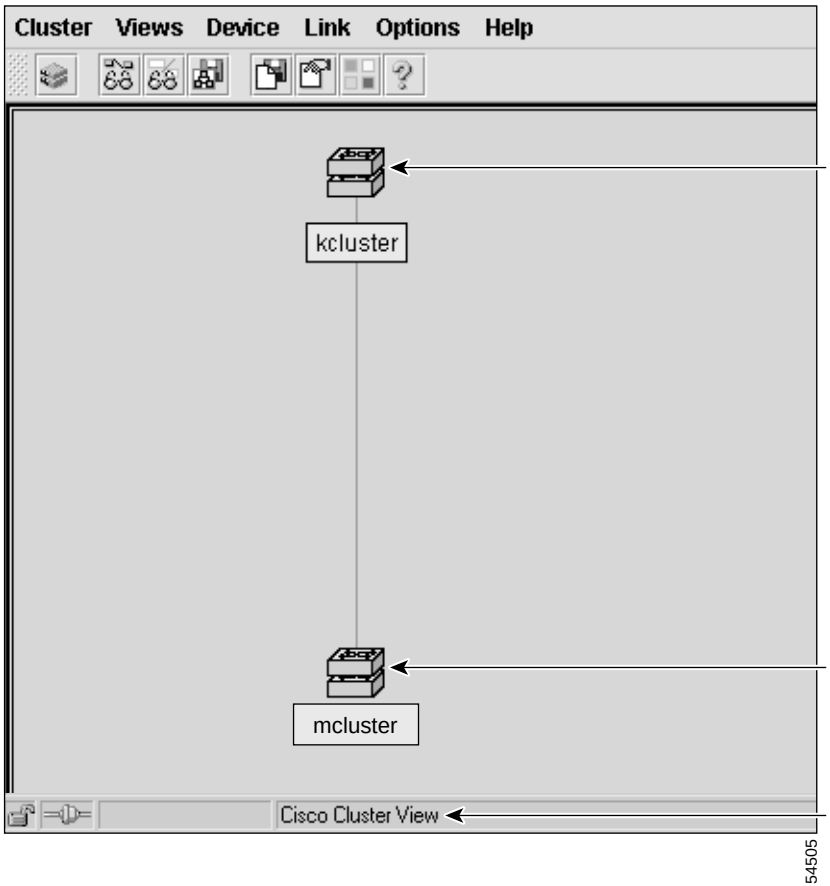
- A toolbar that provides buttons for displaying commonly used cluster configuration windows and for displaying the legends and online help. This toolbar is described in the "Toolbar" section on page 2-27.

- A device-level pop-up menu in Cluster View. This pop-up menu is described in the "Device Pop-Up Menu" section on page 2-28

- Device- and link-level pop-up menus in Cluster Builder. These pop-up menus are described in the "Candidate, Member, and Link Pop-Up Menus" section on page 2-29.

The toolbar and pop-up menus provide quick ways to access the configuration and monitoring options available from the menu bar.

Figure 2-5 Cluster View

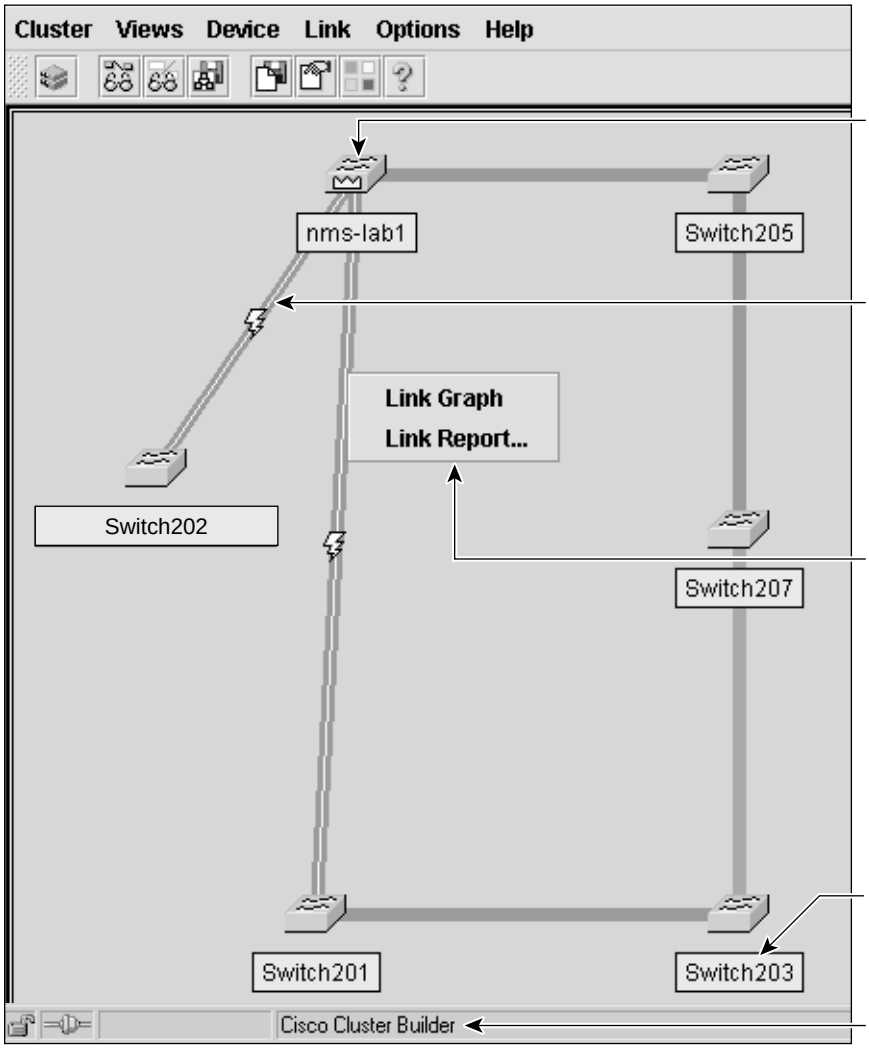


Cluster is collapsed to a double-switch icon.

Connected cluster.

Status bar shows that Cluster View is displayed.

Figure 2-6 Cluster Builder



A switch icon with a crown indicates the command switch.

Lines indicate the type of connection between two devices, such as lightning bolts are Gigastack GBIC connections.

Right-click a line to display the link pop-up menu, and select an option to display link information.

Device label identifies the switch.

Status bar shows that Cluster Builder is displayed.

Topology

The topology appears when you launch use Cluster View and Cluster Builder. It displays connected clusters, command switches, cluster members, candidate switches, and edge devices. From the topology, you can:

- Double-click a cluster icon (double-switch icon) to display cluster members.
- Select a command-switch icon to configure cluster-wide settings.
- Select a switch icon to configure switch-wide settings.

The topology in Cluster View (Figure 2-5) and Cluster Builder (Figure 2-6) uses the same icons used in the Cluster Manager cluster tree (Figure 2-2). It also uses an icon unique to the topology. This icon is the unknown device icon. Figure 2-7 shows the device icons as they appear in the topology. Table 2-12 describes the meanings of the icon colors.

Figure 2-7 Cluster View and Cluster Builder Device Icons

Table 2-12 Icon Colors

Icon Color	Color Meaning
Green	Device is up.
Red	Device is down.
Yellow	Fault indication.

The topology includes *device labels*, which are the switch cluster names, cluster member names, and MAC addresses (Figure 2-6). Table 2-13 describes the meanings of the label colors. You can toggle device labels by selecting **View** > **Toggle Labels**.

Table 2-13 Device Label Colors

Label Color	Color Meaning
Green	A cluster member, either a member switch or the command switch.
Cyan	A cluster candidate that is fully qualified to become a cluster member. Add these candidates with Cluster Builder.
White	A standby command switch.
Yellow	An unknown edge device that cannot become a member.

The link icons in the topology describe the link type and status between two devices. Figure 2-8 shows the device icons as they appear in the topology. Table 2-14 describes the meanings of the link colors. When you point your cursor at a link and right-click, you can display additional link information from the link pop-up menu (Figure 2-6). Complete descriptions of the icons and icon colors are available from **Help** > **Legend**.

Figure 2-8 Cluster View and Cluster Builder Link Icons

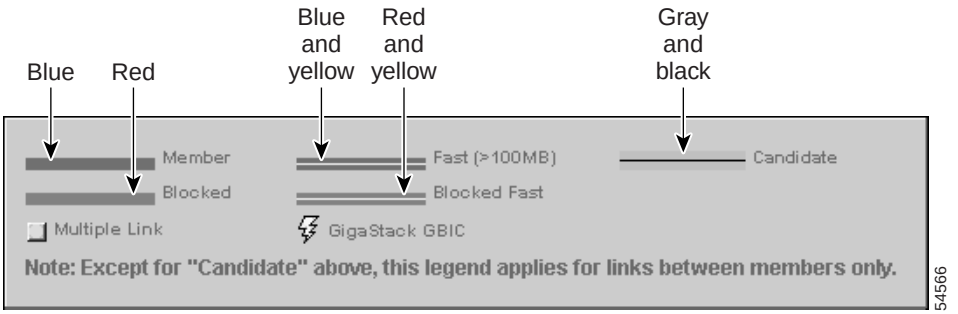


Table 2-14 Link Colors

Link Color	Color Meaning
Blue	Active link
Red	Blocked link

Menu Bar

The Cluster View and Cluster Builder menu bar provides the options for configuring and monitoring a switch cluster. Table 2-15 describes the Cluster View and Cluster Builder menu bar options and their function.

Table 2-15 Cluster View and Cluster Builder Menu

Menu Bar Options	Task
Cluster	
Add to cluster	Add candidates to cluster.
Remove from cluster	Remove members from cluster.
User Settings	Change the default settings for the number of hops to discover and the polling interval for Cluster Builder and the link graphs.
Goto Cluster Manager	Start Cluster Manager.
Views	
Toggle Views	Toggle between Cluster Builder and Cluster View.
Toggle Labels	Toggle between switch names and IP or MAC addresses and connected port numbers.
Device	
Launch Switch Manager	Start Switch Manager for a selected switch.
Bandwidth Graph	Display a graph showing the current bandwidth in use by a selected switch. Not supported on Catalyst 1900 and Catalyst 2820 switches.
Show/Hide Candidates	Expand or collapse image of all candidates connected to a cluster member.
Host Name Configuration	Change the host name for a selected device.
Link	
Link Graph	Display a graph showing the bandwidth being used for the selected link.
Link Report	Display the Link Report for two connected devices. If one device is an unknown device, candidate switch, or Catalyst 1900 or Catalyst 2820 switch, only the cluster member side of the link is displayed.

Table 2-15 Cluster View and Cluster Builder Menu (continued)

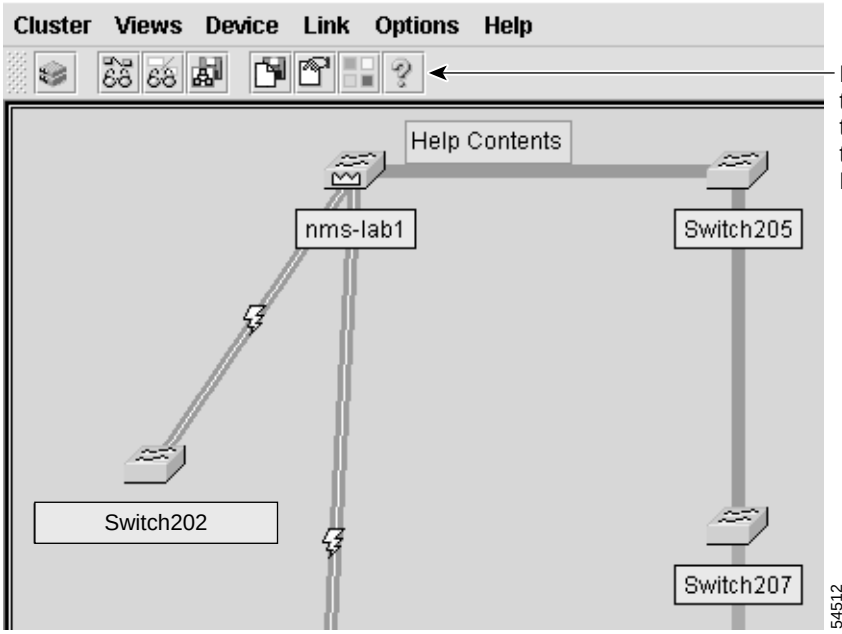
Menu Bar Options	Task
Options	
Save Layout	Save the current arrangement in the topology.
Save Configuration	Save the current configuration of cluster members to Flash memory.
Help	
Contents	List all of the available online help topics.
Legend	Display descriptions of the icons used in the topology.
About	Display the version number for Cluster Builder and Cluster View.

Toolbar

The Cluster Builder and Cluster View toolbar (Figure 2-9) buttons display some cluster-level configuration windows. Hover the cursor over a button to display a pop-up description. From left to right on the toolbar, the following windows can be displayed:

- Launch Cluster Manager.
- Toggle between Cluster Builder and Cluster View—You can also use Cluster Builder and Cluster View to manage your cluster. When you are using Cluster Builder, click the double-switch icon on the toolbar (Figure 2-9) to toggle back to Cluster Manager.
- Toggle between switch names and IP or MAC addresses and connected port numbers.
- Save the arrangement of the cluster icons as you have arranged them.
- Save the current configuration for all cluster members to Flash memory.
- Set the user settings for Cluster Builder and Cluster View.
- Display the legend that describes the icons, labels, and links that are used in Cluster Builder and Cluster View.
- List the online help topics for Cluster Builder and Cluster View.

Figure 2-9 Cluster Builder and Cluster View Toolbar



Move the cursor over the icon to display the tool tip. For example, the **?** button displays Help Contents.

Device Pop-Up Menu

Table 2-16 describes the menu options available when you right-click an icon in Cluster View.

Table 2-16 Cluster View Device Menu

Menu Option	Action
Device Web Page	Displays the web management page for the device.
Disqualification Code	Describes why the switch is not a cluster member or candidate.

Candidate, Member, and Link Pop-Up Menus

Table 2-17 describes the menu options available when you right-click a candidate-switch icon in Cluster Builder.

Table 2-17 Cluster Builder Candidate Pop-up Menu

Menu Option	Action
Device Web Page	Displays the device-management page for the device.
Add to Cluster	Adds the selected candidate or candidates to the cluster.

Table 2-18 describes the menu options available when you right-click a member-switch icon in Cluster Builder. For more information about configuring cluster members, see Chapter 5, "Clustering Switches."

Table 2-18 Cluster Builder Member Pop-up Menu

Menu Option	Action
Switch Manager	Display the VSM Home page for the selected device.
Bandwidth Graph	Display a graph that plots the total bandwidth used by the switch. This feature is not available on Catalyst 1900 or Catalyst 2820 switches.
Host Name Config	Change the name of the switch. For more information, see the "Host Names" section on page 5-10.
Remove from Cluster	Remove the selected switch from the cluster.
Show or hide Candidates	Toggle between displaying candidate switches and not displaying them.
Clear State	Return switches that were down but are now up to the green (up) state. Switches that are yellow are down or were previously down. Applicable only to yellow member switches.

Table 2-19 describes the menu options available when you right-click a link in Cluster Builder. For more information about displaying link information, refer to the online help.

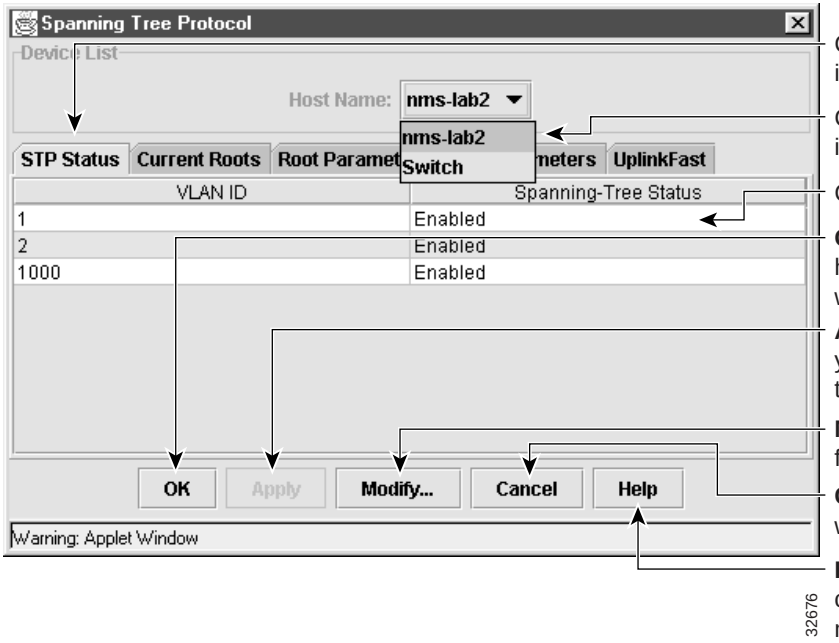
Table 2-19 Cluster Builder Link Pop-up Menu

Menu Option	Action
Link Graph	Display the performance graph for the link. One end of the link must be connected to a port on a cluster member that is a Catalyst 2900 XL or Catalyst 3500 XL switch. Links between any mix of Catalyst 1900 and Catalyst 2820 switches cannot be graphed.
Link Report	Display information about the link between two members. If one end of the link is a candidate, the report only displays information about the member switch.

CMS Window Components

CMS windows use consistent techniques to present configuration information. Figure 2-10 shows the components of a typical CMS window.

Figure 2-10 CMS Window Components



Host Name List

The Host Name drop-down list (also referred to as the Device list) shows a list of cluster member names. To display or change the configuration of a specific switch in a cluster, select the switch name. The current configuration settings of that switch appear.

In some cases, switch-specific features (such as the LRE profiles on the Catalyst 2900 LRE XL switches) are available only when the appropriate switch is a member of the cluster. Otherwise, switch-specific features either are grayed-out or are not shown in the CMS menu bar and pop-up menus.

In other cases, depending on the menu option selected, certain cluster members names are not included in the Host Name list. For example, the VLAN Membership window would not display Catalyst 1900 and Catalyst 2820 switches, even though they are part of the cluster.

Tabs

Some CMS windows have multiple *tabs* that present different kinds of information. Tabs are arranged like folder headings across the top of the window. Click the tab to display a new screen, and click **Apply** to save information on all tabs but without closing the window.

Lists

Listed information can often be changed by selecting an item from a list. To change the information, select one or more items, and click **Modify**. Changing multiple items is limited to those items that apply to at least one of the selections. For example, when you select multiple ports, a parameter such as flow control is grayed out if the ports are not Gigabit Ethernet ports.

Tips

If you try to select a port or device in Cluster Manager while another CMS window is open, the computer issues a ringing bell sound. Rearrange the windows that are displayed to find the open window, and close it to proceed.

Buttons

Table 2-20 describes the most common buttons that you use to change the information in a CMS window:

Table 2-20 Common CMS Buttons

Button	Description
OK	Save any changes made in the window, and close the window.
Apply	Save any changes made in the window, and leave the window open.
Cancel	Do not save any changes made in the window, and close the window.
Modify	Display the pop-up for changing information on the selected item or items. You usually select an item from a list or table and click **Modify**. When you close the pop-up, the original window appears.

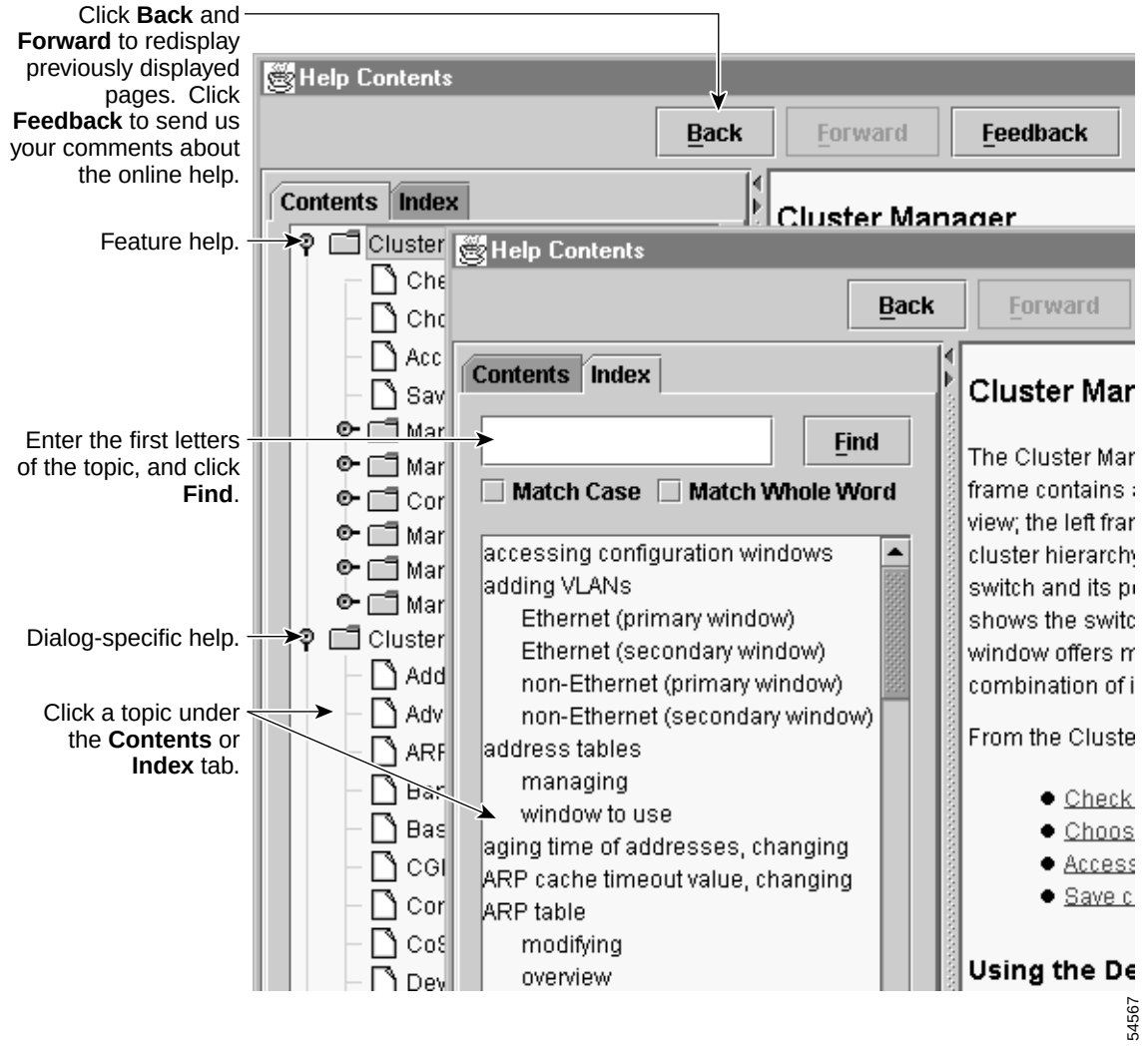
Online Help

CMS provides comprehensive online help to assist you in understanding and performing configuration and monitoring tasks from the CMS windows (Figure 2-11).

- Feature help, available from all menu bars by selecting **Help > Contents**, provides background information and concepts on the features.
- Dialog-specific help, available from the Help button on the VSM and Cluster Manager windows, provides descriptions of all window components (fields, buttons, and so on) and procedures on performing tasks from the window.
- Index of help topics.

You can send us feedback about the information provided in the online help. From the menu bar, select **Help > Contents**, and click **Feedback** to display a simple online form. After completing the form, click **Submit** to send your comments to Cisco. We appreciate and value your comments.

Figure 2-11 Help Contents



Accessing CMS

You must know the IP address and password of the specific switch or command switch to access CMS. You can assign this information to the switch in the following ways:

- Using the setup program, as described in the release notes
- Manually assigning an IP address and password, as described in the "Changing IP Information" section on page 6-2 and "Changing the Password" section on page 6-15.

  Considerations for assigning this information to a command switch and cluster members are described in the "IP Addresses" section on page 5-8 and "Passwords" section on page 5-8.

Accessing CMS also requires meeting the software requirements, including browser and Java plug-in configurations, described in the release notes.

Note Copies of the CMS pages you display are saved in your browser memory cache until you exit the browser session. A password is not required to redisplay these pages, including the Cisco Systems Access page. You can access the CLI by clicking **Web Console - HTML access to the command line interface** from a cached copy of the Cisco Systems Access page. To prevent unauthorized access to CMS and the CLI, exit your browser to end the browser session.

The following procedure assumes you have met the software requirements, (including browser and Java plug-in configurations) and have assigned IP information and a password to the switch or command switch, as described in the release notes.

To access CMS, follow these steps:

Step 1 Enter the IP address in the browser **Location** field (Netscape Communicator) or **Address** field (Microsoft Internet Explorer).

Step 2 Enter your userid and the password at the prompt.

The Cisco Systems Access page appears.

Step 3 Click **Cluster Management Suite or Visual Switch Manager**.

If you access CMS from a standalone or cluster member switch, VSM appears. If you access CMS from a command switch, Cluster Builder launches by default. You can select Cluster Manager to launch by default by selecting **Cluster > User Settings**. You can toggle between Cluster Builder and Cluster View by selecting **View > Toggle Views**.

You can display VSM for a specific cluster member from either Cluster Builder or Cluster View by selecting **Device > Launch Switch Manager**. You cannot display VSM from Cluster Manager.

For information about managing passwords in switch clusters, see the "Passwords" section on page 5-8.

CMS requires that your switch uses Hypertext Transfer Protocol (HTTP) port 80, which is the default HTTP port. If you change the HTTP port, you cannot access CMS. For more information about the HTTP port, see the "HTTP Access to CMS" section on page 4-5.

Saving Configuration Changes

The front-panel images and CMS windows always display the *running configuration* of the switch. When you make a configuration change to a switch or switch cluster, the change becomes part of the running configuration. The change *does not* automatically become part of the config.txt file in Flash memory, which is the *startup configuration* used each time the switch restarts. If you do not save your changes to Flash memory, they are lost when the switch restarts.

To save all configuration changes to Flash memory, you must select **System > Save Configuration** in the Cluster Manager menu bar or **Options > Save Configuration** in the Cluster Builder or Cluster View menu bar.

Note Catalyst 1900 and Catalyst 2820 switches automatically save configuration changes to Flash memory as they occur.

Note As you make cluster configuration changes (except for changes to the topology and in the User Settings window), make sure you periodically save the configuration. The configuration is saved on the command and member switches.

Using Different Versions of Web-Based Switch Management Software

Cluster command switches can manage a mixture of Catalyst desktop switches. However, certain models of the Catalyst desktop switches support different versions of web-based management software; thus, the interfaces can differ.

Keep in mind that when you select a switch image or switch icon and then select **Device > Launch Switch Manager** from the menu bar, a new CMS session is launched, and the web-based management software specific to that switch appears.

- The Catalyst 2900 XL, Catalyst 3500 XL, and Catalyst 2950 switches use the same version of the CMS interface.
- The Catalyst 1900 and Catalyst 2820 switches use an older interface version of VSM, which is referred to as *Switch Manager* on these switches. Other CMS features such as Cluster Manager, Cluster Builder, and Cluster View are not available on these switches.

Refer to the appropriate switch documentation for descriptions of the web-based management software used on other Catalyst desktop switches, such as the Catalyst 2950, Catalyst 1900, and Catalyst 2820 switches.

Refer to the release notes for the list of Catalyst desktop switches that are cluster-compatible and their software versions.

Where to Go Next

The rest of this guide provides descriptions of the software features and general switch administration. Table 4-2 on page 4-9 lists the defaults for all key features, gives the page number in this guide where the feature is described, and the name of the CMS window from which you can configure the feature.

Refer to the online help for CMS procedures and window descriptions. Refer to the release notes for hardware and software requirements, including required browser versions, and for procedures for installing the required Java plug-in, configuring your browser, and accessing CMS.