



Configuring Voice VLAN

This chapter describes how to configure the voice VLAN feature on your switch. Voice VLAN is referred to as an *auxiliary VLAN* in the Catalyst 6000 family switch documentation.



Note

For complete syntax and usage information for the commands used in this chapter, refer to the *Catalyst 2950 Desktop Switch Command Reference* for this release.

This chapter consists of these sections:

- [Understanding Voice VLAN, page 15-1](#)
- [Configuring Voice VLAN, page 15-2](#)
- [Displaying Voice VLAN, page 15-6](#)

Understanding Voice VLAN

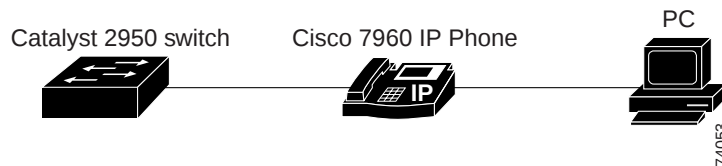
The voice VLAN feature enables access ports to carry IP voice traffic from an IP phone. The switch can connect to a Cisco 7960 IP Phone and carry IP voice traffic. Because the sound quality of an IP phone call can deteriorate if the data is unevenly transmitted, the switch supports quality of service (QoS) based on IEEE 802.1P class of service (CoS). QoS uses classification and scheduling to send network traffic from the switch in a predictable manner. For more information on QoS, see [Chapter 24, “Configuring QoS.”](#) The Cisco 7960 IP Phone is a configurable device, and you can configure it to forward traffic with an 802.1P priority. You can configure the switch to trust or override the traffic priority assigned by a Cisco 7960 IP Phone.

The Cisco 7960 IP Phone contains an integrated three-port 10/100 switch. The ports are dedicated connections to these devices:

- Port 1 connects to the switch or other voice-over-IP (VoIP) device.
- Port 2 is an internal 10/100 interface that carries the IP phone traffic.
- Port 3 connects to a PC or other device.

Figure 15-1 shows one way to connect a Cisco 7960 IP Phone.

Figure 15-1 Cisco 7960 IP Phone Connected to a Switch



For deployment examples that use voice VLANs, see the [“Network Configuration Examples” section on page 1-8](#).

Configuring Voice VLAN

This section describes how to configure voice VLAN on access ports. It contains this configuration information:

- [Default Voice VLAN Configuration, page 15-2](#)
- [Configuration Guidelines, page 15-3](#)
- [Configuring a Port to Connect to a Cisco 7960 IP Phone, page 15-3](#)

Default Voice VLAN Configuration

The voice VLAN feature is disabled by default.

When the voice VLAN feature is enabled, untagged traffic is sent according to the default CoS priority of the port.

The CoS value is trusted for 802.1P or 802.1Q tagged traffic.

Configuration Guidelines

These are the voice VLAN configuration guidelines:

- You should configure voice VLAN on access ports.
- The Port Fast feature is automatically enabled when voice VLAN is configured. When you disable voice VLAN, the Port Fast feature is not automatically disabled.
- If you enable port security on a voice VLAN port and if there is a PC connected to the IP phone, you should set the maximum allowed secure addresses on the port to more than 1.
- You cannot configure static secure MAC addresses in the voice VLAN.
- Voice VLAN ports can also be these port types:
 - Dynamic access port. See the [“Configuring Dynamic Access Ports on VMPS Clients” section on page 13-34](#) for more information.
 - Secure port. See the [“Enabling Port Security” section on page 17-5](#) for more information.
 - 802.1X authenticated port. See the [“Enabling 802.1X Authentication” section on page 8-8](#) for more information.
 - Protected port. See the [“Configuring Protected Ports” section on page 17-3](#) for more information.

Configuring a Port to Connect to a Cisco 7960 IP Phone

Because a Cisco 7960 IP Phone also supports a connection to a PC or other device, a port connecting the switch to a Cisco 7960 IP Phone can carry mixed traffic.

You can configure the port to carry voice traffic in one of these ways:

- [Configuring Ports to Carry Voice Traffic in 802.1Q Frames, page 15-4](#)
- [Configuring Ports to Carry Voice Traffic in 802.1P Priority Tagged Frames, page 15-4](#)

You can configure the IP phone to carry data traffic in one of these ways:

- [Overriding the CoS Priority of Incoming Data Frames, page 15-5](#)
- [Configuring the IP Phone to Trust the CoS Priority of Incoming Data Frames, page 15-5](#)

Configuring Ports to Carry Voice Traffic in 802.1Q Frames

Beginning in privileged EXEC mode, follow these steps to configure a port to carry voice traffic in 802.1Q frames for a specific VLAN:

	Command	Purpose
Step 1	configure terminal	Enter global configuration mode.
Step 2	interface <i>interface-id</i>	Enter interface configuration mode, and enter the port to be configured.
Step 3	switchport voice vlan <i>vlan-id</i>	Instruct the Cisco IP phone to forward all voice traffic through the specified VLAN. By default, the Cisco IP phone forwards the voice traffic with an 802.1Q priority of 5. Valid VLAN IDs are from 1 to 4094 when the enhanced software image is installed and 1 to 1001 when the standard software image is installed. Do not enter leading zeros.
Step 4	end	Return to privileged EXEC mode.
Step 5	show interfaces <i>interface-id</i> switchport	Verify your voice VLAN entries.
Step 6	copy running-config startup-config	(Optional) Save your entries in the configuration file.

To remove voice VLAN, use the **no switchport voice vlan** interface configuration command or the **switchport voice vlan none** interface configuration command.

Configuring Ports to Carry Voice Traffic in 802.1P Priority Tagged Frames

Beginning in privileged EXEC mode, follow these steps to configure a port to instruct the IP phone to give voice traffic a higher priority and to forward all traffic through the native VLAN.

	Command	Purpose
Step 1	configure terminal	Enter global configuration mode.
Step 2	interface <i>interface-id</i>	Enter interface configuration mode, and enter the port to be configured.
Step 3	switchport voice vlan dot1p	Instruct the switch port to use 802.1P priority tagging for voice traffic and to use the default native VLAN to carry all traffic. By default, the Cisco IP phone forwards the voice traffic with an 802.1P priority of 5.
Step 4	end	Return to privileged EXEC mode.
Step 5	show interfaces <i>interface-id</i> switchport	Verify your voice VLAN entries.
Step 6	copy running-config startup-config	(Optional) Save your entries in the configuration file.

To return the port to its default setting, use the **no switchport voice vlan** interface configuration command.

Overriding the CoS Priority of Incoming Data Frames

You can connect a PC or other data device to a Cisco 7960 IP Phone port. The PC can generate packets with an assigned CoS value. You can configure the switch to override the priority of frames arriving on the IP phone port from connected devices.

Beginning in privileged EXEC mode, follow these steps to override the CoS priority received from the nonvoice port on the Cisco 7960 IP Phone:

	Command	Purpose
Step 1	configure terminal	Enter global configuration mode.
Step 2	interface <i>interface-id</i>	Enter interface configuration mode, and enter the switch port to be configured.
Step 3	switchport priority extend <i>cos value</i>	Set the IP phone port to override the priority received from the PC or the attached device. The CoS value is a number from 0 to 7. Seven is the highest priority. The default is 0.
Step 4	end	Return to privileged EXEC mode.
Step 5	show interfaces <i>interface-id</i> switchport	Verify your entries.
Step 6	copy running-config startup-config	(Optional) Save your entries in the configuration file.

Use the **no switchport voice vlan** interface configuration command or the **switchport priority extend none** interface configuration command to return the port to its default setting.

Configuring the IP Phone to Trust the CoS Priority of Incoming Data Frames

You can connect a PC or other data device to a Cisco 7960 IP Phone port. The PC can generate packets with an assigned CoS value. You can configure the switch to trust the priority of frames arriving on the IP phone port from connected devices.

Beginning in privileged EXEC mode, follow these steps to trust the CoS priority received from the nonvoice port on the Cisco 7960 IP Phone:

	Command	Purpose
Step 1	configure terminal	Enter global configuration mode.
Step 2	interface <i>interface-id</i>	Enter interface configuration mode, and enter the switch port to be configured.
Step 3	switchport priority extend trust	Set the IP phone port to trust the priority received from the PC or the attached device.
Step 4	end	Return to privileged EXEC mode.
Step 5	show interfaces <i>interface-id</i> switchport	Verify your entries.
Step 6	copy running-config startup-config	(Optional) Save your entries in the configuration file.

To return the port to its default setting, use the **no switchport voice vlan** interface configuration command or the **switchport priority extend none** interface configuration command.

Displaying Voice VLAN

To display voice VLAN for an interface, use the **show interfaces *interface-id* switchport** privileged EXEC command.

For detailed information about the fields in the display, refer to the *Catalyst 2950 Desktop Switch Command Reference* for this release.