CHAPTER 14

Configuring Voice VLAN

This chapter describes how to configure the voice VLAN feature on the switch. Voice VLAN is referred to as an *auxiliary VLAN* in some Catalyst 6500 family switch documentation.

Note For complete syntax and usage information for the commands used in this chapter, see the command reference for this release.

This chapter consists of these sections:

Understanding Voice VLAN

The voice VLAN feature enables access ports to carry IP voice traffic from an IP phone. When the switch is connected to a Cisco 7960 IP Phone, the phone sends voice traffic with Layer 3 IP precedence and Layer 2 class of service (CoS) values, which are both set to 5 by default. Because the sound quality of an IP phone call can deteriorate if the data is unevenly sent, the switch supports quality of service (QoS) based on IEEE 802.1p CoS. QoS uses classification and scheduling to send network traffic from the switch in a predictable manner. For more information on QoS, see Chapter 33, "Configuring QoS."

The Cisco 7960 IP Phone is a configurable device, and you can configure it to forward traffic with an IEEE 802.1p priority. You can configure the switch to trust or override the traffic priority assigned by a Cisco IP Phone.

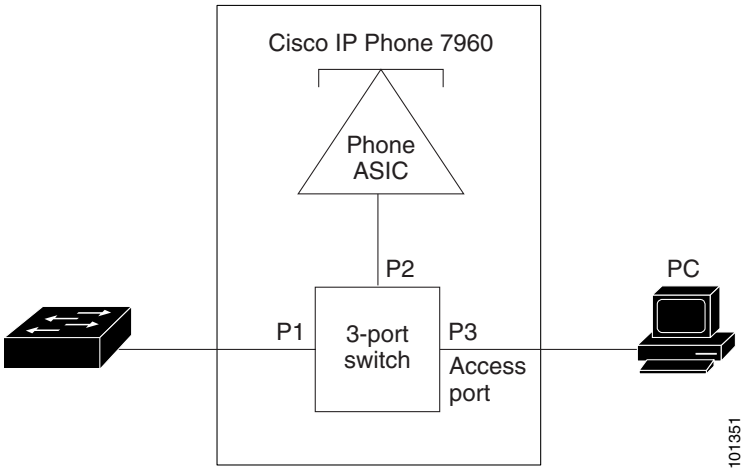
The Cisco IP Phone contains an integrated three-port 10/100 switch as shown in Figure 14-1. The ports provide dedicated connections to these devices:

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 (access port) connects to a PC or other device.

Figure 14-1 Cisco 7960 IP Phone Connected to a Switch



Cisco IP Phone Voice Traffic

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Note

Cisco IP Phone Data Traffic

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Configuring Voice VLAN

Default Voice VLAN Configuration

Voice VLAN Configuration Guidelines

- You should configure voice VLAN on switch access ports; voice VLAN is not supported on trunk ports. You can configure a voice VLAN only on Layer 2 ports.

Note Trunk ports can carry any number of voice VLANs, similar to regular VLANs. The configuration of voice VLANs is not required on trunk ports.

- The voice VLAN should be present and active on the switch for the IP phone to correctly communicate on the voice VLAN. Use the **show vlan** privileged EXEC command to see if the VLAN is present (listed in the display). If the VLAN is not listed, see Chapter 12, "Configuring VLANs," for information on how to create the voice VLAN.

  Do not configure voice VLAN on private VLAN ports.

  Before you enable voice VLAN, we recommend that you enable QoS on the switch by entering the **mls qos** **mls qos trust cos**

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You cannot configure static secure MAC addresses in the voice VLAN.

Voice VLAN ports can also be these port types:

– Dynamic access port.

A source or destination port for a SPAN or RSPAN session.

Secure port. See the "Configuring Port Security" section on page 24-9 for more information.

When you enable port security on an interface that is also configured with a voice VLAN, you must set the maximum allowed secure addresses on the port to two plus the maximum number of secure addresses allowed on the access VLAN. When the port is connected to a Cisco IP Phone, the phone requires up to two MAC addresses. The phone address is learned on the voice VLAN and might also be learned on the access VLAN. Connecting a PC to the phone requires additional MAC addresses.

Configuring a Port Connected to a Cisco 7960 IP Phone

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Configuring Cisco IP Phone Voice Traffic

	Command	Purpose
Step 1	**configure terminal**	
Step 2	**interface** *interface-id*	
Step 3		**Note**
Step 4	**switchport voice** {**detect cisco-phone** [**full-duplex**] | *vlan-id* | **dot1p** | **none** | **untagged**}}	Configure how the Cisco IP Phone carries voice traffic: —Configure the interface to detect and recognize a Cisco IP phone. —When you initially implement the switchport voice detect command, this is the only allowed option. The default is **[full-duplex]** **full-duplex**—(Optional) Configure the switch to only accept a full-duplex Cisco IP phone. —Configure the phone to forward all voice traffic through the specified VLAN. By default, the Cisco IP Phone forwards the voice traffic with an IEEE 802.1Q priority of 5. Valid VLAN IDs are 1 to 4094. —Configure the phone to use IEEE 802.1p priority tagging for voice traffic and to use the default native VLAN (VLAN 0) to carry all traffic. By default, the Cisco IP Phone forwards the voice traffic with an IEEE 802.1p priority of 5. —Allow the phone to use its own configuration to send untagged voice traffic. —Configure the phone to send untagged voice traffic.
Step 5		
Step 6		
Step 7	**copy running-config startup-config**	

```
Switch# configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)# interface gigabitethernet0/1
Switch(config-if)# mls qos trust cos
                  switchport voice vlan dot1p
                  end
```

```
        configure terminal

                interface gigabithernet 0/1
                   switchport voice?
               detection enhancement keyword
vlan           VLAN for voice traffic
Switch(config-if)#
cisco-phone    Cisco IP Phone
Switch(config-if)# switchport voice detect cisco-phone?
full-duplex    Cisco IP Phone

Switch(config-if)# switchport voice detect cisco-phone full-duplex
full-duplex    full duplex keyword

Switch(config-if)#


Switch#
Enter configuration commands, one per line.  End with CNTL/Z.
Switch(config)#
Switch(config-if)#    switchport voice detect cisco-phone
Switch(config-if)# no switchport voice detect cisco-phone full-duplex
```

Configuring the Priority of Incoming Data Frames

	Command	Purpose
Step 1		
Step 2		

	Command	Purpose
Step 3		Set the priority of data traffic received from the Cisco IP Phone access port: • —Configure the phone to override the priority received from the PC or the attached device with the specified CoS value. The value is a number from 0 to 7, with 7 as the highest priority. The default priority is 0. • —Configure the phone access port to trust the priority received from the PC or the attached device.
Step 4		Return to privileged EXEC mode.
Step 5		Verify your entries.
Step 6		(Optional) Save your entries in the configuration file.

```
switchport priority extend trust
end
```

Displaying Voice VLAN