1 Voice VLAN Commands

Command	Function
show voice vlan	Display the configuration and current status of a voice VLAN, including the port on which the voice VLAN function is enabled and the work mode of the voice VLAN.
show voice vlan oui	Display source MAC address entries used by voice VLAN to identify voice packets on the current device.
voice vlan	Configure an existent common VLAN as a voice VLAN.
voice vlan aging	Configure aging time for a port in a voice VLAN in global configuration mode. The aging time indicates the time that the port resides in the voice VLAN when the port fails to receive voice traffic.
voice vlan cos	Configure the CoS value for voice traffic in a voice VLAN in global configuration mode.
voice vlan dscp	Configure the DSCP value for voice traffic in a voice VLAN in global configuration mode.
voice vlan enable	Enable the voice VLAN function on a port.
voice vlan mac-address	Configure a voice traffic OUI to be identified by voice VLAN in global configuration mode.
voice vlan mode auto	Set the voice VLAN of a port to work in automatic mode.
voice vlan security enable	Enable the security mode for a voice VLAN in global configuration mode.

1.1 show voice vlan

Function

Run the **show voice vlan** command to display the configuration and current status of a voice VLAN, including the port on which the voice VLAN function is enabled and the work mode of the voice VLAN.

Syntax

show voice vlan

Parameter Description

N/A

Command Modes

All modes except the user EXEC mode

Default Level

2

Usage Guidelines

N/A

Examples

The following example displays the configuration and current status of a voice VLAN on a device.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# show voice vlan
Voice VLAN status        : ENABLE
Voice VLAN ID            : 2
Voice VLAN security mode: Security
Voice VLAN aging time    : 5 minutes
Voice VLAN cos           : 6
Voice VLAN dscp          : 46
Current voice vlan enabled port mode:
PORT                              MODE
GigabitEthernet 0/1               Auto
```

Table 1-1Output Fields of the show voice vlan Command

Field	Description
Voice VLAN status	Whether the voice VLAN function is enabled on a port ● **Enable**: Enabled ● **Disable**: Disabled
Voice VLAN ID	ID of a voice VLAN
Voice VLAN security mode	Security mode of the voice VLAN

Field	Description
Voice VLAN aging time	Aging time of the voice VLAN. The value range is from 5 to 10000, in minutes, and the default value is **1440**.
Voice VLAN cos	Class of Service (CoS) value of voice traffic in the voice VLAN. The value range is from 0 to 7, and the default value is **6**. A larger value indicates a higher priority.
Voice VLAN dscp	Differentiated Services Code Point (DSCP) value of voice traffic in the voice VLAN. The value range is from 0 to 63, and the default value is **46**. A larger value indicates a higher priority.
PORT	Port on which the voice VLAN function is enabled
MODE	Work mode of the port on which the voice VLAN function is enabled

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.2 show voice vlan oui

Function

Run the **show voice vlan oui** command to display source MAC address entries used by voice VLAN to identify voice packets on the current device.

Syntax

show voice vlan oui

Parameter Description

N/A

Command Modes

All modes except the user EXEC mode

Default Level

2

Usage Guidelines

You can use this command to display the source MAC address entries used to identify voice packets, including the Organizationally Unique Identifier (OUI), OUI mask, and description.

Examples

The following example displays the source MAC address entries used by voice VLAN to identify voice packets on the current device, including the OUI, OUI mask, and description.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# show voice vlan oui
OUI             Mask            Description
0001.e300.0000  ffff.ff00.0000  Siemensphone
0003.6b00.0000  ffff.ff00.0000  Ciscophone
0004.0d00.0000  ffff.ff00.0000  Avayaphone
0060.b900.0000  ffff.ff00.0000  Philips/NECphone
00d0.1e00.0000  ffff.ff00.0000  Pingtelphone
00e0.7500.0000  ffff.ff00.0000  Polycomphone
00e0.bb00.0000  ffff.ff00.0000  3comphone
```

Table 1-1Output Fields of the show voice vlan oui Command

Field	Description
OUI	OUI. If the source MAC address in a voice packet matches the OUI, the packet is assigned to the voice VLAN.
Mask	OUI mask, which indicates the valid length of the OUI and is expressed by a mask.
Description	Description of the OUI, which describes the name of a voice device.

Notifications

N/A

Platform Description

N/A

Related Commands

N/A

1.3 voice vlan

Function

Run the **voice vlan** command to configure an existent common VLAN as a voice VLAN.

Run the **no** form of this command to delete all voice VLANs.

No voice VLAN is configured by default.

Syntax

voice vlan *vlan-id*

no voice vlan

Parameter Description

vlan-id: ID of a voice VLAN. The value range is from 2 to 4094. Only one VLAN can be configured as a voice VLAN on a device.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

You can run the **show voice vlan** command to display the configuration and current status of a voice VLAN.

⚠ **Caution**

- You must create a VLAN before configuring a voice VLAN.
- VLAN 1 is the default VLAN and does not need to be created, but VLAN 1 cannot be configured as a voice VLAN.
- A VLAN cannot be configured as a voice VLAN and a super VLAN at the same time.
- If 802.1x automatic VLAN hopping is enabled on an access port, do not configure the issued VLAN ID as the voice VLAN ID to ensure that 802.1x automatic VLAN hopping functions properly.
- Do not configure a VLAN as a remote VLAN of the remote switched port analyzer (RSPAN) and a voice VLAN at the same time. Otherwise, the RSPAN and voice VLAN functions may be affected.
- Only one voice VLAN can be configured. You must disable the voice VLAN function by running the **no voice vlan** command before you modify the voice VLAN ID.

Examples

The following example creates VLAN 2 and configures VLAN 2 as a voice VLAN.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vlan 2
Hostname(config-vlan)# exit
Hostname(config)# voice vlan 2
```

Notifications

N/A

Common Errors

See "Usage Guidelines."

Platform Description

N/A

Related Commands

- **show voice vlan**

- **voice vlan aging**

- **voice vlan cos**

- **voice vlan dscp**

- **voice vlan enable**

- **voice vlan mac-address**

- **voice vlan mode auto**

- **voice vlan security enable**

1.4 voice vlan aging

Function

Run the **voice vlan aging** command to configure aging time for a port in a voice VLAN in global configuration mode. The aging time indicates the time that the port resides in the voice VLAN when the port fails to receive voice traffic.

Run the **no** form of this command to restore the default configuration.

The default aging time of a port in a voice VLAN is 1440 minutes.

Syntax

voice vlan aging *age*

no voice vlan aging

Parameter Description

age: Aging time of a port in a voice VLAN. The value range is from 5 to 10000, in minutes.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

You can configure the aging time for a port in a voice VLAN on the device. After the MAC address in a voice packet ages, if the device still fails to receive any voice packet from the input port in the specified aging time, the device removes the port from the voice VLAN.

> 🛈 **Note**
>
> The aging time takes effect in the automatic mode only and starts after the source MAC address in a voice packet ages.

You can run the **show voice vlan** command to display the configuration and current status of a voice VLAN.

Examples

The following example sets the aging time for a port in a voice VLAN to 10 minutes in global configuration mode.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# voice vlan aging 10
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

● **show voice vlan**

● **voice vlan**

1.5 voice vlan cos

Function

Run the **voice vlan cos** command to configure the CoS value for voice traffic in a voice VLAN in global configuration mode.

Run the **no** form of this command to restore the default configuration.

The default CoS value of voice traffic in a voice VLAN is **6**.

Syntax

voice vlan cos *cos-value*

no voice vlan cos

Parameter Description

cos-value: CoS value of voice traffic in a voice VLAN. The value range is from 0 to 7. A larger value indicates a higher priority.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

You can modify the CoS and DSCP values for voice traffic in a voice VLAN on the device to improve the priority of voice traffic and ensure the quality of voice calls.

The CoS value indicates the L2 priority and is saved in the L2 header of a packet. It is filled in the **PRI** field of the IEEE 802.1Q VLAN tag.

The CoS value of a common VLAN packet is **0**, which indicates the lowest priority. The default CoS value of voice traffic in a voice VLAN is **6**, which indicates a higher priority than common VLAN packets.

You can run the **show voice vlan** command to display the configuration and current status of a voice VLAN.

Examples

The following example sets the CoS value for voice traffic in a voice VLAN to **5**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# voice vlan cos 5
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show voice vlan**

- **voice vlan**

1.6   voice vlan dscp

Function

Run the **voice vlan dscp** command to configure the DSCP value for voice traffic in a voice VLAN in global configuration mode.

Run the **no** form of this command to restore the default configuration.

The default DSCP value of voice traffic in a voice VLAN is **46**.

Syntax

voice vlan dscp *dscp-value*

no voice vlan dscp

Parameter Description

dscp-value: DSCP value of voice traffic in a voice VLAN. The value range is from 0 to 63. A larger value indicates a higher priority.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

You can modify the CoS and DSCP values for voice traffic in a voice VLAN on the device to improve the priority of voice traffic and ensure the quality of voice calls.

The DSCP value indicates the IP priority (IP PRE) and is saved in the L3 header of a packet. For an IPv4 packet, the DSCP value is filled in the first six bits (bit 0 to bit 5) in the **ToS** field of the IPv4 packet header. For an IPv6 packet, the DSCP value is filled in the first six bits in the **Traffic Class** field of the IPv6 packet header.

The DSCP value of a common IP packet is **0**, which indicates the lowest priority. The default DSCP value of voice traffic in a voice VLAN is **46**, which indicates a higher priority than common VLAN packets.

You can run the **show voice vlan** command to display the configuration and current status of a voice VLAN.

Examples

The following example sets the DSCP value for voice traffic in a voice VLAN to **40**.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# voice vlan dscp 40
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

● **show voice vlan**

● **voice vlan**

1.7 voice vlan enable

Function

Run the **voice vlan enable** command to enable the voice VLAN function on a port.

Run the **no** form of this command to disable this feature.

The voice VLAN function is disabled on a port by default.

Syntax

voice vlan enable

no voice vlan enable

Parameter Description

N/A

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

The voice VLAN function must be enabled on a physical port by default. The voice VLAN function can be enabled on an access port, a trunk port, a hybrid port, an uplink port, a host port of PVLAN, and a promiscuous port of PVLAN.

ⓘ   **Note**

Even if the voice VLAN function is not enabled in global configuration mode, you can also enable the voice VLAN function on a port but the configuration does not take effect.

When a voice VLAN works in automatic mode, the device identifies the source MAC address in a packet and compares the OUI field in the MAC address with the OUI configured on the device. If they match, the device automatically adds the input port of the voice packet to the voice VLAN, issues a policy to change the priority of the voice packet to the voice traffic priority specified for the voice VLAN, and maintains the port in the voice VLAN according to the aging mechanism. Therefore, do not manually add the port to the voice VLAN in automatic mode. Ensure that the voice VLAN is not in the allowed VLAN list of the port. Otherwise, the voice VLAN function cannot be enabled on the port.

When a voice VLAN works in manual mode, you are required to manually add the port to the voice VLAN and then enable the voice VLAN function on the port. The device identifies the source MAC address in a packet and compares the OUI field in the MAC address with the OUI configured on the device. If they match, the device delivers a policy to change the priority of the voice packet to the voice traffic priority specified for the voice VLAN.

You can run the **show voice vlan** command to display the configuration and current status of a voice VLAN.

Examples

The following example connects a PC and a VoIP telephone to GigabitEthernet 0/1 in serial mode. In this case, the voice VLAN works in automatic mode. VLAN 5 is created to transmit PC data traffic, and VLAN 2 is created as a voice VLAN to transmit voice traffic. GigabitEthernet 0/1 is configured as a trunk port, VLAN 5 is added to the allowed VLAN list of the port, voice VLAN 2 is excluded from the VLAN list, and the voice VLAN function is enabled on GigabitEthernet 0/1.

The voice VLAN function must be enabled on GigabitEthernet 0/1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vlan 5
Hostname(config-vlan)# exit
Hostname(config)# vlan 2
Hostname(config-vlan)# exit
Hostname(config)# voice vlan 2
Hostname(config)# voice vlan mac-address 0012.3400.0000 mask ffff.ff00.0000
```

```
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# switchport mode trunk
Hostname(config-if-GigabitEthernet 0/1)# switchport trunk native vlan 5
Hostname(config-if-GigabitEthernet 0/1)# switchport trunk allowed vlan remove 2
Hostname(config-if-GigabitEthernet 0/1)# voice vlan mode auto
Hostname(config-if-GigabitEthernet 0/1)# voice vlan enable
Hostname(config-if-GigabitEthernet 0/1)# exit
Hostname(config)# voice vlan aging 10
Hostname(config)# voice vlan security enable
Hostname(config)# voice vlan cos 7
Hostname(config)# voice vlan dscp 47
```

The following example connects only a VoIP telephone to GigabitEthernet 0/1. In this case, the voice VLAN can be set to work in manual mode; VLAN 2 is created and VLAN 2 is configured as a voice VLAN; the port is added to voice VLAN 2 and the voice VLAN function is enabled on GigabitEthernet 0/1.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# vlan 2
Hostname(config-vlan)# exit
Hostname(config)# voice vlan 2
Hostname(config)# voice vlan mac-address 0012.3400.0000 mask ffff.ff00.0000
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# switchport mode access
Hostname(config-if-GigabitEthernet 0/1)# switchport access vlan 2
Hostname(config-if-GigabitEthernet 0/1)# no voice vlan mode auto
Hostname(config-if-GigabitEthernet 0/1)# voice vlan enable
Hostname(config-if-GigabitEthernet 0/1)# exit
Hostname(config)# voice vlan security enable
Hostname(config)# voice vlan cos 7
Hostname(config)# voice vlan dscp 47
```

Notifications

A port is configured to work in voice VLAN automatic mode but the voice VLAN is contained in the allowed VLAN list of the port. When you try to enable the voice VLAN function on the port, the following notification will be displayed:

```
Can't enable voice VLAN because the port is in voice VLAN and auto mode has been
set.
```

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show voice vlan**
- **voice vlan**

1.8   voice vlan mac-address

Function

Run the **voice vlan mac-address** command to configure a voice traffic OUI to be identified by voice VLAN in global configuration mode.

Run the **no** form of this command to remove this configuration.

No OUI of any voice device is configured by default.

Syntax

voice vlan mac-address *mac-address* **mask** *oui-mask* [**description** *text*]

no voice vlan mac-address *mac-address*

Parameter Description

mac-address: Source MAC address in a voice packet. This field follows the format of *H.H.H*.

mask *oui-mask*: Valid length of an OUI, which is expressed by a mask. This field follows the format of *H.H.H*.

description *text*: Description of an OUI.

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

A voice device identifies a vendor according to the first three bytes of the MAC address. Voice VLAN perform the logical "AND" operation on the source MAC address in a received packet and the OUI mask to obtain the OUI of the packet transmission device, so as to judge whether the packet is a voice packet.

The voice VLAN OUI cannot be a multicast address, and the configured mask should not contain non-consecutive 1's.

You can use the **show voice vlan oui** command to display the OUI for identifying a packet as a voice packet on the current device, OUI mask, and description.

Examples

The following example sets the voice traffic OUI to be identified by voice VLAN to 0012.3400.0000, mask to ffff.ff00.0000, and vendor to Company-A in global configuration mode.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# voice vlan mac-address 0012.3400.0000 mask ffff.ff00.0000
description Company-A
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show voice vlan oui**

- **voice vlan**

1.9   voice vlan mode auto

Function

Run the **voice vlan mode auto** command to set the voice VLAN of a port to work in automatic mode.

Run the **no** form of this command to set the voice VLAN of a port to work in manual mode.

By default, the voice VLAN of a port works in automatic mode.

Syntax

voice vlan mode auto

no voice vlan mode auto

Parameter Description

N/A

Command Modes

Interface configuration mode

Default Level

14

Usage Guidelines

The voice VLAN can work in automatic mode or manual mode, depending on the port configuration. The voice VLAN work modes of ports are independent of each other. Different voice VLAN work modes can be configured for different ports. The methods of adding ports to voice VLANs vary with the work mode. You can configure the voice VLAN work mode of a port based on the type of VoIP telephone connected to the port and the port type.

⚠️   **Caution**

- If the voice VLAN function is enabled on a port and the voice VLAN works in manual mode, you must manually add the port to the voice VLAN to ensure that the voice VLAN function can take effect.
- If the voice VLAN on a port works in automatic mode, the device automatically adds the port to the voice VLAN. Do not configure the native VLAN of the port as a voice VLAN. Remove the voice VLAN from the allowed static VLAN list of the port before enabling the voice VLAN in automatic mode. After the automatic mode is enabled, you are not allowed to add the port to or remove the port from the voice VLAN by running the **switchport trunk allowed vlan remove 2** command.

● The trunk or hybrid port of this device can transmit packets of all VLANs by default. You need to remove the voice VLAN from the allowed static VLAN list of the port and then enable the voice VLAN function. The purpose is to ensure that ports not connected to voice devices will not be added to the voice VLAN and the ports left unused for a long time will not stay in the voice VLAN.
● After the voice VLAN function is enabled on a port, you are not allowed to manually switch the port between the manual mode and automatic mode. To change the voice VLAN work mode, you must first disable the voice VLAN function on the port.

You can run the **show voice vlan** command to display the configuration and current status of a voice VLAN.

Examples

The following example connects a PC and a VoIP telephone to GigabitEthernet 0/1 in serial mode. In this case, the voice VLAN works in automatic mode. VLAN 5 is created to transmit PC data traffic, and VLAN 2 is created as a voice VLAN to transmit voice traffic. GigabitEthernet 0/1 is configured as a trunk port.

(1) The following example sets the MAC address for identifying voice packets to 0012.3400.0000, mask to ffff.ff00.0000, and vendor to Company A in global configuration mode.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# voice vlan mac-address 0012.3400.0000 mask ffff.ff00.0000
description Company A
```

(2) The following example creates VLAN 5 to transmit data traffic and creates VLAN 2 as a voice VLAN to transmit voice traffic.

```
Hostname(config)# vlan 5
Hostname(config-vlan)# exit
Hostname(config)# vlan 2
Hostname(config-vlan)# exit
Hostname(config)# voice vlan 2
```

(3) The following example configures GigabitEthernet 0/1 as a trunk port, configures VLAN 5 as the native VLAN, and removes voice VLAN 2 from the allowed static VLAN list of the port.

```
Hostname(config)# interface gigabitethernet 0/1
Hostname(config-if-GigabitEthernet 0/1)# switchport mode trunk
Hostname(config-if-GigabitEthernet 0/1)# switchport trunk native vlan 5
Hostname(config-if-GigabitEthernet 0/1)# switchport trunk allowed vlan remove
2
```

(4) The following example sets the voice VLAN of the port to work in automatic mode. When the port receives a packet with the MAC address matching the voice VLAN OUI, the port automatically adds the voice VLAN to the allowed VLAN list of the port and forwards the voice packet over the voice VLAN.

```
Hostname(config-if-GigabitEthernet 0/1)# voice vlan mode auto
```

(5) The following example enables the voice VLAN function on the port.

```
Hostname(config-if-GigabitEthernet 0/1)# voice vlan enable
Hostname(config-if-GigabitEthernet 0/1)# exit
```

Notifications

When you configure a voice VLAN to work in automatic mode and then try to change the allowed VLAN list of the port, the following notification will be displayed.

```
Can't change allowed VLAN since voice VLAN has been enabled and auto mode has
been set.
```

Common Errors

N/A

Platform Description

N/A

Related Commands

● **show voice vlan**

● **voice vlan**

1.10   voice vlan security enable

Function

Run the **voice vlan security enable** command to enable the security mode for a voice VLAN in global configuration mode.

Run the **no** form of this command to disable the security mode of the voice VLAN and restore the voice VLAN to the common mode.

The security mode of a voice VLAN is enabled by default, that is, the voice VLAN works in security mode.

Syntax

voice vlan security enable

no voice vlan security enable

Parameter Description

N/A

Command Modes

Global configuration mode

Default Level

14

Usage Guidelines

To better isolate voice traffic from data traffic during transmission, you can enable the security mode of a voice VLAN. After the security mode is enabled, the device checks the source MAC address in each packet. When the source MAC address in the packet matches the OUI of the voice VLAN, the device allows this packet to be transmitted over the voice VLAN. Otherwise, the device discards this packet.

> ⚠ **Caution**
>
> Do not transmit voice data and service data over the voice VLAN at the same time. If you want to transmit both voice data and service data over the voice VLAN, confirm that the security mode of the voice VLAN function is disabled.

> ℹ **Note**
>
> In security mode, the device checks the source MAC addresses of only untagged packets and packets with a voice VLAN tag. For packets with non-voice VLAN tags, the device forwards or discards these packets according to the common VLAN rules, irrespective of the security mode of the voice VLAN.

You can run the **show voice vlan** command to display the configuration and current status of a voice VLAN.

Examples

The following example disables the security mode of a voice VLAN.

```
Hostname> enable
Hostname# configure terminal
Hostname(config)# no voice vlan security enable
```

Notifications

N/A

Common Errors

N/A

Platform Description

N/A

Related Commands

- **show voice vlan**
- **voice vlan**