VLAN Configuration Commands

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Chapter 1 VLAN Configuration Commands

1.1   VLAN Configuration Commands

The VLAN configuration commands include:

- vlan
- name
- dot1q-tunnel
- switchport pvid
- switchport mode
- switchport trunk
- show vlan
- show interface vlan

1.1.1   vlan

Syntax

[**no**] **vlan** *vlan-id*

To add a VLAN, run vlan vlan-id. To delete a VLAN, run [no] vlan vlan-id.

Parameters

Parameters	Description
vlan-id	Defines the ID of the VLAN. Value range: 1-4094.

Default Value

The default value is 1.

Command Mode

Global configuration mode

Usage Guidelines

After this command is run, the system enters the VLAN configuration mode and then you can modify some VLAN attributes.

Example

The following example shows how to add the VLAN whose ID is 2:

Switch_config#

Switch_config#vlan 2

Switch_config_vlan2#exit

1.1.2   name

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Syntax

To name a VLAN, run name str.
[**no**] **name** *str*

Parameters

Parameters	Description
str	Defines the name of the VLAN. Value range: 1-32 characters.

Default Value

The default VLAN name is 'Default'. Other VLAN's name is VLANxxxx (xxxx is 4-digit stack ID)

Command Mode

VLAN configuration mode

Usage Guidelines

This command can be used to modify the VLAN name to symbolize a specific VLAN.

Example

The following example shows how to set the name of VLAN200 to main405:
Switch_config#
Switch_config#
Switch_config#vlan 200
Switch_config_vlan200#name ?
  WORD   The ascii name of VLAN(32bytes)
Switch_config_vlan200#name main405
1.1.3   dot1q-tunnel

Syntax

dot1q-tunnel
no dot1q-tunnel
To enable or disable the Dot1q tunnel globally, run the following commands.

Parameters

None

Default Value

Dot1q Tunnel is not enabled globally.

Command Mode

Global configuration mode

Usage Guidelines

After Qot1Q Tunnel is globally enabled, all ports serve as the downlink ports of Qot1Q Tunnel by default and put the SPVLAN tag on the incoming packets.

Example

The following example shows how to enable Dot1q tunnel in the global configuration mode.
Switch_config#dot1q-tunnel
1.1.4   switchport pvid

Syntax

To configure VLAN of the access-mode port, run switchport pvid vlan-id.

switchport pvid *vlan-id*
no switchport pvid

Parameters

Parameters	Description
vlan-id	VLAN ID which the port belongs to, ranging between 1 and 4049 Value range: 1-4094

Default Value

All ports belong to VLAN 1.

Command Mode

Port configuration mode

Usage Guidelines

If vlan which pvid belongs does not exist before the command, it will be created with the creation of pvid. The port can be configured in the access mode or the relay mode.

Example

The following example shows how to set port GigaEthernet 0/1 to the access port of VLAN10:
Switch_config#interface g0/1
Switch_config_g0/1#switchport pvid 10
1.1.5   switchport mode

Syntax

switchport mode {access | trunk | dot1q-tunnel-uplink | dot1q-translating-tunnel
no switchport mode
To configure the mode of the port, run the following command.

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Parameters

Parameters	Description
access	Access mode
trunk	Relay mode
dot1q-tunnel-uplink	VLAN tunnel uplink mode
dot1q-translating-tunnel	VLAN translating tunnel mode

Default Value

Access mode

Command Mode

Port configuration mode

Usage Guidelines

The switch's port supports the following modes: the access mode, the relay mode, the VLAN tunnel mode, the VLAN translating tunnel mode and the VLAN tunnel uplink mode.

The access mode indicates that the port belongs to just one VLAN; only the untagged Ethernet frame can be transmitted and received.

The relay mode indicates that the port connects other switches and the tagged Ethernet frame can be transmitted and received.

The VLAN translating tunnel mode is a sub mode based on the relay mode. The port looks up the VLAN translation table according to the VLAN tag of received packets to obtain corresponding SPVLAN, and then the switching chip replaces the original tag with SPVLAN or adds the SPVLAN tag to the outside layer of the original tag. When the packets is forwarded out of the port, the SPVLAN will be replaced by the original tag or the SPVLAN tag will be removed mandatorily. Hence, the switch omits different VLAN partitions that access the network, and then passes them without change to the other subnet that connects the other port of the same client, realizing transparent transmission.

The VLAN tunnel uplink mode is a sub mode based on the relay mode. The SPVLAN should be set when packets are forwarded out of the port. When the packets are received by the port, their TPIDs will be checked. If difference occurs or they are untagged packets, the SPVLAN tag which contains their own TPID will be added to them as their outer-layer tag.When the packets are received by the port, their TPIDs will be checked. If difference occurs or they are untagged packets, the SPVLAN tag which contains their own TPID will be added to them as their outer-layer tag.

The port mode collides with the 802.1X protocol. The 802.1X protocol cannot be configured in relay mode (including the VLAN translating tunnel mode and the VLAN tunnel uplink mode); the port on which the 802.1X protocol is configured cannot be set to the relay mode. That is to say, the 802.1X protocol can be effective only on the access-mode port (including the VLAN tunnel mode).

The 802.1X standard does not support authentication on the trunk port. The reason is that the authentication object regulated in the standard is not the port. As to port multiplexing, if user authentication is approved in one VLAN, all other VLAN users who multiplex this port are also authorized correspondingly, therefore, the trunk port does not support authentication.

Example

The following example shows how to configure the port to VLAN tunnel uplink port mode.
Switch_config_g0/1#switchport mode dot1q-tunnel-uplink
1.1.6   switchport trunk

Syntax

To configure the attributes of the relay port, run the following command.

[**no**] **switchport trunk {** {**vlan-allowed** *vlan-list*} | {**vlan-untagged** *vlan-list* } **}**

Parameters

Parameters	Description
vlan-allowed	VLAN ID which can be received and transmitted by the port Value Range: 1-4094
vlan-untagged	Frame that will be transmitted without adding the VLAN tag Value Range: 1-4094

Default Value

The native VLAN ID of all relay ports is 1. The allowable value for all VLANs ranges between 1 and 4094.

Command Mode

Port configuration mode

Usage Guidelines

No matter the port is in access mode or in relay mode, you can run this command on the port. However, the port is in relay mode when this command functions.

The vlan-allowed parameter is used to control theVLANrange of the port; the vlan-untagged parameter is used to decide which packets need be added with theVLANtag when a port transmits these packets.

When the vlan list is used, you can add, remove or set (none, all, except) the lists of the existingVLAN. The entered lists are separated by the comma or the hyphen. For example, "1, 3, 5, 7" stands for "vlan 1, vlan 3, vlan 5, vlan 7", while "1, 3-5, 7" stands for "vlan 1, vlan 3, vlan 4, vlan -5, vlan 7".

Example

The following example shows how to set the allowable VLAN range to 1-10, and the untagged VLAN range to 2-1000.

Switch_config_g0/1#switchport trunk vlan-allowed 1-10

Switch_config_g0/1#switchport trunk vlan-untagged 2-1000

1.1.7   show vlan

Syntax

To display relative information about all VLANs, run the following command.

show vlan [id *vlan-id* **| interface** *intf-id*   **| dot1q-tunnel [interface** *intf***] |mac-vlan | subnet | protocol-vlan |dot1q-translating-tunnel|flat-translation-table]**

Parameters

Parameters	Description
Id *vlan-id*	Displays the designated VLAN. Value range: 1-4094
Interface *Intf-id*	Displays the designated port.
dot1q-tunnel [interface *intf*]	Displays the global information and statistics information about Dot1Q tunnel, or displays the detailed information about Dot1Q tunnel of the designated port.
mac-vlan	Displays the configured MAC VLAN entries.
subnet	Displays the configured IP-subnet VLAN entries.
protocol-vlan	Displays the configured protocol VLAN template or entry.
dot1q-translating-tunnel	Displays the port vlan tunnel translation information
flat-translation-table	Checks the configured items of flat translation

Default Value

None

Command Mode

Global configuration mode, port configuration and EXEC configuration mode

Usage Guidelines

None

Example

The following example shows how to display relative information about all VLANs.

Switch#show vlan

VLAN Status   Name   Ports

```
---- ------- ---------------- ------------------------------------------------
1    Static  Default          g0/1, g0/2, g0/4……
2    Static  VLAN0002         g0/3
3    Static  VLAN0003         g0/3
4    Static  VLAN0004         g0/3
5    Static  VLAN0005         g0/3
```

The status parameter stands for the VLAN generation source; the static parameter means that VLAN is generated through configuration; the dynamic parameter means that VLAN is generated dynamically through the GVRP protocol.

The following example shows the detailed information about a VLAN:

Switch#show vlan id 1

VLAN id: 1, Name: default, TotalPorts:11

```
Ports           Atttributes
-----------------------------------------------------------------
g0/1            Trunk,Untagged
g0/2            Access
```

The following example shows relative information about aVLANon a port:

Switch#show vlan int g0/6

```
Interface       VLAN
Name             Property PVID Vlan-Map        uTagg-VLan-Map
-------------------- -------- ---- ---------------- ----------------
GigaEthernet0/2    Trunk    1    3,5,7,9,11,13,15 none
                   17,19
```

Switch#show vlan int g0/7

```
Interface       VLAN
Name             Property PVID Vlan-Map        uTagg-VLan-Map
GigaEthernet 0/3    Access   7    7              ----
```

1.1.8   show interface vlan

Syntax

To display relative information about the VLAN interface, run the following command.

show interface vlan *intf-id*

Parameters

Parameters	Notes:	Value Range
Intf-id	Displays the designated port.	1-4094

Default Value

None

Command Mode

Global configuration mode, port configuration and EXEC configuration mode

Usage Guidelines

None

Example

The following example shows how to display the information about interface VLAN 1.
Switch#show int vlan 1
VLAN1 is up, line protocol is up
   Hardware is EtherSVI, Address is 00e0.0f42.0071(00e0.0f42.0071)
   MTU 1500 bytes, BW 1000000 kbit, DLY 2000 usec
   Encapsulation ARPA, loopback not set
   5 minute input rate 0 bits/sec, 0 packets/sec
   5 minute output rate 0 bits/sec, 0 packets/sec
      0 packets input, 0 bytes, 0 no buffer
      Received 0 broadcasts, 0 multicasts
      0 input errors, 0 input discards
      0 packets output, 0 bytes, 0 underruns
      Transmited 0 broadcasts, 0 multicasts
      0 output errors, , 0 discards
   ARP type: ARPA, ARP timeout 04:00:00
The statistics values are explained as follows:
Packets input means the input of all packets, including broadcast packets, multicast packets and unicast packets.
Bytes means the byte volume of all packets.
Broadcasts means received broadcast packets.
Broadcasts means received broadcast packets.
Input errors means received error packets.
Input discards means that the received packets are dropped, such as the received packets when the interface protocol is down.

Packets output means the output of all packets, including broadcast packets, multicast packets and unicast packets.
Bytes means the byte volume of all transmitted packets.
Broadcasts means transmitted broadcast packets.
Multicasts means transmitted multicast packets.
Output errors means transmitting error packets.
Output discards means that the transmitted packets are dropped, such as the transmitted packets when the interface protocol is down.