

VLAN Configuration Commands

Table of contents

CHAPTER 1	VLAN CONFIGURATION COMMANDS	3
1.1.	VLAN Configuration Commands	3
1.1.1.	vlan	3
1.1.2.	name	4
1.1.3.	dot1q-tunnel	4
1.1.4.	switchport pvid	5
1.1.5.	switchport mode	6
1.1.6.	switchport trunk	7
1.1.7.	switchport dot1q-translating-tunnel	8
1.1.8.	mac-vlan mac-address	9
1.1.9.	switchport mac-vlan	10
1.1.10.	switchport vlan-subnet enable	10
1.1.11.	protocol-vlan	11
1.1.12.	switchport protocol-vlan	11
1.1.13.	show vlan	12
1.1.14.	show interface vlan	14
1.1.15.	interface supervlan	16
1.1.16.	subvlan	16

CHAPTER 1 VLAN CONFIGURATION COMMANDS

1.1. VLAN Configuration Commands

VLAN configuration commands include:

- `vlan`
- `name`
- `dot1q-tunnel`
- `dot1q-translate-mask-vfp`
- `switchport pvid`
- `switchport mode`
- `switchport trunk`
- `switchport dot1q-translating-tunnel`
- `mac-vlan mac-address`
- `switchport mac-vlan`
- `switchport vlan-subnet enable`
- `protocol-vlan`
- `switchport protocol-vlan`

1.1.1. `vlan`

Syntax

To add a VLAN, use the `vlan` command. Use the `no` form of this command to delete a VLAN.

```
[no] vlan vlan-id
```

Parameter

Parameter	Description
<i>vlan-id</i>	ID of the VLAN. Range is from 1 to 4094.

Default value

None

Command mode

Global configuration mode

Usage Guidelines

Use this command to enter VLAN configuration mode and to modify some attributes of the VLAN.

Example

This example shows how to add a new VLAN with its ID as 2:

```
Switch_config#  
Switch_config#vlan 2  
Switch_config_vlan_2#exit
```

1.1.2. name

Syntax

To assign a name to a VLAN, use the **name** command. Use the no form of this command to remove the name assigned to a VLAN.

[no] **name** *str*

Parameter

Parameter	Description
<i>str</i>	Name of the defined VLAN. The name consists of up to 32 characters.

Default value

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

Command mode

VLAN configuration mode

Usage Guidelines

This command can modify VLAN name to indicate special VLAN according to special requirements.

Example

The following command modify vlan200 to main405.

```
Switch_config#  
Switch_config#  
Switch_config#vlan 200  
Switch_config_vlan_200#name ?  
WORD The ascii name of VLAN(32bytes)  
Switch_config_vlan_200#name main405
```

1.1.3. dot1q-tunnel

Syntax

```
dot1q-tunnel  
no dot1q-tunnel
```

The command is used to enable or disable global Dot1q Tunnel.

Parameter

None

Default value

Global Dot1q Tunnel is not enabled.

Command mode

Global configuration mode

Usage guidelines

The command is used to enable Dot1Q Tunnel globally, turn all ports to Dot1Q Tunnel downlink ports and add SPVLAN tag to the incoming packets.

Example

The following example shows how to enable Dot1q Tunnel globally.

```
Switch_config#dot1q-tunnel
```

1.1.4. switchport pvid

Syntax

```
switchport pvid vlan-id
```

```
no switchport pvid
```

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

Parameter

Parameter	Description
<i>vlan-id</i>	VLAN ID which the port belongs to, ranging between 1 and 4049.

Default

All ports belong to VLAN 1.

Command mode

Interface configuration mode

Usage guidelines

The port can be in access mode or relay mode.

Example

The following example shows how to configure the access port of VLAN 10.

```
Switch_config#interface g0/1
```

```
Switch_config_g0/1#switchport pvid 10
```

1.1.5. switchport mode

Syntax

To configure the interface mode, use the **switchport mode** command.

```
switchport mode {access | trunk | dot1q-tunnel-uplink tpid | dot1q-translating-tunnel | private-vlan}
```

```
no switchport mode
```

Parameter

Parameter	Description
<i>access</i>	The access mode
<i>trunk</i>	The relay mode
dot1q-tunnel-uplink <i>[tpid]</i>	VLAN tunnel uplink mode Tpid is of VLAN tag
dot1q-translating-tunnel	VLAN translating tunnel mode
<i>private-vlan</i>	<i>private-vlan</i>

Default value

Access mode

Command mode

Interface configuration mode

Usage Guidelines

OLT 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 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 OLT 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.

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 set the port to the VLAN tunnel uplink mode and how to set the TPID of the unlink port to 0x9100:

```
Switch_config_g0/1#switchport mode dot1q-tunnel-uplink 0x9100
```

1.1.6. switchport trunk

Syntax

To set the trunk characteristics, use the switchport trunk commands. To reset all of the trunking characteristics back to the original defaults, use the no form of this command.

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

Parameter

Parameter	Description
<i>vlan-allowed</i>	Sets the list of allowed VLANs that transmit traffic from this interface in tagged format. Value is from 1 to 4094.
<i>vlan-untagged</i>	Sets the list of allowed VLANs that transmit traffic from this interface in untagged format. Value is from 1 to 4094.

Default

The default native vlan ID is 1. The valid VLAN ID is from 1 to 4094 (all VLANs).

Command mode

Interface configuration mode

Usage Guidelines

You can use this command on an interface no matter it is in access or trunk mode. But this command is valid only when the interface is in trunking mode.

The `vlan-allowed` parameter sets the list of allowed VLANs that transmit traffic from this interface in tagged format. The `vlan-untagged` parameter sets the list of allowed VLANs that transmit traffic from this interface in untagged format.

When the `vlan` list is used, you can add, remove or set (none, all, except) the lists of the existing VLAN. The input list is divided by “,” and “—”, for instance, ‘1, 3, 5, 7’ represents respectively “vlan 1, vlan 3, vlan 5 and vlan7”; ‘1, 3—5, 7’ represents vlan 1, vlan 3, vlan4, vlan 5 and vlan7.

Example

The following example configures VLAN ID range to 1-10 and trunk untagged VLAN 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. switchport dot1q-translating-tunnel

Syntax

```
switchport dot1q-translating-tunnel mode [flat | qinq] translate [nto1|1to1]
{ oldvlanid | oldvlanlist } newvlanid [priority]
```

```
no switchport dot1q-translating-tunnel mode [flat | qinq] translate [nto1|1to1]
{ oldvlanid | oldvlanlist }
```

To configure the attributes of a port in VLAN translating tunnel mode, run **switchport dot1q-translating-tunnel [mask] mode {flat | qinq} translate 1to1 { oldvlanid | oldvlanlist } newvlanid [priority]**.

Parameter

Parameter	Description
mask	Works in mask mode
<i>translate [nto1 1to1]</i>	Only in the mode of flat, nto1 or 1to1 translation entry can be configured. There is no difference in the mode of qinq.
<i>translate {oldvlanid oldvlanlist} newvlanid [priority]</i>	VLAN translation list of the VLAN translating tunnel port, among which the VLAN's value range of oldvlanid oldvlanlist and newvlanid is 1-4094 and the value range of priority is 0-7.

Default

The VLAN translating mode of the VLAN translating tunnel port is QinQ and no VLAN translating items exists.

Command Mode

Interface Configuration Mode

Usage Guidelines

Both the VLAN translating mode and the VLAN translating items validate in dot1q-translating-tunnel mode after they are configured. The translation modes fall into two kinds: the Flat mode and the QinQ mode. In Flat mode, the CLAN tag of packets which are received by the dot1q-translating-tunnel downlink port will be used as an index to look up the VLAN translating list. The CVLAN will be replaced by detected SPVLANS; when the packets are forwarded out of the port, the SPVLAN will then be replaced by CVLAN. In QinQ mode, the CLAN tag of packets which are received by the dot1q-translating-tunnel downlink port will be used as an index to look up the VLAN translating list and then the detected SPVLANS will form into SPVLAN tag to be added to the outside of CVLAN tag; when the packets are forwarded out of the port, the SPVLAN tag will then be removed.

When the VLAN translating items are configured on a port, the mapping between CVLAN and multiple SPVLANS can be configured in QinQ mode. To configure the mapping between CVLAN and multiple SPVLANS in flat mode, you have to configure QoS and then the correct transformation from SPVLAN to CVLAN can be conducted when packets are transmitted out from this port.

Example

The following example shows how to add the translation items to g1/1, translate CVLAN 1000 into SPVLAN 100 and set the VLAN translation mode of the translation items to Flat.

```
Switch_config#interface g1/1
```

```
Switch_config_g1/1#switchport dot1q-translating-tunnel mode flat translate 1to1 1000 100
```

1.1.8. mac-vlan mac-address

Syntax

mac-vlan mac-address mac-addr **vlan** vlan-id [priority]

no mac-vlan mac-address mac-addr

Add/delete MAC-based VLAN items.

Parameter

Parameter	Description
<i>mac-addr</i>	Means the MAC address that corresponds to a MAC VLAN entry.

<i>vlan-id</i>	Means the corresponding VLAN ID of MAC VLAN entry, which ranges from 1 to 4094.
<i>priority</i>	Priority

Default value

No MAC-based VLAN entry exists.

Command Mode

Global configuration mode

Usage Guidelines

None

1.1.9. switchport mac-vlan**Syntax**

[no] switchport mac-vlan

Enables or disables the MAC-based VLAN function on a port.

Parameter

None

Default

Disable MAC-based VLAN function.

Command Mode

Interface Configuration Mode

Usage Guidelines

Note: In port access mode, an incoming packet will be dropped if its VLAN, which is obtained through the matchup of MAC VLAN entry, is not the PVID of the port. Hence, if not necessary, do not set the port mode, which is to enable MAC VLAN, to access.

1.1.10. switchport vlan-subnet enable**Syntax**

[no] switchport vlan-subnet enable

To enable or disable the IP-subnet VLAN function on the ports, run the above-mentioned commands respectively.

Parameter

None

Default value

Disable IP-subnet VLAN function.

Command Mode

Interface Configuration Mode

Usage Guidelines

In port access mode, an incoming packet will be dropped if its VLAN, which is obtained through the match of subnet VLAN entry, is not PVID of the port. Hence, if not necessary, do not set the port mode, which is to enable subnet VLAN, to access.

1.1.11. protocol-vlan

Syntax

protocol-vlan *protocol_index* **frame-type** { **ETHERII** | **SNAP** | **LLC** } **ether-type** *etype-id*

no protocol-vlan *protocol_index*

To add a protocol template or a protocol VLAN entry, run **protocol-vlan** *protocol_index* **frame-type** { **ETHERII** | **SNAP** | **LLC** } **ether-type** *etype-id*.

To remove a protocol template or a protocol VLAN entry, run **no protocol-vlan** *protocol_index*.

Parameter

Parameter	Description
<i>protocol-index</i>	Protocol template index
<i>etype-id</i>	<i>Means the Ethernet type of the incoming packets.</i>
<i>vlan-id</i>	Means the corresponding VLAN ID, which ranges from 1 to 4094.

Default value

There is no protocol templates or protocol VLAN entries.

Command Mode

Global configuration mode

Usage Guidelines

None

1.1.12. switchport protocol-vlan

Syntax

switchport protocol-vlan

no switchport protocol-vlan

To add the association of a protocol template on a port or enable a protocol-based VLAN on a port, run **switchport protocol-vlan *protocol_index* vlan *vlan-id***.

To delete the association of a protocol template on a port or disable a protocol-based VLAN on a port, run **no switchport protocol-vlan *protocol_index***.

Parameter

None

Default value

A port does not associate with any protocol template or the protocol-based VLAN is disabled on a port.

Command Mode

Interface Configuration Mode

Usage Guidelines

In port access mode, an incoming packet will be dropped if its VLAN, which is obtained through the matchup of protocol-based VLAN entry, is not PVID of the port. Hence, if not necessary, do not set the port mode, which is to enable protocol-based VLAN, to access.

1.1.13. show vlan

Syntax

To display VLAN information, use the show vlan command.

show vlan [id *vlan-id* | interface *intf-id* | dot1q-tunnel [interface *intf*] | mac-vlan | subnet | protocol-vlan | dot1q-translating-tunnel | private-vlan | centec]

Parameter

Parameter	Description
Id <i>vlan-id</i>	Display the designated vlan. The value ranges from 1 to 4094.
Interface <i>Intf-id</i>	Display the designated port.
dot1q-tunnel [interface <i>intf</i>]	Display the global and summary stastics of Dot1Q Tunnel or Dot1Q Tunnel of the given port.
mac-vlan	Display vlan entry based on MAC
subnet	Display vlan entry based on IP subnet
protocol-vlan	Display vlan template or entry based on protocol

dot1q-translating-tunnel	Display information private of port VLAN tunnel translation
private-vlan	Display status information of private vlan
centec	Display vlan information of centec chip

Default value

None

Command mode

EXEC/ All configuration modes

Usage Guidelines

None

Example

The following example shows all VLAN information:

```
Switch#sho vlan
```

```
VLAN Status Name      Ports
-----
1  Static Default      F0/1, F0/2, F0/3, F0/4, F0/5, F0/6, F0/7, F0/8
                               F0/9, F0/10, F0/11, F0/12, F0/13, F0/14, F0/15
                               F0/16, F0/17, F0/18, F0/19, F0/20, F0/21, F0/22
                               F0/23, F0/24, G1/1, G2/1, P1
2  Static VLAN0002      F0/3
3  Static VLAN0003      F0/3
4  Static VLAN0004      F0/3
5  Static VLAN0005      F0/3
6  Static VLAN0006      F0/3
```

Status: indicates the source of VLAN. Static: indicates the VLAN is formed by configuration. Dynamic: indicates the VLAN is dynamically formed by GVRP protocol.

The following example shows the concrete information of a VLAN:

```
Switch> show vlan id 1
```

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

```
Ports      Attributes
-----
F0/1      Trunk,Untagged
```

```

F0/2      Access
F0/5      Trunk,Untagged
F0/7      Trunk,Tagged
F0/8      Trunk,Tagged
F0/9      Trunk,Tagged
F0/11     Access
F0/12     Access
F0/14     Trunk,Tagged
F0/15     Trunk,Tagged
F0/16     Trunk,Untagged
    
```

The following example shows the relevant information about a VLAN on an interface:

```
Switch#sho vlan int f0/6
```

```

Interface      VLAN
Name           Property PVID Vlan-Map      uTagg-VLan-Map
-----
FastEthernet0/6  Trunk   1   3,5,7,9,11,13,15 none
                17,19
    
```

```
Switch#sho vlan int f0/7
```

```

Interface      VLAN
Name           Property PVID Vlan-Map      uTagg-VLan-Map
-----
FastEthernet0/7  Access  7   7             ----
    
```

1.1.14. show interface vlan

Syntax

```
show interface vlan intf-id
```

The above command is used to show information about VLAN Interface.

Parameter

Parameter	Description	Value ranges
Intf-id	Shows specified port	1-4094

Default value

None

Command Mode

EXEC mode

Usage Guidelines

None

Example

The following example shows how to show information about Interface VLAN 1.

```
Switch#sho 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
```

```
Transmitted 0 broadcasts, 0 multicasts
```

```
0 output errors, 0 discards
```

```
ARP type: ARPA, ARP timeout 04:00:00
```

The statistics values are explained as follows:

Pachets 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.

Pachets 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.

1.1.15. interface supervlan

Syntax

[no] interface supervlan *index*

To configure the SuperVlan interface, run the previous command.

Parameter

Parameter	Parameter description
<i>index</i>	Index of the SuperVlan interface Value range: 1-32

Default value

None

Usage guidelines

This command is configured in global configuration mode for configuring a SuperVlan interface and entering port configuration mode; the negative form of this command is used to cancel this SuperVlan interface.

Example

For details, see the **sub VLAN** command.

1.1.16. subvlan

Syntax

[no] subvlan [*string*] [**add** *add-string*] [**remove** *rem-string*]

To configure the SubVlan of a SuperVlan interface, run **subvlan** [*string*] [**add** *add-string*] [**remove** *rem-string*].

Only L3 switches support SubVlan.

Parameter

Parameter	Parameter description
<i>string</i>	Configures the SubVlan on the SuperVlan interface while previous configuration is deleted; string means the Vlan list. For example, 2, 4-6 means VLAN 2, 4, 5, 6.
<i>add-string</i>	Add the VLAN list to the previous SubVlan. The format is

	same to the above.
<i>rem-string</i>	Cancels the VLAN list in the previous SubVlan. The format is same to the above.

Default value

The SubVlan in SuperVlan is null.

Usage guidelines

This command is used to configure the SubVlan list in a SuperVlan.

Example

The following example shows how to configure SuperVlan 5 and set it to SubVlan. The outcome is that SuperVlan 5 contains SubVlan 2,3,5-7,9,11-12.

```
interface supervlan 5
subvlan 2,3,5-7
subvlan add 7,9-12
subvlan remove 10
```