

Interface Configuration

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Chapter 1 Introduction

This section helps user to learn various kinds of interface that our switch supports and consult configuration information about different interface types.

For detailed description of all interface commands used in this section, refer to *Interface configuration command*. For files of other commands appeared in this section, refer to other parts of the manual.

The introduction includes communication information that can be applied to all interface types.

1.1 Supported Interface Types

For information about interface types, please refer to the following table.

Interface Type	Task	Reference
Ethernet interface	Configures Ethernet interface. Configures fast Ethernet interface. Configures gigabit Ethernet interface.	<i>Configuring Ethernet Interface</i>
Logical Interface	Loopback interface Null interface VLAN interface	<i>Configuring Logistical Interface</i> The loopback interface and null interface are only configured on layer-3 switch. User can configure the VLAN interface on layer-2 switch.
	Aggregation interface	<i>Configuring Logistical Interface</i>

The two supported kinds of interface: Ethernet interface and logical interface. The Ethernet interface type depends on one device depends on the standard communication interface and the interface card or interfaced module installed on the switch. The logical interface is the interface without the corresponding physical device, which is established by user manually.

The supported Ethernet interfaces of our switch include:

- Ethernet interface
- Fast Ethernet interface
- Gigabit Ethernet interface

The supported logical interface of our switch include:

- loopback interface
- null interface
- aggregation interface

- VLAN interface

1.2 Interface Configuration Introduction

The following description applies to the configuration process of all interfaces. Take the following steps to perform interface configuration in global configuration mode.

- (1) Run the **interface** command to enter the interface configuration mode and start configuring interface. At this time, the switch prompt becomes 'config_' plus the shortened form of the interface to be configured. Use these interfaces in terms of their numbers. Numbers are assigned during installation(exworks) or when an interface card are added to the system. Run the **show interface** command to display these interfaces. Each interface that the device supports provides its own state as follows:

```
Switch#show interface
GigaEthernet1/1 is down, line protocol is down
Hardware is Fast Ethernet, Address is 0009.7cf7.7dc1
MTU 1500 bytes, BW 10000 Kbit, DLY 1000 usec,
reliability 255/255, txload 1/255, rxload 1/255
Encapsulation ARPA, loopback not set
Auto-duplex, Auto-speed
input flow-control is off, output flow-control is off
ARP type: ARPA, ARP Timeout 04:00:00
Last input never, output 17:52:52, output hang never
Last clearing of "show interface" counters never
Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
Queueing strategy: fifo
Output queue :0/40 (size/max)
5 minute input rate 0 bits/sec, 0 packets/sec
5 minute output rate 0 bits/sec, 0 packets/sec
1 packets input, 64 bytes, 0 no buffer
Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
0 watchdog, 0 multicast, 0 pause input
0 input packets with dribble condition detected
1 packets output, 64 bytes, 0 underruns
0 output errors, 0 collisions, 1 interface resets
0 babbles, 0 late collision, 0 deferred
0 lost carrier, 0 no carrier, 0 PAUSE output
0 output buffer failures, 0 output buffers swapped out
To configure gigabit Ethernet interface g1/1, enter the following content:
interface GigaEthernet0/1
The switch prompts "config_g1/1".
```

Note:

There is no need to add blank between interface type and interface number. For example, in the above line, g 1/1 or g 1/1 is both right.

- (1) You can configure the interface configuration commands in interface configuration mode. Various commands define protocols and application programs to be executed on the interface. These commands will stay until user exits the interface configuration mode or switches to another interface.
- (2) Once the interface configuration has been completed, use the show command in the following chapter 'Monitoring and Maintaining Interface' to test the interface state.

Chapter 2 Interface Configuration

2.1 Configuring Interface Common Attribute

The following content describes the command that can be executed on an interface of any type and configures common attributes of interface. The common attributes of interface that can be configured include: interface description, bandwidth and delay and so on.

2.1.1 Adding Description

Adding description about the related interface helps to memorize content attached to the interface. This description only serves as the interface note to help identify uses of the interface and has no effect on any feature of the interface. This description will appear in the output of the following commands: **show running-config** and **show interface**. Use the following command in interface configuration mode if user wants to add a description to any interface.

Command	Description
description <i>string</i>	Adds description to the currently-configured interface.

For examples relevant to adding interface description, please refer to the following section 'Interface Description Example'.

2.1.2 Configuring Bandwidth

The upper protocol uses bandwidth information to perform operation decision. Use the following command to configure bandwidth for the interface:

Command	Description
bandwidth <i>kilobps</i>	Configures bandwidth for the currently configured interface.

The bandwidth is just a routing parameter, which doesn't influence the communication rate of the actual physical interface.

2.1.3 Configuring Time Delay

The upper protocol uses time delay information to perform operation decision. Use the following command to configure time delay for the interface in the interface configuration mode.

Command	Description
delay <i>tensofmicroseconds</i>	Configures time delay for the currently configured interface.

The configuration of time delay is just an information parameter. Use this command cannot adjust the actual time delay of an interface.

2.2 Monitoring and Maintaining Interface

The following tasks can monitor and maintain interface:

- Checking interface state
- Initializing and deleting interface
- Shutting down and enabling interface

2.2.1 Checking Interface State

Our switch supports displaying several commands related to interface information, including version number of software and hardware, interface state. The following table lists a portion of interface monitor commands. For the description of these commands, please refer to 'Interface configuration command'.

Use the following commands:

Command	Description
show interface [type [slot port]]	Displays interface state.
show running-config	Displays current configuration.

2.2.2 Initializing and Deleting Interface

You can dynamically establish and delete logical interfaces. This also applies to the sub interface and channalized interface. Use the following command to initialize and delete interface in global configuration mode:

Command	Description
no interface type [slot port]	Initializes physical interface or deletes virtual interface.

2.2.3 Shutting down and Enabling Interface

When an interface is shut down, all features of this interface are disabled, and also this interface is marked as unavailable interface in all monitor command displays. This information can be transmitted to other switches via dynamic routing protocol.

Use the following command to shutdown or enable an interface in the interface configuration mode:

Command	Description
shutdown	Shuts down an interface.
no shutdown	Enables an interface.

You can use the **show interface** command and the **show running-config** command to check whether an interface has been shut down. An interface that has been shut down is displayed as 'administratively down' in the **show interface** command display. For more details, please refer to the following example in 'Interface Shutdown Example'.

2.3 Configuring Logistical Interface

This section describes how to configure a logical interface. The contents are as follows:

- Configuring null interface
- Configuring loopback interface.
- Configuring aggregation interface
- Configuring VLAN interface

2.3.1 Configuring Null Interface

The whole system supports only one null interface. Its functions are similar to those of applied null devices on most operating systems. The null interface is always available, but it never sends or receives communication information. The interface configuration command **no ip unreachable** is the only one command available to the null interface. The null interface provides an optional method to filtrate communication. That is, the unwanted network communication can be routed to the null interface; the null interface can function as the access control list.

You can run the following command in global configuration mode to specify the null interface:

Command	Description
interface null 0	Enters the null interface configuration state.

The null interface can be applied in any command that takes the interface type as its parameter.

The following case shows how to configure a null interface for the routing of IP 192.168.20.0.

```
ip route 192.168.20.0 255.255.255.0 null 0
```

2.3.2 Configuring Loopback Interface

The loopback interface is a logistical interface. It always functions and continues BGP session even in the case that the outward interface is shut down. The loopback interface can be used as the terminal address for BGP session. If other switches try to reach the loopback interface, a dynamic routing protocol should be configured to broadcast the routes with loopback interface address. Messages that are routed to the loopback interface can be re-routed to the switch and be handled locally. For messages that are routed to the loopback interface but whose destination is not the IP address of the loopback interface, they will be dropped. This means that the loopback interface functions as the null interface.

Run the following command in global configuration mode to specify a loopback interface and enter the interface configuration state:

Command	Description
interface loopback <i>number</i>	Enter the loopback interface configuration state.

2.3.3 Configuring Aggregation Interface

The inadequate bandwidth of a single Ethernet interface gives rise to the birth of the aggregation interface. It can bind several full-duplex interface with the same rate together, greatly improving the bandwidth.

Run the following command to define the aggregation interface:

Command	Description
Interface port-aggregator <i>number</i>	Configures the aggregation interface

2.3.4 Configuring VLAN Interface

V VLAN interface is the routing interface in switch. The VLAN command in global configuration mode only adds layer 2 VLAN to system without defining how to deal with the IP packet whose destination address is itself in the VLAN. If there is no VLAN interface, this kind of packets will be dropped.

Run the following command to define VLAN interface:

Command	Description
Interface vlan <i>number</i>	Configures VLAN interface.

2.3.5 Configuring Super VLAN Interface

The Super VLAN technology provides a mechanism: hosts in different VLANs of the same switch can be allocated in the same Ipv4 subnet and use the same default gateway; lots of IP addresses are, therefore, saved. The Super VLAN technology puts different VLANs into a group where VLANs use the same management interface and hosts use the same IPv4 network section and gateway. VLAN belonging to Super VLAN is called as SubVLAN. No SubVLAN can possess the management interface by configuring IP address.

You can configure a Super VLAN interface through a command line. The procedure of configuring a Super VLAN interface is shown as follows:

Command	Description
[no] interface supervlan <i>index</i>	Enter the Super VLAN interface configuration mode. If the specified Super VLAN interface does not exist, the system will create a Super VLAN interface. index is the index of the Super VLAN interface. Its effective value ranges from 1 to 32. no means to delete Super VLAN interface.
[no] subvlan [<i>setstr</i>] [add addstr] [remove	Configure SubVLAN in Super VLAN. The added Sub VLAN cannot possess a management interface or cannot belong to other Super VLANs. In original state,

<i>remstr</i>	<p>Super VLAN does not contain any Sub VLAN. Only one sub command can only be used every time.</p> <p>setstr means to set the Sub VLAN list. For example, List 2,4-6 indicate VLAN 2, 4, 5 and 6.</p> <p>add means to add VLAN list in the original SubVLAN list. addstr means the character string whose format is the same as the above.</p> <p>remove means to delete VLAN list in the original SubVLAN list. <i>remstr</i> is the list's character string whose format is the same as the above.</p> <p>no means to delete all SubVLANs in SuperVLAN. The no command cannot be used with other sub commands.</p>
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After you configure the Super VLAN interface, you can configure the IP address for the Super VLAN interface. The Super VLAN interface is also a routing port, which can be configured as other ports are.

Chapter 3 Interface Configuration Example

3.1 Configuring Public Attribute of Interface

3.1.1 Interface Description Example

The following example shows how to add description related to an interface. This description appears in the configuration file and interface command display.

```
interface vlan 1
ip address 192.168.1.23 255.255.255.0
```

3.1.2 Interface Shutdown Example

The following example shows how to shut down the Ethernet interface 0/1:

```
interface GigaEthernet0/1
shutdown
```

The following example shows how to enable the interface:

```
interface GigaEthernet0/1
no shutdown
```