I

Interface Configuration

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Chapter 1 Overview

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 fast Ethernet interface. Configures gigabit Ethernet interface. Configures 10GE Ethernet interface.	Setting the Ethernet Interface
Logical interface	Loopback interface Null interface Aggregation interface VLANinterface SuperVlan interface	Conifugring Logical Interface

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:

● Fast Ethernet

● Gigabit Ethernet interface

● 10GE Ethernet interface

The supported logical interface of our switch include:

● Loopback interface

● Null interface

- Aggregation interface

- VLANinterface

- SuperVlan 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) 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_config#show interface g0/2

GigaEthernet0/2 is administratively down, line protocol is down

Hardware is Giga-Combo-FX, address is 00e0.0f8d.e0e1 (bia 00e0.0f8d.e0e1)

MTU 1500 bytes, BW 10000 kbit, DLY 10 usec

Encapsulation ARPA

port info 1 0 2 1

Auto-duplex,   Auto-speed

flow-control off

Received 0 packets, 0 bytes

0 broadcasts, 0 multicasts

0 discard, 0 error, 0 PAUSE

0 align, 0 FCS, 0 symbol

0 jabber, 0 oversize, 0 undersize

0 carriersense, 0 collision, 0 fragment

0 L3 packets, 0 discards, 0 Header errors

Transmited 0 packets, 0 bytes

0 broadcasts, 0 multicasts

0 discard, 0 error, 0 PAUSE

0 sqettest, 0 deferred

0 single, 0 multiple, 0 excessive, 0 late

0 L3 forwards

Note:

There is no need to add blank between interface type and interface number. For example, in the above line, g 0/2 or g 0/2 is both available.

(2) 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.

(3)   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	Purpose
description *string*	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	Purpose
bandwidth *kilobps*	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	Purpose
delay *tensofmicroseconds*	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 the Port

To maintain and monitor the interface, perform the following tasks:

- To browse the state of an interface, run the above-mentioned command.

- Initializing and deleting the port

- Closing and restarting the port

2.2.1 Browsing the State of an Interface

Our switches support those commands to display interface information, including the version ID of hardware and software, and the interface state. The following table presents you some port monitor commands: For more details, please refer to the "Interface Configuration Command".

Run the following commands:

Command	Purpose
show interface [**type** [slot|port]]	Displays the state of a port.
show running-config	Displays the current settings.
show version	Displays the memory configuration, the software version and the startup mirror.

2.2.2 Initializing and Deleting the Port

The logic interface can be dynamically created and deleted. So it is with the sub-interface and the channelized interface. The physical interface which cannot be deleted dynamically can return to the default setting of the interface. In global configuration mode, run the following command to initialize and delete an interface:

Command	Purpose
no interface [**type** [slot|port]]	Initializes a physical interface or deletes a virtual interface.

2.2.3 Closing and Restarting the Port

You can disable the interface, so that all functions on this interface can be disabled, and then all monitor commands will label this interface as unavailable. This information can be transmitted to other devices through the dynamic routing protocol. The modification on any route will not affect this port.

Run the following commands in interface configuration mode to shut down an interface and then restart it.

Command	Purpose

shutdown	Disable the interface.
no shutdown	Restarting the interface

To check whether an interface is shut down, you can run show interface and show running-config. After the show interface command is run, a disabled interface will be presented as "administratively down". For more examples, please refer to "Interface Shutdown Example".

2.3 Setting the Ethernet Interface

In this section the procedure of setting the Enthernet interface will be described. The detailed configuration includes the following steps, among which step 1 is obligatory while other steps are optional.

2.3.1 Choosing an Ethernet Interface

Run the following command in global configuration mode to enter the Ethernet interface configuration mode:

Command	Function
interface fastethernet [*slot*|*port*]	Enters the fast-Ethernet interface configuration mode.
interface gigaethernet [*slot*|*port*]	Enters the gigabit-Ethernet interface configuration mode.
interface tgigaEthernet [*slot*|*port*]	Enters the 10GE-Ethernet interface configuration mode.

The show interface fastethernet command can be used to show the state of the Ethernet interface, while the show interface gigaethernet command can be used to show the state of the gigabit-Ethernet interface.

2.3.2 Setting the Rate

The Ethernet rate can be realized not only through auto-negotiation but also through interface configuration.

Command	Function
Speed {10|**100**|**1000**|**10000**|**auto}**	Sets the rate of fast Ethernet to 10M, 100M, 1000M or auto-negotiation.
No speed	Resumes the default settings. The rate is auto-negotiation.

Note:

The speed of the optical interface is fixed. For example, the speeds of GBIC and GE-FX are 1000M, while the speed of FE-FX is 100M. If the speed command for an optical interface has the auto parameter, the optical interface has the automatic negotiation function, or the optical interface is mandatory and cannot be negotiated.

2.3.3 Setting the Duplex Mode of an Interface

By default, the Ethernet interface can be auto, half duplex or full duplex. The duplex mode for the gigbit interface is always auto.

Command	Function
duplex {full|half|auto}	Sets the duplex mode of an Ethernet interface.
No duplex	Resumes the default settings. The duplex mode is auto-negotiation.

2.3.4 Setting Flow Control on an Interface

When an interface is in full duplex mode, flow control is realized through the 802.3X-defined PAUSE frame; when an interface is in half duplex mode, flow control is realized through backpressure.

Command	Usage Guidelines
flow-control on/off /atuo	Enables or disables flow control on an interface.
no flow-control	Resumes the default settings, that is, there is no flow control on an interface.

2.4 Configuring Logical 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

- Configuring SuperVLAN interface

2.4.1 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 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	Usage Guidelines
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 example 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

2.4.2 Configuring Loopback Interface

The loopback interface is a logical 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	Usage Guidelines
interface loopback *number*	Enter the loopback interface configuration state.

2.4.3 Configuring Aggregation Interface

The aggregator interface is introduced in the background that the bandwidth of a single Ethernet interface is insufficient. It can bind together multiple full-duplex interfaces of the same rate to multiply the bandwidth.

Run the following command to define the aggregation interface:

Command	Function
Interface port-aggregator *number*	Configuring aggregation interface

2.4.4 Configuring VLAN Interface

VLAN interface is the routing interface in switch. TheVLANcommand 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	Function
Interface vlan *number*	Configuring VLAN interface

2.4.5 Configuring SuperVLAN 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.

Run the following command to define Super VLAN interface:

Command	Function
Interface superVLAN *number*	Configuring the superVLAN interface

Chapter 3 Interface Configuration Example

3.1 Configuring Public Attribute of Interface

3.1.1 Example for Interface Description

The following example shows how to add a description for an interface.

interface vlan 1
ip address 192.168.1.23 255.255.255.0

3.1.2 Example of Interface Shutdown

The following example shows how to disable GigaEthernet   interface 0/1.

interface GigaEthernet0/1
shutdown

The following example shows how to restart the interface.

interface GigaEthernet0/1
no shutdown