Interface Configuration Commands

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Chapter 1 **Interface Configuration Commands**

Basic commands for different interface types are described in this document. For detailed configuration, see the content in the following table:

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General interface	Interface Configuration Introduction
Ethernet interface	Configuring the Ethernet Interface
Serial interface	Configuring Serial Interface
Logic interface	Configuring Logic Interface
Dialer interface	Configuring Dialer Interface
E1 interface	Configuring E1 Interface

1.1   Interface Configuration Commands

The interface configuration commands include:

- async mode
- bandwidth
- channel-group
- clock
- controller E1
- description
- duplex
- encapsulation
- framing
- interface
- linecode
- mtu
- physical-layer mode
- physical-layer speed
- physical-interface fiber
- show interface
- shutdown (E1 controller)
- shutdown (interface)
- speed
- tunnel

1.1.1 async mode

To set the communication mode of the asynchronous port, run the following command:

[**no**] **async mode** [*interactive | dedicated*] [*reverse-telnet*]

Parameter

Parameter	Description
interactive	Uses the port as a command-interactive port. All users connecting the port through the back-to-back cable or the Modem dialer connection can configure the router (similar to the console port).
dedicated	The port can be generally used in package mode of the link layer, such as PPP.
reverse-telnet	Enables the port for reverse telnet. It is configured only after the **interactive** parameter is configured.

Default

None

Command mode

Port configuration mode (asynchronous)

Example

router_conf_s1/0#physical-layer mode async
router_conf_s1/0#async mode interactive

The previous example shows how to modify port S1/0 to the interactive mode. Port S1/0 corresponds to an asynchronous line, line tty 1. You can perform corresponding configuration on line tty 1.

1.1.2 bandwidth

To configure the bandwidth value, run **bandwidth** *kilobps*. You can run **no terminal length** to resume the default value.

bandwidth *kilobps*

no bandwidth

Parameter

Parameter	Description
Kilobps	Set bandwidth whose unit is kilobps For the Ethernet interface, the entered value is 10,000.

Default

The default bandwidth value is set during interface creation. You can run **show interface** to display relative information about the interface or run **bandwidth** *?* to show information in the "<minimum value-maximum value [current value]>" format.

Command mode

Interface configuration mode

Instruction

The **bandwidth** command is set with only one information parameter. You cannot use this command to set the actual bandwidth of the interface. For some media such as Ethernet, the bandwidth is fixed. For other media such as serial line, you can modify the actual bandwidth by rearranging the hardware. For these two types of media, you can run **bandwidth** to transmit the current bandwidth to the upper-layer protocol.

Note:

It is a routing parameter which does not affect the actual communication rate of the physical interface. You need **physical-layer speed** to set the actual communication run rate.

Example

The following example shows how to set the bandwidth of the E1 port.

```
!
interface serial
 1/0 bandwidth
 2000
!
```

Related command

show interface

physical-layer speed

1.1.3   channel-group

To configure the channel of the E1 port, run **channel-group**. The channel can occupy any undistributed time slot and merge any time slot. After the E1 channel is configured, new interface is generated. You can use the "no" form of the command to clear the channel and the corresponding interface.

channel-group *channel-group* **timeslots** { *number | number1-number2* } [,*number | number1-number2* ...]

no channel-group *channel-group*

Parameter

Parameter	Description
channel-group	Number of the E1 channel, ranging between 0 to 30

number,number1,n umber2...	Number of the E1 time slot, ranging between 1 and 31. It can be arranged randomly.

Default

None

Command mode

E1 configuration mode

Instruction

Under the channelized mode of the E1 interface, after the **channel-group** parameter is configured, the system generates a new interface. The logic characteristics of the new interface are same to those of the synchronous port. Its name is **serial<slot>/<group>:<channel-group>** among which **<slot>/<group>** is same to **controller E1 <slot>/<group>**.

Under the unchannelized mode of the E1 interface, the system generates a new interface. Its name is **serial<slot>/<group>:0**.

You can encapsulate the link-layer protocols such as PPP and HDLC.

Example

The following example shows how to configure one channel:

Router_config#controller E1 2/0

Router_config_controller_E1_2/0#channel 0 timeslots 1-31

Router_config_controller_E1_2/0#interface s2/0:0

Router_config_interface_s2/0:0#

The following example shows how to delete channel 0:

Router_config#controller E1 2/0

Router_config_controller_E1_2/0#no channel 0

Related command

controller E1

1.1.4   clock

To configure the synchronous mode of the link, run **clock**. You can use the "no" form of the command to resume the default synchronous signal.

clock {*external|internal***}**

no clock

Parameter

Parameter	Description
external	Sets the synchronous signal of the reception line for the link.

internal	Sets the synchronous signal within the chip for the link.

Default

The synchronous signal of the reception line is used.

Command mode

E1 configuration mode

Example

The following example shows how to set the synchronous signal within the chip for the link:

Router_config#controller E1 2/0
Router_config_controller_E1_2/0#clock internal

Related command

None

1.1.5   controller E1

To configure the E1 interface, run **controller E1**.

controller E1 <***slot***>/<***group***>

Parameter

Parameter	Description
slot	Number of the slot where the E1 controller lies
group	Number of the link of the E1 controller

Default

None

Command mode

Global configuration mode

Instruction

To configure the E1 interface, you need run **controller E1** in global configuration mode to enter the E1 configuration mode.

Example

The following example shows how to configure E1 2/0.

Router_config#controller E1 2/0
Router_config_controller_E1_2/0#

Related command

framing

channel-group

1.1.6 delay

To set the delay of the interface, run **delay**. You can run **no delay** to resume the default value.

delay *tens-of-microseconds*

no delay

Parameter

Parameter	Description
tens-of-microsecon ds	Delay of the designated interface, whose unit is ten microseconds

Default

The default delay is set during interface creation. You can run **show interface** to display relative information about the interface or run **delay** *?*to show information in the "<minimum value-maximum value [current value]>" format.

Command mode

Interface configuration mode

Instruction

The **delay** command is set with only one information parameter. You cannot use this command to set the actual delay of the interface. The **delay** command is used only when the configured delay is transferred to the upper-level protocol.

Example

The following example shows how to set the serial interface 1/2 to a delay of 3000 microseconds:

```
!
interface serial 1/2
delay 300
!
```

Related command

show interface

1.1.7 description

To set the description of the interface, run **description**. To delete the description information about the interface, run **no description**.

description *line*

no description

Parameter

Parameter	Description
line	Description of the designated interface, which can be random characters

Default

The description of the interface is null.

Command mode

Interface configuration mode

Instruction

The **description** command is used to set the description of the interface which does not affect any function of the interface. You can run **show interface** or **show running-config** to display the interface's description information.

Example

The following example shows how to set the description of serial interface 1/2:

!
interface serial 1/2 description
Connect to Beijing
!

Related command

show interface

show running-config

1.1.8 duplex

To set the duplex mode of the Ethernet interface, run **duplex**. You can run **no duplex** to resume the default value.

duplex duplex-type

Parameter

Parameter	Description
duplex-*type*	Duplex type, which can be half-duplex or full-duplex

Default

The default duplex is related with the speed of the interface. For example, if the fast Ethernet is auto-adaptation, the command is invalid; if the Ethernet interface is a 10M one, it is in half-duplex mode.

Command mode

Interface configuration mode

Instruction

The command is used after the system enters the corresponding interface configuration mode.

Example

The following example shows how to set the full-duplex mode of the 10M Ethernet interface 1/0:

!
interface ethenet
1/0 duplex full
!

The following example shows how to set the default duplex mode of the 10M Ethernet interface 1/0:

!
interface ehenet 1/0
no duplex
!

Related command

speed

1.1.9   encapsulation

To set the encapsulation protocol of the interface, run **encapsulation**. You can run **no encapsulation** to resume the default value.

encapsulation encapsulation-type

Parameter

Parameter	Description
encapsulation-type	Encapsulation type, which can be one of the following types:
	Hdlc: the HDLC protocol of the serial interface, which provides the synchronous frame and error check to the HDLC protocol without the window-free or retransmission-free mechanism
	Ppp: the PPP protocol, which is used for serial interfaces
	Sdlc: the SDLC protocol for the serial interface
	Dot1Q: the encapsulation type of Ethernet sub-interface (used for Ethernet

	sub-interface)

Default

The default protocol is related with the interface type. For example, the default protocol of the synchronous serial interface is HDLC, while that of the asynchronous interface and the dialer interface is PPP.

Command mode

Interface configuration mode

Instruction

To support multiple encapsulations simultaneously, you can run **autoselect**. To see the main encapsulation of the interface, you can run **show interface**. The command is valid only on the serial interface.

Example

The following example shows how to set the PPP encapsulation on the serial interface 1/1:

!
interface serial 1/1
encapsulation ppp
!

The following example shows how to set the default encapsulation of the Ethernet interface 1/0:

!
  interface GigaEthernet0/1.1
   ip address 1.1.1.1
   255.255.255.0 no ip directed-
   broadcast encapsulation dot1Q
   2 bandwidth 1000000
   delay 1

Related command

show interface

1.1.10   framing

To configure the link checkup method, run **framing**. To resume the crc4 checkup of the link, run **no framing**.

framing {*crc4 | no-crc4*}

no framing

Parameter

Parameter	Description

crc4	Sets the link checkup method to **crc4**.
no-crc4	Sets the link checkup method not to be **crc4**.

Default

The crc4 checkup is used.

Command mode

E1 configuration mode

Instruction

None

Example

The following example shows how to set the crc4 checkup of the link:

Router_config#controller E1 2/0
Router_config_controller_E1_2/0#framing crc4

Related command

None

1.1.11 interface

To configure the interface type and enter the interface configuration mode, run **interface**. To delete the interface or initialized interface, run **no interface**.

interface type interface-number

To configure the sub-interface, run the following command in global configuration mode:

interface serial *slot/port.subinterface-number* {multipoint | point-to-point}

Parameter

Parameter	Description
type	Interface type which is designated for configuration
interface-number	Number of the logic interface
slot	Number of the slot or card
port	Number of the port of the slot or card
channel-group	Sets the number of the E1 channel group ranging between 0 and 30.
subinterface-number	Number of the sub-interface ranging between 1 and 32767
multipoint| **point-to-point**	Specifies the point-to-multipoint or point-to-point interface. The parameter must be specified with a value for it has no default value.

Default

No interface is configured.

Command mode

Global configuration mode

Instruction

The sub-interface can be used to configure the full-connection-free frame-relay network.

Table 1-1 Keyword and corresponding description of the interface type

Keyword	Type
async	Asynchronous interface
gigaEthernet	1000M Ethernet interface
fastethernet	fast-Ethernet port
loopback	Loopback interface which is realized by software and always enabled in simulation **interface-number** stands for the number of the to-be-configured loopback interface.
null	Null interface
serial	Serial interface
Multilink	Multilink interface
Virtual-template	Virtual-template interface
Virtual-tunnel	Virtual-tunnel interface
Tunnel	Tunnel interface

For the physical interface and the sub-interface, run **no interface** to resume the default configuration of the interface. For other interfaces, run **no interface** to delete them.

Example

The following example shows how to use PPP to encapsulate serial interface 1/0:

```
!
interface serial 1/0
  encapsulation ppp
!
```

The following example shows how to configure the loopback interface and distribute an IP address and mask for the interface:

```
!
interface loopback 0
ip address 192.168.1.1 255.255.255.0
!
```

The following example shows how to use PPP to encapsulate channel group 0 of E1 link:

```
  !
```

```
        controller E11 2/0 channel-
          group 0 timeslots 1-31
        !
        interface serial 2/0:0
          ip address 192.168.3.1 255.255.255.0
          encapsulation ppp
        !
```

Related command

show interface

1.1.12   linecode

To configure the link encoding mode, run **linecode**. To resume the hdp3 encoding of the link, run **no linecode**.

linecode{ **hdb3| ami**}

no linecode

Parameter

Parameter	Description
hdb3	Sets the link to adopt the HDB3 encoding.
Ami	Sets the link to adopt the AMI encoding.

Default

The HDB3 encoding is used.

Command mode

E1 configuration mode

Instruction

None

Example

The following example shows how to set the hdb3 encoding of the link:

Router_config#controller E1 2/0
Router_config_controller_E1_2/0#linecode hdb3

Related command

None

1.1.13 mtu

To adjust the maximum group size or MTU size, run **MTU**. To resume the default MTU value, run **no mtu**.

mtu *bytes*

no mtu

Parameter

Parameter	Description
bytes	Size of the required MTU (unit: byte)

Default

Except that the MTU of the loopback interface is 1514 bytes, the default MTU of other interfaces is 1500 bytes.

Command mode

Interface configuration mode

Instruction

In general, the default value of each interface is the MTU for the interface type. The MTU size is changing among the values larger than 68 bytes on the serial interface. You can run **show interface** to browse the current MTU configuration. If you run **mtu ?**, the information will be shown in the "<minimum value-maximum value [current value]>" format.

Note:

The MTU value change through the **mtu** command will affect the value of the specific version of the protocol (such as ip mtu). In the case that the value specified by the **ip mtu** command is same to the value specified by the **mtu** command, **ip mtu** will automatically match the new MTU if the value of the **mtu** command is changed. However, if the value the **ip mtu** command is modified, the value of the **mtu** command will not be affected.

Example

The following example shows how to specify the 576-byte MTU.

```
!
interface serial 1/0
mtu 576
!
```

Related command

ip mtu

1.1.14 physical-layer mode

To specify the asynchronous/synchronous mode of the serial interface, run **physical-layer mode**. To resume the default synchronous mode of the interface, run

no physical-layer mode. (Interface created by HIC only supports the synchronic mode)

physical-layer mode {**sync |**

async} **no physical-layer mode**

Parameter

Parameter	Description
sync	Sets the interface to the synchronous mode.
async	Sets the interface to the asynchronous mode.

Default

Synchronous mode

Command mode

Interface configuration mode

Instruction

When an interface is in asynchronous mode, it supports all commands available for the standard asynchronous interface. When the synchronous/asynchronous mode is switched each other, the encapsulation protocol which does not exist in new mode will be permanently deleted. If all these things do not exist, the encapsulation turns to be the default encapsulation in new mode.

Example

The following example shows how to change a serial interface from the synchronous mode to the asynchronous mode:

```
!
interface serial 1/2 physical-
layer mode async
!
```

Related command

None

1.1.15 physical-layer speed

To specify the rate of the serial interface, run **physical-layer speed**.

physical-layer speed *speed*

Parameter

Parameter	Description
speed	Rate of the interface

Table 1-2 Rates of the synchronous/asynchronous interface

Synchronous Interface	Asynchronous Interface
1200, 2400, 4800, 9600, 14400, 19200, 38400, 64000, 115200, 128000, 256000, 512000, 1024000, 2048000	1200, 2400, 4800, 9600, 14400, 19200, 38400, 57600, 115200

Default

The default rate in synchronous mode is 64000bps.

The default rate in asynchronous mode is 9600bps.

Command mode

Interface configuration mode

Instruction

The baud rate of the asynchronous serial ports at the ends of the asynchronous serial line must be set to be same. After the synchronous mode is changed to the asynchronous mode, the router automatically sets the baud rate to 9600 bps.

When two serial ports connect, the baud rate of the line is decided by the DCE side of the line. Hence, when the synchronous serial port works under the DCE mode, the baud rate need be set; when the synchronous serial port works under the DTE mode, the baud rate need not be set. After the asynchronous mode is changed to the synchronous mode, the router automatically sets the baud rate to 64000 bps.

Example

The following example shows how to set the rate of the serial interface to 57600 bps:

```
!
interface serial 1/2 physical-
 layer speed 57600
!
```

Related command

physical-layer mode

1.1.16   physical-interface   fiber

To configure the optical port mode of the Ethernet, run **physical-interface** in global configuration mode.

Parameter

None

Default

None

Command mode

Interface configuration mode

Instruction

The command is run in configuration mode of the corresponding port.

Example

None

Related command

None

1.1.17   show interface

To configure the interface state, run **show interface** in global configuration mode.

show interface

show interface type *interface-number*

show interface type *slot*/*port* (used on the router with the unchannelized E1 interface)

show interface serial *slot*/*port*:*channel-group* (used for the unchannelized E1 interface)

Parameter

Parameter	Description
type	Interface type which is designated for configuration
interface-number	Number of the logic interface
slot	Number of the slot or card
port	Number of the port
channel-group	Number of the E1 channel group defined by the **channel-group** command, whose value ranges between 0 and 30

Default

None

Command mode

EXEC

Instruction

If the **show interface** command has no any parameter followed, the information about all interfaces is shown.

Example

None

Related command

None

1.1.18 shutdown (E1 controller)

To Disable the E1 interface, run **shutdown**. To restart up the disabled E1 interface, run **no shutdown**.

shutdown

no shutdown

Parameter

None

Default

All interfaces are enabled.

Command mode

E1 configuration mode

Instruction

The **shutdown** command is used to disable all functions on the specified E1 interface.

Example

The following example shows how to Disable interface E1 1/0.

Router_config#controller E1 2/0
Router_config_controller_E1_2/0#shutdown

The following example shows how to restart up the interface:

Router_config#controller E1 2/0
Router_config_controller_E1_2/0#no shutdown

Related command

None

1.1.19 shutdown (interface)

To disable an interface, run **shutdown (interface)**. To restart up the disabled interface, run **no shutdown**.

shutdown

no shutdown

Parameter

None

Default

All interfaces are enabled.

Command mode

Interface configuration mode

Instruction

The **shutdown** command is used to disable all functions on the specified CPOS interface. On the serial interface, the command reduces the power of the DTR signal. At the same time, the command is also used to label which interface is unavailable. To check up whether the interface is disabled, run **show interface**. The disabled interface is displayed as "administratively down".

Example

The following example shows how to diable fast Ethernet interface 1/1:

```
!
interface fastEthernet 1/1
shutdown
!
```

The following example shows how to restart up the interface:

```
!
interface fastEthernet 1/1
no shutdown
!
```

Related command

show interface

1.1.20 speed

To configure the Ethernet, run **speed**. You can run **no speed** to resume the default configuration.

speed (**10|100**)

no speed

Parameter

Parameter	Description
10	Specifies the fast-Ethernet port to work under the 10M mode.
100	Specifies the fast-Ethernet port to work under the 100M mode.

Default

Auto-adaptation

Command mode

Interface configuration mode

Instruction

None

Example

The following example shows how to configure Fast-Ethernet interface 1/0 to work under the 10M mode.

!
interface fastethernet 1/0
speed 10
!

The following example shows how to resume the interface to auto-adaptation:

!
interface fastethernet 1/1
no speed
!

Related command

None

1.1.21 tunnel

To configure relative parameters of the tunnel interface, run **tunnel**. To resume the default values of these parameters, run **no tunnel**.

tunnel { **checksum** | **destination** *ip-address* | **duplicate** | **key** *key-number* | **mode** *type* | **source** *{ip-address | interface}* | **vrf** *vrf-name* | **speed-up** }

no tunnel { **checksum** | **destination** | **key** | **mode** | **sequence-datagrams** | **source** | **vrf** *vrf-name* | **speed-up** }

Parameter

Parameter	Description
checksum	Specifies the end-to-end packet checkup.

destination	Configures the destination address of the tunnel.
key	Configures the key of the tunnel.
key-number	Number of the key in the decimal system
mode	Configures the encapsulation protocol of the tunnel.
type	Type of the encapsulation protocol gre ip : GRE ipip : IP
source	Configures the source address of the tunnel.
interface	Interface of the current router
vrf	Configures the VRF member.
speed-up	Checks the validity of speed-up route

Default

Default	Description
checksum	Disable
destination	Disable
key	None
mode	Gre/ip encapsulation protocol
source	None
vrf	None
Speed-up	Enable

Command mode

Interface configuration mode (exists only on the tunnel interface)

Instruction

The **tunnel** command only exists on the tunnel interface. To run a protocol of the tunnel interface (protocol up), the following parameters must be configured:

- IP address of the interface

- Source address of the tunnel

- Destination address of the tunnel

The valid route to reach the destination address of the tunnel must exist.

On the current version, the encapsulation protocols that the tunnel supports include GRE and IPIP.

After the GRE protocol is configured, you can identify the VRF routes through configuring different KEY values if the tunnel interface with the same destination and source addresses.

Example

The following example shows how to enable tunnel interface 100:

```
!
interface fastEthernet1/1
  ip address 10.1.1.1 255.255.255.0
!
interface Tunnel100
  ip address 192.168.20.202 255.255.255.0
  tunnel source fastEthernet1/1
  tunnel destination 10.1.1.2
!
```

Because the default encapsulation protocols for the tunnel interface are GRE or IP, the commands to resume the default encapsulation protocols for the tunnel interface are same to the commands to configure the GRE or IP protocol.

```
router_config#interface Tunnel100
router_config_t100#no tunnel mode
```

Same to

```
router_config#interface Tunnel100
router_config_t100#tunnel mode gre ip
```

Related command

interface tunnel