QTECH
МИР ДОСТУПНЕЕ

РУКОВОДСТВО ПОЛЬЗОВАТЕЛЯ

Ethernet Configuration Commands

Оглавление

1. INTERFACE COMMANDS

1.1. bandwidth

Use this command to set the bandwidth on the interface. Use the **no** form of this command to restore the default setting.

bandwidth *kilobits*

no bandwidth

Parameter Description

Parameter	Description
kilobits	Bandwidth per second, in the unit of Kbps.

Defaults

If this command is not configured on the interface, use the show interface command to display the default setting in privileged EXEC mode.

Command Mode

Interface configuration mode

Usage Guide

This command does not affect the actual bandwidth on the interface. Instead, it is used to display the system the bandwidth specification. By default, the bandwidth is determined by the actual link rate on the interface. It can be set by the user as well.

Configuration Examples

The following example sets the bandwidth on the interface to 64 Kbps.

```
QTECH(config)#interface gigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)# bandwidth 64
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

carrier-delay

Use this command to set the carrier delay on the interface. Use the no form of this command to restore the default value.

carrier-delay { [*milliseconds*] *num* | **up** [*milliseconds*] *num* **down** [*milliseconds*] *num*}

no carrier-delay

Parameter Description

Parameter	Description
num	(Optional) in the range from 0 to 60 in the unit of seconds.
milliseconds	(Optional) in the range from 0 to 60000 in the unit of milliseconds.
up	(Optional) Configures the delay after which DCD changes from Down to Up in status.
down	(Optional) Configures the delay after which DCD changes from Up to Down in status.

Defaults

The default is 2 seconds.

Command Mode

Interface configuration mode

Usage Guide

This parameter refers to the delay after which the carrier detection signal DCD of the interface link changes from the Down status to the Up status or vice versa. If the DCD changes within the delay, the system will ignore such changes without disconnecting the upper data link layer for renegotiation. If the DCD carrier is disconnected for a long time, the parameter should be set longer to accelerate route aggregation so that the routing table can be converged more quickly. On the contrary, if the DCD carrier interruption period is shorter

than the time used for route aggregation, you should set the parameter to a higher value to avoid unnecessary route vibration.

Configuration Examples

The following example sets the carrier delay of serial interface to 5 seconds.

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config)# carrier-delay 5
```

The following example sets the carrier delay of serial interface to 100 milliseconds.

```
QTECH(config)# interface GigabitEthernet 1/1
QTECH(config-if-GigabitEthernet 1/1)#carrier-delay milliseconds 100
```

The following example sets the DCD delay from Down to Up in status to 100 milliseconds and from Up to Down to 200 milliseconds.

```
QTECH(config)# interface GigabitEthernet 1/1
QTECH(config-if-GigabitEthernet 1/1)# carrier-delay up milliseconds 100 down milliseconds 200
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

1.2. clear counters

Use this command to clear the counters on the specified interface.

clear counters [*interface-type interface-number*]

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and interface ID

Defaults

N/A

Command Mode

Privileged EXEC mode.

Usage Guide

In the privileged EXEC mode, use the **show interfaces** command to display the counters or the **clear counters** command to clear the counters. If the interface is not specified, the counters on all interfaces will be cleared.

Configuration Examples

Related Commands

Platform Description

The following example clears the counters on interface gigabitethernet 1/1.

```
QTECH# clear counters gigabitethernet 1/1
```

Command	Description
show interfaces	Displays the interface information.

N/A

1.3. clear interface

Use this command to reset the interface.

clear interface *interface-type interface-number*

Parameter Description

Parameter	Description
interface-type interface-number	Interface type and interface ID

Defaults

N/A

Command Mode

Privileged EXEC mode.

Usage Guide

This command is only used on the switch port, member port of the L2 Aggregate port, routing port, and member port of the L3 aggregate port. This command is equal to the shutdown and no shutdown commands.

Configuration Examples

Related Commands

Platform Description

The following example resets the interface gigabitethernet 1/1.

```
QTECH# clear interface gigabitethernet 1/1
```

Command	Description
shutdown	Disables the interface.

N/A

1.4. description

Use this command to configure the alias of interface. Use the **no** form of this command to restore the default setting.

description *string*

no description

Parameter Description

Parameter	Description
string	Interface alias

Defaults

No alias is configured by default.

Command Mode

Interface configuration mode.

Usage Guide

Use **show interfaces** to display the interface information, including the alias.

Configuration Examples

The following example configures the alias of interface.
```
QTECH(config)# interface GigabitEthernet 1/1
QTECH(config-if-GigabitEthernet 1/1)# carrier-delay up milliseconds 100 down milliseconds 200
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description

N/A

1.5. duplex

Use this command to specify the duplex mode for the interface. Use the **no** form of this command to restore the default setting. **duplex** { **auto** | **full** | **half** } **no duplex**

Parameter Description

Parameter	Description
auto	Self-adaptive full duplex and half duplex
full	Full duplex
half	Half duplex

Defaults

The default is **auto**,

Command Mode

Interface configuration mode.

Usage Guide

The duplex mode is associated with the interface type. Use **show interfaces** to display the duplex mode of the interface

Configuration Examples

Related Commands

Platform Description

The following example specifies the duplex mode for the interface.

```
QTECH(config-if)# duplex full
```

Command	Description
show interfaces	Displays the interface information.

N/A

1.6. errdisable recovery

Use this command to recover the interface in violation.

errdisable recovery [interval *time*]

Parameter Description

Parameter	Description
time	Time for the command to take effect. The range is from 30 to 86,400 seconds.

Defaults

N/A

Command Mode

Interface configuration mode.

Usage Guide

Use the command to recover the port that triggers violation after being configured with the violation shutdown command.

Configuration Examples

The following example recovers the violation interface gigabitethernet 1/1.

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if)# errdisable recovery
```

Related Commands

Command	Description
switchport port-security violation shutdown	Configures the port security violation to shutdown.

Platform Description

1.7. fec mode

Use this command to enable or disable the FEC function.

fec mode {rs | base-r | none | auto}

Use the **no** form of this command to restore the default value.

no fec mode

Parameter

Parameter	Description
rs	Indicates the RS mode for enabling the FEC function.
base-r	Indicates the base-r mode for enabling the FEC function.
none	Disables the FEC function.
auto	Indicates FEC function self-adaption, that is, the system determines whether to enable the FEC function based on the optical module and rate.

Description

Defaults

The default configuration depends on the product model.

Command Mode

Interface configuration mode

Default Level

14

Usage Guide

When one end runs FEC function, the other end should enable it, too.

On the premise of not affecting the negotiation status of the two ends, we suggest you NOT to: enable FEC function on the QSFP28-100G-LR4 optical module, on which FEC function is disabled by default.

disable FEC function on QSFP28 modules (except QSFP28-100G-LR4), on which FEC function is enabled by default.

Configuration Examples

The following example forcibly enables the FEC function on Interface HundredGigabitEthernet 1/1.

```
QTECH(config)# interface HundredGigabitEthernet 1/1
QTECH(config-if- HundredGigabitEthernet 1/1)# fec mode rs
```

The following example forcibly enables the FEC function on Interface TFGigabitEthernet 2/1.

```
QTECH(config)# interface TFGigabitEthernet 2/1
QTECH(config-if- TFGigabitEthernet 2/1)# fec mode base-r
```

1.8. fiber antifake enable

Use this command to enable or disable the optical module antifake detection. Use the **no** form of this command to restore the default setting.

fiber antifake {ignore | enable} no fiber antifake enable

Parameter Description

Parameter	Description
ignore	Disables the optical module antifake detection.
enable	Enables the optical module antifake detection.

Defaults

By default, optical module antifake detection is disabled.

Command Mode

Global configuration mode

Usage Guide

If the optical module antifake detection is enabled by default, when a non-original optical module is inserted, alarm logs are printed.Configuration Examples

Related Commands

Platform Description

The following example enables the optical module antifake detection.

```
QTECH(config)# fiber antifake enable
```

Command	Description
N/A	N/A

N/A

flowcontrol

Use this command to enable or disable the flow control. Use the **no** form of this command to restore the default setting.

flowcontrol { **auto** | **off** | **on**}

no flowcontrol

Parameter Description

Parameter	Description
auto	Self-negotiates the flow control.
off	Disables the flow control.
on	Enables the flow control.

Defaults This function is disabled by default.

Command Mode

Interface configuration mode.

Usage Guide

Use the **show interfaces** command to display the flow control configuration.

Configuration Examples

The following example enables flow control on fastEthernet port 1/1.

```
Qtech(config)# interface gigabitethernet 1/1
Qtech(config-if)# flowcontrol on
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description

N/A

1.9. interface

Use this command to enter the interface configuration mode.

interface *interface-type interface-number*

Parameter Description

Parameter	Description
interface-type	The interface type.
interface-number	The interface ID.

Defaults

N/A

Command Mode

Global configuration mode

Usage Guide

This command is used to enter interface configuration mode. The user can modify the interface configuration next,

Configuration Examples

The following example enters configuration mode on Aggregateport 1.

```
QTECH(config)# interface Aggregateport 1
QTECH(config-if-Aggregateport 1)#
```

The following example enters configuration mode on GigabitEthernet 1/2.

```
QTECH(config)# interface GigabitEthernet 1/2
QTECH(config-if-GigabitEthernet 1/2)#
```

The following example configuration mode on VLAN 1.

```
QTECH(config)# interface vlan 1
QTECH(config-if-VLAN 1)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

1.10. interface range

Use this command to enter interface configuration mode on multiple interfaces.

interface range { *port-range* | **macro** *macro_name* }

Use this command to define the macro name of the **interface range** command.

define interface-range *macro_name*

Parameter Description

Parameter	Description
port-range	The interface type and ID range, entered in the form of *interface-type slot-number/interface-number*. The interface can be either an Ethernet physical interface or a loopback interface.
macro *macro_name*	The macro name which represents the interface

	range.

Defaults

The interface range command is disabled by default.

Command Mode

Global configuration mode

Usage Guide

Use the define interface-range command to define a range of interfaces as the macro name and then use the interface range macro macro_name command to enter interface configuration mode on multiple interfaces.

Configuration Examples

The following example enters interface configuration mode on multiple interfaces by setting the interface range.

```
QTECH(config)# interface range gigabitEthernet 0/0, 0/2
```

```
QTECH(config-if-range)# bandwidth 100
```

The following example enters interface configuration mode on multiple interfaces by defining the macro name.

```
QTECH(config)# define interface-range route1 gigabitEthernet 0/0-2
QTECH(config)# interface range macro route1
QTECH(config-if-range)# bandwidth 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

1.11. load-interval

Use this command to set the interval for calculating load on the interface. Use the no form of this command to restore the default setting.

load-interval *seconds*

no load-interval

Parameter Description

Parameter	Description
seconds	In the range from 5 to 600 in the unit of seconds.

Defaults

The default is 10.

Command Mode

Interface configuration mode

Usage Guide

This command is used to set the interval for calculating load on the interface. In general, the numbers of incoming and outgoing packets and bytes are calculated every 10 seconds. For example, if the parameter is set to 180 seconds, the following outcome is displayed when the show interface gigabitEthernet 0/1 command is run.

```
3 minutes input rate 15 bits/sec, 0 packets/sec
3 minutes output rate 14 bits/sec, 0 packets/sec
```

Configuration Examples

The following example sets the interval for calculating load on interface GigabitEthernet 0/1 to 180 seconds.

```
QTECH(config)# interface gigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)# load-interval 180
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

1.12. logging

Use this command to print information on the interface.

logging **[** link-updown **|** error-frame **|** link-dither **]**

Parameter Description

Parameter	Description
link-updown	Prints the status change information.
error-frame	Prints the error frame information.
link-dither	Prints the oscillation information.

Defaults

This function is enabled by default.

Command Mode

Global configuration mode

Usage Guide

N/A

Configuration Examples

The following example prints information on the interface..

```
QTECH(config)# logging link-updown
QTECH(config)# logging error-frame QTECH(config)#
logging link-dither
```

Command	Description
N/A	N/A

Platform Description

N/A

1.13. mtu

Parameter Description

Parameter	Description
num	64 to 9216 (or 65536, which varies by products)

Use this command to set the MTU supported on the interface.

mtu *num*

Defaults

The default is 1500.

Command Mode

Interface configuration mode.

Usage Guide

This command is used to set the maximum transmission unit (MTU) supported on the interface.

Configuration Examples

The following example sets the MTU supported on interface gigabitethernet 1/1 to 9000.

```
QTECH(config)# interface GigabitEthernet 1/1
QTECH(config-if-GigabitEthernet)# mtu 9000
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description

N/A

1.14. negotiation mode

Use this command to enable or disable auto-negotiation mode. Use the **no** form of this command to restore the default setting.

negotiation mode **{** on **|** off **}**

no negotiation mode

Parameter Description

Parameter	Description
on	Enables auto-negotiation.

off	Disables auto-negotiation.

Defaults

This function is disabled by default.

Command Mode

Interface configuration mode

Usage Guide

In general, the auto-negotiation status is determined by interface speed, duplex, and auto-negotiation factor mode.

Configuration Examples

The following example enables auto-negotiation mode on interface GigabitEthernet 1/1.

```
QTECH(config)# interface GigabitEthernet 1/1
QTECH(config-if-GigabitEthernet 1/1)# negotiation mode on
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

1.15. physical-port dither protect

Use this command to enable oscillation protection on the port.

physical-port dither protect

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is enabled by default.

Command Mode

Global configuration mode

Usage Guide

After you configure the **physical-port dither protect** command, the port will be shut down when the oscillation occurs for certain times.

If oscillation occurs on the port for 6 times within 2 seconds, a syslog will be printed. If syslog is printed for 10 consecutive times, the port will be shut down, If oscillation occurs on the port for over 10 times within 10 seconds, a syslog will be printed but the port will not be shut down.

Configuration Examples

Related Commands

Platform Description

The following example enables oscillation protection on the port.

```
QTECH(config)# physical-port dither protect
```

Command	Description
N/A	N/A

N/A

1.16. port speed-mode

Use this command to configure the work rate mode of a 25 Gbps port.

port speed-mode **{**25G | 10G **}**

Parameter

Parameter	Description
25G	Indicates that a 25 Gbps port works in 25 Gbps rate mode.

10G	Indicates that a 25 Gbps port works in 10 Gbps rate mode.

Description

Defaults

A 25 Gbps port works in 25 Gbps rate mode by default.

Command Mode

Interface configuration mode

Default Level

14

Usage Guide

1. Only 25 Gbps ports support this configuration. The four consecutive 25 Gbps ports of the same slot need to be set to work in the same rate mode.

Only 25 Gbps ports that work in the same rate mode can be added to the same aggregation group.

The **default interface** command will not clear the **port speed-mode** configuration of 25 Gbps ports.

Configuration Examples

The following example configures Interfaces TFGigabitEthernet 2/1 through TFGigabitEthernet 2/4 to work in 10 Gbps rate mode.

```
QTECH(config)# interface TFGigabitEthernet 2/2 QTECH(config-if-
TFGigabitEthernet 2/2)# port speed-mode 10G
Warning: Ports Tf2/1 - Tf2/4 will be set speed mode 10G. Continue? [Y/N]:Y
QTECH(config-if-TFGigabitEthernet 2/2)# end
```

1.17. protected-ports route-deny

Use this command to configure L3 routing between the protected ports.

protected-ports route-deny

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default..

Command Mode

Global configuration mode.

Usage Guide

The ports that are set as the protected ports can route on L3. Use this command to deny the L3 communication between protected ports. Use the **show running-config** command to display configuration.

Configuration Examples

The following example configures L3 routing between the protected ports.

```
QTECH(config)# protected-ports route-deny
```

Related Commands

Command	Description
show running-config	Displays the protected ports route-deny configuration.

Platform Description

N/A

1.18. show interfaces

Use this command to display the interface information and optical module information.

show interfaces [*interface-type interface-number*] [**description [up | down] | switchport | trunk**]

Parameter Description

Parameter	Description
interface-id *interface-number*	Interface (including Ethernet interface, aggregate port, SVI or loopback interface).
description	The description of the interface, including the link status.

switchport	Layer 2 interface information.
trunk	Trunk port, applicable for physical port and aggregate port.

Defaults

Command Mode

Privileged EXEC mode.

Usage Guide

This command is used to show all basic information if no parameter is specified.

Configuration Examples

The following example displays the interface information when the Gi0/1 is a Trunk port.

```
SwitchA#show interfaces gigabitEthernet 0/1
Index(dec):1 (hex):1
GigabitEthernet 0/1 is DOWN , line protocol is DOWN Hardware
is Broadcom 5464 GigabitEthernet
Interface address is: no ip address MTU 1500
  bytes, BW 1000000 Kbit
  Encapsulation protocol is Bridge, loopback not set Carrier
  delay is 2 sec
  RXload is 1 ,Txload is 1 Queueing
  strategy: FIFO
    Output queue 0/0, 0 drops; Input
    queue 0/75, 0 drops
  Switchport attributes:
    interface's description:""
    medium-type is copper
    lastchange time:0 Day: 0 Hour: 0 Minute:13 Second Priority
    is 0
    admin duplex mode is AUTO, oper duplex is Unknown admin
    speed is AUTO, oper speed is Unknown
flow receive control admin status is OFF,flow send control admin status is OFF,flow receive
control oper status is Unknown,flow send control oper status is Unknown broadcast Storm
Control is OFF,multicast Storm Control is OFF,unicast Storm Control is OFF
 Port-type: trunk Native
   vlan:1
Allowed vlan lists:1-4094 Active
vlan lists:1, 3-4
  5 minutes input rate 0 bits/sec, 0 packets/sec
```

```
  5 minutes output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer, 0 dropped Received
    0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 abort
    0 packets output, 0 bytes, 0 underruns , 0 dropped
0 output errors, 0 collisions, 0 interface resets
```

The following example displays the interface information when the Gi0/1 is an Access port.

```
SwitchA#show interfaces gigabitEthernet 0/1
Index(dec):1 (hex):1
GigabitEthernet 0/1 is DOWN , line protocol is DOWN Hardware is
Broadcom 5464 GigabitEthernet
Interface address is: no ip address MTU 1500
  bytes, BW 1000000 Kbit
  Encapsulation protocol is Bridge, loopback not set Carrier
  delay is 2 sec
  RXload is 1 ,Txload is 1 Queueing
  strategy: FIFO
    Output queue 0/0, 0 drops; Input
    queue 0/75, 0 drops
  Switchport attributes:
    interface's description:"" medium-
    type is copper
    lastchange time:0 Day: 0 Hour: 0 Minute:13 Second Priority
    is 0
    admin duplex mode is AUTO, oper duplex is Unknown admin
    speed is AUTO, oper speed is Unknown
    flow receive control admin status is OFF,flow send control admin status is
OFF,flow receive control oper status is Unknown,flow send control oper status is Unknown
broadcast Storm Control is OFF,multicast Storm Control is OFF,unicast Storm Control is OFF
Port-type: access Vlan id :
2
  5 minutes input rate 0 bits/sec, 0 packets/sec
  5 minutes output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer, 0 dropped Received 0
    broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 abort
    0 packets output, 0 bytes, 0 underruns , 0 dropped
0 output errors, 0 collisions, 0 interface resets
```

The following example displays the layer-2 interface information when the Gi0/1 is a Hybrid port.

```
SwitchA#show interfaces gigabitEthernet 0/1
Index(dec):1 (hex):1
GigabitEthernet 0/1 is DOWN , line protocol is DOWN Hardware is
Broadcom 5464 GigabitEthernet
Interface address is: no ip address MTU 1500
  bytes, BW 1000000 Kbit
  Encapsulation protocol is Bridge, loopback not set Keepalive
  interval is 10 sec , set
  Carrier delay is 2 sec RXload is 1
  ,Txload is 1 Queueing strategy:
  FIFO
    Output queue 0/0, 0 drops; Input
    queue 0/75, 0 drops
  Switchport attributes:
    interface's description:"" medium-
    type is copper
    lastchange time:0 Day: 0 Hour: 0 Minute:13 Second Priority
    is 0
    admin duplex mode is AUTO, oper duplex is Unknown admin
    speed is AUTO, oper speed is Unknown
    flow receive control admin status is OFF,flow send control admin status is OFF,flow
receive control oper status is Unknown,flow send control oper status is Unknown
broadcast Storm Control is OFF,multicast Storm Control is OFF,unicast Storm Control is OFF
Port-type: hybrid Tagged vlan
id:2 Untagged vlan id:none
  5 minutes input rate 0 bits/sec, 0 packets/sec
  5 minutes output rate 0 bits/sec, 0 packets/sec
    0 packets input, 0 bytes, 0 no buffer, 0 dropped
    Received 0 broadcasts, 0 runts, 0 giants
    0 input errors, 0 CRC, 0 frame, 0 overrun, 0 abort
    0 packets output, 0 bytes, 0 underruns , 0 dropped
0 output errors, 0 collisions, 0 interface resets
```

Platform Description

The following example displays the layer-2 information of the Gi0/1.

```
QTECH# show interfacesgigabitEthernet  0/1 switchport
Interface Switchport ModeAccess Native Protected VLAN lists
--------------------------------------------------------------------------------
GigabitEthernet 0/1 enabled Access 11  Disabled  ALL
```

Command	Description
duplex	Duplex
flowcontrol	Flow control status.
interface gigabitEthernet	Selects the interface and enter the interface configuration mode.
interface aggregateport	Creates or accesses the aggregate port, and enters the interface configuration mode.
interface vlan	Creates or accesses the switch virtual interface (SVI), and enters the interface configuration mode.
shutdown	Disables the interface.
speed	Configures the speed on the port.
switchport priority	Configures the default 802.1q interface priority.
switchport protected	Configures the interface as a protected port.

N/A

1.19. show interfaces counters

Use this command to display the received and transmitted packet statistics.

show interfaces [*interface-type interface-number*] **counters** [**increment** | **drops | errors** | **rate** | **summary**] [*up* | *down*]

Parameter Description

Parameter	Description
interface-type *interface-number*	(Optional) The interface type and ID.

increment	Displays the packet statistics increased during the last sample interval.
drops	Displays dropped packet statistics.
errors	Displays error packet statistics.
rate	Displays packet receiving and transmitting rate.
summary	Displays packet statistics summary.
up	(Optional) Displays the port up statistics.
down	(Optional) Displays the port down statistics.

Defaults

N/A

Command

Any CLI mode

Mode

Usage Guide

If you do not specify an interface, the packet statistics on all interfaces are displayed.

Configuration

The following example displays packet statistics on interface GigabitEthernet 0/1.

Examples

```
QTECH#show interfaces GigabitEthernet 0/1 counters
Interface : GigabitEthernet 0/1
5 minute input rate : 9144 bits/sec, 9 packets/sec
5 minute output rate : 1280 bits/sec, 1 packets/sec
Rxload              : 1%
InOctets            : 17310045
InPkts              : 1000(Unicast: 10%, Multicast: 10%, Broadcast:
80%)
InUcastPkts          : 100
InMulticastPkts      : 100
InBroadcastPkts      : 800
Txload              : 1%
OutOctets           : 1282535
```

```
OutPkts            : 1000(Unicast: 10%, Multicast: 10%, Broadcast:
80%)
OutUcastPkts        : 100
OutMulticastPkts     : 100
OutBroadcastPkts     : 800
Undersize packets    : 0
Oversize packets     : 0
collisions          : 0
Fragments           : 0
Jabbers             : 0
CRC alignment errors : 0
AlignmentErrors      : 0
FCSErrors           : 0
dropped packet events (due to lack of resources): 0 packets received of length (in
octets):
64:46264
65-127: 47427
128-255: 3478
256-511: 658
512-1023: 18016
  1024-1518: 125
Packet increment in last sampling interval(5 seconds): InOctets   :
  10000
  InPkts             : 1000(Unicast: 10%, Multicast: 10%, Broadcast: 80%)
  InUcastPkts         : 100
  InMulticastPkts      : 100
  InBroadcastPkts      : 800
  OutOctets           : 10000
  OutPkts             : 1000(Unicast: 10%, Multicast: 10%, Broadcast: 80%)
  OutUcastPkts         : 100
  OutMulticastPkts     : 100
```

Rxload refers to the receive bandwidth usage and Txload refers to the Tx bandwidth usage. InPkts is the total number of receive unicast, multicast and broadcast packets. OutPkts is the total number of transmit unicast, multicast and broadcast packets.

Packet increment in last sampling interval (5 seconds) represents the packet statistics increased during the last sample interval (5 seconds).

The following example displays the packet statistics on interface GigabitEthernet 0/1 increased during the last sample interval.

```
QTECH#show interfaces GigabitEthernet 0/1 counters increment Interface :
GigabitEthernet 0/1
Packet increment in last sampling interval(5 seconds): InOctets   :
  10000
  InPkts             : 1000(Unicast: 10%, Multicast: 10%, Broadcast: 80%)
  InUcastPkts         : 100
  InMulticastPkts      : 100
  InBroadcastPkts      : 800
```

```
  OutOctets           : 10000
  OutPkts             : 1000(Unicast: 10%, Multicast: 10%, Broadcast: 80%)
  OutUcastPkts         : 100
  OutMulticastPkts     : 100
```

The following example displays error packet statistics on interface GigabitEthernet 0/1.

```
QTECH#show interfaces GigabitEthernet 0/1 counters increment
Interface    UnderSize    OverSize    Collisions
Fragments
……
Gi0/1        0            0           0             0

 Interface    Jabbers    CRC-Align- Err   Align- Err   FCS- Err
……
Gi0/1        0            0           0             0
```

UnderSize is the number of valid packets smaller than 64 bytes.

OverSize is the number of valid packets smaller than 1518 bytes. Collisions is the number of colliding transmit packets.

Fragments is the number of packets with CRC error or frame alignment error which are smaller than 64 bytes.

Jabbers is the number of packets with CRC error or frame alignment error which are smaller than 1518 bytes.

CRC-Align-Err is the number of receive packets with CRC error. Align_Err is the number of receive packets with frame alignment error. FCS-Err is the number of receive packets with FCS error.

The following example displays packet receiving and transmitting rate on interface GigabitEthernet 0/1.

```
QTECH#show interface gigabitEthernet 0/1 counters rate Interface
            Sampling Time        Input Rate          Input Rate Output
Rate        Output Rate
                                 (bits/sec)          (packets/sec)
(bits/sec)    (packets/sec)

Gi0/1 124    5 seconds          0                   23391
23
```

Sampling Time is the time when packets are sampled. Input rate is packet receiving rate and Output rate is packet transmitting rate.

The following example displays packet statistics summary on interface GigabitEthernet 0/1.

```
QTECH#show interface gigabitEthernet 0/1 counters summary
Interface    InOctets           InUcastPkts         InMulticastPkts
InBroadcastPkts
--------------------------------------------------------------------------------------------------------------------
-----------------------------------
```

```
Gi0/1        1475788005          1389              45880503
11886621
Interface     OutOctets           OutUcastPkts        OutMulticastPkts
OutBroadcastPkts
-------------------------------------------------------------------------------------------------------------------
-----------------------------------
Gi0/1         6667915             6382                31629
13410
```

InOctets is the total number of packets received on the interface. InUcastPkts is the number of unicast packets received on the interface. InMulticastPkts is the number of multicast packets

received on the interface. InBroadcastPkts is the number of broadcast packets received on the interface.

OutOctets is the total number of packets transmitted on the interface. OutUcastPkts is the number of unicast packets transmitted on the interface. OutMulticastPkts is the number of multicast packets transmitted on the interface. OutBroadcastPkts is the number of broadcast

packets transmitted on the interface.Related Commands

Platform Description

Command	Description
N/A	N/A

N/A

1.20. show interfaces link-state-change statistics

Use this command to display the link state change statistics, including the time and count.

show interfaces [*interface-type interface-number*] link-state-change statistics

Parameter Description

Parameter	Description
interface-type interface-number	The interface type and ID.

Defaults

N/A

Inteface	Description
Link state change times	The count of link state change.
Last change time	The time when the last link state change occurs.
Link-dither begin	The time when the last frequent dithers begin. “None” indicates no dither happens.
----------	Frequent dithers refer to six dithers happening within 2s.
Link-dither end	The time when the last frequent dithers end. “None” indicates no dither happens.

Privileged EXEC mode

Usage GuideIf you do not specify an interface, the link state statistics of all interfaces are displayed.

Configuration Examples

The following example displays the link state statistics of interface GigabitEthernet 0/1.

```
QTECH#show Interface Link-dither

int link-state-change statistics
 Link state  Link state change times   Last change time begin      Link-dither end

Te0/1       down none

0      2018-05-05 11:07:45  none
```

Related Commands

Platform Description

Command	Description
N/A	N/A

N/A

1.21. show interfaces status

Use this command to display interface status information.

show interfaces [*interface-type interface-number*] **status**

Parameter Description

Parameter	Description
interface-type *interface-number*	The interface type and ID.
status	Displays interface status information, including speed and duplex.

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

If you do not specify an interface, the status information of all interfaces is displayed.

Configuration Examples

Related Commands

Platform Description

Command	Description
N/A	N/A

The following example displays the status information of interface GigabitEthernet 0/1.

```
QTECH#show interfaces GigabitEthernet 0/1 status
Interface     Status Vlan   Duplex  Speed Type
       -
---------------------------------------------
GigabitEthernet 0/1   up       1         Full      1000M    copper
```

N/A

1.22. show interfaces status err-disable

Use this command to display the interface violation status.

show interfaces [*interface-type interface-number*] **status err-disable**

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) The interface type and ID.

Defaults

Command Mode

Any CLI mode

Usage Guide

If you do not specify an interface, violation status of all interfaces is displayed.

Configuration Examples

The following example displays the violation status of interface GigabitEthernet 0/1.

```
QTECH#show interface gigabitEthernet 0/1 status err-disabled
Interface                    Status          Reason
GigabitEthernet 0/1          err-disabled    BPDU Guard
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

1.23. show interfaces transceiver

Use this command to display transceiver information of the interface.

show interfaces [*interface-type interface-number*] transceiver [alarm | diagnosis]

Parameter Description

Parameter	Description
interface-type interface-number	The interface type and ID.
transceiver	Displays the transceiver information.
alarm	Displays the alarm message of the transceiver. If there is no alarm
	message, it is displayed as None.
diagnosis	Displays the diagnostic parameters of the transceiver.

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide If you do not specify an interface, the transceiver information of all interfaces is displayed.

Configuration Examples

The following example displays the transceiver information of interface Gigabitethernet 5/4.

```
QTECH#show interfaces GigabitEthernet 5/4 transceiver alarm gigabitEthernet
5/4 transceiver current alarm information:
RX loss of signal
```

The following example displays the diagnostic parameters of the transceiver of interface Gigabitethernet 5/4.

```
QTECH#show interfaces GigabitEthernet 5/4 transceiver diagnosis
Current diagnostic parameters[AP:Average Power]:
Temp(Celsius)    Voltage(V    Bias(mA)    RX power(dBm)    TX

power(dBm)
38(ок)           3.20(ок)    0.04(ок)
-40.00(alarm)[AP]   -40.00(alarm)
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

1.24. show interfaces usage

Use this command to display bandwidth usage of the interface.

show interfaces [*interface-type interface-number*] **usage** [*up* | *down*]

Parameter Description

Parameter	Description
interface-type interface-number	(Optional) The interface type and ID.
up	(Optional) Displays the port up statistics.
down	(Optional) Displays the port down statistics.

Defaults

N/A

Command Mode

Any CLI mode

Usage Guide

If you do not specify an interface, the bandwidth usage of all interfaces is displayed. Bandwidth refers to the actual link bandwidth rather than the *bandwidth* parameter configured on the interface.

Configuration Examples

The following example displays bandwidth usage of interface GigabitEthernet 0/1.

```
Interface Input Usage  Bandwidth       Average Usage    Output Usage


-------------------------------------------------------------------------

-------------------------------
GigabitEthernet     0/0
0.004462237%
                       1000 Mbit      0.002822759%     0.001183280%
```

Bandwidth refers to the interface link bandwidth, the maximum speed of link. Average Usage refers to the current usage.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

1.25. shutdown

Use this command to disable an interface. Use the **no** form of this command to enable a disabled port.

shutdown

no shutdown

Parameter Description

Parameter	Description
N/A	N/A

Defaults

By default, the administrative status of an interface is Up.

Command Mode

Interface configuration mode

Usage Guide

Use this command to stop the forwarding on the interface (Gigabit Ethernet interface, Aggregate port or SVI). You can enable the port with the no shutdown command. If you shut

down the interface, the configuration of the interface exists, but does not take effect. You can view the interface status by using the show interfaces command.

If you use the script to run no shutdown frequently and rapidly, the system may prompt the interface status reversal.

Configuration Examples

The following example disables an interface.

```
QTECH(config)# interface aggregateport 1
QTECH(config-if)# shutdown
```

The following example enables an interface.

```
QTECH(config)# interface aggregateport 1
QTECH(config-if)# no shutdown
```

Related Commands

Command	Description
clear interface	Resets the hardware.
show interfaces	Displays the interface information.

Platform Description

N/A

1.26. show split summary

Use this command to display split information.

show split summary

Parameter Description

Parameter	Description
N/A	N/A

Command Mode

All CLI user modes

Default Level

14

Usage Guide

This command displays split information of all splittable ports.

Configuration

Examples

The following example displays the split information about Interface GigabitEthernet 0/1.

```
QTECH#show   split summary
Port          SpliteStatus SplitPorts
Hu1/1         merged       Hu1/1:1    Hu1/1:2      Hu1/1:3    Hu1/1:4
Hu1/2         merged       Hu1/2:1    Hu1/2:2      Hu1/2:3    Hu1/2:4
Hu1/3         merged       Hu1/3:1    Hu1/3:2      Hu1/3:3    Hu1/3:4
Hu1/4         merged       Hu1/4:1    Hu1/4:2      Hu1/4:3    Hu1/4:4
Hu1/5         merged       Hu1/5:1    Hu1/5:2      Hu1/5:3    Hu1/5:4
Hu1/6         merged       Hu1/6:1    Hu1/6:2      Hu1/6:3    Hu1/6:4
Hu1/7         merged       Hu1/7:1    Hu1/7:2      Hu1/7:3    Hu1/7:4
Hu1/8         merged       Hu1/8:1    Hu1/8:2      Hu1/8:3    Hu1/8:4
Hu3/25        merged       Hu3/25:1   Hu3/25:2    Hu3/25:3     Hu3/25:4
Hu3/26        merged       Hu3/26:1   Hu3/26:2    Hu3/26:3     Hu3/26:4
```

Note: **Port** indicates the splittable master port, **SpliteStatus** indicates the current split status, and

SplitPorts indicates member ports of the splittable port after splitting.

1.27. snmp trap link-status

Use this command to send LinkTrap on a port. Use the **no** form of this command to disable this function.

snmp trap link-status no snmp trap link-status

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is enabled by default

Command Mode

Interface configuration mode.

Usage Guide

For an interface (for instance, Ethernet interface, AP interface, and SVI interface), this command sets whether to send LinkTrap on the interface. If the function is enabled, the SNMP sends the LinkTrap when the link status of the interface changes.

Configuration

The following example disables the interface from sending LinkTrap on the interface.

Examples

```
QTECH(config)# interface gigabitEthernet 1/1
QTECH(config-if)# no snmp trap link-status
```

The following example enables the interface to forward Link trap.

```
QTECH(config)# interface gigabitEthernet 1/1
QTECH(config-if)# snmp trap link-status
```

Related Commands

Command	Description
snmp trap link-status	Enables the interface to send LinkTrap on the interface.
no snmp trap link-status	Disables the interface from sending LinkTrap on the interface.

Platform Description

N/A

1.28. snmp-server if-index persist

Use this command to set the interface index persistence. The interface index remains the same after the device is restarted.

snmp-server if-index persist

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Global configuration mode

Usage Guide

After this command is configured, all interface indexes are saved in the configuration file. After the device is restarted, interface indexes remain the same as before.

Configuration Examples

Related Commands

Platform Description

The following example enables the interface index persistence.

```
QTECH(config)# snmp-server if-index persist
```

Command	Description
N/A	N/A

N/A

1.29. speed

Use this command to configure the speed on the port.

speed [1000 | 40G | auto]

Parameter Description

Parameter	Description
1000	The transmission rate of the interface is 1000Mbps.

40G	The transmission rate of the interface is 40Gbps.
auto	Self-adaptive

Defaults

The default is auto.

Command Mode

Interface configuration mode.

Usage Guide If an interface is the member of an aggregate port, the rate of the interface depends on the rate of the aggregate port. You can set the rate of the interface, but it does not take effect until the interface exits the aggregate port. Use show interfaces to display configuration. The rate varies by interface types. For example, you cannot set the rate of a SFP interface to 10M.

Configuration Examples

Related Commands

Platform Description

N/A

Command	Description
show interfaces	Displays the interface information.

N/A

1.30. split interface

Use this command to split a 40G interface into four 10G interfaces. Use the **no** form of this command to restore the default setting.

split interface FortyGigabitEthernet *interface-number*

no split interface FortyGigabitEthernet *interface-number*

Parameter Description

Parameter	Description

interface-number	Specifies the interface number.

Defaults

By default, the interface is in the combination mode.

Command Mode

Global configuration mode.

Usage Guide

N/A

Configuration Examples

Related Commands

Platform Description

The following example splits the 40G interface 0/65 into four 10G interfaces.

```
QTECH(config-if)# split interface forty-giga 0/65
```

Command	Description
show interfaces	Displays the interface information.

N/A

1.31. switchport

Use this command to configure a Layer 3 interface. Use the no form of this command to restore the default setting.

switchport

no switchport

Parameter Description

Parameter	Description
N/A	N/A

Defaults

All the interfaces are in Layer 2 mode by default.

Command Mode

Interface configuration mode.

Usage GuideThis command is valid only for physical interfaces. The switchport command is used to disable the interface and re-enable it. In this status, the device will send the information to indicate the connect status. If the interface is changed to Layer 3 mode from Layer 2, all the attributes in Layer 2 mode will be cleared.

Configuration Examples

Related Commands

The following example configures a Layer 3 interface.

```
QTECH(config-if)# switchport
```

Command	Description
show interfaces	Displays the interface information.

Platform Description

N/A

1.32. switchport access

Use this command to configure an interface as a statics access port and add it to a VLAN. Use the **no**

form of this command to restore the default setting.

switchport access vlan *vlan-id*

no switchport access vlan

Parameter Description

Parameter	Description
vlan-id	The VLAN ID at which the port to be added.

Defaults

By default, the switch port is an access port and the VLAN is VLAN 1.

Command Mode

Interface configuration mode.

Usage Guide

Enter one VLAN ID. The system will create a new one and add the interface to the VLAN if you enter a new VLAN ID. If the VLAN ID already exists, the command adds the interface to the VLAN.

If the port is a trunk port, the operation does not take effect.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if)# switchport access vlan 2
```

The following example configures interface gigabitethernet 1/1 as a statistic access port and adds it to VLAN 2.

Related Commands

Command	Description
switchport mode	Configures the interface as Layer 2 mode (switch port mode).
switchport trunk	Configures a native VLAN and the allowed-VLAN list for the trunkport.

Platform Description

N/A

1.33. switchport mode

Use this command to specify a L2 interface (switch port) mode. You can specify this interface to be an access port or a trunk port or an 802.1Q tunnel. Use the no form of this command to restore the default setting.

Parameter Description

switchport mode { access | trunk }

no switchport mode

Parameter	Description
access	Configures the switch port as an access port.
trunk	Configures the switch port as a trunk port.

Defaults

The default is access.

Command Mode

Interface configuration mode.

Usage GuideIf a switch port mode is access port, it can be the member port of only one VLAN. Use switchport access vlan to specify the member of the VLAN.

A trunk port can be the member port of various VLANs defined by the allowed-VLAN list. The allowed VLAN list of the interface determines the VLANs to which the interface may belong. The trunk port is the member of all the VLANs in the allowed VLAN list. Use switchport trunk to define the allowed-VLANs list.

Configuration Examples

Related Commands

Platform Description

The following example specifies a L2 interface (switch port) mode.

```
QTECH(config-if)# switchport mode trunk
```

Command	Description
switchport access	Configures an interface as a statics access port and assigns it to a VLAN.
switchport trunk	Configures a native VLAN and the allowed-VLAN list for the trunk port.

N/A

1.34. switchport protected

Use this command to configure the interface as the protected port.

switchport protected

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Interface configuration mode.

Usage Guide

The ports that are set as the protected ports cannot switch on L2, but can route on L3. A protected port can communicate with an unprotected port. Use the **show interfaces** command to display configuration.

Configuration Examples

The following example configures interface gigabitethernet 1/1 as a protected port.

```
QTECH(config)#interface gigabitethernet 1/1
QTECH(config-if)# switchport protected
```

Related Commands

Command	Description
show interfaces	Displays the interface information.

Platform Description

N/A

1.35. switchport trunk

Use this command to specify a native VLAN and the allowed-VLAN list for the trunk port. Use the **no**

form of this command to restore the default setting.

switchport trunk { **allowed vlan** { **all |** [**add** | **remove** | **except**] *vlan-list* } | **native vlan** *vlan-id* }

no switchport trunk **{** allowed vlan **|** native vlan **}**

Parameter Description

Parameter	Description
allowed vlan *vlan-list*	Configures the list of VLANs allowed on the trunk port. *vlan-list* can be a VLAN or a range of VLANs starting with the smaller VLAN ID and ending with the larger VLAN ID and being separated by hyphen, for example, 10 to 20. The segments can be separated with a comma (,), for example, 1 to 10, 20 to 25, 30, 33. all means that the allowed VLAN list contains all the supported VLANs; add means to add the specified VLAN list to the allowed VLAN list; remove means to remove the specified VLAN list from the allowed VLAN list; except means to add all the VLANs other than those in the specified VLAN list to the allowed VLAN list;
native vlan *vlan-id*	Configures the native VLAN.

Defaults

The allowed VLAN list is all, the Native VLAN is VLAN1.

Command Mode

Interface configuration mode.

Usage Guide

Native VLAN:

A trunk port belongs to one native VLAN. A native VLAN means that the untagged packets received/sent on the trunk port belong to the VLAN. Obviously, the default VLAN ID of the interface (that is, the PVID in the IEEE 802.1Q) is the VLAN ID of the native VLAN. In addition, when frames belonging to the native VLAN are sent over the trunk port, they are untagged.

Allowed-VLAN List:

By default, a trunk port sends traffic to and received traffic from all VLANs (ID 1 to 4094). However, you can prevent the traffic from passing over the trunk by configuring allowed VLAN lists on a trunk. Use show interfaces switchport to display configuration.

Configuration Examples

The following example remoes port 1/15 from VLAN 2.

```
QTECH(config)# interface fastethernet 1/15 QTECH(config-if)# switchport
trunk allowed vlan remove 2 QTECH(config-if)# end
QTECH# show interfaces fastethernet1/15 switchport Switchport is
enabled
Mode is trunk port
Access vlan is 1,Native vlan is 1 Protected is
disabled
Vlan lists is
1,3-4094
```

Related Commands

Command	Description
show interfaces	Displays the interface information.
switchport access	Configures an interface as a statics access port and assigns it to a VLAN.

Platform Description

N/A

2. MAC ADDRESS COMMANDS

2.1. clear mac-address-table dynamic

Use this command to clear the dynamic MAC address.

clear mac-address-table dynamic [address *mac-addr* [interface *interface-id*] [vlan *vlan-id*] |
{ [interface *interface-id*] [vlan *vlan-id*] }]

Parameter	Description
dynamic	Clears all the dynamic MAC addresses.
address *mac-addr*	Clears the specified dynamic MAC address.
interface *interface-id*	Clears all the dynamic MAC addresses of the specified interface.
vlan *vlan-id*	Clears all the dynamic MAC addresses of the specified VLAN, in the range from 1 to 4094.

Parameter Description

Defaults

N/A

Command Mode

Privileged EXEC mode.

Usage Guide Use the show mac-address-table dynamic command to display all the dynamic MAC addresses.

Configuration Examples

Related Commands

Platform Description

The following command clears all the dynamic MAC addresses.

```
QTECH# clear mac-address-table dynamic
```

Command	Description
show mac-address-table dynamic	Displays dynamic MAC address.

N/A

2.2. mac-address-learning

Use this command to enable the port address learning. Use the no or default form of this command to restore the default setting.

mac-address-learning no mac-address-learning

default mac-address-learning

Parameter

Parameter	Description
N/A	N/A

Description

Defaults

The address learning function is enabled.

Command Mode

Interface configuration mode.

Usage Guide MAC address learning cannot be disabled on the port where the security function is enabled. The security function cannot be configured on the port where address learning is disabled.

Configuration Examples

Related Commands

Platform Description

The following example disables the port address learning function.

```
QTECH(config-if)# no mac-address-learning
```

Command	Description
N/A	N/A

N/A

2.3. mac-address-learning (global)

Use this command to enable MAC address learning globally. Use the **no** or **default** form of this command to restore the default setting.

mac-address-learning enable

Use this command to disable MAC address learning globally.

mac-address-learning disable

Use this command to restore MAC address learning globally.

default mac-address-learning

Parameter Description

Parameter	Description
enable	Enables MAC address learning globally.
disable	Disables MAC address learning globally.

Defaults

The **mac-address-learning enable** command is enabled by default.

Command Mode

Global configuration mode

Usage Guide

When this function is enabled, the MAC address is learned in global configuration mode the same as learned in interface configuration mode.

Configuration Examples

The following example disables MAC address learning globally.

```
QTECH(config)# mac-address-learning disable
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

2.4. mac-address-table aging-time

Use this command to specify the aging time of the dynamic MAC address. Use the no or default form of the command to restore the default setting.

mac-address-table aging-time ***seconds*** no mac-address-table aging-time default mac-address-table aging-time

Parameter Description

Parameter	Description
seconds	Aging time of the dynamic MAC address (in seconds). The time range depends on the switch.

Defaults

The default is 300.

Command Mode

Global configuration mode.

Usage Guide

Use show mac-address-table aging-time to display configuration.

Configuration Examples

Related Commands

Platform Description

The following example sets the aging time of the dynamic MAC address to 500 seconds.

```
QTECH(config)# mac-address-table aging-time 500
```

Command	Description
show mac-address-table aging-time	Displays the aging time of the dynamic MAC address.
show mac-address-table dynamic	Displays dynamic MAC address.

N/A

2.5. mac-address-table filtering

Use this command to configure the filtering MAC address. Use the no or default form of the command to restore the default setting.

mac-address-table filtering *mac-address* vlan *vlan-id*

no mac-address-table filtering *mac-address* vlan *vlan-id*

default mac-address-table filtering *mac-address* vlan *vlan-id*

Parameter Description

Parameter	Description
mac-address	Filtering Address
vlan-id	VLAN ID, in the range from 1 to 4094.

Defaults

No filtering address is configured by default.

Command Mode

Global configuration mode.

Usage Guide

The filtering MAC address shall not be a multicast address.

Configuration Examples

Related Commands

Platform Description

The following example configures the filtering MAC address for VLAN 1.

```
QTECH(config)#mac-address-table filtering 0000.0202.0303 vlan 3
```

Command	Description
clear mac-address-table filtering	Clears the filtering MAC address.

N/A

2.6. mac-address-table notification

Use this command to enable the MAC address notification function. Use The no or default form of the command to restore the default setting.

mac-address-table notification [interval *value* | history-size *value*]

no mac-address-table notification [interval | history-size]

default mac-address-table notification [interval | history-size]

Parameter Description

Parameter	Description
interval *value*	Sets the interval of sending the MAC address trap message, 1 second by default.
history-size *value*	Sets the maximum number of the entries in the MAC address notification table, 50 entries by default.

Defaults

By default, the interval is 1 and the maximum number of the entries in the MAC address notification table is 50.

Command Mode

Global configuration mode.

Usage Guide

The MAC address notification function is specific for only dynamic MAC address and secure MAC address. No MAC address trap message is generated for static MAC addresses. In the global

configuration mode, you can use the snmp-server enable traps mac-notification command to enable or disable the switch to send the MAC address trap message.

Configuration Examples

The following example enables the MAC address notification function.

```
QTECH(config)# mac-address-table notification QTECH(config)# mac-address-
table notification interval 40
QTECH(config)# mac-address-table notification history-size 100
```

Related Commands

Command	Description
snmp-server enable traps	Sets the method of handling the MAC address trap message..
show mac-address-table notification	Displays the MAC address notification configuration and the MAC address trap notification table.
snmp trap mac-notification	Enables the MAC address trap notification function on the specified interface.

Platform Description

N/A

2.7. mac-address-table static

Use this command to configure a static MAC address. Use the no or default form of the command to restore the default setting.

mac-address-table static *mac-addr* vlan *vlan-id* interface *interface-id*

no mac-address-table static *mac-addr* vlan *vlan-id* interface *interface-id*

default mac-address-table static *mac-addr* vlan *vlan-id* interface *interface-id*

Parameter Description

Parameter	Description
mac-addr	Destination MAC address of the specified entry

vlan-id	VLAN ID of the specified entry, in the range from 1 to 4094.
interface-id	Interface (physical interface or aggregate port) that packets are forwarded to

Defaults

No static MAC address is configured by default.

Command Mode

Global configuration mode.

Usage Guide

A static MAC address has the same function as the dynamic MAC address that the switch learns.

Compared with the dynamic MAC address, the static MAC address will not be aged out. It can only be configured and removed by manual. Even if the switch is reset, the static MAC address will not be lost. A static MAC address shall not be configured as a multicast address. Use show

mac-address-table static to display the static MAC address.

Configuration Examples

```
N/A
```

Related Commands

Command	Description
show mac-address-table static	Displays the static MAC address.

Platform Description

N/A

2.8. max-dynamic-mac-count

Use this command to set the maximum number of MAC address learned dynamically on the VLAN or interface. Use the no or default form of this command to restore the default setting.

max-dynamic-mac-count *num* no max-dynamic-mac-count default max-dynamic-mac-count

Parameter Description

Parameter	Description
num	Sets the maximum number of MAC addresses.

Defaults

The maximum number is not set by default.

Command Mode

VLAN configuration mode / Interface configuration mode

Usage GuideThis command is used to set the maximum number of MAC addresses learned dynamically on the VLAN or interface.

If the number of MAC addresses dynamically learned on the VLAN or interface reaches the upper limit, MAC address learning is disabled on the VLAN or interface.

If the number of MAC addresses reaches the upper limit when this command is configured, the surplus MAC addresses are not cleared. Instead, they remain and then age. MAC address learning is disabled on the VLAN or interface.

Use the show mac-address-table max-dynamic-mac-count command to display the maximum number of MAC addresses learned dynamically on the VLAN or interface.

Configuration Examples

The following example sets the maximum number of MAC addresses dynamically learned on VLAN 1.

```
QTECH#configure terminal
Enter configuration commands, one per line. End with CNTL/Z. QTECH(config)#vlan 1
QTECH(config-vlan)#max-dynamic-mac-count 160
```

The following example sets the maximum number of MAC addresses dynamically learned on interface GigabitEthernet 0/1.

```
QTECH(config)#interface GigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)#max-dynamic-mac-count 160
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

2.9. max-dynamic-mac-count exceed-action

Use this command to set the action if the dynamic MAC address learned on the VLAN or interface exceeds the limit. Run the no form of this command to restore the default setting.

max-dynamic-mac-count exceed-action forward | discard

no max-dynamic-mac-count exceed-action forward | discard

Parameter Description

Parameter	Description
forward	Forwards the packets if the dynamic MAC address learned on the VLAN or interface exceeds the limit.
discard	Discards the packets if the dynamic MAC address learned on the VLAN or interface exceeds the limit.

Command Mode

VLAN configuration mode / Interface configuration mode

Usage Guide

This command is used to set the action if the dynamic MAC address learned on the VLAN or interface exceeds the limit.

When the command default interface is run in global configuration mode, if there is any layer-2

sub-interface, the action when MAC address learned dynamically exceeds the limit cannot restore the default settings.

Configuration Examples

The following example sets the maximum number of MAC addresses dynamically learned on VLAN 1.

```
QTECH#configure terminal
Enter configuration commands, one per line. End with CNTL/Z. QTECH(config)#vlan 1
QTECH(config-vlan)#max-dynamic-mac-count 160
QTECH(config-vlan)#max-dynamic-mac-count exceed-action discard
```

QTECH(config-vlan)#max-dynamic-mac-count exceed-action discardThe following example sets the maximum number of MAC addresses dynamically learned on interface GigabitEthernet 0/1.

```
QTECH#configure terminal
Enter configuration commands, one per line. End with CNTL/Z. QTECH(config)#interface
GigabitEthernet 0/1
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

2.10. show mac-address-learning

Use this command to display the MAC address learning.

show mac-address-learning

Parameter Description

Parameter	Description
N/A	N/A

Defaults

N/A

Command Mode

Privileged EXEC mode.

Usage Guide

N/A

Configuration Examples

The following example displays the MAC address learning.

```
QTECH# show  mac-address-learning GigabitEthernet 0/0
                        learning ability: disable
GigabitEthernet 0/1     learning ability: enable
GigabitEthernet 0/2     learning ability: enable
GigabitEthernet 0/3     learning ability: enable
```

Related Commands

Command	Description

N/A	N/A

Platform Description

N/A

```
1          00d0.f800.1001      STATIC GigabitEthernet 1/1
QTECH#   show mac-address-table
```

2.11. show mac-address-table

Use this command to display all types of MAC addresses (including dynamic address, static address and filter address).

show mac-address-table [address *mac-addr*] [interface *interface-id*] [vlan *vlan-id*]

Parameter Description

Parameter	Description
address *mac-addr*	The MAC address.
interface *interface-id*	The Interface ID.
vlan *vlan-id*	The VLAN ID, in the range from 1 to 4094.

Defaults

N/A

Command Mode

All modes

Usage Guide

N/A

Configuration Examples

Related Commands

Platform Description

The following example displays the MAC address.

Field	Description

Vlan	The interface address.
MAC Address	The MAC address.
Type	The MAC address type.
Interface	The interface corresponding to the MAC address.

Command	Description
N/A	N/A

N/A

2.12. show mac-address-table aging-time

Use this command to display the aging time of the dynamic MAC address.

show mac-address-table aging-time

Parameter	Description
N/A	N/A

Defaults

N/A

Command Mode

All modes

Usage Guide

N/A

Configuration Examples

The following example displays the aging time of the dynamic MAC addr

Related Commands

```
QTECH# show mac-address-table aging-time
```

```
Aging time : 300
```

Platform Description

N/A

2.13. show mac-address-table count

Use this command to display the number of address entries in the address table.

show mac-address-table count [**interface** *interface-id* **| vlan** *vlan-id*]

Parameter Description

Parameter	Description
interface *interface-id*	Interface ID
vlan *vlan-id*	VLAN ID, in the range from 1 to 4094.

Defaults

N/A

Command Mode

Privileged EXEC mode.

Usage Guide

The **show mac-address-table count** command is used to display the number of entries based on the type of MAC address entry.

The **show mac-address-table count interface** command is used to display the number of entries based on the interface associated with the MAC address entry.

The **show mac-address-table count vlan** command is used to display the number of entries based on the VLAN of MAC address entries.

Configuration Examples

```
QTECH# show mac-address-table count
Dynamic Address Count : 51
```

The following example displays the number of MAC address entries.

```
Static Address Count : 0 Filter Address
Count : 0 Total Mac Addresses : 51
Total Mac Address Space Available: 8139
```

The following example displays the number of MAC address in VLAN 1.

```
QTECH# show mac-address-table count vlan 1
```

```
Dynamic Address Count : 7
Static Address Count : 0
Filter Address Count : 0 Total Mac
Addresses             : 7
```

The following example displays the number of MAC addresses on interface g0/1.

Related Commands

Command	Description
show mac-address-table static	Displays the static address.
show mac-address-table filtering	Displays the filtering address.
show mac-address-table dynamic	Displays the dynamic address.
show mac-address-table address	Displays all the address information of the specified address.
show mac-address-table interface	Displays all the address information of the specified interface.
show mac-address-table vlan	Displays all the address information of the specified vlan.

Platform Description

N/A

2.14. show mac-address-table dynamic

Use this command to display the dynamic MAC address.

show mac-address-table dynamic [**address** *mac-add r*] [**interface** *interface-id*] [**vlan** *vlan-id*]

Parameter Description

Parameter	Description
mac-addr	Destination MAC address of the entry

vlan-id	VLAN of the entry, in the range from 1 to 4094.
interface-id	Interface that the packet is forwarded to. It may be a physical port or an aggregate port

Defaults

Command Mode

All modes

Usage Guide **N/A**

Configuration Examples

Related Commands

Platform Description

The following example displays the dynamic MAC address.

```
QTECH# show mac-address-table dynamic
Vlan   MAC Address     Type   Interface

1   0000.0000.0001    DYNAMIC gigabitethernet 1/1
1   0001.960c.a740    DYNAMIC gigabitethernet 1/1
1   0007.95c7.dff9    DYNAMIC gigabitethernet 1/1
1   0007.95cf.eee0    DYNAMIC gigabitethernet 1/1
1   0007.95cf.f41f    DYNAMIC gigabitethernet 1/1
1   0009.b715.d400    DYNAMIC gigabitethernet 1/1
1   0050.bade.63c4    DYNAMIC gigabitethernet 1/1
```

Command	Description
clear mac-address-table dynamic	Clears the dynamic MAC address.

N/A

2.15. show mac-address-table filtering

Use this command to display the filtering MAC address.

show mac-address-table filtering [ddr *mac-addr*] [vlan *vlan-Id*]

Parameter Description

Parameter	Description
mac-addr	Destination MAC address of the entry
vlan-id	VLAN ID of the entry, in the range from 1 to 4094.

Defaults

N/A

Command Mode

Privileged EXEC mode.

Usage Guide

N/A

Configuration Examples

The following example displays the filtering MAC address.

Related Commands

Platform Description

```
1    0000.2222.2222   FILTER Not available
```

Command	Description
mac-address-table filtering	Configures the filtering MAC address.

N/A

2.16. show mac-address-table interface

Use this command to display all the MAC addresses on the specified interface including static and dynamic MAC address

show mac-address-table interface [*interface-id*] [vlan *vlan-id*]

Parameter Description

Parameter	Description
interface-id	Displays the MAC address information of the specified Interface (physical interface or aggregate port).
vlan-id	VLAN ID of the entry, in the range from 1 to 4094..

Defaults

N/A

Command Mode

Privileged EXEC mode.

Usage Guide

N/A

Configuration Examples

Related Commands

The following example displays all the MAC addresses on interface gigabitethernet 1/1.

Command	Description
show mac-address-table static	Displays the static MAC address.
show mac-address-table filtering	Displays the filtering MAC address.
show mac-address-table dynamic	Displays the dynamic MAC address.
show mac-address-table address	Displays all types of MAC addresses.
show mac-address-table vlan	Displays all types of MAC addresses of the specified VLAN.
show mac-address-table	Displays the address counts in the MAC

count	address table.

```
QTECH# show mac-address-table interface gigabitethernet 1/1
Vlan   MAC Address  Type     Interface

-----

1  00d0.f800.1001  STATIC  gigabitethernet  1/1
1  00d0.f800.1002  STATIC  gigabitethernet  1/1
1  00d0.f800.1003  STATIC  gigabitethernet  1/1
1  00d0.f800.1004  STATIC  gigabitethernet  1/1
```

Platform Description

N/A

2.17. show mac-address-table max-dynamic-mac-count

Use this command to display the maximum number of dynamic MAC addresses learned on the VLAN or interface.

show mac-address-table max-dynamic-mac-count { **vlan** [*vlan-id*] | **interface** [*interface-id*] }

Parameter Description

Parameter	Description
vlan	Displays the dynamic MAC address learned on all VLANs which are configured with the maximum number of dynamic MAC address learning.
vlan-id	Displays the dynamic MAC address learned on the specified VLAN.
interface	Displays the dynamic MAC address learned on all interfaces which are configured with the maximum number of dynamic MAC address learning.
interface-id	Displays the dynamic MAC address learned on the specified interface.

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

N/A

Configuration Examples

The following example displays the MAC address learned on all VLANs which are configured with the maximum number of dynamic MAC addresses.

```
QTECH#show Vlan Limit

1
mac-address-table max-dynamic-mac-count MAC count Learning

vlan

160

                              6

YES
```

```
QTECH#show Vlan Limit

mac-address-table max-dynamic-mac-count MAC count Learning

vlan

1

160

                              6

YES
```

The following example displays the MAC address learned dynamically on the specified VLAN.

QTECH# show Vlan Limit		**mac-address-table max-dynamic-mac-count MAC count Learning**		**vlan**	**1**
1	160	6	YES		
Field				Description	
Vlan				The VLAN ID.	

Limit	The maximum number of MAC addresses.
MAC count	The number of MAC address learned dynamically on the VLAN.
Learning	Whether MAC address learning is disabled on the VLAN.

Platform Description

The following example displays the MAC address learned on all interfaces which are configured with the maximum number of the dynamic MAC address.

```
QTECH#show mac-address-table  max-dynamic-mac-count interface
Interface              Limit   MAC count Learning
-----------------------------------------------
GigabitEthernet 0/1     160     6         YES
```

The following example displays the MAC address learned dynamically on the specified interface.

QTECH#show mac-address-table GigabitEthernet 0/1 **Interface Limit**		**max-dynamic-mac-count** **MAC count Learning**	**interface**
GigabitEthernet 0/1	160	6	YES
Field			Description
Interface			The Interface ID
Limit			The maximum number of MAC addresses.
MAC count			The number of MAC address learned dynamically on the interface.
Learning			Whether MAC address learning is disabled on

	the interface

Command	Description
N/A	N/A

N/A

2.18. show mac-address-table notification

Use this command to display the MAC address notification configuration and the MAC address notification table.

show mac-address-table notification [**interface** [*interface-id*] | **history**]

Parameter Description

Parameter	Description
interface	Displays the MAC address notification configuration on all interfaces.
interface-id	Displays the MAC address notification configuration on a specific interface.
history	Displays the MAC address notification history.

Defaults

Command Mode

Privileged EXEC mode.

Usage GuideN/A

Configuration Examples

The following example displays the MAC address notification configuration and the MAC address notification table.

```
QTECH# show mac-address-table notification MAC
Notification Feature: Disabled
Interval between Notification Traps: 1 secs
```

```
Maximum Number of entries configured in History Table:1 Current
History Table Length: 0
```

Related Commands

Command	Description
mac-address-table notification	Enables MAC address notification.
snmp trap mac-notification	Enables the MAC address trap notification function on the specified interface.

latform Description

N/A

2.19. show mac-address-table static

Use this command to display the static MAC address.

show mac-address-table static [addr *mac-add r*] [interface *interface-Id*] [vlan *vlan-id*]

Parameter Description

Parameter	Description
mac-addr	Destination MAC address of the entry
vlan-id	VLAN ID of the entry, within the range from 1 to 4094.
interface-id	Interface of the entry physical interface or aggregate port

Defaults

N/A

Command Mode

Privileged EXEC mode.

Usage Guide

N/A

```
QTECH# show mac-address-table static
Vlan    MAC Address     Type   Interface
 STATIC
                                      gigabitethernet
1/1
 STATIC
                                      gigabitethernet
1/1
 STATIC
                                      gigabitethernet
```

Configuration Examples

The following example displays the static MAC addresses

Commands

Commands	Description
mac-address-table static	Configures the static MAC address.

2.20. show mac-address-table vlan

Use this command to display all addresses of the specified VLAN.

show mac-address-table vlan [*vlan-id*]

Parameter Description

Parameter	Description
vlan-id	VLAN ID of the entry, within the range from 1 to 4094.

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

N/A

Configuration Examples

Related Commands

Command	Description
show mac-address-table static	Displays static addresses.
show mac-address-table filtering	Displays filtered addresses.
show mac-address-table dynamic	Displays dynamic addresses.
show mac-address-table address	Displays all address information about the specified address.
show mac-address-table interface	Displays all address information about the specified interface.
show mac-address-table count	Displays the number of addresses in the address table.

The following example displays all addresses of the specified VLAN.

```
QTECH# show mac-address-table vlan 1
Vlan  MAC Address    Type    Interface

1   00d0.f800.1001  STATIC  gigabitethernet 1/1
1   00d0.f800.1002  STATIC  gigabitethernet 1/1
1   00d0.f800.1003  STATIC  gigabitethernet 1/1
```

Platform Description

N/A

2.21. snmp trap mac-notification

Use this command to enable the MAC address trap notification on the specified interface. Use The **no**

or **default** form of the command to restore the default setting.

snmp trap mac-notification **{** added **|** removed **}**

no snmp trap mac-notification { **added** | **removed** }

default snmp trap mac-notification { added | removed }

Parameter Description

Parameter	Description
added	Notifies when a MAC address is added.
removed	Notifies when a MAC address is removed

Defaults

Command Mode

Interface configuration mode.

Usage Guide

Use show mac-address-table notification interface to display configuration.

Configuration Examples

The following example enables the MAC address trap notification on interface gigabitethernet 1/1.

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if)# snmp trap mac-notification added
```

Related Commands

Command	Description
mac-address-table notification	Enables MAC address notification.
show mac-address-table notification	Displays the MAC address notification configuration and the MAC address notification table.

Platform Description

N/A

3. AGGREGATE PORT COMMANDS

3.1. aggregate bfd-detect

Use this command to enable BFD on the AP port. Use the **no** form of this command to restore the default setting.

aggregate bfd-detect ipv4 *src_ip dst_ip*

no aggregate bfd-detect ipv4

Parameter Description

Parameter	Description
ipv4	Enables IPv4 BFD when the AP port is configured with an IPv4 address.
src_ip	Specifies source IP address, namely, the IP address configured on the AP port.
dst_ip	Specifies destination IP address, namely, the IP address configured on the peer AP port.

Defaults

This function is disabled by default.

Command Mode

AP interface configuration mode

Usage Guide

If you want to enable BFD on the AP port, you should see corresponding configuration guide for BFD parameter settings.

Different products vary in support for IPv4 BFD on AP port.

If an AP port supports IPv4 BFD, it is allowed to enable IPv4 BFD at the same time.

If an AP port is enabled with BFD, its member ports in forwarding state create BFD session automatically.

Configuration Examples

The following example enables BFD on the AP por.

```
Switch(config)# interface aggregateport 3 Switch(config-if-Aggregateport 3)# ip address 1.0.0.1
Switch(config-if-Aggregateport 3)# aggregate bfd-detect ipv4 1.0.0.1 1.0.0.2
Switch(config-if-Aggregateport 3)# bfd interval 50 min_rx 50 multiplier 3
```

Related

Command	Description
N/A	N/A

Commands

Platform Description

N/A

3.2. aggregateport capacity mode

Use this command to configure the AP capacity mode. Use the **no** form of this command to restore the default setting, Use the **no** form of this command to restore the default setting,

aggregateport capacity mode *capacity-mode*

no aggregateport capacity mode

Parameter Description

Parameter	Description
capacity-mode	Configures the capacity mode.

Defaults

The default *capacity-mode* varies with the device.

Command Mode

Global configuration mode

Usage Guide

The system provides several capacity modes for devices that support capacity mode configuration. To restore the default settings, run no aggregateport capacity mode in global configuration mode.

Configuration Examples

The following example configures the the capacity mode.

```
QTECH# configure terminal
QTECH(config)# aggregateport capacity mode 256*8
```

Related Commands

Command	Description
N/A	N/A

Platform escription

N/A

3.3. aggregateport hash-header

Use this command to specify the balancing factor acquisition mode for specific tunnel packets, to optimize traffic balancing. Use the **default** form of this command to restore the default setting, **aggregateport hash-header {inner | outer}**

default aggregateport hash-header

Parameter Description

Parameter	Description
inner	Specifies the inner layer in the header of tunnel packets as the source for acquiring the balancing factor.
outer	Specifies the outer layer in the header of tunnel packets as the source for acquiring the balancing factor.

Defaults

The default configuration varies with products.

Command Mode

Global configuration mode

Usage Guide

Optional. When performing load balancing, use this command to specify the balancing factor acquisition mode for specific tunnel packets, to optimize traffic balancing.

Use the **default** form of this command to restore the default acquisition mode.

After configuration, if the **show running** command does not display the configuration, the configured mode is the same as the default value.

The supported configuration options and types of tunnel packets vary with products.

Configuration Examples

The following example specifies the inner layer in the header of tunnel packets as the source for acquiring the balancing factor in global configuration mode.

```
QTECH# configure terminal

QTECH(config)# aggregateport hash-header inner
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.4. aggregateport load-balance

Use this command to configure a global load-balance algorithm for aggregate ports or a load-balance algorithm for an aggregate port . Use the **no** form of this command to return the default setting. **aggregateport load-balance** { **dst-mac** | **src-mac** | **src-dst-mac** | **dst-ip** | **src-ip** | **src-dst ip** |

src-dst-ip-l4port **|** enhanced profile ***profile-name***} no aggregateport load-balance

Parameter Description

Parameter	Description
dst-mac	Load balance based on the destination MAC addresses of the incoming packets. For all the links of an aggregate port, the messages with the same destination MAC addresses are sent to the same port, and those with different destination MAC addresses are sent to different ports.
src-mac	Load balance based on the source MAC addresses of the incoming packets. For all the links of an aggregate port, the messages from different addresses are distributed to different ports, and those from the same addresses are distributed to

	the same port.
src-dst-ip	Load balance based on the source IP address and destination IP address. Packets with different source and destination IP address pairs are forwarded through different ports. The packets with the same source and destination IP address pairs
	are forwarded through the same links. At layer 3, this load balancing style is recommended.
dst-ip	Load balance based on the destination IP addresses of the incoming packets. For all the links of an aggregate port, the messages with the same destination IP addresses are sent to the same port, and those with different destination IP addresses are sent to different ports.
src-ip	Load balance based on the source IP addresses of the incoming packets. For all the links of an aggregate port, the messages from different addresses are distributed to different ports, and those from the same addresses are distributed to the same port.
src-dst-mac	Load balance based on the source and destination MAC addresses. Packets with different source and destination MAC address pairs are forwarded through different ports. The packets with the same source and destination MAC address pairs are forwarded through the same port.
src-dst-ip-l4p ort (supported in global configuration mode)	Load balance based on the source IP address, destination IP address, L4 source port number and L4 destination port number.
enhanced profile	Load balance based on the packet type

Defaults

The default load balance mode is **src-dst-mac** for the L2 AP port and **src-dst-ip** for the L3 AP port .

Command Mode

Global configuration mode/Interface configuration mode

that support load balancing configuration on a specific AP port. The configuration in interface configuration mode prevails. To disable the load balancing algorithm, run no aggregateport

load-balance in interface configuration mode of the AP port. After that, the load balancing algorithm configured in global configuration mode takes effect.

Configuration Examples

Related Commands

Platform Description

The following example configures a load-balance algorithm globally based on the destination MAC address.

```
QTECH(config)# aggregateport load-balance dst-mac
```

Command	Description
show aggregateport load-balance	Displays aggregate port configuration.

N/A

3.5. aggregateport member linktrap

Use this command to send LinkTrap to aggregate port members. Use the **no** form of this command to restore the default setting.

aggregateport member linktrap no aggregateport member linktrap

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default.

Command Mode

Global configuration mode

Usage Guide

This function cannot be enabled by running the **snmp trap link-status** command in interface configuration mode.

Configuration Examples

```
QTECH# configure terminal
QTECH(config)# aggregateport member linktrap
```

The following example enables the LinkTrap function on the aggregate port members.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.6. aggregateport primary-port

Use this command to configure the AP member port as a primary port. Use the no form of this command to restore the default setting.

aggregateport primary-port

no aggregateport primary-port

Parameter Description

Parameter	Description
N/A	N/A

Defaults

The AP member port is not a primary port by default.

Command Mode

Interface configuration mode

Usage Guide

Only one primary port can be configured for an aggregate port.

Configuration Examples

```
QTECH(config)# interface GigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)# port-group 1 mode active QTECH(config-
if-GigabitEthernet 0/1)# aggregateport primary-port QTECH(config-if-
GigabitEthernet 0/1)# end
QTECH# show interface aggregateport 1
…
Aggregate Port Informations: Aggregate
       Number: 1
       Name: "AggregatePort 1" Members:
       (count=1)
       Primary Port: GigabitEthernet 0/1
       GigabitEthernet 0/1        Link Status: Up    Lacp Status: bndl
```

The following example configures GigabitEthernet 0/1 as a primary port.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.7. hash-disturb

Use this command to configure HASH disturbance. Use the no form of this command to restore the default setting.

hash-disturb { *string* | { [seed *seed_value*] [offset *offset*] } }

no hash-disturb

Parameter Description

Parameter	Description
string	HASH disturbance.

seed_value	Seed value of HASH disturbance.
offset	Offset value of HASH disturbance.

Defaults

This function is disabled by default.

Command Mode

Enhanced template configuration mode

Usage Guide

You can configure this function if you want to balance packets of the same type among multiple devices of the same type.

To configure HASH disturbance, you can run either the hash-disturb *string* command or the

hash-disturb { [seed *seed_value*] [offset *offset*] } command. The latter is supported on few models. And these two commands are mutually excluded. Thus, you need to remove the first configuration before adopting a second configuration.

Configuration Examples

The following example configures the HASH disturbance.

```
QTECH# configure terminal QTECH(config)#load-
balance-profile QTECH(config-load-balance-profile)#
QTECH(config-load-balance-profile)#hash-disturb A QTECH(config-
load-balance-profile)#
```

The following example sets the seed value to 12 and offset to 1.

```
QTECH# configure terminal QTECH(config)#load-
balance-profile QTECH(config-load-balance-profile)#
QTECH(config-load-balance-profile)#hash-disturb seed 12 offset 1
QTECH(config-load-balance-profile)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.8. hash-symmetrical

Use this command to configure HASH symmetry. Use the **no** form of this command to restore the default setting.

hash-symmetrical {ipv4 | ipv6 } no hash-symmetrical {ipv4 | ipv6 }

Parameter Description

Parameter	Description
ipv4	Configures HASH symmetry for IPv4 packets.
Ipv6	Configures HASH symmetry for IPv6 packets.

Defaults

This function is enabled by default.

Command Mode

Enhanced template configuration mode

Usage Guide

You can configure this function if you want to specify a link for both the uplink and downlink traffic of packets of the same type.

Configuration Examples

```
QTECH# configure terminal QTECH(config)#load-balance-profile QTECH(config-load-balance-profile)#
QTECH(config-load-balance-profile)#no hash-symmetrical ipv6
```

The following example disables HASH symmetry for IPv6 packets.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.9. interfaces aggregateport

Use this command to create the aggregate port or enter interface configuration mode of the aggregate port. Use the **no** form of this command to restore the default setting.

interfaces aggregateport *ap-number*

no interfaces aggregateport *ap-number*

Parameter Description

Parameter	Description
ap-number	Aggregate port number.

Defaults **T**

he aggregate port is not created by default.

Command Mode

Global configuration mode

Usage Guide If the aggregate port is created, this command is used to enter the interface configuration mode.

Otherwise, this command is used to create the aggregate port and then enter its interface configuration mode.

Configuration Examples

```
QTECH# configure terminal
QTECH(config)# interfaces aggregateport 5 QTECH(config-if-Aggregateport 5)# end
```

The following example creates AP 5 and enters its interface configuration mode.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.10. ipv4 field

Use this command to configure the IPv4 load balance mode for a specified profile. Use the **no** form of this command to restore the default setting.

ipv4 field [**src-ip**] [**dst-ip**] [**protocol**] [**l4-src-port**] [**l4-dst-port**] [**vlan**] **no ipv4 field**

Parameter Description

Parameter	Description
src-ip	Load balance based on the source IP address of theIPv4 packet.
dst-ip	Load balance based on the destination IP address of the IPv4 packet.
protocol	Load balance based on the protocol type of the IPv4 packet.
l4-src-port	Load balance based on the L4 source port number of the IPv4 packet.
l4-dst-port	Load balance based on the L4 destination port number of the IPv4 packet.
vlan	Load balance based on the VLAN ID of the IPv4 packet.

Defaults

The default load balance mode is src-ip and dst-ip.

Command Mode

Load balance profile configuration mode

Usage Guide

You need to configure the load balance profile first.

Configuration Examples

```
QTECH# configure terminal QTECH(config)# load-balance-profile apl
QTECH(config-load-balance-profile)# ipv4 field src-ip
```

The following example sets the IPv4 load balance mode for profile apl to **src-ip**.

elated Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.11. ipv6 field

Use this command to configure the IPv6 load balance mode for a specified profile. Use the no form of this command to restore the default setting.

ipv6 field [src-ip] [dst-ip] [protocol] [l4-src-port] [l4-dst-port] [vlan]

no ipv6 field

Parameter Description

Parameter	Description
src-ip	Load balance based on the source IP addresses of the IPv6 packets.
dst-ip	Load balance based on the destination IP addresses of the IPv6 packets.
protocol	Load balance based on the protocol types of the IPv6 packets.
l4-src-port	Load balance based on the L4 source port numbers of the IPv6 packets.
l4-dst-port	Load balance based on the L4 destination port numbers of the IPv6 packets.
vlan	Load balance based on the VLAN ID of the IPv4 packet.

Defaults

The default load balance mode is src-ip and dst-ip.

Command Mode

Load balance profile configuration mode

Usage Guide

You need to configure the load balance profile first.

onfigurati on Examples

Related Commands

Platform Description

The following example sets the load balance mode of IPv6 packets to **src-ip**.

```
Qtech(config)# load-balance-profile apl
Qtech(config-load-balance-profile)# ipv6 field src-ip
```

Command	Description
N/A	N/A

N/A

3.12. l2 field

Use this command to configure the load balance mode of L2 packets for a specified profile. Use the

no form of this command to restore the default setting.

l2 field [**src-mac**] [**dst-mac**] [**vlan**]

no l2 field

Parameter Description

Parameter	Description
src-mac	Load balance based on the source MAC address of the L2 packet.
dst-mac	Load balance based on the destination MAC address of the L2 packets.
vlan	Load balance based on the VLAN ID of the L2 packet.

Defaults

The default load balance mode is **src-mac**, **dst-mac**, and **vlan**.

Command Mode

Load balance profile configuration mode

Usage Guide

You need to configure the load balance profile first.

Configuration Examples

```
QTECH(config)# load-balance-profile apl
QTECH(config-load-balance-profile)# l2 field src-mac src-port
```

The following example sets the load balance mode of L2 packets to **src-mac** and **src-prot**.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.13. lacp individual-port enable

Use this command to enable the LACP independent port function. Use the no form of this command to restore the default setting.

lacp individual-port enable no lacp individual-port enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

By default, the LACP independent port function is disabled.

Command Mode

Interface configuration mode

Usage Guide (Optional) Perform this operation when the LACP member port cannot perform LACP negotiation and need to be changed to a common physical port.

After this function is enabled, the member port becomes an independent port (a common physical port) if LACP negotiation fails because the port does not receive LACP packets from the peer end within the set time-out period.

Configuration Examples

```
QTECH(config)# interface GigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)# port-group 1 mode active QTECH(config-if-
GigabitEthernet 0/1)# lacp individual enable QTECH(config-if-GigabitEthernet
0/1)# end
QTECH# show interface aggregateport 1
…
Aggregate Port Informations: Aggregate Number:
        1
        Name: "AggregatePort 1"
        Members: (count=1)
```

This example shows how to enable the independent port function for GigabitEthernet 0/1.

```
        Primary Port: GigabitEthernet 0/1
        GigabitEthernet 0/1         Link Status: Up     Lacp Status: individual …
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.14. lacp port-priority

Use this command to set the priority of the LACP AP member port. Use the **no** form of this command to restore the default setting.

lacp port-priority *port-priority*

no lacp port-priority

Parameter Description

Parameter	Description
port-priority	The LACP port priority, in the range from 0 to 65535.

Defaults

The default is 32768.

Command Mode

Interface configuration mode

Usage Guide

N/A

Configuration Examples

```
QTECH(config)# interface gigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)# lacp port-priority 4096
```

This example sets the LACP port priority of interface Gi0/1 to 4096.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.15. lacp short-timeout

Use this command to configure the short-timeout mode for the LACP AP member port. Use the no form of this command to restore the default setting.

lacp short-timeout

no lacp short-timeout

Parameter Description

Parameter	Description
N/A	N/A

Defaults

The default is long-timeout mode.

Command Mode

Interface configuration mode

Usage Guide

In long-timeout mode, the port sends an LACP packet every 30 seconds. If the packet is not received in 90 seconds, the connection times out.

In short-timeout mode, the port sends an LACP packet every 1 second. If the packet is not received in 3 seconds, the connection times out.

Configuration Examples

```
QTECH(config)# interface gigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)# lacp short-timeout
```

The following example configures the short-timeout mode for the LACP AP member port.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.16. lacp system-priority

Use this command to set the LACP system priority. Use the no form of this command to restore the default setting.

lacp system-priority *system-priority*

no lacp system-priority

Parameter Description

Parameter	Description
system-priority	The LACP system priority, in the range from 0 to 65535.

Defaults

The default is 32768.

Command Mode

Global configuration mode.

Usage Guide

Configuration Examples

The following example sets the LACP system priority to 4096.

```
QTECH(config)# lacp system-priority 4096
```

Related Commands

Command	Description
port-group *key* mode { active | passive }	Enables the LACP on the port and specifies the aggregation group ID and operation mode.
lacp port-priority	Sets the LACP port priority.

Platform Description

N/A

3.17. load-balance-profile

Use this command to rename a load balance enhanced profile and apply the profile. Use the **default**

form of this command to restore the default setting.

load-balance-profile *profile-name*

no load-balance-profile *profile-name*

no load-balance-profile

Parameter Description

Parameter	Description
profile-name	Specifies the profile name, which contains up to 31 characters.

Defaults

The defaul*t profile-name* is default.

Command Mode

Global configuration mode.

Usage Guide

By default, the device is configured with an enhanced profile named default. Use the

load-balance-profile default command to enter the enhanced profile configuration mode. You can change the profile name by using the **load-balance-profile** *profile-name* command.

Configuration Examples

The following example creates a load balance profile named **apl**.

```
QTECH(config)# load-balance-profile apl
```

```
Warning: The profile default has been used,  and this command will rename it. Continue?
[Y/N]:y
```

```
QTECH(config-load-balance-profile)#
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.18. port-group

Use this command to assign a physical interface to be a member port of a static aggregate port or an LACP aggregate port. Use the **no** form of this command to restore the default setting.

port-group *port-group-number*

port-group *key-number* **mode** { **active** | **passive** }

no port-group

Parameter Description

Parameter	Description
port-group-number	Member group ID of an aggregate port, the interface number of the aggregate port.
key-number	Member group ID of an LACP aggregate port, the interface number of the LACP aggregate port.
active	Places a port into an active negotiating state, in which the port initiates negotiations with remote ports by sending LACP

	packets.
passive	Places a port into a passive negotiating state, in which the port responds to LACP packets it receives but does not initiate LACP negotiation.

Defaults

By default, the physical port does not belong to any aggregate port.

Command Mode

Interface configuration mode.

Usage Guide All the members of an aggregate port belong to a VLAN or configured to be trunk ports. The ports belonging to different native VLANs cannot form an aggregate port.

Configuration Examples

The following example specifies the Ethernet interface 1/3 as a member of the static AP 3.

```
QTECH(config)# interface gigabitethernet 1/3
QTECH(config-if-GigabitEthernet 1/3)# port-group 3
```

The following example specifies the Ethernet interface 2/3 as a member of the LACP AP4 and set the aggregation mode to active.

```
QTECH(config)# interface gigabitethernet 2/3
QTECH(config-if-GigabitEthernet 2/3)# port-group 4 mode active
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.19. show aggregateport

Use this command to display the aggregate port configuration.

show aggregateport *aggregate-port-number* [**load-balance | summary**]

Parameter Description

Parameter	Description
aggregate-port-number	Number of the aggregate port.
load-balance	Displays the load-balance algorithm on the aggregate port.
summary	Displays the summary of the aggregate port.

Defaults

N/A

Command Mode

Any mode

Usage Guide

f the aggregate port number is not specified, all the aggregate port information will be displayed.

Configuration Examples

The following example displays the aggregate port configuration.

```
QTECH# show  aggregateport 1 summary
AggregatePort  MaxPorts  SwitchPort Mode    Load balance          Ports
-----------------------                                  ---------------------------------------
-----------------------------------------
Ag1              8         Enabled    ACCESS  dst-mac               Gi0/2
```

Field	Description
AggregatePort	Indicates AP name.
MaxPorts	Indicates the maximum number of ports an AP can support.

SwitchPort	Indicates whether the AP is a switch port or not. “Enabled” indicates the AP is a switch port, while “Disabled” means the AP is not a switch port.
Mode	Indicates the AP Mode, which can be ACCESS, TRUNK, TUNNEL, HYBRID, UPLINK, HOST, or PROMIS. When the AP is not a switch port, nothing is displayed under this field.
Load balance	Indicates load balancing mode of the AP.
Ports	Indicates the name of an AP member.

The following example displays the configuration information of **load-balance** globally.

```
QTECH#show aggregateport load-balance
Load-balance     : Source MAC and Destination
MAC Hash-elasticity : enable
Algorithm mode
current: 3,
default: 0
Hash-disturb(Expert
Mode): current seed: 1,
offset 0.
default seed: 0, offset 0.
Hash-disturb(Expert Mode):
```

current seed: 1, offset 0.
default seed: 0, offset 0.

Field	Description
Load-balance	Indicates global load balancing mode.
Hash-elasticity	Indicates whether Hash elasticity is enabled.
Algorithm mode	Indicates Hash load-balancing algorithm mode.
Hash-disturb(Expert Mode)	Indicates the seed and offset values of Hash disturbance. Not all models are able to display this such information. “Current” stands for the current values, and “default” for

	the default ones.

Related Commands

Command	Description
aggregateport load-balance	Configures a load-balance algorithm of AP.

Platform Description

N/A

3.20. show aggregateport capacity

Use this command to display the AP capacity mode and the AP number.

show aggregateport capacity

Parameter Description

Parameter	Description
N/A	N/A

Defaults

N/A

Command Mode

Any mode

Usage Guide

N/A

Configuration Examples

```
QTECH# show aggregateport capacity AggregatePort Capacity Information: Configuration Capacity Mode: 128*16. Effective Capacity Mode           :     256*8.     Available Capacity     : 128*8.
Total Number: 128, Used: 1, Available: 127.
```

The following example displays the AP capacity mode and the AP number.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

3.21. show lacp summary

Use this command to display the LACP aggregation information.

show lacp summary [*key-number*]

Parameter Description

Parameter	Description
key-number	Specifies the aggregation group id to show.

Defaults

N/A

Command Mode

Any mode.

Usage Guide

N/A

Configuration Examples

Related Commands

Command	Description
ort-group *key* **mode**	Enables the LACP on the port and specifies the aggregation group ID and operation mode.

The following example displays the LACP aggregation information.

Platform Description

```
QTECH(config)# show lacp summary 3

System Id:32768,00d0.f8fb.0002

Flags: S - Device is requesting Slow LACPDUs

F - Device is requesting Fast LACPDUs.

A - Device is in active mode.   P - Device is in
passive mode.
Aggregate port 3:

Local information:

LACP port     Oper    Port    Port

Port    Flags    State    Priority      Key    Number
State

Gi0/1     SA        bndl                                4096          0x3      0x1        0x3d
Gi0/2     SA        bndl                                4096          0x3      0x2        0x3d
Gi0/3     SA        bndl                                4096          0x3      0x3        0x3d
Partner information:
                  LACP port                                          Oper      Port       Port
Port      Flags     Priority                 Dev ID                  Key       Number     State

Gi0/1     SA        61440                    00d0.f800.0002          0x3       0x1        0x3d
Gi0/2     SA        61440                    00d0.f800.0002          0x3       0x2        0x3d
Gi0/3     SA        61440                    00d0.f800.0002          0x3       0x3        0x3d
```

N/A

show load-balance-profile

Use this command to display the enhanced profile.

show load-balance-profile [*profile-name*]

Parameter Description

Parameter	Description
profile-name	Specifies the profile name.

Defaults -

Command Mode

Any mode.

Usage Guide

All enhanced profiles are displayed if the profile name is not specified.

Configuration Examples

The following example displays the enhanced profile ofmodule0.

```
QTECH# show load-balance-profile module0 Load-balance-
profile: module0
Packet    Hash Field: IPv4: src-ip dst-ip
IPv6: src-ip dst-ip
L2 : src-mac dst-mac vlan
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

4. VLAN COMMANDS

4.1. add

Use this command to add one or a group Access interface into current VLAN. Use the **no** or **default**

form of the command to remove the Access interface.

add interface { *interface-id* | **range** *interface-range* }

no add interface { *interface-id* | **range** *interface-range* }

default add interface { *interface-id* | **range** *interface-range* }

Parameter Description

Parameter	Description
interface-id	Layer-2 Ethernet interface or layer-2 AP port.
range *interface-range*	Range of the Layer-2 Ethernet interface or layer-2 AP port.

Defaults

All layer-2 Ethernet interfaces are in the VLAN1.

Command mode

VLAN configuration mode.

Usage Guide

This command is only valid for the access port.

The configuration of this command is the same as specifying the VLAN to which interface belongs in the interface configuration mode (that is the **switchport access vlan** *vlan-id* command). For the two commands of adding the interface to the VLAN, the command configured later will overwrite the one configured before and take effect.

The configuration of adding the layer-2 AP into current VLAN through this command will only take effect for the layer-2 AP port, but not for the member port of the layer-2 AP port.

Configuration Examples

The following example adds the interface GigabitEthernet 0/10 to VLAN20.

```
QTECH# configure terminal SwitchA(config)#vlan 20
SwitchA(config-vlan)#add interface GigabitEthernet 0/10 QTECH# show
interface GigabitEthernet 0/10 switchport
Interface Switchport Mode Access Native Protected VLAN lists
       -

--------------------------------------------------

GigabitEthernet 0/10 enabled ACCESS 20 1 Disabled ALL
```

The following example adds the interface range GigabitEthernet 0/1-10 to VLAN200.

```
QTECH# configure terminal SwitchA(config)#vlan 200
```

```
Qtech# configure terminal
SwitchA(config)#vlan 200
SwitchA(config-vlan)#add interface range GigabitEthernet 0/1-10
Qtech# show vlan
```

```
SwitchA#show vlan
VLAN Name        Status                    Ports
------ ---------- ---------------- ------------------------------------
1 VLAN0001   STATIC  Gi0/11,Gi0/12,Gi0/13,Gi0/14,Gi0/15,
Gi0/16,Gi0/17,Gi0/18,Gi0/19,Gi0/20,Gi0/21, Gi0/22, Gi0/23, Gi0/24
200 VLAN0200 STATIC  Gi0/1,Gi0/2,Gi0/3,Gi0/4,Gi0/5,
Gi0/6,Gi0/7,Gi0/8,Gi0/9,Gi0/10
```

Related Commands

Platform Description

The following example adds the AggregatePort10 to VLAN20.

```
QTECH# configure terminal SwitchA(config)#vlan 20
SwitchA(config-vlan)#add interface aggregateport 10 QTECH# show
interface aggregateport 10 switchport
Interface Switchport Mode Access Native Protected VLAN lists
       -



AggregatePort       10   ACCE    2    1   Disable   ALL
enabled                  SS      0        d
```

Command	Description
show interface *interface-id*	Displays the layer-2 interfaces.

switchport	

N/A

4.2. name

Parameter Description

Use this command to specify the name of a VLAN. Use the no or default form of this command to restore the default setting.

name *vlan-name* no name default name

Defaults

The default name of a VLAN is the combination of “VLAN” and VLAN ID, for example, the default name of the VLAN 2 is “VLAN0002”.

Parameter	Description
vlan-name	VLAN name

Command mode

Usage Guide N/A

Configuration Examples

The following example sets the name of VLAN to 10.

```
QTECH(config)# vlan 10
QTECH(config-vlan)# name vlan10
```

Related Commands

Command	Description
show vlan	Displays member ports of the VLAN.

Platform Description

N/A

4.3. show vlan

Use this command to display member ports of the VLAN.

show vlan [id *vlan-id*]

Parameter Description

Parameter	Description
vlan-id	VLAN ID

Defaults

N/A

Command mode

All modes

Usage Guide

N/A

Configuration Examples

The following command displays the status of VLAN 1.

```
QTECH(config-vlan)#show vlan id 20
VLAN Name     Status Ports
-------
------------------------------------------------------------------------------------------------------------------------

20 VLAN0020   STATIC Gi0/1
```

The following command displays the status of all VLANs.

```
QTECH(config-vlan)#show     vlan
VLAN Name
                                Status     Ports
-------
------------------------------------------------------------------------

1 VLAN0001                      STATIC     Gi0/1, Gi0/2, Gi0/4, Gi0/5
Gi0/6, Gi0/7, Gi0/8, Gi0/9 Gi0/10, Gi0/11, Gi0/12, Gi0/13 Gi0/14, Gi0/15,
Gi0/16, Gi0/17 Gi0/18, Gi0/19, Gi0/20, Gi0/21
Gi0/22, Gi0/23, Gi0/24



2-3 VLAN0002-VLAN0003                      STATIC         Gi0/1
20 VLAN0020                                STATIC         Gi0/1
```

Related Commands

Command	Description
name	VLAN name.
switchport access	Adds the interface to a VLAN.

Platform Description

N/A

4.4. switchport access

Use this command to configure an interface as a static access port and assign it to a VLAN. Use the

no or default form of the command to assign the port to the default VLAN.

switchport access vlan *vlan-id* no switchport access vlan default switchport access vlan

Parameter Description

Parameter	Description
vlan-id	The VLAN ID at which the port to be added.

Defaults

By default, the switch port is an access port and the VLAN is VLAN 1.

Command mode

Interface configuration mode.

Usage GuideEnter one VLAN ID. The system will create a new one and add the interface to the VLAN if you enter a new VLAN ID. If the VLAN ID already exists, the command adds the port to the VLAN.

If the port is a trunk port, the operation does not take effect.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if)# switchport access vlan 2
```

Related Commands

Command	Description
switchport mode	Specifies the interface as Layer 2 mode (switch port mode).
switchport trunk	Specifies a native VLAN and the allowed-VLAN list for the trunkport.

Platform Description

N/A

4.5. switchport hybrid allowed

Use this command to add the port to the VLAN or remove the port from the VLAN, Use the no or

default form of this command to restore the default setting.

switchport hybrid allowed vlan { { [add | only] tagged *vlist* | [add] untagged *vlist* } | remove *vlist* }

no switchport hybrid allowed vlan default switchport hybrid allowed vlan

Parameter Description

Parameter	Description
add	Adds the port to the VLAN.
only	Adds the port to the VLAN and removes the port from the VLANs not on the VLAN list.

Defaults

By default, the hybrid port is in all VLANs. All VLAN packets (except native VLAN packets) going out on the port are tagged with VLAN ID. Native VLAN packets are not tagged with VLAN ID.

Command mode

Interface configuration mode

Usage Guide **N/A**

Configuration Examples

```
QTECH(config)# interface gigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)# switchport mode hybrid QTECH(config-if-
GigabitEthernet 0/1)#switchport hybrid allowed vlan untagged 20
QTECH(config-if-GigabitEthernet 0/1)#switchport hybrid allowed vlan add
```

The following example adds the hybrid port to VLAN 20 and VLAN 30 and the VLAN packets going out on the port are not tagged with VLAN ID.

untagged 30

The following example adds the hybrid port to VLAN 40 and VLAN 50 and the VLAN packets going out on the port are tagged with VLAN ID,

```
QTECH(config)# interface gigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)#switchport mode hybrid
QTECH(config-if-GigabitEthernet 0/1)#switchport hybrid allowed vlan tagged 40
QTECH(config-if-GigabitEthernet 0/1)#switchport hybrid allowed vlan tagged
50
```

```
QTECH(config)# interface gigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)#switchport mode hybrid
QTECH(config-if-GigabitEthernet 0/1)#switchport hybrid allowed vlan remove 20
```

he following example removes the hybrid port from VLAN 20.

The following example adds the hybrid port to VLAN 20 and deletes all the other VLANs. The VLAN packets going out on the port are tagged with VLAN ID.

```
QTECH(config)# interface gigabitEthernet 0/1
QTECH(config-if-GigabitEthernet 0/1)#switchport mode hybrid QTECH(config-if-
GigabitEthernet 0/1)#switchport hybrid allowed vlan only tagged 20
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

4.6. switchport hybrid native

Use this command to configure the native VLAN for the hybrid port. Use the **no** or **default** form of this command to restore the default setting.

switchport hybrid native vlan ***vlan-id*** no switchport hybrid native vlan default switchport hybrid native vlan

Parameter Description

Parameter	Description
vlan-id	Configures the native VLAN for the hybrid port.

Defaults

The default is VLAN 1.

Command mode

Interface configuration mode

Usage Guide

Native VLAN packets going out on the hybrid port are not tagged with VLAN ID. Packets not tagged with VLAN ID coming in on the hybrid port are taken as native VLAN packets.

Configuration Examples

```
QTECH(config-if-GigabitEthernet 0/1)#interface gigabitEthernet 0/1 QTECH(config-
if-GigabitEthernet 0/1)#switchport mode hybrid
QTECH(config-if-GigabitEthernet 0/1)#switchport hybrid native vlan 20
```

The following example configures VLAN 20 as the native VLAN for hybrid port GigabitEthernet 0/1.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

4.7. switchport mode

Use this command to specify a L2 interface (switch port) mode. You can specify this interface to be an access port or a trunk port. Use the **no** or **default** form of this command to restore the default setting. **switchport mode** { **access** | **trunk** | **hybrid** | **uplink** }

no switchport mode default switchport mode

Parameter Description

Parameter	Description
access	Configures the switch port as an access port.
trunk	Configures the switch port as a trunk port.
hybrid	Configures the switch port as a hybrid port.
uplink	Configures the switch port as an uplink port.

Defaults

By default, the switch port is an access port.

Command mode

Interface configuration mode.

Usage Guide

If a switch port is an access port, the port can be added only to one VLAN. You can run the **switchport access vlan** command to specify the VLAN to which the port belongs.

If a switch port is a trunk port, the port is added to all VLANs by default. You can also run the **switchport trunk allowed** command to add the port to or remove the port from a specified VLAN. If a switch port is an uplink port, the port is added to all VLANs by default. Different from the trunkport, the uplink port sends packets with a tag carried, that is, the tag of packets from default VLANs will not be deleted. You can run the **switchport trunk allowed** command to add the port to or remove the port from a specified VLAN.

If a switch port is a hybrid port, the port is added to all VLANs by default. Different from a trunk port, a hybrid port can be added to a VLAN in tag or untag mode by running the **switchport hybrid allowed** command.

Configuration Examples

The following example configures port 1 as an access port.

```
QTECH(config)#int g 0/1
QTECH(config-if-GigabitEthernet 0/1)#switchport mode access
```

The following example configures port 1 as a trunk port.

```
QTECH(config)#int g 0/1
QTECH(config-if-GigabitEthernet 0/1)# switchport mode trunk
```

The following example configures port 1 as an uplink port.

```
QTECH(config)#int g 0/1
QTECH(config-if-GigabitEthernet 0/1)# switchport mode uplink
```

The following example configures port 1 as a hybrid port.

```
QTECH(config-if-GigabitEthernet 0/1)# switchport mode hybrid
```

```
QTECH(config)#int g 0/1
```

Related Commands

Command	Description
switchport access	Configures an interface as a statics access port and assigns it to a VLAN.
switchport trunk	Specifies a native VLAN and the allowed-VLAN list for the trunkport.

Platform Description

N/A

4.8. switchport trunk allowed vlan

Use this command to add the trunk/uplink port to the VLAN or remove a trunk/uplink port from the VLAN. Use the no or default form of the command to restore the default setting.

switchport trunk allowed vlan { all | { add *vlan-list* | remove *vlan-list* | except *vlan-list* | only *vlan-list* }

no switchport trunk allowed vlan default switchport trunk allowed vlan}

Parameter Description

Parameter	Description
all	Adds the trunk/uplink port to all VLANs.
add	**Adds the trunk/uplink port to the**

	VLAN.
remove	Removes the trunk/uplink port from the VLAN port.
except	Removes the trunk/uplink port from the VLAN and adds the port to all the other VLANs.
only	Adds the trunk/uplink port to the specified VLAN and removes the port from the VLANs not on the VLAN list.
vlan-list	Specifies the VLAN.

Defaults The trunk/unlink port is in all VLANs by default.

Command mode

Interface configuration mode.

Usage Guide

A trunk/uplink port transmits all VLAN (1-4094) data by default. You can block some VLAN data by configuring this command. Use the **show interfaces** command to display configuration.

Configuration Examples

```
QTECH(config)# interface gigabitEthernet 0/10
QTECH(config-if-GigabitEthernet 0/10)# switchport mode trunk
QTECH(config-if-GigabitEthernet 0/10)# switchport trunk allowed vlan remove 2
```

The following example removes trunk port GigabitEthernet 0/10 from VLAN 2.

```
QTECH(config)# interface gigabitEthernet 0/10
QTECH(config-if-GigabitEthernet 0/10)# switchport trunk allowed vlan except 10
```

The following example removes uplink port GigabitEthernet 0/10 from VLAN 10.

```
QTECH(config)# interface gigabitEthernet 0/10
QTECH(config-if-GigabitEthernet 0/10)# switchport mode uplink
QTECH(config-if-GigabitEthernet 0/10)# switchport trunk allowed vlan remove 10
```

The following example adds uplink port GigabitEthernet 0/10 to all VLANs except VLAN10.

```
QTECH(config)# interface gigabitEthernet 0/10
QTECH(config-if-GigabitEthernet 0/10)# switchport trunk allowed vlan except 10
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

4.9. switchport trunk native vlan

Use this command to configure the native VLAN for the trunk/uplink port. Use the **no** or **default** form of this command to restore the default setting.

switchport trunk native vlan ***vlan-id*** no switchport trunk native vlan default switchport trunk native vlan

Parameter Description

Parameter	Description
vlan-id	Native VLAN ID.

Defaults

By default, the native VLAN for the trunk/uplink port is VLAN 1.

Command mode

Interface configuration mode

Usage Guide

After this function is enabled, packets not tagged with VLAN ID are taken as native VLAN packets.

Tags are removed from native VLAN packets going out on the trunk port.

Configuration Examples

The following example configures VLAN 10 as the native VLAN for trunk port GigabitEthernet 0/10.

```
QTECH(config)#interface gigabitEthernet 0/10
QTECH(config-if-GigabitEthernet 0/10)# switchport mode trunk QTECH(config-if-
GigabitEthernet 0/10)# switch trunk native vlan 10
```

The following example configures VLAN 10 as the native VLAN for unlink port

GigabitEthernet 0/10.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

4.10. vlan

Use this command to enter the VLAN configuration mode. Use the no or default form of this command to restore the default setting.

vlan { *vlan-id* | range *vlan-range* }

no vlan { *vlan-id* | range *vlan-range* }

default vlan { *vlan-id* | range *vlan-range* }

Parameter	Description
vlan-id	VLAN ID Default VLAN (VLAN 1) cannot be removed.
vlan-range	VLAN ID range.

Parameter Description

Defaults

The default is static VLAN.

Command mode

Global configuration mode.

Usage Guide **N/A**

Configuration Examples

```
QTECH(config)# vlan 10
QTECH(config-vlan)#
```

The following example creates VLAN 10.

Related Commands

Command	Description
show vlan	Displays member ports of the VLAN.

Platform Description

N/A

5. SUPER-VLAN COMMANDS

5.1. proxy-arp

Use this command to enable the proxy ARP function for a VLAN. Use the no form of this command to disable this function. Use the default form of this command torestore the default setting.

proxy-arp

no proxy-arp default proxy-arp

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is enabled by default.

Command mode

VLAN configuration Mode.

Usage Guide

Super VLAN and sub VLAN must be both enabled with proxy ARP.

Configuration Examples

The following example enables the proxy ARP function for VLAN 3.

```
QTECH(config)# vlan 3
QTECH(config-vlan)# proxy-arp
```

The following example disables the proxy ARP function for VLAN 3.

```
QTECH(config)# vlan 3
QTECH(config-vlan)# no proxy-arp
```

Related Commands

Command	Description
show supervlan	Displays the super VLAN information.

Platform Description

N/A

5.2. show supervlan

Use this command to display the configuration of the super VLAN and its sub VLANs.

show supervlan

show supervlan *vlan-id*

Parameter Description

Parameter	Description
vlan-id	VLAN ID

Defaults

N/A

Command mode

Any mode

Usage Guide

N/A

Configuration Examples

Related Commands

Platform Description

The following example displays the configuration of super VLAN 2.

```
SwitchA(config-if-range)# show supervlan 2
supervlan id supervlan arp-proxy subvlan id subvlan arp-proxy subvlan ip
range
----------------------
     2         ON        10         ON      192.168.196.10 - 192.168.196.50
                         20         ON     192.168.196.60 - 192.168.196.100
                         30         ON    192.168.196.110 - 192.168.196.150
```

The following example displays the configuration of all super VLANs.

```
SwitchA(config-if-range)# show supervlan
supervlan id supervlan arp-proxy subvlan id subvlan arp-proxy subvlan ip
range
```

```
2        ON        10      ON        192.168.196.10 - 192.168.196.50
                   20      ON        192.168.196.60 - 192.168.196.100
                   30      ON        192.168.196.110 - 192.168.196.150
6        ON        7-8     ON
```

Command	Description
N/A	N/A

N/A

5.3. subvlan

Use this command to set the sub VLAN for the super VLAN. Use the no form of this command to disbale this function. Use the default form of this command to restore the default setting. subvlan *vlan-id-list*

no subvlan [*vlan-id-list*]

default subvlan [*vlan-id-list*]

Parameter Description

Parameter	Description
vlan-id-list	Sub VLAN ID of the VLAN. Multiple VLANs are supported.

Defaults

No super VLAN is set by default.

Command mode

VLAN configuration Mode.

Usage Guide Use the **no subvlan** command to delete all sub VLANs of this super VLAN.

Configuration Examples

```
SwitchA(config)#vlan 2 SwitchA(config-
vlan)#supervlan
SwitchA(config-vlan)#subvlan 10,20,30
```

The following example sets the sub VLAN.

Related Commands

Command	Description
show supervlan	Displays the super VLAN information.

Platform Description

N/A

5.4. subvlan-address-range

Use this command to set the IP address range of the sub VLAN. Use the no form of this command to disbale this function. Use the default form of this command to restore the default setting.

subvlan-address-range *start-ip end-ip*

no subvlan-address-range default subvlan-address-range

Parameter Description

Parameter	Description
start-ip	The start IP address of this sub VLAN
end-ip	The end IP address of this sub VLAN

Defaults

No IP address range is set by default.

Command mode

VLAN configuration Mode.

Usage Guide N/A

Configuration

The following example sets the IP address range for the sub VLAN.

Examples

```
QTECH(config)# vlan 2
QTECH(config-vlan)#subvlan-address-range 192.168.23.1 192.168.23.5
```

Command	Description
show supervlan	Displays the super VLAN information.

elated Commands

Platform Description

```
QTECH(config)# vlan 2
QTECH(config-vlan)#supervlan
```

N/A

5.5. supervlan

Use this command to set the VLAN as a super VLAN. Use the no form of this command to disbale this function. Use the default form of this command to restore the default setting.

supervlan

no supervlan default supervlan

Parameter Description

Parameter	Description
N/A	N/A

Defaults

No super VLAN is set by default.

Command mode

VLAN configuration Mode.

Usage Guide

No physical port can be added to a super VLAN.

Configuration Examples

The following example configures a Sub VLAN.

Related Commands

Command	Description
show supervlan	Displays the super VLAN information.

Platform Description

N/A

6. PRIVATE VLAN COMMANDS

6.1. debug bridge pvlan

Use this command to enable private VLAN debugging. Use the no or default form of this command to restore the default setting.

debug bridge pvlan no debug bridge pvlan

Parameter Description

Parameter	Description
N/A	N/A

Defaults

Debugging is disabled by default.

mmand mode

Privileged EXEC mode

Usage Guide

Debugging information includes error and prompt messages appearing during private VLAN configuration.

This command can be used to troubleshoot VLAN and interface configuration failure.

ith private VLAN debugging enabled, all super VLAN configuration and packet processing on SVI is displayed.

Debugging information helps troubleshooting and fault location.

Configuration Examples

The following example enables private VLAN debugging.

```
Qtech# debug bridge pvlan
```

The following example disables private VLAN debugging.

```
Qtech# no debug bridge pvlan
```

Related Commands

Platform Description

N/A

6.2. private-vlan

Use this command to configure the private VLAN feature. Use the **no** or **default** form of this command to restore the default setting.

Parameter Description

Parameter	Description
community	Sets the community VLAN.
isolated	Sets the isolated VLAN.
primary	Sets the primary VLAN.

private-vlan { **community** | **isolated** | **primary** }

no private-vlan { **community** | **isolated** | **primary** }

default private-vlan { **community** | **isolated** | **primary** }

Defaults

No private VLAN feature is configured by default.

Command mode

VLAN configuration mode

Usage Guide N/A

Configuration Examples

The following example configures the private VLAN feature.

```
QTECH(config)#vlan 90
QTECH(config-vlan)#private-vlan primary QTECH(config-
vlan)#vlan 91 QTECH(config-vlan)#private-vlan isolated
QTECH(config-vlan)#vlan 92
QTECH(config-vlan)#private-vlan community
```

```
QTECH(config)#vlan 90
QTECH(config-vlan)#no private-vlan primary QTECH(config-
vlan)#vlan 91
QTECH(config-vlan)#no private-vlan isolated QTECH(config-
vlan)#vlan 92
```

```
QTECH(config-vlan)#no private-vlan community
```

The following example disables the private VLAN feature using the **no private-vlan** command.

The following example disables the private VLAN feature using the **default private-vlan** command.

```
Qtech(config)#vlan 90
Qtech(config-vlan)#default private-vlan primary
Qtech(config-vlan)#vlan 91
Qtech(config-vlan)#default private-vlan isolated
Qtech(config-vlan)#vlan 92
Qtech(config-vlan)#default private-vlan community
```

Related Commands

Command	Description
N/A	N/A

Platform

N/A

Description

private-vlan association

Use this command to associate the secondary VLAN with the primary VLAN on layer 2. Use the no or

default form of this command to restore the default setting. private-vlan association { *svlist* | add *svlist* | remove *svlist* } no private-vlan association

default private-vlan association

Parameter Description

Parameter	Description
svlist	The secondary VLAN list
add *svlist*	Adds the associated secondary VLAN.
remove *svlist*	Removes the associated secondary VLAN.

Defaults

This function is disabled by default.

Command mode

VLAN configuration Mode.

Usage GuideN/A

Configuration Examples

```
QTECH(config)# vlan 22
QTECH(config-vlan)# private-vlan association add 24-26
```

The following example associates the secondary VLAN with the primary VLAN on layer 2.

The following example removes the association between the secondary VLAN with the primary VLAN.

```
QTECH(config)# vlan 22
QTECH(config-vlan)# private-vlan association remove 24
```

Related

Command	Description
show vlan private-vlan	N/A

Commands

Platform Description

N/A

6.3. private-vlan mapping

Use this command to associate the secondary VLAN with the primary VLAN on layer 3. Use the **no** or

default form of this command to restore the default setting.

arameter Description**private-vlan mapping** { *svlist* | **add** *svlist* | **remove** *svlist* }

no private-vlan mapping default private-vlan mapping

Parameter	Description
svlist	Secondary VLAN list.
add *svlist*	Adds the associated secondary VLAN.

remove *svlist*	Removes the associated secondary VLAN.

Defaults

This function is disabled by default.

Command mode

Interface configuration mode

Usage Guide **N/A**

Configuration Examples

```
QTECH(config)# interface vlan 22
QTECH(config-if)# private-vlan mapping add 24-26
```

The following example associates the secondary VLAN with the primary VLAN on layer 3.

Related Commands

Command	Description
show vlan private-vlan	N/A

Platform Description

N/A

6.4. show vlan private-vlan

Use this command to display the private VLAN configuration.

show vlan private-vlan **[** community **|** primary **|** isolated **]**

Use this command to display all the private VLANs configuration.

show vlan private-vlan

Parameter Description

Parameter	Description
primary	Displays the primary VLAN information.
community	Displays the community VLAN information.
isolated	Displays the isolated VLAN information.

Defaults

N/A

Command mode

All modes

Usage Guide

N/A

Configuration Examples

Related Commands

Platform Description

The following example displays the private VLAN configuration.

```
QTECH# show vlan private-vlan
VLAN  Type       Status   Routed   Ports                          Associated
VLANs
---------                                          ---------------------------------------------------
-------------------------------------------------------------------------
30    primary    inactive Enabled
31    isolated   inactive Disabled                             No Association
90    primary    active   Disabled                            91-92
91    isolated   active   Disabled                            90
92    community  active   Disabled Gi0/1                        90
```

Command	Description
N/A	N/A

N/A

6.5. switchport mode private-vlan

Use this command to declare the private VLAN mode of the interface. Use the **no** or **default** form of this command to restore the default setting.

switchport mode private-vlan **{** host **|** promiscuous **}**

no switchport mode default switchport mode

Parameter Description

Parameter	Description
host	Host mode of the private VLAN
promiscuous	Promiscuous mode of the private VLAN

Defaults

The port is an access port by default.

Command mode

Interface configuration mode.

Usage Guide

Before a port is configured as an isolated port or promiscuous port, and the port mode must be configured as the host port mode.

The port mode must be configured as the promiscuous mode.

Configuration Examples

```
QTECH(config)# interface gigabitEthernet0/2
QTECH(config-if)# switchport mode private-vlan host
```

The following example applies the private host mode to the interface.

```
QTECH(config)# interface gigabitEthernet 0/2
QTECH(config-if-GigabitEthernet 0/2)#sw mode private-vlan promiscuous
```

The following example applies the promiscuous mode to the interface.

Related Commands

Command	Description
how vlan private-vlan	N/A

Platform Description

N/A

6.6. switchport private-vlan association trunk

Use this command to associate the trunk port in the private VLAN mode, which is associated with the primary VLAN and the secondary VLAN. Use the **no** or **default** form of this command to restore the default settings.

switchport private-vlan association trunk *p_vid s_vid*

no switchport private-vlan association trunk

default switchport private-vlan association trunk *p_vid s_vid*

Parameter Description

Parameter	Description
p_vid	Primary VID.
s_vid	Secondary VID
no	Deletes the host port from the private VLAN.

Defaults

By default, it is trunk port.

Command modeInterface configuration mode.

Usage Guide

The associated PVLAN must be a VLAN pair on which Layer-2 association is performed.

The interface must work in Trunk port mode.

One Trunk port can be associated with multiple PVLAN pairs.

Configuration Examples

```
QTECH(config)# interface gigabitEthernet 0/2 QTECH(config-
if)# switchport mode trunk
QTECH(config-if)# switchport private-vlan association trunk 202 203
```

The following example configures a Trunk port, and associates it with a layer 2 port and private VLAN.

Related Commands

Command	Description
show vlan private-vlan	N/A

Platform Description

N/A

6.7. switchport private-vlan host-association

Use this command to associate the primary VLAN, which is associated with the private VLAN mode of the interface, with the secondary VLAN. Use the no or default form of this command to restore the default setting.

switchport private-vlan host-association *p_vid s_vid*

no switchport private-vlan host-association default switchport private-vlan host-association

Parameter Description

Parameter	Description
p_vid	Primary VID.
s_vid	Secondary VID

Defaults

This function is disabled by default.

Command mode

Interface configuration mode.

Usage Guide

Before a port is configured as an isolated port or promiscuous port, and the port mode must be configured as the host port mode.

Whether a port is configured as an isolated port or community port depends on the s_vid parameter. p_vid and s_vid must be respectively the IDs of the primary VLAN and secondary VLAN in a PVLAN pair, on which Layer-2 association is performed.

One host port can be associated with only one PVLAN pair.

Configuration Examples

```
QTECH(config)# interface gigabitEthernet 0/1 QTECH(config-if)# switchport mode private-
```
vlan host

```
QTECH(config-if)# switchport private-vlan host-association 22 23
```

```
QTECH(config-if)# default switchport private-vlan host-asscioation
```

The following example associates the secondary VLAN with the primary VLAN on the host port.

Related Commands

Platform Description

```
QTECH(config-if)# switchport private-vlan host-association 22 25
```

Command	Description
show vlan private-vlan	N/A

N/A

6.8. switchport private-vlan mapping

Use this command to configure the secondary VLAN for the promiscuous port. Use the no or default

form of this command to restore the default setting.

switchport private-vlan mapping *p_vid* { *svlist* | add *svist* | remove *svlist* }

no switchport private-vlan mapping default switchport private-vlan mapping

Parameter Description

Parameter	Description
p_vid	Indicates the primary VLAN ID in a PVLAN pair.
svlist	Indicates the secondary VLAN associated with a promiscuous port.

	Layer-2 association must be performed between it and *p_vid*.
add	Adds a secondary VLAN to be associated with a port.
remove	Cancels the secondary VLAN associated with a port.

Defaults

This function is disabled by default.

Command mode

Interface configuration mode

Usage Guide

The port mode must be configured as the promiscuous mode.

Layer-2 association must be performed between the primary and secondary VLAN.

Configuration Examples

```
QTECH(config)# interface gigabitEthernet 0/1 QTECH(config-if)#
switchport mode private-vlan promiscuous
QTECH(config-if)# switchport private-vlan mapping 22 add 23-25
```

The following example configures the secondary VLAN for the promiscuous port.

Related Commands

Command	Description
show vlan private-vlan	N/A

Platform N/A

Description

6.9. switchport private-vlan promiscuous trunk

Use this command to configure the ports as a promiscuous trunk port, which is associated with the L2 port and the private VLAN. Multiple pairs are allowed to associate. Use the **no** or **default** form of this command to restore the default settings.

switchport private-vlan promiscuous trunk *p_vid_s_list*

no switchport private-vlan promiscuous trunk *p_vid_s_list*

Parameter Description

Parameter	Description
p_vid	Primary VID
svlist	Secondary VLAN list.
no	Removes all the relationships between the layer-2 ports and private VLANs.

Defaults

N/A

Command mode

Interface configuration mode

Usage Guide

The port mode must be a Trunk port.

Layer-2 association must be performed between the primary and secondary VLAN.

Configuration Examples

```
QTECH(config)# interface gigabitEthernet 0/2 QTECH(config-
if)# switchport mode trunk
QTECH(config-if)# switchport private-vlan promiscuous trunk 202 203
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

7. MSTP COMMANDS

7.1. bpdu src-mac-check

Use this command to enable the BPDU source MAC address check function on the interface. Use the

no form of this command to restore the default setting.

bpdu src-mac-check *H.H.H*

no bpdu src-mac-check

Parameter Description

Parameter	Description
H.H.H	Indicates that only the BPDU messages from this MAC address are received.

Defaults

This function is disabled by default.

Command Mode

Interface configuration mode.

Usage GuideBPDU source MAC address check prevents BPDU packets from maliciously attacking switches and causing MSTP abnormal. When the switch connected to a port on a point-to-point link is determined, you can enable BPDU source MAC address check to receive BPDU packets sent only by the peer switch and discard all other BPDU packets, thereby preventing malicious attacks. You can enable the BPDU source MAC address check in interface configuration mode for a specific port. One port can only filter one MAC address.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if-interface-id-interface-id)# bpdu src-mac-check 00d0.f800.1e2f
```

The following example indicates only the BPDU with 00d0.f800.1e2f as the source MAC address will be received by interface Gi 1/1 .

Related Commands

Command	Description

N/A	N/A

Platform Description

N/A

7.2. bridge-frame forwarding protocol bpdu

Use this command to enable BPDU transparent transmission. Use the no form of this command to restore the default setting.

bridge-frame forwarding protocol bpdu

no bridge-frame forwarding protocol bpdu

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Global configuration mode

Usage Guide In the IEEE 802.1Q standard, 01-80-C2-00-00-00, the destination MAC address of BPDU frames, is reserved. Devices following the IEEE 802.1Q standard don't forward BPDU frames. In real network deployment, devices may be required to support BPDU transparent transmission. For example, when a device is not enabled with STP, BPDU transparent transmission can help implement STP calculation.

BPDU transparent transmission works only when STP is disabled.

Configuration Examples

Related Commands

Platform Description

The following example enables BPDU transparent transmission.

```
QTECH(config)# bridge-frame forwarding protocol bpdu
```

Command	Description
N/A	N/A

N/A

7.3. clear spanning-tree counters

Use this command to clear the statistics of the sent and received STP packets.

clear spanning-tree detected-protocols [interface *interface-id*]

Parameter Description

Parameter	Description
interface-id	ID of the interface

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

It is used to clear the statistics of the sent and received STP packets.

Configuration Examples

Related Commands

Platform Description

The following example clears the statistics of the sent and received STP packets.

```
QTECH# clear spanning-tree counters
```

The following example clears the statistics of the sent and received packets on interface Gi 0/1.

```
QTECH# clear spanning-tree counters interface gigabitethernet 0/1
```

Command	Description
show spanning-tree counters	**Displays the statistics of STP transceived packets.**

N/A

7.4. clear spanning-tree detected-protocols

Use this command to force the interface to send the RSTP BPDU message and check the BPDU messages.

clear spanning-tree detected-protocols [**interface** *interface-id*]

Parameter Description

Parameter	Description
interface-id	ID of the interface

Defaults N/A

Command Mode

Privileged EXEC mode

Usage Guide

Use this command to force the interface to send the RSTP BPDU message.

Configuration Examples

Related Commands

Command	Description
show spanning-tree interface	**Displays the STP configuration of the interface.**

Forces to check the version of all interfaces.

```
QTECH# clear spanning-tree detected-protocols
```

Platform Description

N/A

7.5. clear spanning-tree mst topochange record

Use this command to clear STP topology change record.

clear spanning-tree mst *instance-id* **topochange record**

Parameter Description

Parameter	Description
instance-id	Instance ID. For STP and RSTP protocols, only instance 0 is valid.

Defaults N/A

Command Mode

Privileged EXEC mode

Usage Guide **N/A**

Configuration Examples

```
QTECH# show spanning-tree mst 0 topochange record Topology change
information on mst 0:
 Time              Interface          Old status   New status   Type
                      -
      -
QTECH# clear spanning-tree mst 0 topochange record QTECH# show
spanning-tree mst 0 topochange record
%There's no topology change information has been record on mst 0.
```

The following example clears STP topology change record.

Related Commands

Command	Description

N/A	N/A

Platform Description

N/A

7.6. instance instance-id vlan vlan-range

Use this command to set instance and VLAN mapping relations. Use the **no** form of the command to restore the default setting.

Parameter Description

Parameter	Description
instance-id	Instance ID, in the range from 0 to 64
vlan-range	VLAN range, in the range from 1 to 4094.

instance *instance-id* **vlan** *vlan-range*

no instance *instance-id* { **vlan** *vlan-range* }

Defaults

The default is instance 0.

Command Mode

MST configuration mode

Usage Guide **instance** *instance-id* **vlan** *vlan-range* : Add VLAN to MST instance. Instance-ID is in the range from 0 to 64 and VLAN is in the range from 1 to 4094. Use commas to separate VLAN IDs and use hyphen

to indicate VLAN range, e.g., instance 10 vlan 2,3,6-9, which adds VLAN 2, 3, 4, 5, 6, 7, 8, 9 to instance 10. By default, all VLANs are in instance 0. Use the **no** form of this command to remove VLAN from instance 1-64.

If you create 64 instances by stacking on a QTECH device with a small memory (e.g., 64M), the memory may be undersized. It is recommended to limit stacking instance number.

Configuration Examples

Related Commands

Command	Description
N/A	N/A

This example enters MST mode and maps VLAN 3 and 5-10 to MST instance1.

```
QTECH(config)# spanning-tree mst configuration QTECH(config-mst)# instance
1 vlan 3, 5-10 QTECH(config-mst)# show spanning-tree mst configuration
Multi spanning tree protocol : Enable
Name   : Revision : 0
Instance Vlans Mapped



---------

0    1-2,4,11-4094
1    3,5-10
----------------------------------------------------------------------

QTECH(config-mst)# exit
QTECH(config)#
```

The following example removes VLAN3 from instance 1.

```
QTECH(config-mst)# no instance 1 vlan 3
```

The following example removes instance 1.

```
QTECH(config-mst)# no instance 1
```

Platform Description

N/A

7.7. l2protocol-tunnel stp

Use this command to enable BPDU TUNNEL globally. Use the no form of this command to disable this function.

l2protocol-tunnel stp no l2protocol-tunnel stp

Parameter Description

Parameter	Description

N/A	N/A

Defaults

N/A

Command Mode

Global configuration mode

Usage Guide

If you want to BPDU TUNNEL globally, enable BPDU TUNNEL on the interface first.

Configuration Examples

```
QTECH(config)# l2protocol-tunnel stp QTECH(config)#
show l2protocol-tunnel stp

L2protocol-tunnel: stp Enable
L2protocol-tunnel destination mac address: 01d0.f800.0005
```

The following example enables BPDU TUNNEL globally

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

7.8. l2protocol-tunnel stp enable

Use this command to enable BPDU TUNNEL on the interface. Use the **no** form of this command to disable this function.

l2protocol-tunnel stp enable no l2protocol-tunnel stp enable

Parameter

Parameter	Description

N/A	N/A

Description

Defaults

N/A

Command Mode

Interface configuration mode

Usage Guide If you want to BPDU TUNNEL globally, enable BPDU TUNNEL on the interface first.

Configuration Examples

```
QTECH(config-if-interface-id)# l2protocol-tunnel stp enable QTECH(config-
if-interface-id)# show l2protocol-tunnel stp

L2protocol-tunnel: stp Enable
L2protocol-tunnel destination mac address: 01d0.f800.0005
GigabitEthernet 0/1 l2protocol-tunnel stp enable
```

The following example enables BPDU TUNNEL on the interface.

Related Commands

Command	Description
N/A	N/A

Platform escription

N/A

7.9. l2protocol-tunnel stp tunnel-dmac

Use this command to configure the STP address for transparent transmission through BPDU TUNNEL. Use the no form of this command to restore the default setting.

l2protocol-tunnel stp tunnel-dmac *mac-address*

no l2protocol-tunnel stp tunnel-dmac

Parameter Description

Parameter	Description
mac-address	The STP address for transparent transmission.

Defaults

Command Mode

Global configuration mode

Usage Guide

The available STP address includes 01d0.f800.0005, 011a.a900.0005, 010f.e200.0003, 0100.0ccd.cdd0, 0100.0ccd.cdd1, and 0100.0ccd.cdd2.

Configuration Examples

Related Commands

Platform Description

The following example configures the STP address for transparent transmission through BPDU TUNNEL.

```
QTECH(config)# l2protocol-tunnel stp tunnel-dmac 011a.a900.0005
```

Command	Description
N/A	N/A

N/A

7.10. name

Parameter Description

Parameter	Description
name	MST name, up to 32 characters.

Use this command to set MST name. Use the **no** form of the command to restore the default setting.

name *name*

no name

Defaults

The default is NULL.

Command Mode

MST configuration mode

Usage Guide

name *name*: Sets the MST name, up to 32 characters.

show spanning-tree mst configuration: Displays MST region information.

Configuration Examples

```
QTECH(config)# spanning-tree mst configuration QTECH(config-mst)# name region1
QTECH(config-mst)# show spanning-tree mst configuration Multi
```

This example sets MST name to region1.

Related

Command	Description
N/A	N/A

Commands

Platform Description

N/A

7.11. revision

Use this command to set revision number of MSTP region. Use the **no** form of the command to restore the default setting.

revision *version*

no revision

Parameter Description

Parameter	Description
version	MST revision number, in the range from 0 to 65535.

Defaults

The default is 0.

Command Mode

MST configuration mode

Usage Guide **revision** *version*: Sets the MST version, in the range from 0 to 65535. **show spanning-tree mst configuration**: Displays MST region information.

Configuration Examples

```
QTECH(config)# spanning-tree mst configuration QTECH(config-mst)# revision 1
QTECH(config-mst)# show spanning-tree mst configuration Multi spanning tree protocol :
Enable
Name     : Revision : 1
Instance Vlans Mapped
```

This example sets revision number to1.

Related Commands

Command	Description
N/A	N/A

Platform

N/A

Description

7.12. show l2protocol-tunnel stp

Use this command to display BPDU TUNNEL configuration.

show l2protocol-tunnel stp

Parameter Description

Parameter	Description
N/A	N/A

Defaults

N/A

Command Mode

Privileged EXEC mode / Global configuration mode / Interface configuration mode

Usage Guide N/A

Configuration Examples

```
QTECH# show l2protocol-tunnel stp

L2protocol-tunnel: stp Enable
L2protocol-tunnel destination mac address:011a.a900.0005
GigabitEthernet 0/1 l2protocol-tunnel stp enable
```

The following example displays BPDU TUNNEL configuration.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

7.13. show spanning-tree

Use this command to display the global spanning-tree configuration.

show spanning-tree [summary | forward-time | hello-time | max-age | inconsistentports| tx-hold-count | pathcost method | max_hops | counters]

Parameter Description

Parameter	Description
summary	Displays the information of MSTP instances and forwarding status of the interfaces.
inconsistentports	Displays the block port due to root guard or loop guard.

forward-time	**Displays BridgeForwardDelay.**
hello-time	Displays BridgeHelloTime.
max-age	Displays BridgeMaxAge.
max-hops	Displays the maximum hops of an instance.
tx-hold-count	Displays TxHoldCount.
pathcost method	Displays the method used for calculating path cost.
counters	Displays the statistics of STP transceived packets.

Defaults

N/A

Command Mode

Privileged EXEC mode, global configuration mode and interface configuration mode.

Usage Guide

N/A

Configuration Examples

Related Commands

Platform Description

The following example displays the global spanning-tree configuration.

```
QTECH# show spanning-tree hello-time
```

The following example displays the sent and received STP packets.

```
       STP BPDU count
QTECH# show spanning-tree counters
---------------------------------------------------------------------
 Port                          Receive      Send
 GigabitEthernet               0            122594
 0/3
---------------------------------------------------------------------
 MSTID      Port                          Receive      Send 0
 0          GigabitEthernet               0
 0/3
       STP TC or TCN count
```

Command	Description
spanning-tree pathcost method	Sets the pathcost method.
spanning-tree forward-time	Sets BridgeForwardDelay.
spanning-tree hello-time	Sets BridgeHelloTime.
spanning-tree max-age	Sets BridgeMaxAge.
spanning-tree max-hops	Sets the maximum hops of an instance.
spanning-tree tx-hold-count	Displays TxHoldCount.

N/A

7.14. show spanning-tree interface

se this command to display the STP configuration of the interface, including the optional spanning tree.

show spanning-tree interface *interface-id* [{ bpdufilter | portfast | bpduguard | link-type }]

Parameter Description

Parameter	Description
interface-id	Interface ID
bpdufilter	Displays the status of BPDU filter.
portfast	Displays the status of portfast.
bpduguard	Displays the status of BPDU guard.
link-type	Displays the link type of an interface.

Defaults

N/A

Command Mode

Privileged EXEC mode, global configuration mode and interface configuration mode.

Usage Guide

N/A

Configuration Examples

```
QTECH# show spanning-tree int gi 0/1

PortAdminPortFast : Disabled PortOperPortFast :
Disabled PortAdminAutoEdge : Enabled
PortOperAutoEdge : Disabled PortAdminLinkType :
auto PortOperLinkType : point-to-point
PortBPDUGuard : Disabled PortBPDUFilter :
Disabled PortGuardmode : None

###### MST 0 vlans mapped :ALL PortState :
forwarding PortPriority : 128
PortDesignatedRoot : 32768.001a.a979.00ea
PortDesignatedCost : 0 PortDesignatedBridge
:32768.001a.a979.00ea PortDesignatedPortPriority : 128
PortDesignatedPort : 1
PortForwardTransitions : 1
PortAdminPathCost : 200000
PortOperPathCost : 200000 Inconsistent
```

```
states : normal PortRole : rootPort
```

The following example displays the STP configuration on interface Gi 0/1.

Related Commands

Command	Description
spanning-tree bpdufilter	Enables the BPDU filter feature someone the interface.
spanning-tree portfast	Enables the portfast on the interface.
spanning-tree bpduguard	Enables the BPDU guard on the interface.
spanning-tree link-type	Sets the link type of the interface to point-to-point.

latform Description

N/A

7.15. show spanning-tree mst

Use this command to display the information of MST and instances.

show spanning-tree mst { **configuration** | *instance-id* [**interface** *interface-id*] }

Parameter Description

Parameter	Description
configuration	The MST configuration of the equipment.
instance-id	Instance number
interface-id	Interface number

Defaults All the instances are displayed by default.

Command Mode

Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide

N/A

Configuration Examples

The following example displays the information of MST and instances.

```
QTECH# show spanning-tree mst configuration Multi spanning tree protocol
: Enable
Name   : test Revision : 0
Instance Vlans Mapped




0      : 2-4094
1      : 1
```

Field Description

Field	Description
Multi spanning tree protocol	Enables MSTP protocol.

Name	Name of the MST region
Revision	Revision of the MST region
Instance Vlans Mapped	Mapping relation between the instance and VLAN

Related Commands

Command	Description
spanning-tree mst configuration	Configures the MST region.

spanning-tree mst cost	Displays the path cost of the instance.
spanning-tree mst max-hops	Displays the maximum hops of the instance.
spanning-tree mst priority	Displays the equipment priority of the instance.
spanning-tree mst port-priority	Displays the port priority of the instance.

latform Description

N/A

7.16. show spanning-tree mst topochange record

Use this command to display the STP topology change record.

show spanning-tree mst *instance-id* **topochange record**

Parameter Description

Parameter	Description
instance-id	Instance ID.

Defaults

N/A

Command Mode

Privileged EXEC mode / Global configuration mode / Interface configuration mode

Usage Guide

N/A

Configuration Examples

```
QTECH# show spanning-tree mst 0 topochange record
Topology change information on mst 0:
 Time              Interface          Old status   New status   Type
                      -
---------------------------------
 2013.5.1 4:18:46    GI0/6              Learning     Forwarding   Normal
```

The following example displays the STP topology change record of instance 0.

Field	Description
Time	**The time when the topology changes.**
Interface	**The interface whose topology changes.**
Old status	**Old STP status on the interface.**
New status	New STP status on the interface.
Type	Topology change may be caused by the following causes: Normal: UP/DOWN state change on the interface, LoopGuard Block: Loop-inconsistence causes the interface to be blocked. RootGuard Block: Root-inconsistence causes the interface to be blocked. Inferior Block: Receiving inferior BPDU frames causes the interface to be blocked. LoopGuard Unblock: The interface returns to Forward status from loop-inconsistence. RootGuard Unblock: The interface returns to Forward status from root-inconsistence. Inferior Unblock-The interface returns to Forward status after not receiving inferior BPDU frames.

Related Commands

Command	Description

N/A	N/A

Platform Description

N/A

7.17. spanning-tree

Use this command to enable MSTP and configure its basic settings globally. The no form of the command disables the spanning-tree function. The no form of the command with parameters only restores the corresponding parameters to the default values, but does not disable the spanning-tree function.

spanning-tree [forward-time *seconds* | hello-time *seconds* | max-age *seconds*]

no spanning-tree [forward-time | hello-time | max-age]

Parameter Description

Parameter	Description
forward-time *seconds*	Interval at which the port status changes, in the range from 4 to 30 in the unit of seconds. The default is 15.
hello-time *seconds*	Interval at which the switch sends the BPDU message, in the range from 1 to 10 in the unit of seconds. The default is 2.
max-age *seconds*	Maximum aging time of the BPDU message, in the range from 6 to 40 in the unit of seconds. The default is 20.

Defaults

This function is disabled by default.

Command Mode

Global configuration mode.

Usage Guide

The values of **forward-time, hello time** and **max-age** are interrelated. Modifying one of these three parameters will affect the others. There is a restricted relationship among the above three values. 2*(Hello Time+1.0snd) <= Max-Age Time <= 2*(Forward-Delay–1.0snd)

If the values do not according with the condition, the settings do not work.

Configuration Examples

Related Commands

Platform Description

The following example enables the spanning-tree function.

```
QTECH(config)# spanning-tree
```

The following example configures the BridgeForwardDelay.

```
QTECH(config)# spanning-tree  forward-time 10
```

Command	Description
show spanning-tree	Displays the global STP configuration.
spanning-tree mst cost	Sets the PathCost of an STP interface.
spanning-tree tx-hold-count	Sets the global TxHoldCount of STP.

N/A

7.18. spanning-tree autoedge

Use this command to enable Autoedge on the interface. Use the **disabled** form of this command to disable this function.

spanning-tree autoedge **[** disabled **]**

Parameter Description

Parameter	Description
disabled	Disabled Autoedge on the interface.

Defaults

This function is enabled by default.

Command Mode

Interface configuration mode.

Usage Guide

If the designated port of a device does not receive a BPDU from the downlink port within a specific period (3 seconds), the device regards a network device connected to the designated port, configures the port as an edge port, and switches the port directly into the forwarding state. The edge port will be automatically identified as a non-edge port after receiving a BPDU.

You can run the spanning-tree autoedge disabled command to disable Auto Edge.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if-interface-id-interface-id)# spanning-tree autoedge disabled
```

The following example disables Autoedge on the interface.

Related Commands

Command	Description
show spanning-tree interface	Displays the STP configuration information of the interface.

Platform Description

N/A

7.19. spanning-tree bpdufilter

Use this command to enable BPDU filter on the interface. You can use the **enabled** or **disabled**

option of the command to enable or disable the BPDU filter function on the interface.

spanning-tree bpdufilter **[** enabled **|** disabled **]**

Parameter Description

Parameter	Description
enabled	Enables BPDU filter on the interface.
disabled	Disables BPDU filter on the interface.

Defaults

This function is disabled by default,

Command Mode

Interface configuration mode.

Usage Guide

If BPDU filter is enabled on a port, the port neither sends nor receives BPDUs.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if-interface-id-interface-id)# spanning-tree bpdufilter enable
```

The following example enables BPDU filter on interface Gi 1/1.

Related Commands

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description

N/A

7.20. spanning-tree bpduguard

Use this command to enable the BPDU guard function on the interface. You can use the enabled or disabled option of the command to enable or disable the BPDU guard function on the interface. spanning-tree bpduguard [enabled | disabled]

Parameter Description

Parameter	Description
enabled	Enables BPDU guard on the interface.
disabled	Disables BPDU guard on the interface.

Defaults

This function is disabled by default.

Command Mode

Interface configuration mode.

Usage Guide 1. If BPDU guard is enabled on a port, the port enters the error-disabled state after receiving a BPDU.

2. Run command errdisable recovery [interval *seconds*] to recover the interface in Error-disabled state.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if-interface-id-interface-id)# spanning-tree bpduguard enable
```

The following example enables the BPDU guard function on the interface.

Related Commands

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description

N/A

7.21. spanning-tree compatible enable

Use this command to send the message selectively carried with MSTI according to the interface attribute of current port to realize interconnection with other vendors. Use the no form of this command to restore the default setting.

spanning-tree compatible enable no spanning-tree compatible enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults This function is disabled by default. .

Command Mode

Interface configuration mode.

Usage Guide If the compatibility mode is enabled on a port, this port will add different MSTI information into the to-be-sent BPDU based on the current port to realize interconnection between QTECH devices and other SPs' devices.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 0/1
QTECH(config-if-interface-id-interface-id)#spanning-tree compatible enable
```

The following example enables the compatibility mode on interface Gi 0/1.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

7.22. spanning-tree guard loop

Use this command to enable **loop guard** on the interface to prevent the root port or backup port from generating loop since they cannot receive bpdu. Use the **no** form of this command to disable **loop guard**.

spanning-tree guard loop

no spanning-tree guard loop

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Interface configuration mode.

Usage Guide 1.

Enabling loop guard on a root port or backup port will prevent possible loops caused by BPDU receipt failure.

The loop guard function and root guard function cannot be enabled at the same time.

Configuration

The following example enables **loop guard** on interface Gi 0/1.

Examples

```
QTECH(config)# interface gigabitethernet 0/1
QTECH(config-if-interface-id)# spanning-tree guard loop
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

7.23. spanning-tree guard none

Use this command to disable **guard** on the interface. Use the **no** form of this command to enable this function

spanning-tree guard none no spanning-tree guard none

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is enabled by default.

Command Mode

Interface configuration mode.

Usage Guide

N/A

Configuration Examples

```
QTECH(config)# interface gigabitethernet 0/1
QTECH(config-if-interface-id)# spanning-tree guard none
```

The following example disables **guard** on interface Gi 0/1.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

7.24. spanning-tree guard root

Use this command to enable root guard on the interface to prevent the change of current root bridge position because of error configuration and illegal packet attack. Use the no form of this command to restore the default setting.

Parameter Description

Parameter	Description
N/A	N/A

7.25. spanning-tree guard root no spanning-tree guard root

Defaults

This function is disabled by default.

Command Mode

Interface configuration mode.

Usage Guide

If root guard is enabled, the current root bridge will not change due to incorrect configuration or illegal packet attacks.

The loop guard function and root guard function cannot be enabled at the same time.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 0/1
QTECH(config-if-interface-id)# spanning-tree guard root
```

The following example enables root guard on the interface.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

7.26. spanning-tree ignore tc

Use this command to enable the tc filtering on the interface. Use the no form of this command to restore the default setting. With tc filtering enabled, the TC packets received on the interface will not be processed.

spanning-tree ignore tc

no spanning-tree ignore tc

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command

Interface configuration mode.

Mode

Usage Guide I

f TC filter is enabled on a port, the port does not process received TC packets.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 0/1
QTECH(config-if-interface-id)# spanning-tree ignore tc
```

The following example enables the tc filtering on the interface.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

7.27. spanning-tree link-type

Use this command to configure the link type of the interface. Use the no form of this command to restore the default setting.

spanning-tree link-type [point-to-point | shared]

no spanning-tree link-type

Parameter Description

Parameter	Description
point-to-point	Sets the link type of the interface to point-to-point.
shared	Forcibly sets the link type of the interface to shared.

Defaults

For a full-duplex interface, its link type is set to point-to-point link; for a half-duplex interface, its link type is set to shared.

Command Mode

Interface configuration mode.

Usage Guide

If the link type of a port is point-to-point connection, RSTP can rapidly converge. If the link type is not configured, the device automatically sets the link type based on the duplex mode of the port.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if-interface-id)# spanning-tree link-type point-to-point
```

The following example configures the link type of the interface.

Related Commands

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description

N/A

7.28. spanning-tree loopguard default

Use this command to enable loop guard globally to prevent the root port or backup port from generating loop since they cannot receive bpdu. Use the no form of this command to restore the default setting.

spanning-tree loopguard default

no spanning-tree loopguard default

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Global configuration mode.

Usage Guide

Enabling loop guard on a root port or backup port will prevent possible loops caused by BPDU receipt failure.

Configuration Examples

Related Commands

Platform Description

The following example enables **loop guard** globally to prevent the root port or backup port from generating loop since they cannot receive bpdu.

```
QTECH(config)# spanning-tree loopguard default
```

Command	Description
N/A	N/A

N/A

7.29. spanning-tree max-hops

Use this command to set the maximum number of hops(Max-hopsCount) of the BPDU message in the global configuration mode, the number of hops in a region that the BPDU message passes before being dropped. This parameter takes effect for all instances. Use the no form of this command to restore the default setting.

spanning-tree max-hops *hop-count*

no spanning-tree max-hops

Parameter Description

Parameter	Description
hop-count	Number of hops in a region that the BPDU message passes before being dropped. The range is 1 to 40 hops.

Defaults

The default is 20 hops.

Command Mode

Global configuration mode.

Usage GuideIn the region, the BPDU message sent by the root bridge includes a Hot Count field. When the BPDU message passes a device, the Hop Count is decreased by 1 until it reaches 0, which indicates the BPDU message times out. The device will drop the BPDU message whose Hop Count is 0.

Changing the max-hops command affects all instances.

Configuration Examples

Related Commands

Platform Description

This example sets the max-hops of the spanning tree to 10 for all instances.

```
QTECH(config)# spanning-tree  max-hops 10
```

Command	Description
show spanning-tree	Displays the MSTP information.

N/A

7.30. spanning-tree mode

Use this command to set the STP version. Use the no form of the command to restore the default setting.

spanning-tree mode [stp | rstp | mstp]

no spanning-tree mode

Parameter Description

Parameter	Description
stp	Spanning tree protocol(IEEE 802.1d)
rstp	Rapid spanning tree protocol(IEEE 802.1w)
mstp	Multiple spanning tree protocol(IEEE 802.1s)

Defaults

The default is mstp.

Command

Mode Global configuration mode.

Usage Guide

However, some vendors' devices do not work according to 802.1 protocol standards, possibly

causing incompatibility. If other vendors' devices are incompatible with QTECH devices, run this command to switch the STP mode to a lower version.

Configuration Examples

Related Commands

Platform Description

The following example sets the STP version.

```
QTECH(config)# spanning-tree mode stp
```

Command	Description
show spanning-tree	Displays the spanning-tree configuration.

N/A

7.31. spanning-tree mst configuration

Use this command to enter the MST configuration mode in the global configuration mode and configure the MSTP region. Use the no form of the command to restore the default setting. spanning-tree mst configuration

no spanning-tree mst configuration

Parameter Description

Parameter	Description
N/A	N/A

Defaults

Command Mode

Global configuration mode.

Usage Guide

To return to the privileged EXEC mode, enter end or Ctrl+C. To return to the global configuration mode, enter exit.

After entering the MST configuration mode, you can configure MSTP Region parameters:

Configuration Examples

This example enters the MST configuration mode.

```
QTECH(config)# spanning-tree mst
configuration QTECH(config-mst)# instance
1 vlan 3, 5-10 QTECH(config-mst)# name
region 1 QTECH(config-mst)# revision  1
QTECH(config-mst)# show spanning-tree mst
configuration Multi spanning tree protocol : Enable
Name    : region1
Revision : 1Instance Vlans Mapped


0    1-2,4,11-4094

1    3,5-10


QTECH(config-mst)# exit

QTECH(config)#
```

Related Commands

Command	Description
show spanning-tree mst	Displays the MST region configuration.
instance *instance-id* **vlan** *vlan-range*	Adds VLANs to the MST instance.
name	Configures the name of MST.
revision	Configures the version of MST.

Platform Description

N/A

7.32. spanning-tree mst cost

Use this command to set the path cost of an instance in the interface configuration mode. Use the **no**

form of the command to restore the default setting.

spanning-tree [**mst** *instance-id*] **cost** *cost*

no spanning-tree [**mst** *instance-id*] *cost*

Parameter Description

Parameter	Description
instance-id	Instance ID in the range from 0 to 64.
cost	Path cost in the range from 1 to 200,000,000.

Defaults

The default instance-id is 0.

The default value is calculated by the link rate of the interface automatically. 1000 Mbps—20000

100 Mbps—200000

10 Mbps—2000000

Command Mode

Interface configuration mode.

Usage Guide

A higher cost value means a higher path cost.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if)# spanning-tree mst 3 cost 400
```

This example sets the path cost to 400 on the interface associated with instances 3.

Related Commands

Command	Description
show spanning-tree mst	Displays the MSTP information of an interface.
spanning-tree mst port-priority	Configures the priority of an interface.
spanning-tree mst priority	Configures the priority of an

	instance.

Platform Description

N/A

7.33. spanning-tree mst port-priority

Use this command to configure the interface priority for different instances in the interface configuration mode. It will determine which interface of a loop in a region is in charge of forwarding. Use the no form of this command to restore the default setting.

spanning-tree [mst *instance-id*] port-priority *priority*

no spanning-tree [mst *instance-id*] port-priority

Parameter Description

Parameter	Description
Instance-id	Instance ID, in the range of 0 to 64
priority	Interface priority. Sixteen integers are available: 0, 16, 32, 48, 64, 80, 96, 112, 128, 144, 160, 176, 192, 208, 224, 240, which are the multiples of 16.

Defaults

The default instance-id is 0.

The default priority is 128.

Command Mode

Interface configuration mode.

Usage Guide

When a loop occurs in the region, the interface of the higher priority will be in charge of forwarding. If all interfaces have the same priority value, the interface of the smaller number will be in charge of the forwarding.

Run this command to determine which port in the loop of a region enters the forwarding state.

Configuration Examples

This example sets the priority of gigabitethernet 1/1 to 10 in instance 20.

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if-interface-id)# spanning-tree mst 20 port-priority 0
```

Related Commands

Command	Description
show spanning-tree mst	Displays the MSTP information of an interface.
spanning-tree mst cost	Sets the path cost.
spanning-tree mst priority	Sets the device priority for different instances.

Platform Description

N/A

7.34. spanning-tree mst priority

Use this command to set the device priority for different instances in the global configuration mode. Use the no form of this command to restore the default setting.

spanning-tree [mst *instance-id*] priority *priority*

no spanning-tree [mst *instance-id*] priority

Parameter Description

Parameter	Description
instance-id	Instance ID, in the range of 0 to 64
priority	Device priority. Sixteen integers are available: 0, 4096, 8192, 12288, 16384, 20480, 24576, 28672, 32768, 36864, 40960, 45056, 49152,53248, 57344 and 61440, which are all multiples of 4096.

Defaults

The default instance ID is 0.

The default device priority is 32768.

Command Mode

Global configuration mode.

Usage Guide

Configure the switch priority to determine a device as the root of the entire network and to determine the topology of the entire network.

Configuration Examples

Related Commands

Platform Description

The following example sets the device priority of the Instance to 8192.

```
QTECH(config)# spanning-tree mst 20 priority 8192
```

Command	Description
show spanning-tree mst	Displays the MSTP information of an interface.
spanning-tree mst cost	Sets path cost.
spanning-tree mst port-priority	Sets the port priority of an instance.

N/A

7.35. spanning-tree pathcost method

Use this command to configure the path cost of the port. Use the **no** form of this command to restore the default setting.

spanning-tree pathcost method **{ {** long **[** standard **} |** short **}**

no spanning-tree pathcost method

Parameter Description

Parameter	Description
Long [**standard**]	Adopts the 802.1t standard to configure path cost. The standard indicates that use the expression recommended by the standard to calculate the cost value.
short	Adopts the 802.1d standard to configure path cost.

Defaults

802.1T standard is adopted to set path cost by default.

Command Mode

Global configuration mode.

Usage Guide

If the port path cost uses the default value, the device automatically calculates the port path cost based on the port rate.

Configuration Examples

Related Commands

Platform Description

The following example configures the path cost of the port.

```
QTECH(config-if)# spanning-tree pathcost method long
```

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

N/A

7.36. spanning-tree portfast

Use this command to enable the portfast on the interface. Use the disabled form of this command to restore the default setting,

spanning-tree portfast **[** disabled **]**

Parameter Description

Parameter	Description
disabled	Disables the portfast on the interface.

Defaults

This function is disabled by default.

Command Mode

Interface configuration mode.

Usage Guide

After PortFast is enabled on a port, the port directly enters the forwarding state. However, since the Port Fast Operational State becomes disabled due to receipt of BPDUs, the port can properly run the STP algorithm and enter the forwarding state.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if-interface-id)# spanning-tree portfast
```

The following example enables the portfast on the interface.

Related Commands

Command	Description
show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description

N/A

7.37. spanning-tree portfast bpdufilter default

Use this command to enable the BPDU filter function globally. You can use the **no** form of the command to restore the default setting.

spanning-tree portfast bpdufilter default

no spanning-tree portfast bpdufilter default

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default,

Command Mode

Global configuration mode.

Usage Guide

Once the BPDU filter is enabled, the BPDU message is neither received nor sent on the interface.

Use the **show spanning-tree** command to display the configuration.

Configuration Examples

Related Commands

Command	Description
show spanning-tree interface	Displays the global STP configuration.

The following example enables the BPDU filter function globally.

```
QTECH(config)# spanning-tree portfast bpdufilter default
```

Platform Description

N/A

7.38. spanning-tree portfast bpduguard default

Use this command to enable the BPDU guard globally. Use the no form of this command to restore the default setting,

spanning-tree portfast bpduguard default no spanning-tree portfast bpduguard default

Parameter Description

Parameter	Description

N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Global configuration mode.

Usage Guide

Once the BPDU guard is enabled on the interface, it will enter the error-disabled status if the BPDU message arrives at the interface. Use the show spanning-tree command to display the configuration.

The global BPDU guard takes effect only when PortFast is enabled on a port.

Configuration Examples

```
uijie(config)# spanning-tree portfast bpduguard
default
```

The following example enables the GPDU guard globally.

Related Commands

Command	Description
show spanning-tree interface	Displays the global STP configuration.

Platform Description

N/A

7.39. spanning-tree portfast default

Use this command to enable the portfast feature on all interfaces globally. Use the no form of this command to restore the default setting.

spanning-tree portfast default

no spanning-tree portfast default

Parameter Description

Parameter	Description

N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Global configuration mode.

Usage Guide

N/A

Configuration Examples

Related Commands

Platform Description

The following example enables the portfast feature on all interfaces globally.

```
QTECH(config)# spanning-tree portfast default
```

Command	Description
show spanning-tree interface	Displays the global STP configuration.

N/A

7.40. spanning-tree reset

Use this command to restore the spanning-tree configuration to the default setting.

spanning-tree reset

Parameter Description

Parameter	Description

N/A	N/A

Defaults

N/A

Command Mode

Global configuration mode.

Usage Guide

Enable TC guard to prevent TC packets from spreading.

Configuration Examples

```
QTECH(config)# interface gigabitethernet 1/1
QTECH(config-if-interface-id)# spanning-tree tc-guard
```

The following example enables tc-guard on interface Gi 1/1.

Related Commands

Command	Description
show spanning-tree	Displays the global STP configuration.
show spanning-tree interface	Displays the STP configuration of the interface.

Platform Description

N/A

7.41. spanning-tree tc-guard

Use this command to enable tc-guard on the interface to prevent the spread of TC messages. Use the no form of this command to disable this function on the interface.

spanning-tree tc-guard no spanning-tree tc-guard

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Global configuration mode.

Usage Guide

N/A

Configuration Examples

Related Commands

Platform Description

The following example enables tc-guard on the interface to prevent the spread of TC messages.

```
QTECH(config)# spanning-tree tc-guard
```

Command	Description
N/A	N/A

N/A

7.42. spanning-tree tc-protection

Use this command to enable tc-protection globally. Use The no form of this command to disable this function.

spanning-tree tc- protection no spanning-tree tc- protection

Parameter Description

Parameter	Description

N/A	N/A

Defaults

This function is enabled by default.

Command Mode

Global configuration mode.

Usage Guide

N/A

Configuration Examples

Related Commands

Platform Description

The following example enables tc-protection globally.

```
QTECH(config)# spanning-tree tc-protection
```

Command	Description
N/A	N/A

N/A

7.43. spanning-tree tc-protection tc-guard

Use this command to enable tc-guard to prevent TC packets from being flooded. Use the no form of this command to restore the default setting.

spanning-tree tc-protection tc-guard no spanning-tree tc-protection tc-guard

Parameter Description

Parameter	Description

N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Global configuration mode.

Usage Guide

Enable TC guard to prevent TC packets from spreading.

Configuration Examples

Related Commands

Command	Description
N/A	N/A

The following example enables tc-guard to prevent TC packets from being flooded.

```
QTECH(config)# spanning-tree tc-protection tc-guard
```

Platform Description

N/A

7.44. spanning-tree tx-hold-count

Use this command to configure the TxHoldCount of the STP, the maximum number of the BPDU messages sent in one second. Use the no form of this command to restore the default setting. spanning-tree tx-hold-count *tx-hold-count*

no spanning-tree tx-hold-count

Parameter Description

Parameter	Description
tx-hold-count	Indicates the maximum number of BPDUs sent per second. The

	value ranges from 1 to 10. The default value is 3.

Defaults

The default is 3.

Command Mode

Global configuration mode.

Usage Guide

N/A

Configuration Examples

Related Commands

Platform Description

The following example sets the maximum number of the BPDU messages sent in one second.

```
QTECH(config)# spanning-tree tx-hold-count 5
```

Command	Description
show spanning-tree	Displays the global MSTP configuration.

N/A

8. GVRP COMMANDS

8.1. bridge-frame forwarding protocol gvrp

Use this command to enable GVRP PDUs transparent transmission. Use the no form of this command to restore the default setting.

bridge-frame forwarding protocol gvrp

no bridge-frame forwarding protocol gvrp

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command mode

Global configuration mode

Usage Guide

In the IEEE 802.1Q standard, the MAC address 01-80-C2-00-00-21 of GVRP PDUs is reserved for future standardization. In other words, the device following the IEEE 802.1Q standard does not forward GVRP PDUs frames. However, in actual network deployment, GVRP PDUs transparent transmission may be required. For example, the device not enabled with GVRP needs to transmit GVRP PDUs frames transparently to ensure proper GVRP topology calculation.

Configuration Examples

Related Commands

Platform Description

The following example enables GVRP PDUs transparent transmission.

```
QTECH(config)# bridge-frame forwarding protocol gvrp
```

Command	Description
N/A	N/A

N/A

8.2. clear gvrp statistic

Use this command to clear the GVRP statistics for re-counting.

clear gvrp statistics { *interface-id* | all }

Parameter Description

Parameter	Description
interface-id	Interface id

Defaults

N/A

Command mode

Privileged EXEC mode.

Usage GuideUse the show gvrp statistics to display the statistics.

Configuration Examples

Related Commands

Platform Description

The following example clears GVRP statistics.

```
QTECH# clear gvrp statistics all
```

Command	Description
N/A	N/A

N/A

8.3. gvrp applicant state

Use this command configures the GVRP advertisement mode on the interface.. Use the **no** form of this command to restore default setting.

gvrp applicant state **{** normal **|** non-applicant **}**

no gvrp applicant state

Parameter Description

Parameter	Description
normal	The interface sends VLAN advertisement.
non-applicant	The interface does not send VLAN advertisement.

Defaults

The interface sends GVRP advertisement by default.

Command mode

Interface configuration mode.

Usage Guide

N/A

Configuration Examples

The following example configures the GVRP advertisement mode on the interface.

```
QTECH(config-if)# gvrp applicant state normal
```

Related Commands

Command	Description
show gvrp configuration	Displays the GVRP configurations.

Platform Description

N/A

8.4. gvrp dynamic-vlan-creation

Use this command to enable dynamic VLAN creation. Use the **no** form of this command to restore the default setting.

gvrp dynamic-vlan-creation enable no gvrp dynamic-vlan-creation enable

Parameter Description

Parameter	Description

N/A	N/A

Defaults

This function is disabled by default.

Command mode

Global configuration mode.

Usage Guide

Use the **show gvrp configuration** to display the configuration.

Configuration Examples

Related Commands

Platform Description

The following example enables dynamic VLAN creation.

```
QTECH(config)# gvrp dynamic-vlan-creation enable
```

Command	Description
show gvrp configuration	Displays the GVRP configurations.

N/A

8.5. gvrp enable

Use this command to enable the GVRP function. Use the **no** form of this command to restore the default setting.

gvrp enable no gvrp enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command mode

Global configuration mode

Usage Guide

This command is used to display the configuration.

Configuration Examples

Related Commands

Platform Description

The following example enables the GVRP function.

```
QTECH(config)#gvrp enable
```

Command	Description
show gvrp configuration	Displays the GVRP configurations.

N/A

8.6. gvrp registration mode

Use this command to set the registration mode to control whether to enable dynamic VLAN creation/registration/canceling on the port. Use the no form of this command to restore the default setting.

gvrp registration mode { normal | disabled }

no gvrp registration mode

Parameter Description

Parameter	Description
normal	Enables dynamic VLAN creation/registration/canceling on the port.
disabled	Disables dynamic VLAN creation/registration/canceling on the port.

Defaults

Dynamic VLAN creation/registration/canceling is enabled by default,

Command mode

Interface configuration moe.

Usage Guide

N/A

Configuration Examples

Related Commands

Command	Description
show gvrp configuration	Displays the GVRP configurations.

The following example sets the registration mode.

```
QTECH(config-if)# gvrp registration mode normal
```

Platform Description

N/A

8.7. gvrp timer

Use this command to set the GVRP timer. Use the no form of this command to restore the default setting.

gvrp timer { join *timer_value* | leave *timer_value* | leaveall *timer_value* }

no gvrp timer

Parameter Description

Parameter	Description
join *timer_value*	Controls the maximum delay before sending the advertisement on the port. The actual sending interval is in the range of 0 to the maximum delay.

leave *timer_value*	Controls the waiting time before removing the VLAN from the port with the Leave Message received. If the Join Message is received again within this time range, the port-VLAN relation still exists and the timer becomes invalid. If no Join Message is received on the port, the port status will be the Empty and removed from the VLAN member list.
leave all *timer_value*	Controls the minimum interval of sending the LeaveAll Message on the port. If the LeaveAll Message is received before the timer expires, the timer re-counts. If the timer expires, send the LeaveAll Message on the port and also send this Message to the port, so that the Leave timer begins counting. The actual sending interval ranges from leaveall to leaveall+join.

Defaults

Join timer: 200 milliseconds;

Leave timer: 600 milliseconds; Leaveall timer: 10000 milliseconds.

Command mode

Global configuration mode

Usage Guide

Use the **show gvrp configuration** to display the configuration.

Use the **no gvrp timer** command to restore **join**, **leave** and **leaveall timer** to default settings.

Configuration Examples

Related Commands

Command	Description
show gvrp configuration	Displays the GVRP configuration.

The following example configures the join timer.

```
QTECH(config)# gvrp timer join 200
```

Platform Description

N/A

8.8. l2protocol-tunnel gvrp

Use this command to enable global GVRP PDUs TUNNEL globally. Use the **no** form of this command to restore the default setting.

l2protocol-tunnel gvrp

no l2protocol-tunnel gvrp

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command mode

Global configuration mode

Usage Guide

If you want to enable global GVRP PDUs TUNNEL, enable GVRP PDUs TUNNEL on the interface first.

Configuration Examples

```
QTECH(config)# l2protocol-tunnel gvrp QTECH(config)#
show l2protocol-tunnel gvrp

L2protocol-tunnel: Gvrp Disable
L2protocol-tunnel destination mac address:01d0.f800.0006
```

The following example enables GVRP PDUs TUNNEL globally.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

8.9. l2protocol-tunnel gvrp enable

Use this command to enable GVRP PDUs TUNNEL on the interface. Use this command to restore the default setting.

l2protocol-tunnel gvrp enable

no l2protocol-tunnel gvrp enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command mode

Interface configuration mode

Usage Guide

If you want to enable global GVRP PDUs TUNNEL, enable GVRP PDUs TUNNEL on the interface first.

Configuration Examples

The following example enables GVRP PDUs TUNNEL on the interface.

```
QTECH(config-if-interface-id)# l2protocol-tunnel gvrp enable QTECH(config-
if-interface-id)# show l2protocol-tunnel gvrp

L2protocol-tunnel: Gvrp Disable
L2protocol-tunnel destination mac address:01d0.f800.0006
GigabitEthernet 0/1 l2protocol-tunnel gvrp enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

8.10. l2protocol-tunnel gvrp tunnel-dmac

Use this command to configure the MAC address for transparent transmission in GVRP PDUs TUNNEL. Use the no form of this command to restore the default setting.

l2protocol-tunnel gvrp tunnel-dmac *mac-address*

no l2protocol-tunnel gvrp tunnel-dmac

Parameter Description

Parameter	Description
mac-address	The MAC address for transparent transmission in GVRP PDUs TUNNEL.

Defaults

The default is 01d0.f800.0006.

Command mode

Global configuration mode

Usage Guide

The available MAC address f ranges from 01d0.f800.0006 to 011a.a900.0006.

Configuration Examples

Related Commands

Platform Description

The following example configures the MAC address for transparent transmission in GVRP PDUs TUNNEL.

```
QTECH(config)# l2protocol-tunnel gvrp tunnel-dmac 011a.a900.0006
```

Command	Description
N/A	N/A

N/A

8.11. show gvrp configuration

Use this command to display the GVRP configuration.

show gvrp configuration

Parameter Description

```
Global GVRP Configuration:
GVRP Feature:enabled
GVRP dynamic VLAN creation:enabled
Join Timers(ms):200
Leave Timers(ms):600
Leaveall Timers(ms):1000
Port based GVRP Configuration:
       PORT             Applicant Status        Registration Mode
-----------------------------------------
GigabitEthernet 0/2          normal                  normal
```

Field	Description
GVRP Feature	Whether to enable GVRP
GVRP dynamic VLAN creation	Whether to enable dynamic VLAN creation
Join Timers	Join timer
Leave Timers	Leave timer
Leaveall Timers	Leaveall timer
PORT	Port
Applicant Status	Advertisement mode
Registration Mode	Registration mode

Command	Description

N/A	N/A

Defaults

N/A

Command mode

Privileged EXEC mode.

Usage Guide

Use the **show gvrp configuration** to display the configuration.

Configuration Examples

```
Global GVRP Configuration:
GVRP Feature:enabled
GVRP dynamic VLAN creation:enabled Join Timers(ms):200
Leave Timers(ms):600 Leaveall Timers(ms):1000
Port based GVRP Configuration:
       PORT             Applicant Status        Registration Mode

GigabitEthernet 0/2
```

The following example displays GVRP configuration.

Related

Command	Description
N/A	N/A

Commands

Platform Description

N/A

8.12. show gvrp statistics

Use this command to display the GVRP statistics of one interface or all interfaces.

show gvrp statistics { *interface-id* | **all** }

Parameter Description

Parameter	Description
interface-id	Interface id.

Defaults

N/A

Command mode

Privileged EXEC mode

Usage Guide

Use the show gvrp statistics to display the statistics of one interface or all interfaces.

Configuration Examples

```
QTECH# show gvrp statistics gigabitethernet 1/1 Interface  GigabitEthernet             3/1
RecValidGvrpPdu     0
RecInvalidGvrpPdu   0
RecJoinEmpty 0
RecJoinIn     0
RecEmpty      0
RecLeaveEmpty  0
RecLeaveIn    0
RecLeaveAll   0
SentGvrpPdu   0
SentJoinEmpty   0
SentJoinIn    0
SentEmpty     0
SentLeaveEmpty  0
SentLeaveIn   0
SentLeaveAll 0
JoinIndicated   0
LeaveIndicated  0
JoinPropagated  0
LeavePropagated  0
```

Field	Description
RecValidGvrpPdu	Number of received valid GPDU packets.

RecInvalidGvrpPdu	Number of received unvalid GPDU packets.
RecJoinEmpty/ SentJoinEmpty	Number of received/sent JoinEmpty messages.
RecJoinIn/ SentJoinIn	Number of received/sent JoinIn messages.
RecEmpty/SentEmpty	Number of received/sent Empty messages.
RecLeaveEmpty/SentLeaveEmpty	Number of received/sent LeaveEmpty messages,
RecLeaveIn/ SentLeaveIn	Number of received/sent LeaveIn messages.
RecLeaveAll/SentLeaveAll	Number of received/sent LeaveAll messages.
SentGvrpPdu	Number of sent GPDU messages.
JoinIndicated/ LeaveIndicated	Number of Join/Leave service requests.
JoinPropagated / LeavePropagated	Number of Join/Leave topology update requests.

Related Commands

Command	Description
clear gvrp statistics	Clears the statistics of one interface or all interfaces.

Platform Description

N/A

8.13. show gvrp status

Use this command to display all dynamic VLAN ports generated by GVRP and the dynamic VLAN ports added to the static VLAN.

8.14. show gvrp status

Parameter Description

Parameter	Description
N/A	N/A

Defaults

N/A

Command mode

Privileged EXEC mode.

Usage GuideUse the show gvrp status command to display the GVRP status.

Configuration Examples

Related Commands

Platform Description

The following example displays the GVRP status.

```
QTECH# show gvrp status
VLAN 1
Dynamic Ports:
DVLAN 2
Dynamic Ports:
```

Field	Description
VLAN	Static VLAN
DVLAN	Dynamic VLAN
Dynamic Ports	Dynamic ports.

Command	Description
N/A	N/A

N/A

8.15. show l2protocol-tunnel gvrp

Use this command to display GVRP PDUs TUNNEL configuration.

show l2protocol-tunnel gvrp

Parameter Description

Parameter	Description
N/A	N/A

Defaults

N/A

Command mode

Privileged EXEC mode/Global configuration mode/Interface configuration mode

Usage Guide

N/A

Configuration Examples

```
QTECH# show l2protocol-tunnel gvrp

L2protocol-tunnel: Gvrp Enable
```

The following example displays GVRP PDUs TUNNEL configuration.

```
L2protocol-tunnel destination mac address:011a.a900.0006
GigabitEthernet 0/1 l2protocol-tunnel gvrp enable
```

Related Commands

Command	Description

N/A	N/A

Platform Description

N/A

9. LLDP COMMANDS

9.1. civic-location

Use this command to configure a common LLDP address. Use the no form of this command to delete the address.

{ country | state | county | city | division | neighborhood | street-group | leading-street-dir | trailing-street-suffix | street-suffix | number | street-number-suffix | landmark |

additional-location-information | name | postal-code | building | unit | floor | room | type-of-place | postal-community-name | post-office-box | additional-code } *ca-word*

no { country | state | county | city | division | neighborhood | street-group | leading-street-dir | trailing-street-suffix | street-suffix | number | street-number-suffix | landmark |

additional-location-information | name | postal-code | building | unit | floor | room | type-of-place | postal-community-name | post-office-box | additional-code } *ca-word*

Parameter Description

Parameter	Description
country	Country code, two bytes. For example, the country code of China is CH.
state	Address information, CA type 1
county	CA type 2
city	CA type 3
division	CA type 4
neighborhood	CA type 5
street-group	CA type 6
leading-street-dir	CA type 16
trailing-street-suffix	CA type 17

street-suffix	CA type 18
number	CA type 19
street-number-suffix	CA type 20
landmark	CA type 21
additional-location-information	CA type 22
name	CA type 23
postal-code	CA type 24
building	CA type 25
unit	CA type 26
floor	CA type 27
room	CA type 28
type-of-place	CA type 29
postal-community-name	CA type 30
post-office-box	CA type 31
additional-code	CA type 32
ca-word	Address information

Defaults

N/A

Command Mode

LLDP Civic address configuration mode

Usage Guide

This command is used to configure a common LLDP address in LLDP Civic address configuration mode.

Configuration Examples

```
QTECH#config
QTECH(config)# lldp location civic-location identifier 1 QTECH(config-lldp-civic)# country CH
```

QTECH(config-lldp-civic)# city Fuzhou

The following example configures an LLDP Civic Address (ID: 1).

Related Commands

Command	Description
show lldp location civic-location { identifier *id* | interface *interface-name* | static }	Displays the information about an LLDP Civic address.

Platform Description

N/A

9.2. clear lldp statistics

Use this command to clear LLDP statistics.

clear lldp statistics [interface *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guideinterface parameter: clear the LLDP statistics of the specified interface

Configuration Examples

```
QTECH# clear lldp statistics interface GigabitEthernet 0/1 QTECH# show
```

lldp statistics interface GigabitEthernet 0/1 Lldp statistics information of port [GigabitEthernet 0/1]

The following example clears LLDP statistics of interface 1.

Related Commands

```
The  number  of  lldp frames transmitted : 0
The  number  of  frames discarded    : 0
The  number  of  error frames : 0
The  number  of  lldp frames received       : 0
The  number  of  TLVs discarded      : 0
The  number  of  TLVs unrecognized   : 0
The  number  of  neighbor information aged out : 0
```

Parameter	Description
N/A	N/A

9.3. clear lldp table

Use this command to clear LLDP neighbor information.

clear lldp table [interface *interface-name*]

Parameter Description

Parameter	Description
interface-name	Interface name

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

If the interface parameter is specified, the LLDP neighbor information on the specified interface is cleared.

If the interface parameter is not specified, the LLDP neighbor information on all interfaces is cleared.

Configuration Examples

```
QTECH# show lldp neighbors interface GigabitEthernet 0/1
Lldp statistics information of port [GigabitEthernet 0/1]
------------------------------------------------------------------------------------------------

The number of lldp frames transmitted : 0
The number of frames discarded   : 0
The number of error frames : 0
The number of lldp frames received      : 0
The number of TLVs discarded     : 0
The number of TLVs unrecognized  : 0
The number of neighbor information aged out : 0
QTECH# clear lldp table interface GigabitEthernet 0/1
QTECH# show lldp neighbors interface GigabitEthernet 0/1
```

The following example clears the LLDP neighbor information on interface 1.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

9.4. device-type

Use this command to configure the device type. Use the no form of this command to restore the default setting.

device-type *device-type*

no device-type

Parameter Description

Parameter	Description

device-type	Device type. The value ranges from 0 to 2. 0: The device type is DHCP Server. 1: The device type is switch. 2: The device type is LLDP MED terminal.

Defaults

Command Mode

LLDP Civic address configuration mode

Usage GuideThis command is used to configure the device type in a common LLDP address in LLDP Civic address configuration mode.

Configuration Examples

```
QTECH#config
QTECH(config)# lldp location civic-location identifier 1 QTECH(config-
lldp-civic)# device-type 1
```

The following example sets the device type to switch.

Related Commands

Command	Description
show lldp location civic-location { identifier *id* | interface *interface-name* | static }	Displays LLDP Civic Address information.

Platform Description

N/A

9.5. lldp compliance vendor

Use this command to enable detection of compatible neighbors.

Parameter Description

Parameter	Description
N/A	N/A

lldp compliance vendor no lldp compliance vendor

Defaults

This function is disabled by default.

Command Mode

Global configuration mode

Usage Guide

N/A

Configuration Examples

```
QTECH#config
QTECH(config)#no lldp enable
```

The following example enables detection of compatible neighbors.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

9.6. lldp enable

Use this command to enable the LLDP globally or on the interface. Use no form of this command to disable this function.

lldp enable no lldp enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is enabled by default.

Command Mode

Global (or interface) configuration mode

Usage Guide

LLDP takes effect on an interface only when LLDP is enabled globally.

Configuration Examples

The following example disables LLDP globally and on the interface.

```
QTECH#config
QTECH(config)#no lldp enable
config)#no lldp enable
```

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description

N/A

lldp encapsulation snap

Use this command to configure the encapsulation format of LLDP packets. Use the no form of this command to restore the default setting.

lldp encapsulation snap

no lldp encapsulation snap

Parameter Description

Parameter	Description
N/A	N/A

Defaults

By default, Ethernet II encapsulation format is used.

Command Mode

Interface configuration mode.

Usage Guide

To guarantee the normal communication between local device and neighbor device, the same LLDP packet encapsulation format must be used.

\Configuration Examples

```
QTECH#config
QTECH(config)#interface gigabitethernet 0/1 QTECH(config-
if)#lldp encapsulation snap
```

The following example sets LLDP packet encapsulation format to SNAP.

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description

N/A

9.7. lldp error-detect

Use this command to configure the LLDP error detection, including the detection of VLAN configurations on both sides of the link, port state detection, port aggregation configuration detection,

Parameter Description

Parameter	Description
N/A	N/A

MTU configuration detection and loop detection. If any error is detected by LLDP, warning message will be printed to notify the administrator. Use the no form of this command to disable this function. lldp error-detect

no lldp error-detect

Defaults

This function is enabled by default.

Command Mode

Interface configuration mode.

Usage Guide

LLDP error detection relies on the specific TLV in the LLDP packets exchanged between devices on both sides of the link. To ensure normal functioning of the detection feature, correct TLVs must be advertised.

Configuration Examples

```
QTECH#config
QTECH(config)#interface gigabitethernet 0/1 QTECH(config-
if)#lldp error-detect
```

The following example configures LLDP error detection.

Related Commands

Command	Description
show interface status	Displays LLDP status information.

Platform Description

N/A

9.8. lldp fast-count

When a new neighbor is detected or when LLDP operating mode changes from shutdown or Rx to TxRx or Tx, to allow the neighbor device to quickly study the information about this device, the fast sending mechanism will be initiated. The fast sending mechanism shortens the LLDPDU sending interval to 1 second and continuously transmits a certain number of LLDPDUs before restoring to the normal transmit interval. Use the no form of this command to restore the default setting.

lldp fast-count *value*

no lldp fast-count

Parameter Description

Parameter	Description
value	The number of fast sent LLDP packets, in the range from 1 to 10.

Defaults

The default is 3.

Command

Global configuration mode.

Mode

Usage Guide

N/A

Configuration Examples

```
QTECH#config
QTECH(config)#lldp fast-count 5
```

The following example sets the number of fast sent LLDP packets to 5.

Related Commands

Command	Description
show interface status	Displays LLDP status information.

Platform Description

N/A

9.9. lldp hold-multiplier

Use this command to set the TTL multiplier. Use the no form of this command to restore to default setting.

lldp hold-multiplier *value*

no lldp hold-multiplier

Parameter Description

Parameter	Description
value	TTL multiplier, in the range from 2 to 10.

Defaults

The default is 4.

Command Mode

Global configuration mode.

Usage Guide

The value of Time To Live (TLV) in LLDP packet = TTL multiplier × LLDP packet transmit interval + 1. Therefore, the TTL of local device information on the neighbor device can be controlled by adjusting TTL multiplier.

Configuration Examples

The following example sets TTL multiplier to 5

QTECH#config

QTECH(config)#lldp hold-multiplier 5

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description

N/A

9.10. lldp ignore pvid-error-detect

Use this command to enable the function of ignoring PVID function. Use the no form of this command to disable the function of ignoring PVID function.

lldp ignore pvid-error-detect no lldp ignore pvid-error-detect

Parameter Description

Parameter	Description
N/A	N/A

Defaults

By default, it is disabled.

Command Mode

Global configuration mode

Usage Guide

N/A

Configuration Examples

The following example ignores PVID detection globally.

QTECH# configure terminal

QTECH(config)# lldp ignore pvid-error-detect

Platform Description

N/A

9.11. lldp location civic-location identifier

Use this command to create a common address of a device connected to the network in LLDP Civic Address configuration mode. Use the **no** form of this command to delete the address.

lldp location civic-location identifier ***id***

no lldp location civic-location identifier *id*

Parameter Description

Parameter	Description
id	ID of a common address of a network device, in the range from 1 to 1024.

Defaults

N/A

Command Mode

Global configuration mode

Usage GuideThis command can be used to enter the LLDP Civic Address configuration mode.

Configuration Examples

The following example creates the Civic Address information in LLDP MED-TLV as follows: set *id* to

```
QTECH#config
QTECH(config)#lldp location civic-location identifier 1 QTECH(config-
lldp-civic)#
```

Related Commands

Command	Description

show lldp location civic-location { identifier *id* | interface *interface-name* | static }	Displays the LLDP Civic Address information.

Platform Description

N/A

9.12. lldp location elin identifier

Use this command to set an emergency number encapsulated in a Location Identification TLV. Use the no form of this command to delete the number.

lldp location elin identifier *id* elin-location *tel-number*

no lldp location elin identifier *id*

Parameter Description

Parameter	Description
id	ID of an emergency number, in the range from 1 to 1024.
tel-number	Emergency number, in the range from 10 to 25 bytes.

Defaults

N/A

Command Mode

Global configuration mode

Usage Guide

This command is used to configure an emergency number.

Configuration Examples

The following example sets an emergency number.

```
QTECH#config
QTECH(config)#lldp location elin identifier 1 elin-location 085283671111
```

Related Commands

Command	Description
show lldp location elin-location { identifier *id* | interface *interface-name* | static }	Displays an LLDP emergency number.

Platform Description

N/A

9.13. lldp management-address-tlv

Use this command to configure the management address advertised in LLDP packets. Use the **no** form of this command to disable the advertisement of management address.

lldp management-address-tlv [*ip-address*]

no lldp management-address-tlv

Parameter Description

Parameter	Description
ip-address	The management address advertised in LLDP packets.

Defaults

N/A

Command ModeInter

face configuration mode.

Usage Guide

By default, the management address is advertised in LLDP packets, and is the IPv4 address of the lowest-ID VLAN carried on the port. If IPv4 address is not configured for this VLAN, the next lowest-ID VLAN carried on the port will be tried until the IPv4 address is obtained.

If the IPv4 address is still not found, the IPv6 address of the lowest-ID VLAN carried on the port will be tried.

If the IPv6 address is still not found, the MAC address of the device will be advertised as the management address.

Configuration Examples

The following example configures the management address advertised in LLDP packets to 192.168.1.1.

```
QTECH#config
QTECH(config)#interface gigabitethernet 0/1 QTECH(config-if)#lldp management-address-tlv 192.168.1.1
```

Related Commands

Command	Description
show lldp local-information	Displays LLDP local information

Platform Description

N/A

9.14. lldp mode

Use this command to configure the LLDP operating mode. Use **no** form of this command to restore the default setting.

lldp mode { **rx** | **tx** | **txrx** }

no lldp mode

Parameter Description

Parameter	Description
rx	Only sends LLDPDUs.
tx	Only receives LLDPDUs.
txrx	Sends and receives LLDPDUs.

Defaults

The default is **txrx**.

Command Mode

Interface configuration mode

Usage Guide

Disable LLDP operating mode on the interface. The interface won't send and receive LLDP packets.

The precondition for enabling LLDP on the interface is that LLDP has been enabled globally and LLDP operates in tx, rx or txrx mode.

Configuration Examples

```
QTECH#config
QTECH(config)#interface gigabitethernet 0/1 QTECH(config-
if)#lldp mode tx
```

The following example sets LLDP operating mode to tx on the interface.

Related Commands

Command	Description
show lldp status	Displays LLDP status information

Platform Description

N/A

9.15. lldp network-policy profile

se this command to create an LLDP network policy and enter the LLDP network policy configuration mode. Use the no form of this command to delete the policy.

lldp network-policy profile *profile-num*

no lldp network-policy profile *profile-num*

Parameter Description

Parameter	Description
profile-num	ID of an LLDP network policy, in the range from 1 to 1024.

Defaults

N/A

Command Mode

Global configuration mode

Usage Guide

This command is used to enter the LLDP network policy configuration mode. When this command is run, the policy ID must be specified.

In LLDP network-policy mode, the { voice | voice-signaling } vlan command can be used to configure the specific network policy.

Configuration Examples

The following example creates an LLDP network policy whose ID is 1.

```
QTECH#config
QTECH(config)#lldp network-policy profile 1
QTECH(config-lldp-network-policy)#
```

Related Commands

Command	Description
show lldp network-policy profile [*profile-num*]	Displays an LLDP network policy.

Platform Description

N/A

9.16. lldp notification remote-change enable

Use this command to configure LLDP Trap. Use the no form of this command to restore the default setting.

lldp notification remote-change enable no lldp notification remote-change enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Interface configuration mode.

Usage Guide

By configuring LLDP Trap, the LLDP information of local device (such as information about the detection of new neighbor or the fault on the communication link) can be sent to the

network management server. The administrator can monitor the network operation status according to such information.

Configuration Examples

```
QTECH#config
QTECH(config)#interface gigabitethernet 0/1 QTECH(config-if)#lldp notification remote-change enable
```

The following example configures LLDP Trap.

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description

N/A

lldp timer notification-interval

Use this command to set an interval of sending LLDP Traps. Use the no form of this command to restore the default setting.

lldp timer notification-interval *seconds*

no lldp timer notification-interval

Parameter Description

Parameter	Description
seconds	Interval of sending LLDP Traps, in the range from 5 to 3600 in the unit of seconds.

Defaults

The default is 5.

Command Mode

Global configuration mode.

Usage Guide

To prevent excessive LLDP traps from being sent, you can set an interval of sending LLDP Traps. If LLDP information change is detected during this interval, traps will be sent to the network management server.

Configuration Examples

he following example sets the interval of sending LLDP Traps to 10 seconds.

```
QTECH#config
QTECH(config)#lldp timer notification-interval 10
```

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description

N/A

lldp timer reinit-delay

Use this command to set port initialization delay. Use the **no** form of this command to restore he default setting.

lldp timer reinit-delay *seconds*

no lldp timer reinit-delay

Parameter Description

Parameter	Description
seconds	Port initialization delay, in the range from 1 to 10 in the unit of seconds.

Defaults

The default is 2.

Command Mode

Global configuration mode.

Usage Guide

To prevent LLDP from being initialized too frequently due to the frequent operating mode change, you can configure port initialization delay.

Configuration Examples

The following example sets LLDP port initialization delay to 3 seconds.

```
QTECH#config
QTECH(config)#lldp timer reinit-delay 3
```

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description

N/A

9.17. lldp timer tx-delay

Use this command to set LLDP packet transmission delay. Use the no form of this command to restore the default setting.

lldp timer tx-delay *seconds*

no lldp timer tx-delay

Parameter Description

Parameter	Description
seconds	LLDP packet transmission delay, in the range from 1 to 8192 in the unit of seconds.

Defaults

The default is 2.

Command Mode

Global configuration mode.

Usage Guide

An LLDP-enabled port will send LLDP packets when the local device information changes. To avoid frequently sending LLDP packets due to the frequent local device information change, configure the LLDP packet transmission delay to control the frequent transmission of LLDP packets.

Configuration Examples

The following example sets LLDPDU transmission delay to 3 seconds.

```
QTECH#config
QTECH(config)#lldp timer tx-delay 3
```

Related

Command	Description
show lldp status	Displays LLDP status information.

Commands

Platform Description

N/A

9.18. lldp timer tx-interval

Use this command to set the interval of sending the LLDP packets. Use no form of this command to restore the default setting.

lldp timer tx-interval *seconds*

no lldp timer tx-interval

Parameter Description

Parameter	Description
seconds	Interval of sending the LLDP packets, in the range from 5 to 32768 in the unit of seconds.

Defaults

The default is 30.

Command Mode

Global configuration mode.

Usage Guide

N/A

Configuration Examples

The following example sets the interval of sending the LLDP packets to 10 seconds.

```
QTECH#config
QTECH(config)#lldp timer tx-interval 10
```

Related Commands

Command	Description
show lldp status	Displays LLDP status information.

Platform Description

N/A

9.19. lldp tlv-enable

Use this command to configure the types of advertisable TLVs. Use the no form of this command to restore the default setting.

lldp tlv-enable { basic-tlv { all | port-description | system-capability | system-description | system-name } | dot1-tlv { all | port-vlan-id | protocol-vlan-id [*vlan-id*] | vlan-name [*vlan-id*] } | dot3-tlv { all | link-aggregation | mac-physic | max-frame-size | power } | med-tlv { all | capability

| inventory | location { civic-location | elin } identifier *id* | network-policy profile [*profile-num*] | **power-over-ethernet } }**

no lldp tlv-enable { **basic-tlv** { **all | port-description | system-capability | system-description | system-name** } **| dot1-tlv** { **all | port-vlan-id | protocol-vlan-id | vlan-name** } **| dot3-tlv** { **all |**

link-aggregation | mac-physic | max-frame-size | power } **| med-tlv** { **all | capability | inventory | location** { **civic-location | elin** } **identifier** *id* **| network-policy profile** [*profile-num*] **|**

power-over-ethernet } }

Defaults By default, all TLVs other than Location Identification TLV can be advertised on the interface for products other than S12000. For the S12000 product series, only basic TLVs and IEEE 802.1 TLVs are advertised. To advertise IEEE 802.3 TLVs and LLDP-MED TLVs, run the **lldp tlv-enable** command.

Parameter Description

Parameter	Description
basic-tlv	Basic management TLV
port-description	Port Description TLV
system-capability	System Capabilities TLV
system-description	System Description TLV
system-name	System Name TLV
dot1-tlv	802.1 organizationally specific TLV
port-vlan-id	Port VLAN ID TLV
protocol-vlan-id	Port And Protocol VLAN ID TLV
vlan-id	VLAN ID
vlan-name	VLAN Name TLV
vlan-id	VLAN ID corresponding to the specified VLAN name
dot3-tlv	802.3 organizationally specific TLV
link-aggregation	Link Aggregation TLV
mac-physic	MAC/PHY Configuration/Status TLV
max-frame-size	Maximum Frame Size TLV
power	Power Via MDI TLV
med-tlv	LLDP MED TLV
capability	LLDP-MED Capabilities TLV

inventory	Inventory management TLVs, including hardware revision TLVs, firmware revision TLVs, software revision TLVs, serial number TLVs, manufacturer name TLVs, model name TLVs, and asset ID TLVs.
location	Location Identification TLV
civic-location	Common address information about the network device in location identification TLVs.
elin	Encapsulated emergency number
id	Policy ID
network-policy	Network Policy TLV
profile-num	ID of network policy
power-over-ethernet	Extended Power-via-MDI TLV

Command Mode

Interface configuration mode

Usage Guide

During configuration of basic management TLVs, IEEE 802.1 TLVs, and IEEE 802.3 TLVs, if the **all**

arameter is specified, all optional TLVs of the types are advertised.

During configuration of LLDP-MED TLVs, if the **all** parameter is specified, all LLDP-MED TLVs except Location Identification TLVs are advertised.

When configuring LLDP-MED Capability TLVs, configure LLDP-MED MAC/PHY TLVs first. When canceling LLDP-MED MAC/PHY TLVs, cancel LLDP-MED Capability TLVs first.

When configuring LLDP-MED TLVs, configure LLDP-MED Capability TLVs first so that LLDP-MED TLVs of other types can be configured.

To cancel LLDP-MED TLVs, cancel LLDP-MED TLVs of other types first so that LLDP-MED Capability TLVs can be canceled.

Configuration Examples

```
QTECH# configure terminal QTECH(config)#interface gigabitethernet 0/1
QTECH(config-if-GigabitEthernet 0/1)#lldp tlv-enable dot1-tlv all
```

The following example configures all IEEE 802.1 TLVs to be advertised.

```
QTECH#config
QTECH(config)#interface gigabitethernet 0/1
QTECH(config-if-GigabitEthernet 0/1)#lldp tlv-enable med-tlv network-policy profile 1
```

The following example applies LLDP network policy 1 on the 0/1 interface.

The following example applies the LLDP Civic Address (ID: 1) configuration on the 0/1 interface.

```
QTECH#config
QTECH(config)#interface gigabitethernet 0/1
QTECH(config-if-GigabitEthernet 0/1)#lldp location elin identifier 1
```

The following example applies the emergency number (ID: 1) on the 0/1 interface.

Related Commands

Command	Description
show lldp tlv-config interface	Displays the attributes of advertisable TLVs

Platform Description

N/A

9.20. show lldp local-information

Use this command to display the LLDP information of local device. The information will be encapsulated in the TLVs and sent to the neighbor device.

show lldp local-information [global | interface *interface-name*]

Parameter Description

Parameter	Description
nterface-name	Interface name

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

- global parameter: display the global LLDP information to be sent.

Interface parameter: displays the LLDP information to be sent out the interface specified.

No parameter: display all LLDP information, including global and interface-based LLDP information.

Configuration Examples

The following example displays the device information to be sent to neighbor device.

```
QTECH# show lldp local-information Global LLDP
local-information:
 Chassis ID type     : MAC address Chassis id  :
 00d0.f822.33aa System name             : System
 name
 System description   : System description
 System capabilities supported : Repeater, Bridge, Router System
 capabilities enabled : Repeater, Bridge, Router

 LLDP-MED capabilities    : LLDP-MED Capabilities, Network Policy, Location
    Identification, Extended Power via MDI-PD, Inventory
 Device class      : Network Connectivity HardwareRev :
 1.0
 FirmwareRev      :
 SoftwareRev      : RGOS 10.4(3) Release(94786) SerialNum    :
 1234942570001
 Manufacturer name     : Manufacturer name Asset tracking
 identifier            :
------------------------------------------------------------------------------------------------------------------------
Lldp local-information of port [GigabitEthernet 0/1]
------------------------------------------------------------------------------------------------------------------------
 Port ID type      : Interface name
```

```
Port id      : GigabitEthernet 0/1
Port description    :

Management address subtype : 802 mac address
Management address    : 00d0.f822.33aa
Interface numbering subtype  :
Interface number     : 0
Object identifier     :


802.1 organizationally information
Port VLAN ID      : 1
Port and protocol VLAN ID(PPVID) : 1
 PPVID Supported    : YES
 PPVID Enabled     : NO
VLAN name of VLAN 1    : VLAN0001
Protocol Identity     :


802.3 organizationally information
Auto-negotiation supported : YES
Auto-negotiation enabled   : YES
PMD auto-negotiation advertised : 100BASE-TX full duplex mode, 100BASE-TX half
   duplex mode
Operational MAU type    :
PoE support      : NO
Link aggregation supported : YES
Link aggregation enabled   : NO
Aggregation port ID    : 0
Maximum frame Size    : 1500

LLDP-MED organizationally information
Power-via-MDI device type   : PD
Power-via-MDI power source : Local
Power-via-MDI power priority  :
Power-via-MDI power value   :
Model name      : Model name
```

show lldp local-information command output description:

Field	Description
Chassis ID type	Chassis ID type for identifying the Chassis ID

	field
Chassis ID	Used to identify the device, and is generally represented with MAC address
System name	Name of the sending device
System description	Description of the sending device, including hardware/software version, operating system and etc.
System capabilities supported	Capabilities supported by the system
System capabilities enabled	Capabilities currently enabled by the system
LLDP-MED capabilities	LLDP-MED capabilities supported by the system
Device class	MED device class, which is divided into 2 categories: network connectivity device and terminal device. Network connectivity device Class I: normal terminal device Class II: media terminal device; besides Class I capabilities, it also supports media streams. Class III: communication terminal device; it supports all the capabilities of Class I and Class II and IP communication.
HardwareRev	Hardware version
FirmwareRev	Firmware version
SoftwareRev	Software version
SerialNum	Serial number
Manufacturer name	Device manufacturer
Asset tracking identifier	Asset tracking ID

Port ID type	Port ID type
Port ID	Port ID
Port description	Port description
Management address subtype	Management address type
Management address	Management address
Interface numbering subtype	Type of the interface identified by the management address
Interface number	ID of the interface identified by the management address
Object identifier	ID of the object identified by the management address
Port VLAN ID	Port VLAN ID
Port and protocol VLAN ID	Port and Protocol VLAN ID
PPVID Supported	Indicates whether port and protocol VLAN is supported
PPVID Enabled	Indicates whether port and protocol VLAN is enabled
VLAN name of VLAN 1	Name of VLAN 1
Protocol Identity	Protocol identifier
Auto-negotiation supported	Indicates whether auto-negotiation is supported
Auto-negotiation enabled	Indicates whether auto-negotiation is enabled
PMD auto-negotiation advertised	Auto-negotiation advertising capability of the port

Operational MAU type	Speed and duplex state of the port
PoE support	Indicates whether POE is supported
Link aggregation supported	Indicates whether link aggregation is supported
Link aggregation enabled	Indicates whether link aggregation is enabled
Aggregation port ID	ID of the link aggregation port
Maximum frame Size	Maximum frame size supported by the port
Power-via-MDI device type	Device type, including: PSE (power sourcing equipment) PD (powered device)
Power-via-MDI power source	Power source type
Power-via-MDI power priority	Power supply priority
Power-via-MDI power value	Available power on port
Model name	Name of model

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

9.21. show lldp location

Use this command to display the common LLDP address or emergency number of the local device. show lldp location { civic-location | elin-location} { identifier *id* | interface *interface-name* | static }

Parameter Description

Parameter	Description
civic-location	Encapsulates a common address of a network device.
elin-location	Encapsulates an emergency number.
identifier	Displays one address or emergency number configured.
id	Policy ID of configured information
interface	Displays the address or emergency number on an interface.
interface-name	Interface name
static	Displays all addresses or emergency numbers configured.

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage GuideIf the policy ID is specified, the specified address or emergency number is displayed.

If the interface name is specified, the address or emergency number configured on the interface is displayed.

If no parameter is specified, all addresses or emergency numbers are displayed.

Configuration Examples

The following example displays all addresses.

```
QTECH# show lldp location civic-location static
```

```
LLDP       location information
Civic


 Identifier          : testt County      : china City Division           :
```

```
22
Leading street direction : 44 Street number    : 68 Landmark: 233
Name   : liuy Building                   : 19bui Floor       : 1
Room   : 33
City   : fuzhou Country           : 86
Additional location : aaa Ports   : Gi0/1


Identifie
r           : tee
```

Related Commands

Platform Description

The following example displays all emergency numbers.

```
QTECH# show lldp location elin-location
static Elin location information


Identifier :  t
Elin : iiiiiiiiii
Ports     :
Gi1/0/3
```

Command	Description
N/A	N/A

N/A

9.22. show lldp neighbors

Use this command to display the LLDP information about a neighboring device.

show lldp neighbors [interface *interface-name*] [detail]

Parameter Description

Parameter	Description
interface-name	Interface name
detail	All information about a neighboring

	device

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide If the detail parameter is not specified, the brief information about a neighboring device is displayed. If the detail parameter is specified, the detailed information about a neighboring device is displayed. If the interface parameter is specified, the neighboring device information received on the specified interface is displayed.

Configuration Examples

```
QTECH# show lldp neighbors detail
Lldp neighbor-information of port [GigabitEthernet 0/1] Neighbor index  : 1
 Device type     : LLDP Device
 Update time     : 1hour 53minutes 30seconds Aging time     : 5seconds
Chassis ID type     : MAC address Chassis id   : 00d0.f822.33cd
System name     : System name
System description    : System description
System capabilities supported : Repeater, Bridge, Router System capabilities enabled :
Repeater, Bridge, Router
LLDP-MED capabilities    :
Management address subtype : 802 mac address Management address   : 00d0.f822.33cd
Interface numbering subtype  :
nterface number     : 0
Object identifier     :
LLDP-MED capabilities    :
Device class     :                :
HardwareRev     :
FirmwareRev     :                                    Manufacturer name     :
SoftwareRev     : SerialNum                          Asset tracking identifier   :
Manufacturer name     :
Asset tracking identifier
```

The following example displays the neighboring device information received on all ports.

```
Id GigabitEthernet 0/1

 Port description
 802.1 organizationally information Port VLAN ID
                  : 1
 Port and protocol VLAN ID(PPVID) : 1 PPVID
  Supported          : YES
  PPVID Enabled     : NO
 VLAN name of VLAN 1    : VLAN0001
```

```
Protocol Identity     :
802.3 organizationally information Auto-
negotiation supported : YES Auto-negotiation
enabled                     : YES
PMD auto-negotiation advertised : 1000BASE-T full duplex mode, 100BASE-TX full duplex mode,
   100BASE-TX half duplex mode
Operational MAU type    : speed(1000)/duplex(Full) PoE support
                : NO
Link aggregation supported : YES Link
aggregation enabled   : NO Aggregation port ID
                       : 0 Maximum frame Size :
1500
LLDP-MED organizationally information Power-via-MDI
device type                 :
Power-via-MDI power source : Power-via-MDI
power priority :
Power-via-MDI power value   :
```

Description of fields:

Field	Description
Neighbor index	Neighbor index
Device type	Type of neighboring device
Update time	Latest update time of neighbor information
Aging time	Aging time of a neighbor, namely the time after which a neighbor is aged and deleted
Chassis ID type	Chassis ID type
Chassis ID	Used to identify a device. Usually, a MAC address is used.
System name	Device name
System description	Device description, including hardware/software version and operating system

System capabilities supported	Functions supported by the system
System capabilities enabled	Functions enabled by the system
Management address subtype	Type of management address
Management address	Management address
Interface numbering subtype	Interface type of management address
Interface number	Interface ID of management address
Object identifier	Object ID of management address
Device class	MED device type: network connectivity device and terminal device Network connectivity device: Class I: general terminal device Class II: media terminal device, including capabilities of Class I and supporting media stream Class III: communication terminal device, including capabilities of Class I and Class II and supporting IP communication
HardwareRev	Hardware version
FirmwareRev	Firmware version
SoftwareRev	Software version
SerialNum	Serial number
Manufacturer name	Manufacturer name
Asset tracking identifier	Asset ID
Port ID type	Port ID type

Port ID	Port ID
Port description	Port description
Port VLAN ID	VLAN ID of a port
Port and protocol VLAN ID	Port and protocol VLAN ID
PPVID Supported	Whether port and protocol VLAN is supported
PPVID Enabled	Whether port and protocol VLAN is enabled
VLAN name of VLAN 1	VLAN 1 name
Protocol Identity	Protocol ID
Auto-negotiation supported	Whether auto-negotiation is supported
Auto-negotiation enabled	Whether auto-negotiation is enabled
PMD auto-negotiation advertised	Port auto-negotiation advertisement capability
Operational MAU type	Rate and duplex status of port auto-negotiation
PoE support	Whether POE is supported
Link aggregation supported	Whether link aggregation is supported
Link aggregation enabled	Whether link aggregation is enabled
Aggregation port ID	ID of link aggregation port
Maximum frame Size	Maximum frame length supported by a port
Power-via-MDI device type	Device type, including: PSE

	PD
Power-via-MDI power source	Power type
Power-via-MDI power priority	Power supply priority
Power-via-MDI power value	Power value of a port where power is supplied

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

9.23. show lldp network-policy profile

Use this command to display the information about an LLDP network policy.

show lldp network-policy { profile [*profile-num*] | interface *interface-name* }

Parameter Description

Parameter	Description
profile-num	ID of a network policy, in the range from 1 to 1024.
interface-name	Interface name

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide If *profile-num* is specified, the information about the specified network policy is displayed.

If no parameter is specified, the information about all network policies is displayed.

Configuration Examples

The following example displays the information about a network policy.

Related Commands

Command	Description
N/A	N/A
Network Policy Profile 1 voice vlan 2 cos 4 dscp 6 voice-signaling vlan 2000 cos 4 dscp 6	

Platform Description

N/A

9.24. show lldp statistics

The following example displays LLDP statistics.

show lldp statistics [global | interface *interface-name*]

Parameter

Parameter	Description
interface-name	Interface name

Description

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

- global parameter: display the global LLDP statistics.

Interface parameter: display the LLDP statistics of the specified interface.

Configuration Examples

The following example displays all LLDP statistics.

```
QTECH# show lldp statistics
lldp statistics global Information:
Neighbor information last changed time : 1hour 52minute 22second
The number of neighbor information inserted : 2
The number of neighbor information deleted : 0
The number of neighbor information dropped : 0
The number of neighbor information age out : 1


------------------------------------------------------------------------------------------------------
Lldp statistics information of port [GigabitEthernet 0/1]
------------------------------------------------------------------------------------------------------
The number of lldp frames transmitted : 26
The number of frames discarded    : 0
The number of error frames     : 0
The number of lldp frames received   : 12
The number of TLVs discarded    : 0
The number of TLVs unrecognized    : 0
The number of neighbor information aged out : 0
```

show lldp statistics command output description:

Field	Description
Neighbor information last change time	Time the neighbor information is latest updated
The number of neighbor information inserted	Number of times of adding neighbor information
The number of neighbor information deleted	Number of times of removing neighbor information
The number of neighbor information dropped	Number of times of dropping neighbor information

The number of neighbor information aged out	Number of the neighbor information entries that have aged out
The number of lldp frames transmitted	Total number of the LLDPDUs transmitted
The number of frames discarded	Total number of the LLDPDUs discarded
The number of error frames	Total number of the LLDP error frames received
The number of lldp frames received	Total number of the LLDPDUs received
The number of TLVs discarded	Total number of the LLDP TLVs dropped
The number of TLVs unrecognized	Total number of the LLDP TLVs that cannot be recognized
The number of neighbor information aged out	Number of the neighbor information entries that have aged out

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

9.25. show lldp status

Use this command to display LLDP status information.

show lldp status [**interface** *interface-name*]

Parameter Description

Parameter	Description

interface-name	Interface name

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide

interface parameter: display the LLDP status information of the specified interface.

Configuration Examples

```
QTECH# show lldp status
Global status of LLDP     : Enable
Neighbor information last changed time : 1hour 52minute 22second Transmit
interval               : 30s
Hold multiplier      : 4 Reinit delay    : 2s
Transmit delay       : 2s Notification
interval             : 5s Fast start counts
                       : 3
```

The following example displays LLDP status information of all ports.

```
Port [GigabitEthernet 0/1
Port status of LLDP    : Enable Port state     : UP
Port encapsulation         :
Port status of LLDP    : Enable Port state     : UP
Port encapsulation    : Ethernet II Operational mode  : RxAndTx Notification enable
                      : NO
Error detect enable    : YES
Number of neighbors    : 1 Number of MED neighbors    : 0
```

Related Commands

Platform Description

show lldp status command output description:

Field	Description
Global status of LLDP	Whether LLDP is globally enabled

Neighbor information last changed time	Time the neighbor information is latest updated
Transmit interval	LLDPDU transmit interval
Hold multiplier	TTL multiplier
Reinit delay	Port re-initialization delay
Transmit delay	LLDPDU transmit delay
Notification interval	Interval for sending LLDP Traps
Fast start counts	The number of fast sent LLDPDUs
Port status of LLDP	Whether LLDP is enabled on the port
Port state	Link status of port: UP or DOWN
Port encapsulation	LLDPDU encapsulation format
Operational mode	Operating mode of LLDP
Notification enable	Whether LLDP Trap is enabled on the port
Error detect enable	Whether error detection is enabled on the port
Number of neighbors	Number of neighbors
Number of MED neighbors	Number of MED neighbors

Command	Description
N/A	N/A

N/A

9.26. show lldp tlv-config

Use this command to display the advertisable TLV configuration of a port.

show lldp tlv-config [interface *interface-name*]

Parameter

Parameter	Description
interface-name	Interface name

Description

Defaults

N/A

Command Mode

Privileged EXEC mode

Usage Guide Interface parameter: display the LLDP TLV configuration of the specified interface.

Configuration Examples

Related Commands

Command	Description
N/A	N/A

The following example displays TLV information of port 1.

```
QTECH# show lldp tlv-config interface GigabitEthernet 0/1
LLDP tlv-config of port [GigabitEthernet 0/1]
------------------------------------------------------------------------------
    NAME    STATUS DEFAULT
------------------------------------------------------------  ----------------
```

```
Basic optional TLV:
Port Description TLV    YES YES
System Name TLV     YES YES
System Description TLV   YES YES
System Capabilities TLV   YES YES
Management Address TLV   YES YES

IEEE 802.1 extend TLV:
Port VLAN ID TLV     YES YES
Port And Protocol VLAN ID TLV YES YES
VLAN Name TLV      YES YES

IEEE 802.3 extend TLV:
MAC-Physic TLV     YES YES
Power via MDI TLV     YES YES
Link Aggregation TLV    YES YES
Maximum Frame Size TLV   YES YES

LLDP-MED extend TLV:
Capabilities TLV     YES YES
Network Policy TLV    YES YES
Location Identification TLV NO NO
Extended Power via MDI TLV YES YES
Inventory TLV      YES YES
```

Platform Description

N/A

9.27. { voice | voice-signaling } vlan

Use this command to configure the LLDP network policy. Use the **no** form of this command to delete the policy.

{ **voice | voice-signaling** } **vlan** { { *vlan-id* [**cos** *cvalue* **| dscp** *dvalue*] } | { **dot1p** [**cos** *cvalue* **| dscp**

dvalue] } **| none | untagged** }

no **{** voice | voice-signaling **}** vlan

Parameter Description

Parameter	Description
voice	Voice application
voice-signaling	Voice-signaling application

vlan-id	(Optional) VLAN ID of voice flow. The value ranges from 1 to 4094.
cos	(Optional) Class of service
cvalue	(Optional) CoS of the configured voice flow. The value ranges from 0 to 7, and the default value is 5.
dscp	(Optional) Differentiated services code point
dvalue	(Optional) DSCP value of the configured voice flow. The value ranges from 0 to 63. The default value is 46.
dot1p	(Optional) 802.1p priority tagging. The tag frame includes user_priority and vlan id is 0.
none	(Optional) The network policy is not advertised. VoIP determines the network policy based on its configuration.
untagged	(Optional) The untag frame is sent in the voice vlan in VoIP. In this case, the value of vlan id and cos are ignored.

Defaults

N/A

Command Mode

LLDP network policy configuration mode

Usage Guide

In the LLDP network policy configuration mode, configure the LLDP network policy.

Configuration Examples

The following example configures the LLDP network policy (profile-num is 1).

```
QTECH#config
```

Related Commands

Command	Description
show lldp network-policy profile [*profile-num*]	Displays the LLDP network policy.

Platform Description

/A

10. QINQ COMMANDS

10.1. dot1q-tunnel cos inner-cos-value remark-cos outer-cos-value

Use this command to map the priority from the outer tag to the inner tag for the packets on the interface. Use the **no** form of this command to restore the default setting.

dot1q-tunnel cos inner-cos-value remark-cos outer-cos-value

no dot1q-tunnel cos inner-cos-value remark-cos outer-cos-value default dot1q-Tunnel cos *inner-cos-value* **remark-cos** *outer-cos-value*

Parameter Description

Parameter	Description
inner-cos-value	Indicates the CoS value of the inner tag.
outer-cos-value	Indicates the CoS value of the outer tag.
no	Cancels the priority mapping of the packets on the interface.

Defaults

The policy list is null by default.

Command Mode

Interface configuration mode.

Usage Guide I

f the QoS policy based on the COS value is set for the service provider's network to which a user network connects, the COS value of the outer tag can be set to different values based on the data packet importance. In this case, important services can be preferentially processed and transmitted.

Configuration Examples

Command	Description
show interface intf-name remark	N/A

The following example configures the priority mapping from the outer tag to the inner tag.

Related Commands

latform Description

N/A

10.2. frame-tag tpid

Use this command to set the packet TPID compatible with the manufacturer TPID. Use the no or default form of this command to restore the default setting.

Parameter Description

frame-tag tpid *tpid*

no frame-tag tpid default frame-tag tpid

Defaults

The default is 0x8100.

Command Mode

Parameter	Description
tpid	Packet TPID.

Interface configuration mode.

Usage GuideIf the TPID value of the connected third-party device is not 0x8100 (default value) defined in IEEE802.1Q, the TPID value on the egress used to connect to the third-party device is the TPID value of the third-party device.

Configuration Examples

```
QTECH(config)# interface g0/3 QTECH(config-if)# frame-tag tpid 0x9100 QTECH(config-if)#
end
QTECH# show frame-tag tpid
Port    tpid
```

The following example sets the packet TPID compatible with the manufacturer TPID

```
QTECH(config)# interface g0/3 QTECH(config-if)# frame-tag tpid 0x9100 QTECH(config-if)#
end
QTECH# show frame-tag tpid
Port    tpid
```

Related Commands

Command	Description
show frame-tag tpid	N/A

Platform Description

N/A

10.3. inner-priority-trust enable

Use this command to copy the priority of the inner tag to the outer tag of the packets on the interface. Use the **no** or **default** form of this command to restore the default setting.

inner-priority-trust enable no inner-priority-trust enable

default inner-priority-trust enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

This function is disabled by default.

Command Mode

Interface configuration mode.

Usage Guide

If the QoS policy is configured based on the COS value of the user's VLAN tag for the service provider's network to which a user network connects, the user's VLAN tag priority can be copied to the outer VLAN tag, so that the user's packets are encapsulated with the outer VLAN tag and have the same priority as the user's VLAN tag. In this case, the user's packets can be preferentially processed and transmitted on the service provider's network.

Configuration ExamplesThe following example copies the priority of the inner tag to the outer tag of the packets on the interface.

```
QTECH#configure terminal
QTECH(config)# interface gigabitEthernet 0/2 QTECH(config-
if)# inner-priority-trust enable QTECH(config-if)#end
```

Related Commands

Command	Description

show inner-priority-trust	N/A

Platform Description

N/A

10.4. l2protocol-tunnel

Use this command to set the dot1q-tunnel port to receive L2 protocol message. Use the **no** or **default**

form of this command to disable this function.

l2protocol-tunnel **{** stp | gvrp **}**

no l2protocol-tunnel { **stp | gvrp** }

default l2protocol-tunnel { **stp** | **gvrp** }

Parameter Description

Parameter	Description
stp	Receives stp message.
gvrp	Receives gvrp message.

Defaults

N/A

Command Mode

Global configuration mode.

Usage Guide

If the STP and GVRP packets need to be transparently transmitted, this function must be enabled in global configuration mode.

Configuration Examples

```
QTECH#configure
QTECH(config)# l2protocol-tunnel stp QTECH(config)#
l2protocol-tunnel gvrp QTECH(config)#end
```

The following example enables the function of receiving L2 protocol gvrp and stp.

Related Commands

Command	Description
show l2protocol-tunnel { gvrp | stp }	N/A

Platform Description

N/A

10.5. l2protocol-tunnel enable

Use this command to enable transparent transmission of L2 protocol message. Use the **no** or **default**

form of this command to restore the default setting.

l2protocol-tunnel **{** stp | gvrp **}** enable

no l2protocol-tunnel { **stp | gvrp** } **enable**

Parameter Description

Parameter	Description
stp	Transparently transmits stp message.
gvrp	Transparently transmits gvrp message.

Defaults

It is disabled by default.

Command Mode

Intereface configuration mode.

Usage Guide

If this functio n is enable d in global and interfa**ce configu ration modes**, STP packet s can be transp arently transm itted after the bridge- frame forwar ding protoc ol bpdu comm and is enable d in global configu ration mode.

Configuratio n Examples

```
QTECH#configure  QTECH(config)# interface
fa 0/1
```

```
QTECH(config-if)# l2protocol-tunnel gvrp enable
QTECH(config-if)#end
```

Here is an example of enabling transparent transmission of L2 protocol message :

Related Commands

Command	Description
show l2protocol-tunnel { gvrp | stp }	N/A

Platform Description

N/A

10.6. l2protocol-tunnel tunnel-dmac

Use this command to set the MAC address for the transparent transmission of the corresponding protocol messages. Use the no or default form of this command to restore the default setting. l2protocol-tunnel { stp|gvrp } tunnel-dmac *mac-address*

no l2protocol-tunnel { stp|gvrp } tunnel-dmac *mac-address*

default l2protocol-tunnel { stp | gvrp } tunnel-dmac *mac-address*

Parameter Description

Parameter	Description
stp	Sets the STP transparent transmission address.
gvrp	Sets the GVRP transparent transmission address.

Defaults

The first three bytes of the address are 01d0f8 and the last three bytes are 000005 for stp and 000006 for gvrp by default.

Command Mode

Global configuration mode.

Usage GuideN/A

Configuration Examples

```
QTECH# configure terminal
QTECH(config-if)# l2protocol-tunnel gvrp tunnel-dmac 011AA9 000005 QTECH(config-
if)#end
```

The following example sets the MAC address for the L2-protocol transparent transmission function:

Related Commands

Command	Description
show l2protocol-tunnel { gvrp | stp }	N/A

Platform Description

N/A

10.7. show dot1q-tunnel

Use this command to display whether dot1q-tunnel of interface is enabled or not.

show dot1q-tunnel [**interfaces** *intf-id*]

Parameter Description

Parameter	Description
intf-id	The specified interface.

Defaults

N/A

Command Mode

Any mode

Usage Guide

N/A

Configuration Examples

```
QTECH# show dot1q-tunnel
Ports   Dot1q-tunnel
Gi0/1    Enable
```

The following example displays whether dot1q-tunnel of interface is enabled or not.

Related Commands

Command	Description
N/A	N/A

Platform Description

10.8. show frame-tag tpid

Use this command to display the configuration of interface tpid.

show frame-tag tpid [interfaces *intf-id*]

Parameter Description

Parameter	Description
intf-id	Specifies the interface.

Defaults

N/A

Command Mode

Any mode

Usage Guide

N/A

Configuration Examples

The following example displays the configuration of interface tpid.

```
QTECH# show frame-tag tpid
Ports     tpid
Gi0/1    0x9100
```

Platform Description

N/A

10.9. show inner-priority-trust

Use this command to display whether the priority copy function is enabled.

show inner-priority-trust

Parameter Description

Parameter	Description
N/A	N/A

Defaults

N/A

Command Mode

Any mode

Usage Guide

N/A

Configuration Examples

The following example displays whether the priority copy function is enabled.

```
QTECH# show inner-priority-trust

Port    inner-priority-trust
Gi0/1    enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description

10.10. show interfaces dot1q-tunnel

Use this command to display the VLAN configuration on the dot1q-tunnel port.

show interfaces [*intf-Id*] **dot1q-tunnel**

Parameter Description

Parameter	Description
intf-id	Specifies the interface.

Defaults

N/A

Command Mode

Any mode

Usage Guide

N/A

Configuration Examples

```
QTECH# show interfaces dot1q-tunnel Interface:
Gi0/3
Native vlan: 10
Allowed vlan list: 4-6, 10, 30-60
Tagged vlan list: 4, 6, 30-60
```

The following example displays the VLAN configuration on the dot1q-tunnel port.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

10.11. show interfaces remark

Use this command to display the priority mapping configuration.

show interfaces [*intf-id*] **remark**

Parameter Description

Parameter	Description
intf-id	specifies an interface

Defaults

N/A

Command Mode

Any mode

Usage Guide

N/A

Configuration Examples

```
QTECH# show  interfaces remark
Ports         Type        From value  To value
----------------------

Gi0/1         Cos-To-Cos  3           5
```

The following example displays the priority mapping configuration.

Related ommands

Command	Description
N/A	N/A

Platform Description

N/Ashow l2protocol-tunnel

Use this command to display transparent transmission configuration of L2 protocol.

show l2protocol-tunnel { gvrp | stp }

Parameter Description

Parameter	Description
gvrp	Displays configuration of transparently transmitting gvrp protocol.
stp	Displays configuration of transparently transmitting stp protocol.

Defaults

N/A

Command Mode

Any mode

Usage Guide

N/A

Configuration Examples

```
QTECH# show l2protocol-tunnel stp L2protocol-tunnel: Stp Enable QTECH# show l2protocol-tunnel gvrp
L2protocol-tunnel: gvrp Disable
```

The following example displays transparent transmission configuration of L2 protocol.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

10.12. show registration-table

Use this command to display vid add policy list of prorocol-based dot1q-tunnel port.

show registration-table [interfaces *intf-id*]

Parameter Description

Parameter	Description
intf-id	Specifies the interface.

Defaults

N/A

Command Mode

Any mode

Usage Guide

N/A

Configuration Examples

The following example displays vid add policy list of prorocol-based dot1q-tunnel port.

```
QTECH# show registration-table
```

```
Ports      Type    Outer-VID  Inner-VID-list
Gi0/7     Add-outer  5     7-10,15,20-30
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

10.13. show traffic-redirect

Use this command to display flow-based vid change or add policy list.

show traffic-redirect [**interfaces** *intf-id*]

Parameter Description

Parameter	Description
intf-id	Specifies the interface.

Defaults
N/A

Command Mode

Any mode

Usage Guide N/A

Configuration Examples

```
QTECH# show traffic-redirect
Ports          Type          VID   Match-filter
```

The following example displays flow-based vid change or add policy list.

Gi0/3	**Mod-outer**	**2 3**	**11**
Gi0/3	Mod-outer	3	4
Gi0/3	Mod-outer	6	5
Gi0/3	Mod-inner	8	inner-to-8

Gi0/6	Mod-inner	9	100
Gi0/7	Nested-vid	13	nest-13

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

10.14. show translation-table

Use this command to display vid modify policy list of prorocol-based access, trunk, hybrid port.

show translation-table [**interfaces** *intf-id*]

Parameter Description

Parameter	Description
intf-id	Specifies the interface.

Defaults

N/A

Command Mode

Any mode

Usage Guide

N/A

Configuration Examples

Related Commands

Command	Description

N/A	N/A

The following example displays vid modify policy list of prorocol-based access, trunk, hybrid port.

```
QTECH# show translation-table
Ports       Type      Relay-VID Old-local  Local\inner-VID-list
----------------------------------------
Gi0/7       Inner-CVID 8         N/A       10-20
Gi0/7       Local-SVID 1001       N/A       30-60
Gi0/7       In+Out     8         20        50
```

Platform Description

N/A

10.15. switchport dot1q-tunnel allowed vlan

Use this command to configure the allowed VLAN of dot1q-tunnel. Use the **no** or **default** form of this command to restore the default setting.

switchport dot1q-tunnel allowed vlan { [**add**] **tagged** *vlist* | [**add**] **untagged** *vlist* | **remove** *vlist* }

no switchport dot1q-tunnel allowed vlan default switchport dot1q-tunnel allowed vlan

Parameter Description

Parameter	Description
add	Add allowed VLAN.
tagged	Tag-carried.
untagged	Not tag-carried.
v_list	vlan id list.
no	Remove the settings.

Defaults

The default is untagged 1.

Command Mode

Interface configuration mode.

Usage Guide **N/A**

Configuration Examples

The following example specifies vlan 3-6 of dot1q-tunnel port as allowed VLAN and outputting the frame with tag.

```
QTECH(config)#interface gigabitEthernet 0/1
QTECH(config-if)#switchport dot1q-tunnel allowed vlan tagged 3-6
QTECH(config)#end
```

Related Commands

Command	Description
show interface dot1q-tunnel	N/A

Platform Description

N/A

10.16. switchport dot1q-tunnel native vlan

Use this command to configure the default vlan id of dot1q-tunnel. Use the no or default form of this command to restore the default setting.

Parameter Description

switchport dot1q-tunnel native vlan *vid*

no switchport dot1q-tunnel native vlan default switchport dot1q-tunnel native vlan

Defaults

The default is VLAN 1.

Command Mode

Parameter	Description
Vid	Configures default vlan id.

Interface configuration mode.

Usage Guide

N/A

Configuration Examples

```
QTECH(config)#interface gigabitEthernet 0/1 QTECH(config-
```

```
if)#switchport dot1q-tunnel native vlan 8
QTECH(config)#end
```

The following example specifies default VLAN of dot1q-tunnel port as 8.

Related Commands

Command	Description
show interface dot1q-tunnel	N/A

Platform Description

N/A

10.17. switchport mode dot1q-tunnel

Use this command to configure the interface as the dot1q-tunnel interface. Use the **no** or **default** form of this command to restore the default setting.

switchport mode dot1q-tunnel no switchport mode

default switchport mode

Parameter Description

Parameter	Description
-	-

Defaults

The interface is not a tunnel port by default.

Command Mode

Interface configuration mode.

Usage Guide

N/A

Configuration Examples

```
QTECH(config)# interface gigabitEthernet 0/1 QTECH(config-if)# switchport mode dot1q-tunnel
QTECH(config)# end
```

The following example configures the interface as the dot1q-tunnel interface.

Related Commands

Command	Description
show vlan	N/A

Platform Description

N/A

11. ERPS COMMANDS

11.1. associate sub-ring

Use this command to associate the ethernet ring with its sub-rings.

associate sub-ring raps-vlan *vlan-list*

no associate sub-ring raps-vlan *vlan-list*

Parameter Description

Parameter	Description
vlan-list	Sub-rings' R-APS VLAN.

Defaults

By default, Ethernet ring is not associated with its sub-rings.

Command Mode

ERPS configuration mode.

Usage Guide

1. You need to configure this command on all nodes of the Ethernet ring, so as to transmit its sub-ring's ERPS protocol packets in the Ethernet ring.

2. Configuring the association is mainly to make the sub-ring's protocol packets transmit in the Ethernet ring. Users can also adopt the configuration command provided by the VLAN module to configure elaborately the VLAN and the relation between ports and VLAN, so as to transmit the sub-ring's protocol packets in other Ethernet rings and not leak the packets to the user network.

Configuration Examples

```
#Enter the privileged EXEC mode
QTECH# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.

# Configure the link mode of the Ethernet ring port and the default VLAN.
QTECH(config)# interface fastEthernet 0/1 QTECH(config-
if)# switchport mode trunk QTECH(config-if)# exit
QTECH(config)# interface fastEthernet 0/2 QTECH(config-
if)# switchport mode trunk QTECH(config-if)# exit

# Enter the erps configuration mode.
QTECH(config)# erps raps-vlan 4093
```

```
#Add the ports that participate in the ERPS protocol computing to the Ethernet ring.
QTECH(config-erps4093)# ring-port west fastEthernet 0/1 east fastEthernet
0/2

# Configure the Ethernet subring QTECH(config)# erps raps-
vlan 100 QTECH(config)# interface fastEthernet 0/3
QTECH(config-if)# switchport mode trunk QTECH(config-
if)# exit
QTECH(config)# erps raps-vlan 100
QTECH(config-erps100)# ring-port west fastEthernet 0/3 east virtual-channel QTECH(config-
if)# exit

# Associate the subring with other Ethernet rings.
QTECH(config)# erps raps-vlan 4093
QTECH(config-erps4093)# associate sub-ring raps-vlan 100
```

The following example associates the Ethernet sub-ring with other Ethernet rings:

```
0/2

# Configure the Ethernet subring QTECH(config)# erps raps-
vlan 100 QTECH(config)# interface fastEthernet 0/3
QTECH(config-if)# switchport mode trunk QTECH(config-
if)# exit
QTECH(config)# erps raps-vlan 100
QTECH(config-erps100)# ring-port west fastEthernet 0/3 east virtual-channel
QTECH(config-if)# exit

# Associate the subring with other Ethernet rings.
QTECH(config)# erps raps-vlan 4093
QTECH(config-erps4093)# associate sub-ring raps-vlan 100
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

11.2. erps enable

Use this command to enable/disable the ERPS function in the global configuration mode.

erps enable no erps enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

Disabled

Command Mode

Global configuration mode.

Usage Guide

The ERPS protocol of the specified ring will begin running truly only after the global ERPS protocol and the ERPS protocol of the specified ring are both enabled.

Configuration Examples

```
# Enter the privileged EXEC mode
QTECH# configure terminal
```

The following example enables the ERPS protocol globally:

```
# Enable the ERPS function globally.
QTECH(config)# erps enable
# Enter the ERPS configuration mode
QTECH(config)# erps raps-vlan 4093
# Enable the ERPS function for the specified ring.
QTECH(config-erps4093)# state enable
```

Related Commands

Command	Description
state enable	After entering the ERPS configuration mode of the specified ring, configure this command to enable the ERPS protocol of this specified ring.

Platform Description

N/A

11.3. erps monitor link-state by oam

Use this command to configure the method of monitoring the ERPS link state.

erps monitor link-state by oam vlan ***vlan-id***

no erps monitor link-state by oam

Parameter Description

Parameter	Description
N/A	N/A

Defaults

By default, it adopts the directly monitoring the link physical state (up or down) rather than the oam method.

Command Mode

Global configuration mode.

Usage Guide

For the link state monitoring, use the method of directly monitoring the link physical state (up or down), also monitor the logic state (unidirectional fault, bidirectional fault or normal) of the link by the OAM. By default, the former is adopted. If the OAM method is used, the inefficient link state monitoring may cause the convergence time longer when the topology changes.

Configuration Examples

```
# Enter the privileged EXEC mode.
QTECH# configure terminal
```

The following example configures the method of monitoring the link state.

```
# Configure the method of monitoring the link state.
QTECH(config)# erps monitor link-state by oam vlan 100
```

Related Commands

Platform Description

N/A

11.4. erps raps-vlan

Use this command to configure the R-APS VLAN of Ethernet ring.

erps raps-vlan *vlan-id*

no erps raps-vlan *vlan-id*

Parameter Description

Parameter	Description
vlan-id	R-APS VLAN ID

Defaults

No R-APS VLAN is configured.

Command Mode

Global configuration mode.

Usage Guide

The R-APS VLAN must be the VLAN that is not used on the device. Cannot set the VLAN1 to the R-APS VLAN.

The same Ethernet ring of different devices needs the same R-APS VLAN.

If you want to transparently transmit the ERPS protocol packets on a device without the ERPS function configured, make sure that only the two ports connected to the Ethernet ring on this device allow the R-APSA VLAN packets corresponding to this ERPS ring passing through. Otherwise, the other VLAN packets may enter the R-APS VLAN through the transparent transmission, causing the shock to the ERPS ring.

Configuration Examples

```
# Enter the privileged EXEC mode.
QTECH# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.

#Configure the R-APS VLAN globally.
QTECH(config)# erps raps-vlan 4093
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

11.5. protected-instance

Use this command to configure the VLAN protected by the Ethernet ring to implement the load balance function.

protected-instance *instance-id-list*

no protected-instance

Parameter Description

Parameter	Description
instance-id-list	Instance protected by this Ethernet ring. (The VLANs corresponding to these instances are the VLANs protected by the Ethernet ring.)

Defaults

By default, all VLANs are protected.

Command Mode

EPRS configuration mode.

Usage Guide

The protected VLAN consists of the R-APS VLAN of this Ethernet ring and the data VLAN protected by this Ethernet ring.

Configuration Examples

Suppose that the ERP1 and ERP2 are configured on the switch to implement the load balance. The R-APS VLAN of the ERPS1 is 100, the protected data VLAN is in the range of 1 to 99 and 101-2000, the R-APS VLAN of the ERPS2 is 4093, and the protected data VLAN is in the range of 2001 to 4092 and 4094. Configuration for the load balance is shown as below:

```
# Enter the privileged EXEC mode.
QTECH# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

```
# Configure the VLAN configured by the ERP1.
QTECH(config)# spanning-tree mst configuration QTECH(config-mst)# instance 1 vlan 100,
1-99, 101-2000 QTECH(config-mst)# exit
```

```
QTECH(config)# erps raps-vlan 100
QTECH(config-erps100)#protected-instance 1

# Configure the VLAN configured by the ERP2.
QTECH(config)# spanning-tree mst configuration
QTECH(config-mst)# instance 2 vlan 4093, 2001-4092, 4094 QTECH(config-mst)# exit
QTECH(config)# erps raps-vlan 4093
QTECH(config-erps4093)#protected-instance 2
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

11.6. ring-port

Use this command to configure the ERPS ring.

ring-port west { *interface-name1* | **virtual-channel** } **east** { *interface-name2* | **virtual-channel** }

no ring-port

Parameter Description

Parameter	Description
interface-name1	Name of the West port.
interface-name2	Name of the East port.

Defaults

No ERPS ring is configured.

Command Mode

EPRS configuration mode.

Usage Guide

1) After adding the port to the ERP ring, the trunk attribute of the port is not allowed to be modified any more.

2) If the ring port is configured on the virtual-channel, this ring will be considered as a sub-ring.

3) Ports running the ERPS do not participate in the STP computing. ERPS, RERP and REUP do not share the port.

Configuration Examples

```
# Enter the privileged EXEC mode.
QTECH# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

The following example is for the ERPS ring.

```
# Configure the link mode of the Ethernet ring port and the default VLAN.
QTECH(config)# interface fastEthernet 0/1 QTECH(config-
if)# switchport mode trunk QTECH(config-if)# exit
QTECH(config)# interface fastEthernet 0/2

QTECH(config-if)# switchport mode trunk
QTECH(config-if)# exit

# Enter the ERPS configuration mode.
QTECH(config)# erps raps-vlan 4093

#Add the ports that participate in the ERPS protocol computing to the Ethernet ring.
QTECH(config-erps4093)# ring-port west fastEthernet 0/1 east fastEthernet
0/2
```

Related Commands

Command	Description
state enable	Enable the ERPS protocol of the specified ring in the ERPS mode of the specified ring.
sub-ring associate raps-vlan *vlan-id*	Establish the association between the subring and other Ethernet rings in the subring ERPS configuration mode.

Platform Description

N/A

11.7. rpl-port

Use this command to configure the RPL port and RPL owner.

rpl-port { **west** | **east** } [**rpl-owner**]

no rpl-port

Parameter Description

Parameter	Description
N/A	N/A

Defaults

No RPL port and RPL owner are configured.

Command Mode

EPRS configuration mode.

Usage Guide

Up to one RPL link and one RPL owner node are needed and configurable for each ring.

Configuration Examples

```
# Enter the privileged EXEC mode.
QTECH# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

The following example configures the RPL port and RPL owner.

```
# Configure the link mode of the Ethernet ring port and the default VLAN.
QTECH(config)# interface fastEthernet 0/1 QTECH(config-
if)# switchport mode trunk QTECH(config-if)# exit
QTECH(config)# interface fastEthernet 0/2
QTECH(config-if)# switchport mode trunk QTECH(config-
if)# exit

# Enter the ERPS configuration mode.
QTECH(config)# erps raps-vlan 4093

# Add the ports that participate in the ERPS protocol computing to the Ethernet ring.
QTECH(config-erps4093)# ring-port west fastEthernet 0/1 east fastEthernet
0/2
```

```
# Specify the port where the RPL link is and the RPL owner.
QTECH(config-erps4093)# rpl-port west rpl-owner
```

Command	Description
ring-port west { *interface-name1* | **virtual-channel** } **east** { *interface-name2* | **virtual-channel** }	Configure the specified ERP ring in the ERPS configuration mode of the specified ring.
state enable	Enable the ERPS protocol of the specified ring in the ERPS configuration mode of the specified ring.

Related Commands

Platform Description

N/A

11.8. show erps

```
# Specify the port where the RPL link is and the RPL owner.
QTECH(config-erps4093)# rpl-port west rpl-owner
```

Use this command to show the parameters and states of the ERPS.

show erps [{ global | raps_vlan *vlan-id* [sub-ring] }]

Parameter	Description
N/A	N/A

Parameter Description

Defaults

N/A

Command Mode

Privileged EXEC mode.

```
QTECH# show
erps ERPS
Information                    :   Enab
Global                         :   N   led
Status Link                        o
monitored by                       t   Oam

R-APS VLAN                     :   4092
Ring                           :   Enabled
Status                         :   Gi 0/5 (Blocking) Gi 0/7 (Forwarding)
West                           :   West Port
Port                           :
East                           :   A   Enabled
Port RPL                           l   0 milliseconds
Port                               l   500 milliseconds
RPL Port Blocked               :       5 minutes Idle
VLAN RPL Owner                 :
Holdoff                        :
Time                           :
Guard
Time WTR
Time
Current        Ring
State

R-APS VLAN                     :   4093
Ring                           :   Enabled  Virtual Channel
Status                         :   Gi 0/10 (Forwarding) None
West                           :   All Disabled
Port                           :   0 milliseconds
East                           :   500 milliseconds
Port RPL                       :   5 minutes Idle
Port                           :
RPL Port Blocked               :
VLAN RPL Owner                 :
Holdoff                        :
Time
Guard
Time WTR
Time
Current Ring State
```

```
R-APS VLAN   : 4094
Ring Status  : Enabled
West Port    : Virtual Channel
East Port    : 12 (Forwarding)
RPL Port     : None
RPL Port Blocked VLAN     : All
RPL Owner    : Disabled
Holdoff Time : 0 milliseconds
Guard Time   : 500 milliseconds
WTR Time     : 5 minutes
Current Ring State  : Idle


QTECH# show erps raps_vlan 4093 sub-ring
```

Usage Guide

N/A

Configuration Examples

The following example shows the use of this command.

```
R-APS VLAN: 4093
Sub-Ring R-APS VLANs TC Propagation State


100                     Enable

200                     Enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

11.9. state enable

Use this command to enable/disable the specified R-APS ring.

state enable no state enable

Parameter Description

Parameter	Description
N/A	N/A

Defaults

Disabled

Command Mode

EPRS configuration mode.

Usage Guide

Only after the global ERPS protocol and the ERPS protocol of the specified ring are both enabled, the ERPS protocol of the specified ring will begin truly running.

Configuration Examples

```
#Enter the privileged EXEC mode.
QTECH# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.

#Configure the link mode of the Ethernet ring port and the default VLAN.
QTECH(config)# interface fastEthernet 0/1 QTECH(config-
if)# switchport mode trunk QTECH(config-if)# exit
QTECH(config)# interface fastEthernet 0/2 QTECH(config-
if)# switchport mode trunk QTECH(config-if)# exit
```

The following example enables the specified ERPS ring:

```
# Enter the ERPS configuration mode.
QTECH(config)# erps raps-vlan 4093

# Add the ports that participate in the ERPS protocol computing to the Ethernet ring. QTECH(config-
erps4093)# ring-port west fastEthernet 0/1 east fastEthernet 0/2

# Enable the ERPS function for the specified ring.
QTECH(config-erps4093)#state enable

# Enable the global ERPS function.
```

```
QTECH(config-erps4093)# exit
QTECH(config)# erps enable
```

Related Commands

Command	Description
erps enable	Enable the global ERPS protocol.

Platform Description

N/A

11.10. sub-ring tc-propagation

Use this command to specify the devices corresponding to the crossing node on the crossing ring whether to send out the notification when the subring topology changes.

sub-ring tc_propagation enable no sub-ring tc_propagation

Parameter Description

Parameter	Description
N/A	N/A

Defaults

By default, the topology changing notification is not sent.

Command Mode

EPRS configuration mode.

Usage Guide

This command is just needed to be configured on the crossing nodes on the crossing ring.

Configuration Examples

```
# Enter the privileged EXEC mode.
QTECH# configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
```

The following example is configured when the subring topology changes.

```
#Configure the link mode of the Ethernet ring port and the default VLAN.
QTECH(config)# interface fastEthernet 0/1 QTECH(config-
```

```
if)# switchport mode trunk QTECH(config-if)# exit
QTECH(config)# interface fastEthernet 0/2 QTECH(config-
if)# switchport mode trunk QTECH(config-if)# exit

# Enter the ERPS configuration mode.
QTECH(config)# erps raps-vlan 4093

# Add the ports that participate in the ERPS protocol computing to the Ethernet ring. QTECH(config-
erps4093)# ring-port west fastEthernet 0/1 east fastEthernet 0/2

#Configure the Ethernet subring. QTECH(config)# erps raps-vlan
100 QTECH(config)# interface fastEthernet 0/3
QTECH(config-if)# switchport mode trunk QTECH(config-if)#
exit
QTECH(config)# erps raps-vlan 100
QTECH(config-erps100)# ring-port west fastEthernet 0/3 east virtual-channel

# Associate the subring with other Ethernet rings.
QTECH(config-erps100)# sub-ring associate raps-vlan 4093

# Enable the topology changing notification for the subring.
QTECH(config-erps100)# sub-ring tc-propagation enable
```

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A

11.11. timer

Use this command to configure the timer of the ERPS protocol.

timer { **holdoff-time** *interval1* | **guard-time** *interval2* | **wtr-time** *interval3* }

no timer **{** holdoff-time **|** guard-time **|** wtr-time **}**

Parameter Description

Parameter	Description

interval1	Value of the Holdoff timer in 100 milliseconds, the valid range is 0 to 100.
Interval2	Value of the Guard timer in 10 milliseconds, the valid range is 1 to 200.
Interval3	Value of the WTR in minute, the valid range is 5 to 12.

Defaults

Holdoff timer: 0.

Guard timer: 500 milliseconds. WTP timer: 5 seconds.

Command Mode

EPRS configuration mode.

Usage Guide

Holdoff timer:

This timer is used to avoid the ERPS from topology swithcingswitching continuously due to the link intermittent fault. With this timer configured, if the link fault is detected, the ERPS does not perform the topology switching immediately until the timer times out and the link fault is verified. **Guard timer:** This timer is used to prevent the device receiving the timed-out R-APS messages.

When the device detects the recovery from failure of the link, it sends out the message of link recovery and starts up the Guard timer. Before the Guard times out, except for the flush packets indicating the subring topology change, other packets are discarded directly without being handled. **WTR (Wait-to-restore) timer:** This timer is only valid for the RPL owner device. It is mainly used to prevent the RPL owner making the erroneous judgment to the ring network status. When the RPL detects the fault recovery, it does not perform the topology switching immediately until the WTR times out and the Ethernet ring indeed recovers from the fault. If the ring network fault is checked again before the WTR times out, then the WTR timer will be canceled and topology switching will be not executed any longer.

Configuration Examples

```
# Enter the privileged EXEC mode.
QTECH# configure terminal
Enter configuration commands, one per line. End with CNTL/Z. # Enter the
ERPS configuration mode.
QTECH(config)# erps raps-vlan 4093
```

```
# Configure the protocol timer.
QTECH(config-erps4093)# timer holdoff-time 10 QTECH(config-
erps4093)# timer guard-time 10
QTECH(config-erps4093)# timer wtr-time 10
```

The following example configures the timer of the ERPS protocol.

Related Commands

Command	Description
N/A	N/A

Platform Description

N/A