



L3 Switch Series

OS6226

CLI Reference Guide

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1. Port configuration

1.1. interface ethernet

Function

Enter port configuration mode

Format

interface ethernet *port-id*

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

1.2. duplex

Function

Configure the port duplex mode in port mode. The default is **auto**

Format

duplex {auto | full | half }

Parameter Description

none

1.3. speed

Function

In port mode, it is used to configure the port rate. The default is **auto**

Format

speed{10|100|1000|10000|auto}
no speed

Parameter Description

none

1.4. priority

Function

Configuring port priority in port mode

Format

priority *value*
nopriority

Parameter Description

parameter	Parameter	Value
value	Description Default 0	0-7

1.5. shutdown

Function

(Disable) enable a port in port mode

Format

shutdown
noshutdown

Parameter Description

none

1.6. description

Function

Configure port description information in port mode (delete)

Format

description *string* **no**
description

Parameter Description

	Parameter	Value
Parameter string	Description Description	String<1-128> , a string with a length of less than 128

1.7. switchport ethernet

Function

Add or delete ports in **VLAN** mode

Format

switchport {ethernet *port-id* |all}
noswitchport {ethernet *port-id* |all}

Parameter Description

	Parameter	Value
Parameter <i>port-id</i>	Description Take port id	String<5-6>, the format is: stack number/slot number/port number

1.8. Ingress filtering

Function

Enable or disable the port packet filtering function in port mode.

Format

ingress filtering
no ingress filtering

Parameter Description

none

1.9. ingress acceptable-frame

Function

In port mode, configure the types of packets that the port is allowed to receive.

Format

**ingress acceptable-frame {all | tagged |
untagged} no ingress acceptable-frame**

Parameter Description

	Parameter Description Value	
Parameters tagged	Only receive messages with tags	

all	All messages received	
untagged	Only accept untagged Message	none

1.10. switchport pvid

Function

Modify the port **PVID** in port mode

Format

switchport pvid *vlan-id*

noswitchport pvid

Parameter Description

parameter	Parameter	Value
vlan-id	Description Take vlan id	1-4094

1.11. switchport trunk

Function

Add or delete **the VLAN** to which the **trunk** port belongs in port mode

Format

switchport trunk allowed vlan {*vlan-list* | **all**}

no switchport trunk allowed vlan {*vlan-list* | **all**}

Parameter Description

parameter	Parameter Description	Value
vlan-list	VLAN list all	String<1-128>, for example 8,9,11-15
all	configured VLANs	

1.12. switchport hybrid

Function

Add or delete **the VLAN** to which the **hybrid untagged** port belongs in port mode

Format

switchport hybrid {**tagged** | **untagged**} **vlan** {*vlan-list* | **all**}

no switchport hybrid vlan {*vlan-list* | **all**}

Parameter Description

parameter	Parameter Description	Value
vlan-list	VLAN list all	String<1-128>, for example 8,9,11-15
all	configured VLANs	

1.13. switchport link-type

Function

Configure the link type of a port in port mode

Format

switchport link-type {**access** | **hybrid** | **trunk**} **no**

switchport link-type {**access** | **hybrid** | **trunk**}

Parameter Description

none

1.14. show interface ethernet

Function

View port information

Format

show interface [**ethernet** *port-id*]

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

1.15. show interface brief

Function

View brief port information

Format

show interface brief [**ethernet***port-id*]

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

1.16. show description interface

Function

View port description information

Format

show description interface [ethernet *port-id*]

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

1.17. show ingress interface

Function

Check the port receiving frame type and filtering switch status

Format

show ingress interface [ethernet *port-id*]

Parameter Description

parameter	Parameter	Value
port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

1.18. Configuration example

```
DUT(config)#int ethernet 0/0/1 //Duplex mode           //Enter port
DUT(config-if-ethernet-0/0/1)#duplex full //Configure port rate
DUT(config-if-ethernet-0/0/1)#speed 1000 //Configure port priority
DUT(config-if-ethernet-0/0/1)#priority 5 //Down the port
DUT(config-if-ethernet-0/0/1)#shutdown //Enable port
DUT(config-if-ethernet-0/0/1)#no shutdown //Port description
DUT(config-if-ethernet-0/0/1)#description
DUT(config-if-ethernet-0/0/1)#switchport port type //Configure port pvid
DUT(config-if-ethernet-0/0/1)#ingress acceptable-frame tagged //Configure the port to receive frame type
```

```

DUT(config-if-ethernet-0/0/1)#switchport link-type trunk //Configure port type
DUT(config-if-ethernet-0/0/1)#switchport trunk allowed vlan all //Trunk port allows all VLANs to pass
DUT(config-if-ethernet-0/0/1)#show int brief ethernet 0/0/1 //View single port information
Port      Desc Link shutdn Speed          Pri PVID Mode TagVlan e0/0/1      UtVlan
test down false f1000 5              1    trk all          1
Total entries: 1

```

2. Port statistics

2.1. show statistics interface

Function

View detailed port statistics in any view.

Format

show statistics interfacebrief [ethernet *port-id*]

show statistics interface [ethernet *port-id*]

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

2.2. Clear interface

Function

Clear port statistics in the global view.

Format

clear interface [ethernet [*slot-id* | *port-id*]]

Parameter Description

parameter	Parameter	Value
slot-id	Description	0-3
port-id	Slot Number Port Number	String<5-6>, the format is: stack number/slot number/port number

2.3. show cpu-statistics

Function

Command to view **CPU** port statistics

Format

show cpu-statistics [**ethernet** *port-id*]

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

2.4. clear cpu-statistics

Function

Clear **CPU** port statistics

Format

clear cpu-statistics

Parameter Description

none

2.5. show statistics dynamic

Function

View real-time statistics of all ports

Format

show statistics dynamic [**interface**|**eth-trunk**]

Parameter Description

none

2.6. show statistics eth-trunk

Function

View aggregate port statistics

Format

show statistics eth-trunk *id*

Parameter Description

parameter	Parameter Description	Value
id	Aggregation group id	1-16

2.7. show utilization

Function

View the real-time utilization of all ports

Format

show utilization interface
show utilization eth-trunk

Parameter Description

none

2.8. Configuration example

#View single port statistics

DUT2(config)#show statistics interface ethernet 0/0/1

Port number: e0/0/1

last 5 minutes input rate 0 bits/sec, 0 packets/sec

**last 5 minutes output rate 856 bits/sec, 1 packets/
sec 64 byte**

packets:0 65-127

byte packets:0 128-255

byte packets:0 256-511

byte packets:0 512-1023

byte packets:0 1024-1518

byte packets:0 0 packetsinput, 0 bytes, 0

discarded packets 0 unicasts, 0

multicasts, 0 broadcasts 0 input errors, 0 FCS error, 0

symbol error,

0 false carrier 0 runts, 0 giants 1012 packets output,

100886 bytes, 0 discarded packets 0 unicasts, 512 multicasts, 500 broadcasts

0 output errors, 0 deferred, 0 collisions 0
late collisions
Total entries: 1.

3. MTU configuration

3.1. mtu

Function

Configure the maximum transmission unit on the port

Format

mtu<pkt-size>
no mtu

Parameter Description

	Parameter	Value
Parameter pkt-size	Description Message size	1522-12288

3.2. show mtu interface

Function

View **mtu** configuration

Format

show mtu interface [ethernetport-id]

Parameter Description

none

4. 802.1Q Configuration

4.1. vlan

Function

Create a **VLAN** globally or enter **VLAN** mode

Format

vlan *vlan-list*

no vlan {**all** | *vlan-list*}

Parameter Description

parameter	Parameter Description	Value
vlan-list	VLAN list all	String<1-128> , for example 8,9,11-15
all	configured VLANs	none

4.2. switchport

Function

Add a port to a **VLAN** in **VLAN** mode

Format

switchport {**ethernet**<port-id **all**>} **no**

switchport {**ethernet**<port-id **all**>}

Parameter Description

	Parameter	Value
	Description	String<5-6>, the format is: stack number/slot number/port number
Parameterport -id all	Take port id all ports	none

4.3. description

Function

Configure the **VLAN** name in **VLAN** mode

Format

description *name*

no description

Parameter Description

parameter	Parameter Description	Value
name	VLAN Description	String<1-32> , a string with a length less than 32

4.4. show vlan brief

Function

View **VLAN** information

Format

Show vlan [*vlan-id*]

Show vlan brief [*vlan-list*]

Show vlan brief interface [*ethernet port-id* [*ethernetport-id* | to *ethernetport-id*]]

Parameter Description

parameter	Parameter Description	Value
vlan-id	VLAN number	1-4094
vlan-list	VLAN list port	String<1-128> , for example 8,9,11-15
port-id	number	String<5-6>, the format is: stack number/slot number/port number

4.5. Configuration example

DUT(config)#

DUT(config)#vlan 1-4094 // Create **vlan**

DUT(config-if-vlan-1-4094)#addition to VLAN

DUT(config-if-vlan-1-4094)#int ethernet 0/0/1 // port mode

DUT(config-if-ethernet-0/0/1)#switchport pvid 2 // modify port **pvid**

DUT(config-if-ethernet-0/0/1)#switchport link-type trunk // Configure port type

DUT(config-if-ethernet-0/0/1)#switchport trunk allowed vlan 20 // Configure the **VLAN** allowed to pass //View

DUT(config-if-ethernet-0/0/1)#show int brief port information

Port	Desc	Link	shutdn	Speed	Pri	PVID	Mode	TagVlan	UtVlan
e0/0/1	test	down	false	f1000	5	2	trk	all	2
e0/0/2		down	false	auto	0	1	hyb		1
e0/0/3		down	false	auto	0	1	hyb		1
e0/0/4		down	false	auto	0	1	hyb		1
e0/0/5		down	false	auto	0	1	hyb		1

e0/0/6	down false auto	0	1	hyb	1
e0/0/7	down false auto	0	1	hyb	1
e0/0/8	down false auto	0	1	hyb	1
e0/0/9	up false auto-f1000 up	0	1	hyb	1
e0/0/10	false auto-f1000 up false	0	1	hyb	1
e0/0/11	auto-f1000 up false auto-	0	1	hyb	1
e0/0/12	f1000	0	1	hyb	1
e0/0/13	down false auto	0	1	hyb	1
e0/0/14	up false auto-f1000 down	0	1	hyb	1
e0/0/15	false auto	0	1	hyb	1
e0/0/16	down false auto	0	1	hyb	1
e0/0/17	down false auto	0	1	hyb	1
e0/0/18	down false auto	0	1	hyb	1
e0/0/19	down false auto	0	1	hyb	1
e0/0/20	down false auto	0	1	hyb	1
e0/0/21	down false auto	0	1	hyb	1
e0/0/22	down false auto	0	1	hyb	1
e0/1/1	down false auto	0	1	hyb	1
e0/1/2	down false auto	0	1	hyb	1

Total entries: 24 .

5. MAC-VLAN configuration

5.1. mac-vlan mac-address

Function

Configure **mac vlan** forwarding table

Format

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

no mac-vlan [*mac-addr*]

Parameter Description

parameter	Parameter	Value
mac-addr	Description mac address	Hex<12> , the format is: x:x:x:x:x:x, xý[00-ff]
vlan-id	Vlan id	1-4094
pri	priority	0-7

5.2. show mac-vlan mac-address

Function

View **mac vlan** configuration

Format

show mac-vlan [mac-addressmac-addr]

Parameter Description

parameter	Parameter	Value
mac-addr	Description mac address	Hex<12> , the format is: x:x:x:x:x:x, xÿ[00-ff]

5.3. Configuration example

DUT(config)#**mac-vlan mac-address 00:00:00:1:2:3 vlan 2 priority 5** //Configure **mac-vlan**

DUT(config)#**show mac-vlan mac-address 00:00:00:1:2:3** //Check **mac-vlan**

MAC Address VLAN ID Priority Status active

00:00:00:01:02:03 2 5

Total active entries: 1.

Total inactive entries: 0.

6. IP-Subnet-VLAN Configuration

6.1. Ip-subnet-vlan IPv4

Function

Configure **VLAN** forwarding table based on **IP** subnet

Format

ip-subnet-vlanip v4 ip-add maskmask vlan vlan-id priority [pri] no ip-subnet-vlanip v4 ip-add maskmask

Parameter Description

	Parameter Description	Value
	IP address	Decimal<12> , format: xxxx, xÿ[0-255]
	mask	Decimal<12> , format: xxxx, xÿ[0-255]
	Vlan id	1-4094
Parameterip -add mask vlan priority	Priority	0-7

6.2. ip-subnet-vlan precede

Function

(Cancel) Enable ip-subnet-vlan to prioritize mac-vlan forwarding.

Format

[no] ip-subnet-vlan precede

Parameter Description

none

6.3. show ip-subnet-vlan

Function

View all configurations based on subnet VLAN

Format

show ip-subnet-vlan [ipv4 ip-add maskmask]

Parameter Description

	Parameter Description	Value
	IP address	12 -digit decimal, format: xxxx, xŷ[0-255]
Parameterip -add mask	mask	12 -digit decimal, format: xxxx, xŷ[0-255]

6.4. Configuration example

DUT(config)#ip-subnet-vlan ipv4 192.168.1.1 mask 255.0.0.0 vlan 1 priority 4 //Configure ip-subnet-vlan //

DUT(config)#ip-subnet-vlan precede // Configure subnet priority matching

ip-subnet-vlan The precedence of View ip-subnet-vlan DUT(config)#show

ip-subnet-based VLAN is higher than mac-based VLAN.

IP Address IP Mask VLAN ID Priority Status

192.168.1.1 255.0.0.0 1 4 active

Total active entries: 1.

Total inactive entries: 0.

7. Protocol-vlan configuration

7.1. protocol-vlan profile id frame-type

Function

Configure **protocol-vlan profile** globally and specify **frame-type**

Format

protocol-vlan profile *profile-id* **frame-type** *frame-type* **ether-type** *value*
no protocol-vlan profile *profile-id*

Parameter Description

	Parameter	Value
	Description	1-16
	Item ID Frame Type	[ethernet2,llc,snap]
Parameterprofile -id frame-type value	Ethernet type	Hex 1-FFFF

7.2. protocol-vlan profile id vlan vid

Function

Reference the **protocol-vlan profile** on the port and specify the **VLAN** and priority.

Format

protocol-vlan profile *profile-id* **vlan** *vid*[**priority** *priority*] **no**
protocol-vlan profile [*profile-id*]

Parameter Description

parameter	Parameter	Value
Profile-id	Description Item ID	1-8
vid	Vlan value	1-4094
priority	priority	0-7

7.3. protocol-vlan

Function

(Cancel) enable **protocol-vlan** in port mode

Format

[no]protocol-vlan profile

Parameter Description

parameter	Parameter	Value
Profile-id	Description Item ID	1-3

7.4. show protocol-vlan profile

Function

View the **protocol-vlan** forwarding table configuration

Format

show protocol-vlan profile [*id*]

Parameter Description

parameter	Parameter	Value
Profile-id	Description Item ID	1-8

7.5. show protocol-vlan interface

Function

Check the port enable configuration

Format

show protocol-vlan interface [ethernet <*port-id*>]

Parameter Description

parameter	Parameter	Value
port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

7.6. Configuration examples

```
DUT(config)#protocol-vlan profile 1 frame-type ethernet2 ether-type 0200
```

```
DUT(config)#protocol-vlan profile 2 frame-type llc ether-type 0300
```

```
DUT(config)#interface ethernet 0/0/1
```

```
DUT(config-if-ethernet-0/0/1)#protocol-vlan
```

```
DUT(config-if-ethernet-0/0/1)#protocol-vlan profile 1 vlan 100
```

```
DUT(config-if-ethernet-0/0/1)#protocol-vlan profile 2 vlan 100 priority 2
```

```
DUT(config-if-ethernet-0/0/1)#show protocol-vlan profile
```

```
Profile Index Frame Type Ether Type Status
```

1	Ethernet2	0x0200	active
2	LLC	0x0300	active

Total active entries: 2.

Total inactive entries: 0.

DUT(config-if-ethernet-0/0/1)#

DUT(config-if-ethernet-0/0/1)#show protocol-vlan interface ethernet 0/0/1

Port	AdminStatus	Profile Index	VLAN ID	Priority	ActionStatus
e0/0/1 enable	1	100	0	active	
	2	100	2	active	

Total port entries: 1.

Total active action entries: 2.

Total inactive action entries: 0.

DUT(config-if-ethernet-0/0/1)#

8. vlan-swap configuration

8.1. vlan swap

Function

Configure VLAN translation in port mode

Format

vlan swap<startid><endid><swapid><priority value>

no vlan swap <startid><endid>

no vlan swap all

Parameter Description

parameter	Parameter Description	Value
<i>startid</i>	Start vlan id	1-4094
<i>endid</i>	End vlan id	1-4094
<i>swapid</i>	Swap vlan id	1-4094
<i>priority value</i> priority		0-7

9. QinQ Configuration

9.1.qinq

Function

Enable (disable) qinq function in global mode

Format

qinq
no qinq

Parameter Description

none

9.2. qinq inner-tpid

Function

Configuring **inner-tpid**

Format

qinq inner-tpid *<protocol-number>*
no qinq inner-tpid

Parameter Description

Parameter	Parameter Description	Value
number	Protocol number	1-ffff, default 8100

9.3. qinq outer-tpid

Function

Configuring **outer-tpid**

Format

qinq outer-tpid *<protocol-number>*
no qinq outer-tpid

Parameter Description

Parameter	Parameter Description	protocol-number	Value
Protocol number			1-ffff, default 8100

9.4. Qinq mode

Function

Configure **qinq** mode on the port, default **uplink**

Format

qinq mode [customer |
uplink] **no qinq mode**

Parameter Description

none

9.5. vlan insert

Function

Configure **qinq** to insert into **vlan** under the port

Format

vlan insert<start-vlan><end-vlan><service-vlan><priority>
no vlan insert <start-vlan><end-vlan>

Parameter Description

parameter	Parameter	Value
start-vlan end-	Description	1-4094
vlan service-	Start VLAN	1-4094
vlan priority	End VLAN Service	1-4094 0-7
	VLAN Priority	

9.6. vlan pass-through

Function

Configure transparent transmission **VLAN** on the port

Format

vlan pass-through<start-vlan><end-vlan>

no vlan pass-through { all | <start-vlan>< end-vlan>}

Parameter Description

parameter	Parameter	Value
start-vlan end-vlan	Description Start	1-4094
	vlan End vlan	1-4094

9.7. show qinq

Function

View **qinq** configuration information

Format

show qinq

Parameter Description

none

9.8. show flexible-vlan interface

Function

View flexible **qinq** configuration information

Format

show flexible-vlan interface [enter | ethernet *portid*]

Parameter Description

none

9.9. Configuration Examples

As shown

TCA ----1 DUT 2 -----TCB

1. Create vlan 1-200 and include ports

1 and 2 **dut1(config)#vlan**

1-200 dut1(config-vlan-range)#switchport ethernet 0/0/1

ethernet 0/0/2 dut1(config-vlan-

range)#interface eth 0/0/2 dut1(config-if-ethernet-0/0/2)#switchport hybrid tagged vlan all

2. Enable **qinq** globally and configure port 1 to customer mode

```
dut1(config)#qinq
```

```
dut1(config)#interface eth 0/0/1
```

```
dut1(config-if-ethernet-0/0/1)#qinq mode customer
```

3. Configure **vlan insert 10-20** on the port, and the service

```
vlan is 100 dut1(config-if-ethernet-0/0/1)#vlan insert 10 20 100 5
```

4. TCA sends a message to **vlan10** , and TCB captures the packet and views it

The double **-tag message** captured by TCB : inner-tag=10, outer-tag=100;

10. MAC address management

10.1. mac-address-table learning

Function

Enable or disable **MAC** address learning globally or on a port

Format

```
mac-address-table learning
```

```
no mac-address-table learning
```

Parameter Description

none

10.2. mac-address-table age-time time

Function

Configure the **MAC** address aging time

Format

```
mac-address-table age-time second
```

```
no mac-address-table age-time
```

Parameter Description

parameter	Parameter Description	Value

second	When the MAC address ages The default value is seconds. 300s	10-1000000

10.3. mac-address-table age-time disable

Function

Disable **MAC** address aging

Format

mac-address-table age-time disable

Parameter Description

none

10.4. mac-address-table permanent

Function

Configuring a permanent **MAC** address table

Format

mac-address-table permanent <mac-add> interface ethernet <port-id> vlan <vlan-id>
no mac-address-table permanent <mac-add> [interface ethernet <port-id>] vlan <vlan-id>
no mac-address-table permanent vlan <vlan-id>
no mac-address-table permanent interface ethernet <port-id>

Parameter Description

parameter	Parameter Description	Value
mac-add	MAC address	Hex<12>, the format is: x:x:x:x:x:x, xy[00-ff]
port-id	port	String<5-6>, the format is: stack number/slot number/port number
vlan-id	number takes vlan id	1-4094

10.5. mac-address-table static

Function

Configuring a Static **MAC** Address

Format

mac-address-table static <mac-add> interface ethernet <port-id> vlan <vlan-id>
no mac-address-table static <mac-add> [interface ethernet <port-id>] vlan <vlan-id>
no mac-address-table static vlan <vlan-id>
no mac-address-table static interface ethernet <port-id>

Parameter Description

parameter	Parameter Description	Value
mac-add	MAC address	Hex<12>, the format is: x:x:x:x:x:x, xÿ[00-ff]
port-id	port	String<5-6>, the format is: stack number/slot number/port number
vlan-id	number takes vlan id	1-4094

10.6. mac-address-table dynamic

Function

Configuring a dynamic **MAC** address table

Format

mac-address-table dynamic <mac-add> interface ethernet <port-id> vlan <vlan-id> **no mac-**
address-table dynamic <mac-add> [interface ethernet <port-id>] **vlan** <vlan-id> **no mac- address-table**
dynamic **vlan** <vlan-id>
no mac-address-table dynamic interface ethernet <port-id>

Parameter Description

parameter	Parameter Description	Value
mac-add	MAC address	Hex<12>, the format is: x:x:x:x:x:x, xÿ[00-ff]
port-id	port	String<5-6>, the format is: stack number/slot number/port number
vlan-id	number takes vlan id	1-4094

10.7. mac-address-table blackhole

Function

Configuring a Blackhole **MAC** Address Table

Format

mac-address-table blackhole <mac-add> vlan <vlan-id>
no mac-address-table blackhole <mac-add> **vlan** <vlan-id>
no mac-address-table blackhole vlan <vlan-id>

Parameter Description

parameter	Parameter Description	Value
mac-add	MAC Address	Hex<12> , the format is: x:x:x:x:x:x, xý[00-ff]
vlan-id	Get vlan id	1-4094

10.8. mac-address-table max-mac-count

Function

Configure the number of **MAC** addresses learned in port mode or **VLAN** mode

Format

(no)mac-address-table max-mac-count *count*

Parameter Description

parameter	Parameter Description Value	
count	Number of Mac addresses	1-32768

10.9. show mac-address-table max-mac-count

Function

Check the **MAC** learning limit configuration information

Format

Show mac-address max-mac-count interface [*ethernet port-id*]

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

10.10. show mac-address-table age-time

Function

Check the **MAC** address aging time configuration information

Format

show mac-address-table age-time

Parameter Description

none

10.11.show mac-address-table

Function

View the **MAC** address table

Format

```
show mac-address-table [permanent | static | dynamic] [eth-trunk eth-trunk-id | ethernet  
port-id] [vlan vlan-id]
```

```
show mac-address-table blackhole vlan <vlan-id>
```

```
show mac-address-table mac-addr [vlan vid]
```

Parameter Description

parameter	Parameter	Value
eth-trunk-id	Description Link	1-16
port-id	aggregation group ID Port ID	String<5-6>, the format is: stack number/slot number/port number
Vid	VLAN ID	1-4094
mac-addr	MAC Address	Hex<12>, the format is: x:x:x:x:x:x, xŷ[00-ff]

10.12.show mac-address-table learning

Function

Check the **mac** address learning status, enabled by default

Format

```
show mac-address-table learning [vlan vid | interface [ethernet port-id]]
```

Parameter Description

parameter	Parameter Description	Value
Vid	VLAN	1-4094
port-id	IDPort ID	String<5-6>, the format is: stack number/slot number/port number

10.13. Configuration example

```
DUT(config)#mac-address-table permanent 00:00:00:01:02:03 interface ethernet 0/0/1 vlan 1 //Configure a static mac address
```

```
DUT(config)#int ethernet 0/0/1
```

```
DUT(config-if-ethernet-0/0/1)#mac-address-table max-mac-count 250 //Configure the maximum number of learned mac addresses for the port
```

```
DUT(config-if-ethernet-0/0/1)#show mac-address-table //View the mac address table
```

MAC Address	VLAN ID	port 0/0/1	status
00:00:00:01:02:03	1		static
00:0a:6a:00:00:06	1	0/0/10	dynamic

80:1f:02:4c:19:60 1 0/0/14 dynamic

Total entries: 3.

DUT(config-if-ethernet-0/0/1)#show mac-address-table max-mac-count interface ethernet 0/0/1 //View a single port

Maximum number of learned MAC addresses

Port	Mac address max count

e0/0/1	250

Total entries: 1

DUT(config)#mac-address-table age-time //Configure mac address aging time

250 DUT(config)#show mac-address-table

age-time mac address table agingtime is 250 seconds.

11. Flow Control Configuration

11.1. flow-control

Function

Enable (disable) flow control function on the port

Format

[no] flow-control

Parameter Description

none

11.2. show flow-controlinterface

Function

View flow control configuration

Format

show flow-control interface [ethernetport-id]

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

11.3. Configuration Example

```
DUT(config)#int ethernet 0/0/1
DUT(config-if-ethernet-0/0/1)#flow-control
DUT(config-if-ethernet-0/0/1)#show flow-control interface ethernet 0/0/1
port      flow-control-state
e0/0/1 enable
Total entries: 1.
```

12. Bandwidth Control Configuration

12.1. bandwidth {ingress | egress}

Function

Configure the bandwidth limit in the inbound direction in port mode

Format

bandwidth {ingress | egress} {kbps *rate* | percent *percentage*}

no bandwidth {ingress | egress}

Parameter Description

parameter	Parameter	Value
rate		16-10000000, unit is 1024 bits per second
percentage	Description Bandwidth Total bandwidth Percentage	1-99

12.2. Bandwidth queue

Function

Configure the outbound bandwidth limit in port mode

Format

bandwidth queue *queue-id* kbps *rate*

no bandwidth queue *queue-id*

Parameter Description

	Parameter	Value
Parameter	Description	0-7
queue-id rate	Queue ID Bandwidth	16-10000000, unit is 1024 bits per second

12.3. show bandwidth interface

Function

Check the bandwidth limit configuration of the port

Format

show bandwidth interface [queue]interface [ethernet<port-id>]

Parameter Description

parameter	Parameter Description	Value
port-id	Port Number	String<5-6>, the format is: stack number/slot number/port number

12.4. Configuration Example

```
DUT3(config)#interface eth 0/0/1
```

```
DUT3(config-if-ethernet-0/0/1)#bandwidth ingress kbps 16
```

```
DUT3(config-if-ethernet-0/0/1)#interface eth 0/0/2
```

```
DUT3(config-if-ethernet-0/0/2)#bandwidth ingress percent 10
```

```
DUT3(config-if-ethernet-0/0/2)#show bandwidth interface ethernet 0/0/1 ether  
net 0/0/2
```

Port-bandwidth informations:

port	ingress bandwidth	egress bandwidth
e0/0/1	16kbps	Disable
e0/0/2	10%	Disable

```
DUT3(config-if-ethernet-0/0/2)#
```

13. Dlf-Control Configuration

13.1. unknown-discard unicast vlan

Function

Enable (cancel) the function of discarding unknown unicast packets on the port.

Format

[no] unknown-discard unicast

Parameter Description

none

13.2. unknown-discard src-mac

Function

Enable (disable) discard unknown sources on the port

Format

[no] unknown-discard src-mac

Parameter Description

none

13.3. unknown-discard multicast vlan

Function

Enable or disable the function of discarding unknown multicast packets of a specified **VLAN** globally.

Format

[no] unknown-discard multicast vlan <vid>

Parameter Description

parameter	Parameter Description	Value
<i>vid</i>	vlan id	1-4094

13.4. show unknown-discardethernet

Function

Enable or disable the function of discarding unknown multicast packets of a specified **VLAN** globally.

Format

show unknown-discard ethernet *port-id*

Parameter Description

parameter	Parameter	Value
port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

13.5. show unknown-discardsrc-mac

Function

Enable or disable the function of discarding unknown multicast packets of a specified **VLAN** globally.

Format

show unknown-discard src-mac [*ethernet port-id*]

Parameter Description

Parameter	Parameter	Value
port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

13.6. show unknown-discard vlan

Function

Check the unknown multicast packet discarding function configuration

Format

show unknown-discard vlan [*vid*]

Parameter Description

parameter	Parameter Description	Value
<i>vid</i>	vlan id	1-4094

14. Port mirroring configuration

14.1. mirror group id source-interface

Function

Configure the mirror source globally

Format

mirror group <group-id>**source-interface ethernet** <port-id>[*ingress | egress | both*]
mirror group <group-id>**source-interface cpu**[*ingress | egress | both*]

Parameter Description

parameter	Parameter Description	Value
group-	Group	1-3
id port-id	Number Port Number	String<5-6>, the format is: stack number/slot number/port number

14.2. mirror group id destination-interface

Function

Configure the mirroring destination port globally

Format

mirror group group-id destination-interface ethernet <port-id> [rspan [local | middle |

target] vid vid]

Parameter Description

parameter	Parameter Description	Value
group-	Group	1-3
id port-id	Number Port Number	String<5-6>, the format is: stack number/slot number/port number

14.3. no mirror group

Function

Deleting a mirror group

Format

no mirror group all

no mirror group group-id

no mirror group group-id source-interface [cpu | ethernet <port-id>] **no**

mirror group group-id destination-interface ethernet <port-id> [rspan [local | middle |

target] vid vid]

Parameter Description

parameter	Parameter Description	Value
group-	Group	1-3
id port-id	Number Port Number	String<5-6>, the format is: stack number/slot number/port number

14.4. show mirror group

Function

View mirror configuration information

Format

show mirror group [*all|group-id*]

Parameter Description

parameter	Parameter Description	Value
group-id	Group No.	1-3

14.5. Configuration Examples

DUT3(config)#mirror group 1 source-interface ethernet 0/0/1 ingress

DUT3(config)#mirror group 1 source-interface ethernet 0/0/2 egress

DUT3(config)#mirror group 1 source-interface ethernet 0/0/3 both

DUT3(config)#mirror group 1 source-interface cpu both

DUT3(config)#mirror group 1 destination-interface ethernet 0/0/4

DUT3(config)#show mirror group 1

Information about mirror groups:

Group number : 1

The monitor port : e0/0/4

The mirrored egress ports : cpu,e0/0/2-e0/0/3.

The mirrored ingress ports : e0/0/1,cpu,e0/0/3.

Total entries: 1 .

DUT3(config)#

15. Sflow Configuration

15.1. sflow agent

Function

Configure the sampling local proxy address

Format

sflow agent [*ip <ip> | ipv6 <ipv6>*]

no sflow agent

Parameter Description

parameter	Parameter	Value
ip	Description The agent uses IPv4 address	Decimal<12>, format: xxxx, xȳ[0-255]
ipv6	used by the proxy IPv6 Address	Hex<32>, the format is: x:x:x:x:x:x:x, xȳ [0000-ffff]

15.2. sflow collector

Function

Configuring a Sampling Remote Collector

Format

**sflow collector <Id> [ip <ip> | ipv6 <ipv6>] owner <owner> [datagram-size <size>] [time-out
<time-value>] [port <port>]**
no sflow collect <Id>

Parameter Description

parameter	Parameter Description Value	
Id	Collector ID [1-10]	
ip	The agent used IPv4 address	Decimal<12>, format: xxxx, xȳ[0-255]
ipv6	used by the proxy IPv6 Address	Hex<32>, the format is: x:x:x:x:x:x:x, xȳ [0000-ffff]
owner	Owner 1-127 characters	
size	Packet size [256-1400]	
time-value	Timeout [30-2147483647]	
port	Sflow protocol port number [1-2147483647]	

15.3. sflow counter collector id

Function

Configure **counter** sampling on the port and associate it with the **collector**

Format

[no] sflow counter collector <Id>

Parameter Description

parameter	Parameter	Value
Id	Description Collector ID	[1-10]

15.4. sflow counter interval

Function

Configure the **counter** sampling period on the port

Format

[no] sflow counter interval <interval>

Parameter Description

parameter	Parameter	Value
Interval	Description Sampling period	[3-2147483647]

15.5. sflow flow collector id

Function

Configure **flow** sampling on the port and associate it with **the collector**

Format

[no] sflow flow collector <id>

Parameter Description

parameter	Parameter	Value
Id	Description Collector ID	[1-10]

15.6. sflow flow sampling-rate

Function

Configure the **flow** sampling rate on the port

Format

[no] sflow flow sampling-rate <rate>

Parameter Description

parameter	Parameter	Value
rate	Description Sampling rate	1-65535

15.7. sflow flow max-header

Function

Configure the length of the original message from the beginning of the header to be cut off when the **flow** sampling is configured on the port.

Format

[no] sflow flow max-header <size>

Parameter Description

parameter	Parameter	Value
size	Description Sample message content Get length	64-128

15.8. show sflow collector

Function

View collector configuration information

Format

show sflow collector <id>

Parameter Description

parameter	Parameter	Value
id	Description Collector ID	1-10

15.9. show sflow flow

Function

Check the port **flow** sampling configuration information

Format

show sflow flow [ethernet<portId>]

Parameter Description

	Parameter	Value
Parameter portId	Description Port number	Different devices have different values, for example, 0/0/1

15.10.show sflow counter

Function

View the port **counter** sampling configuration information

Format

show sflow counter [ethernet<portId>]

Parameter Description

	Parameter	Value
Parameter portId	Description Port number	Different devices have different values, for example, 0/0/1

15.11. Configuration example

Networking

PC1-----1 DUT 2-----PC2
|
collector 192.168.1.25

Configuration

```
DUT3(config)#interface vlan-interface 1
DUT3(config-if-vlanInterface-1)#ip address 192.168.1.62 255.255.255.0
DUT3(config-if-vlanInterface-1)#exit
DUT3(config)#sflow agent ip 192.168 .1.62
DUT3(config)#sflow collector 1 ip 192.168.1.25 owner mycollector
```

#Port1 enables flow sampling

```
DUT3(config)#interface eth 0/0/1
DUT3(config-if-ethernet-0/0/1)#sflow flow sampling-rate 1000
DUT3(config-if-ethernet-0/0/1)#sflow flow max-header 64
DUT3(config-if-ethernet-0/0/1)#sflow flow collector 1
```

#Port2 starts counter sampling

```
DUT3(config-if-ethernet-0/0/1)#interface eth 0/0/2
DUT3(config-if-ethernet-0/0/2)#sflow counter interval 10
DUT3(config-if-ethernet-0/0/2)#sflow counter collector 1
```


16. ACL Configuration

16.1. access-list <id> match-order

Function

Configure ACL matching order globally

Format

access-list<id> match-order [auto| config]

Parameter Description

parameter	Parameter Description	Value
<i>id</i>	Access control list number	1-2999
auto	The default is to have a larger length.	
config	Configuration sequence number smaller priority	

16.2. Access-list step

Function

ACL sub-item numbering step

Format

access-list step *step_value*
no access-list step

Parameter Description

parameter	Parameter Description	Value
<i>Step_value</i>	Access Control List Step long	INTEGER<1-10>

16.3. access-list <1-999>

Function

Globally configure IP access control lists

Format

access-listid{permit | deny}[protocol-id] {src_ipv4{host | mask} | any} {dst_ipv4{host | mask} | any} [fragments] [dscp dscp-value] [precedence prece-value] [tos tos-value] [time-range name]
access-listid [permit|deny][protocol-id] {src_ipv6/prefix_len | ipv6any} {dst_ipv6/prefix-len | ipv6any} [traffic-class traffic-value] [time-range name]

Or enter the **acl** view first, and then configure the rules

access-list ip-aclid
{permit | deny}[protocol-id] {src_ipv4{host | mask} | any} {dst_ipv4{host | mask} | any} [fragments] [dscp dscp-value] [precedence prece-value] [tos tos-value] [time-range name]

Delete globally

no access-list {all | id [subitem_id]}

Parameter Description

parameter	Parameter	Value
<i>id</i>	Description Access control list number	[1-999], indicating the ip acl type
<i>Protocol-id</i>	Transport layer protocol number	0-255, some protocols can use keywords such as udp tcp source
<i>src_ipv4</i>	IPv4 address	Decimal<12>, format: xxxx, xÿ[0-255] Destination
<i>dst_ipv4</i>	IPv4 address	Decimal<12>, format: xxxx, xÿ[0-255]
<i>mask</i>	IPv4 subnet mask	Decimal<12>, format: xxxx, xÿ[0-255]
<i>dscp-value</i>	DSCP value	0-63
<i>precede-value</i>	Precedence value	0-7
<i>tos-value</i>	ToS value	0-15
<i>name</i>	specifies the access control list Table effective time	String<1-32>
<i>src_ipv6</i>	Source IPv6 address	Hex<32> , the format is: x:x:x:x:x:x:x:x , x ÿ [0000-ffff] ,
<i>dst_ipv6</i>	Destination IPv6 address	Hex<32> format: x:x:x:x:x:x:x:x , x ÿ [0000-ffff]
<i>Prefix-len</i>	IPv6 address prefix length Spend	0-128
<i>traffic-value</i>	Flow Level	0-255

16.4. access-list <1000-1999>

Function

Globally configure Layer 2 access control lists

Format

**access-list id {permit|deny}[protocol-id] { src_mac {mask | host} | any} { dst_mac {mask | host} | any}
[vlanvid] [cosvalue] [time-rangename]**

Or enter the acl view first, and then configure the rules

access-list mac-acl id

**{permit|deny}[protocol-id] { src_mac {mask | host} | any} { dst_mac {mask | host} | any}
[vlanvid] [cosvalue] [time-rangename]**

no access-list {all | id [subitem_id]}

Parameter Description

parameter	Parameter	Value
<i>id</i>	Description Access control list	number [1000-1999], indicating the type of Layer 2 access control list

<i>Protocol-id</i>	network layer protocol number 0-FFFF, some optional keywords, such as arp, ip	source
<i>src_mac</i>	mac address	Hex<12>, the format is: x:x:x:x:x:x, xȳ[00-ff] Destination
<i>dst_mac</i>	mac address	Hex<12>, the format is: x:x:x:x:x:x, xȳ[00-ff]
<i>mask</i>	MAC address mask	Hex<12>, the format is: x:x:x:x:x:x, xȳ[00-ff]
<i>vid</i>	Vlan id	1-4094
<i>cos</i>	802.1p priority	0-7 time range
<i>name</i>	name	String<1-32>

16.5. access-list <2000-2999>

Function

Globally configure hybrid access control lists

Format

access-list *id* {**permit** | **deny**} [*protocol-id*] [**vlan** *vid*] [**cos** *pri*] **src-mac** *src-mac* {**host** | *mac-mask*} **dst-mac** *dst-mac* {**host** | *mac-mask*} {**src-ip** *src-ip*{*host* | *ip-mask*| **any**} **dst-ip** {*host* | *ip-mask*| **any**} [**fragments**] [*dscp**dscp-value*| **precedence** *prece-value* **tos** *tos-vlaue*] | **src-ipv6** { *src_ipv6/ prefix_len* | **ipv6any** } **dsp-ipv6** { *dst_ipv6/ prefix_len* | **ipv6any** }
[traffic-class *traffic-value*}] **[time-range** *name*]

no access-list {**all** | *id* [*subitem_id*]}

Parameter Description

parameter	Parameter Description	Value
<i>id</i>	Access control list number	2000-2999 Transport layer
<i>Protocol-id</i>	protocol number 0-255, some protocols can use keywords such as udp tcp	
<i>vid</i>	Vlan id	1-4094
<i>cos</i>	802.1p priority	0-7
<i>src_mac</i>	source MAC address	Hex<12>, the format is: x:x:x:x:x:x, xȳ[00-ff]
<i>dst_mac</i>	Destination MAC address	Hex<12>, the format is: x:x:x:x:x:x, xȳ[00-ff]
<i>mac-mask</i>	MAC address mask	Hex<12>, the format is: x:x:x:x:x:x, xȳ[00-ff]
<i>src_ipv4</i>	source IPv4 address	Decimal<12>, format: xxxx, xȳ[0-255]
<i>dst_ipv4</i>	Destination IPv4 address	Decimal<12>, format: xxxx, xȳ[0-255]
<i>ip-mask</i>	IPv4 subnet mask	Decimal<12>, format: xxxx, xȳ[0-255]
<i>dscp-value</i>	DSCP value	0-63
<i>before-value</i>	Precedence value	0-7
<i>tos-value</i>	ToS Value	0-15
<i>src_ipv6</i>	Source IPv6 address	Hex<32>, the format is: x:x:x:x:x:x:x:x, xȳ[0000-ffff]
<i>dst_ipv6</i>	Destination IPv6 address	Hex<32>, the format is: x:x:x:x:x:x:x:x, xȳ[0000-ffff]
<i>Prefix-len</i>	IPv6 address prefix length	0-128 flow level time
<i>traffic-value</i>	range name	0-255
<i>name</i>		String<1-32>

16.6. access-group

Function

Activate access control list in global or port mode

Format

access-group {*acl-type*id [*subitem sub-num*]} *direction*

no access-group {*acl-type**acl-id* [*subitem sub-num*]} *direction*

Parameter Description

parameter	Parameter	Value
<i>acl-type</i>	Description Access control list type [<i>ip-acl, mac-acl, hybrid-acl</i>] [1-2999] The value range is related	
<i>id</i>	Access Control List Number	to the selected type
<i>sub_num</i>	Rule ID number, when adding a rule Automatically	0-127
<i>direction</i>	generate effective direction	[in, out]

16.7. time-range

Function

Configure time globally and enter time range view

Format

time-range <*name*>

no time-range <*name*>

Parameter Description

parameter	Parameter	Value
<i>name</i>	Description Segment name (maximum 32 bytes, must be [az, AZ] starts with, no case sensitive)	String<1-32>

16.8. absolute

Function

Configuring an absolute time range in the time range view

Format

absolute start <*start_time*><*start_date*> **end** <*end_time*><*end_date*> **no**

absolute start <*start_time*><*start_date*> **end** <*end_time*><*end_date*>

Parameter Description

parameter	Parameter	Value
<i>start_time</i>	Description Start	00:00:00-23:59:59
<i>start_date</i>	time Start year month	2000/01/01-2099/12/31
<i>end_time</i>	day End time	00:00:00-23:59:59

<i>end_date</i>	End date	2000/01/01-2099/12/31

16.9. periodic

Function

Configuring relative time periods in time period view

Format

periodic <date_list><start_time> to <end_time> no

periodic <date_list><start_time> to <end_time>

Parameter Description

parameter	Parameter Description	Value
<i>date_list</i>	Date list start	[0-6,Daily,fri,mon,sat,sun,thu,tue,wed,weekdays,weekend]
<i>start-time</i>	time end time	00:00:00-23:59:59
<i>end-time</i>		00:00:00-23:59:59

16.10.show time-range

Function

View time period configuration information

Format

show time-range {all | statistics | name <name>}

Parameter Description

parameter	Parameter Description	Value
<i>name</i>	Time period name (maximum 32 bytes, must Starts with [az,AZ] (not case sensitive)	1-32

16.11.show access-list config

Function

View access control list configuration information

Format

show access-list config [all|brief|acl_id]

Parameter Description

parameter	Parameter	Value
<i>acl_id</i>	Description Access Control List Number	[1-2999]

16.12.show access-list runtime

Function

View the activated access control list information

Format

show access-list runtime [all|brief|acl_id]

Parameter Description

	Parameter Description	Value
Parameter <i>acl_id</i>	Access control list number [1-2999]	

16.13. Configuration Example

```
DUT3(config)#show clock
Fri 2021/12/24 08:00:02 CCT 08:00
```

```
DUT3(config)#time-range morning
Config time range successfully.
```

```
DUT3(config-timerange-morning)#periodic daily 7:00:00 to
8:00:00 Config periodic range successfully .
```

```
DUT3(config-timerange-morning)#absolute start 12:00:00 2021/12/24 end 14:00:
00 2021/12/24
Config absolute range successfully.
```

```
DUT3(config-timerange-morning)#access-list ip-
acl 1 DUT3(config-ip-nacl-1)#permit 192.168.101.1 host any time-range
morning Config ACL subitem successfully.
```

```
DUT3(config-ip-nacl-1)#exit
```

```
DUT3(config)#time-range morning2
Config time range successfully.
```

```
DUT3(config-timerange-morning2)#periodic daily 8:00:00 to
9:00:00 Config periodic range successfully .
```

```
DUT3(config-timerange-morning2)#exit
```

```
DUT3(config)#access-list 2 permit 192.168.102.1 host any time-range morning2
```

```
Config ACL subitem successfully.
```

DUT3(config)#access-group ip-acl 1
in Activate ACL successfully .

DUT3(config)#access-group ip-acl 2
in Activate ACL successfully .

DUT3(config)#show access-list config all
IP Access List 1, match-order is config, 1
rule: 0 : permit 192.168.101.1 255.255.255.255 any time-range morning

IP Access List 2, match-order is config, 1
rule: 0 : permit 192.168.102.1 255.255.255.255 any time-range morning2

total config rules: 2 rules
DUT3(config)#show access-list runtime all
access-list 1 subitem 0 not running
inbound access-list 2 subitem 0 running inbound

total runtime rules: 2 rules
DUT3(config)#show time-range all
Current time is: 08:05:51 2021/12/24 Friday

time-range: morning (Inactive)
absolute: start 12:00:00 2021/12/24 end 14:00:00 2021/12/24
periodic: daily 07:00:00 to 08:00:00

time-range: morning2 (Active)
periodic: daily 08:00:00 to 09:00:00

Total entries: 2

DUT3(config)#

17. QACL Configuration

17.1. traffic insert-vlan

Function

Configure the specified flow to be inserted into the outer VLAN

Format

```
traffic insert-vlan { mac-acl | ip-acl | hybrid-acl }acl_id [subitemsub_num]vid no traffic insert-vlan  
{ mac-acl | ip-acl | hybrid-acl } acl_id [subitemsub_num]
```

Parameter Description

Parameter	Parameter Description	Value
<i>acl_id</i>	Acl	[1-2999]
<i>Sub-num</i>	numbering rule ID	[0-127]
<i>vid</i>	Vlan Number	[1-4094]

17.2. TrafficStatistic

Function

Configuring flow statistics in the global view

Format

```
[no] trafficstatistic {mac-acl | ip-acl | hybrid-acl} acl_id [subitemsub_num] {in | out }
```

Parameter Description

Parameter	Parameter Description	Value
<i>acl_id</i>	Acl	[1-2999]
<i>Sub-num</i>	numbering rule ID	[0-127]

17.3. Traffic mirror

Function

Configuring a Specified Flow Mirroring in the Global View

Format

```
traffic mirror{mac-acl | ip-acl | hybrid-acl}acl_id [subitemsub_num] {cpu | interface ethernet port-id}
```

```
no traffic mirror{mac-acl | ip-acl | hybrid-acl}acl_id [subitemsub_num]
```

Parameter Description

parameter	Parameter Description	Value
<i>acl_id</i>	Acl number rule	[1-2999]
<i>Sub-num</i>	ID port number	[0-127]
port-id		String<5-6>, the format is: stack number/slot number/port number

17.4. Traffic priority

Function

Configure the specified flow marking priority

Format

```
traffic priority { mac-acl | ip-acl | hybrid-acl } acl_id [subitemsub_num] { cos | dscp | local-precedence  
| precedence } value  
no traffic priority { mac-acl | ip-acl | hybrid-acl } acl_id [subitemsub_num]
```

Parameter Description

	Parameter Description	Value
Parameter <i>acl_id</i>	Acl	[1-2999]
<i>Sub-num</i>	numbering rule ID	[0-127]
<i>value</i>	Based on specific keywords Value	dscp 0-63 cos 0-7 precedence 0-7 Local-precedence 0-7

17.5. Traffic rate-limit

Function

Configure rate limit for specific flows

Format

```
traffic rate-limit { mac-acl | ip-acl | hybrid-acl } acl_id [subitemsub_num] { rate |  
two-rate-police trp-id } { in | out }  
no traffic rate-limit { mac-acl | ip-acl | hybrid-acl } acl_id [subitemsub_num] { in | out }
```

Parameter Description

parameter	Parameter Description	Value
<i>acl_id</i>	Acl	[1-2999]
<i>Sub-num</i>	numbering rule ID	[0-127]
<i>rate</i>	Target rate	GE port <64-1000000> 10GE port <64-10000000>
<i>trp-id</i>	Dual-speed three-color ID	0-255

17.6. Traffic redirect

Function

Command configuration message redirection

Format

```
trafficredirect { mac-acl | ip-acl | hybrid-acl } acl_id [subitem sub_num] { interface ethernet port-  
id | cpu } no trafficredirect { mac-acl | ip-  
acl | hybrid-acl } acl_id [subitem sub_num]
```

Parameter Description

parameter	Parameter Description	Value
<i>acl_id</i>	Acl number	[1-2999]
<i>Sub-num</i>	rule ID	[0-127]
port-id	port number	String<5-6>, the format is: stack number/slot number/port number

17.7. traffic rewrite-vlan

Function

Configure and modify the VLAN of the specified flow

Format

```
traffic rewrite-vlan { mac-acl | ip-acl | hybrid-acl } acl_id [subitem sub_num] vid no traffic rewrite -vlan  
{ mac-acl | ip-acl | hybrid- acl } acl_id [subitem sub_num]
```

Parameter Description

	Parameter Description	Value
Parameter <i>acl_id</i>	Acl	[1-2999]
<i>Sub-num</i>	numbering rule ID	[0-127]
<i>Vid</i>	Vlan Number	[1-4094]

17.8. Clear traffic statistics

Function

Clear traffic statistics

Format

```
clear traffic statistic { all | acl-type acl-id [subitem sub-num] } { in | out }
```

Parameter Description

parameter	Parameter	Value
<i>acl-type</i>	Description Access control list type	[ip-acl, mac-acl, hybrid-acl] Access
<i>acl-id</i>	control list number	[1-2999]

		The value range is related to the selected type
<i>sub_num</i>	Rule ID number, when adding a rule Automatically generate	0-127

17.9. show traffic all | brief

Function

Display all **QoS** configurations

Format

show traffic all
show traffic brief

Parameter Description

none

17.10. show traffic insert-vlan

Function

show **vlan** insertion configuration

Format

show traffic insert-vlan

Parameter Description

none

17.11. show traffic mirror

Function

Display all traffic mirroring configurations

Format

show traffic mirror

Parameter Description

none

17.12.show traffic priority

Function

Displays the configuration of priority tags

Format

show traffic priority

Parameter Description

none

17.13.show traffic rate-limit

Function

Displays the flow rate limit configuration

Command Format show traffic rate-limit

Parameter Description

none

17.14.show traffic redirect

Function

Display redirection configuration

Format

show trafficredirect

Parameter Description

none

17.15.show traffic rewrite-vlan

Function

Displays the parameter settings of **VLAN** rewrite

Format

show traffic rewrite-vlan

Parameter Description

none

17.16.show traffic statistics

Function

Display all flow statistics configurations

Format

show traffic statistics

Parameter Description

none

17.17. Configuration example

#Configure and activate **ACL**

DUT(config)#access-list 150 permit any 192.168.1.150 255.255.255.252

#Mark **ACL** priority

DUT(config)#traffic priority ip-acl 150 cos 7

18. Port isolation configuration

18.1. interface port-isolate group group-id

Function

Add or delete an uplink port under the port. By default, all ports are added. Delete an uplink port.

The traffic of this port cannot be forwarded to this port, which means isolation is achieved.

Format

port-isolation uplink ethernet *port-id*
no port-isolation uplink {all | ethernet *port-id* }

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

18.2. show port-isolation group

Function

Check the port isolation configuration

Format

show port-isolation [**thernet** *port-id*]

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

18.3. Configuration Example

DUT3(config)#show port-isolation ethernet 0/0/1

Port-isolation informations:

port : uplink list

e0/0/1 : e0/0/1-e0/1/4.

DUT3(config)#interface eth 0/0/1

DUT3(config-if-ethernet-0/0/1)#no port-isolation uplink ethernet 0/0/2

DUT3(config-if-ethernet-0/0/1)#show port-isolation ethernet 0/0/1

Port-isolation informations:

port : uplink list

e0/0/1 : e0/0/1,e0/0/3-e0/1/4.

DUT3(config-if-ethernet-0/0/1)#

19. Storm-control configuration

19.1. Storm-control action

Function

Configuring storm suppression actions in port mode

Format

storm-control action {ogging| shutdown] trap}
no storm-control action

Parameter Description

none

19.2. Storm-control

Function

Configuring broadcast storm suppression in port mode

Format

storm-control {broadcast | multicast | unicast} {kbps *rate* | pps *counts*}

Parameter Description

parameter	Parameter Description	Value
rate	bandwidth	16-10000000 , unit is 1024 bits per second
counts	Number of messages	1-14881000

19.3. show storm-control interface

Function

Display storm suppression configuration information

Format

show storm-control interface [ethernet<port-id>

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

19.4. Configuration Example

```
DUT3(config)#interface eth 0/0/1
```

```
DUT3(config-if-ethernet-0/0/1)#show storm-control interface ethernet 0/0/1
```

```
Port number: e0/0/1
```

```
Storm-control action: N/A
```

```
Broadcast storm control has been disabled
```

```
Multicast storm control has been disabled
```

```
Unicast storm control has been disabled
```

```
Total entries: 1.
```

```
DUT3(config-if-ethernet-0/0/1)#storm-control action logging Do  
you want to config action, it can clear all configurations(y/n)? [n]  
y
```

```
DUT3(config-if-ethernet-0/0/1)#storm-control broadcast pps 100
```

```
DUT3(config-if-ethernet-0/0/1)#storm-control multicast pps 200
```

```
DUT3(config-if-ethernet-0/0/1)#storm-control unicast pps 300
```

```
DUT3(config-if-ethernet-0/0/1)#show storm-control interface ethernet 0/0/1
```

```
Port number: e0/0/1
```

```
storm-control action: logging
```

```
Broadcast storm control target rate is 100pps
```

```
Multicast storm control target rate is 200pps
```

```
Unicast storm control target rate is 300pps
```

```
Total entries: 1.
```

20. IP-Source-Guard Configuration

20.1. ip source

Function

Enable and configure (delete) filtering mode in port mode

Format

```
[no]ip source [ip | ip-mac | ip-mac-vlan]
```

Parameter Description

parameter	Parameter	Value
ip	Description Port only reports based on IP The source IP address of the document Filtering messages	none
ip-mac	Port according to IP message Source IP and MAC Filtering messages	none
ip-mac-vlan	Port according to IP message The source IP , MAC and VLAN to filter packets	none

20.2. ip source bind

Function

Configure (delete) a binding entry

Format

[no] ip source bind *ip-address* [*mac-address* [**interface ethernet** *port-id* **vlan** *vlan-id*]]

Parameter Description

parameter	Parameter	Value
ip-address	Description Configurable valid IP The address	Decimal<12> , format: xxxx, xÿ[0-255]
mac-address	can be configured to correspond to the port mac address	Hex<12> , the format is: x:x:x:x:x:x, xÿ[00-ff]
port-id	Port Number	Determined by the physical port of the switch, for example, a 28 - port switch Machine: 0/0/1-0/1/4
vlan-id	VLAN ID	1-4094

20.3. ip source permit-igmp

Function

(Cancel) Enable forwarding of **igmp** protocol packets

Format

ip source permit-igmp

no ip source permit-igmp

Parameter Description

none

20.4. ip source vlan

Function

(Cancel) Enable the **VLAN** filtering function

Format

[no]ip source vlan *vlan-id*

Parameter Description

parameter	Parameter Description	Value
<i>vlan-id</i>	VLAN ID	1-4094

20.5. show ip source

Function

View configuration information

Format

show ip source

Parameter Description

none

20.6. show ip source bind

Function

View the binding table

Format

show ip source bind [*ip-address*]

Parameter Description

parameter	Parameter Description	Value
<i>ip-address</i>	Configure a valid IP address site	Decimal<12>, format: xxxx, xÿ[0-255]

20.7. show ip source permit-igmp

Function

Command to view configuration information

Format

show ip source permit-igmp

Parameter Description

none

20.8. show ip source vlan

Function

Command to view configuration information

Format

show ip source vlan

Parameter Description

none

20.9. Configuration Example

Networking

TCA----- 1 DUT 2 -----TCB

Configuration

DUT(config)#ip source bind 192.168.1.10

DUT(config)#interface eth 0/0/1

DUT(config-if-ethernet-0/0/1)#ip source ip

21. ARP anti-flood configuration

21.1. arp anti-flood

Function

(Cancel) Enable the **ARP anti-flood** function

Format

(no)arp anti-flood

Parameter Description

none

21.2. arp anti-flood action

Function

Configure the policy for handling **ARP** attack packets

Format

arp anti-flood action {deny-all |deny-arp} [rate-limit *rate*] no

arp anti-flood action [rate-limit *rate*]

Parameter Description

parameter	Parameter	Value
deny-	Description Drop	
all deny-arp	all Drop arp	None, default
rate	Maximum number of arps allowed per second Number of messages	1-100, unit: pps

21.3. arp anti-flood bind blackhole

Function

Bind the attack table entries generated by flood attacks to static blackhole MAC, which is effective when **deny-all** is used.

Format

arp anti-flood bind blackhole{all|mac}

Parameter Description

parameter	Parameter Description	Value
all	All dynamic black holes have no MAC	
<i>Mac</i>	address	Hex<12>, the format is: x:x:x:x:x, xy[00-ff]

21.4. arp anti-flood rate-limit

Function

Configure the **ARP** rate threshold globally or on a physical interface

Format

arp anti-flood rate-limit <rate>

no arp anti-flood rate-limit

Parameter Description

parameter	Parameter	Value
rate	Description Maximum number of allowed Number of messages	1-100, unit: pps

21.5. arp anti-flood recover

Function

Manually restore banned users

Format

arp anti-flood recover {all|mac}

Parameter Description

parameter	Parameter	Value
all	Description All prohibited users have no	
Mac	Mac Address	Hex<12>, the format is: x:x:x:x:x, xy[00-ff]

21.6. arp anti-flood recover-time

Function

Configure the attack entry recovery time

Format

arp anti-flood recover-time time

no arp anti-flood recover-time

Parameter Description

parameter	Parameter Description Value	
time	Automatic recovery time 0-1440 min, 0 means no recovery	

21.7. show arp anti-flood

Function

Check the flood prevention configuration

Format

show arp anti-flood

Parameter Description

none

21.8. show arp anti-flood rate-limit

Function

Check the port ARP threshold

Format

show arp anti-flood rate-limit

Parameter Description

none

21.9. Configuration Examples

Networking

PC----- 1 DUT

Configuration

DUT(config)#arp anti-flood

DUT(config)#arp anti-flood action deny-arp

DUT(config-if-ethernet-0/0/1)#show arp anti-flood

Informations of arp anti-flood

Arp anti-flood: enabled

Arp anti-flood rate-limit: 16pps

Arp anti-flood user recovery time: 10 minutes

Arp anti-flood deny type: DenyARP

DeniedSrcMAC	SourceIP	Port	Vlan	DenyType	RemainAgingTime(m:s)

Total entries: 0.

22. ARP anti-spoofing configuration

22.1. ARP anti-spoofing

Function

(Cancel) Enable the ARP anti-spoofing function

Format

[no] arp anti-spoofing

Parameter Description

none

22.2. arp anti-spoofing action

Function

Configure the processing strategy for unknown ARP packets

Format

arp anti-spoofing action {discard|flood}

Parameter Description

parameter	Parameter Description	Value
discard	Discard	
flood	Flood	None

22.3. arp anti-spoofing bind

Function

Configure hosts allowed to pass

Format

arp anti-spoofing bind ip <ip>ethernet<port-list>

no arp anti-spoofing bind [ip <ip> [ethernet<port-list>]]

Parameter Description

parameter	Parameter	Value
	Description	Decimal<12>, format: xxxx, xy[0-255] format such as 0/0/1
ip port-list	IP address Port list	

22.4. arp anti-spoofing gateway-disguiser

Function

(Cancel) Enable the gateway anti-spoofing function

Format

arp anti-spoofing gateway-disguiser

no arp anti-spoofing gateway-disguiser

Parameter Description

none

22.5. arp anti-spoofing source-mac-check

Function

(Cancel) Enable ARP packet source address consistency check

Format

arp anti-spoofing source-mac-check

no arp anti-spoofing source-mac-check

Parameter Description

none

22.6. arp anti-attack trust

Function

The port mode is configured as a trusted port.

Format

arp anti-attack trust no

arp anti-attack trust

Parameter Description

none

22.7. show arp anti-spoofing

Function

View anti-spoofing configuration

Format

show arp anti-spoofing

Parameter Description

none

22.8. show arp anti-spoofing bind

Function

View the **bind** table entry

Format

show arp anti-spoofing bind

Parameter Description

none

22.9. show arp anti-attack

Function

View port configuration information

Format

show arp anti-attack [ethernet <port-id>]

Parameter Description

parameter	Parameter Description	Value
port-id	Port Number	Determined by the physical port of the switch, for example, a 28 - port switch Machine: 0/0/1-0/1/4

22.10. Configuration Example

Networking

PC----- 1 DUT

Configuration

DUT(config)#arp anti-spoofing

DUT(config)#arp anti-spoofing action discard

DUT(config-if-ethernet-0/0/1)#sinterface ethernet 0/0/1

DUT(config-if-ethernet-0/0/1)#arp anti-attack trust

23. Anti-DOS attack configuration

23.1. Anti-dos packets class

Function

(Cancel) Enable packet attack protection

Format

[no] anti-dos packets class *type* <num>

Parameter Description

parameter	Parameter Description	Value
num	Message Classification	0-14, the meanings are as follows: type0: Source MAC and dst MAC equal type1:Source IP and dst IP equal type2:UDP with sport and dport equal type3:TCP with sport and dport equal type4:ICMPv4 maximum length type5:ICMPv6 maximum length type6:TCP control flags and sequence equal 0 type7:TCP SYN flags unviable

		type8:Check IP first fragments type9:Minimum size of IPv6 fragments type10:Fragmented ICMP packets type11:TCP fragments with offset value of 1(*8) type12:TCP with SYN & FIN bits type13:TCP with FIN,URG and PSH bits,and sequence equal 0 type14:TCP first fragments with minimum TCP header length

23.2. show anti-dos

Function

View anti- **dos** configuration

Format

show anti-dos

Parameter Description

none

24. LACP Configuration

24.1. interface eth-trunk *id*

Function

Configure or enter an aggregation group

Format

interface eth-trunk *id*

no interface eth-trunk <id>

Parameter Description

parameter	Parameter Description	Value
id	Aggregation group number	1-16

32.4 Link-aggregation mode

Function

Configuring the aggregation type in aggregation group mode

Format

link-aggregation mode {dynamic | static}

no link-aggregation mode

Parameter Description

	Parameter	Value
Parameters	Description	none
dynamic static	Dynamic Static	none

24.2. link-aggregation members

Function

Add or delete aggregation group member ports in aggregation group mode

Format

link-aggregation members ethernet *port-id*

no link-aggregation members ethernet *port-id*

Parameter Description

	Parameter	Value
Parameter port-id	Description Port number	String<5-6>, the format is: stack number/slot number/port number

24.3. link-aggregation eth-trunk

Function

Configure ports to join or leave an aggregation group in port mode

Format

link-aggregation eth-trunk *id*

no link-aggregation eth-trunk

Parameter Description

parameter	Parameter Description	Value
id	Aggregation group number	1-16

24.4. lacp mode

Function

Configure negotiation mode in port mode

Format

lacp mode {active | passive}

no lacp mode

Parameter Description

	Parameter	Value
Parameters	Description	none
passive active	Passive Active	none

24.5. lacp period

Function

Configuring timeout mode in port mode

Format

lacp period {long | short}

Parameter Description

parameter	Parameter	Value
short	Description	none
long	Short timeout Long timeout	none

24.6. lacp port-priority

Function

Configure port priority under port configuration

Format

lacp port-priority num

no lacp port-priority

Parameter Description

parameter	Parameter	Value
num	Description Priority	1-65535

24.7. lacp system-priority

Function

Configuring system priority

Format

lacp system-priority num

no lacp system-priority

Parameter Description

parameter	Parameter	Value
num	Description Priority	1-65535

24.8. link-aggregation load-balance

Function

Configuring a Load Balancing Policy for an Aggregation Group

Format

link-aggregation load-balance {dst-ip | dst-mac | src-dst-ip | src-dst-mac | src-ip | src-mac}

no link-aggregation load-balance

Parameter Description

	Parameter	Value
	Description	none
	Destination IP	none
Parameters	Destination Mac	none
dst-ip dst-	Source Destination IP	none
mac src-dst-ip src-dst-mac src-ip		none
src-mac	Destination Mac Source IP Source Mac, default	

24.9. show lacp local

Function

Display the local aggregation group status

Format

show lacp local [eth-trunk *id*]

Parameter Description

Parameter	Parameter Description	Value
id	Aggregation group number	1-16

24.10. show lacp neighbor

Function

Display the peer aggregation group status

Format

show lacp neighbor [eth-trunk *id*]

Parameter Description

parameter	Parameter Description	Value
id	Aggregation group number	1-16

24.11. show lacp sys-id

Function

Display system id information

Format

show lacp sys-id

Parameter Description

none

24.12. Configuration Example

#Configure a static link aggregation group

```
DUT2(config)#interface eth-trunk 1 //Create an aggregation group
DUT2(config-if-eth-trunk-1)#link-aggregation mode static //Configure the aggregation group mode to be static
DUT2(config-if-eth-trunk-1)#link-aggregation members ethernet 0/0/10
DUT2(config-if-eth-trunk-1)#link-aggregation members ethernet 0/0/11
DUT2(config-if-eth-trunk-1)#exit
DUT2(config)#link-aggregation load-balance dst-mac
DUT2(config)#show lacp local
Load balance: dst-mac
```

eth-trunk ID: 1, static channel

Port	State	A-Key	O-Key	Priority	Logic-port	Actor-state	e0/0/10 bndl
	-	-	-			10	-
e0/0/11 bndl	-	-	-			10	-

25. STP/RSTP Configuration

25.1. stp

Function

Enable **stp** globally or on a physical interface

Format

```
stp
no stp
```

Parameter Description

none

25.2. stp mode [stp|rstp]

Function

Configure **stp** mode globally

Format

```
stp mode [stp|rstp]
no stp mode
```

Parameter Description

none

25.3. stp hello-time

Function

Globally configure the interval for sending **STP** protocol packets

Format

stp hello-time <seconds >

no stp hello-time

Parameter Description

parameter	Parameter Description	Value
seconds	Hello message sending room Interval	1-10 s , default 2s

25.4. stp forward-time

Function

Configure the port **forward-delay** time globally

Format

stp forward-time <seconds >

no stp forward-time

Parameter Description

parameter	Parameter	Value
seconds	description changed to Forward State delay time	4-30 s , default 15 s

25.5. stp max-age

Function

Configure the global **STP** protocol packet aging time

Format

stp max-age <num >

no stp max-age

Parameter Description

parameter	Parameter	Value
num	Description Root bridge aging time	6-40 s , default 20s

25.6. stp pathcost-standard

Function

Configure the **STP cost** calculation method globally

Format

stp pathcost-standard[dot1d-1998 | dot1t]

nostp pathcost-standard

Parameter Description

none

25.7. stp priority

Function

Configure the STP priority of the bridge globally

Format

stp priority <priority>

no stp priority

Parameter Description

parameter	Parameter	Value
<i>priority</i>	Description Priority	0-61440 and multiples of 4096 , default 32768

25.8. stp root-guard action

Function

Configuring root bridge protection globally

Format

stp root-guard action [block-port | drop-bpdu]

Parameter Description

none

25.9. stp tc-protection

Function

Enable TC protection globally

Format

stp tc-protection

no stp tc-protection

Parameter Description

none

25.10.stp tc-protection interval

Function

Configure the TC protection period globally

Format

stp tc-protection *interval*<interval>

no stp tc-protection interval

Parameter Description

parameter	Parameter Description	Value
<i>interval</i>	TC protection effective time	1-255, default 10s

25.11.stp tc-protection threshold

Function

Maximum number of TC messages processed within the global configuration protection period

Format

stp tc-protection threshold <threshold>

no stp tc-protection threshold

Parameter Description

parameter	Parameter	Value
<i>threshold</i>	Description Trigger TC protection to take effect Threshold	1-255, default 6

25.12.stp time-factor

Function

Configure the root bridge timeout factor globally

Format

stp time-factor <num>

no stp time-factor

Parameter Description

parameter	Parameter	Value
num	Description Timeout factor	1-10, default 3

25.13.stp bpdu-guard

Function

Enable the **bpdu-guard** function on the physical interface.

Format

stp bpdu-guard

no stp bpdu-guard

Parameter Description

none

25.14.stp bpdu-filter

Function

Filter **BPD**U messages globally or on a physical interface

Format

stp bpdu-filter

no stp bpdu-filter

Parameter Description

none

25.15.stp cost

Function

Cost of the physical interface configuration path

Format

stp cost <cost>

no stp cost

Parameter Description

parameter	Parameter	Value
<i>cost</i>	Description Path Cost	1-200000000

25.16.stp portfast

Function

Physical interface configuration edge port

Format

stp portfast [autoedge | disable | edgeport]

no stp portfast

Parameter Description

parameter	Parameter	Value
AutoEdge	Description : No BPD U message received Automatically become the edge mouth	none
disable	Ports will not become edges After the edge	none
edgeport	port is up , it will be changed directly Edge Port	none

25.17.stp link-type

Function

Physical interface configuration link type

Format

stp link-type [auto | point-to-point | shared]

no stp link-type

Parameter Description

parameter	Parameter Description	Value
auto	Automatic detection	
point-to-point		
shared	Non-point-to-point	

25.18.stp loop-guard

Function

Configuring the **loop-guard** function on a physical interface

Format

stp loop-guard

no stp loop-guard

Parameter Description

none

25.19.stp mcheck

Function

Execute the **mcheck** function

Format

stp mcheck

Parameter Description

none

25.20.stp port-priority

Function

Configure the **STP** priority of the physical interface port

Format

stp port-priority <priority>

no stp port-priority

Parameter Description

parameter	Parameter	Value
<i>priority</i>	Description Priority	0-240 and multiples of 16 , default 128

25.21.stp root-guard

Function

Configure the **root-guard** function on the physical interface

Format

stp root-guard
no stp root-guard

Parameter Description

none

25.22.stp tcn-restricted

Function

Configure **TCN** transmission restriction function on physical interface

Format

stp tcn-restricted
no stp tcn-restricted

Parameter Description

none

25.23.stp transmit-limit

Function

Configure the maximum number of **BPDU** packets that can be processed by the physical interface

Format

stp transmit-limit <limit>
no stp transmit-limit

Parameter Description

parameter	Parameter Description	Value
<i>limit</i>	BPDU message processing limit system	1-255, default 3

25.24. show stp interface

Function

Display interface **stp** information

Format

show stp interface [brief] ethernet <port-number>

Parameter Description

parameter	Parameter	Value
brief	Description Brief Information	
<i>port number</i>	Port Name	Slashes are decimal, such as: 0/0/1

25.25. Configuration Example

Networking

DUT1(1,2) =====(1,2) DUT2 14 -----PC
11 12



Ports **1 and 2** of **DUT1** and **DUT2** are interconnected (loop), and ports **11 and 12** of **DUT2** are self-connected (self-loop). **DUT1** is the root bridge.

Details are as follows:

#Configure the root bridge

```
DUT1(config)#stp
DUT1(config)#stp priority 4096
```

#Configure non-root bridge

```
DUT2(config)#stp
DUT2(config)#show stp interface brief
Spanning-tree protocol: Enabled, spanning-tree mode: RSTP
```

Port Protect: R-RootGuard, L-LoopGuard, B-BpduGuard, F-BpduFilter

Port	Cost	Priority	Protect	Role	State
e0/0/1	20000	128	N/A	Root	Forwarding
e0/0/2	20000	128	N/A	Alternate	Discarding
e0/0/11	20000	128	N/A	Designated	Forwarding
e0/0/12	20000	128	N/A	Backup	Discarding
e0/0/14	200000	128	N/A	Designated	Forwarding

```
DUT2(config)#show stp interface
```

```
Spanning-tree protocol: Enabled, spanning-tree mode: RSTP
STP info timeout factor: 3

TC protection: Enabled, interval: 10, threshold:
6 Bridge time: HelloTime 2s, MaxAge 20s, ForwardDelay 15s
Bridge ID: 32768-000a.6a01.0222
Root Bridge: 4096-000a.6a00.0006
Path cost to root bridge: 20000
Topo change times: 13
```

//Root bridge information

e0/0/1 STP state: Forwarding

Spanning-tree protocol: Enabled

remote loop detect is Disabled Port role: RootPort

Port path cost: 20000

Port priority: 128

Root guard: Disabled(block-port)

Loop guard: Disabled, port is not in loop-inconsistent state

Designated bridge: 4096-000a.6a00.0006 Port

is a non-edge port //Non-edge port

Connected link type: point-to-point Max

transmit limit: 3 BPDUs per HelloTime Port time:

HelloTime 4s, MaxAge 25s, ForwardDelay 20s, MessageAge 0 Rx info expired count:

0, last time: Rx TC BPDU count: 6, last

time: 2019/12/15 17:15:04 TC Protection status: Normal

Tx BPDU: 10

TCN: 0, RST: 10, Config: 0

Rx BPDU: 287

TCN: 0, RST: 287, Config: 0

e0/0/14 STP state: Forwarding

Spanning-tree protocol: Enabled

remote loop detect is Disabled Port role: DesignatedPort

Port path cost: 200000

Port priority: 128

Root guard: Disabled(block-port)

Loop guard: Disabled, port is not in loop-inconsistent state

Designated bridge: 32768-000a.6a01.0222 Port

is an edge port //Edge port

Connected link type: point-to-point Max

transmit limit: 3 BPDUs per HelloTime Port time:

HelloTime 4s, MaxAge 25s, ForwardDelay 20s, MessageAge 1 Rx info expired

count: 0, last time: Rx TC BPDU count:

0, last time: TC Protection status:

Normal

Tx BPDU: 520

TCN: 0, RST: 520, Config: 0

Rx BPDU: 0

TCN: 0, RST: 0, Config: 0

26. MSTP Configuration

26.1. stp

Function

Enable **stp** globally or on a physical interface

Format

stp
no stp

Parameter Description

none

26.2. stp mode mstp

Function

Configure the **mstp** mode globally

Format

stp mode mstp
no stp mode

Parameter Description

none

26.3. mstp hello-time

Function

Globally configure the interval for sending **STP** protocol packets

Format

mstp hello-time <seconds >
no mstp hello-time

Parameter Description

parameter	Parameter	Value
<i>seconds</i>	Description Send BPDU message cycle	1-10 s, default 2s

26.4. mstp forward-time

Function

Configure the port **forward-delay** time globally

Format

mstp forward-time <seconds>

no mstp forward-time

Parameter Description

parameter	Parameter	Value
<i>seconds</i>	Description Port status switching, etc. Waiting time	4-30 s, default 15 s

26.5. mstp max-age

Function

Configure the global **STP** protocol packet aging time

Format

mstp max-age <seconds>

no mstp max-age

Parameter Description

parameter	Parameter Description	Value
<i>seconds</i>	When BPDU message ages between	6-40 s, default 20s

26.6. mstp max-hops

Function

Configure the maximum number of **STP** hops in the domain globally

Format

mstp max-hops <num>

no mstp max-hops

Parameter Description

parameter	Parameter Description	Value
num	BPDU message maximum expansion Scattered Range	1-255 s, default 20

26.7. mstp instance <id> priority

Function

Configuring the Priority of a Spanning Tree Instance Globally

Format

mstp instance <id> *priority*<priority>

no mstp instance <id> *priority*

Parameter Description

parameter	Parameter Description	Value

<i>id</i>	Instance	0-15
<i>priority</i>	number priority	0-61440 and multiples of 4096 , default 32768

26.8. mstp root-guard action

Function

Configuring root bridge protection globally

Format

mstp root-guard action {block-port | drop-bpdu}

Parameter Description

	Parameter	Value
Parameter drop-	Description Discard message	
bpdu block-port	Blocking ports	default value

26.9. mstp tc-protection

Function

Enable TC protection globally

Format

mstp tc-protection

no mstp tc-protection

Parameter Description

none

26.10.mstp tc-protection interval

Function

Configure the TC protection period globally

Format

mstp tc-protection interval <interval>

no mstp tc-protection interval

Parameter Description

parameter	Parameter Description	Value
<i>interval</i>	TC protection effective time	1-255, default 10s

26.11.mstp tc-protection threshold

Function

Maximum number of TC messages processed within the global configuration protection period

Format

mstp tc-protection threshold<threshold>

no mstp tc-protection threshold

Parameter Description

parameter	Parameter	Value
<i>threshold</i>	Description Trigger TC protection to take effect Threshold	1-255, default 6

26.12.mstp time-factor

Function

Global configuration timeout factor

Format

mstp time-factor <num>

no mstp time-factor

Parameter Description

parameter	Parameter	Value
num	Description Root bridge information timeout son	1-10, default 3

26.13.mstp bpdu-guard

Function

Enable **bpdu-guard** on the physical interface

Format

mstp bpdu-guard

no mstp bpdu-guard

Parameter Description

none

26.14.mstp bpdu-filter

Function

Enable filtering of **BPDU** packets globally or on a physical interface

Format

mstp bpdu-filter

no mstp bpdu-filter

Parameter Description

none

26.15.mstp instance

Function

Globally configure spanning tree instance mapping to **VLAN**

Format

[no] mstp instance <id> vlan <vlan-list>

Parameter Description

parameter	Parameter	Value
<i>id</i>	Description	0-15
<i>vlan-list</i>	Instance Number VLAN List	1-4094

26.16.mstp region-name

Function

Globally configure domain name

Format

mstp region-name <name>

no mstp region-name

Parameter Description

parameter	Parameter Description	Value
<i>name</i>	Domain Name	STRING<1-32>

26.17.mstp enable instance

Function

Enable spanning tree instance globally

Format

mstp enable instance <id>

Parameter Description

parameter	Parameter Description	Value
<i>id</i>	Instance number	1-15

26.18.mstp disable instance

Function

Disable spanning tree instance globally

Format

mstp disable instance <id>

Parameter Description

parameter	Parameter Description	Value
<i>id</i>	Instance number	1-15

26.19.mstp revision-level

Function

Global configuration **revision level**

Format

mstp revision-level <level>

no mstp revision-level

Parameter Description

parameter	Parameter	Value
level	Description Level	0-65535

26.20.mstp flap-guard

Function

Enable flap-guard globally, configure the maximum number of flapping times, and configure the flapping protection recovery time.

Format

mstp flap-guard[max-flaps <num>time <S1>|recovery-time<S2>]

no mstp flap-guard[max-flaps|recovery-time]

Parameter Description

parameter	Parameter Description Value	
num	Oscillation times 1-100s , default 5s	
S1	Oscillation interval 1-60s , default 10s	
S2	Recovery time 30-1000s , default 30s	

26.21.mstp external cost

Function

Configure the **MSTP** inter-zone **cost** on the physical interface

Format

mstp external cost <num>

no mstp external cost

Parameter Description

parameter	Parameter	Value
num	Description Cost	1-200000000

26.22.mstp instance <id> cost

Function

Cost in the physical interface configuration domain

Format

mstp instance <id> cost <cost>

nomstp instance <id> cost

Parameter Description

parameter	Parameter	Value
<i>id</i>	Description	0-15
<i>cost</i>	Instance Number Cost	1-200000000

26.23.mstp portfast

Function

Physical interface configured as edge port

Format

mstp portfast {autoedge |disable | edgeport}

no mstp portfast

Parameter Description

parameter	Parameter	Value
AutoEdge	Description : No BPDU message received Automatically become the edge mouth	
disable	Ports will not become edges Edge Port	
edgeport	After the port is up , it changes directly Edge Port	

26.24.mstp link-type

Function

Physical interface configuration link type

Format

mstp link-type {auto | point-to-point | shared}

no mstp link-type

Parameter Description

parameter	Parameter Description	Value
auto	Automatic detection	
point-to- point		
shared	Non-point-to-point	

26.25.mstp loop-guard

Function

Configuring the **loop-guard** function on a physical interface

Format

mstp loop-guard

no mstp loop-guard

Parameter Description

none

26.26.mstp root-guard

Function

Configure the **root-guard** function on the physical interface

Format

mstp root-guard

no mstp root-guard

Parameter Description

none

26.27.mstp mcheck

Function

The physical interface performs the **mcheck** function .

Format

mstp mcheck

Parameter Description

none

26.28.mstp instance <id> port-priority

Function

Instance priority of **mstp** configured on physical interface

Format

mstp instance <id> port-priority<priority>

no mstp instance <id> port-priority

Parameter Description

parameter	Parameter	Value
<i>id</i>	Description	0-15
<i>priority</i>	Instance Number Priority Size	0-240 and multiples of 16 , default 128

26.29.mstp instance <id> cost

Function

Configure the instance **cost** value of **mstp** on the physical interface

Format

mstp instance <id> cost<cost>

no mstp instance <id> cost

Parameter Description

parameter	Parameter	Value
<i>cost</i>	Description cost	1-200000000
<i>id</i>	size instance number	0-15

26.30.mstp config-digest-snooping

Function

Physical interface configuration compatible with Cisco

Format

mstp config-digest-snooping

no mstp config-digest-snooping

Parameter Description

none

26.31.show mstp instance brief

Function

View **mstp** information

Format

show mstp instance brief

Parameter Description

26.32.show mstp instance <id> interface

Function

View **mstp** information

Format

show mstp instance <id> interface [ethernet <port-number>]

Parameter Description

	Parameter Description	Value
	Port Number	Slashes are decimal, such as: 0/0/1
Parameterport -list id	Instance Number	0-15

26.33.show mstp disabled-instance

Function

View the disabling instance

Format

show mstp disabled-instance

Parameter Description

none

26.34.show mstp config-id

Function

View the domain configuration of **mstp**

Format

show mstp config-id

Parameter Description

none

26.35.31.35 Configuration Example

#Networking

```
-----21 DUT3 22 --
|
2122
DUT1(1,2) =====(1,2) DUT2 14 -----PC
11 12
|_|
```

DUT1 and DUT2 are connected to each other (loop) at ports **1 and 2** , and DUT2 is connected to itself (loop) at ports **11 and 12** .

The same domain **region2**, and DUT1 belongs to the root of **region1** ; DUT3 belongs to another domain region1, and in the entire spanning tree, DUT3

Belongs to the main root. Configuration details are as follows:

#Configure the root bridge

```
DUT3(config)#stp
DUT3(config)#stp mode mstp
DUT3(config)#mstp region-name region1
DUT3(config)#mstp instance 0 priority 0
DUT3(config)#mstp hello-time 6
DUT3(config)#mstp forward-time 24
DUT3(config)#mstp max-age 30
```

#Configure the domain root bridge

```
DUT1(config)#stp
DUT1(config)#stp mode mstp
DUT1(config)#mstp region-name region2
DUT1(config)#mstp instance 0 priority 4096
```

#Configure non-root bridge

```
DUT2(config)#stp
DUT2(config)#stp mode mstp
DUT2(config)#mstp region-name region2
DUT2(config)#show mstp instance brief
Current spanning tree protocol is MSTP
Spanning tree protocol is enabled
```

Received information time factor is 3

TC protection is enabled, interval is 10, threshold is 6

Flap guard is disable, max count 5, detect period 10 s, recovery period 30 s

```
MSTP Instance 0      vlans mapped:1-4094
Bridge ID            32768-000a.6a01.0222
CIST root            0-000a.6a00.03cc           //Total root bridge
Region root          4096-000a.6a00.0006       //Domain root bridge
Bridge time           HelloTime 2,MaxAge 20,ForwardDelay 15,MaxHops 20
Cist Root time        HelloTime 6,MaxAge 30,ForwardDelay 24,RemainingHops 19
                      External rpc: 20000, Internal rpc: 20000
```

PortID	Role	Sts	ExternalCost	InternalCost	Prio.Nbr	Type
e0/0/1	Root FWD	20000		20000	128.1	P2P
e0/0/2	Alte DIS		20000	20000	128.2	P2P //Domain root backup port
e0/0/11	Design FWD	20000		20000	128.11	P2P
e0/0/12	Backup DIS		20000	20000	128.12	P2P
e0/0/14	Design FWD	200000		200000	128.14	P2P
e0/0/22	Alte DIS		20000	20000	128.22	P2P //Total root backup port

```
DUT2(config)#show mstp instance 0 interface
```

Current spanning tree protocol is MSTP

Spanning tree protocol is enabled

Received information time factor is 3

TC protection is enable, interval is 10, threshold is 6

Flap guard is disable, max count 5, detect period 10 s, recovery period 30 s

Bridge id is 32768-000a.6a01.0222

Cist root is 0-000a.6a00.03cc ,root port is e0/0/1

Region root is 4096-000a.6a00.0006,root port is e0/0/1

Bridge time:HelloTime 2,MaxAge 20,ForwardDelay 15,MaxHops 20

Cist Root time:HelloTime 6,MaxAge 30,ForwardDelay 24,RemainingHops 19

External root path cost is 20000, internal root path cost is 20000

Port e0/0/1 of instance 0 is forwarding

Port role is RootPort, priority is 128

Port external path cost is 20000,internal path cost is 20000

Root guard disable and port is not in root-inconsistent state

Loop guard disable and port is not in loop-inconsistent state

Designated bridge is 4096-000a.6a00.0006,designated port is e0/0/2 //Non-

Port is a(n) non-edge port,link type is point-to-point Port edge port

time:HelloTime 6,MaxAge 30,FwdDelay 24,MsgAge 1,RemainingHops 19 Received TC

flag BPDU count:6; last time:2019/12 /15 18:17:20

TC Protection status: Normal

Received information expired count:0; last time:

Received BPDUs:TCN 0,RST 89,Config BPDU 0

Transmitted BPDUs:TCN 0,RST 13,Config BPDU 0

Port e0/0/14 of instance 0 is forwarding

Port role is DesignatedPort, priority is 128

Port external path cost is 200000,internal path cost is 200000 Root

guard disable and port is not in root-inconsistent state Loop

guard disable and port is not in loop-inconsistent state

Designated bridge is 32768-000a .6a01.0222,designated port is e0/0/14 //

Port is a(n) edge port,link type is point-to-point Port Edge port

time:HelloTime 6,MaxAge 30,FwdDelay 24,MsgAge 1,RemainingHops 19 Received TC flag

BPDU count:0; last time: TC Protection status:

Normal

Received information expired count:0; last time:

Received BPDUs:TCN 0,RST 0,Config BPDU 0

Transmitted BPDUs:TCN 0,RST 95,Config BPDU 0

#Configure root path consumption within the port domain and port priority

DUT2(config)#interface ethernet 0/0/2

DUT2(config-if-ethernet-0/0/2)#mstp instance 0 cost 18000 //The port with the lowest cost will be used as the root port

DUT2(config-if-ethernet-0/0/2)#interface ethernet 0/0/12

DUT2(config-if-ethernet-0/0/12)#mstp instan 0 port-priority 64 //Ports with higher priority are less likely to be blocked

DUT2(config-if-ethernet-0/0/12)#show mstp instance brief

Current spanning tree protocol is MSTP

Spanning tree protocol is enabled

Received information time factor is 3

TC protection is enabled, interval is 10, threshold is 6

Flap guard is disable, max count 5, detect perid 10 s, recovery period 30 s

```

MSTP Instance 0      vlans mapped:1-4094
Bridge ID            32768-000a.6a01.0222
CIST root            0-000a.6a00.03cc
Region root          4096-000a.6a00.0006
Bridge time           HelloTime 2,MaxAge 20,ForwardDelay 15,MaxHops 20
Cist Root time        HelloTime 6,MaxAge 30,ForwardDelay 24,RemainingHops 19
                        External rpc: 20000, Internal rpc: 18000

```

PortID	Role	Sts	ExternalCost	InternalCost	Prio.Nbr	Type
e0/0/1	Alte DIS		20000	20000		P2P
e0/0/2	Root FWD	20000		18000	128.2	P2P
e0/0/11	Backup DIS		20000	20000	128.11	P2P
e0/0/12	Design FWD	20000		20000	64.12	P2P
e0/0/14	Design FWD	200000		200000	128.14	P2P
e0/0/22	Alte DIS	20000		20000	128.22	P2P

```

DUT2(config-if-ethernet-0/0/12)#interface ethernet 0/0/22
DUT2(config-if-ethernet-0/0/22)#mstp external cost 18000
DUT2(config-if-ethernet-0/0/22)#show mstp instance brief
Current spanning tree protocol is MSTP
Spanning tree protocol is enabled

```

Received information time factor is 3

TC protection is enabled, interval is 10, threshold is 6

Flap guard is disable, max count 5, detect perid 10 s, recovery period 30 s

```

MSTP Instance 0      vlans mapped:1-4094
Bridge ID            32768-000a.6a01.0222
CIST root            0-000a.6a00.03cc
Region root          32768-000a.6a01.0222 //DUT2 becomes the domain root because the total root consumption is smaller
Bridge time           HelloTime 2,MaxAge 20,ForwardDelay 15,MaxHops 20
Cist Root time        HelloTime 6,MaxAge 30,ForwardDelay 24,RemainingHops 20
                        External rpc: 18000, Internal rpc: 0

```

PortID	Role	Sts	ExternalCost	InternalCost	Prio.Nbr	Type
e0/0/1	Design FWD	20000		20000	128.1	P2P
e0/0/2	Design FWD	20000		18000	128.2	P2P
e0/0/11	Backup DIS	20000		20000	128.11	P2P
e0/0/12	Design FWD	20000		20000	64.12	P2P
e0/0/14	Design FWD	200000		200000	128.14	P2P
e0/0/22	Root FWD	18000		20000	128.22	P2P

Note: When DUT2 replaces DUT1 as the domain root, the original root ports and root backup ports in the domain are all converted to designated ports.

Assuming that ports 1 and 2 are both in forwarding state, DUT1 will have an intra-domain root port and an intra-domain root backup port.

27. LBD Configuration

27.1. loopback-detection action[discarding | shutdown]

Function

Configure the loop processing mode.

Format

loopback-detection action[discarding | shutdown]

Parameter Description

parameter	Parameter	Value
discarding	Description Set the loopback port to discarding state (Default mode)	none
shutdown	Close loopback port None	

27.2. loopback-detection interface[enter | ethernet<portid>]

Function

Enable/disable the **loopback-detection** function of the port

Format

(no)loopback-detection interface [enter | ethernet<portid>]

Parameter Description

parameter	Parameter Description	Value
portid	Get port id	Numeric string, case insensitive, does not support null The length range is 5-6. The port range is related to the physical Port Equality

27.3. loopback-detection

Function

Enable/disable the global **loopback-detection** function.

Execute this command in port mode to enable the **loopback-detection** function of the port.

Format

loopback-detection
no loopback-detection

Parameter Description

none

27.4. loopback-detection interval-time

Function

Configure the loop processing interval.

Format

loopback-detection interval-time<times>

Parameter Description

parameter	Parameter	Value
times	Description Interval (unit: seconds, default value: 5 seconds	5-300

27.5. show loopback-detection

Function

Check the **loopback derection** configuration.

Format

show loopback-detection [ethernet <portid>]

Parameter Description

parameter	Parameter Description	Value
portid	Get port id	Numeric string, case insensitive, does not support null The length range is 5-6. The port range is related to the physical Port Equality

27.6. Configuration Example

Networking

DUT1 -/11-----9/11 DUT2

Configuration

1. Enable the **loopback-detection** function globally and on ports

dut1(config)#loopback-detection

dut1(config)#loopback-detection interface

dut2(config)#loopback-detection

dut2(config)#loopback-detection interface 2. Check the

loopback-detection status, remove the loop, and port **11** is in the **discard** state.

dut1(config)#s loopback-detection ethernet 0/0/9 ethernet 0/0/11

LB-Detect:Enable

Loopback-detection action is Discarding

The interval time is 5 seconds

The recovery time of the discarding action is 15 seconds

Port Information:

port loopback status

e0/0/9 Enable Normal

e0/0/11 Enable Discarding

dut2(config)#s loopback-detection ethernet 0/0/9 ethernet 0/0/11
LB-Detect:Enable

Loopback-detection action is Discarding

The interval time is 5 seconds

The recovery time of the discarding action is 15 seconds

Port Information:

port	loopback	status
e0/0/9	Enable	Normal
e0/0/11	Enable	Normal

28. ERPS Configuration

28.1. erps

Function

Enable the **erps** function globally.

Format

erps
no erps

Parameter Description

none

28.2. erps instance

Function

Create/delete and enter **erps instance**.

Format

[no] erps instance <id>

Parameter Description

parameter	Parameter Description	Value
id	instance id	0-15

28.3. control-vlan

Function

Configure the control VLAN in **erps instance** mode .

Format

[no] control-vlan <vlan-id>

Parameter Description

parameter	Parameter	Value
<i>vlan-id</i>	Description Configuration control VLAN vlan is not configured vlan	2-4094

28.4. guard-timer

Function

Configure/delete guard-timer in **erps instance** mode .

Format

guard-timer<times>

no guard-timer

Parameter Description

parameter	Parameter	Value
<i>times</i>	Description Guard Time	100-2000ms, default: 500ms

28.5. mel

Function

Configure/delete mel in **erps instance** mode .

Format

mel<level>

no mel

Parameter Description

parameter	Parameter	Value
<i>level</i>	Description erps instance Associated cfm level	0-7, default: 0

28.6. port0

Function

Configure/delete **port0** port and mode in **erps instance** mode .

Format

[no] port0 {eth-trunk *id* | ethernet portid}[neighbour] next-neighbour [owner]

Parameter Description

	Parameter	Value
Parameterneighbour	Description rpl	
owner	neighbour rpl-	
owner next-neighbour	next neighbor	

<i>port-id id</i>	Port number	Slashes are decimal, such as: 0/0/1
	aggregation group number	INTEGER<1-16>

28.7. port1

Function

Configure/delete **port1** and mode in **erps instance** mode .

Format

[no] port1[eth-trunk *id* | ethernet portid][neighbour| next-neighbour |owner]

Parameter Description

	Parameter	Value
Parameterneighbour	Description rpl	
owner	neighbour rpl-	
owner next-neighbour next	neighbor port	
<i>port-id</i>	number	Slashes are decimal, such as: 0/0/1
aggregation group number <i>id</i>		INTEGER<1-16>

28.8. protected-instance

Function

Configure/delete the referenced instance in **erps instance** mode.

Format

protected-instance <*id*>

no protected-instance

Parameter Description

parameter	Parameter	Value
<i>id</i>	Description mstp Create an instance id	1-64

28.9. ring

Function

Configure **ring** configuration in **erps instance** mode .

Format

ring [*id*]

ring level <*level*>

ring enable

ringdisable

Parameter Description

parameter	Parameter Description	Value
<i>id</i>	Ring id Ring	1-239
<i>level</i>	level	0-1

	(0-main ring, 1-sub-ring)	

28.10. work-mode

Function

Configure the working mode in **erps instance** mode.

Format

work-mode { non-revertive | revertive }

Parameter Description

parameter	Parameter	Value
revertive	Description Switch, the default mode is	revertive
Non-revertive mode does not switch		non-revertive

28.11.wtr-timer

Function

Waiting time for switching working modes in **erps instance** mode.

Format

(no)wtr-timer <time>

Parameter Description

parameter	Parameter Description Value	
time	The default is 5 minutes 1-12	

28.12.show erps

Function

show erps to check the **erps** status.

Format

show erps

Parameter Description

none

28.13.show erps control-vlan

Function

Check the **erps** control **vlan**.

Format

show erps control-vlan<vlan-id>

Parameter Description

parameter	Parameter Description	Value
<i>vlan-id</i>	VLAN ID	1-4094

28.14.show erps instance

Function

Check the status of an **erps** instance.

Format

show erps instance < id >

Parameter Description

parameter	Parameter	Value
<i>id</i>	Description Instance id	0-15

28.15.show erps statistics

Function

View **erps** statistics.

Format

show erps statistics

Parameter Description

none

28.16. Configuration Example

Networking

DUT1 11/12-----11/12 DUT2

Order

1. Disable the **stp** function of the **erps** port

dut1(config)#interface range ethernet 0/0/11 ethernet 0/0/12

dut1(config-if-range)#no

stp dut2(config)#interface range ethernet 0/0/11 ethernet

0/0/12 dut2(config-if-

range)#no stp 2. dut1, dut2 enable **erps** and configure the **erps** port role

dut1(config)#erps

dut1(config)#erps instance

0 dut1(config-erps-instnace-0)#control-

vlan 99 dut1(config-erps-instnace-0)#port0 eth

0/0/11 owner dut1(config-erps-

instnace-0)#port1 eth 0/0/12 dut1(config-erps-

instnace-0)#protected-instance 0 dut1(config-erps-instnace-0)#ring enable

```

dut2(config)#erps
dut2(config)#erps instance
0 dut2(config-erps-instnace-0)#control-vlan
99 dut2(config-erps-instnace-0)#port0 eth 0/0/11
neighbour dut2(config-erps-instnace-0)#port1
eth 0/0/12 dut2(config-erps-instnace-0)#protected-
instance 0 dut2(config-erps-
instnace-0)#ring enable 3. Check the erps status after the network is stable .

```

```

dut1(config)#show erps

```

```

ERPS state          : enable

```

```

Instance Id         : 0
MeI                  : 0
Work-mode            : revertive
WTR Timer            : 5 min
Guard Timer          : 500 ms
Holdoff Timer        : 0 s
Ring 1 info          :
Control vlan         : 99
Status               : enable
Protected-instance : 0
Role                  : Owner
Sub-ring              : No
Stm                   : Pending

```

port	portId	role	state	nodeId	BPR
port0	e0/0/11	Owner	Blocking	port1	00:00:00:00:00:00 0
e0/0/12	Common	Forwarding	00:00:00:00:00:00	0	

Total 1 ring(s).

```

dut2(config-erps-inst-0)#s erps

```

```

ERPS state          : enable

```

```

Instance Id         : 0
MeI                  : 0
Work-mode            : revertive
WTR Timer            : 5 min
Guard Timer          : 500 ms
Holdoff Timer        : 0 s
Ring 1 info          :
Control vlan         : 99
Status               : enable

```

Protected-instance : 0

Role : Neighbour

Sub-ring : No

Stm : Idle

port	portId	role	state	nodeId	BPR
port0	GE0/0/9	Neighbor	Blocking	port1	00:0a:5e:00:00:33 0
GE0/0/11	Common		Forwarding	00:0a:5e:00:00:33 0	

Total 1 ring(s).

29. DHCP-Snooping Configuration

29.1. dhcp-snooping

Function

Enable **dhcp-snooping** in global mode or **VLAN** mode (disable)

Format

dhcp-snooping

no dhcp-snooping

Parameter Description

none

29.2. dhcp-snooping fast-remove

Function

Enable fast aging

Format

dhcp-snooping fast-remove

no dhcp-snooping fast-remove

Parameter Description

none

29.3. dhcp-snooping dhcp-server

Function

Specify DHCP server

Format

dhcp-snooping dhcp-server <ipaddress>

no dhcp-snooping dhcp-server [all | <ipaddress>]

Parameter Description

parameter	Parameter Description	Value
Parameter <i>ipaddress</i>	DHCP server ip	Decimal<12>, the format is: xxxx, xy[0-255

29.4. dhcp-snooping max-learn-num

Function

Configure the maximum number of learning parameters in port mode or VLAN mode

Format

dhcp-snooping max-learn-num *value*

no dhcp-snooping max-learn-num

Parameter Description

parameter	Parameter	Value
value	Description Specific Limit	0-2048

29.5. dhcp-snooping trust

Function

Configure (cancel) the trust function in port mode or VLAN mode.

Format

dhcp-snooping trust

no dhcp-snooping trust

Parameter Description

none

29.6. show dhcp-snooping

Function

View information

Format

show dhcp-snooping vlan

show dhcp-snooping interface [ethernet <port-id>]

show dhcp-snooping clients

Parameter Description

parameter	Parameter Description	Value
<i>port-id</i>	Get port id	Numeric string, case insensitive, does not support null The length range is 5-6. The port range is related to the physical Port Equality

30. DHCP-Option82 Configuration

30.1. dhcp-option82

Function

Enable **dhcp-option82** globally, on a **VLAN** , or on a port (cancel)

Format

dhcp-option82

no dhcp-option82

Parameter Description

none

30.2. dhcp-option82 device-id

Function

Add **device-id** information to global configuration

Format

dhcp-option82 device-id

no dhcp-option82 device-id

Parameter Description

none

30.3. dhcp-option82 format

Function

Add **device-id** information to global configuration

Format

dhcp-option82 format [**normal** | **user-defined** | **verbose** [**node-identifier** [**hostname** | **mac** | **user-defined** *<node-value>*]]]

no dhcp-option82 format [**verbose** **node-identifier**]

Parameter Description

parameter	Parameter Description Value	
node-value	Custom node information 1-60 characters	

30.4. dhcp-option82 information format

Function

Globally configure **option 82** content format

Format

dhcp-option82 information format [ascii | hex]

no dhcp-option82 information format

Parameter Description

none

30.5. dhcp-option82 circuit-id

Function

Configure **circuit-id** content under **VLAN** or port

Format

dhcp-option82 circuit-id user-defined *<circuit-info>*

no dhcp-option82 circuit-id user-defined

Parameter Description

parameter	Parameter Description Value	
circuit-info	Circuit-ID information 1-128 characters	

30.6. dhcp-option82 remote-id

Function

Configure **remote-id** content in **VLAN** or port

Format

dhcp-option82 remote-id user-defined *<remote-info>*

no dhcp-option82 remote-id user-defined

Parameter Description

parameter	Parameter Description Value	
remote-info	Remote-id information 1-128 characters	

30.7. dhcp-option82 strategy

Function

Configuring **Option 82** message processing policy on **VLAN** or port

Format

dhcp-option82 strategy [drop | keep | replace]

no dhcp-option82 strategy

Parameter Description

none

30.8. show dhcp-option82 interface

Function

Check the configuration of **dhcp-option82** port

Format

show dhcp-option82 interface [**ethernet** <*port-id*>]

Parameter Description

parameter	Parameter Description	Value
port-id	Get port id	Numeric string, case insensitive, does not support null The length range is 5-6. The port range is related to the physical Port Equality

30.9. show dhcp-option82 vlan

Function

Check the configuration of **dhcp-option82** vlan

Format

show dhcp-option82 vlan [*vlan-id*]

Parameter Description

parameter	Parameter Description	Value
vlan-id	Get VLAN ID	Numeric string, case insensitive, does not support null The length range is 1-128. The string range is 1-4094

31. DHCP-Server Configuration

31.1. dhcp-server

Function

Global configuration **dhcp-server**

Format

dhcp-server *ID**ipaddress*

no dhcp-server *ID*

Parameter Description

	Parameter Description	Value
	Server Number	1-256
Parameter id ipaddress	Server ip	

31.2. dhcp-server <id>

Function

Interface mode configuration application **dhcp-server**

Format

dhcp-server *id*

no dhcp-server *id*

Parameter Description

parameter	Parameter Description	Value
id	Server Number	1-256

31.3. dhcp-server ip-pool name

Function

Creating a pool

Format

dhcp-server ip-pool *name*

no dhcp-server ip-pool *name*

Parameter Description

parameter	Parameter Description	Value
name	Pool name	1-32 characters

31.4. gateway *ipaddress mask*

Function

Configuring **gateway** in **pool** mode

Format

gateway *ipaddress mask*

Parameter Description

	Parameter Description	Value
Parameter	IP address	DUT uses the interface IP of the pool
ipaddress mask	subnet mask	

31.5. setup *id startip endip*

Function

Configuring an address pool in Pool mode

Format

setup *id startip endip*

no section *id*

Parameter Description

parameter	Parameter	Value
id	Description Address	0-7
startip	segment number Starting IP	
endip	Harness IP	

31.6. router ipaddress

Function

Pool mode configures the gateway when the address pool is assigned to **the client**

Format

(no)routeripaddress

Parameter Description

parameter	Parameter	Value
ipaddress	Description Gateway Address	

31.7. Lease time

Function

Pool mode configuration lease time

Format

(no)lease *ddd:hh:mm*

Parameter Description

parameter	Parameter	Value
<i>ddd:hh:mm</i>	Description Aging time	Default 24h

31.8. dns-list

Function

Configure DNS server in pool configuration mode

Format

(no)dns-list [*fourth-ip |primary-ip|second-ip|third-ip*] *ipaddress*

Parameter Description

none

31.9. domain-name

Function

Configure **domain name suffix** in **pool** mode

Format

(no)domain-name *string*

Parameter Description

	Parameter Description	Value
Parameter string	Domain name	1-32 characters

31.10.nbns-list ipaddress

Function

Configuring **WINS server list** in **pool** mode

Format

(no)nbns-list[primary-ip|second-ip] *ipaddress*

Parameter Description

	Parameter Description	Value
Parameter ipaddress	Wins server ip	

31.11.forbidden-ip ipaddress

Function

Configure unassigned **IP** in **pool** mode

Format

(no)forbidden-ip *ipaddress*

Parameter Description

	Parameter Description	Value
Parameter ipaddress	IP address	

31.12.option

Function

Configure **option** in **pool** mode

Format

(no)optioncode ...

Parameter Description

parameter	Parameter Description	Value
code	Option code	4-254

31.13.unbind-client

Function

In **pool** mode, configure **the IP address** used by users that do not match the binding entry

Format

(no)unbind-client section *<id>*

Parameter Description

parameter	Parameter Description	Value
id	Address segment number	0-7

31.14.dhcp-client bind *ipaddress macaddress vid*

Function

Global configuration binding user

Format

(no)dhcp-client bind *ipaddress macaddress vid*

Parameter Description

	Parameter	Value
Parameter	Description	Legal addresses in the Pool
<i>ipaddress</i>	Bound IP User MAC	Legal mac
<i>macaddress vid</i>	Vlan id	1-4094

31.15.dhcp-client bind

Function

Globally (dis)enable the user binding function

Format

(no)dhcp-client bind

Parameter Description

none

31.16.dhcp-client unbind-assign

Function

Globally enable **IP** allocation to unbound users

Format

(no)dhcp-client unbind-assign

Parameter Description

none

31.17.show dhcp-server

Function

View Configuration

Format

show dhcp-server <id>

Parameter Description

parameter	Parameter Description	Value
id	Server Number	1-256

31.18.show dhcp-server clients

Function

View client entries

Format

show dhcp-server clients [ip address <mask> |mac address |ip pool name]

Parameter Description

Parameters	Parameter Description	Value
IP address	IP address	The IP address learned from the address pool
mask	subnet mask	
mac address	mac address	
ip pool name	address pool	STRING<1-32>

31.19.show dhcp-server interface

Function

Check the DHCP configuration under the interface

Format

show dhcp-server interface [supervlan-interface<superVLAN ID> |vlan-interface
<id>]

Parameter Description

	Parameter Description	Value
Parameters	superVLAN	
ID id	number	1-128
	vlan id	1-4094

31.20.show dhcp-server ip-pool

Function

View **DHCP** address pool configuration

Format

show dhcp-server ip-pool [<name>|brief]

Parameter Description

parameter	Parameter Description	Value
name	Pool name	1-32 characters

31.21.show dhcp-client bind

Function

View the **dhcp-client** binding table

Format

show dhcp-client bind [enter | *ABCD* | *H:H:H:H:H:H*]

32. DHCP-Relay Configuration

32.1. dhcp-relay

Function

Enable **dhcp-relay** globally or on a port (cancel)

Format

dhcp-relay

no dhcp-relay

Parameter Description

none

32.2. dhcp-relay hide server-ip

Function

(Cancel) Enable hidden **server**

Format

dhcp-relay hide server-ip

no dhcp-relay hide server-ip

Parameter Description

none

32.3. dhcp-relay max-hops

Function

Configuring max-hops in global mode

Format

dhcp-relay max-hops *<number>*

no dhcp-relay max-hops

Parameter Description

parameter	Parameter	Value
number	Description Value	1-16

32.4. show dhcp-relay

Function

View Configuration

Format

show dhcp-relay

Parameter Description

none

33. IGMP-Snooping Configuration

33.1. igmp-snooping

Function

Enable or disable multicast snooping in the global view

Format

igmp-snooping

no igmp-snooping

Parameter Description

none

33.2. igmp-snooping enable-vlan

Function

In global view, (cancel) enable multicast snooping for a specified **VLAN ID**

Format

igmp-snooping enable-vlan<vlan_list>
no igmp-snooping enable-vlan<vlan_list>

Parameter Description

parameter	Parameter Description	Value
<i>vlan-id</i>	VLAN List	String[1-128], any combination of "," and "-" in the range combine For example: 1,3,5-10

33.3. igmp-snooping host-aging-time

Function

Configuring the aging time of dynamic multicast port members in the global view

Format

igmp-snooping host-aging-time <time> [**vlan vid**]
no igmp-snooping host-aging-time [**vlan vid**]

Parameter Description

parameter	Parameter	Value
<i>Time</i>	Description Aging time (seconds)	[0-1000000]
<i>Vid</i>	VLAN ID	1-4094

33.4. igmp-snooping overflow-replace

Function

Configure the action when the multicast group table is full in the global or port view. When the function is disabled, when the **group** table is full,

No new entries are learned. When the function is enabled, when the **group** entry is full, the old entry is replaced by the new one.

When enabling this function, configure it in the global view. When you need to enable this function only on some ports, configure it on the corresponding ports.

Format

[no] igmp-snooping overflow-replace

Parameter Description

none

33.5. igmp-snooping max-response-time

Function

Global view configuration query maximum response time

Format

igmp-snooping max-response-time <time>

no igmp-snooping max-response-time

Parameter Description

parameter	Parameter Description Value	
<i>Time</i>	Maximum response time (seconds) [1-100]	

33.6. igmp-snooping static-group

Function

Command to configure static multicast group

Format

igmp-snooping static-group group_ip [source-ip src_ip] vlan vid{all | ethernetport-id} no

igmp -snooping static-group group_ip [source-ip src_ip] vlan vid[all | ethernetport-id]

Parameter Description

parameter	Parameter	Value
<i>group-ip</i>	Description Multicast	IPv4 multicast address, in the format of X:X:X:X
<i>src_ip</i>	Group Address Client IP	IPv4 unicast address, in the format of X:X:X:X
<i>Vid</i>	VLAN ID	[1-4094]
<i>port_id</i>	Port Number	Port number, in the format of device_id/slot_id/port_id, for example: 0/0/1

33.7. igmp-snooping static-group proxy

Function

Command (cancel) enable static multicast proxy

Format

igmp-snooping static-group proxy[interval *interval*]
no igmp-snooping static-group proxy

Parameter Description

parameter	Parameter	Value
<i>interval</i>	Description Static group proxy The upstream sends a report Interval between texts	30-300, unit: seconds

33.8. igmp-snooping version

Function

Configure the **IGMP** version in the global view

Format

igmp-snooping version <*ver_num*>

Parameter Description

parameter	Parameter Description	Value
<i>ver_num</i>	IGMP version number, default IGMPv2	[2,3]

33.9. igmp-snooping source-learning

Function

Command configuration **igmpv3** multicast source learning

Format

[no]igmp-snooping source-learning

Parameter Description

none

33.10.igmp-snooping querier

Function

Global view opening and closing query

Format

igmp-snooping querier
no igmp-snooping querier

Parameter Description

none

33.11.igmp-snoopingquerier-vlan

Function

Configure the query function in a specific **VLAN** in the global view

Format

igmp-snooping querier-vlan <vlan_list>
no igmp-snooping querier-vlan [vlan_list]

Parameter Description

parameter	Parameter Description	Value
<i>vlan-id</i>	VLAN List	String[1-128], any combination of "," and "-" in the range combine For example: 1,3,5-10

33.12.igmp-snooping query-interval

Function

Configure the query message interval in the global view

Format

igmp-snooping query-interval <time>
no ip igmp snooping query-interval

Parameter Description

parameter	Parameter	Value
<i>value</i>	Description Query message sending time Interval (seconds), default 60s	[1-30000]

33.13.igmp-snooping last-member-query-interval

Function

Command to configure or restore the multicast specific query sending interval

Format

igmp-snooping last-member-query-interval<time> no igmp-snooping last-member-query-interval

Parameter Description

parameter	Parameter	Value
<i>Value</i>	Description Maximum response time (seconds), default 1s	[1-5]

33.14.igmp-snooping robust-count

Function

Command to configure or restore the multicast robustness factor

Format

igmp-snooping robust-count <count> no igmp-snooping robust-count

Parameter Description

parameter	Parameter	Value
<i>count</i>	Description Robustness coefficient value, default For 2	1-5

33.15.igmp-snooping query-source

Function

Configure the source address used for sending group query messages in the global view

Format

igmp-snooping query-source<ipv4> no igmp-snooping query-source

Parameter Description

parameter	Parameter	Value
<i>ipv4</i>	Description Query message source address Decimal<12>, format: xxxx, xy[0-255]	

33.16.igmp-snooping query-proxy

Function

Globally (cancel) enable **query proxy** (after enabling, query messages will be forwarded using their own MAC)

Format

igmp-snooping query-proxy no

igmp-snooping query-proxy

Parameter Description

none

33.17.igmp-snooping route-port forward

Function

Configuring the hybrid routing port function in the global view

Format

igmp-snooping route-port forward no

igmp-snooping route-port forward

Parameter Description

none

33.18.igmp-snooping router-aging-time

Function

Configure the aging time of dynamic routing ports in the global view

Format

igmp-snooping router-aging-time<time> no

igmp-snooping router-aging-time

Parameter Description

parameter	Parameter	Value
<i>time</i>	Description Routing port aging Time range (seconds)	[10-1000000], default value 300s

33.19.igmp-snooping route-port

Function

Configuring static routing ports in global view

Format

igmp-snooping route-port vlan <vid>[all | ethernet <port-id>]
no igmp-snooping route-port [vlan <vid> [all]] [ethernet <port-id>]

Parameter Description

parameter	Parameter Description	Value
<i>vid</i>	VLAN ID	[1-4094]
<i>port-id</i>	Port Number	Port number, in the format of device_id/slot_id/port_id , for example: 0/0/1

33.20.igmp-snooping preview switch

Function

Enable the multicast preview function in the global view (cancel)

Format

igmp-snooping preview
no igmp-snooping preview

Parameter Description

none

33.21.igmp-snooping preview group-ip

Function

Configuring a multicast group using the multicast preview function in the global view

Format

[no] igmp-snooping preview group-ip <ipv4> vlan <vid> ethernet <port id>

Parameter Description

parameter	Parameter Description	Value
<i>ipv4</i>	Multicast group address	Decimal<12>, format: xxxx, xy[0-255]
<i>Vid</i>	VLAN ID	[1-4094]
<i>port id</i>	Port Number	Port number, in the format of device_id/slot_id/port_id , for example: 0/0/1

33.22.igmp-snooping preview time parameters

Function

Global view configuration preview times, single preview duration, interval between each preview, preview reset duration

Format

igmp-snooping preview [**time-once** *time-once*] [**time-interval** *time-interval*] [**time-reset** *time-reset*] [**permit-times** *permit-times*]
no igmp-snooping preview [**time-once** *time-once*] [**time-interval** *time-interval*] [**time-reset** *time-reset*] [**permit-times** *permit-times*]

Parameter Description

parameter	Parameter Description	Value
<i>time-once</i>	Single preview duration (seconds)	[60-300]
<i>time-interval</i>	Preview interval (seconds)	[180-600]
<i>time-reset</i>	Preview reset duration (seconds)	[1800-7200]
<i>permit-times</i>	Number of previews allowed	[1-10]

33.23.igmp-snooping profile

Function

Configure the **profile** index in the global view and configure the **profile** attributes in the **profile** view

Format

Create an index in the global view Create an index in the global view Create an index in the view and enter the **profile** view

igmp-snooping profile <*profile_id*>

Add under **profile** view or add under view or parameter

profile limit <*type*>

ip range <*start_ipv4*><*end_ipv4*> [**vlan** <*vid*>]

no ip range [<*start_ipv4*><*end_ipv4*>] [**vlan** <*vid*>]

mac range <*start_mac*><*end_mac*> [**vlan** <*vid*>]

no mac range [<*start_mac*><*end_mac*>] [**vlan** <*vid*>]

description <*name*>

no description

Deleting an index in the global viewDeleting an index in the global view

no igmp-snooping profile [<*profile_id*>]

Parameter Description

parameter	Parameter Description	Value

<i>profile_id</i>	Profile Index	[1-128]
<i>Type</i>	Profile Type	[permit,deny], default value is permit
<i>start_ipv4</i>	Starting ipv4 multicast address	IPv4 multicast address, format xxxx , for example: 225.0.0.1
<i>end_ipv4</i>	End ipv4 multicast address	IPv4 multicast address, format xxxx , for example: 228.0.0.1
<i>start_mac</i>	Starting mac multicast address	Mac multicast address, in the format of x:x:x:x:x:x For example: 01:00:5e:00:00:1
<i>end_mac</i>	End mac multicast address	Mac multicast address, in the format of x:x:x:x:x:x For example: 01:00:5e:00:00:3
<i>Name</i>	Profile Name	String<1-32>

33.24.igmp-snooping profile refer

Function

Port view and VLAN view configuration reference **profile**

Format

igmp-snooping profile refer <*profile_id*> **no igmp-snooping profile refer**

Parameter Description

	Parameter Description	Value
Parameter <i>profile_id</i>	Profile Index	[1-128]

33.25.igmp-snooping {permit | deny} group all

Function

Configure to allow or deny all multicast group learning in the global view

Format

igmp-snooping {permit | deny} group all

Parameter Description

none

33.26.igmp-snooping {permit | deny} group

Function

Configuring multicast blacklist and whitelist in port view

Format

igmp-snooping *type* {**group** *mac* | **group-range** *mac* **multi-count** *num*} **vlan** *vid*
no igmp-snooping *type* **group** [*mac* **vlan** *vid*]

Parameter Description

parameter	Parameter	Value
<i>Type</i>	Description List Type	[permit,deny]
<i>Mac</i>	mac multicast address	Mac multicast address, in the format of x:x:x:x:x:x For example: 01:00:5e:00:00:1
<i>Num</i>	Number of multicasts	[1-64]
<i>Vid</i>	VLAN ID	[1-4094]

33.27.igmp-snooping group-limit

Function

Configure the maximum number of learnable multicast messages in port view

Format

igmp-snooping group-limit <*num*> **no**
igmp-snooping group-limit

Parameter Description

parameter	Parameter Description	Value
<i>Num</i>	Number of multicast groups	[0-1024] , default value 1024

33.28.igmp-snooping fast-leave

Function

Enable or disable the express leave mode in the port view. When the function is enabled, when the port is down, **the group** related to it will

The entry is deleted immediately.

Format

[no] igmp-snooping fast-leave

Parameter Description

none

33.29.igmp-snooping multicast vlan

Function

Configure multicast vlan in port view . After this function is enabled, no matter which VLAN the **IGMP** message received by the port belongs to ,

The switch will modify it to a multicast **VLAN**.

Format

igmp-snooping multicast-vlan <vid>
no igmp-snooping multicast-vlan

Parameter Description

parameter	Parameter Description	Value
<i>Vid</i>	VLAN ID	[1-4094]

33.30.igmp-snooping drop

Function

Configure the port view to discard query or report packets

Format

igmp-snooping drop {query | report}
no igmp-snooping drop {query | report}

Parameter Description

none

33.31.show igmp-snooping

Function

Check the **IGMP Snooping** configuration

Format

show igmp-snooping

Parameter Description

none

33.32.show igmp-snooping router-port

Function

View Routing Ports

Format

show igmp-snooping { router-dynamic | router-static}

Parameter Description

none

33.33.show igmp-snooping mcast-table

Function

View dynamic **group** entries

Format

show ip igmp snoopingmcast-table [ethernet *port-id* | ip-addressgroup-ip]

Parameter Description

	Parameter Description Value	
Parameter	Port Number	String<5-6>, the format is: stack number/slot number/port number
<i>port-id group-ip</i>	Multicast IP address IPv4	multicast address, in the format of X:X:X:X

33.34.show igmp-snooping static-table

Function

View static **group** entries

Format

show igmp-snooping static-table

Parameter Description

none

33.35.show igmp-snooping fib-table

Function

View simple table information based on **IP** forwarding

Format

show igmp-snooping fib-table

Parameter Description

none

33.36.show igmp-snooping preview

Function

View multicast preview information

Format

show igmp-snooping preview [status]

Parameter Description

none

33.37.show igmp-snooping profile

Function

View the current **profile** configuration and the reference configuration to **the profile**

Format

show igmp-snooping profile [profile_list | vlan vid | ethernet port-id[to ethernet port-id]]

Parameter Description

parameter	Parameter Description	Value
<i>profile_list</i>	Profile index number list	String<1-128>, any combination of values in the range [1,128], Use "," and "-" to connect For example: 2,4,7-9
<i>Vid</i>	VLAN number	[1-4094]
<i>port-id</i>	Port Number	Port number, in the format of device_id/slot_id/port_id , for example: 0/0/1

33.38.show igmp-snooping statistics

Function

Check multicast packet statistics

Format

show igmp-snooping statistics {all | vlan vid| ethernet port-id [to ethernet port-id]}

Parameter Description

parameter	Parameter Description	Value

<i>Vid</i>	VLAN Number	[1-4094]
<i>port-id</i>	Port Number	Port number, in the format of device_id/slot_id/port_id , for example: 0/0/1

33.39. Configuration Example

#Networking

TC A ----- 22 DUT 21 ----- TC B

14

|
PC

Enable multicast listening function

DUT(config)#igmp-snooping

DUT(config)#igmp-snooping enable-vlan 1

#TC A sends a report message (joining multicast group 225.0.0.2)

#View the multicast member ports detected

DUT(config)#show igmp-snooping mcast-table

Show IGMP-snooping multicast table:

Vlan ID: 1, Group IP: 225.1.1.1

Port: e0/0/1, Filter Mode: exclude, Static: false

Expire: 0, V1 Expire: 00:02:20, V2 Expire: 0, V3 Expire: 0

Forward Source(0): N/A

Block Source(0) : N/A

Total entries: 1

DUT(config)#show igmp-snooping mcast-table ip-address 225.1.1.1

Show IGMP-snooping multicast table:

Vlan ID: 1, Group IP: 225.1.1.1

Port: e0/0/1, Filter Mode: exclude, Static: false

Expire: 0, V1 Expire: 00:02:10, V2 Expire: 0, V3 Expire: 0

Forward Source(0): N/A

Block Source(0) : N/A

Total entries: 1

34. Static Layer 2 Multicast Configuration

34.1. multicast mac-address

Function

Configure **MAC** format static Layer 2 multicast.

Format

multicast mac-address <mac> **vlan** <vid>**interface** {all | ethernet <port id>}
no multicast [mac-address <mac> **vlan** <vid>[**interface** {all | ethernet <port id>}]]

Parameter Description

parameter	Parameter Description	Value
<i>Mac</i>	mac multicast address	Mac multicast address, in the format of x:x:x:x:x:x For example: 01:00:5e:00:00:1
<i>vid</i>	VLAN number	[1-4094]
<i>port id</i>	Port Number	Port number, in the format of device_id/slot_id/port_id , for example: 0/0/1

34.2. show multicast

Function

View the multicast table information

Format

show multicast [mac-address<mac>]

Parameter Description

parameter	Parameter Description	Value
<i>Mac</i>	mac multicast address	Mac multicast address, in the format of x:x:x:x:x:x For example: 01:00:5e:00:00:1

34.3. Configuration Example

Network topology

TC1-----DUT(21)-----TC2/TC3/TC4

Configuring Static Multicast Group Members

DUT(config)#multicast mac-address 01:00:5e:00:00:01 vlan 1 interface ethernet 0/0/1
DUT3(config)#show multicast

show multicast table information

MAC Address : 01:00:5e:00:00:01

VLAN ID : 1

Static port list : e0/0/1.

IGMP port :

list Dynamic port list:

Total entries: 1

35. System Information

35.1. show version

Function

View version information

Format

show version

Parameter Description

none

35.2. show system

Function

View operation information

Format

show system

Parameter Description

none

36. User Management Configuration

36.1. username *user_name*

Function

Create User

Format

username *user_name* *privilegelevel* *password{0 | 7}* *password*
nousername *user_name*

Parameter Description

parameter	Parameter	Value
<i>user_name</i>	Description	STRING<1-64>
<i>level</i>	Username	INTEGER<0-15>
<i>password</i>	Permission Password	STRING<1-128>

36.2. username change-password

Function

Change Password

Format

username change-password

Parameter Description

none

36.3. username *failmax[user_name]fail_times*

Function

(Cancel) Enable the silent function

Format

username failmax [user_name]fail_times
nouusername failmax [user_name]

Parameter Description

parameter	Parameter Description	Value
<i>user_name</i>	Username	STRING<1-64>
<i>fail_times</i>	times	INTEGER<3-8>

36.4. username silent-time

Function

Configure the quiet time during which users cannot log in.

Format

username silent-time <min>

Parameter Description

parameter	Parameter Description	Value
min	time	INTEGER<2-1440>, unit: min

36.5. username *online-maxuser_namenum*

Function

Configure the number of simultaneous online users

Format

(no)username online-max *user_name* *num*

Parameter Description

parameter	Parameter Description	Value
<i>user_name</i>	Number of	STRING<1-64>
num	U usernames	INTEGER<1-100>

36.6. username *user_name* terminal

Function

Configuring the User Login Terminal

Format

username *user_name* **terminal** {all | console | telnet | ssh| web | none}

Parameter Description

none

36.7. stop*user_name*

Function

Privileged mode forces users to log off

Format

stop *user_name*

Parameter Description

parameter	Parameter Description	Value
<i>user_name</i>	username	STRING<1-64>

36.8. show username

Function

View user information

Format

show username [*user_name*]

Parameter Description

parameter	Parameter Description	Value
<i>user_name</i>	username	STRING<1-64>

36.9. show users

Function

View online user information

Format

show users

Parameter Description

none

36.10.show username silent

Function

View Silent Users

Format

show username silent

Parameter Description

none

36.11. Configuration Example

#Create user aa, view user

DUT2(config)#username aa password 0 123456

DUT2(config)#show username

display user information

User Name	Role

admin	ADMIN
aa	NORMAL

37. SSH Configuration

37.1. ssh

Function

Enable (or disable) **SSH** globally

Format

ssh
no ssh

Parameter Description

none

37.2. ssh limit

Function

Globally configure **SSH** connection user restrictions

Format

ssh limit <limit>
nossh limit

Parameter Description

parameter	Parameter	Value
limit	Description Number of logged-in users system	[0-5]

37.3. crypto key generate[dss | ecdsa | rsa]

Function

Generate a key in privileged mode

Format

crypto key generate [dss | ecdsa | rsa]

Parameter Description

none

37.4. crypto key zeroize[dss | ecdsa | rsa]

Function

Clearing keys in privileged mode

Format

crypto key zeroize [dss | ecdsa | rsa]

Parameter Description

none

37.5. stop vty

Function

Force close the virtual terminal in privileged mode

Format

stop vty [all | <ld>]

Parameter Description

parameter	Parameter Description	Value
ld	Virtual terminal ID	0-5

37.6. Configuration Example

Networking

PC-----DUT

Configuration

```
DUT(config)#interface vlan-interface 1
DUT(config-if-vlanInterface-1)#ip address 192.168.1.11 255.255.255.0
DUT(config-if-vlanInterface-1)#exit
DUT(config)#ssh
DUT(config)#exit
DUT#crypto key generate rsa
```

#PC uses Xshell virtual terminal software SSH to log

in to DUT [D:~]\$ ssh

192.168.1.11 Connecting to 192.168.1.11:22...

Connection established.

To escape to local shell, press 'Ctrl+Alt+J'.

WARNING! The remote SSH server rejected X11 forwarding request.

Password(1-32 chars):*****

Admin>

38. Manage IP restriction configuration

38.1. login-access-list telnet

Function

Configure the network addresses that can be accessed through telnet

Format

login-access-list *telnet**ipaddresswildcard*

no login-access-list telnet{all | *ipaddresswildcard*}

Parameter Description

parameter	Parameter	Value
<i>ipaddress</i>	Description Network IP address	that is allowed to access, in dotted decimal format, such as 192.168.1.11
<i>wildcard</i>	Network reverse mask	0.0.0.0-255.255.255.255

38.2. login-access-list ssh

Function

Configure the network addresses that are allowed to be accessed via **ssh**

Format

```
login-access-list sshipaddresswildcard  
no login-access-list ssh{all | ipaddresswildcard}
```

Parameter Description

parameter	Parameter	Value
<i>ipaddress</i>	Description Network IP address that is allowed to access, in dotted decimal format, such as 192.168.1.11 Network	
<i>wildcard</i>	reverse mask	0.0.0.0-255.255.255.255

38.3. login-access-list snmp

Function

Configure the network addresses that are allowed to be accessed through **SNMP**

Format

```
login-access-list snmpipaddresswildcard  
no login-access-list snmp{all | ipaddresswildcard}
```

Parameter Description

parameter	Parameter Description	Value
<i>ipaddress</i>	The network IP address that is allowed to access, in dotted decimal notation, for example, 192.168.1.11 Network reverse	
<i>wildcard</i>	mask	0.0.0.0-255.255.255.255

38.4. login-access-list web

Function

Configure the network addresses that are allowed to be accessed via **the web**

Format

```
login-access-list webipaddresswildcard  
no login-access-list web{all | ipaddresswildcard}
```

Parameter Description

parameter	Parameter	Value
<i>ipaddress</i>	Description Network IP address that is allowed to access, in dotted decimal format, such as 192.168.1.11 Network	
<i>wildcard</i>	reverse mask	0.0.0.0-255.255.255.255

38.5. login-access-list privilege-limit

Function

Configure the number of users who can log in to privileged mode through **Telnet** at the same time

Format

login-access-list privilege-limit *num*
no login-access-list privilege-limit

Parameter Description

parameter	Parameter	Value
num	Description Value	0-5

38.6. show login-access-list

Function

View configuration information

Format

show login-access-list

Parameter Description

none

39. Telnet Server Configuration

39.1. telnet enable

Function

Enable Function

Format

telnet enable

Parameter Description

none

39.2. telnet disable

Function

Disable the enable function

Format

telnet disable

Parameter Description

none

39.3. telnet limit

Function

Configuring a Limit on the Number of **Telnet** Users

Format

telnet limit <num>
notelnet limit

Parameter Description

parameter	Parameter Description	Value
num	Specific value	0-5

39.4. stopvty

Function

Force close the virtual terminal in privileged mode

Format

stop vty [all | <ld>]

Parameter Description

parameter	Parameter	Value
ld	Description Virtual terminal ID	0-5

39.5. show telnet limit

Function

View the number of logins to the **telnet** service

Format

show telnet limit

Parameter Description

none

39.6. Configuration Example

Networking

PC-----DUT

Order

DUT(config)#interface vlan-interface 1 DUT(config-if-

vlanInterface-1)#ip address 192.168.1.61 255.255.255.0 DUT(config-if-vlanInterface-1)#ipv6 address 2001:1000::61/64 //

Configure the number of remote logins

DUT(config)#telnet limit 2 //Open remote

DUT(config)#telnet enable

PC uses **Xshell** virtual terminal **IPv4** address **telnet** to log

in to **DUT** **[D:~]\$ telnet**

2001:1000::61 Connecting to 2001:1000::61:23...

Connection established.

To escape to local shell, press 'Ctrl+Alt+J'.

Linux 4.19.1 (DUT2) (11:07 on Monday, 06 September 2021)

Username(1-64 chars):admin

Password(1-128 chars):*****

DUT>

PC uses Xshell virtual terminal IPv6 address telnet to log in to DUT

[D:\~]\$ telnet 192.168.1.61

Connecting to 192.168.1.61:23...

Connection established.

To escape to local shell, press 'Ctrl+Alt+']'.

Linux 4.19.1 (DUT2) (11:12 on Monday, 06 September 2021)

Username(1-64 chars):admin

Password(1-128 chars):*****

DUT>enable

DUT#show telnet limit // Check the number of remote logins

Telnet user limit is 2, current is 2.login is 2

40. Telnet Client Configuration

40.1. Telnet

Function

Telnet connects to server in privileged mode

Format

telnet <ip> [<port>]

Parameter Description

parameter	Parameter	Value
ip	Description Server IP address	IP address, dotted decimal, for example 192.168.1.1

40.2. Configuration Example

Networking

DUT----- Server (192.168.1.11)

Order

DUT#telnet 192.168.1.11

Trying to connect to 192.168.1.11 ...

Connected to 192.168.1.11 successfully."Ctrl+" to exit.

Username(1-32 chars):admin

Password(1-32 chars):*****

Server>exit

The telnet client has exited..

DUT#

Telnet6Client Configuration

41. WEB Configuration

41.1. http

Function

Globally (dis)enable **HTTP**

Format

http enable [*port port*] **http**

disable

Parameter Description

parameter	Parameter Description	Value
port	Protocol port number	[3-65535], default 80

41.2. http enable ssl

Function

Enable (or disable) **HTTPS** globally

Format

http enable ssl [*port port*] **http**

disable

Parameter Description

parameter	Parameter	Value
port	Description Protocol Port Number	[3-65535]

41.3. load server-certificate

Function

Download the certificate file required for the **HTTPS** protocol in privileged mode

Format

```
load server-certificate ftp {inet | inet6}<server-ip><filename><user><password> load
server-certificate tftp {inet | inet6}<server-ip><filename>
```

Parameter Description

parameter	Parameter	Value
server-ip	Description Server IP address	Legal IP address
filename	The full name of the certificate file is 1-64 characters.	
user	FTP login username 1-32 characters	
password	FTP login password 1-32 characters	

41.4. load private-key

Function

Download the key file required for the **HTTPS** protocol in privileged mode

Format

```
load private-key ftp[inet | inet6] <server-ip><filename><user><password> load
private-key tftp[inet | inet6] <server-ip><filename>
```

Parameter Description

	Parameter Description	Value
Parameter	Server IP address Legal IP key	file name Full
server-ip filename	name 1-64 characters	
user	FTP login username 1-32 characters	
password	FTP login password 1-32 characters	

41.5. http timeout

Function

Globally configure **HTTP** timeout

Format

http timeout <*time-value*>
no http timeout

Parameter Description

parameter	Parameter Description	Value
time-value	HTTP login timeout between	[60-36000]

41.6. Configuration Example

Networking

PC-----DUT

Order

Enable **http** function

DUT(config)#http enable

42. SNMP Management Configuration

42.1. snmp-server contact

Function

Configuring system **contact**

Format

snmp-server contact <*value*>
nosnmp-server contact

Parameter Description

parameter	Parameter Description	Value
<i>value</i>	Contact Details	STRING<1-255>

42.2. snmp-server location

Function

Configuring system **location**

Format

snmp-server location <*value*>
nosnmp-server location

Parameter Description

parameter	Parameter Description	Value

<i>value</i>	Location	STRING<1-255>

42.3. snmp-server name

Function

Configuration system **name**

Format

snmp-server *name*<*value*>
nosnmp-server **name**

Parameter Description

parameter	Parameter Description	Value
<i>value</i>	name	STRING<1-255>

42.4. snmp-server max-packet-length

Function

Configure system **max-packet-length**

Format

snmp-server max-packet-length <*value*> **nosnmp-server max-packet-length**

Parameter Description

parameter	Parameter	Value
<i>value</i>	Description Specific Value	484-8000

42.5. snmp-server view

Function

Configuration View

Format

snmp-server view <*view-name*><*oid*> {**exclude** | **include**} **nosnmp-server view** <*view-name*> <*oid*>

Parameter Description

parameter	Parameter Description	Value
view-name	The view name	STRING<1-32>
oid	mib tree oid does	STRING<1-64>
exclude	not contain the configured oid . It	
Incline	only contains the configured oid .	

42.6. snmp-server community

Function

Configuring a Community Name

Format

snmp-server community *name**privilege**type* [**view** *view*] **no snmp-server community** *id*

Parameter Description

parameter	Parameter	Value
name	Description Ciphertext Community Name	STRING<1-20> Permission Type View
privilege	Name	[rw,ro]
type	Community	[permit,deny]
view	Name Id	STRING<1-32>
id		[1-8]

42.7. snmp-server group

Function

Configure v3 group

Format

snmp-server group *name* **3** *authentication-type* [**context** *context*] [**notify** *notify-view*] [**read** *read-view*] [**write** *write-view*] **no snmp-server group** *name* **3** *authentication-type* [**context** *context*]

Parameter Description

parameter	Parameter Description	Value
name	Group Name	STRING<1-32>
authentication-type <i>Authentication encryption type</i>		[noauthpriv,auth,priv] , respectively means no authentication and no priv Encryption, Authentication Only, Authentication Encryption
context	The view that the context is	STRING<1-32>
read-view	configured to read must be configured Place	STRING<1-32>
write-view	The view written must be equipped with Place	STRING<1-32>
notify-view	Message view, must be configured Place	STRING<1-32>

42.8. snmp-server user

Function

Configuring v3 users

Format

snmp-server user *username* *groupname* [**remote** *serverip* [**udp-port** *portid*]] [**auth**

{md5 | sha} {auth-key [encrypt-authkey] *authkey* | auth-password [encrypt-authpassword] *authpassword*}] [priv des {priv-key [encrypt-privkey] *privkey* | priv-password [encrypt-privpassword] *privpassword* }]

no snmp-server user *username* [remote *serverip* [udp-port *portid*]]

Parameter Description

parameter	Parameter Description	Value
username	Username,	STRING<1-32>
groupname	group	STRING<1-32>
serverip	name, remote	IP address, dotted decimal notation, such as: 192.168.1.1
portid	address , UDP port number	INTEGER<1-65535>
authkey	Authentication Key	When the encryption algorithm is md5, the value is STRING<32-32>; When the confidentiality algorithm is sha , the value is STRING<40-40>.
authpassword	Authentication passwordEncryption	STRING<1-32>
		STRING<32-32>
keyprivkeyprivpassword	Encryption password	STRING<1-32>

42.9. snmp-server enable [traps|informs]

Function

Enable traps/informs

Format

snmp-server enable [traps | informs] [bridge | gbn | gbnsavecfg | interfaces | rmon | snmp]*
no snmp-server enable traps/informs

Parameter Description

none

42.10.snmp-server trap-source

Function

Configure the source of the trap message

Format

snmp-server trap-source <ip-address>
no snmp-server trap-source

Parameter Description

Parameter	Parameter Description	Value
ip-address	Interface IP address ,	dotted decimal, such as: 192.168.1.1

42.11.snmp-server host

Function

Configure the notification destination host

Format

snmp-server host *ipaddress* [**version** {**1** | **2c** | **3**} **security-name** [**udp-port** *portid*]
[**notify-type** [**bridge** | **gbn** | **gbnsavecfg** | **interfaces** | **rmon** |
snmp]*] **no snmp-server host** *ipaddress***security-name** {**1** | **2c** | **3**}

Parameter Description

parameter	Parameter Description	Value
ip <i>ipaddress</i>	Destination host	IP address, dotted decimal notation, such as: 192.168.1.1
security-name <i>security name</i>		STRING<1-32>
	UDP destination port ID	INTEGER<1-65535> portid

42.12.snmp-server engineid

Function

Configuring **engineid**

Format

snmp-server engineid {**local** | **remote** *ip-address* [**udp-port** *portid*]} **engine-id**
no snmp-server engineid {**local** | **remote** *ip-address* [**udp-port** *portid*]}

Parameter Description

	Parameter	Value
Parameter ip-	Description Remote server	address IP address, dotted decimal, such as: 192.168.1.1
address	UDP destination port ID	INTEGER<1-65535> engine id
portid engine-id		STRING<1-24>

42.13.show snmp-server community

Function

View **community** information

Format

show snmp-server community

Parameter Description

none

42.14.show snmp-server contact

Function

View **contact** information

Format

show snmp-server contact

Parameter Description

none

42.15.show snmp-server engineid

Function

View **engineid** information

Format

show snmp-server engineid {local | remote}

Parameter Description

none

42.16.show snmp-server group

Function

View Group Information

Format

show snmp-server group

Parameter Description

42.17.show snmp-server host

Function

View the notification information host

Format

show snmp-server host

Parameter Description

none

42.18.show snmp-server location

Function

View **location** information

Format

show snmp-server location

Parameter Description

none

42.19.show snmp-server max-packet-length

Function

View the maximum **snmp** packet length

Format

show snmp-server max-packet-length

Parameter Description

none

42.20.show snmp-server name

Function

View **snmp** name

Format

show snmp-server name

Parameter Description

none

42.21.show snmp-server notify

Function

View **notify**

Format

show snmp-server notify

Parameter Description

none

42.22.show snmp-server user

Function

View **v3** user information

Format

show snmp-server user

Parameter Description

none

42.23.show snmp-server view

Function

View the view corresponding to the **oid**

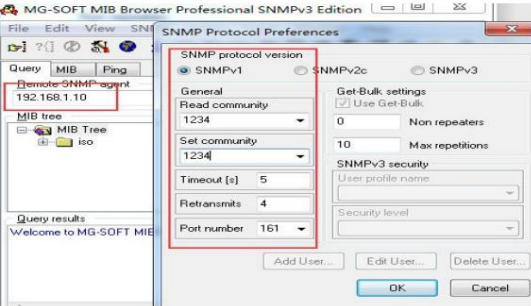
Format

show snmp-server view

Parameter	Description
	none

42.24. Configuration Example

```
#Configure the switch interface IP address
DUT2(config)#int vlan-interface 1 DUT2(config-if-
vlanInterface-1)#ip add 192.168.1.10 255.0.0.0 DUT2(config-if-vlanInterface-1)#exit #Configure a
readable and writable community name and enable the SNMP
function
DUT2(config)#snmp-server community 1234 rw permit #Configure the alarm host
DUT2(config)#snmp-server host 192.168.1.1 version 1 1234 DUT2(config)#snmp-server enable
traps #Install the MIB browser software and open it for connection
```



```
#Verify the configuration results and view the snmp group
DUT2(config)#show snmp-server community
Show snmp community information
index community priority state view-name permit
1 1234 rw iso
```

```
#View the alarm host
DUT2(config)#show snmp-server host
Show SNMP trap host information
SNMP host ip security version
192.168.1.1 1234 1
```

43. RMON Configuration

43.1. rmon statistics

Function

Create a statistics group in port mode

Format

rmon statistics statisticid[ownername]

no rmon statistics [statisticid]

Parameter Description

parameter	Parameter Description	Value
<i>statisticid</i>	Statistics Group ID	INTEGER<1-65535>
<i>name</i>	User name STRING<1-127>	

43.2. rmon history

Function

Check the history group created in port mode

Format

rmon history historyid bucket bucket-num interval interval [ownername] **no**

rmon history [historyid]

Parameter Description

parameter	Parameter Description	Value
<i>historyid</i>	History Group ID	INTEGER<1-65535>
<i>bucket-num</i>	Number of	INTEGER<1-65535>
<i>interval</i>	records Sampling interval (seconds)	INTEGER<1-3600> User name
<i>name</i>	STRING<1-127>	

43.3. rmon alarm

Function

Create an alarm group

Format

rmon alarm alarmidmiboidinterval {absolute | delta} rising thresholdvaleventid falling

thresholdval eventid [owner name]

no rmon alarm [alarmid]

Parameter Description

parameter	Parameter Description	Value
<i>alarmid</i>	Alarm group ID	INTEGER<1-65535>
<i>miboid</i>	MIB object identifier	STRING<1-127> , dotted decimal, such as: 1.3.6
<i>interval</i>	Sampling interval value (seconds)	INTEGER<1-3600> The limit of
<i>thresholdval</i>	sampling statistics value	INTEGER<1-2147483647>
<i>eventid</i>	Event ID	INTEGER<1-65535>
<i>name</i>	User name STRING<1-127>	

43.4. rmon event

Function

Create an event table entry

Format

rmon event *eventid* [**description** *desc*] {**none** | **log** | **trap** *commname* | **log-trap** *commname*}

[**owner** *name*]

no rmon event [*eventid*]

Parameter Description

parameter	Parameter Description	Value
<i>eventid</i>	Event Group ID	INTEGER<1-65535>
<i>desc</i>	Description string	STRING<1-127>
<i>commname</i>	Group Name	STRING<1-127>
<i>name</i>	User name STRING<1-127>	

43.5. show rmon alarm

Function

View alarm group information

Format

show rmon alarm [*alarmid*]

Parameter Description

parameter	Parameter Description	Value
<i>alarmid</i>	Alarm group ID	INTEGER<1-65535>

43.6. show rmon event

Function

Event Information View

Format

show rmon event [*eventid*]

Parameter Description

parameter	Parameter	Value
<i>eventid</i>	Description Event Group ID	INTEGER<1-65535>

43.7. show rmon eventlog

Function

Event log information viewing

Format

show rmon eventlog [*eventid*]

Parameter Description

parameter	Parameter	Value
index	Description Table Index	1-65535

43.8. show rmon history

Function

View historical group information

Format

show rmon history interface [*ethernet portid* [*to ethernetportid*]*]

Parameter Description

parameter	Parameter Description	Value
<i>portid</i>	Port Number	STRING<5-6>, slash marks decimal, such as: 0/0/1

43.9. show rmon statistics

Function

Statistics group information view

Format

show rmon statistics [*ethernetportid*]*

Parameter Description

parameter	Parameter Description	Value
<i>portid</i>	Port Number	STRING<5-6>, slash marks decimal, such as: 0/0/1

43.10. Configuration Example

Networking

PC-----DUT

Configuration

```
DUT(config)#int eth 0/0/1
DUT(config-if-ethernet-0/0/1)#rmon statistics
1 DUT(config-if-ethernet-0/0/1)#exit
DUT(config) #int eth
0/0/2 DUT(config-if-ethernet-0/0/2)#rmon history 10 buckets 5
interval 10 DUT(config-if-
ethernet-0/0/1)#exit
DUT(config) #rmon event 1 log DUT(config)#rmon alarm 1 1.3.6.1.2.1.16.1.1.1.5.1 10 absolute rising 10000 1 falling 500 1
```

44. System debugging configuration

44.1. ping

Function

Check whether the **ipv4** host is reachable

Format

ping [-s *sourceip*] [-c *number*] [-i *tll*][-l *length*] [-t *timeout*] *dstip*

Parameter Description

parameter	Parameter Description	Value
<i>sourceip</i>	Number of	Dotted decimal notation, such as: 192.168.1.1
<i>number</i>	packets sent by source IP	INTEGER<1-2147483647>
<i>tll</i>	TTL	INTEGER<1-255>
<i>length</i>	Packet length Timeout	INTEGER<0-4064>, unit byte
<i>timeout</i>	Destination IP	INTEGER<1-60>, unit s,
<i>dstip</i>		dotted decimal, such as: 192.168.1.2

44.2. ping6

Function

Check whether the **ipv6** host is reachable

Format

ping6 [-h *hop*][-s *len*][-c *count*] [-a *sourceip*] [-w *timeout*] [-t]*dstip*

Parameter Description

Parameter	Parameter Description	Value
<i>hop</i>	Number	INTEGER<1-255>
<i>len</i>	of hops Packet	INTEGER<20-8100>, unit: bytes
<i>count</i>	length Number of	INTEGER<1-2147483647>
<i>sourceip</i>	packets	Colons are used to represent hexadecimal numbers, such as: 2001::1
<i>timeout</i>	sent Source IP	INTEGER<1-60>, unit: s
<i>dstip</i>	Timeout time Target IP	Colons are used to represent hexadecimal numbers, such as: 2001::2

44.3. tracer

Function

Detect the path taken by the destination host

Format

tracer [-c | -u | -s *sourceip*] [-f *tll*] [-h *maxhops*] [-w *timeout*] *dstip*

Parameter Description

parameter	Parameter	Value
tll	Description	1-255
-C	Hop Count ICMP Mode	

-u	udp mode	
sourceip	Source	Dotted decimal notation, such as: 192.168.1.1
ttl	IP Hop	INTEGER<1-255>
maxhops	Count Maximum	INTEGER<1-255>
timeout	Hop Count	INTEGER<1-60>, unit s, dotted
dstip	Timeout Target IP	decimal, such as: 192.168.1.1

44.4. hostname

Function

Configuring the Hostname

Format

hostname <name>

Parameter Description

parameter	Parameter Description	Value
name	Device Name	STRING<1-64>

44.5. help

Function

View help information

Format

help

Parameter Description

none

44.6. screen-rows per-page

Function

Configuring the number of lines displayed on the split screen in privileged mode

Format

screen-rows per-pagnumber
no screen-rows per-page

Parameter Description

parameter	Parameter Description	Value
<i>number</i>	Show command displays The number of rows to display, the default is 25	INTEGER<0-256>, 0 means display all

44.7. show screen-rows per-page

Function

View split-screen configuration information

Format

show screen-rows per-page

Parameter Description

none

44.8. Line width

Function

Configure the maximum number of characters that can be displayed on each command line in privileged mode

Format

line width *number*

No line width

Parameter Description

parameter	Parameter Description	Value
<i>number</i>	Maximum length of each command line Number of symbols, default 78	INTEGER<78-256>

44.9. show line width

Function

View **line** configuration information

Format

show line width

Parameter Description

none

44.10.cls

Function

Clear screen

Format

cls

Parameter Description

none

44.11.Terminal language

Function

Configure the terminal display language in privileged mode

Format

terminal language { chinese | english }

Parameter Description

none

44.12.show tech-support

Function

View **tech-support** information

Format

show tech-support [nowat|product-sn]

Parameter Description

none

44.13.buildrun mode

Function

Configure loading mode in privileged mode

Format

buildrun mode {continue|stop}

Parameter Description

parameter	Parameter	Value
continue	Description Keyword, indicating loading When configuration fails, Continue loading configuration	none
stop	Keyword, indicating loading Configuration fails. Serial stop loading configuration	none

44.14.Configuration Mode (View) Switching

Function

Configuration view (mode) switching, see the command format for details;

Format

Enter execution mode immediately after logging in: Enter execution mode immediately after logging in: Switch>

enable Enter privileged mode from execution mode (Enter **privileged (enable) mode** from execution mode: **Switch# system-view** Enter global mode from **privileged (enable) mode: Switch(config)# end** Switch to **enable** mode, also known as privileged mode

exit Return to the previous mode

quit Log out

Parameter Description

none

44.15.show memory

Function

View memory information

Format

show memory

Parameter Description

none

44.16.show cpu-utilization

Function

Check **CPU** utilization

Format

show cpu-utilization

Parameter Description

none

45. Manage timeout configuration

45.1. timeout

Function

Configuring access timeout in privileged mode

Format

timeout <num>
notimeout

Parameter Description

parameter	Parameter	Value
num	Description Value, default	20min 1-480 min

45.2. Show timeout

Function

View timeout configuration in privileged mode

Format

showtimeout

46. Reboot Configuration

46.1. reboot

Function

Restart the system in privileged mode

Format

reboot

Parameter Description

none

46.2. auto-reboot in

Function

Configuring a single automatic restart

Format

auto-reboot in hours *hour minutes min*
no auto-reboot

Parameter Description

parameter	Parameter Description	Value
hour	Hours	[0-23]
min	and Minutes	[0-59]

46.3. auto-rebootat

Function

Configuring periodic automatic restart

Format

auto-reboot at *hh:mm:ss [yyy/mm/dd [daily |fri|mon|sat|sun|thu|tue|wed weekly]* **no auto-reboot**

Parameter Description

parameter	Parameter Description	Value
hour	Hours	[0-23]
min	and Minutes	[0-59]

hh:mm:ss	Hours, minutes,	Colons are used to separate decimal numbers, such as: 8:10:10
yyyy/mm/dd	seconds, year, month, day	Slashes are used to separate decimal numbers, such as: 2022/1/1

46.4. show auto-reboot

Function

View the automatic restart configuration

Format

show auto-reboot

Parameter Description

none

46.5. Configuration Examples

#Automatically restart at 12 o'clock every day

DUT2(config)#auto-reboot at 12:00:00 daily

47. File Download

47.1. load application ftp

Function

Use **FTP** to download host programs in privileged mode

Format

load application ftp {inet serverip | inet6 serveripv6}filenameusername password

Parameter Description

Parameter	Parameter Description	Value
<i>serverip</i>	FTP server IP address in dotted decimal format, such as: 192.168.1.1	
<i>serveripv6</i>	ftp server ipv6 address site	Colons are used to represent hexadecimal numbers, such as: 2001::1
<i>filename</i>	Host program file STRING<1-64>	
<i>username</i>	FTP server username STRING<1-32>	
<i>password</i>	ftp server user password code	STRING<1-32>

47.2. load application tftp

Function

Use **tftp** to download host programs in privileged mode

Format

load application tftp {**inet** *serverip* | **inet6** *serveripv6*}*filename*

Parameter Description

	Parameter Description Value	
Parameter <i>serverip</i>	FTP server IP address in dotted decimal format, such as: 192.168.1.1	
<i>serveripv6</i>	ftp server ipv6 address site	Colons are used to represent hexadecimal numbers, such as: 2001::1
<i>filename</i>	Host program file STRING <1-64>	

47.3. load application xmodem

Function

Use **xmodem** to download host programs in privileged mode

Format

load application xmodem

Parameter Description

none

47.4. load whole-bootrom ftp

Function

Use **FTP** to download the **bootrom** program in privileged mode

Format

load whole-bootrom ftp {**inet** *serverip* | **inet6** *serveripv6*}*filename**username password*

Parameter Description

	Parameter Description Value	
Parameter <i>serverip</i>	FTP server IP address in dotted decimal format, such as: 192.168.1.1	
<i>serveripv6</i>	ftp server ipv6 address 2001::1.	Colons are used to represent hexadecimal addresses , such as
<i>filename</i>	Host program file STRING <1-64>	

<i>username</i>	FTP server username	STRING<1-32>
<i>password</i>	ftp server user password code	STRING<1-32>

47.5. load whole-bootrom tftp

Function

Use **tftp** to download the **bootrom** program in privileged mode

Format

load whole-bootrom tftp {**inet** *serverip* | **inet6** *serveripv6*}*filename*

Parameter Description

	Parameter Description Value	
Parameter <i>serverip</i>	FTP server IP address in dotted decimal format, such as: 192.168.1.1	
<i>serveripv6</i>	ftp server ipv6 address site	Colons are used to represent hexadecimal numbers, such as: 2001::1
<i>filename</i>	Host program file	STRING<1-64>

47.6. load whole-bootrom xmode

Function

Download **bootrom** program using **xmodem** in privileged mode

Format

load whole-bootrom xmodem

Parameter Description

none

47.7. load configuration xmodem

Function

Use **xmodem** to download configuration files in privileged mode

Format

load configuration xmodem

Parameter Description

none

47.8. load configuration tftp

Function

Use **tftp** to download configuration files in privileged mode

Format

load configuration tftp {inet serverip | inet6 serveripv6}filename

Parameter Description

	Parameter Description Value	
Parameter <i>serverip</i>	FTP server IP address in dotted decimal format, such as: 192.168.1.1	
<i>serveripv6</i>	ftp server ipv6 address 2001::1.	Colons are used to represent hexadecimal addresses , such as
<i>filename</i>	Host program file STRING<1-64>	

47.9. load configuration ftp

Function

Use **FTP** to download configuration files in privileged mode

Format

load configuration ftp {inet serverip | inet6 serveripv6}filenameusername password

Parameter Description

parameter	Parameter Description Value	
<i>serverip</i>	FTP server IP address in dotted decimal format, such as: 192.168.1.1	
<i>serveripv6</i>	ftp server ipv6 address 2001::1.	Colons are used to represent hexadecimal addresses , such as
<i>filename</i>	Host program file STRING<1-64>	
<i>username</i>	FTP server username STRING<1-32>	
<i>password</i>	ftp server user password code	STRING<1-32>

47.10.show running-config

Function

View the current configuration decompilation

Format

show running-config [*modulename*]* [**perlines** *lines*]

Parameter Description

parameter	Parameter Description Value	
modulename	The function module name is determined according to the switch feature module	
lines	Display several lines each time INTEGER<0-4096>	

47.11. copy running-config startup-config

Function

Save the current configuration in privileged mode

Format

copy running-config startup-config

Parameter Description

47.12. copy startup-config running-config

Function

Loading the startup configuration in privileged mode

Format

copy startup-config running-config

Parameter Description

none

47.13.show startup-config

Function

View the startup configuration in privileged mode

Format

show startup-config [*module_name*] [**perlines***lines*]

show startup-config [*modulename*]* [**perlines** *lines*]

Parameter Description

parameter	Parameter Description	Value
modulename	The function module name is determined according to the switch feature module	
lines	Display several lines each time	INTEGER<0-4096>

47.14. clear startup-config

Function

Clear the startup configuration in privileged mode

Format

clear startup-config [with user-info]

Parameter Description

none

47.15. Configuration Example

DUT#load configuration tftp inet 192.168.1.11 sw.txt DUT#load application tftp inet //Use **tftp** to download the configuration file
192.168.1.11 test.img //Use **ftp** to upgrade

48. File Upload

48.1. upload logging ftp

Function

Use **FTP** to upload log files in privileged mode

Format

upload logging ftp {inet serverip | inet6 serveripv6}filenameusername password

Parameter Description

	Parameter Description	Value
Parameter <i>serverip</i>	FTP server IP address in dotted decimal format, such as: 192.168.1.1	
<i>serveripv6</i>	ftp server ipv6 address site	Colons are used to represent hexadecimal numbers, such as: 2001::1
<i>filename</i>	Host program file STRING<1-64>	
<i>username</i>	FTP server username	STRING<1-32>
<i>password</i>	ftp server user password code	STRING<1-32>

48.2. upload logging tftp

Function

Use **tftp** to upload log files in privileged mode

Format

upload logging tftp {inet serverip | inet6 serveripv6}filename

Parameter Description

parameter	Parameter Description Value	
<i>serverip</i>	FTP server IP address in dotted decimal format, such as: 192.168.1.1	
<i>serveripv6</i>	ftp server ipv6 address site	Colons are used to represent hexadecimal numbers, such as: 2001::1
<i>filename</i>	Host program file STRING<1-64>	

48.3. upload configuration ftp

Function

Upload the configuration file using **FTP** in privileged mode

Format

upload configuration ftp {inet serverip | inet6 serveripv6}filenameusername password

Parameter Description

parameter	Parameter Description Value	
<i>serverip</i>	FTP server IP address in dotted decimal format, such as: 192.168.1.1	
<i>serveripv6</i>	ftp server ipv6 address site	Colons are used to represent hexadecimal numbers, such as: 2001::1
<i>filename</i>	Host program file STRING<1-64>	
<i>username</i>	FTP server username	STRING<1-32>
<i>password</i>	ftp server user password code	STRING<1-32>

48.4. upload configuration tftp

Function

Command to upload configuration files using **tftp** in privileged mode

Format

upload configuration tftp {inet serverip | inet6 serveripv6}filename

Parameter Description

parameter	Parameter Description	Value
<i>serverip</i>	FTP server IP address in dotted decimal format, such as: 192.168.1.1	FTP server IPv6
<i>serveripv6</i>	address site	Colons are used to represent hexadecimal numbers, such as: 2001::1
<i>filename</i>	Host program file STRING<1-64>	

48.5. Configuration Examples

DUT#upload logging tftp inet 192.168.1.11 1.txt DUT#upload logging ftp inet //Use tftp to upload host logs

192.168.1.11 1.txt admin admin //Use ftp to upload the host log

DUT#upload configuration tftp inet 192.168.1.11 zz.txt //Use tftp to upload the configuration file

DUT#upload configuration ftp inet 192.168.1.11 zz.txt admin admin //Use FTP to upload the configuration file

49. Syslog Configuration

49.1. logging

Function

Enable or disable logging

Format

[no] logging

Parameter Description

none

49.2. logging sequence-numbers

Function

Switch log sequence number

Format

[no] logging sequence-numbers

Parameter Description

none

49.3. Logging timestamps

Function

Command configuration (restore) timestamp type

Format

logging timestamps {notime | uptime | datetime}

no logging timestamps

Parameter Description

parameter	Parameter Description	Value
notime	Do not display timestamp	
uptime	When the power-on time is displayed Time stamp	none
datetime	Display in absolute time Timestamp	none

49.4. Terminal monitor

Function

(Dis)enable output to the terminal in privileged mode

Format

[no] terminal monitor

Parameter Description

none

49.5. Logging monitor switch

Function

(Disable) enable output to **vtty** in global mode

Format

[no] logging monitor {all | *monitor-num*}

Parameter Description

parameter	Parameter Description	Value

<i>monitor-num</i>	terminal number	0-5

49.6. Logging monitor filter rules

Function

Configure **vtty** log filtering rules

Format

logging monitor {**all** | *monitor-num*} [*level-value*|*none* | *level-list**start-level**toend-level*]

[**module** *module-name*]*

no logging monitor [*all*|*monitor-num*] **filter**

Parameter Description

Parameters	Parameter Description	Value
<i>-num</i>	Terminal number	INTEGER<0-5>
<i>value</i>	Information	INTEGER<0-7>
<i>levelend</i>	<i>levelstart</i> - <i>level</i> Information	INTEGER<0-7>
<i>-level</i>	<i>module-name</i> Module name	INTEGER<0-7>
		Switch feature module

49.7. Logging buffered switch

Function

(Cancel) Enable output to **buffer**

Format

[**no**] **logging buffered**

Parameter Description

none

49.8. Logging buffered filter rules

Function

Configure **buffered** log filtering rules

Format

logging buffered [*level-value*|*none* | *level-list**start-level**toend-level*] [**module** *module-name*]

no loggingbufferedfilter

Parameter Description

parameter	Parameter	Value
<i>level-value</i>	Description	INTEGER<0-7>
<i>start-level</i>	Information	INTEGER<0-7>
Information	level	INTEGER<0-7>
level Information level <i>end-level</i>	<i>module-name</i> module name	Switch feature module

49.9. Logging flash switch

Function

(Cancel) Enable output to **flash**

Format

[no] logging flash

Parameter Description

none

49.10. Logging flash filter rules

Function

Configuring **flash** log filtering rules

Format

logging flash [*level-value* | none | level-list [*start-level* to *end-level*] [*level-value*]] [*module-name*]

no logging flash filter

Parameter Description

parameter	Parameter	Value
Information	Description	INTEGER<0-7>
level <i>start-level</i> level <i>level-value</i>	information	INTEGER<0-7>
<i>module-name</i> level Information level <i>end-level</i>		INTEGER<0-7>
<i>name</i> Module name		Switch feature module

49.11. logging snmp-agent switch

Function

(Disable) Enable output to **snmp** agent

Format

[no] logging snmp-agent

Parameter Description

none

49.12.logging snmp-agent filter rules

Function

Configure **snmp-agent** log filtering rules

Format

logging snmp-agent[*level-value* | none | level-list [*start-level* *toend-level*][*level-value*]]

[module *module-name*]

no logging snmp-agent filter

Parameter Description

none

49.13. Logging ip-address

Function

Configuring the Log Server

Format

[no]logging ip-address

Parameter Description

parameter	Parameter Description	Value
<i>ip-address</i>	Syslog server IP address	Dotted decimal notation, such as: 192.168.1.1

49.14.logging host switch

Function

(Cancel) Enable the log server

Format

[no] logging host [all | *ip-address*]

Parameter Description

parameter	Parameter Description	Value
<i>ip-address</i>	Syslog server IP address	Dotted decimal notation, such as: 192.168.1.1

49.15. Logging host filter rules

Function

Configuring filtering rules

Format

logging host {all | *ip-address* } [*level-value* | none | level-list *start-level* to *end-level*] [module *module-name*]

no logging host {all | *ip-address* } filter

Parameter Description

parameter	Parameter Description	Value
<i>ip-address</i>	Syslog server IP Address	Dotted decimal notation, such as: 192.168.1.1
<i>level-value</i>	information level	INTEGER<0-7>
level <i>end-level</i> to <i>start-level</i>	information level information	INTEGER<0-7>
<i>module-name</i> module name		INTEGER<0-7>
		Switch feature module

49.16.logging facility

Function

Configure the logging tool name

Format

logging facility [clock1 | clock2 | ftp | kernel | lineprinter | localuse0 | localuse1 | localuse2 | localuse3 | localuse4 | localuse5 | localuse6 | localuse6 | localuse7 | logalert | logaudit | mail | networkknews | ntp | security1 | security2 | syslogd | system | userlevel | uucp]

No logging facility

Parameter Description

none

49.17.logging source

Function

Configure the source **IP address** of log messages

Format

logging source {*ip-address* | **loopback-interface***if-id*}

no logging source

Parameter Description

parameter	Parameter	Value
<i>ip-address</i>	Description Configurable valid IP address	Dotted decimal notation, such as: 192.168.1.1
<i>if-id</i>	loopback interface id	INTEGER<0-1>

49.18.show logging

Function

View configuration information

Format

Show logging

Parameter Description

none

49.19.show logging filter

Function

View filter rules

Format

show logging filter {**buffered** | **flash**|**host***ip-address*|**snmp-agent**|**monitor***monitor-num*}

Parameter Description

Description Parameter Value	Parameter	
<i>ip-address</i>	Log server address in dotted decimal format, such as: 192.168.1.1	
<i>monitor-num</i> terminal number	INTEGER<0-5>	

49.20.show logging buffered

Function

View **buffer** log

Format

show logging buffered [*level-value* | **level-list** [*start-level* **to** *end-level*] *value*]

[**module***module-name*]

Parameter Description

parameter	Parameter	Value
Information	Description	INTEGER<0-7>
<i>level start-</i> <i>level level-value</i>	Information	INTEGER<0-7>
<i>module-</i> <i>level</i> Information <i>level end-level</i>		INTEGER<0-7>
<i>name</i> Module name		Switch feature module

49.21.show logging flash

Function

Command to view the log information in **the flash**

Format

Show logging flash [*level-value* | **level-list** [*start-level* **to** *end-level*] *value*]

[**module***module-name*]

Parameter Description

parameter	Parameter	Value
Information	Description	INTEGER<0-7>
<i>level start-</i> <i>level level-value</i>	Information	INTEGER<0-7>
<i>module-</i> <i>level</i> Information <i>level end-level</i>		INTEGER<0-7>
<i>name</i> Module name		Switch feature module

49.22. Configuration Example

1. Configure log output to the console

Enable terminal output function

DUT#terminal monitor

DUT#system-view

Enable terminal display function

DUT(config)#logging monitor all

Enable logging (enabled by default)

DUT(config)#logging

2. Configure log output to the log server **192.168.1.3** #Configure

log server

DUT(config)#logging 192.168.1.3

#Enable the log

server **DUT(config)#logging host 192.168.1.3**

#Configuration information view

DUT(config)#show logging

state: on;

logging sequence-numbers: on;

logging timestamps: datetime;

logging language: english

logging monitor:

Console: state: on; display: on; 0 logged; 0 lost; 0 overflow.

Telnet 1: state: on; display: off; 0 logged; 0 lost; 0 overflow. state: on;

Telnet 2: display: off; 0 logged; 0 lost; 0 overflow. state: on; display:

Telnet 3: off; 0 logged; 0 lost; 0 overflow. logging buffered: state: on;

Telnet 4: 182 logged; logging flash: state: state: on; display: off; 0

Telnet 5: logged; 0 lost; 0 overflow. on; 76 logged; logging loghost:

logging facility: localuse7;logging source: off 0 lost; 57 overflow.

logging SNMP Agent: state: on; 0 logged; 0 lost; 0 overflow.

0 lost; 0 overflow.

50. Alarm Configuration

50.1. alarm cpu

Function

Globally (disable) enable **CPU** alarm

Format

[no] alarm cpu

Parameter Description

none

50.2. alarm cpu threshold

Function

Configure **CPU** busy or idle thresholds

Format

alarm cpu threshold {busy <percentage> | unbusy <percentage>}*

no alarm cpu threshold

Parameter Description

parameter	Parameter Description	Value
percentage	CPU usage	INTEGER<0-100>

50.3. alarm all-packets

Function

Enable **port alarm** globally or on a port (disable)

Format

[no] alarm all-packets

Parameter Description

none

50.4. alarm all-packets threshold

Function

Port configuration port busy or idle threshold

Format

alarm all-packets threshold {exceed <bandwidth> normal <bandwidth> }

no alarm all-packets threshold

Parameter Description

parameter	Parameter	Value
bandwidth	Description Bandwidth Usage	INTEGER<1-1000>

50.5. show alarm cpu

Function

Check the **CPU Alarm** configuration

Format

show alarm cpu

Parameter Description

none

50.6. show alarm all-packets

Function

Check the global or **port alarm** configuration

Format

show alarm all-packets [interface [ethernet <portId> [to eth <portId>]]*]

Parameter Description

	Parameter	Value
Parameter portId	Description Port number	For example: 0/0/1

51. LLDP

51.1. lldp

Function

Enable (or disable) **LLDP** globally

Format

[no] lldp

Parameter Description

none

51.2. lldp hello-time

Function

Configure the sending interval

Format

lldp hello-time <interval>

no lldp hello-time

Parameter Description

	Parameter	Value
Parameter interval	Description Time interval	INTEGER<5-32768>

51.3. lldp hold-time

Function

Configuring **hold time**

Format

lldp hold-time <value>

no lldp hold-time

Parameter Description

parameter	Parameter	Value
value	Description Value	INTEGER<2-10>

51.4. lldp trap

Function

(Cancel) Enable LLDP trap

Format

lldp trap enable
lldp trap disable

Parameter Description

none

51.5. lldp [rxtx | rx | tx]

Function

Port mode configuration transceiver type

Format

lldp {rxtx |rx |tx}
no lldp

Parameter Description

51.6. lldp management-address

Function

Configuration management address information

Format

lldpmanagement-address [supervlan-interface | vlan-interface] <interfaceId>
no lldp management-address

Parameter Description

parameter	Parameter Description	Value
interfaceId	Interface ID	Super interface [1-128] Normal interface [1-4094]

51.7. show lldp

Function

Check the LLDP configuration and collected topology information

Format

show lldp [ethernet <portId> [to ethernet <portId>]*]

Parameter Description

	Parameter	Value
Parameter portid	Description Port number	STRING<5-6>, slash marks decimal, such as: 0/0/1

51.8. Configuration Example

Networking

DUT1 1----- 18 DUT2

Format

```
DUT1(config)#interface vlan-interface 1
DUT1(config-if-vlanInterface-1)#ip address 192.168.1.11 255.255.255.0
DUT1(config-if-vlanInterface-1)#ex
DUT1(config)#lldp
DUT1(config )#interface eth 0/0/1
DUT1(config-if-ethernet-0/0/1)#lldp rxtx
DUT1(config-if-ethernet-0/0/1)#
```

```
DUT2(config)#interface vlan-interface 1
DUT2(config-if-vlanInterface-1)#ip address 192.168.1.12 255.255.255.0
DUT2(config-if-vlanInterface-1)#ex
DUT2(config)#lldp
DUT2(config )#interface eth 0/0/18
DUT2(config-if-ethernet-0/0/18)#lldp rxtx
DUT2(config-if-ethernet-0/0/18)#
```

```
DUT1(config-if-ethernet-0/0/1)#show lldp ethernet 0/0/1
System LLDP: enable
LLDP trap: disable
LLDP hello-time: 30(s) LLDP hold-times: 4 LLDP TTL: 120(s)
```

```
GE0/0/1
Port LLDP: rxtx          Pkt Tx: 82          Pkt Rx: 116
Total neighbor count: 2
```

```
Neighbor (1):
TTL: 90(s)
Chassis ID: 00:e0:53:17:ee:e3
Port ID: GE0/0/18
System Name: S3052PETF-E
System Description: INTELLINET
Port Description: NULL
Management Address: 192.168.1.12
Port Vlan ID: 1
Port SetSpeed: auto
Port ActualSpeed: FULL-1000
```

Port Link Aggregation: support ,not in aggregation

52. Static time configuration

52.1. clock set

Function

Configuring system time in privileged mode

Format

clock set*<HH:MM:SS YYYY/MM/DD>*

Parameter Description

parameter	Parameter Description	Value
<i>HH:MM:SS</i>	Hours, minutes, seconds	Colons are used to separate decimals, such as: 8:00:00
<i>YYYY/MM/DD</i> Year Month Day		Slashes are used to separate decimals, such as 2001/1/1

52.2. clock timezone

Function

Configuring the time zone

Format

clock timezone *<zone-name hours-offset minutes-offset>*
noclock timezone

Parameter Description

parameter	Parameter	Value
zone-name		STRING<1-32>
Time zone name	Description	INTEGER<-23+23>
Offset hours hours-offset minutes minutes-offset Offset minutes		INTEGER<0-59>

52.3. show clock

Function

View the current system time and time zone information

Format

show clock

Parameter Description

none

53. SNTP-Client Configuration

53.1. sntp client

Function

In global mode, this parameter specifies the **sntp** client enable switch.

Format

[no] sntp client

Parameter Description

none

53.2. sntp client mode

Function

Configure the sntp client working mode in global mode.

Format

sntp client mode {anycast | broadcast | multicast | unicast}

no sntp client mode

Parameter Description

parameter	Parameter	Value
anycast	Description	No
broadcast	Anycast	No
multicast	Broadcast	No
unicast	Multicast Unicast	

53.3. sntp client authenticate

Function

Configure the sntp client authentication function switch in global mode.

Format

sntp client authenticate

no sntp client authenticate

Parameter Description

none

53.4. sntp client authentication-key

Function

Configure the authentication password of the sntp trusted clock source in global mode

Format

(no)sntp client authentication-key *keyidmd5 keyvalue*

Parameter Description

	Parameter Description	Value
	Password Number	INTEGER<1-4294967295>
Parameters <i>keyid keyvalue</i>	Authentication Password	STRING<1-16>

53.5. sntp client broadcastdelay

Function

Modify the broadcast delay in global mode

Format

sntp client broadcastdelay *<delay>*

no sntp client broadcastdelay

Parameter Description

parameter	Parameter	Value
<i>Delay</i>	Description Specific Value	INTEGER<1-9999>

53.6. sntp client poll-interval

Function

Configure the polling interval in global mode

Format

sntp client poll-interval *<interval>*

no sntp client poll-interval

Parameter Description

parameter	Parameter	Value
<i>interval</i>	Description Specific Value	INTEGER<64-1024>

53.7. sntp client retransmit

Function

Configure the number of retransmissions in global mode

Format

sntp client retransmit *<times>*

no sntp client retransmit

Parameter Description

parameter	Parameter Description	Value
<i>times</i>	Number of retransmissions	INTEGER<1-10>

53.8. sntp client retransmit-interval

Function

Configuring the retransmission interval in global mode

Format

sntp client retransmit-interval *<interval>*

no sntp client retransmit-interval

Parameter Description

parameter	Parameter Description	Value
<i>interval</i>	Retransmission Interval	INTEGER<3-30>

53.9. sntp client summer-time daily

Function

Configure daylight saving time by date in global mode

Format

sntp client summer-time daily *<start-month start-day start-time end-month end-day end-time >*

no sntp client summer-time

Parameter Description

parameter	Parameter	Value
<i>start-month</i>	Description	INTEGER<1-12>
<i>start-day</i>	Start month	INTEGER<1-31> Colon
<i>start-time</i>	Start day Start	decimal, such as: 8:00:00
<i>end-month</i>	time End month	INTEGER<1-12>
<i>end-day</i>	End day End	INTEGER<1-31> Colon
<i>end-time</i>	time	decimal, such as: 8:00:00

53.10. sntp client summer-time weekly

Function

Configure sntp daylight saving time by week in global mode

Format

sntp client summer-time weekly *start-month start-week weekly start-time end-month end-week weekly end-time*

no sntp client summer-time

Parameter Description

parameter	Parameter	Value
<i>start-month</i>	Description	INTEGER<1-12>
<i>start-week</i>	Start month Start	INTEGER<1-5> Colon
<i>start-time</i>	day of week	decimal, such as: 8:00:00
<i>end-month</i>	Start time End month	INTEGER<1-12>

<i>end-week</i>	Ending day of the	INTEGER<1-5>
<i>end-time</i>	week Ending	Colon decimal, such as: 8:00:00
<i>weekly</i>	time Day of the week	[mon,tue,wen,thu,fri,sat,sun]

53.11.snntp client valid-server

Function

Configure legal snntp servers in global mode

Format

snntp client valid-server <ip><wildcard>

no snntp client valid-server [all | <ip><wildcard>]

Parameter Description

parameter	Parameter Description	Value
<i>ip</i>	The network segment where the server is located, in dotted decimal format, such as:	
<i>wildcard</i>	1.1.1.1 The wildcard in dotted decimal format, such as: 0.0.0.255	

53.12.snntp trusted-key

Function

Configure snntp trust password id in global mode

Format

snntp trusted-key <keyid>

no snntp trusted-key

Parameter Description

	Parameter Description	Value
Parameter <i>keyid</i>	Password Number	INTEGER<1-4294967295>

53.13.snntp server key

Function

Configure snntp trust password id in global mode

Format

snntp server key <keyid>

no snntp server key

Parameter Description

	Parameter Description	Value
Parameter <i>keyid</i>	Password Number	INTEGER<1-4294967295>

53.14.sntp server

Function

Configure the main server IP in global mode

Format

sntp server <ip-address>

no sntp server

Parameter Description

	Parameter	Value
Parameter <i>ip-address</i>	Description IP address	Dotted decimal notation, such as: 1.1.1.1

53.15.sntp server backup

Function

Configure the backup server IP in global mode

Format

sntp server backup<ip-address>

no sntp server backup

Parameter Description

	Parameter	Value
Parameter <i>ip-address</i>	Description IP address	Dotted decimal notation, such as: 1.1.1.1

53.16.sntp client mode anycast key

Function

Configure the trust password id

Format

sntp client mode anycast <keyid>

nosntp client anycastkey <keyid>

Parameter Description

parameter	Parameter Description	Value
<i>keyid</i>	Password Number	INTEGER<1-4294967295>

53.17.show sntp client

Function

View the running information of the sntp client

Format

show sntp client

Parameter Description

none

53.18.show sntp client summer-time

Function

Check the SNTP daylight saving time status

Format

show sntp clientsummer-time

Parameter Description

none

53.19. Configuration Example

Networking

SNTP Server ----- DUT

Order

Enable the **sntp** client function

DUT1(config)#sntp client

#Configure **sntp** working mode to broadcast

DUT1(config)#sntp client mode broadcast

#Configure the **IP** address range of the **sntp** legal server

DUT1(config)#sntp client valid-server 192.168.1.0 0.0.0.255

Enable **SNTP** server, and set the sending mode to broadcast

#View **SNTP client** information

DUT1(config)#show sntp client

Clock state: synchronized Current mode: broadcast

Use server : 192.168.1.110 State : idle

Server state: synchronized Server stratum: 1

Authenticate : disable Bcast delay : 3ms

Last synchronized time: Fri Sep 3 07:21:19 2021

Summer-time is not set.

Valid server list:

Server address:192.168.1.0 wildcard:0.0.0.255

54. IP Management Interface

54.1. interface internal-interface 0

Function

Enter management port configuration mode.

Format

interface internal-interface<id>
no interface internal-interface<id>

Parameter Description

parameter	Parameter	Value
<i>id</i>	Description Interface number, fixed to 0	0

54.2. ip address address configuration

Function

Enter management port configuration mode.

Format

ip address*ipaddress mask*
no ipaddress [*ipaddress mask*]

Parameter Description

parameter	Parameter Description	Value
<i>ipaddress</i>	IP address	Dotted decimal notation, such as 1.1.1.1 Dotted
<i>mask</i>	subnet mask	decimal notation, such as 255.0.0.0

54.3. Configuration Example

#**Configure** the management interface address **192.168.1.100/24**

DUT(config)#**interface internal-interface**

0 DUT1(config-if-internalInterface-0)#**ip address 192.168.1.100 255.255.255.0**

55. IF-Vlan Interface Configuration Commands

55.1. interface vlan-interface

Function

Configure a common **VLAN** interface and enter interface configuration mode

Format

interface vlan-interface *vid*
no interface vlan-interface *vid*

Parameter Description

parameter	Parameter Description	Value
<i>vid</i>	VLAN ID	INTEGER<1-4094>

55.2. description

Function

Configure interface description information in interface mode

Format

description *desc*
no description

Parameter Description

parameter	Parameter Description	Value
<i>desc</i>	Description	STRING<1-31>, any character except ?, space Double quotes are required

55.3. shutdown

Function

Switch interface in interface mode, enabled by default

Format

[no] shutdown

Parameter Description

none

55.4. ip address address configuration

Function

Configure the interface static IP address in interface mode

Format

ip address *ipaddressmask*
no ip address [*ipaddressmask*]

Parameter Description

parameter	Parameter Description	Value
<i>ipaddress</i>	IP address	Dotted decimal notation, such as 1.1.1.1
<i>mask</i>	subnet mask	Dotted decimal notation, such as 255.0.0.0

55.5. ip addressprimary

Function

Switch the primary IP address of the interface in interface mode

Format

ip address primary *ipaddress*

Parameter Description

parameter	Parameter Description	Value
<i>ipaddress</i>	IP address	Dotted decimal notation, such as: 1.1.1.1

55.6. ip address range

Function

In interface mode, configure the interface to allow communication range. By default, all IPs can communicate.

Format

ip address range*startip endip*

no ip address range [*startip endip*]

Parameter Description

parameter	Parameter Description	Value
<i>startip</i>	IP address	Dotted decimal notation, such as 1.1.1.1 Dotted
<i>endip</i>	IP address	decimal notation, such as 1.1.1.1

55.7. Dynamic acquisition of ip address

Function

In interface mode, (cancel) enable dhcp&bootp client, that is, dynamically obtain IP

Format

[no] ip address {dhcp | bootp}

Parameter Description

none

55.8. ipv6 address

Function

Configure the interface ipv6 address in interface mode

Format

[no] ipv6 address auto link-local

[no] ipv6 address *linklocal* link-local

[no] ipv6 address *ipv6/ prefix* [eui-64]

[no] ipv6 address autoconfig

Parameter Description

parameter	Parameter Description	Value
<i>linklocal</i>	The local link address is in hexadecimal notation, such as: fe80::1	
<i>ipv6</i>	The colon of the global unicast address is in hexadecimal, such as: 2001::1	
<i>prefix</i>	Address prefix length INTEGER<1-128>	

55.9. IPv6 forwarding

Function

(Cancel) Enable ipv6 forwarding

Format

[no] ipv6 forwarding

Parameter Description

none

55.10. show ip dhcp lease

Function

View the dynamic address of the interface

Format

show ip dhcp lease

Parameter Description

none

55.11. show ip interface vlan-interface

Function

View the interface configuration ip address information

Format

show ip interface vlan-interfacevid
show ipv6 interface vlan-interfacevid

Parameter Description

parameter	Parameter	Value
<i>vid</i>	Description vlan interface ID	INTEGER<1-4094>

55.12. Configuration Example

DUT(config)#int vlan-interface 1 //Configure IP address //Enter the normal VLAN interface

DUT(config-if-vlanInterface-1)#ip address 1.1.1.1 255.0.0.0 //Interface description

DUT(config-if-vlanInterface-1)#description zz //View interface information

DUT(config-if-vlanInterface-1)#show ip interface

Show informations of interface

The mac-address of interface is 00:0a:6a:01:02:22

Interface description: zz

Interface name : VLAN-IF1

Primary ipaddress : 192.168.1.10/255.0.0.0

Secondary ipaddress : 1.1.1.1/255.0.0.0

VLAN : 1

Interface status : Up

Total entries: 1 interface.

56. SuperVlan interface configuration commands

56.1. interface supervlan-interface

Function

Configure the **supervlan** interface and enter the interface configuration mode

Format

[no] interface supervlan-interface *sid*

Parameter Description

parameter	Parameter Description	Value
<i>sid</i>	SuperVLAN Interface ID	INTEGER<1-128>

56.2. Subvlan vid

Function

Configure **subvlan** under **supervlan** in interface mode

Format

[no] subvlan {*vid* | *vlist*}

Parameter Description

parameter	Parameter Description	Value
<i>vid</i>	VLAN ID	INTEGER<1-4094>
<i>vlist</i>	VLAN List	STRING<1-64>, such as: 1,3,4-5

56.3. description

Function

Configure interface description information in interface mode

Format

description *desc*

no description

Parameter Description

parameter	Parameter Description	Value
<i>desc</i>	Description	STRING<1-31>, any character except ?, space Double quotes are required

56.4. shutdown

Function

Switch interface in interface mode, enabled by default

Format

[no] shutdown

Parameter Description

none

56.5. ip address address configuration

Function

Configure the interface static **IP** address in interface mode

Format

ip address *ipaddressmask*

no ip address [*ipaddressmask*]

Parameter Description

parameter	Parameter Description	Value
<i>ipaddress</i>	IP address	Dotted decimal notation, such as 1.1.1.1 Dotted
<i>mask</i>	subnet mask	decimal notation , such as 255.0.0.0

56.6. ip addressprimary

Function

Switch the primary **IP** address of the interface in interface mode

Format

ip address primary *ipaddress*

Parameter Description

parameter	Parameter Description	Value
<i>ipaddress</i>	IP address	Dotted decimal notation, such as: 1.1.1.1

56.7. ip address range

Function

In interface mode, configure the interface to allow communication range. By default, all **IPs** can communicate.

Format

ip address *range**startip endip*
no ip address range [*startip endip*]

Parameter Description

parameter	Parameter Description	Value
<i>startip</i>	IP address	Dotted decimal notation, such as 1.1.1.1 Dotted
<i>endip</i>	IP address	decimal notation, such as 1.1.1.1

56.8. Dynamic acquisition of IP address

Function

In interface mode, (cancel) enable **dhcp&bootp** client, that is, dynamically obtain **IP**

Format

[no] ip address {dhcp | bootp}

Parameter Description

none

56.9. ipv6 address

Function

Configure the interface **ipv6** address in interface mode

Format

[no] ipv6 address auto link-local
[no] ipv6 address *linklocal* **link-local**
[no] ipv6 address *ipv6/prefix* **[eui-64]**
[no] ipv6 address autoconfig

Parameter Description

parameter	Parameter Description	Value
<i>linklocal</i>	The local link address is in hexadecimal notation, such as: fe80::1	
<i>ipv6</i>	The colon of the global unicast address is in hexadecimal, such as: 2001::1	
<i>prefix</i>	Address prefix length INTEGER<1-128>	

56.10.show ip dhcp lease

Function

View the dynamic address of the interface

Format

show ip dhcp lease

Parameter Description

none

56.11.show ip interface supervlan-interface

Function

View the interface configuration **ip** address information

Format

show ip interfacesupervlan-interfacesid
show ipv6 interfacesupervlan-interfacesid

Parameter Description

parameter	Parameter Description	Value
<i>sid</i>	SuperVLAN Interface ID	INTEGER<1-128>

56.12. Configuration Example

DUT(config)#int supervlan-interface

//Enter the **supervlan** interface

**superVLANInterface-1)#subvlan 1 DUT(config-if-
superVLANInterface-1)#ip address 2.2.2.1 255.0.0.0** This ipaddress
will be the primary ipaddress of this interface.

DUT(config-if-superVLANInterface-1)#description example

DUT(config-if-superVLANInterface-1)#show ip interface supervlan-interface 1
Show informations of interface

//View the **supervlan** interface

The mac-address of interface is 00:0a:6a:01:02:22

Interface description: ss

Interface name : superVLAN-IF1 :

Primary ipaddress 2.2.2.1/255.0.0.0

Secondary ipaddress : None

VLAN : 1

Interface status : Down

Total entries: 1 interface.

57. ARP

57.1. arp ipmac static entry configuration

Function

Configuring a static **arp** table

Format

arp ipmac [**vlan vid**][**ethernet portid**]

Parameter Description

parameter	Parameter Description	Value
<i>ip</i>	IP address	Dotted decimal, such as:
<i>Mac</i>	MAC Address	1.1.1.1 Colon hexadecimal, such as: 00:00:00:00:11:11
<i>vid</i>	VLAN ID	INTEGER<1-4094>
<i>portid</i>	Port Number	Slashes are decimal, such as: 0/0/1

57.2. arp aging-time

Function

Configure the **ARP** aging time

Format

arp aging-time <age>

no arp aging-time

Parameter Description

parameter	Parameter Description	Value
<i>age</i>	Value, default 20m INTEGER<3-2880> , unit min	

57.3. arp bind dynamic

Function

Change dynamic **arp** to static

Format

arp bind dynamic{**ip** | **all**}

Parameter Description

parameter	Parameter Description	Value
<i>ip</i>	IP address	Dotted decimal notation, such as: 1.1.1.1

57.4. no arp

Function

Delete **arp** table

Format

no arp {dynamic | static | all | *ip*}

Parameter Description

parameter	Parameter Description	Value
<i>ip</i>	IP address	Dotted decimal notation, such as: 1.1.1.1

57.5. show arp

Function

View the **arp** table

Format

show arp {all | dynamic | static | *ip [mac]*}

Parameter Description

parameter	Parameter Description	Value
<i>ip</i>	IP address	Dotted decimal, such as: 1.1.1.1
<i>Mac</i>	MAC Address	Colon hexadecimal, such as: 00:00:00:00:11:11

57.6. show arp aging-time

Function

Check the **arp** aging time

Format

show arp aging-time

Parameter Description

none

57.7. Configuration Examples

DUT(config)#arp 192.168.1.2 00:00:00:01:2:3 ethernet 0/0/1 vlan 1 //Configure static arp
DUT(config)#arp bind dynamic 192.168.1.111 //Convert dynamic arp to static entries

DUT(config)#show arp all
Information of ARP

//View the arp table

IpAddress	Mac_Address	Vlan Port	Type
192.168.1.2	00:00:00:01:02:03	0/0/1 static	0/0/14
192.168.1.111	80:1f:02:4c:19:60	1	static

Total entries: 2, Printed entries: 2

58. ND

58.1. ipv6 neighbor configuration

Function

Configure static **IPv6** neighbors globally

Format

ipv6 neighbor *ipv6mac* [**vlan** *vid* **ethernet** *portid*]

noipv6 neighbor *ipv6*

Parameter Description

	Parameter Description	Value
Parameter <i>ipv6</i>	IPv6 Address	Colons are used to represent hexadecimal numbers, such as: 2001::1
<i>Mac</i>	MAC Address	Colons are hexadecimal, such as: 00:00:00:00:11:11
<i>vid</i>	VLAN ID Port	INTEGER<1-4094>
<i>portid</i>	Number	Slashes are decimal, such as: 0/0/1

58.2. ipv6 neighbors max-learning-num

Function

Configure the maximum number of **IPv6** neighbors that can be learned

Format

ipv6 neighbors max-learning-num *<limit>*

no ipv6 neighbors max-learning-num

Parameter Description

parameter	Parameter Description	Value
<i>limit</i>	Maximum number of neighbors	INTEGER<1-2048>

58.3. ipv6 nd dad attempts

Function

Configure the number of **DAD** detection times on the interface

Format

ipv6 nd dad attempts *<times>*

noipv6 nd dad attempts

Parameter Description

parameter	Parameter Description	Value
<i>times</i>	DAD detection times	INTEGER<0-20>

58.4. ipv6 nd ns retrans-time

Function

Configure the interval for sending **NS** messages on the interface.

Format

ipv6 nd ns retrans-time <interval>

noipv6 nd ns retrans-time

Parameter Description

Parameters	Parameter Description	Value
time	interval interval	INTEGER<1-3600>

58.5. ipv6 nd reachable-time

Function

Configure the neighbor reachable time on the interface.

Format

ipv6 nd reachable-time <age>

noipv6 nd reachable-time

Parameter Description

parameter	Parameter	Value
age	Description Neighbor reachable time	INTEGER<1-3600>

58.6. show ipv6 nd

Function

View **ND** Configuration

Format

show ipv6 nd { dad | ns retrans-time | reachable-time}

Parameter Description

none

58.7. show ipv6 neighbors

Function

Check the **IPv6** neighbor table

Format

show ipv6 neighbors {<ipv6> | <mac mac> | dynamic | static | all}

Parameter Description

Parameter	Parameter Description	Value
ipv6	IPv6 Address	Colons are used to represent hexadecimal numbers, such as: 2001::1

Mac	MAC Address	Colons are hexadecimal, such as: 00:00:00:00:11:11

58.8. Configuration Examples

Networking

PC----- 48 DUT

Configuration

```
DUT(config)#interface eth 0/0/1
DUT(config)#interface vlan-interface 4094
DUT(config-if-vlanInterface-4094)#ipv6 address 2001:1000::62/112
DUT(config-if-vlanInterface-4094)#exit
DUT(config)#ipv6 neighbor 2001:1000::111 00:00:00:13:40:20 vlan 4094 ethernet 0/0/1
DUT(config)#ping6 2001:1000::112
PING 2001:1000::112(2001:1000::112) 56 data bytes
64 bytes from 2001:1000::112: icmp_seq=1 ttl=128 time < 1ms
64 bytes from 2001:1000::112: icmp_seq=2 ttl=128 time < 1ms
64 bytes from 2001:1000::112: icmp_seq=3 ttl=128 time < 1ms
64 bytes from 2001:1000::112: icmp_seq=4 ttl=128 time < 1ms
64 bytes from 2001:1000 ::112: icmp_seq=5 ttl=128 time < 1ms

--- 2001:1000::112 ping statistics ---
5 packets transmitted, 5 received, 0% packet loss, time 4094ms
rtt min/avg/max/mdev = 0/0/0/0 ms
```

DUT3(config)#show ipv6 neighbors all

Information of neighbors

IpAddress	Mac_Address	Vlan Port	Type	Status
ExpireTime				
2001:1000::111	00:00:00:13:40:20	4094	0/0/1	static
PERMANENT --				
2001:1000::112	80:1f:02:4c:19:60	4094	0/0/48	dynamic
REACHABLE 26 sec				

Total entries: 2, Printed entries: 2

59. Static Routing

59.1. ip route

Function

Configure static routing entries.

Format

ip *route* *dstnetmasknexthop* [**distance** *distance*]

no **ip** **route** {*static all* | *dstnetmask* [*nexthop*]}

Parameter Description

	Parameter Description Value	
	Target network address in	dotted decimal format, such as: 192.168.1.1
Parameter <i>dstip mask</i>	Target network mask in	dotted decimal format, such as: 255.255.255.0
<i>nexthop</i>	Next hop IP address in	dotted decimal format, such as: 192.168.2.1
<i>distance</i>	Administrative distance value	INTEGER<1-255>

59.2. show ip route

Function

View routing table entries

Format

show ip route [*dstip* [*mask*]]

Parameter Description

	Parameter Description Value	
	Target network address in	dotted decimal format, such as: 192.168.1.1
Parameter <i>dstip mask</i>	Target network mask in	dotted decimal format, such as: 255.255.255.0

59.3. show ip routerib-stats

Function

View routing statistics

Format

show ip route rib-stats

Parameter Description

none

59.4. ipv6 route

Function

Configure static routing entries.

Format

[**no**] **ipv6** *route* *dstnetmasknexthop*

[**no**] **ipv6** *route* *dstnet/ prefixnexthop*

Parameter Description

	Parameter Description Value	
Parameter <i>dstip</i>	The target network address is in hexadecimal notation, such as: 2000::	

<i>mask</i>	The target network mask is in hexadecimal notation, such as: ffff:: address prefix length	
<i>prefix</i>	INTEGER<1-128>	
<i>nexthop</i>	The next hop IP address is in hexadecimal notation, such as 2001::1	

59.5. show ipv6 route

Function

View routing table entries

Format

show ipv6 route

Parameter Description

none

60. RIP

60.1. router rip

Function

Enter **rip** configuration mode

[no] router rip

Parameter Description

none

60.2. network

Function

Rip configuration mode starts the **RIP** protocol for the specified **IP** segment .

Format

[no] network *ipaddress*

Parameter Description

	Parameter Description Value	
Parameter <i>ipaddress</i>	Target network address in dotted decimal format, such as: 192.168.1.1	

60.3. aggregate-address

Function

Rip mode configures aggregate routing.

Format

[no]aggregate-address *ip/len*

Parameter Description

parameter	Parameter Description	Value
<i>ip</i>	Aggregate route IP address	Dotted decimal notation, such as: 192.168.1.0
<i>len</i>	mask length	INTEGER<0-32>

60.4. redistribute

Function

Rip mode configuration to import external routes

Format

redistribute *routeprotocol* [**metric metric**] [*route-map**routemap*]

no redistribute *routeprotocol*

Parameter Description

parameter	Parameter Description	Value
<i>routeprotocol</i>	Routing protocol name	[bgp,connected,isis,ospf,static]
<i>metric</i>	routing metric routing	INTEGER<0-16>
<i>routemap</i>	map	STRING<1-32>

60.5. default-information originate

Function

Rip mode configuration introduces default route

Format

[**no**] **default-information originate**

Parameter Description

none

60.6. default-metric

Function

Default **metric** value for importing external routes in **RIP** mode

Format

default-metric**metric**

no default-metric

Parameter Description

parameter	Parameter Description	Value
<i>metric</i>	Routing Metric	INTEGER<1-16>

60.7. distance

Function

Rip mode configures the administrative distance of **rip** routing.

Format

distance *distance* [**ip**/*len* [*acl*]] **no**

distance [*distance* [**ip**/*len* [*acl*]]]

Parameter Description

parameter	Parameter Description	Value
<i>distance</i>	Management	INTEGER<1-255>
<i>ip</i>	distance aggregate route IP	Dotted decimal notation, such as: 192.168.1.0
<i>len</i>	address mask	INTEGER<0-32>
<i>acl</i>	length ip acl name	STRING<1-32>

60.8. distribute-list

Function

Configuring route filtering in **Rip** mode

Format

[no] **distribute-list** {*acl* | **prefix** *prefixname*} *direction* [*interfacetype* *interfaceid*]

Parameter Description

parameter	Parameter Description	Value
<i>acl</i>	IP Access list name	STRING<1-32>
<i>prefixname</i>	prefix list	STRING<1-32>
<i>direction</i>	name	[in,out]
<i>direction interface type</i>	interface type	[supervlan-interface,vlan-interface]
<i>interfaceid</i>	Interface ID	When the interface type is supervlan-interface : INTEGER<1-128> When the interface type is vlan-interface : INTEGER<1-4094>

60.9. ip access-list

Function

Configuring **IP ACL** policy in **Rip** mode

Format

[no] **ip access-list** *aclid* {**permit** | **deny**} {**any** | **host** *hostip* | *netip wildcard* [**any** | **host** *ip* | *ip wildcard*]}

[no] **ip**

access-list *aclname* {**permit** | **deny**} {**any** | *netip/len* [**exact-match**]}

Parameter Description

parameter	Parameter Description	Value
<i>aclid</i>	Access List ID	Standard ACL value INTEGER<1-99> Extended ACL value INTEGER<100-199>
<i>hostip</i>	Target host address	Dotted decimal notation, such as: 1.1.1.1
<i>netip</i>	Target network address	Dotted decimal notation, such as: 1.0.0.0

<i>wildcard</i>	Wildcards	Dotted decimal notation, such as: 0.0.0.255
<i>aclname</i>	Access List name mask	STRING<1-32>
<i>len</i>	length	INTEGER<1-32>

60.10.ip prefix-list

Function

Configure the **IP Prefix** policy in **Rip** mode .

Format

[no] ip prefix-list sequence-number [no]

ip prefix-list *prefixname* [seq *seqid*] {permit | deny} {any | *netip/len* [ge *len*] [le *len*]}

Parameter Description

parameter	Parameter Description	Value
<i>prefixname</i>	IP prefix name serial	STRING<1-32>
<i>seqid</i>	number	INTEGER<1-2147483647>
<i>netip</i>	target network address	Dotted decimal notation, such as: 1.0.0.0
<i>len</i>	mask length	INTEGER<1-32>

60.11.key chain name

Function

Configure the key name in **RIP** mode and enter the **keychain** configuration mode

Format

[no] key chain *name*

Parameter Description

parameter	Parameter Description	Value
name	Key-chain name	STRING<1-32>

60.12.key chain

Function

Configure the authentication management key in **Rip** configuration mode and enter **keychain** mode

Format

[no] key chain *name*

Parameter Description

parameter	Parameter Description	Value
name	Key-chain name	STRING[1,32]

60.13.Key key_id

Function

Configure the key ID in **keychain** mode and enter **key** mode

Format

[no] key *keyid*

Parameter Description

parameter	Parameter Description	Value
<i>keyid</i>	Key Number	INTEGER<0-2147483647>

60.14.Key key-string

Function

key mode configuration **key id**

Format

key *keyvalue*

Parameter Description

	Parameter Description	Value
Parameter <i>keyvalue</i>	password	STRING<1-16>

60.15.accept-lifetime

Function

Key mode configuration key **accept life time**

Format

accept-lifetime *time day moth year*{*time day moth year* | **duration** *duration* | **infinite**}

Parameter Description

parameter	Parameter Description	Value
<i>time</i>	Time Day	The colon is used to separate decimals, such as: 8:01:01
<i>day</i>		INTEGER<1-31>
<i>moth</i>		INTEGER<1-12>
<i>year</i>	Month Year	INTEGER<1993-2035>
<i>duration</i>	Duration of the key	INTEGER<1-2147483646>

60.16.send-lifetime

Function

Key mode configuration key **send life time**

Format

send-lifetime *time day moth year*{*time day moth year* | **duration** *duration* | **infinite**}

Parameter Description

parameter	Parameter Description	Value
<i>time</i>	Time Day	The colon is used to separate decimals, such as: 8:01:01
<i>day</i>		INTEGER<1-31>
<i>moth</i>		INTEGER<1-12>
<i>year</i>	Month Year	INTEGER<1993-2035>
<i>duration</i>	Duration of the key	INTEGER<1-2147483646>

60.17.ip rip authentication

Function

Interface Mode Configuration Authentication

Format

ip rip authentication mode [**md5** *key-chain chainname* | **text** *passwd password*]

no ip rip authentication

Parameter Description

parameter	Parameter Description	Value
md5	Enable MD5 authentication Enable	none
text	plain text authentication	none
<i>chainname</i>	Key Chain Name Plain	STRING<1-32>
<i>password</i>	Text Password	STRING<1-16>

60.18.offset-list

Function

Rip mode configuration route offset

Format

[no]offset-list *acl**direction**metric direction* [*interface**type interfaceid*]

Parameter Description

parameter	Parameter Description	Value
<i>acl</i>	IP Access list name	STRING<1-32>
<i>direction</i>		[in,out]
<i>metric</i>	direction route	INTEGER<0-16>
<i>metric interface type</i>	interface type	[supervlan-interface,vlan-interface]
<i>interfaceid</i>	Interface ID	When the interface type is supervlan-interface : INTEGER<1-128> When the interface type is vlan-interface : INTEGER<1-4094>

60.19.passive-interface

Function

Rip mode passive interface.

Format

[no] passive-interface [default|supervlan-interface|sid|vlan-interface|vid]

Parameter Description

parameter	Parameter Description	Value
<i>sid</i>	SuperVLAN interface ID	INTEGER<1-128>
<i>vid</i>	VLAN interface ID	INTEGER<1-4094>

60.20. route-map

Function

Configuring a **route-map** policy

Format

[no] route-map name[{permit |deny} seqnum] [no]

route-map name direction interfacetype interfaceid

Parameter Description

parameter	Parameter Description	Value
<i>name</i>	Route map name	STRING<1-32>
<i>seqnum</i>	Route map serial number	INTEGER <1-65535> Direction
<i>direction</i>		[in,out]
<i>interfacetype</i>	interface type	[supervlan-interface,vlan-interface]
<i>interfaceid</i>	Interface ID	When the interface type is supervlan-interface : INTEGER<1-128> When the interface type is vlan-interface : INTEGER<1-4094>

60.21.timers basic

Function

Rip mode configuration timer

Format

timers basic update timeout garbage

[no] timers basic

Parameter Description

parameter	Parameter	Value
<i>update</i>	Description Configure RIP route	INTEGER<5-65535>
<i>timeout</i>	update time Configure RIP route timeout time	INTEGER<5-65535>
<i>garbage</i>	Configure RIP route garbage time	INTEGER<5-65535>

60.22.version

Function

RIP mode configuration version number

Format

version *version*
noversion

Parameter Description

parameter	Parameter	Value
<i>version</i>	Description Configure RIP version number	INTEGER<1-2>

60.23.ip rip receive version

Function

Interface mode configuration receiving message version

Format

ip rip receive version *version*
noip rip receive version

Parameter Description

parameter	Parameter Description	Value
<i>version</i>	Version number of the received rip message	INTEGER<1-2>

60.24.ip rip send version

Function

Interface mode configuration sends the version of the message

Format

ip rip send version *version*
noip rip send version

Parameter Description

parameter	Parameter	Value
<i>version</i>	Description: Version number of the received rip message	INTEGER<1-2>

60.25.ip rip split-horizon

Function

Interface mode configuration split horizon

Format

[no] ip rip split-horizon [poisoned-reverse]

Parameter Description

60.26.show ip rip status

Function

Check the **rip** status.

Format

show ip rip status

Parameter Description

60.27.show ip rip interface

Function

Check the **rip** interface status.

Format

show ip rip interface [loopback-interfacelid| supervlan-interfacesid| vlan-interface vid]

Parameter Description

parameter	Parameter Description	Value
<i>lid</i>	Loopback interface ID	INTEGER<0-1>
<i>sid</i>	SuperVLAN interface ID	INTEGER<1-128>
<i>vid</i>	VLAN interface ID	INTEGER<1-4094>

60.28.show rip route-table

Function

View **rip** routing information

Format

show rip route-table [dstip[mask]]

Parameter Description

parameter	Parameter Description	Value
<i>dstip</i>	Destination network address	Dotted decimal notation, such as:
<i>mask</i>	Destination network mask	192.168.1.1 Dotted decimal notation, such as: 255.255.255.0

60.29.show ip fdb

Function

View **fdb** information

Format

show ip fdb [dstip[mask]]

Parameter Description

parameter	Parameter Description	Value
<i>dstip</i>	Destination network address	Dotted decimal notation, such as:
<i>mask</i>	Destination network mask	192.168.1.1 Dotted decimal notation, such as: 255.255.255.0

60.30. Configuration Example

#Networking

DUT1 ----- DUT2

#Configure the RIP process

DUT1(config)#router rip

DUT1(config-router-rip)#network 192.168.1.10

DUT2(config)#router rip

DUT2(config-router-rip)#network 192.168.1.11

#View rip information

DUT1(config-router-rip)#show ip rip status

Routing Protocol is "rip"

Sending updates every 30 seconds with +/-50%, next due in 18 seconds

Timeout after 180 seconds, garbage collection after 120 seconds

Default redistribution metric is 1

Outgoing update filter list for all interface is not set

Incoming update filter list for all interface is not set

Redistributing: connected

Default version control: send version 2, receive any version

Routing for Networks:

192.168.1.10

Routing Information Sources:

Gateway	BadPackets	BadRoutes	Distance	Last Update
192.168.1.11	0	0	120	00:00:16

Distance: (default is 120)

DUT1(config-router-rip)#

#Publish direct routes

DUT1(config-router-rip)#redistribute connected

DUT2(config-router-rip)#redistribute connected

#View the routes learned from neighbors

DUT1(config-router-rip)#show ip route

IP route information

DestIp/Mask	Proto	Distance	Metric	NextHop	Interface
127.0.0.0/8	connected	0	1	*	N/A
192.168.1.0/24	connected	0	1	*	N/A
192.168.2.0/24	connected	0	1	*	N/A
192.168.3.0/24	rip	120	1	192.168.1.11	N/A

Total entries: 4. Printed entries: 4.

61. OSPF

61.1. router ospf

Function

Configure the **ospf** process in the global view

Format

[no] router ospf [*processid*]

Parameter Description

parameter	Parameter Description	Value
<i>processid</i>	Process ID	INTEGER<1-10>

61.2. network

Function

Configure the area number of the interface in **ospf** view

Format

[no] network *interface_address* *wildcard* **area** *area_id*

Parameter Description

Parameter	Parameter Description	Value
<i>interface_address</i>	Interface address reverse mask	Dotted decimal notation, such as 1.1.1.1
<i>wildcard</i>		Dotted decimal notation, such as 0.0.0.255
<i>area_id</i>	Area No.	Dotted decimal notation, such as 0.0.0.1 or INTEGER<0-4294967295>, such as: 1

61.3. ip ospf authentication

Function

Interface mode (disable) enables **OSPF** authentication.

Format

ip ospf authentication [null | message-digest]

no ip ospf authentication
ip ospf authentication [message-digest] interface_address
no ip ospf authentication interface_address

Parameter Description

Parameter	Parameter Description	Value
interface_address	Interface	
address		Dotted decimal notation, such as: 1.1.1.1

61.4. ip ospf authentication-key

Function

Configure the plain text password in interface mode.

Format

ip ospf authentication-key password [interface_address] no
ip ospf authentication-key [interface_address]

Parameter Description

parameter	Parameter	Value
Authentication	Description	STRING<1-8>
password password interface_address	interface address	Dotted decimal notation, such as: 1.1.1.1

61.5. ip ospf message-digest-key

Function

Configure the password for **MD5** authentication in interface mode

Format

ip ospf message-digest-key keyidmd5password [interface_address]
no ip ospf message-digest-key keyidmd5password [interface_address]

Parameter Description

parameter	Parameter Description	Value
keyid	Configure the key for MD5 authentication.	INTEGER<1-255>
password	Configure the password for interface authentication.	STRING<1-16>
interface_addressinterface	interface address	Dotted decimal notation, such as: 1.1.1.1

61.6. redistribute

Function

In the **OSPF** view, configure routes from other protocol sources to be redistributed into the **OSPF** routing domain.

Format

redistribute protocol_type [metric metric] [metric-type metric-type] [route-mapname] no
redistribute protocol_type

Parameter Description

parameter	Parameter Description	Value

<i>protocol_type</i>	specifies the protocol for redistributing routes. The	[bgp,connected,isis,rip,static]
<i>Metric</i>	metric type of	INTEGER<0-16777214>
<i>metric-type</i>	the	INTEGER<1-2>
<i>name</i>	route. Configure the name of the route-map.	STRING<1-32>

61.7. area <area_id> authentication

Function

Enable/disable zone plaintext or **message-digest** authentication.

Format

area area_idauthentication [message-digest] no

area area_idauthentication

Parameter Description

parameter	Parameter Description	Value
<i>area_id</i>	Area No.	Dotted decimal notation, such as 0.0.0.1 or INTEGER<0-4294967295>, such as: 1

61.8. area <area_id> default-cost

Function

Configure the default **cost** value for advertising the default route.

Format

area area_iddefault-costcost

no area area_iddefault-cost

Parameter Description

parameter	Parameter Description	Value
<i>area_id</i>	Area No.	Dotted decimal notation, such as 0.0.0.1 or INTEGER<0-4294967295>, such as: 1
<i>cost</i>	Cost value of the default route advertised in a special area	INTEGER<0-16777214>

61.9. area <area_id> filter-list prefix

Function

Configure the inter-zone filtering policy.

Format

area area_idfilter-list prefixprefix-name{in |out} no

area area_idfilter-list prefixprefix-name{in |out}

Parameter Description

parameter	Parameter Description	Value
<i>area_id</i>	Area No.	Dotted decimal notation, such as 0.0.0.1 or INTEGER<0-4294967295>, such as: 1
<i>prefix-name</i>	Prefix list name	STRING<1-32>

61.10.area <area_id> nssa

Function

Configure the area as **NSSA** .

Format

**area area_id nssa [translate-candidate | translate-always | translate-never | no-summary] no area
area_id nssa [no-summary]**

Parameter Description

parameter	Parameter Description	Value
<i>area_id</i>	Area No.	Dotted decimal, such as 0.0.0.1 or INTEGER<0-4294967295>, such as 1

61.11.area <area_id> stub

Function

Configure the area as a **stub** area

Format

**area area_id stub [no-summary] no
area area_id stub [no-summary]**

Parameter Description

parameter	Parameter Description	Value
<i>area_id</i>	Area No.	Dotted decimal, such as 0.0.0.1 or INTEGER<0-4294967295>, such as 1

61.12.area <area_id> range

Function

Configure inter-area aggregate routes.

Format

**area area_id range netip/len [not-advertise | advertise | cost cost] substitute netip/len] no area
area_id range netip /len [substitute netip/len]**

Parameter Description

parameter	Parameter Description	Value
<i>area_id</i>	Area No.	Dotted decimal, such as 0.0.0.1 or INTEGER<0-4294967295>, such as 1
<i>netip</i>	The aggregate route target network address is in dotted decimal format, such as 172.11.0.0. The target	
<i>len</i>	network mask length will publish	INTEGER<0-32>
advertise	the aggregate route.	
not-advertise	will not publish the aggregated route	
<i>cost</i>	Configure the cost value of the aggregate route	INTEGER <0-16777215> The aggregate route is
substitute	replaced by another network segment	

61.13.area <area_id> shortcut

Function

Configure the area to **shortcut** mode.

Format

area area_id shortcut {default | disable | enable}

no area area_id shortcut

Parameter Description

parameter	Parameter	Value
default	Description By default, shortcut mode	none
disable	is enabled. Shortcut mode is	none
enable	disabled. Shortcut mode is enabled.	none

61.14.area <area_id> virtual-link

Function

Configuring a Virtual Link

Format

area area_id virtual-link rid [authentication-key keyname | message-digest-key keyid md5 password | hello-interval hello | retransmit-interval retransmit | transmit-delay delay | dead-interval dead]*
no area area_id virtual-link rid

Parameter Description

parameter	Parameter Description	Value
<i>area_id</i>	Area No.	Dotted decimal format, such as 0.0.0.1 or INTEGER<0-4294967295>, such as 1
<i>rid</i>	Configure the router ID of the virtual link peer in dotted decimal format, such as: 2.2.2.2Configure the	
<i>key</i>	authentication	STRING<1-8>
<i>kid</i>	passwordConfigure the key for MD5	INTEGER<1-255>
<i>password</i>	authenticationConfigure the password	STRING<1-16>
<i>hello</i>	for MD5 authenticationConfigure the virtual link hello time	INTEGER<1-65535>

<i>retransmit</i>	Configure virtual link retransmission	INTEGER<1-65535>
<i>delay</i>	time Configure virtual link transmission delay time INTEGER<1-65535> Configure virtual link	
<i>dead</i>	invalidation time	INTEGER<1-65535>

61.15.auto-cost reference-bandwidth

Function

Configure the default **cost** calculation method for interfaces

Format

auto-cost reference-bandwidth *bandwidth*

no auto-cost reference-bandwidth

Parameter Description

parameter	Parameter Description	Value
<i>bandwidth</i>	Configure the cost value calculation reference value	INTEGER<1-4294967>

61.16. clear ip prefix-list

Function

Clear the statistics of the matched prefix list

Format

clear ip prefix-list [*prefix-name* [*netip/len*]]

Parameter Description

parameter	Parameter Description	Value
<i>prefix-name</i>	Prefix list name	STRING<1-32>
<i>netip</i>	Aggregate route Destination network address	Dotted decimal notation, such as: 172.11.0.0
<i>len</i>	Destination network mask length	INTEGER<0-32>

61.17. capability opaque

Function

Configure LSAs that support **opaque** .

Format

[no] capability opaque

Parameter Description

none

61.18.default-information originate

Function

Configure the default route

Format

default-information originate [**always** | **metric metric** | *metric-type metric-type* | **route-map**

name]

no default-information originate [**always**|**metric**|**metric-type**|**route-map**]

Parameter Description

parameter	Parameter	Value
<i>metric</i>	Description Configure the metric value of the imported default route	INTEGER<0-16777214> Configure the type
<i>metric-type</i>	value of the imported default route INTEGER<1-2> Route-map name	
<i>name</i>		STRING<1-32>

61.19.default-metric

Function

Configure the default **metric** value for importing external routes .

Format

default- *metric* **metric**

no default-metric

Parameter Description

parameter	Parameter Description	Value
<i>metric</i>	Configure the metric value of the imported default route	INTEGER<0-16777214>

61.20.distance

Function

Configure the administrative distance of **OSPF** routes.

Format

distance ospf {**external** *distance* | **inter-area** *distance* | **intra-area** *distance*}* **no distance**

ospf [**external** *distance* | **inter-area** *distance* | **intra-area** *distance*]* **distance** *distance* [*netip/*

len [*ipacl*]] **no distance** [*netip/ len*]

Parameter Description

parameter	Parameter	Value
<i>distance</i>	Description Configuration	INTEGER<1-255>
<i>netip</i>	Administrative distance value Aggregate route	Dotted decimal notation, such as: 172.11.0.0
<i>len</i>	Target network address Target network mask length	INTEGER<0-32>
<i>ipcal</i>	IP ACL Name	STRING<1-32>

61.21.distribute-list

Function

Configuring the Release Path Policy

Format

[no] distribute-list *ipacl* out {bgp | connected | isis | rip | static}

Parameter Description

	Parameter Description	Value
Parameter <i>ipcal</i>	IP ACL Name	STRING<1-32>

61.22.ip access-list

Function

Configure **IP ACL** policies in the **OSPF** process .

Format

[no] ip access-list *aclid* {permit | deny} {any | host *hostip* | *netip* *wildcard* [any | host *ip* | *ip* *wildcard*]}

[no] ip

access-list *aclname* {permit | deny} {any | *netip*/*len* [exact-match]}

Parameter Description

parameter	Parameter Description	Value
<i>aclid</i>	Access List ID	Standard ACL value INTEGER<1-99> Extended ACL value INTEGER<100-199>
<i>hostip</i>	Target host address	Dotted decimal notation, such as: 1.1.1.1
<i>netip</i>	Target network	Dotted decimal notation, such as: 1.0.0.0
<i>wildcard</i>	address Wildcard	Dotted decimal notation, such as: 0.0.0.255
<i>aclname</i>	Access List name	STRING<1-32>
<i>len</i>	mask length	INTEGER<1-32>

61.23.ip prefix-list

Function

Configure the **IP prefix** policy in the **OSPF** process .

Format

[no] ip prefix-list sequence-number

[no] ip prefix-list *prefixname* [seq *seqid*] {permit | deny} {any | *netip*/*len* [ge *len*] [le *len*]}

Parameter Description

parameter	Parameter Description	Value
<i>prefixname</i>	IP prefix name	STRING<1-32>
<i>seqid</i>	serial	INTEGER<1-2147483647>
<i>netip</i>	number target	Dotted decimal notation, such as: 1.0.0.0
<i>len</i>	network address mask length	INTEGER<1-32>

61.24.log-adjacency-changes

Function

(Cancel) Enable **OSPF** logging information.

Format

[no] log-adjacency-changes [detail]

Parameter Description

none

61.25.neighbor

Function

Configure **OSPF** static neighbors.

Format

neighbor ip [priority priority] [poll-interval interval] no
neighbor ip

Parameter Description

	Parameter Description	Value
	Configure the IP address of the static	Dotted decimal notation, such as: 1.0.0.1
Parameter ip priority	neighbor. Configure the priority of the	INTEGER<0-255>
interval	static neighbor. Configure the polling interval of the static neighbor.	INTEGER<1-65535>

61.26.ospf abr-type

Function

Configure the **OSPF ABR** type.

Format

ospf abr-type {cisco|ibm |shortcut|standard}
noospf abr-type

Parameter Description

none

61.27.ospf rfc1583compatibility

Function

Configure the routing calculation method to be compatible with **RFC1583**.

Format

[on] ospf rfc1583compatibility

Parameter Description

none

61.28.ospf router-id

Function

Configure the **OSPF** routing identifier (**RID**).

Format

ospf router-id*router-id*

noospf router-id

Parameter Description

parameter	Parameter	Value
<i>router-id</i>	Description Route ID	0.0.0.1-255.255.255.255

61.29.passive-interface

Function

Configure the passive interface.

Format

[no] passive-interface [**default**]**supervlan-interface***sid***vlan-interface***vid*

Parameter Description

parameter	Parameter Description	Value
<i>sid</i>	SuperVLAN interface ID	INTEGER<1-128>
<i>vid</i>	VLAN interface ID	INTEGER<1-4094>

61.30. refresh timer

Function

Configuring the Refresh Timer

Format

refresh timer *timer*

norefresh timer

Parameter Description

parameter	Parameter	Value
timer	Description Refresh timer time	INTEGER<10-1800>

61.31. route-map

Function

Configure a **route-map** policy.

Format

[no] route-map name[**{permit |deny}** *seqnum*]

Parameter Description

parameter	Parameter Description	Value
<i>name</i>	Route map name	STRING<1-32>
<i>seqnum</i>	Route map serial number	INTEGER <1-65535>

61.32.timers throttle spf

Function

Configure the threshold of the **SPF** algorithm.

Format

timers throttle spf *delay* *init* *max*

no**timers throttle spf**

Parameter Description

parameter	Parameter	Value
<i>delay</i>	Description Configure the delay time of the SPF algorithm INTEGER<0-600000> Configure the init hold time of	
<i>init</i>	the SPF algorithm INTEGER<0-600000> Configure the max hold time of the SPF algorithm INTEGER<0-600000>	
<i>max</i>		

61.33.ip ospf bfd

Function

Interface mode (cancel): Enable **BFD** function.

Format

[no] ip ospf bfd

61.34.ip ospf cost

Function

Interface mode configures **the cost** value of the interface.

Format

ip ospf cost *cost* [*ip*]

no**ip ospf cost** [*ip*]

Parameter Description

parameter	Parameter Description	Value
<i>cost</i>	Configure the cost value of the interface and	INTEGER<1-65535>
<i>ip</i>	the IP address of the interface	Dotted decimal notation, such as: 1.1.1.1

61.35.ip ospf dead-interval

Function

Configure **OSPF** dead time in interface mode.

Format

ip ospf dead-interval {*interval* | **minimal hello-multiplier** *multiple*} [*ip*]

no**ip ospf dead-interval** [*ip*]

Parameter Description

parameter	Parameter Description	Value
<i>interval</i>	Configure the dead time of the	INTEGER<1-65535>
<i>multiple</i>	interface. Configure the dead time to be a multiple of the hello time. INTEGER<1-10>	
<i>ip</i>	Interface IP address	Dotted decimal notation, such as: 1.1.1.1

61.36.ip ospf hello-interval

Function

Configure **the OSPF hello** time in interface mode.

Format

ip ospf hello-interval *interval* [*ip*]

noip ospf hello-interval [*ip*]

Parameter Description

parameter	Parameter	Value
<i>interval</i>	Description Configuration interface	INTEGER<1-255>
<i>ip</i>	hello time interface IP address	Dotted decimal notation, such as: 1.1.1.1

61.37.ip ospf mtu-ignore

Function

Interface mode **(disable)** enables ignoring the check of MTU value.

Format

[no] ip ospf mtu-ignore *ip*

Parameter Description

parameter	Parameter Description	Value
<i>ip</i>	Interface IP address	Dotted decimal notation, such as: 1.1.1.1

61.38.ip ospf network

Function

Interface mode configures the network type.

Format

ip ospf network {broadcast | non-broadcast | point-to-multipoint | point-to-point}

noip ospf network

Parameter Description

61.39.ip ospf priority

Function

Interface Mode The priority of the interface.

Format

ip ospf priority *priority* [*ip*]

noip ospf priority [*ip*]

Parameter Description

parameter	Parameter	Value
<i>priority</i>	Description Configuration interface	INTEGER<0-255>
<i>ip</i>	priority interface IP address	Dotted decimal notation, such as: 1.1.1.1

61.40.ip ospf retransmit-interval

Function

Configure the retransmission time in port mode.

Format

ip ospf retransmit-interval *interval* [*ip*]

noip ospf retransmit-interval [*ip*]

Parameter Description

parameter	Parameter Description	Value
<i>interval</i>	Configure the interface retransmission time	INTEGER<1-65535>
<i>ip</i>	interface IP address	Dotted decimal notation, such as: 1.1.1.1

61.41.ip ospf transmit-delay

Function

The port mode configures the transmission delay time.

Format

ip ospf transmit-delay *delay* [*ip*]

noip ospf transmit-delay [*ip*]

Parameter Description

parameter	Parameter	Value
<i>delay</i>	Description Configuration interface transmission delay	INTEGER<1-65535>
<i>ip</i>	time Interface IP address	Dotted decimal notation, such as: 1.1.1.1

61.42.show ip ospf

Function

Check the **ospf** information.

Format

show ip ospf [*processid*]

Parameter Description

parameter	Parameter Description	Value
<i>processid</i>	Process ID	INTEGER<1-10>

61.43.show ospf route-table

Function

Check the **ospf** routing table information.

Format

show ospf route-table

Parameter Description

none

61.44.show ip ospf border-routers

Function

Check the **OSPF** border router information.

Format

show ip ospf border-routers

Parameter Description

none

61.45.show ip ospf database

Function

Check the **ospf LSA** database information.

Format

show ip ospf database [asbr-summary | external | network | nssa-external | opaque-area | opaque-as | opaque-link | router | summary]

Parameter Description

none

61.46.show ip ospf interface

Function

Check the **ospf** interface information.

Format

show ip ospf interface [vlan-interfacevid | supervlan-interface sid]

Parameter Description

parameter	Parameter Description	Value
<i>vid</i>	ID number of common VLAN interface	INTEGER<1-4094>
<i>sid</i>	SuperVLAN interface ID	INTEGER<1-128

61.47.show ip ospf neighbor

Function

Check the **OSPF** neighbor information.

Format

show ip ospf neighbor

Parameter Description

none

61.48.show ip ospf virtual-link

Function

Check the **OSPF** virtual link information.

Format

show ip ospf virtual-link

Parameter Description

none

61.49. Configuration Example

#Networking

DUT1 ----- DUT2

#Configure **OSPF** process 1

DUT1(config-router-ospf-1)#router ospf

1 DUT1(config-router-ospf-1)#network 192.168.1.10 0.0.0.255 area 0.0.0.1

DUT2(config-router-ospf-1)#router ospf

1 DUT2(config-router-ospf-1)#network 192.168.1.11 0.0.0.255 area 0.0.0.1

#View neighbor information

DUT1(config)#show ip ospf 1 neighbor

Type: D - Dynamic, S - Static

Type	Neighbor ID	Pri	State	Dead Time	Address	Interface	RXmtL	RqstL	DBsmL
D	192.168.1.11	1	Full/DR	34.258s	192.168.1.11	VLAN-IF1	0	0	0

#View the routes learned from neighbors

DUT1(config-router-ospf-1)#show ip route

IP route information

DestIp/Mask	Proto	Distance	Metric	Nexthop	Interface
127.0.0.0/8	connected	0	1	*	N/A

192.168.1.0/24	connected 0	1	*	N/A
192.168.2.0/24	connected 0	1	*	N/A
192.168.3.0/24	ospf 110	1	192.168.1.11	N/A

Total entries: 4. Printed entries: 4.

62. CFM

62.1. cfm md

Function

Create or delete a maintenance domain globally

Format

[no] cfm md <id>

Parameter Description

parameter	Parameter Description	Value
<i>id</i>	Domain ID	[1-4294967295]

62.2. cfm md format type name level

Function

Configure domain names and levels under maintenance domains

Format

cfm md format [none | <type> name <name>] level <level>

Parameter Description

parameter	Parameter	Value
<i>type</i>	Description Name	[dns-name,mac-uint,string]
<i>name</i>	Type Maintenance domain name A string filled in according to <i>type</i> type	
<i>level</i>	Maintenance domain level [0-7]	

62.3. cfm ma

Function

Configuring a maintenance set in a maintenance domain

Format

[no] cfm ma <id>

Parameter Description

parameter	Parameter	Value
<i>id</i>	Description Maintenance Set Name	[1-4294967295]

62.4. cfm mep Id direction

Function

Configure the maintenance point direction and corresponding port in the maintenance set

Format

```
cfm mep <Id> direction <direction> [primary-vlan <vid>] interface [ethernet <pId> |  
channel-group <lagId>] no  
cfm mep <Id>
```

Parameter Description

parameter	Parameter Description	Value
<i>Id</i>	Maintenance point ID	[1-8191]
<i>direction</i>	Maintenance point direction	[up,down]
<i>vid</i>	VLAN ID Port	[1-4094]
<i>pId</i>	Number	Stack number/slot number/port number, for example: 0/0/1
<i>lagId</i>	Aggregation Port ID	[1-16]

62.5. cfm mep Id priority

Function

Configure maintenance point priority in maintenance set

Format

```
cfm mep <Id> priority <priority> no cfm  
mep <Id> priority
```

Parameter Description

parameter	Parameter Description Value	
<i>Id</i>	Maintenance point ID [1-8191]	
<i>priority</i>	Maintenance point priority [0-7]	

62.6. cfm mep Id state

Function

Configuration of maintenance point management status under maintenance set

Format

```
cfm mep <Id> state { enable | disable }
```

Parameter Description

parameter	Parameter Description	Value
<i>Id</i>	Maintenance point ID	[1-8191]

62.7. cfm mep Id cc

Function

Configure maintenance point continuity detection under maintenance set

Format

cfm mep <id> cc { enable | disable }

Parameter Description

parameter	Parameter Description	Value
<i>Id</i>	Maintenance point ID	[1-8191]

62.8. cfm mip

Function

Configure the intermediate point under the maintenance set

Format

cfm mip <id> interface [ethernet <pld> | channel-group <lagld>] no cfm mip <id>

Parameter Description

parameter	Parameter	Value
<i>Id</i>	Description	[1-8191]
<i>pld</i>	Maintenance	Stack number/slot number/port number, for example: 0/0/1
<i>lagld</i>	point ID Port number Aggregation port ID	[1-16]

62.9. cfm rmep

Function

Configure remote endpoints in the maintenance set

Format

cfm rmep <id> mep <id> no

cfm rmep <id>

Parameter Description

parameter	Parameter Description	Value
<i>Id</i>	Maintenance point ID	[1-8191]

62.10. cfm loopback

Function

Configure the link tracking function in the maintenance set

Format

cfm loopback mep <id> [dst-mac <mac> | dst-mep <id>] [count <counts> data <content>

length <len> priority <priority>]

Parameter Description

parameter	Parameter Description	Value
<i>Id</i>	Maintenance point ID	[1-8191]
<i>Mac</i>	MAC address	xx:xx:xx:xx:xx:xx
<i>counts</i>	message	[1-1024]
<i>content</i>	number message content	1-400 characters

<i>len</i>	Message length	[1-1500]
<i>priority</i>	Message priority	[0-7]

62.11. cfm linktrace

Function

Configuring loopback detection in maintenance set

Format

cfm linktrace mep <Id> [**dst-mac** <mac> | **dst-mep** <Id>] [**flag** <flag> **timeout** <timeout> **tll**

[tll]]

Parameter Description

parameter	Parameter Description	Value
<i>Id</i>	Maintenance point ID	[1-8191]
<i>Mac</i>	MAC Address	xx:xx:xx:xx:xx:xx
<i>flag</i>	MIP CCM Database tag [unuse-mpddb, use-mpddb] [3-60]	
<i>timeout</i>	Timeout lifetime	
<i>tll</i>	value	[1-255]

62.12.cfm eth-2dm

Function

Configuring the frame delay measurement function in the maintenance set

Format

cfm eth-2dm mep <Id> [**dst-mac** <mac> | **dst-mep** <Id>] [**count** <counts> **interval**

<interval> **priority** <priority> **timeout** <timeout>] **Parameter**

Description

parameter	Parameter Description	Value
<i>Id</i>	Maintenance point ID	[1-8191]
<i>Mac</i>	MAC address	xx:xx:xx:xx:xx:xx
<i>counts</i>	measurement	[1-1024]
<i>interval</i>	interval Message	[1-30]
<i>priority</i>	priority timeout	[0-7]
<i>timeout</i>		[3-60]

62.13. cfm eth-slm

Function

Configuring the frame loss rate measurement function in the maintenance set

Format

cfm eth-slm mep <Id> [**dst-mac** <mac> | **dst-mep** <Id>] [**count** <counts> **interval**

<interval> **priority** <priority> **timeout** <timeout>] **Parameter**

Description

parameter	Parameter Description	Value

<i>Id</i>	Maintenance point ID	[1-8191]
<i>Mac</i>	MAC address	XX:XX:XX:XX:XX:XX
<i>counts</i>	measurement	[1-1024]
<i>interval</i>	interval Message	[1-30]
<i>priority</i>	priority timeout	[0-7]
<i>timeout</i>		[3-60]

62.14. cfm cc

Function

Configure the continuity detection interval in the maintenance set

Format

cfm cc interval <interval>

no cfm cc interval

Parameter Description

parameter	Parameter	Value
<i>interval</i>	Description Time interval	[1,10,60,600]

62.15.show cfm md

Function

Viewing maintenance domain information

Format

show cfm md [<mdId> [ma <maid>]]

Parameter Description

parameter	Parameter Description	Value
<i>mdId</i>	Maintenance domain	[1-4294967295]
<i>maid</i>	ID Maintenance set ID	[1-4294967295]

62.16.show cfm ma

Function

View maintenance set information

Format

show cfm ma

Parameter Description

none

62.17.show cfm mp

Function

View maintenance point information

Format

show cfm mp <location>

Parameter Description

parameter	Parameter Description	Value
<i>location</i>	Location	[local,remote]

62.18.show cfm cc

Function

Viewing Continuity Test Statistics

Format

show cfm cc [database]

Parameter Description

none

62.19.show cfm errors

Function

View error statistics

Format

show cfm cc errors

Parameter Description

none

63. BGP

63.1. router bgp

Function

Configure the **bgp** process in the global view

Format

router *bgp* autonomous-system

no router **bgp** *autonomous-system*

Parameter Description

	Parameter Description	Value
Parameter <i>autonomous-system</i>	BGP local autonomous system number	INTEGER<1-65535>

63.2. aggregate-address

Function

Configuring Aggregate Routes in **BGP** Mode

Format

aggregate-address{**ip-address/length** | *ip-address mask*}[**as-set** | **summary-only**]*

no aggregate-address{**ip-address/length** | *ip-address mask*}

Parameter Description

parameter	Parameter Description	Value
<i>ip-address</i>	Aggregate route address	Dotted decimal format
<i>length</i>	Mask length of the aggregate route	The value is an integer. The value range is 0~32
<i>mask</i>	Aggregate route mask in dotted decimal format	
as-set	Indicates that the aggregate route needs to generate the AS_PATH	
attribute / summary-only means that only the aggregate route is advertised, and the detailed route is not advertised /		

63.3. bgp always-compare-med

Function

The command is used to configure **BGP** route optimization to force comparison of **MED** attribute values from different neighbor routes.

Format

bgp always-compare-med

no bgp always-compare-med

Parameter Description

none

63.4. bgp client-to-client reflection

Function

The command is used to configure the route reflection function between **BGP** clients.

By default, route reflection between **BGP** clients is enabled.

Format

bgp client-to-client reflection

no bgp client-to-client reflection

Parameter Description

none

63.5. bgp cluster-id

Function

The command is used to configure the cluster ID of the **BGP** route reflector. By default, the route reflector cluster ID uses the device **Router ID** value.

Format

bgp cluster-id {*ip-address* | *cluster-id*}

no bgp cluster-id

Parameter Description

parameter	Parameter	Value
<i>ip-address</i>	Description Route reflector cluster ID	Dotted decimal format
<i>cluster-id</i>	value Route reflector cluster ID value	The value is an integer ranging from 1 to 4294967295 .

63.6. bgp confederation identifier

Function

Commands are used to configure the **BGP** confederation **ID**

Format

bgpconfederationidentifieras-number

no bgp confederation identifier

Parameter Description

parameter	Parameter	Value
<i>as-number</i>	Description Alliance ID, which identifies the alliance as a whole Governance system number	The value is an integer. 1-4294967295

63.7. bgp confederation peers

Function

The command is used to specify the sub-AS numbers that belong to the same confederation.

Format

bgp confederation peers *as-number-list*

no bgp confederation peers *as-number-list*

Parameter Description

	Parameter Description	Value
Parameter <i>as-number-list</i> sub-AS number list		The value is an integer ranging from 1 to 4294967295 .

63.8. bgp default local-preference

Function

Commands are used to configure the default value of local preference.

Format

bgp default local-preference*local-value*

no bgp default local-preference

Parameter Description

parameter	Parameter Description	Value
<i>local-value</i>	Default local preference	The value is an integer ranging from 1 to 4294967295 .

63.9. bgp network import-check

Function

When this function is enabled, it will check whether the routes imported by **BGP** exist in the global **IP** routing table.

By default, it is not enabled.

Format

bgp network import-check

no bgp network import-check

Parameter Description

none

63.10.bgp router-id

Function

Commands are used to configure **the router ID** of the device.

Format

bgp router-id *router-id*

no bgp router-id

Parameter Description

parameter	Parameter Description	Value
<i>router-id</i>	Router ID , in dotted decimal format using the IP address	

63.11.neighbor advertisement-interval

Function

The command is used to configure the interval for sending routes to neighbors.

Format

neighbor neighbor-address advertisement-interval seconds

no neighbor neighbor-address advertisement-interval

Parameter Description

Parameter	Parameter Description	Value
<i>neighbor-address</i>	neighbor IP address	Dotted decimal
<i>seconds</i>	time interval	The value is an integer ranging from 1 to 600.

63.12.neighbor distribute-list

Function

Filter **BGP** routes based on **access-list** , supporting **in** and **out** directions

Format

neighbor {neighbor-address | peer-group-name} distribute-list {acl-number | acl-name} { in | out}

no neighbor {neighbor-address | peer-group-name} distribute-list {acl-number | acl-name} { in | out}

Parameter Description

	Parameter Description	Value
Parameters <i>neighbor-address</i>	neighbor IP address	Dotted decimal
<i>peer-group-name</i>	peer group name	Integer format : 1-199 or
<i>acl-number</i>	ACL Number	1300-1999
<i>acl-name</i>	ALC Name	The value is a string. The value range is 1-32.
in	Import	/
out	Application Export Application	/

63.13.neighbor ebgp-multihop

Function

The command is used to configure the establishment of connections between non-directly connected **EBGP** neighbors and specify the maximum number of hops allowed.

Format

neighbor {neighbor-address | peer-group-name} ebgp-multihop [ttl-value]

no neighbor {neighbor-address | peer-group-name} ebgp-multihop

Parameter Description

parameter	Parameter Description	Value

<i>neighbor-address</i> neighbor	IP address	Dotted decimal
<i>peer-group-name</i> peer	group name	Integer format: 1-255
value <i>ttl-value</i>	TTL	

63.14.neighbor filter-list

Function

Filter **BGP** routes based on **AS-PATH** list , supporting **in** and **out** directions

Format

neighbor{*neighbor-address* | **peer-group-name**}*filter-list-as-path-number* {**in** | **out**}

no *neighbor*{*neighbor-address* | **peer-group-name**}*filter-list-as-path-number* {**in** | **out**}

Parameter Description

	Parameter Description	Value
Parameters <i>neighbor-address</i> neighbor		Dotted decimal
IP address <i>peer-group-name</i> peer	group name	Integer format: 1-199
<i>-path-</i> numbering	AS-PATH number	as
application ingress		/
out application		/

63.15.neighbor next-hop-self

Function

The command is used to configure the next hop attribute to be changed to the address of the router itself when advertising routes to neighbors or peer groups.

Format

neighbor{*neighbor-address* | *peer-group-name*}*next-hop-self*

no *neighbor*{*neighbor-address* | *peer-group-name*}*next-hop-self*

Parameter Description

Parameter	Parameter Description	Value
<i>neighbor-address</i> neighbor	IP address <i>peer-</i>	Dotted decimal
<i>group-name</i> peer	group name	The value is a string. The value range is 1-32.

63.16.neighbor passive

Function

The command is used to configure the current device as a passive device, which does not actively send **open** messages to neighboring devices.

Format

neighbor{neighbor-address | peer-group-name}passive

no *neighbor{neighbor-address | peer-group-name}passive*

Parameter Description

Parameter	Parameter Description	Value
<i>neighbor-address</i>	neighbor IP address	Dotted decimal
<i>peer-group-name</i>	peer group name	The value is a string. The value range is 1-32.

63.17.neighbor password

Function

MD5 authentication is performed when establishing a **TCP** connection for **BGP**. The connection can only be established if the keys configured on the two routers are the same.

Establish a **TCP** connection to avoid establishing a **TCP** connection with an illegal **BGP** router

Format

neighbor{neighbor-address | peer-group-name}passwordpassword-value

no *neighbor{neighbor-address | peer-group-name}password*

Parameter Description

	Parameter Description	Value
Parameters <i>neighbor-address</i>	neighbor IP address	Dotted decimal
<i>peer-group-name</i>	peer group name	The value range is 1-32. The value range is 1-80.
<i>password-value</i>		
encryption key		

63.18.neighbor peer-group-name peer-group

Function

Command is used to create a new peer group

Format

neighborpeer-group-name peer-group

no *neighborpeer-group-name peer-group*

Parameter Description

	Parameter Description	Value
Parameter <i>peer-group-name</i>	peer group name	The value is a string. The value range is 1-32.

63.19.neighbor peer-group

Function

The command is used to configure neighbors to join the specified peer group.

Format

*neighbor***neighbor-address peer-grouppeer-group-name**

no *neighbor***neighbor-address peer-grouppeer-group-name**

Parameter Description

	Parameter Description	Value
Parameters <i>neighbor-address</i>	neighbor IP address	Dotted decimal
<i>peer-group-name</i> peer group name		The value is a string. The value range is 1-32.

63.20.neighbor prefix-list

Function

Filter **BGP** routes based on **IP** prefix list , supporting **in** and **out** directions

Format

neighbor{*neighbor-address* | **peer-group-name**}**prefix-listprefix-list-name {in|out}**

no *neighbor*{*neighbor-address* | **peer-group-name**}**prefix-listprefix-list-name {in|out}**

Parameter Description

	Parameter Description	Value
Parameters <i>neighbor-address</i>	neighbor IP address	Dotted decimal
<i>peer-group-name</i> peer group name		The value is a string. The value range is 1-32.
<i>prefix-list-name</i>	IP prefix list name	The value range is 1-32.

63.21.neighbor remote-as

Function

The command is used to configure the **AS** number of a neighbor or peer group.

Format

neighbor{*neighbor-address* | **peer-group-name**}**remote-asas-number**

no *neighbor*{*neighbor-address* | *peer-group-name*}**remote-as**

Parameter Description

Parameter	Parameter Description	Value
<i>neighbor-address</i>	neighbor IP address	Dotted decimal
<i>peer-group-name</i>	peer group name	Integer format: 1-65535
<i>as-number</i>	AS Number	

63.22.neighbor route-map

Function

The command is used to apply routing policies to **BGP** routes in order to filter routes or modify route attributes.

Holds **int** and **out** directions

Format

neighbor{*neighbor-address* | **peer-group-name**}route-map*route-map-name* {**in**|**out**}

no *neighbor*{*neighbor-address* | **peer-group-name**}route-map*route-map-name* {**in**|**out**}

Parameter Description

parameter	Parameter Description	Value
<i>neighbor-address</i> neighbor IP address <i>peer-group-name</i>		Dotted decimal
peer group name <i>route-map-name</i>	routing policy name ingress	The value is a string. The value range is 1-32. The
application egress application		value range is 1-32.
in		/
out		/

63.23.neighbor route-reflector-client

Function

Commands are used to configure the route reflector client

Format

neighbor{*neighbor-address* | **peer-group-name**}route-reflector-client

no *neighbor*{*neighbor-address* | **peer-group-name**}route-reflector-client

Parameter Description

	Parameter Description	Value
Parameters <i>neighbor-address</i> neighbor IP address <i>peer-</i>		Dotted decimal
<i>group-name</i> peer group name		The value is a string. The value range is 1-32.

63.24.neighbor send-community

Function

The command is used to configure the community attributes to be advertised to neighbors or peer groups.

Format

neighbor{*neighbor-address* | **peer-group-name**}send-community [**both**|**extended**|**standard**]

no *neighbor*{*neighbor-address* | **peer-group-name**}send-community
[both|extended|standard]

Parameter Description

parameter	Parameter Description	Value
<i>neighbor-address</i> neighbor IP	address <i>peer-group-</i>	Dotted decimal
<i>name</i> peer group name		The value is a string. The value range is 1-32.
both	Send standard and extended community	
extended	attributes / Send only extended community	
standard	attributes / Send only standard community attributes /	

63.25.neighbor shutdown

Function

The command is used to configure and close the **TCP** connection of a neighbor or peer group.

Format

neighbor{neighbor-address | peer-group-name}shutdown

no *neighbor{neighbor-address | peer-group-name}shutdown*

Parameter Description

	Parameter Description	Value
Parameters <i>neighbor-address</i>	neighbor IP address	Dotted decimal
<i>peer-group-name</i> peer group name		The value is a string. The value range is 1-32.

63.26.neighbor timers

Function

The command is used to configure the **keepalive** and **holdtime** of a specified neighbor or peer.

Format

neighbor{neighbor-address | peer-group-name}timerskeepalive-time hold-time

no *neighbor{neighbor-address | peer-group-name}timers*

Parameter Description

Parameter	Parameter Description	Value
<i>address</i> neighbor IP	address <i>peer-group-name</i>	Dotted decimal
peer group name		Integer value range: 0-21845 Integer value
<i>keepalive-time</i>	Keepalive Time	range: 0-65535
<i>hold-time</i>	Hold time	

63.27.network

Function

The command is used to send the route of the specified network segment to the **BGP** routing table.

Format

network{*ip-address/length* | *ip-adress* [**mask** *mask-address*]}[*route-map**route-map-name*]

no *network*{*ip-address/length* | *ip-adress* [**mask** *mask-address*]}

Parameter Description

parameter	Parameter	Value
<i>ip-address</i>	Description Destination	Dotted decimal format
<i>length</i>	network address	The value is an integer ranging from 0 to 32 .
mask	Mask length Set the mask for the specified network address	/
<i>mask-address</i>	network mask in dotted decimal format	
route-map	Apply routing policy to the specified network segment . In string format	
<i>route-map-name</i>	routing policy name	the value range is 1-32.

63.28. redistribute

Function

The command is used to import the routing information of **the IGP** routing protocol into **the BGP** routing table so that the imported information can be published through **BGP** .

Routing information

Format

redistribute{**connected** | **isis** | **ospf** | **rip** | **static** } [**metric** *metric-value*|*route-map* *route-map-name*]*

no redistribute{**connected** | **isis** | **ospf** | **rip** | **static** }

Parameter Description

parameter	Parameter Description	Value
connected	Direct Routing	/
isis	ISIS Routing	/
ospf	OSPF Routing	/
rip	RIP static	/
static	routing sets	/
metric	the metric value for the imported route	/
<i>metric-value</i>	Metric value	Digital format, value range: 0-4294967295
route-map	Apply routing policy to the routes of the specified network segment. In string format,	
<i>route-map-name</i>	routing policy name	the value range is: 1-32

63.29.timers

Function

The command is used to configure the global **keepalive** and **holdtime** time, and its priority is lower than **neighbor timers**.

Format

timers *bgpkeepalive-time hold-time*

no timers bgp

Parameter Description

parameter	Parameter Description	Value
<i>keepalive-time</i>	Keepalive Time	Integer value range: 0-21845 Integer value range:
<i>hold-time</i>	Hold time	0-65535

63.30.ip access-list

Function

The command is used to configure the **ACL** access control list under the **BGP** process , supporting standard ACL, extended ACL, and named **ACL**.

Format

Standard **ACL**:

ip access-list*standard-acl-number {permit | deny } {ip-address wildcard | any | host ip-address }*

no access-list *standard-acl-number [permit | deny]{ip-address wildcard | any | host ip-address }}*

Extended **ACL**:

ip access-list*extended-acl-number {permit | deny } { ip sour-addr sour-wildcard | any | host ip-address } {dest-addr dest-wildcard | any | hostdest-addr }*

no access-list*extended-acl-number [permit | deny { ip sour-addr sour-wildcard | any | host ip-address } {dest-addr dest-wildcard | any | hostdest-addr }]*

Name **ACL**:

ip access-list*acl-name {permit | deny } {ip-prefix/length | any} [exact-match]*

no ip access-list*acl-name [permit | deny {ip-prefix/length | any} [exact-match]]*

Parameter Description

parameter	Parameter Description	Value
<i>standard-acl- number</i> Standard ACL number		The value is an integer ranging from 1 to 99. 1300-1999
<i>extended-acl- number</i> Extended ACL number		The value is an integer ranging from 100 to 199. Or 2000-2699 string
<i>acl-name</i>	ACL Name	format: Value range: 1-32
permit	Allow	/
deny	Deny	/
<i>ip-address</i>	Destination network address	Dotted decimal format

<i>wildcard</i>	The reverse mask of the destination network in dotted decimal format	
<i>sour-addr</i>	Destination network address in dotted decimal format	
<i>sour-wildcard</i>	Match the destination network address in reverse mask	dotted decimal format
<i>dest-addr</i>	Mask address in dotted decimal format	
<i>dest-wildcard</i>	Matches the inverse mask of the masked address in dotted decimal format	
<i>ip-prefix</i>	Destination network address in dotted decimal format	
<i>length</i>	Mask length integer, value range: 0-32 all network host	addresses
any		/
host		/

63.31.ip as-path

Function

Commands are used to configure the **AS-PATH** path list

Format

ip as-path access-list *as-path-number* {**permit** | **deny** } *as-path*

no ip as-path access-list *as-path-number* {**permit** | **deny** } *as-path*

Parameter Description

parameter	Parameter Description	Value
<i>as-path-number</i>	AS-PATH numbers allow	The value is an integer ranging from 1 to 199.
permit	for	/
deny	rejection	/
<i>as-path</i>	of regular expressions, which are used to specify Specified AS attribute set	The value is a string ranging from 1 to 64.

63.32.ip prefix-list

Function

Command used to configure the **IPv4** address prefix list

Format

ip prefix-list {**sequence-number** | {*prefix-list-name* [*seqseq-value*]} {**permit** | **deny** } {*network/length*
[*ge ge-value* [*lele-value*]] **any** }}

no ip prefix-list{**sequence-number** | {*prefix-list-name* [[*seqseq-value*]} {**permit** | **deny** } {*network/length*
[*ge ge-value* [*lele-value*]] **any**]}}

Parameter Description

parameter	Parameter Description	Value
sequence-number	Command is used to determine whether the prefix list contains With serial number	Default includes: sequence-number
<i>prefix-list-name</i> prefix list name		The value is a string. The value range is 1-32.

seq	Specify the prefix list sequence number	/
<i>seq-value</i>	value to allow	The value is an integer ranging from 1 to 2147483647.
permit	and deny	/
deny		/
<i>network</i>	IPv4 address prefix mask	Dotted decimal
<i>length</i>	length is greater	The value is an integer ranging from 0 to 32.
ge	than or equal to	/
<i>ge-value</i>	the minimum prefix length	The value is an integer ranging from 0 to 32.
le	and less than or	/
<i>le-value</i>	equal to the maximum	The value is an integer ranging from 0 to 32.
any	prefix length All networks	

63.33.ip community-list

Function

Commands are used to configure a standard and extended **community-list**

Format

ip community-list{*standard-comm-list-num* | **standard** *standard-comm-list-num*}{**permit** | **deny**}
{*string* | **internet** | **local-AS** | **no-advertise** | **no-export**}

no ip community-list{*standard-comm-list-num* | **standard** *standard-comm-list-num*}{**permit** | **deny**}
{*string* | **internet** | **local-AS** | **no-advertise** | **no-export**}

ip community-list{*expanded-comm-list-num* | **expanded** *expanded-comm-list-num*}{**permit** | **deny**}
regular-expression

no ip community-list{*expanded-comm-list-num* | **expanded**
expanded-comm-list-num}{**permit** | **deny**} *regular-expression*

Parameter Description

parameter	Parameter Description	Value
<i>standard-comm-list-num</i>	Standard community-list number	The value is an integer ranging from 1 to 99.
standard	Community-list of identification standards	/
<i>standard-comm-list-num</i>	Standard community-list names	The value is a string. The value range is: 1-32
<i>expanded-comm-list-num</i>	Extended community-list number	The value is an integer and ranges from: 100-500
expanded	Identifies the extended community-list	/
<i>expanded-comm-list-num</i>	The name of the extended community-list	The value is a string. The value range is: 1-32
permit	Allow	/
deny	deny	/
<i>string</i>	community attribute value	The value is a string. The value range is:

		3-11 , the format is: aa<0-65535>:nn<0-65535>
internet	All routes have internet community attributes. Can be announced to all BGP peers	
local-AS	Routes with this attribute cannot be It cannot be published to other places other than the local AS . After receiving a route with this	/
no-advertise	attribute from other sub- ASs in the alliance , it cannot be Notify any other BGP peers	/
no-export	Routes with this attribute cannot be Publish outside the local AS . Alliance, it cannot be published outside the alliance, but can Regular expressions are published to other sub- ASs in	/
<i>regular-expression</i>	the alliance to specify the regular expressions that meet the requirements. AS attribute set	The value is a string. The value range is: 1-64

63.34.ip extcommunity-list

Function

Commands are used to configure a standard and extended **extcommunity-list**

Format

ip *extcommunity-list*{*standard-extcomm-list-num* | **standard** *standard-extcomm-list-num*}{*permit* | **deny**} {*rtroute-target* | *soosoo-value*}

noip *extcommunity-list*{*standard-extcomm-list-num* | **standard** *standard-extcomm-list-num*}{*permit* | **deny**} {*rtroute-target* | *soosoo-value*}

ip *extcommunity-list*{*expanded-extcomm-list-num* | **expanded** *expanded-extcomm-list-num*}{*permit* | **deny**} *regular-expression*

noip *extcommunity-list*{*expanded-extcomm-list-num* | **expanded** *expanded-extcomm-list-num*}{*permit* | **deny**} *regular-expression*

Parameter Description

parameter	Parameter Description	Value
<i>standard-extcomm-list-num</i>	Standard extcommunity-list number	The value is an integer ranging from 1 to 99.
standard	Identify the standard extcommunity-list	/
<i>standard-extcomm-list-num</i>	Standard extcommunity-list names	The value is a string. The value range is 1-32.
<i>expanded-extcomm-list-num</i>	Extended extcommunity-list number	The value is an integer ranging from 100 to 500.
expanded	Identifies the extended extcommunity-list	/
<i>expanded-extcomm</i>	The name of the extended extcommunity-list is in the form of a	The value range is: 1-32

<i>-list-num</i>		
permit	Allow	/
deny	Deny	/
rt	Route Target, route target	/
<i>route-target</i>	RT extended community attribute value	The value is a string ranging from 3 to 21. The format is: aa<0-65535>:nn<0-65535> or IP<xxxx>:nn<0-65535>
soo	Site of Origin, source site	/
<i>soo-value</i>	soo extended community attribute value	The value is a string ranging from 3 to 21. The format is: aa<0-65535>:nn<0-65535> or IP<xxxx>:nn<0-65535>
<i>regular-expression</i>	Regular expressions are used to specify AS attribute set	The value is a string ranging from 1 to 64.

63.35. route-map

Function

The command is used to create a routing policy and enter the routing policy view.

Format

route-map *map-name* {**permit** | **deny** } *seq-number*

no route-map *map-name* [{**permit** | **deny** } *seq-number*]

Parameter Description

parameter	Parameter Description	Value
<i>map-name</i>	Routing policy name	The value is a string. The value range is 1-32.
permit	allow	/
deny	deny	/
<i>seq-number</i>	sequence number	The value is an integer ranging from 1 to 65535.

63.36.set

Function

In **route-map** view, commands are used to modify **BGP** routing attributes.

Format

set { **ip next-hop** *next-hop-address* | **ipv6 next-hop** {**global** | **local**} *ipv6-address* |
local-preference *local-prf-value* | **metric** {*metric* | *+metric* | *-metric* } | **metric-type** {**type -1** |
type-2 } | **origin** { **egp** | **igp** | **incomplete** } | **tag** *tag-value* | **weight** *weight-value* }

no set { **ip next-hop** | **ipv6 next-hop** {**global** | **local**} | **local-preference** | **metric** | **metric-type** |
origin | **tag** | **weight** }

Parameter Description

	Parameter Description	Value
Parameters ip next-hop changes the IPv4 next hop address <i>next-hop-address</i>	ip next-hop changes the IPv4	/
<i>address</i> IPv4 next hop address	ip next-hop changes the IPv6	Dotted decimal
next hop address		BGP protocol does not support
<i>ipv6-address</i>	IPv6 next hop address	32 - bit hexadecimal number, in the format of X:X::X:X
local-preference Modify local preference		/
<i>local-prf-value</i> local preference value		The value is an integer ranging from 0 to 4294967295.
metric Modify metric		/
<i>metric</i> value		The value is an integer ranging from 0 to 4294967295.
<i>+metric</i>	metric value	String format, value range: 2-32 String format, value
<i>-metric</i>	Increase metric value Decrease metric value	String format, value range: 2-32
metric-type Modify the metric type Modify		BGP protocol does not support
Origin the origin of the route		/
egp type is: egp , identifier: e / Origin type is: igp , identifier: i /		
igp Origin type is: incomplete, identifier		
incomplete / is:?		
Modify the tag tag		BGP protocol does not support
weight value of the route Modify		The value is an integer ranging from 0 to 65535.
<i>weight</i> value weight <i>weight-value</i>		/
value		The value is an integer ranging from 0 to 4294967295.

63.37.match

Function

In **route-map** view, the command is used to match **BGP** route attributes.

Format

```
match { as-path as-path-name | interface {supervlan-interface supervlan-id | vlan-interface vlan-id} | ip
{address | next-hop | route-source} {acl-num | acl-name | prefix-list prefix-list-name} | ipv6
{address {acl-num | acl-name | prefix-list prefix-list-name}| next-hop ipv6-address} | metric metric | origin { egp
| igp | incomplete } | peer ip-address | probability percentage | tag tag-value}
```

```
no match {as-path | ip {address | next-hop | route-source} [prefix-list] | ipv6 {address [prefix-list] |
next-hop ipv6-address} | metric | origin | peer | probability | tag }
```

Parameter Description

parameter	Parameter	Value
as-path	Description Match as-path list	/
<i>as-path-name</i>	as-path list name match Layer	The value is a string. The value range is 1-32.
interface	3 interface supervlan-	BGP protocol does not support
<i>supervlan-id</i>	interface interface	The value is an integer ranging from 1 to 128.

<i>vlan-id</i>	Ordinary VLAN interfaces	The value is an integer ranging from 1 to 4094.
ip	are specified as IPv4 addresses	/
address	that match the destination network	/
address. Next-	address and the next-hop	/
hop route-source matches the	routing source address.	/
<i>acl-num</i>	access-list number	The value is an integer ranging from 1 to 199 . 1300-2699
<i>acl-name</i>	access-list name	The value is a string. The value range is 1-32.
list prefix-	address prefix	/
list prefix-list-name prefix	list name	The value is a string. The value range is 1-32.
ipv6	specifies the IPv6 address	BGP protocol does not support
<i>ipv6-address</i>	IPv6	32 - bit hexadecimal number, in the format of X:X::X:X
metric	address matches	/
<i>metric</i>	metric	The value is an integer ranging from 0 to 4294967295.
origin	value metric value	/
egp	matches the origin of the route Origin	
igp	type: egp, identifier: e / Origin type:	
incomplete	igp, identifier: i / Origin type: incomplete, identifier / for:?	
peer	Match peer	/
<i>address</i>	peer IP address <i>ip-</i>	Dotted decimal
probability match the	percentage of the total number	/
of routes <i>percentage</i> per	centage	The value is an integer ranging from 0 to 100.
tag	match the tag value	BGP protocol does not support
<i>tag-value</i>	of the route	The value is an integer ranging from 0 to 65535.

63.38. call

Function

In **route-map** view, the command is used to jump to other **route-maps** for execution.

Format

call *route-map-name*

no call

Parameter Description

	Parameter Description	Value
Parameter <i>route-map-name</i>	route-map name	The value is a string. The value range is 1-32.

63.39. continue

Function

In **route-map** view, the command is used to execute the specified node of the current **route-map**.

Format

continue [*sequence-number*]

no continue

Parameter Description

Parameter	Parameter Description	Value
<i>sequence-number</i>	node	
number		The value is an integer ranging from 1 to 65535.

63.40.on-match

Function

In **route-map** view, the command is used to execute the specified node of the current **route-map**.

Format

on-match {**goto** *sequence-number* | **next**}

no on-match {**goto** | **next**}

Parameter Description

parameter	Parameter Description	Value
goto	Execute the specified node of the current route-map / Execute the next	
next	node of the current route-map point	/
<i>sequence-number</i>	node number	The value is an integer ranging from 1 to 65535.

63.41.show ip bgp neighbors

Function

The command is used to view detailed information about **BGP** neighbors.

Format

show ip bgp *neighbors*[*ip-address*]

Parameter Description

parameter	Parameter Description	Value
<i>ip-address</i>	Neighbor IP address	Dotted decimal

63.42.show ip bgp summary

Function

The command is used to view the summary information of **BGP** neighbors.

Format

show ip bgp summary

Parameter Description

none

63.43.show bgp route-table

Function

Command is used to view **BGP** routing table information

Format

show bgp route-table[network | *network/length*]

Parameter Description

parameter	Parameter Description	Value
<i>network</i>	Destination network address	Dotted decimal
<i>length</i>	mask length	The value is an integer ranging from 0 to 32.

63.44. Configuration Example

#Networking

DUT1-----DUT2-----DUT3

#Configure an **IBGP** neighbor relationship between **DUT1** and **DUT2** , and an **EBGP** neighbor relationship between **DUT2** and **DUT3**

DUT1(config)#router bgp

100 DUT1(config-router-bgp)#neighbor 10.1.1.2 remote-
as 100 DUT1(config-router-bgp)#network 1.1.1.0/24

DUT2(config)#router bgp

100 DUT2(config-router-bgp)#neighbor 10.1.1.1 remote-
as 100 DUT2(config-router-bgp)#neighbor 20.1.1.2
remote-as 200 DUT2(config-router-bgp) #neighbor 10.1.1.1 next-hop-self

DUT3(config)#router bgp

200 DUT3(config-router-bgp)#neighbor 20.1.1.1 remote-
as 100 DUT3(config-router-bgp)#network 2.1.1.0/24

#View neighbor information

DUT1(config)#show ip bgp summary

BGP router identifier 1.1.1.1, local AS number 100

Neighbor V AS MsgRcvd MsgSent TblVer InQ OutQ Up/Down State/PfxRcd

10.1.1.2 4 100 12 13 0 0 0 00:09:40 Established

Total neighbors: 1.

#View BGP routing information

DUT1(config)#show bgp route-table Local
router ID is 1.1.1.1

Status codes: s suppressed, d damped, h history, * valid, > best, i - internal r
, RIB-failure, S Stale, R Removed

Origin codes: i - IGP, e - EGP, ? - incomplete

Network Next Hop Metric LocPrf Weight Path 32768 i

*> 1.1.1.0/24 0.0.0.0 0

*>i2.1.1.0/24 10.1.1.2 0 100 0 200 i

Total entries: 2.

DUT3(config)#show bgp route-table
Local router ID is 3.3.3.3

Status codes: s suppressed, d damped, h history, * valid, > best, i - internal r
, RIB-failure, S Stale, R Removed

Origin codes: i - IGP, e - EGP, ? - incomplete

Network Next Hop Metric LocPrf Weight Path

*> 1.1.1.0/24 20.1.1.1 0 100 i

*> 2.1.1.0/24 0.0.0.0 0 32768 i

64. Radius

64.1. aaa group server radius

Function

AAA mode configuration group server **radius** configuration items

Format

aaa group server radius *name*

no aaa group server radius *name*

Parameter Description

parameter	Parameter Description	Value
<i>name</i>	Configuration scheme name	1-32 characters

64.2. primary-auth-ip

Function

Configure the primary authentication server in **RADIUS** mode

Format

primary-auth-ip *ipaddr port*

no primary-auth-ip

Parameter Description

parameter	Parameter Description	Value
<i>ipaddr</i>	Configurable valid IP address	32 -bit binary number, format is XXXX
<i>port</i>	Primary server authentication port	1-65535

64.3. second-auth-ip

Function

Configure secondary authentication server in **radius** mode

Format

second-auth-ip *ipaddr port*

no second-auth-ip

Parameter Description

parameter	Parameter Description	Value
<i>ipaddr</i>	Configurable valid IP address	32 -bit binary number, format is XXXX
<i>port</i>	Backup server authentication port	1-65535

64.4. primary-acct-ip

Function

Configure the primary accounting server in **radius** mode

Format

primary-acct-ip *ipaddr port*

no primary-acct-ip

Parameter Description

parameter	Parameter Description	Value
<i>ipaddr</i>	Configurable valid IP address	32 -bit binary number, format is

		XXXX
<i>port</i>	Primary server authentication port	1-65535

64.5. second-acct-ip

Function

Configure secondary billing server in **radius** mode

Format

second-acct-ip *ipaddr port*

no second-acct-ip

Parameter Description

parameter	Parameter	Value
<i>ipaddr</i>	Description Configurable valid IP address	32 -bit binary number, format is XXXX
<i>port</i>	Backup server authentication port	1-65535

64.6. auth-secret-key

Function

Configure the authentication server shared key in **radius** mode

Format

auth-secret-key*keystring*

no auth-secret-key

Parameter Description

parameter	Parameter	Value
<i>keystring</i>	Description Shared Key	1-16 characters long

64.7. auth-encrypt-key

Function

RADIUS mode, only used for decompilation, authentication server key encryption

Format

auth-encrypt-key*keystring*

no auth-encrypt-key

Parameter Description

parameter	Parameter	Value
<i>keystring</i>	Description Shared Key	1-16 characters long

64.8. acct-secret-key

Function

Configure the accounting server shared key in **radius** mode

Format

acct-secret-key *keystring*

no acct-secret-key

Parameter Description

parameter	Parameter Description	Value
<i>keystring</i>	Shared Secret	1-16 characters long

64.9. acct-encrypt-key

Function

RADIUS mode, only used for decompilation, billing server key encryption

Format

acct-encrypt-key *keystring*

no acct-encrypt-key

Parameter Description

	Parameter Description	Value
Parameter <i>keystring</i>	Shared Secret	1-16 characters long

64.10. radius-server timeout

Function

RADIUS configuration mode: Configure the timeout period for the device to wait for the **RADIUS** server to respond (restore to the default value)

Format

radius-server timeout *timeout*

no radius-server timeout

Parameter Description

parameter	Parameter Description	Value
<i>timeout</i>	Timeout for waiting for RADIUS server response	The unit is seconds, and the value range is 1~ 60

64.11. radius-server retransmit

Function

RADIUS configuration mode: Configure the maximum number of times the device retransmits to the **RADIUS** server (restore to the default value)

Format

radius-server retransmit retries

no radius-server retransmit retries

Parameter Description

parameter	Parameter Description	Value
retries	The device re- sends the Maximum number of transmissions	The value range is 1 to 10

64.12.nas-ipaddress

Function

RADIUS configuration mode configures the **IP** address of the **RADIUS** client

Format

nas-ipaddress ipaddr

no nas-ipaddress

Parameter Description

parameter	Parameter	Value
<i>ipaddr</i>	Description Configurable valid IP address	32 -bit binary number, format is XXXX

64.13.username-format

Function

The **radius** configuration mode is used to set whether the user name should include the domain name when the system transmits messages to the current **RADIUS** server.

Format

username-format { with-domain | without-domain }

Parameter Description

	Parameter Description	Value
Parameters with- domainUsername	name with domain	none
namewithout - domainUsername	without domain name	none

64.14. realtime-account

Function

Configuring real-time accounting in **radius** configuration mode

Format

realtime-account

no realtime-account

Parameter Description

none

64.15. realtime-account interval

Function

In **radius** configuration mode, configure the real-time accounting sending interval. By default, the real-time accounting sending interval is **12s**.

Format

realtime-account interval*time*

Parameter Description

parameter	Parameter Description	Value
<i>time</i>	RADIUS server real-time accounting room The unit is minutes	1-255

64.16.neighbor passive

Function

The **radius** configuration mode configures the preemption timer. By default, the preemption timer is **0**.

Format

*preemption-time***Preemption-time**

Parameter Description

parameter	Parameter Description	Value
<i>time</i>	RADIUS server real-time accounting room The unit is minutes	1-255

64.17.local-user username

Function

Configuring local user information in **aaa** configuration mode

Format

local-user *username* *name* *password* *pwd* [*vlan* *vid*]

no local-user *username*

Parameter Description

parameter	Parameter Description	Value
<i>name</i>	Local User Name	1-64 characters, any characters can be used
<i>pwd</i>	Local User Password	1-64 characters, any characters can be used
<i>vid</i>	VLAN ID	1-4094

64.18.default domain-name

Function

The **aaa** configuration mode is used to configure the default domain or to close it.

Format

default domain-name { **enabled** *domain-name* | **disable** }

Parameter Description

Parameter	Parameter Description	Value
<i>name</i>	Default domain name	1-24 characters

64.19.domain

Function

The **aaa** configuration mode is used to create a domain scheme

Format

domain *domain-name*

no domain *domain-name*

Parameter Description

parameter	Parameter Description	Value
<i>domain-name</i>	domain name	1-24 characters

64.20.scheme

Function

Domain configuration mode uses **RADIUS** server or local user information for authentication

Format

scheme { local | radius [local] }

Parameter Description

none

64.21. radius host binding

Function

Domain configuration mode configures the current domain and selects the **RADIUS** server

Format

radius host binding *radius-name*

no radius host binding

Parameter Description

parameter	Parameter Description	Value
<i>radius-name</i>	RADIUS configuration scheme name, 1-32 characters	

64.22.access-limit

Function

In **domain** configuration mode, configure (disable) the maximum number of users allowed to pass authentication in the current domain

Format

access-limit{enablenumber | disable}

Parameter Description

parameter	Parameter Description	Value
<i>number</i>	The number of connections allowed for the domain	1-640

64.23.state

Function

Domain configuration mode configuration activates (blocks) the current domain

Format

state { active | block }

Parameter Description

none

64.24.domain-delimiter

Function

Configure the domain name separator in **domain** configuration mode

Format

domain-delimiter *name*

Parameter Description

none

64.25.accounting-on

Function

The number of times **account-on** is sent in **aaa** configuration mode

Format

accounting-on{**enablenum** | **disable**}

Parameter Description

parameter	Parameter Description	Value
<i>num</i>	Configure the number of times to send account-on (1-255).	

64.26.h3c-cams

Function

Configuring **H3C Cams** compatibility in **aaa** configuration mode

Format

h3c-cams { **enable** | **disable** }

Parameter Description

parameter	Parameter	Value
enable	description The user name will remove the IP and version	
disable	Disable H3C Cams compatibility feature	

64.27. Radius accounting

Function

The **aaa** configuration mode is used to enable the accounting function in **AAA** mode.

Format

radius accounting

no radius accounting

Parameter Description

none

64.28. radius server-disconnect drop 1x

Function

aaa configuration mode, configure to enable accounting message and disconnect the user if no response

Format

radius server-disconnect drop 1x

no radius server-disconnect drop 1x

Parameter Description

none

64.29. radius 8021p

Function

The **aaa** configuration mode is used to enable (delete) the RADIUS port priority

Format

radius 8021p { enable|disable }

Parameter Description

none

64.30. radius vlan

Function

The **aaa** configuration mode is used to enable (delete) the RADIUS port **PVID**

Format

radius vlan { enable|disable }

Parameter Description

none

64.31. radius vlan-format

Function

AAA configuration mode configures the format of **RADIUS** sending **VLAN**

Format

radius vlan-format{integer |string2decimal |string2hex | vlanname}

no radius vlan-format

Parameter Description

parameter	Parameter	Value
		/
Description Integer string2decimal string of		/
integer / string2hex	decimal integer string of hexadecimal	
vlanname	The default format of the VLAN name string is	

64.32. radius mac-address-number enable

Function

Configuring (deleting) the limit on the number of **MAC** addresses issued by RADIUS ports in **aaa** configuration mode

Format

radius mac-address-number { enable|disable }

Parameter Description

none

64.33. radius config-attribute

Function

AAA configuration mode configuration to modify the **radius** attribute number

Format

radius config-attribute{access-bandwidth { downlink|unit|uplink }

|dscp|mac-address-number|vendor type}

Parameter Description

parameter	Parameter Description	Value
<i>vendor type</i>	Attribute Number	1-500

64.34.dnrate-value

Function

The **aaa** configuration mode is configured when the **h3c-cams enable** function is enabled. By default, **dnrate-value** is **5**

Format

dnrate-value *value*

nodnrate-value

Parameter Description

parameter	Parameter Description	Value
<i>value</i>		1-32

64.35.uprate-value

Function

The **aaa** configuration mode is configured when the **h3c-cams enable** function is enabled. By default,

The **uprate-value** is **2**

Format

uprate-value *value*

nouprate-value

Parameter Description

parameter	Parameter Description	Value
<i>value</i>		1-32

64.36. radius bandwidth-limit enable

Function

aaa configuration mode, the command is used to enable (delete) RADIUS- delivered port bandwidth control

Format

radius bandwidth-limit { enable|disable }

Parameter Description

none

64.37. radius password-encryption

Function

aaa configuration mode, the command is used to enable/disable **RADIUS** authentication/accounting key encryption function

Format

radius password-encryption

Parameter Description

none

64.38.show radius config-attribute

Function

Privileged user mode/global configuration mode, view and display **radius** attributes

Format

show radius config-attribute

Parameter Description

none

64.39.show aaa server radius

Function

Privileged user mode/global configuration mode, used to display **radius** service configuration information

Format

show aaa server radius *hostname*

Parameter Description

none

64.40.show rate-attribute-value

Function

Privileged user mode/global configuration mode, view **rate** attribute operation information

Format

show rate-attribute-value

Parameter Description

none

64.41.show domain

Function

Privileged user mode/global configuration mode, used to view domain configuration

Format

show domain

Parameter Description

none

64.42.debug radius

Function

Command to open the debugging function of the **radius** module

Format

debug radius

no debug radius

Parameter Description

none

64.43. Configuration Example

#Networking

DUT1-----DUT2-----DUT3

#Configure an **IBGP** neighbor relationship between DUT1 and DUT2 , and an **EBGP** neighbor relationship between DUT2 and DUT3

DUT1(config)#router bgp 100
DUT1(config-router-bgp)#neighbor 10.1.1.2 remote-as 100
DUT1(config-router-bgp)#network 1.1.1.0/24

DUT2(config)#router bgp 100
DUT2(config-router-bgp)#neighbor 10.1.1.1 remote-as 100
DUT2(config-router-bgp)#neighbor 20.1.1.2 remote-as 200
DUT2(config-router-bgp) #neighbor 10.1.1.1 next-hop-self

DUT3(config)#router bgp 200
DUT3(config-router-bgp)#neighbor 20.1.1.1 remote-as 100
DUT3(config-router-bgp)#network 2.1.1.0/24

#View neighbor information

DUT1(config)#show ip bgp summary
BGP router identifier 1.1.1.1, local AS number 100

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.1.1.2	4	100	12	13	0	0	0	00:09:40	Established

Total neighbors: 1.

#View **BGP** routing information

DUT1(config)#show bgp route-table

Local router ID is 1.1.1.1

Status codes: s suppressed, d damped, h history, * valid, > best, i -
, internal r RIB-failure, S Stale, R Removed

Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 1.1.1.0/24	0.0.0.0	0		32768	i
*>i2.1.1.0/24	10.1.1.2	0	100	0	200 i

Total entries: 2.

DUT3(config)#show bgp route-table Local
router ID is 3.3.3.3

Status codes: s suppressed, d damped, h history, * valid, > best, i -
, internal r RIB-failure, S Stale, R

Removed Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 1.1.1.0/24	20.1.1.1		0	100	i
*> 2.1.1.0/24	0.0.0.0	0		32768	i

65. 802.1X Authentication

65.1. dot1x

Function

Global configuration mode: Enable/disable **802.1X** authentication globally

Format

dot1x { enable | disable }

Parameter Description

parameter	Parameter Description	Value
enable	Enable 802.1X authentication globally	
disable	Disable 802.1X authentication globally	

65.2. dot1x eap-relay

Function

In global configuration mode, configure the authentication mode as relay/junction authentication mode

Format

dot1x eap-relay { enable | disable }

Parameter Description

parameter	Parameter Description	Value
enable	Used to configure the authentication method as relay authentication method	
disable	Used to configure the authentication method as intermediate authentication method	

65.3. dot1x port-method

Function

Port configuration mode configures access control mode to user/port based access control mode

Format

dot1x port-method{ macbased | portbased}

Parameter Description

parameter	Parameter Description	Value
macbased	Based on user access control	
portbased	Port-based access control	

65.4. dot1x port-control

Function

Port configuration mode Configure port authentication mode

Format

dot1x port-control { auto | forceauthorized | forceunauthorized }

Parameter Description

parameter	Parameter Description	Value
auto	The port authentication mode is auto	
forceauthorized	configures the port authentication mode to forced authentication mode	
forceunauthorized	Configure the port authentication mode to forced unauthenticated mode	

65.5. dot1x re-authenticate

Function

Configuring immediate reauthentication in port mode

Format

dot1x re-authenticate

Parameter Description

none

65.6. dot1x re-authentication

Function

Enable re-authentication in port mode

Format

dot1x re-authentication

no dot1x re-authentication

Parameter Description

none

65.7. dot1x timeout re-authperiod

Function

Configure re-authentication time in port configuration mode

Format

dot1x timeout re-authperiodtimes

no dot1x timeout re-authperiod

Parameter Description

parameter	Parameter Description	Value
<i>times</i>	Re-authentication time, whether the port enables re-authentication In this case, the authentication device periodically checks the client Re-authentication	The value range is 10–3600 , and the unit is seconds, the default value is 3600

65.8. dot1x multicast-trigger

Function

Port configuration mode is used to enable multicast triggering function

Format

dot1x multicast-trigger

no dot1x multicast-trigger

Parameter Description

none

65.9. dot1x multicast-period

Function

The port configuration mode command is used to configure the multicast trigger time.

Format

dot1x multicast-periodtimes

Parameter Description

parameter	Parameter Description	Value
<i>times</i>	Multicast trigger time	The value range is 10~600, in seconds. The value is 60

65.10.dot1x max-user-num

Function

The port configuration mode is used to configure the maximum number of users on the port.

Format

dot1x max-user-num *number*

no dot1x max-user-num

Parameter Description

parameter	Parameter Description	Value
<i>number</i>	Maximum number of users on a port	The value range is 1 to 64, the unit is pieces, the default The value is 64

65.11.dot1x user cut

Function

Configure the offline status of online users in global configuration mode

Format

dot1x user cut{*mac-address**mac-address*|*username**user-name* }

Parameter Description

parameter	Parameter Description	Value
<i>mac-address</i>	Specify the user to go offline based on the MAC address	
<i>user-name</i>	Specify the user to go offline based on the user name	

65.12.dot1x keepalive

Function

Port configuration mode is used to enable the keep-alive function

Format

dot1x keepalive

no dot1x keepalive

Parameter Description

none

65.13.dot1x keepalive period

Function

Configure the keep-alive function cycle time

Format

dot1x keepalive period *periods*

no dot1x keepalive period

Parameter Description

parameter	Parameter Description	Value
<i>periods</i>	Keep alive period	The value range is 1~3600, in seconds. The default value is 25

65.14.dot1x timeout quiet-period

Function

Configuring the Quiet Time

Format

dot1xtimeout quiet-period *periods*

no dot1x timeout quiet-period

Parameter Description

parameter	Parameter Description	Value
<i>periods</i>	Quiet Time	The value range is 0~600, in seconds. The default value is 0

65.15.dot1x timeout supp-timeout

Function

Configuring the client timeout

Format

dot1xtimeout supp-timeout *times*

no dot1x timeout supp-timeout

Parameter Description

parameter	Parameter Description	Value
<i>times</i>	Client timeout, authentication settings After the device sends a message to the client, No client received within the specified time If the client does not respond, it is considered to have timed out. No answer	The value range is 15~3600, in seconds. The default value is 30

65.16.dot1x timeout server-timeout

Function

Configuring server timeout

Format

dot1xtimeout server-timeout *times*

no dot1x timeout server-timeout

Parameter Description

parameter	Parameter	Value
<i>times</i>	Description Server timeout, authentication device After sending a message to the authentication server, Service not received within the specified time If the server fails to respond, it is considered that the server has exceeded No response	The value range is 15~3600, in seconds. The default value is 30S

65.17.dot1x portbased host-mode

Function

The port configuration mode is used to configure the host mode under the port access control mode to multiple (single) host mode.

Format

dot1x portbased host-mode{ multi-hosts | single-host}

no dot1x portbased host-mode

Parameter Description

parameter	Parameter Description	Value
multi-hosts	Hosts in port access control mode The mode is multi-host mode	
single-host	Hosts in port access control mode The mode is single host mode	

65.18.dot1x guest-vlan

Function

Port configuration mode, used to configure **Guest VLAN**

Format

dot1x guest-vlan *vlan id*

no dot1x guest-vlan

Parameter Description

parameter	Parameter Description	Value
<i>vlan id</i>	Configured Guest VLAN	1~4094

65.19.dot1x max-authfail

Function

Port configuration mode, used to configure the maximum number of authentication failures

Format

dot1x max-authfailnumber

no dot1x max-authfail

Parameter Description

parameter	Parameter Description	Value
<i>number</i>	Maximum number of authentication failures	1~10, unit is times, default value is 1

65.20.dot1x default-active-vlan

Function

Default effective **VLAN** configuration in port configuration mode

Format

dot1x default-active-vlan*vlan id*

no dot1x default-active-vlan

Parameter Description

parameter	Parameter	Value
<i>vlan id</i>	Description Default VLAN	1~4094

65.21.dot1x eapol-relay

Function

MD5 authentication is performed when establishing a **TCP** connection for **BGP**. The connection can only be established if the keys configured on the two routers are the same.

Establish a **TCP** connection to avoid establishing a **TCP** connection with an illegal **BGP** router

Format

neighbor{neighbor-address | peer-group-name}passwordpassword-value

no *neighbor{neighbor-address | peer-group-name}password*

Parameter Description

parameter	Parameter Description	Value
<i>neighbor-address</i> neighbor IP address <i>peer-group-name</i> peer		Dotted decimal
group name <i>password-value</i> encryption key		The value range is 1-32. The value range is 1-80.

65.22.dot1x eapol-relay uplink

Function

Port configuration mode configures the uplink port with transparent transmission function

Format

dot1x eapol-relay uplink

no dot1x eapol-relay uplink

Parameter Description

none

65.23.dot1x max-req

Function

Configure the maximum number of authentication message transmissions in global mode

Format

dot1x max-reqtimes

no dot1x max-req

Parameter Description

parameter	Parameter Description	Value
<i>times</i>	The maximum number of authentication message transmissions is 1 to 10, in times, and the default value is 2	

65.24.dot1x max-reauth

Function

Configure the maximum number of authentication message transmissions in global mode

Format

dot1x max-reauth*times*

no dot1x max-reauth

Parameter Description

parameter	Parameter Description	Value
<i>times</i>	The maximum number of authentication message transmissions is 1 to 10, in times, and the default value is 2	

65.25.dot1x critical-vlan

Function

Configure **critical-vlan** on a port

Format

dot1x critical-vlan*vlan id*

no dot1x critical-vlan

Parameter Description

parameter	Parameter Description	Value
<i>vlan id</i>	Configured critical VLAN	1~4094

65.26.dot1x native-vlan-free

Function

Port configuration, used to enable the function of allowing unauthenticated users to communicate within **the VLAN** to which **the PVID** belongs

Format

dot1x native-vlan-free

no dot1x native-vlan-free

Parameter Description

none

65.27.neighbor route-reflector-client

Function

Configure **guest-acl** in port configuration mode

Format

dot1x guest-acl *name*

no dot1x guest-acl

Parameter Description

parameter	Parameter	Value
<i>name</i>	Description Guest ACL rule code under the port Number	The length is 1-64, and the input range is the acl list 1-3999, you can use the @ symbol to specify sub-items

65.28.dot1x radius-acl-format

Function

The command is used to configure the **radius-acl** delivery sequence number format

Format

dot1x radius-acl-format { integer | string }

no dot1x radius-acl-format

Parameter Description

parameter	Parameter	Value
integer	Description Send acl in	
string	integer format Send acl in string format	

65.29.dot1x station-move

Function

Port configuration mode to enable/disable migration function

Format

dot1x station-move{enable | disable}

Parameter Description

parameter	Parameter	Value
enable	Description Enable migration function	
disable	Disable the migration feature	

65.30.dot1x syslog

Function

Command to enable/disable logging function

Format

dot1x station-move{enable | disable}

Parameter Description

parameter	Parameter Description	Value
enable	Enable authentication failure logging	
disable	Disable authentication failure logging	

65.31.dot1x after-mac-auth enable

Function

The command is used to enable the **dot1x** authentication function after **mac** authentication.

Format

dot1x after-mac-auth enable

no dot1x after-mac-auth enable

Parameter Description

none

65.32.show dot1x multicast-trigger

Function

The command is used to view the watch function of the **802.1x** authentication port

Format

show dot1x multicast-trigger*interface ethernet port-id*

Parameter Description

parameter	Parameter Description	Value
<i>port-id</i>	Port Number	According to the switch physical port Certainly

65.33.show dot1x

Function

Command used to view **dot1x** configuration information

Format

show dot1x*interface ethernet port-id*

Parameter Description

parameter	Parameter Description	Value
<i>port-id</i>	Port Number	According to the switch physical port Certainly

65.34.show dot1x users

Function

The command is used to view **802.1x** authentication users.

Format

show dot1x usersr

show dot1x users interface ethernet *port-id*

show dot1x users mac-address *mac-add*

Parameter Description

parameter	Parameter Description	Value
<i>port-id</i>	Port number	Determined by the switch physical port
<i>mac-add</i>	mac address	

65.35.show dot1x eapol-relay

Function

The command is used to view the transparent transmission function of the **802.1x** authentication port.

Format

show dot1x eapol-relay interface ethernet *port-id*

Parameter Description

Parameter	Parameter Description	Value
<i>port-id</i>	Port Number	Determined by the switch physical port

65.36.show dot1x keepalive

Function

The command is used to view the keep-alive function of the **802.1x** authentication port.

Format

show dot1x keepalive interface ethernet *port-id*

Parameter Description

parameter	Parameter Description	Value
<i>port-id</i>	Port Number	Determined by the switch physical port

65.37.show dot1x config-vlan

Function

The command is used to view the **VLAN** configuration of the **802.1x** authentication port.

Format

show dot1x config-vlan *interface ethernet port-id*

Parameter Description

parameter	Parameter	Value
<i>port-id</i>	Description Port number	Determined by the switch physical port

65.38.show dot1x port-auth

Function

The command is used to view the authentication status of **802.1x** port authentication.

Format

show dot1x port-auth

Parameter Description

none

65.39.show dot1x timeout

Function

The command is used to view the silent time, client timeout time, and server timeout time.

Format

show dot1x timeout

Parameter Description

none

65.40.show dot1x guest-acl

Function

Command is used to view **guest-acl**

Format

show dot1x guest-acl

Parameter Description

none

65.41.show dot1x radius-acl

Function

Command used to view **radius-acl**

Format

show dot1x radius-acl

Parameter Description

none

65.42.debug dot1x

Function

Command to open the debugging function of the **8021x** authentication module

Format

debug dot1x

no debug dot1x

Parameter Description

none

65.43. Configuration Example

#Networking

DUT1-----DUT2-----DUT3

#Configure an **IBGP** neighbor relationship between **DUT1** and **DUT2** , and an **EBGP** neighbor relationship between **DUT2** and **DUT3**

DUT1(config)#router bgp 100

DUT1(config-router-bgp)#neighbor 10.1.1.2 remote-as 100

DUT1(config-router-bgp)#network 1.1.1.0/24

DUT2(config)#router bgp 100

DUT2(config-router-bgp)#neighbor 10.1.1.1 remote-as 100

DUT2(config-router-bgp)#neighbor 20.1.1.2 remote-as 200

DUT2(config-router-bgp) #neighbor 10.1.1.1 next-hop-self

DUT3(config)#router bgp 200

DUT3(config-router-bgp)#neighbor 20.1.1.1 remote-as 100

DUT3(config-router-bgp)#network 2.1.1.0/24

#View neighbor information

DUT1(config)#show ip bgp summary

BGP router identifier 1.1.1.1, local AS number 100

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.1.1.2	4	100	12	13	0	0	0	00:09:40	Established

Total neighbors: 1.

#View BGP routing information

DUT1(config)#show bgp route-table

Local router ID is 1.1.1.1

Status codes: s suppressed, d damped, h history, * valid, > best, i -
, internal r RIB-failure, S Stale, R Removed

Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 1.1.1.0/24	0.0.0.0	0		32768	i
*>i2.1.1.0/24	10.1.1.2	0	100	0	200 i

Total entries: 2.

DUT3(config)#show bgp route-table Local

router ID is 3.3.3.3

Status codes: s suppressed, d damped, h history, * valid, > best, i -
, internal r RIB-failure, S Stale, R

Removed Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path
*> 1.1.1.0/24	20.1.1.1			0	100 i
*> 2.1.1.0/24	0.0.0.0	0		32768	i

66. MAC Authentication

66.1. mac-authentication enable

Function

Enable MAC authentication globally

Format

mac-authentication {enable | disable}

Parameter Description

parameter	Parameter Description	Value
enable	Enable MAC authentication globally	
disable	Disable mac authentication globally	

66.2. mac-authentication domain

Function

Domain server used to globally configure **MAC** authentication reference

Format

mac-authentication domainname

no mac-authentication domain

Parameter Description

parameter	Parameter Description	Value
<i>name</i>	Domain server name	1-24 characters

66.3. mac-authentication encryption

Function

The command is used to authenticate using **chap (pap) authentication method**

Format

mac-authentication encryption { chap | pap }

Parameter Description

parameter	Parameter	Value
chap	Description chap authentication method	
pap	PAP authentication method	

66.4. mac-authentication timeout offline-detect

Function

The command is used to globally configure the client offline check time.

By default, the value is **300s**.

Format

mac-authentication timeout offline-detect times

no mac-authentication timeout offline-detect

Parameter Description

parameter	Parameter	Value
<i>times</i>	Description mac configuration client offline check time, authentication settings Prepare to periodically check whether the client has gone offline	The unit is seconds, and the value range is 30-3600

66.5. mac-authentication timeout quiet-period

Function

The command is used to globally configure the time period during which no authentication requests from the user will be accepted after a **MAC** authentication failure.

By default, the value is **60s**.

Format

mac-authentication timeout quiet-period*times*

no mac-authentication timeout quiet-period

Parameter Description

parameter	Parameter	Value
<i>times</i>	Description User silent time configuration	The unit is seconds, and the value range is 30-3600

66.6. bgp confederation identifier

Function

Command is used to globally configure the guest user re-authentication interval

Format

mac-authentication timeout re-auth*period**times*

no mac-authentication timeout re-auth*period*

Parameter Description

parameter	Parameter Description	Value
<i>times</i>	Guest user re-authentication time configuration	The unit is seconds, and the value range is 30-3600

66.7. mac-authentication user-name-format fixed

Function

The command is used to globally configure the use of fixed usernames and passwords for **MAC** authentication

Format

mac-authentication user-name-format fixed *account name**password**password*

Parameter Description

parameter	Parameter	Value
<i>name</i>	Description Username when logging in with a fixed user name <i>Account Name</i>	1-63 characters
<i>password</i>	Password 1-63 characters when logging in with a fixed user	

66.8. mac-authentication user-name-format mac-address

Function

Used to globally configure the **mac** authentication user name to be the **mac** address, and whether the user name contains the "-" character

Format

mac-authentication user-name-format mac-address {with-hyphen | without-hyphe}

Parameter Description

parameter	Parameter Description	Value
with-hyphen	Mac authentication user name with "-" character	
without-hyphe	Mac authentication user name does not contain "-" symbol	

66.9. mac-authentication

Function

The command is used to configure and enable the **MAC** authentication function on the port.

Format

mac-authentication

no mac-authentication

Parameter Description

none

66.10. mac-authentication max-user-num

Function

The command is used to configure the maximum number of users on a port.

Format

mac-authentication max-user-numnumber

no mac-authentication max-user-num

Parameter Description

parameter	Parameter Description	Value
<i>number</i>	Maximum number of users on a port	1-32, default value is 32

66.11. show mac-authentication

Function

Command used to view **mac** authentication configuration

Format

show mac-authentication

Parameter Description

none

66.12.show mac-authentication interface ethernet

Function

The command is used to view the **mac** authentication configuration of the specified port

Format

show mac-authentication interface ethernetport

Parameter Description

parameter	Parameter	Value
<i>port</i>	Description Port id	

66.13.show mac-authentication users

Function

The command is used to view **mac** authenticated users

Format

show mac-authentication users

Parameter Description

none

66.14.debug macauthentication

Function

Command to open the debugging function of the **mac** authentication module

Format

debug macauthentication

no debug macauthentication

Parameter Description

none

66.15. Configuration Example

#Networking

DUT1-----DUT2-----DUT3

#Configure an IBGP neighbor relationship between DUT1 and DUT2 , and an EBGP neighbor relationship between DUT2 and DUT3

DUT1(config)#router bgp 100

DUT1(config-router-bgp)#neighbor 10.1.1.2 remote-as 100

DUT1(config-router-bgp)#network 1.1.1.0/24

DUT2(config)#router bgp 100

DUT2(config-router-bgp)#neighbor 10.1.1.1 remote-as 100

DUT2(config-router-bgp)#neighbor 20.1.1.2 remote-as 200

DUT2(config-router-bgp) #neighbor 10.1.1.1 next-hop-self

DUT3(config)#router bgp 200

DUT3(config-router-bgp)#neighbor 20.1.1.1 remote-as 100

DUT3(config-router-bgp)#network 2.1.1.0/24

#View neighbor information

DUT1(config)#show ip bgp summary

BGP router identifier 1.1.1.1, local AS number 100

Neighbor	V	AS	MsgRcvd	MsgSent	TblVer	InQ	OutQ	Up/Down	State/PfxRcd
10.1.1.2	4	100	12	13	0	0	0	00:09:40	Established

Total neighbors: 1.

#View BGP routing information

DUT1(config)#show bgp route-table Local

router ID is 1.1.1.1

Status codes: s suppressed, d damped, h history, * valid, > best, i - internal r

, RIB-failure, S Stale, R Removed

Origin codes: i - IGP, e - EGP, ? - incomplete

Network	Next Hop	Metric	LocPrf	Weight	Path

*> 1.1.1.0/24	0.0.0.0	0			

*>i2.1.1.0/24	10.1.1.2	0	100	0	200 i

Total entries: 2.

DUT3(config)#show bgp route-table

Local router ID is 3.3.3.3

Status codes: s suppressed, d damped, h history, * valid, > best, i - internal

```

,          r RIB-failure, S Stale, R Removed
Origin codes: i - IGP, e - EGP, ? - incomplete
Network      Next Hop Metric LocPrf Weight Path
*> 1.1.1.0/24 20.1.1.1          0         100 i
*> 2.1.1.0/24 0.0.0.0          0         32768 i

```