54-Port L2+ Fully Managed PoE+ Switch with 48 Gigabit Ports and 6 SFP+ Uplinks

System Command User Manual

Model 561969

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1 Port Configuration

1.1 interface ethernet

Command Function

Enter the port configuration mode.

Command Format

interface ethernet *port-id*

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number /slot number/port number.

1.2 duplex

Command Function

In port mode, configure the port duplex mode. Default is auto.

Command Format

duplex {auto | full | half}

Parameter Instructions

None

1.3 speed

Command Function

In port mode, configure the port speed. Default is auto.

Command Format

speed {10|100|1000|10000|auto}

no speed

Parameter Instructions

None

1.4 priority

Command Function

In port mode, configure the port priority.

Command Format

priority *value*

Parameter Instructions

Parameter	Parameter Instructions	Value
value	Indicates the priority of a port. A larger value indicates a higher priority.	0-7, default value is 0.

1.5 shutdown

Command Function

In port mode, enable (disable) the port.

Command Format

shutdown

no shutdown

Parameter Instructions

None

1.6 description

Command Function

In port mode, configure the port description.

Command Format

description *string*

no description

Parameter Instructions

Parameter	Parameter Instructions	Value
string	Port description information.	String <1-128>.

1.7 interface ethernet

Command Function

In VLAN mode, configure VLAN members.

Command Format

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

no switchport {ethernet *port-id* **| all}**

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number /slot number/port number.

1.8 ingress filtering

Command Function

In port mode, enable the port packets filtering function.

Command Format

ingress filtering

no ingress filtering

Parameter Instructions

None

1.9 ingress acceptable-frame

Command Function

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

Command Format

ingress acceptable-frame {all | tagged | untagged}

no ingress acceptable-frame

Parameter Instructions

Parameter	Parameter Instructions	Value
tagged	Only receive packets with tag.	None
all	Received all packets.	None
Untagged	Only receive untagged packets.	None

1.10 switchport pvid

Command Function

In port mode, modify the port pvid.

Command Format

switchport pvid *vlan-id*

no switchport pvid

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-id	VLAN ID	1 to 4096

1.11 switchport trunk

Command Function

In port mode, add a trunk port as VLAN members.

Command Format

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

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

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-list	VLAN list.	String<1-128>, example: 8, 9, 11-15.
All	All created VLANs	

1.12 switchport hybrid

Command Function

In port mode, add a hybrid port as VLAN members.

Command Format

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

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

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-list	VLAN list.	String<1-128>, example: 8, 9, 11-15.
All	All created VLANs	

1.13 switchport link-type

Command Function

In port mode, configure the link type of the port.

Command Format

switchport link-type {access | hybrid | trunk}

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

Parameter Instructions

None

1.14 show interface ethernet

Command Function

View the detail information about the port.

Command Format

show interface [ethernet *port-id*]

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID	String<5-6>, format: device number/slot number/port number.

1.15 show interface brief

Command Function

View the brief information about the port.

Command Format

show interface brief [ethernet *port-id*]

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID	String<5-6>, format: device number/slot number/port number.

1.16 show description interface

Command Function

View the description information about the port.

Command Format

Show description interface [ethernet *port-id*]

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID	String<5-6>, format: device number/slot number/port number.

1.17 show ingress interface

Command Function

View the frame type received by the port and the status of the filter switch.

Command Format

Show ingress interface [ethernet *port-id*]

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID	String<5-6>, format: device number/slot number/port number.

1.18 show ingress interface

#Enter the port.

switch(config)#interface ethernet 0/0/1

#Duplex mode.

switch(config-if-ethernet-0/0/1)#duplex full

#Configure the port speed.

switch(config-if-ethernet-0/0/1)#speed 1000

#Configure the port priority.

switch(config-if-ethernet-0/0/1)#priority 5

#Disable port.

switch(config-if-ethernet-0/0/1)#shutdown

#Enable port.

switch(config-if-ethernet-0/0/1)#no shutdown

#Description port.

switch(config-if-ethernet-0/0/1)#description test

#Configurate the PVID of the port.

switch(config-if-ethernet-0/0/1)#switchport pvid 1 //

#Configure the port to receive frame type.

switch(config-if-ethernet-0/0/1)#ingress acceptable-frame tagged //

#Configure the link type of the port.

switch(config-if-ethernet-0/0/1)#switchport link-type trunk

#Trunk port allows all VLANs to pass through.

switch(config-if-ethernet-0/0/1)#switchport trunk allowed vlan all

#View a port information.

switch(config-if-ethernet-0/0/1)#show interface brief ethernet 0/0/1

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

Total entries: 1

2 Port Statistics

2.1 show statistics interface

Command Function

View the brief (detail) information about the port statistics.

Command Format

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

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID	String<5-6>, format: device number/slot number/port number.

2.2 clear interface

Command Function

In global mode, clear all ports statistics.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID	String<5-6>, format: device number/slot number/port number.

2.3 show cpu-statistics

Command Function

View the CPU statistics.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID	String<5-6>, format: device number/slot number/port number.

2.4 clear cpu-statistics

Command Function

Clear CPU port statistics information.

Command Format

clear cpu-statistics

Parameter Instructions

None

2.5 show statistics dynamic

Command Function

View real-time statistics of all ports.

Command Format

show statistics dynamic [interface|eth-trunk]

Parameter Instructions

None

2.6 show statistics eth-trunk

Command Function

View the statistics information of aggregation port.

Command Format

show statistics eth-trunk *id*

Parameter Instructions

Parameter	Parameter Instructions	Value
id	aggregate group ID.	1 to 16.

2.7 show utilization

Command Function

View the real-time utilization of all ports.

View the real-time utilization of eth-trunk port.

Command Format

show utilization interface

show utilization eth-trunk

Parameter Instructions

None

2.8 configuration example

#View the statistics of a single port.

switch(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 packets input, 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

Command Function

In port mode, configure the maximum transmission unit.

Command Format

mtu *<pkt-size>*

no mtu

Parameter Instructions

Parameter	Parameter Instructions	Value
pkt-size	Packets size.	1522 to 12288.

4 802.1Q Configuration

4.1 VLAN

Command Function

Create VLAN or enter VLAN mode.

Delete the created VLAN.

Command Format

vlan vlan-list

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

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-list	VLAN list.	String<1-128>, example: 8, 9, 11-15.
all	All VLAN.	

4.2 switchport

Command Function

In VLAN mode, add the port as a VLAN member.

Command Format

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

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.
all		

4.3 description

Command Function

In VLAN mode, configure VLAN description.

Command Format

description *name*

no description

Parameter Instructions

Parameter	Parameter Instructions	Value
name	VLAN description.	String<1-32>, any string ,except “?”.

4.4 show VLAN brief

Command Function

View VLAN information.

Command Format

show vlan [*vlan-id***]**

show vlan brief [*vlan-list***]**

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

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-id	VLAN ID.	1 to 4094.
vlan-list	VLAN ID.	String<1-128>, example: 8, 9, 11-15.
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

4.5 configuration example

#Create VLAN or enter an existed VLAN.

switch(config)#vlan 1-4094

#Add the port as a VLAN member.

switch(config-if-vlan-1-4094)#switchport ethernet 0/0/1

#Enter the port configuration mode.

switch(config-if-vlan-1-4094)#interface ethernet 0/0/1

#Modify the port PVID.

switch(config-if-ethernet-0/0/1)#switchport pvid 2

#Configure the link type of the port.

switch(config-if-ethernet-0/0/1)#switchport link-type trunk

#Configure the allowed VLANs.

switch(config-if-ethernet-0/0/1)#switchport trunk allowed vlan 20

#View the port information.

switch(config-if-ethernet-0/0/1)#show interface brief

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

……

5 MAC-VLAN Configuration

5.1 mac-vlan mac-address

Command Function

Configure(Remove) MAC VLAN forwarding table.

Command Format

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

no mac-vlan ***[mac-addr]***

Parameter Instructions

Parameter	Parameter Instructions	Value
mac-addr	MAC address.	Hexadecimal, format: x.x.x.x.x.x.
vlan-id	VLAN id.	1-4094.
pri	Priority.	0-7.

5.2 show mac-vlan mac-address

Command Function

View the MAC VLAN configuration.

Command Format

show mac-vlan [mac-address *mac-addr***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
mac-addr	MAC address.	Hexadecimal, format: x.x.x.x.x.x.

5.3 configuration example

#Configure MAC VLAN.

switch(config)#mac-vlan mac-address 00:00:00:1:2:3 vlan 2 priority 5

#View the MAC VLAN configuration.

switch(config)#show mac-vlan mac-address 00:00:00:1:2:3

MAC Address	VLAN ID	Priority	Status
00:00:00:01:02:03	2	5	active

Total active entries: 1.

Total inactive entries: 0.

6 IP-Subnet-VLAN Configuration

6.1 ip-subnet-vlan IPv4

Command Function

Configure IP subnet-based vlan forwarding table.

Command Format

ip-subnet-vlan ipv4 *ip-add* **mask** *mask* **vlan** *vlan-id* **priority** [*pri*]

no ip-subnet-vlan ipv4 *ip-add* **mask** *mask*

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-add	IP address.	Decimal, format: x.x.x.x.
mask	Mask.	Decimal, format: x.x.x.x.
vlan-id	VLAN ID.	1 to 4094.
pri	Priority.	0 to 7.

6.2 ip-subnet-vlan precede

Command Function

Enable ip-subnet-vlan priority mac-vlan forwarding.

Command Format

[no] ip-subnet-vlan precede

Parameter Instructions

None

6.3 show ip-subnet-vlan

Command Function

View all configurations based on subnet VLAN.

Command Format

show ip-subnet-vlan [ipv4 *ip-add* **mask** *mask***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-add	IP address.	Decimal, format: x.x.x.x.
mask	Mask.	Decimal, format: x.x.x.x.

6.4 configuration example

#Configure ip-subnet-vlan.

switch(config)#ip-subnet-vlan ipv4 192.168.1.1 mask 255.0.0.0 vlan 1 priority 4

#Configure subnet matching first.

switch (config)#ip-subnet-vlan precede

#View the ip-subnet-vlan

switch (config)#show ip-subnet-vlan

The precedence of 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.

6.5 show mtu interface

Command Function

View the maximum transmission unit configuration.

Command Format

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

Parameter Instructions

None

7 Protocol-vlan Configuration

7.1 protocol-vlan profile id frame-type

Command Function

In global mode, configure protocol-vlan profile and appoint frame-type.

Command Format

protocol-vlan profile *profile-id* **frame-type** *frame-type* **ether-type** *value*

no protocol-vlan profile *profile-id*

Parameter Instructions

Parameter	Parameter Instructions	Value
profile-id	Table item ID.	1 to 16.
frame-type	Frame type.	[ethernet2,llc,snap].
value	Etherenet type.	Hex 1-FFFF.

7.2 protocol-vlan profile id vlan vid

Command Function

In port mode, refer to the protocol-vlan configuration file, and specify the VLAN and priority.

Command Format

protocol-vlan profile *profile-id* **vlan** *vid* **[priority** *priority***]**

no protocol-vlan profile *profile-id*

Parameter Instructions

Parameter	Parameter Instructions	Value
profile-id	Table item ID.	1 to 8.
vid	VLAN ID.	1 to 4094.
priority	Priority.	0 to 7.

7.3 protocol-vlan

Command Function

In port mode, enable protocol-vlan.

Command Format

[no] protocol-vlan profile

Parameter Instructions

Parameter	Parameter Instructions	Value
profile-id	Table item ID.	1 to 3

7.4 show protocol-vlan profile

Command Function

View protocol-vlan forwarding table configuration.

Command Format

show protocol-vlan profile [*id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
profile-id	Table item ID.	1 to 8

7.5 show protocol-vlan interface

Command Function

View the port enable configuration.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	string<5-6>, format: device number /slot number/port number.

7.6 configuration example

switch(config)# protocol-vlan profile 1 frame-type ethernet2 ether-type 0200
switch(config)# protocol-vlan profile 2 frame-type llc ether-type 0300
switch(config)#interface ethernet 0/0/1
switch(config-if-ethernet-0/0/1)#protocol-vlan
switch(config-if-ethernet-0/0/1)# protocol-vlan profile 1 vlan 100
switch(config-if-ethernet-0/0/1)#protocol-vlan profile 2 vlan 100 priority 2
switch(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.

switch(config-if-ethernet-0/0/1)#
switch(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.

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

8 VLAN-swap Configuration

8.1 vlan swap

Command Function

In port mode, configure vlan translation.

Command Format

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

no vlan swap *<startid> <endid>*

no vlan swap all

Parameter Instructions

Parameter	Parameter Instructions	Value
startid	Start VLAN ID.	1 to 4094.
endid	End VLAN ID.	1 to 4094.
swapid	Swap VLAN ID.	1 to 4094.
priority value	Priority.	0 to 7.

9 MAC Address Management

9.1 mac-address-table learning

Command Function

In global or port mode, MAC address learning is enabled..

Command Format

mac-address-table learning

no mac-address-table learning

Parameter Instructions

None

9.2 mac-address-table age-time

Command Function

Configure the MAC address table aging time.

Command Format

mac-address-table age-time *second*

no mac-address-table age-time

Parameter Instructions

Parameter	Parameter Instructions	Value
second	MAC address aging time.	10 to 1000000 seconds, default value is 300 seconds.

9.3 mac-address-table age-time disable

Command Function

Disable the MAC address table aging time function.

Command Format

mac-address-table age-time disable

Parameter Instructions

None

9.4 mac-address-table permanent

Command Function

Configure a permanent MAC address entry.

Command 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 Instructions

Parameter	Parameter Instructions	Value
mac-add	MAC address.	Hexadecimal, format: x:x:x:x:x:x.

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.
vlan-id	VLAN ID.	1 to 4094.

9.5 mac-address-table static

Command Function

Configure a static MAC address entry.

Command 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 Instructions

Parameter	Parameter Instructions	Value
mac-add	MAC address.	Hexadecimal, format: x:x:x:x:x:x.
port-id	Port ID.	string<5-6>, format: device number/slot number/port number.
vlan-id	VLAN id.	1 to 4094.

9.6 mac-address-table dynamic

Command Function

Configure a dynamic MAC address entry.

Command 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 Instructions

Parameter	Parameter Instructions	Value
mac-add	MAC address.	Hexadecimal, format: x:x:x:x:x:x.
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.
vlan-id	VLAN id.	1-4094.

9.7 mac-address-table blackhole

Command Function

Configure a blackhole MAC address entry.

Command 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 Instructions

Parameter	Parameter Instructions	Value
mac-add	MAC address.	Hexadecimal, format: x:x:x:x:x:x.
vlan-id	VLAN id.	1 to 4094.

9.8 mac-address-table max-mac-count

Command Function

In port or vlan mode, configure the maximum number of learned mac addresses.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
count	Total number of mac addresses.	1 to 32768.

9.9 show mac-address-table max-mac-count

Command Function

View the configuration information of the MAC address table learning number.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

9.10 show mac-address-table age-time

Command Function

View the configuration information of MAC address table aging time.

Command Format

show mac-address-table age-time

Parameter Instructions

None

9.11 show mac-address-table

Command Function

View the MAC address table.

Command 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 Instructions

Parameter	Parameter Instructions	Value
eth-trunk-id	Link aggregation group ID.	1 to 16.

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.
vlan-id	VLAN ID.	1 to 4094.
mac-addr	MAC address.	Hexadecimal, format: x:x:x:x:x:x.

9.12 show mac-address-table learning

Command Function

View the MAC address learning status.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
vid	VLAN ID.	1 to 4094
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

9.13 configuration example

#Configure a static MAC address entry.

switch(config)#mac-address-table permanent 00:00:00:01:02:03 interface ethernet 0/0/1 vlan 1

#Enter a port, configure the maximum learning number of the MAC address table.

switch(config)#interfac ethernet 0/0/1

switch(config-if-ethernet-0/0/1)#mac-address-table max-mac-count 250

#View the MAC address table.

switch(config-if-ethernet-0/0/1)#show mac-address-table

MAC Address VLAN ID port status

00:00:00:01:02:03 1 0/0/1 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 .

#View the maximum number of learned mac addresses for a single port

switch(config-if-ethernet-0/0/1)#show mac-address-table max-mac-count interface ethernet 0/0/1

Port Mac address max count

e0/0/1 250

Total entries: 1

#Configure the MAC address table aging time.

switch(config)#mac-address-table age-time 250

switch(config)#show mac-address-table age-time

mac address table agingtime is 250 seconds.

10 Flow Control Configuration

10.1 flow-control

Command Function

In port mode, enable flow control.

Command Format

[no] flow-control

Parameter Instructions

None

10.2 show flow-control interface

Command Function

View the flow control configuration.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

10.3 configuration example

switch(config)#interface ethernet 0/0/1
switch(config-if-ethernet-0/0/1)#flow-control
switch(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.

11 Bandwidth Control Configuration

11.1 bandwidth {ingress | egress}

Command Function

In port mode, configure bandwidth limiting for ingress(egress) direction.

Command Format

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

no bandwidth {ingress | egress}

Parameter Instructions

Parameter	Parameter Instructions	Value
rate	Bandwidth.	16 to 10000000, unit is kbps.
percentage	Percent of total bandwidth.	1 to 99.

11.2 bandwidth queue

Command Function

In port mode, bandwidth limiting for queues takes effect only for packets sent to the CPU.

Command Format

bandwidth queue *queue-id* **limit** *rate*

no bandwidth queue *queue-id*

Parameter Instructions

Parameter	Parameter Instructions	Value
queue-id	Queue ID.	0 to 7.
rate	Bandwidth.	16 to 10000000, unit is kbps.

11.3 show bandwidth interface

Command Function

View the bandwidth and rate limit configuration of the port.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	port ID.	String<5-6>, format: device number/slot number/port number.

11.4 configuration example

switch(config)#interface ethernet 0/0/1

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

switch (config-if-ethernet-0/0/1)#interface ethernet 0/0/2

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

switch (config-if-ethernet-0/0/2)#show bandwidth interface ethernet 0/0/1 ether

net 0/0/2

Port-bandwith informations:

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

switch(config-if-ethernet-0/0/2)#

12 Dlf-Control Configuration

12.1 unknown-discard unicast vlan

Command Function

In port mode, enable the function of discarding unknown unicast packets..

Command Format

[no] unknown-discard unicast

Parameter Instructions

None

12.2 unknown-discard src-mac

Command Function

In port mode, enable discarding unknown sources packets.

Command Format

[no] unknown-discard src-mac

Parameter Instructions

None

12.3 unknown-discard multicast vlan

Command Function

In global mode, enable the function of discarding unknown multicast packets of the specified VLAN.

Command Format

[no] unknown-discard multicast vlan <*vid***>**

Parameter Instructions

Parameter	Parameter Instructions	Value
vid	VLAN id.	1 to 4094.

12.4 show unknown-discard ethernet

Command Function

View the discarding status of unknown packets on a port.

Command Format

show unknown-discard ethernet *port-id*

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	port ID.	String<5-6>, format: device number/slot number/port number.

12.5 show unknown-discard src-mac

Command Function

View the status of the port discard unknown source packets.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	port ID.	String<5-6>, format: device number/slot number/port number.

12.6 show unknown-discard vlan

Command Function

View the status of discard unknown VLAN multicast packets.

Command Format

show unknown-discard vlan [*vid***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
vid	VLAN ID.	1 to 4094.

13 Port Mirror Configuration

13.1 mirror group id source-interface

Command Function

In global mode, configure the mirror source port.

Command Format

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

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

Parameter Instructions

Parameter	Parameter Instructions	Value
group-id	group ID.	1 to 3.
port-id	port ID.	String<5-6>, format: device number/slot number/port number.

13.2 mirror group id destination-interface

Command Function

In global mode, configure the mirror destination port.

Command Format

mirror group *group-id* **destination-interface ethernet <***port-id***> [rspan [local | middle | target] vid** *vid***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
group-id	group ID.	1 to 3.
port-id	port ID.	String<5-6>, format: device number/slot number/port number.

13.3 no mirror group

Command Function

Delete mirror group.

Command 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 Instructions

Parameter	Parameter Instructions	Value
group-id	group ID.	1 to 3.
port-id	port ID.	String<5-6>, format: device number/slot number/port number.

13.4 show mirror group

Command Function

View the mirror configuration information.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
group-id	Group ID.	1 to 3

13.5 configuration example

switch(config)#mirror group 1 source-interface ethernet 0/0/1 ingress
switch(config)#mirror group 1 source-interface ethernet 0/0/2 egress
switch(config)#mirror group 1 source-interface ethernet 0/0/3 both
switch(config)#mirror group 1 source-interface cpu both
switch(config)#mirror group 1 destination-interface ethernet 0/0/4
switch(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 .

switch(config)#

14 ACL Configuration

14.1 access-list <id> match-order

Command Function

Configure matching order ACLs in global mode.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Access control list number.	1 to 2999.
auto	Large length is preferred.	Default.
config	Smaller configuration number is preferred.	

14.2 access-list step

Command Function

The step length of the ACL subitem number.

Command Format

access-list step *step_value*

no access-list step

Parameter Instructions

Parameter	Parameter Instructions	Value
step-value	ACL step length.	1 to 10.

14.3 access-list <1-999>

Command Function

In global mode, configure IP access control lists.

Command Format

access-list *id* **{permit | deny}** [*protocol-id*] {*src-ipv4* **{host |** *mask*} **| any**} {*dst-ipv4* {**host |** *mask* } **| any**} [**fragments] [dscp** *dscp-value***| precedence** *prece-value* **tos** *tos-vlaue*] [**time-range** *name***]**

access-list *id* [**permit|deny**] [*protocol-id*] {*src-ipv6***/***prefix-len* | **ipv6any**} {*dst-ipv6***/***prefix-len* | **ipv6any**} [**traffic-class** *traffic-value*] [**time-rang** *name* **]**

Or enter the ACL view first, and then configure the rules.

access-list ip-acl *id*

{permit | deny} [*protocol-id*] {*src-ipv4* **{host |** *mask*} **| any**} {*dst-ipv4* {**host |** *mask* } **| any**} [**fragments] [dscp** *dscp-value***| precedence** *prece-value* **tos** *tos-vlaue*] [**time-range** *name***]**

Delete in global mode.

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

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Access control list number.	1 to 999，indicates the type of IP ACL.
protocol-id	Transport layer protocol number.	0 to 255, some protocols can use keywords such as udp, tcp.
src-ipv4	Source IPv4 address.	Decimal, format: x.x.x.x.
dst-ipv4	Destination IPv4 Address.	Decimal, format: x.x.x.x.
mask	IPv4 subnet mask.	Decimal, format: x.x.x.x.
dscp-value	DSCP value.	0 to 63.
prece-value	Precedence value.	0 to 7.
tos-value	ToS value.	0 to 15.
name	Specify the effective time of the ACL.	String<1-32>.
src-ipv6	Source IPv6 address.	Hexadecimal, format: x:x:x:x:x:x.
dst-ipv6	Destination Ipv6 Address.	Hexadecimal, format: x:x:x:x:x:x.
prefix-len	IPv6 address prefix length.	0 to 128.
traffic-value	Flow level.	0 to 255.

14.4 access-list <1000-1999>

Command Function

In global mode, configure a layer 2 ACL.

Command Format

access-list id {**permit|deny**} [*protocol-id*] { *src-mac* {*mask* | **host}** | **any}** { *dst-mac* {*mask* | **host}** | **any}** [**vlan** *vid*] [**cos** *value*] [**time-range** *name*]

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}** [**vlan** *vid*] [**cos** *value*] [**time-range** *name*]

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

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Access control list number.	1000 to 1999, Indicates the type of a Layer 2 ACL.
protocol-id	Network layer protocol number.	0 to 255, some protocols can use keywords, such as arp, ip.
src-mac	Source MAC address.	Hexadecimal, format: x:x:x:x:x:x.
dst-mac	Destination MAC address.	Hexadecimal, format: x:x:x:x:x:x.
mask	MAC address mask.	Hexadecimal, format: x:x:x:x:x:x.
vid	VLAN id.	1 to 4094.
cos	Priority in 802.1p.	0 to 7.
name	Schedule name.	String<1-32>.

14.5 access-list <2000-2999>

Command Function

In global mode, configure a hybrid ACL.

Command 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 Instructions

Parameter	Parameter Instructions	Value
id	Access control list number.	2000 to 2999.
protocol-id	Transport layer protocol number.	0 to 255, some protocols can use keywords, such as udp, tcp.
vid	VLAN id.	1 to 4094.
cos	Priority in 802.1p.	0 to 7.
src-mac	Source MAC address.	Hexadecimal, format: x:x:x:x:x:x.
dst-mac	Destination MAC address.	Hexadecimal, format: x:x:x:x:x:x.
mac-mask	MAC address mask.	Hexadecimal, format: x:x:x:x:x:x.
src-ipv4	Source IPv4 address.	Decimal, format: x.x.x.x.
dst-ipv4	Destination Ipv4 Address.	Decimal, format: x.x.x.x.
Ip-mask	IPv4 subnet mask.	Decimal, format: x.x.x.x.
dscp-value	DSCP value.	0 to 63.
prece-value	Precedence value.	0 to 7.
tos-value	ToS value.	0 to 15.
src-ipv6	Source Ipv6 address.	Hexadecimal, format: x:x:x:x:x:x.
dst-ipv6	Destination Ipv6 Address.	Hexadecimal, format: x:x:x:x:x:x.
prefix-len	Length of the IPv6 address prefix.	0 to 128.
traffic-value	Flow level.	0 to 255.
name	Schedule name.	String<1-32>.

14.6 access-group

Command Function

In global or port mode, activate ACL.

Command Format

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

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

Parameter Instructions

Parameter	Parameter Instructions	Value
acl-type	ACL type.	ip-acl, mac-acl, hybrid-acl.
id	ACL ID.	1 to 2999, the range of values is related to the selected type.
sub-num	Rule ID, automatically generated when adding a rule.	0 to 127.
direction	Effective direction.	in, out.

14.7 time-range

Command Function

In global mode, configure time and enter time period mode.

Command Format

time-range <*name***>**

no time-range <*name***>**

Parameter Instructions

Parameter	Parameter Instructions	Value
name	Interval name (up to 32 bytes, must start with [a-z,A-Z], case insensitive).	String<1-32>.

14.8 absolute

Command Function

In time period mode, configure absolute period range.

Command 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 Instructions

Parameter	Parameter Instructions	Value
start-time		00:00:00 - 23:59:59.
start-date		2000/01/01 - 2099/12/31.
end-time		00:00:00 - 23:59:59.
end-date		2000/01/01 - 2099/12/31.

14.9 periodic

Command Function

In time period mode, configure relative time period.

Command Format

periodic <*date-list***> <***start-time***> to <***end-time***>**

no periodic <*date-list***> <***start-time***> to <***end-time***>**

Parameter Instructions

Parameter	Parameter Instructions	Value
date-list	\	[0-6,Daily,fri,mon,sat,sun,thu,tue,wed,weekdays,weekend].
start-time	\	00:00:00 - 23:59:59.
end-time	\	00:00:00 - 23:59:59.

14.10 show time-range

Command Function

View the configuration information of time period.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
name	Interval name (up to 32 bytes, must start with [a-z,A-Z], case insensitive).	String<1-32>.

14.11 show access-list config

Command Function

View the configuration information of ACL.

Command Format

show access-list config [all|brief|*acl-id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
acl-id	ACL ID.	1 to 2999.

14.12 show access-list runtime

Command Function

View the information of the activated ACL.

Command Format

show access-list runtime [all|brief|*acl-id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
acl-id	ACL ID.	1 to 2999.

14.13 configuration example

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

switch(config)#time-range morning
Config time range successfully.

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

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

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

switch(config-ip-nacl-1)#exit

switch(config)#time-range morning2
Config time range successfully.

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

switch(config-timerange-morning2)#exit

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

Config ACL subitem successfully.

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

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

switch(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
switch(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
switch(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

switch(config)#
```

15 QACL Configuration

15.1 traffic insert-vlan

Command Function

Configure the specified flow to insert into the outer VLAN.

Command Format

traffic insert-vlan { mac-acl | ip-acl | hybrid-acl } *acl-id* [**subitem** *sub_num*] *vid*

no traffic insert-vlan { mac-acl | ip-acl | hybrid-acl } *acl-id* [**subitem** *sub_num*]

Parameter Instructions

Parameter	Parameter Instructions	Value
acl-id	ACL ID.	1 to 2999.
sub-num	Rule ID.	0 to 127.
vid	VLAN ID.	1 to 4094.

15.2 traffic statistic

Command Function

In global mode, configure flow statistics.

Command Format

[no] traffic statistic {mac-acl | ip-acl | hybrid-acl} *acl-id* [**subitem** *sub-num*] {**in | out** }

Parameter Instructions

Parameter	Parameter Instructions	Value
acl-id	ACL ID.	1 to 2999.
sub-num	Rule ID.	0 to 127.

15.3 traffic mirror

Command Function

In global mode, configure the specified flow mirror.

Command Format

traffic mirror {mac-acl | ip-acl | hybrid-acl} *acl_id* [**subitem** *sub_num*] **{cpu | interface ethernet** *port-id*}

no traffic mirror {mac-acl | ip-acl | hybrid-acl} *acl_id* [**subitem** *sub_num*]

Parameter Instructions

Parameter	Parameter Instructions	Value
acl_id	ACL ID.	1 to 2999.
sub-num	Rule ID.	0 to 127.
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

15.4 traffic priority

Command Function

Configure the specified flow tag priority.

Command Format

traffic priority {mac-acl | ip-acl | hybrid-acl} *acl_id* [**subitem** *sub_num*] **{cos | dscp | local-precedence | precedence}** *value*

no traffic priority { mac-acl | ip-acl | hybrid-acl } *acl_id* [**subitem** *sub_num*]

Parameter Instructions

Parameter	Parameter Instructions	Value
acl_id	ACL ID.	1 to 2999.
sub-num	Rule ID.	0 - 127.
value	Values based on specific keywords.	dscp 0-63, cos 0-7, precedence 0-7 Local-precedence 0-7.

15.5 traffic rate-limit

Command Function

Configure a rate limit for a specific flow.

Command Format

traffic rate-limit { mac-acl | ip-acl | hybrid-acl } *acl_id* [**subitem** *sub_num*] {*rate* | **two-rate-policer** *trp-id*} **{in|out }**

no traffic rate-limit { mac-acl | ip-acl | hybrid-acl } *acl_id* [**subitem** *sub_num*] **{in|out }**

Parameter Instructions

Parameter	Parameter Instructions	Value
acl_id	ACL ID.	1 to 2999.
Sub-num	Rule ID.	0 to 127.
rate	Target rate.	GE port :64 to 1000000; 10GE port: 64 to 10000000.
trp-id	Two-speed three-color ID.	0 to 255.

15.6 traffic redirect

Command Function

Configure packet redirection.

Command Format

traffic redirect { mac-acl | ip-acl | hybrid-acl } *acl_id* [**subitem** *sub_num*] { **interface ethernet** *port-id* | **cpu** }

no traffic redirect { mac-acl | ip-acl | hybrid-acl } *acl_id* [**subitem** *sub_num*]

Parameter Instructions

Parameter	Parameter Instructions	Value
acl_id	ACL ID.	1 to 2999.
sub-num	Rule ID.	0 to 127.
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

15.7 traffic rewrite-vlan

Command Function

Modify the VLAN of the specified flow.

Command 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 Instructions

Parameter	Parameter Instructions	Value
acl_id	ACL ID.	1 to 2999.
sub-num	Rule ID.	0 to 127.
vid	VLAN ID.	1 to 4094.

15.8 clear traffic statistic

Command Function

Clear traffic statistics.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
acl-type	ACL type.	ip-acl, mac-acl, hybrid-acl.
acl-id	ACL ID.	1 to 2999, the range of values is related to the selected type The range of values is related to the selected type.
sub-num	Rule id, automatically generated when adding a rule.	0 to 127.

15.9 show traffic all | brief

Command Function

Show all QACL configurations.

Command Format

show traffic all

show traffic brief

Parameter Instructions

None

15.10 show traffic insert-vlan

Command Function

View vlan insertion configuration.

Command Format

show traffic insert-vlan

Parameter Instructions

None

15.11 show traffic mirror

Command Function

View all flow mirror configurations.

Command Format

show traffic mirror

Parameter Instructions

None

15.12 show traffic priority

Command Function

View the configuration of priority tags.

Command Format

show traffic priority

Parameter Instructions

None

15.13 show traffic rate-limit

Command Function

View the flow rate limit configuration.

Command Format

show traffic rate-limit

Parameter Instructions

None

15.14 show traffic redirect

Command Function

View the redirected configuration.

Command Format

show traffic redirect

Parameter Instructions

None

15.15 show traffic rewrite-vlan

Command Function

View the parameter settings of the vlan rewrite.

Command Format

show traffic rewrite-vlan

Parameter Instructions

None

15.16 show traffic statistic

Command Function

View all flow statistics configurations.

Command Format

show traffic statistic

Parameter Instructions

None

15.17 configuration example

#Configure and activate ACL.

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

 # Tag ACL priority.

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

16 Port Isolate Configuration

16.1 interface port-isolate group group-id

Command Function

In port mode, delete the upstream port, and all ports are added to the port by default.Deleting an upstream port means that the traffic of this port cannot be forwarded to the deleted port, that is port isolation .

Command Format

port-isolation uplink ethernet *port-id*

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

16.2 show port-isolation group

Command Function

View the port isolation configuration.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID	String<5-6>, format: device number/slot number/port number.

16.3 configuration example

switch(config)#show port-isolation ethernet 0/0/1
Port-isolation informations:
port : uplink list
e0/0/1 : e0/0/1-e0/1/4.

switch(config)#interface ethernet 0/0/1
switch(config-if-ethernet-0/0/1)#no port-isolation uplink ethernet 0/0/2
switch(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.

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

17 Storm-control Configuration

17.1 storm-control action

Command Function

In port mode, configure storm suppression actions.

Command Format

storm-control action {**ogging**| **shutdown**] **trap**}

no storm-control action

Parameter Instructions

None

17.2 storm-control

Command Function

In port mode, configure broadcast storm suppression.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
rate	Bandwidth.	16 to 10000000, the unit is kbps.

17.3 show storm-control interface

Command Function

View the storm suppression configuration information.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	port ID.	String<5-6>, format: device number/slot number/port number.

17.4 configuration example

switch(config)#interface ethernet 0/0/1
switch(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.
switch(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

switch(config-if-ethernet-0/0/1)#storm-control broadcast pps 100
switch(config-if-ethernet-0/0/1)#storm-control multicast pps 200
switch(config-if-ethernet-0/0/1)#storm-control unicast pps 300
switch(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.

18 IP-Source-Guard Configuration

18.1 ip source

Command Function

In port mode, enable and configure filter mode.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
ip	The port filters the packets according to the source IP address of the IP packets.	None.
ip-mac	The port filters the packets according to the source IP address and MAC address of the IP packets.	None.
ip-mac-vlan	The port filters the packets according to the source IP address, MAC address and VLAN of the IP packets.	None.

18.2 ip source bind

Command Function

Configure a binding table entry.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Configurable valid ip address.	Decimal, format: x.x.x.x.
mac-address	MAC address.	Hexadecimal, format: x:x:x:x:x:x.
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.
vlan-id	VLAN ID.	1 to 4094.

18.3 ip source permit-igmp

Command Function

Enable forwarding of igmp protocol packets.

Command Format

ip source permit-igmp

no ip source permit-igmp

Parameter Instructions

None

18.4 ip source vlan

Command Function

Enable filtering function of VLAN.

Command Format

[no] ip source vlan *vlan-id*

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-id	VLAN ID.	1 to 4094.

18.5 show ip source

Command Function

View the IP source configuration information.

Command Format

show ip source

Parameter Instructions

None

18.6 show ip source bind

Command Function

View the binding table entry.

Command Format

show ip source bind [*ip-address*]

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	IP address.	Decimal, format: x.x.x.x.

18.7 show ip source permit-igmp

Command Function

View IP source permit-igmp configuration information.

Command Format

show ip source permit-igmp

Parameter Instructions

None

18.8 show ip source vlan

Command Function

View IP source vlan configuration information.

Command Format

show ip source vlan

Parameter Instructions

None

18.9 configuration example

Network diagram:

TC A----- 1 switch 2 ----- TC B

Configuration:

switch(config)#ip source bind 192.168.1.10
switch(config)#interface ethernet 0/0/1
switch(config-if-ethernet-0/0/1)#ip source ip

19 ARP anti-flood Configuration

19.1 arp anti-flood

Command Function

Enable(Disable) the arp anti-flood function.

Command Format

(no)arp anti-flood

Parameter Instructions

None

19.2 arp anti-flood action

Command Function

Configure the processing policy for ARP attack packets.

Command Format

arp anti-flood action {deny-all |deny-arp} [rate-limit *rate***]**

no arp anti-flood action [rate-limit *rate***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
deny-all	Discard all.	None.
deny-arp	Discard arp.	None.
rate	Maximum number of packets allowed per second.	1 to 100, unit is pps.

19.3 arp anti-flood bind blackhole

Command Function

Bind entries generated by flooding attacks as static black hole MACs, which are valid when deny-all.

Command Format

arp anti-flood bind blackhole {all | *mac***}**

Parameter Instructions

Parameter	Parameter Instructions	Value
all	All dynamic black holes.	None.
mac	MAC address.	Hexadecimal, format: x:x:x:x:x:x.

19.4 arp anti-flood rate-limit

Command Function

Configure the rate value of arp packets.

Command Format

arp anti-flood rate-limit <*rate*>

no arp anti-flood rate-limit

Parameter Instructions

Parameter	Parameter Instructions	Value
rate	Maximum number of packets allowed per second.	1 to 100, unit is pps.

19.5 arp anti-flood recover

Command Function

Manual recovery of banned users.

Command Format

arp anti-flood recover {all | *mac***}**

Parameter Instructions

Parameter	Parameter Instructions	Value
all	All banned users.	None.
mac	MAC address.	Hexadecimal, format: x:x:x:x:x:x.

19.6 arp anti-flood recover-time

Command Function

Configure the recovery time of attack entries.

Command Format

arp anti-flood recover-time *time*

no arp anti-flood recover-time

Parameter Instructions

Parameter	Parameter Instructions	Value
time	Auto recovery time.	0 - 1440 minute, 0 means no recovery.

19.7 show arp anti-flood

Command Function

View the anti-flood configuration.

Command Format

show arp anti-flood

Parameter Instructions

None

19.8 show arp anti-flood rate-limit

Command Function

View the port arp threshold value.

Command Format

show arp anti-flood rate-limit

Parameter Instructions

None

19.9 configuration example

Network diagram:

PC----- 1 switch

Configuration:

switch(config)#arp anti-flood
switch(config)#arp anti-flood action deny-arp
switch(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.

20 ARP anti-spoofing Configuration

20.1 arp anti-spoofing

Command Function

Enable the arp anti-spoofing function.

Command Format

[no] arp anti-spoofing

Parameter Instructions

None

20.2 arp anti-spoofing action

Command Function

Configure the processing strategy for unknown arps.

Command Format

arp anti-spoofing action {discard|flood}

Parameter Instructions

Parameter	Parameter Instructions	Value
discard	\	None.
flood	\	None.

20.3 arp anti-spoofing bind

Command Function

Configure the hosts to allow through.

Command Format

arp anti-spoofing bind ip <*ip***> ethernet <***port-id***>**

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

Parameter Instructions

Parameter	Parameter Instructions	Value
ip	IP address.	Decimal, format: x.x.x.x.
Port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

20.4 arp anti-spoofing gateway-disguiser

Command Function

Enable(Disable) the gateway anti-spoofing function.

Command Format

arp anti-spoofing gateway-disguiser

no arp anti-spoofing gateway-disguiser

Parameter Instructions

None

20.5 arp anti-spoofing source-mac-check

Command Function

Enables(Disabled) the consistency check of the source address of ARP packets.

Command Format

arp anti-spoofing source-mac-check

no arp anti-spoofing source-mac-check

Parameter Instructions

None

20.6 arp anti-attack trust

Command Function

In port mode, configure the port as a trusted port.

Command Format

arp anti-attack trust

no arp anti-attack trust

Parameter Instructions

None

20.7 show arp anti-spoofing

Command Function

View the Anti-Spoofing configuration.

Command Format

show arp anti-spoofing

Parameter Instructions

None

20.8 show arp anti-spoofing bind

Command Function

View the arp anti-spooing binding table entry.

Command Format

show arp anti-spoofing bind

Parameter Instructions

None

20.9 show arp anti-attack

Command Function

View the arp anti-attack configuration .

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

20.10 configuration example

Network diagram:

PC----- 1 switch

Configuration；

switch(config)#arp anti-spoofing
switch(config)#arp anti-spoofing action discard
switch(config)#interface ethernet 0/0/1
switch(config-if-ethernet-0/0/1)#arp anti-attack trust

21 Anti-DOS Attack Configuration

21.1 anti-dos packets class

Command Function

Enable anti-packet attack.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Packet classification.	0-14，Meaning is as follows： type0：Source MAC and destination MAC equal. type1:Source IP and destination IP equal. type2:UDP with sport and dport equal. type3:TCP with sport and dport equal. type4:ICMPv4 maxinum length. type5:ICMPv6 maxinum 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 frist fragments with minimum TCP header length.

21.2 show anti-dos

Command Function

View the anti-dos configuration.

Command Format

show anti-dos

Parameter Instructions

None

22 LACP Configuration

22.1 interface eth-trunk id

Command Function

Configure or enter an aggregation group.

Command Format

interface eth-trunk *id*

no interface eth-trunk <*id***>**

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Aggregate group number.	1 to 16.

22.2 link-aggregation mode

Command Function

In aggregation group mode, configure the aggregation type.

Command Format

link-aggregation mode {dynamic | static}

no link-aggregation mode

Parameter Instructions

Parameter	Parameter Instructions	Value
dynamic	\	None
static	\	None

22.3 link-aggregation members

Command Function

In aggregation group mode, add aggregation group member ports.

Command Format

link-aggregation members ethernet *port-id*

no link-aggregation members ethernet *port-id*

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

22.4 link-aggregation eth-trunk

Command Function

In port mode, configure the port to join or leave the aggregation group.

Command Format

link-aggregation eth-trunk *id*

no link-aggregation eth-trunk

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Aggregate group number.	1 to 16.

22.5 lacp mode

Command Function

In port mode, configure the negotiation mode.

Command Format

lacp mode {active | passive}

no lacp mode

Parameter Instructions

Parameter	Parameter Instructions	Value
passive	\	None.
active	\	None.

22.6 lacp period

Command Function

In port mode, configure the timeout mode.

Command Format

lacp period {long | short}

Parameter Instructions

Parameter	Parameter Instructions	Value
short	Short timeout.	None.
long	Long timeout.	None.

22.7 lacp port-priority

Command Function

In port mode, configure the port priority.

Command Format

lacp port-priority *num*

no lacp port-priority

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Priority number.	1 to 65535.

22.8 lacp system-priority

Command Function

Configure the system priority.

Command Format

lacp system-priority *num*

no lacp system-priority

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Priority number.	1 to 65535.

22.9 link-aggregation load-balance

Command Function

Configure a load balancing policy for an aggregation group.

Command 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 Instructions

Parameter	Parameter Instructions	Value
dst-ip	Destination IP.	
dst-mac	Destination MAC.	
src-dst-ip	Source/destination IP.	
src-dst-mac	Source/destination MAC.	
src-ip	Source IP.	
src-mac	Source MAC.	

22.10 show lacp local

Command Function

View the status of the local aggregation group.

Command Format

show lacp local [eth-trunk *id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Aggregate group number	1 to 16.

22.11 show lacp neighbor

Command Function

View the status of the peer aggregation group.

Command Format

show lacp neighbor [eth-trunk *id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Aggregate group number.	1 to 16.

22.12 show lacp sys-id

Command Function

View system ID information.

Command Format

show lacp sys-id

Parameter Instructions

None

22.13 configuration example

 # Configure or enter an aggregation group.

switch(config)#interface eth-trunk 1

 # Configure the aggregation group mode to static.

switch(config-if-eth-trunk-1)#link-aggregation mode static

switch(config-if-eth-trunk-1)#link-aggregation members ethernet 0/0/10
switch(config-if-eth-trunk-1)#link-aggregation members ethernet 0/0/11
switch(config-if-eth-trunk-1)#exit
switch(config)#link-aggregation load-balance dst-mac
switch(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	-

23 STP/RSTP Configuration

23.1 stp

Command Function

In global or port mode, enable stp.

Command Format

stp

no stp

Parameter Instructions

None

23.2 stp mode [stp|rstp]

Command Function

In global mode, configure stp mode.

Command Format

stp mode [stp|rstp]

no stp mode

Parameter Instructions

None

23.3 stp hello-time

Command Function

In global mode,configure the interval for sending STP protocol packets.

Command Format

stp hello-time < *seconds* >

no stp hello-time

Parameter Instructions

Parameter	Parameter Instructions	Value
seconds	Hello packets sending interval time.	1 to 10 seconds, the default is 2 seconds.

23.4 stp forward-time

Command Function

In global mode, configure the port forward-delay time.

Command Format

stp forward-time < *seconds* >

no stp forward-time

Parameter Instructions

Parameter	Parameter Instructions	Value
seconds	Delay time when changing to forward state.	4 to 30 seconds, the default is 15 seconds.

23.5 stp max-age

Command Function

In global mode, configure the aging time of stp protocol packets.

Command Format

stp max-age < *num* >

no stp max-age

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Aging time of BPDU packets.	6 to 40 seconds, the default is 20 seconds.

23.6 stp pathcost-standard

Command Function

In global mode, configure the stp cost calculation method.

Command Format

stp pathcost-standard [dot1d-1998 | dot1t]

no stp pathcost-standard

Parameter Instructions

None

23.7 stp priority

Command Function

In global mode, configure the stp priority of the bridge.

Command Format

stp priority <*priority*>

no stp priority

Parameter Instructions

Parameter	Parameter Instructions	Value
priority	Priority number.	0 to 61440, the value is a multiple of 4096, default is 32768.

23.8 stp root-guard action

Command Function

In global mode, configure root bridge protection behavior.

Command Format

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

Parameter Instructions

None

23.9 stp tc-protection

Command Function

In global mode, enable TC protection.

Command Format

stp tc-protection

no stp tc-protection

Parameter Instructions

None

23.10 stp tc-protection interval

Command Function

In global mode, configure the TC protection period.

Command Format

stp tc-protection interval *<interval>*

no stp tc-protection interval

Parameter Instructions

Parameter	Parameter Instructions	Value
interval	The effective time of TC protection.	1 to 255 seconds, default is 10 seconds.

23.11 stp tc-protection threshold

Command Function

Configure the maximum number of TC packets processed during the protection period.

Command Format

stp tc-protection threshold *<threshold>*

no stp tc-protection threshold

Parameter Instructions

Parameter	Parameter Instructions	Value
threshold	Threshold for triggering TC protection to take effect.	1 to 255, default is 6.

23.12 stp time-factor

Command Function

In global mode, configure the root bridge timeout factor.

Command Format

stp time-factor *<num>*

no stp time-factor

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Timeout factor	1 to 10，default is 3.

23.13 stp bpdu-guard

Command Function

Enable bpdu-guard function in port mode.

Command Format

stp bpdu-guard

no stp bpdu-guard

Parameter Instructions

None

23.14 stp bpdu-filter

Command Function

In global or port mode, filter bpdu packets.

Command Format

stp bpdu-filter

no stp bpdu-filter

Parameter Instructions

None

23.15 stp cost

Command Function

In port mode,configure the path cost.

Command Format

stp cost *<cost>*

no stp cost

Parameter Instructions

Parameter	Parameter Instructions	Value
cost	Path cost.	1 to 200000000.

23.16 stp portfast

Command Function

In port mode, configure an edge port.

Command Format

stp portfast [autoedge | disable | edgeport]

no stp portfast

Parameter Instructions

Parameter	Parameter Instructions	Value
autoedge	If the port does not receive bpdu packets within 3s after the port is up, it will automatically become an edge port.	None.
disable	Port does not become an edge port.	None.
edgeport	After the port is up, it become an edge port directly.	None.

23.17 stp link-type

Command Function

In port mode, configure the link type.

Command Format

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

no stp link-type

Parameter Instructions

Parameter	Parameter Instructions	Value
auto	Automatic detection.	
point-to-point	\	
shared	Non-point-to-point.	

23.18 stp loop-guard

Command Function

In port mode, configure the loop-guard function.

Command Format

stp loop-guard

no stp loop-guard

Parameter Instructions

None

23.19 stp mcheck

Command Function

In port mode, execute the mcheck function.

Command Format

stp mcheck

Parameter Instructions

None

23.20 stp port-priority

Command Function

Configure the stp priority of the port.

Command Format

stp port-priority <*priority*>

no stp port-priority

Parameter Instructions

Parameter	Parameter Instructions	Value
priority	Priority number.	0 to 240, the value is a multiple of 16, default is 128.

23.21 stp root-guard

Command Function

In port mode, configure the root-guard function.

Command Format

stp root-guard

no stp root-guard

Parameter Instructions

None

23.22 stp tcn-restricted

Command Function

In port mode, configure the tcn propagation limit function.

Command Format

stp tcn-restricted

no stp tcn-restricted

Parameter Instructions

None

23.23 stp transmit-limit

Command Function

In port mode, configure the maximum number of bpdu packets processed.

Command Format

stp transmit-limit <*limit*>

no stp transmit-limit

Parameter Instructions

Parameter	Parameter Instructions	Value
limit	BPDU packets processing limit.	1 to 255, default is 3.

23.24 show stp interface

Command Function

View the interface stp information.

Command Format

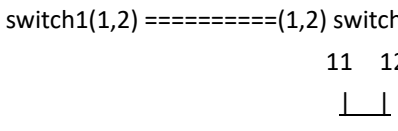
show stp interface [brief| ethernet <*port-number***>]**

Parameter Instructions

Parameter	Parameter Instructions	Value
brief	Brief information.	
port-number	Port ID.	String<5-6>, format: device number/slot number/port number.

23.25 configuration example

Network diagram:



The corresponding ports 1 and 2 of switch1 and switch2 are interconnected to form a loop, and ports 11 and 12 of SWITCH2 are self-connected (self-loop). where switch is the root bridge. Configuration details are as follows:

 # Configure a root bridge

```
switch1 (config)#stp
switch1 (config)#stp priority 4096
```

 # Configure a non-root bridge

```
switch2 (config)#stp
switch2 (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

switch2 (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                          //Root Bridge Information
   Path cost to root bridge: 20000
   Topo change times: 13

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
```

24 MSTP Configuration

24.1 stp

Command Function

In global or on port mode, enable stp function.

Command Format

stp

no stp

Parameter Instructions

None

24.2 stp mode mstp

Command Function

In global mode, configure mstp mode.

Command Format

stp mode mstp

no stp mode

Parameter Instructions

None

24.3 mstp hello-time

Command Function

In port mode, configure the interval for sending stp protocol packets.

Command Format

mstp hello-time < *seconds* >

no mstp hello-time

Parameter Instructions

Parameter	Parameter Instructions	Value
seconds	Period for sending BPDU packets.	1 to 10 seconds, default is 2 seconds.

24.4 mstp forward-time

Command Function

in global mode, configure the port forward-delay time.

Command Format

mstp forward-time < *seconds* >

no mstp forward-time

Parameter Instructions

Parameter	Parameter Instructions	Value
seconds	Delay time when changing to forward state.	4 to 30 second, the default is 15 seconds.

24.5 mstp max-age

Command Function

In global mode, configure the aging time of stp protocol packets.

Command Format

mstp max-age <*seconds*>

no mstp max-age

Parameter Instructions

Parameter	Parameter Instructions	Value
seconds	Aging time of BPDU packets.	6 to 40 second, the default is 20 seconds.

24.6 mstp max-hops

Command Function

In port mode, configure the maximum number of STP hops in the domain.

Command Format

mstp max-hops < *num* **>**

no mstp max-hops

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Maximum diffusion range of BPDU packets.	1 to 255 secon, default is 20 seconds.

24.7 mstp instance <id> priority

Command Function

In global mode, configure the priority of spanning tree instances.

Command Format

mstp instance <*id***> priority** <*priority*>

no mstp instance <*id***> priority**

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Instance number.	0 to 15.
priority	\	0 to 61440, the value is a multiple of 4096, default is 32768.

24.8 mstp root-guard action

Command Function

In global mode, configure root bridge protection behavior.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
drop-bpdu	Discard packets.	

Parameter	Parameter Instructions	Value
block-port	Blocked port.	

24.9 mstp tc-protection

Command Function

In global mode, enable TC protection.

Command Format

mstp tc-protection

no mstp tc-protection

Parameter Instructions

None

24.10 mstp tc-protection interval

Command Function

In global mode, configure the TC protection period.

Command Format

mstp tc-protection interval *<interval>*

no mstp tc-protection interval

Parameter Instructions

Parameter	Parameter Instructions	Value
interval	TC protection effective time.	1 to 255 seconds, default is 10 seconds.

24.11 mstp tc-protection threshold

Command Function

Configure the maximum number of TC packets processed during the protection period.

Command Format

mstp tc-protection threshold *<threshold>*

no mstp tc-protection threshold

Parameter Instructions

Parameter	Parameter Instructions	Value
threshold	Threshold for triggering TC protection to take effect.	1 to 255, default is 6.

24.12 mstp time-factor

Command Function

In global mode, configure the root bridge timeout factor.

Command Format

mstp time-factor *<num>*

no mstp time-factor

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Timeout factor.	1 to 10，default is 3.

24.13 mstp bpdu-guard

Command Function

In port mode, enable bpdu-guard function.

Command Format

mstp bpdu-guard

no mstp bpdu-guard

Parameter Instructions

None

24.14 mstp bpdu-filter

Command Function

In global or port mode, configure the function of filtering bpdu packets.

Command Format

mstp bpdu-filter

no mstp bpdu-filter

Parameter Instructions

None

24.15 mstp instance

Command Function

In global mode, configure spanning tree instance map to VLANs.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Instance number.	0 to 15.
vlan-list		1 to 4094.

24.16 mstp region-name

Command Function

In global mode, configure the domain names.

Command Format

mstp region-name *<name>*

no mstp region-name

Parameter Instructions

Parameter	Parameter Instructions	Value
name	Name description.	String<1-32>.

24.17 mstp enable instance

Command Function

In global mode, enable spanning tree instance.

Command Format

mstp enable instance *<id>*

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Instance number.	1 to 15.

24.18 mstp disable instance

Command Function

In global mode, disable spanning tree instance.

Command Format

mstp disable instance *<id>*

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Instance number.	1 to 15.

24.19 mstp revision-level

Command Function

In global mode, configure the revision level.

Command Format

mstp revision-level *<level>*

no mstp revision-level

Parameter Instructions

Parameter	Parameter Instructions	Value
level	\	0 to 65535.

24.20 mstp flap-guard

Command Function

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

Command Format

mstp flap-guard [**max-flaps <***num***> time <***s1***>|recovery-time<***s2***>**]

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

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Flapping times.	1 to 100 seconds, default is 5 seconds.
s1	Interval time.	1 to 60 seconds, default is 10 seconds.

Parameter	Parameter Instructions	Value
s2	Recovery time.	30 to 1000 seconds, default is 30 seconds.

24.21 mstp external cost

Command Function

In port mode, configure the mstp interzone cost.

Command Format

mstp external cost *<num>*

no mstp external cost

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Interzone cost.	1 to 200000000.

24.22 mstp instance <id> cost

Command Function

In port mode, configure the cost in the domain.

Command Format

mstp instance <*id***> cost** *<cost>*

no mstp instance <*id***> cost**

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Instance number.	0 to 15.
cost		1 to 200000000.

24.23 mstp portfast

Command Function

In port mode, configure edge ports.

Command Format

mstp portfast {autoedge |disable | edgeport }

no mstp portfast

Parameter Instructions

Parameter	Parameter Instructions	Value
autoedge	If the port does not receive bpdu packets within 3s after the port is up, it will automatically become an edge port.	
disable	Port does not become an edge port.	
edgeport	After the port is up, it become an edge port directly.	

24.24 mstp link-type

Command Function

In port mode, configure the mstp link type.

Command Format

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

no mstp link-type

Parameter Instructions

Parameter	Parameter Instructions	Value
auto	Automatic detection.	
point-to-point	\	
shared	non-point-to-point.	

24.25 mstp loop-guard

Command Function

In port mode, configure the loop-guard function.

Command Format

mstp loop-guard

no mstp loop-guard

Parameter Instructions

None

24.26 mstp root-guard

Command Function

in port mode, configure the root-guard function.

Command Format

mstp root-guard

no mstp root-guard

Parameter Instructions

None

24.27 mstp mcheck

Command Function

In port mode, execute the mcheck function.

Command Format

mstp mcheck

Parameter Instructions

None

24.28 mstp instance <id> port-priority

Command Function

In port mode, configure the instance priority of mstp.

Command Format

mstp instance <*id***> port-priority** <*priority*>

no mstp instance <*id***> port-priority**

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Instance number.	0 to 15.
priority	Priority number.	0 to 240, the value is a multiple of 16, default is 128.

24.29 mstp instance <id> cost

Command Function

In port mode, configure the instance cost value of mstp.

Command Format

mstp instance <id> cost <cost>

no mstp instance <id> cost

Parameter Instructions

Parameter	Parameter Instructions	Value
cost	Cost value.	1 to 200000000.
id	Instance number.	0 to 15.

24.30 mstp config-digest-snooping

Command Function

In port mode, the configuration is compatible with Cisco.

Command Format

mstp config-digest-snooping

no mstp config-digest-snooping

Parameter Instructions

None

24.31 show mstp instance brief

Command Function

View mstp brief information.

Command Format

show mstp instance brief

Parameter Instructions

None

24.32 show mstp instance <id> interface

Command Function

View mstp information.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port-number.	String<5-6>, format: device number/slot number/port number.
id	Instance number.	0 to 15.

24.33 show mstp disabled-instance

Command Function

View disabled instance.

Command Format

show mstp disabled-instance

Parameter Instructions

None

24.34 show mstp config-id

Command Function

View the domain configuration of mstp.

Command Format

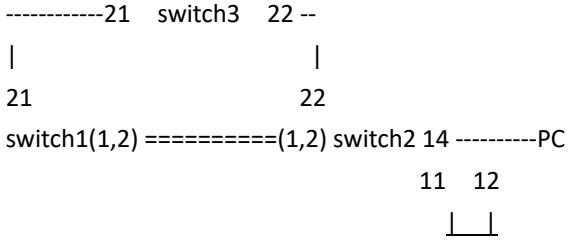
show mstp config-id

Parameter Instructions

None

24.35 configuration example

#Network diagram:



The corresponding ports 1 and 2 of switch1 and switch2 are interconnected to form a loop, and ports 11 and 12 of switch2 are self-connected (self-loop). switch1 and switch2 belong to the same domain region2, and switch1 is the root bridge; switch3 belongs to another domain region1, and in the entire spanning tree, SWITCH3 is the total root bridge. Configuration details are as follows:

 # Configure the total root bridge.

```
switch3 (config)#stp
switch3 (config)#stp mode mstp
switch3 (config)#mstp region-name region1
switch3 (config)#mstp instance 0 priority 0
switch3 (config)#mstp hello-time 6
switch3 (config)#mstp forward-time 24
switch3 (config)#mstp max-age 30
```

 # Configure a Domain Root Bridge.

```
switch1 (config)#stp
switch1 (config)#stp mode mstp
switch1 (config)#mstp region-name region2
switch1 (config)#mstp instance 0 priority 4096
```

 # Configure a non-root bridge.

```
switch2 (config)#stp
switch2 (config)#stp mode mstp
switch2 (config)#mstp region-name region2
switch2 (config)#show mstp instance brief
Current spanning tree protocol is MSTP
   Spanning tree protocol is enable

   Received information time factor is 3
   TC protection is enable, 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                    // 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.

SWITCH2 (config)#show mstp instance 0 interface
Current spanning tree protocol is MSTP
   Spanning tree protocol is enable
   Received information time factor is 3
   TC protection is enable, interval is 10, threshold is 6
   Flap guard is disable, max count 5, detect perid 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
Port is a(n) non-edge port,link type is point-to-point **// Non-edge port.**
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 **// Edge port.**
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 intra-domain root path consumption and port priority.
switch2 (config)#interface ethernet 0/0/2
#The port with the least consumption will be used as the root port.
switch2 (config-if-ethernet-0/0/2)#mstp instance 0 cost 18000
switch2 (config-if-ethernet-0/0/2)#interface ethernet 0/0/12
 # The port with higher priority are less prone to blocking.
switch2 (config-if-ethernet-0/0/12)#mstp instan 0 port-priority 64
switch2 (config-if-ethernet-0/0/12)#show mstp instance brief
Current spanning tree protocol is MSTP
Spanning tree protocol is enable

Received information time factor is 3
TC protection is enable, 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	128.1	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

switch2 (config-if-ethernet-0/0/12)#interface ethernet 0/0/22
switch2 (config-if-ethernet-0/0/22)#mstp external cost 18000
switch2 (config-if-ethernet-0/0/22)#show mstp instance brief
Current spanning tree protocol is MSTP
Spanning tree protocol is enable

Received information time factor is 3
TC protection is enable, 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
#SWITCH2 becomes the domain root because SWITCH2 to the total root consumption is smaller.
Region root 32768-000a.6a01.0222
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

Notes: When switch2 replaces switch1 as the domain root, the original root port and root backup port in the original domain are all changed to designated ports, so ports 1 and 2 are both forwarding states. On the contrary, SWITCH1 will have a root port and root backup port in the domain.

25 LBD Configuration

25.1 loopback-detection action [discarding / shutdown]

Command Function

Configure loopback detection mode.

Command Format

loopback-detection action [**discarding** / **shutdown**]

Parameter Instructions

Parameter	Parameter Instructions	Value
discarding	Set the loopback port to discarding state (default mode).	None.
shutdown	Close loopback port.	None.

25.2 loopback-detection interface [enter | ethernet *<portid >*]

Command Function

Enable the loopback detection function of the port.

Command Format

(no)loopback-detection interface [enter | ethernet <*port-id >*]

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id		String<5-6>, format: device number/slot number/port number.

25.3 loopback-detection

Command Function

In global or port mode, enable loopback detection function.

Command Format

loopback-detection

no loopback-detection

Parameter Instructions

None

25.4 loopback-detection interval-time

Command Function

Configure loopback detection time interval.

Command Format

loopback-detection interval-time <*times*>

Parameter Instructions

Parameter	Parameter Instructions	Value
times	interval	5 to 300 seconds, default is 5 seconds

25.5 show loopback-detection

Command Function

View loopback derection configuration.

Command Format

show loopback-detection [**ethernet <***port-id*>]

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

25.6 configuration example

Network diagram:

switch1 -/11---------9/11 switch2

Configuration:

#1.Enable the loopback-detection function of the global and port.

switch1(config)#loopback-detection

switch1(config)#loopback-detection interface

switch2(config)#loopback-detection

switch2(config)#loopback-detection interface

#2. Check the loopback detection state, remove the loop, and port 11 is in the discard state.

switch1(config)#show 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

switch2(config)#show 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

26 ERPS Configuration

26.1 erps

Command Function

In global mode, enable erps function.

Command Format

erps

no erps

Parameter Instructions

None

26.2 erps instance

Command Function

Create and enter an erps instance.

Command Format

[no] erps instance *<id>*

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Instance id.	0 to 15.

26.3 control-vlan

Command Function

In erps instance mode, configure the control VLAN..

Command Format

[no] control-vlan *<vlan-id>*

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-id	Configure the control vlan, which is an unconfigured vlan.	2 to 4094.

26.4 guard-timer

Command Function

In erps instance mode, configure the guard timer.

Command Format

guard-timer *<times>*

no guard-timer

Parameter Instructions

Parameter	Parameter Instructions	Value
times	Guard time.	100 to 2000 ms，default is 500 ms.

26.5 mel

Command Function

In erps instance mode, configure mel .

Command Format

mel *<level>*

no mel

Parameter Instructions

Parameter	Parameter Instructions	Value
level	The level associated with the cfm.	0 to 7,default is 0.

26.6 port0

Command Function

In erps instance mode, configure the port0 port and mode.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
neighbour	Rpl neighbour	
owner	Rpl-owner	
next-neighbour	Next-neighbour	
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.
id	Eth-trunk ID.	1 to 16.

26.7 port1

Command Function

In erps instance mode, configure the port1 port and mode.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
neighbour	Rpl neighbour.	
owner	Rpl-owner.	
next-neighbour	Next-neighbour.	
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.
id	Eth-trunk ID.	1 to 16.

26.8 protected-instance

Command Function

In erps instance mode, configure the referenced instance.

Command Format

protected-instance *<id>*

no protected-instance

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Instance id created by mstp.	1 to 64.

26.9 ring

Command Function

In erps instance mode, configure the ring.

Command Format

ring [*id*]

ring level *<level>*

ring enable

ring disable

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Ring id.	1 to 239.
level	Ring level (0 corresponds to the main ring, 1 corresponds to the sub-ring).	0,1.

26.10 work-mode

Command Function

In erps instance mode, configure the working mode.

Command Format

work-mode { non-revertive | revertive }

Parameter Instructions

Parameter	Parameter Instructions	Value
revertive		Default is revertive.
non-revertive		non-revertive

26.11 wtr-timer

Command Function

In the erps instance mode, configure the waiting time for switching the working mode.

Command Format

(no)wtr-timer *<time>*

Parameter Instructions

Parameter	Parameter Instructions	Value
time		1 to 12 seconds, default is 5 seconds.

26.12 show erps

Command Function

View erps information.

Command Format

show erps

Parameter Instructions

None

26.13 show erps control-vlan

Command Function

View the erps control vlan.

Command Format

show erps control-vlan *<vlan-id>*

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-id	VLAN ID.	1 to 4094.

26.14 show erps instance

Command Function

View erps instance information.

Command Format

show erps instance *< id >*

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Instance ID.	0 to 15.

26.15 show erps statistics

Command Function

View erps statistics information.

Command Format

show erps statistics

Parameter Instructions

None

26.16 configuration example

Network diagram:

switch1 11/12---------11/12 switch2

Configuration:

#Disable the stp function of the port.

```
switch1(config)#interface range ethernet 0/0/11 ethernet 0/0/12
switch1(config-if-range)#no stp
switch2(config)#interface range ethernet 0/0/11 ethernet 0/0/12
switch2(config-if-range)#no stp
```

#Enable erps on switch1 and switch2, and configure the erps port function.

```
switch1(config)#erps
switch1(config)#erps instance 0
switch1(config-erps-instnace-0)#control-vlan 99
switch1(config-erps-instnace-0)#port0 ethernet 0/0/11 owner
switch1(config-erps-instnace-0)#port1 ethernet 0/0/12
switch1(config-erps-instnace-0)#protected-instance 0
switch1(config-erps-instnace-0)#ring enable

switch2(config)#erps
switch2(config)#erps instance 0
switch2(config-erps-instnace-0)#control-vlan 99
switch2(config-erps-instnace-0)#port0 ethernet 0/0/11 neighbour
switch2(config-erps-instnace-0)#port1 ethernet 0/0/12
switch2(config-erps-instnace-0)#protected-instance 0
switch2(config-erps-instnace-0)#ring enable
```

#After the network is stable, view erps.

```
switch1(config)#show erps
ERPS state                  : enable
Instance Id                 : 0
Mel                         : 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       00:00:00:00:00:00     0
port1    e0/0/12    Common    Forwarding     00:00:00:00:00:00     0

Total 1 ring(s).

switch2(config-erps-inst-0)#s erps
ERPS state                  : enable
```

```
Instance Id              : 0
Mel                      : 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    Neighbour    Blocking     00:0a:5e:00:00:33  0
port1    GE0/0/11   Common       Forwarding   00:0a:5e:00:00:33  0

Total 1 ring(s).
```

27 DHCP-Snooping Configuration

27.1 dhcp-snooping

Command Function

In global or vlan mode, enable dhcp-snooping function.

Command Format

dhcp-snooping

no dhcp-snooping

Parameter Instructions

None

27.2 dhcp-snooping fast-remove

Command Function

Enable fast aging function.

Command Format

dhcp-snooping fast-remove

no dhcp-snooping fast-remove

Parameter Instructions

None

27.3 dhcp-snooping dhcp-server

Command Function

Configure dhcp server.

Command Format

dhcp-snooping dhcp-server <*ip-address***>**

no dhcp-snooping dhcp-server [all | <*ip-address***>]**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Dhcp server IP address.	Decimal, format: x.x.x.x.

27.4 dhcp-snooping max-learn-num

Command Function

In port or vlan mode, configure the maximum number of learning clients.

Command Format

dhcp-snooping max-learn-num *value*

no dhcp-snooping max-learn-num

Parameter Instructions

Parameter	Parameter Instructions	Value
value	\	0 to 2048.

27.5 dhcp-snooping trust

Command Function

In port or vlan mode, enable the trust function.

Command Format

dhcp-snooping trust

no dhcp-snooping trust

Parameter Instructions

None

27.6 show dhcp-snooping

Command Function

View dhcp snooping configuration information.

Command Format

show dhcp-snooping vlan

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

show dhcp-snooping clients

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id		String<5-6>, format: device number/slot number/port number.

28 DHCP-Option82

28.1 dhcp-option82

Command Function

In global or vlan mode, enable dhcp-option82.

Command Format

dhcp-option82

no dhcp-option82

Parameter Instructions

None

28.2 dhcp-option82 device-id

Command Function

In global mode, add device identification information.

Command Format

dhcp-option82 device-id

no dhcp-option82 device-id

Parameter Instructions

None

28.3 dhcp-option82 format

Command Function

In global mode, configure the dhcp-option82 format.

Command Format

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

no dhcp-option82 format [verbose node-identifier]

Parameter Instructions

Parameter	Parameter Instructions	Value
node-value	Customize the node information.	String<1-60>.

28.4 dhcp-option82 information format

Command Function

In global mode, configure the option82 content format.

Command Format

dhcp-option82 information format [ascii | hex]

no dhcp-option82 information format

Parameter Instructions

None

28.5 dhcp-option82 circuit-id

Command Function

In port or vlan mode, configure the circuit-id content.

Command Format

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

no dhcp-option82 circuit-id user-defined

Parameter Instructions

Parameter	Parameter Instructions	Value
circuit-info	Circuit-id infomation.	String<1-128>.

28.6 dhcp-option82 remote-id

Command Function

In port or vlan mode, configure the remote-id content.

Command Format

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

no dhcp-option82 remote-id user-defined

Parameter Instructions

Parameter	Parameter Instructions	Value
remote-info	Remote-id infomation.	String<1-128>.

28.7 dhcp-option82 strategy

Command Function

In porte or vlan mode, configure the strategy for processing option82 packets.

Command Format

dhcp-option82 strategy [drop | keep | replace]

no dhcp-option82 strategy

Parameter Instructions

None

28.8 show dhcp-option82 interface

Command Function

In port mode, view the configuration of dhcp-option82.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

28.9 show dhcp-option82 vlan

Command Function

View the configuration of dhcp-option82 in the VLAN.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-id	VLAN ID.	String<5-6>, format: device number/slot number/port number.

29 DHCP-Server Configuration

29.1 dhcp-server

Command Function

In global mode, configure the dhcp server.

Command Format

dhcp-server ID *ip-address*

no dhcp-server *ID*

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Server ID.	1 to 256.
ip-address	Server IP address.	Decimal, format: x.x.x.x.

29.2 dhcp-server

Command Function

In interface mode, configure and apply dhcp-server.

Command Format

dhcp-server *id*

no dhcp-server *id*

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Server ID.	1 to 256.

29.3 dhcp-server ip-pool name

Command Function

Configure IP pool name.

Command Format

dhcp-server ip-pool *name*

no dhcp-server ip-pool *name*

Parameter Instructions

Parameter	Parameter Instructions	Value
name	Pool name.	String<1-32>.

29.4 gateway

Command Function

In pool mode, configure the gateway.

Command Format

gateway *ip-address mask*

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	IP address.	Decimal, format: x.x.x.x.
mask	Subnet mask.	Decimal, format: x.x.x.x.

29.5 setion

Command Function

In pool mode, configure the address segment.

Command Format

setion *id start-ip end-ip*

no section *id*

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Address segment number.	0 to 7.
start-ip	Start IP.	Decimal, format: x.x.x.x.
end-ip	End IP.	Decimal, format: x.x.x.x.

29.6 router ipaddress

Command Function

In pool mode, configure the gateway of the address pool.

Command Format

(no)router *ip-address*

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Gateway address.	Decimal, format: x.x.x.x.

29.7 lease time

Command Function

In pool mode, configure the lease time.

Command Format

(no)lease *dd:hh:mm*

Parameter Instructions

Parameter	Parameter Instructions	Value
dd:hh:mm	Lease time.	Default is 24 hours.

29.8 dns-list

Command Function

In pool mode, configure DNS server.

Command Format

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

Parameter Instructions

None

29.9 domain-name

Command Function

In pool mode, configure the domain name suffix.

Command Format

(no)domain-name *string*

Parameter Instructions

Parameter	Parameter Instructions	Value
string	Domain name.	String<1-32>.

29.10 nbns-list ipaddress

Command Function

In pool mode, configure the list of WINS servers.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Wins server ip address.	Decimal, format: x.x.x.x.

29.11 forbidden-ip ipaddress

Command Function

In pool mode, configure unassigned ip addresses.

Command Format

(no)forbidden-ip *ip-address*

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	IP address.	Decimal, format: x.x.x.x.

29.12 option

Command Function

In pool mode, configure options.

Command Format

(no)option *code*

Parameter Instructions

Parameter	Parameter Instructions	Value
code	Option code.	4 to 254.

29.13 unbind-client

Command Function

In pool mode, configure the IP address used by users who do not match binding entries.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
id	IP address segment number.	0 to 7.

29.14 dhcp-client bind

Command Function

In global mode, configure bound users.

Command Format

(no)dhcp-client bind *ip-address mac-address vid*

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Binding IP address.	Decimal, format: x.x.x.x.
mac-address	Users MAC address.	Hexadecimal, format: x:x:x:x:x:x.
vid	VLAN id	1 to 4094.

29.15 dhcp-client unbind-assign

Command Function

In global mode, assign IPs to unbound user.

Command Format

(no)dhcp-client unbind-assign

Parameter Instructions

None

29.16 show dhcp-server

Command Function

View the dhcp server configuration.

Command Format

show dhcp-server *<id>*

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Server ID.	1 to 256.

29.17 show dhcp-server clients

Command Function

View client table entries.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	IP address.	Decimal, format: x.x.x.x.
mask	Subnet mask.	Decimal, format: x.x.x.x.
mac address		Hexadecimal, format: x:x:x:x:x:x.
ip pool name	Address pool name.	String<1-32>.

29.18 show dhcp-server interface

Command Function

In port mode, view the DHCP configuration.

Command Format

show dhcp-server interface [supervlan-interface<*super-vlan-id***> |vlan-interface <***id***>]**

Parameter Instructions

Parameter	Parameter Instructions	Value
super-vlan-id	\	1 to 128.
id	VLAN ID.	1 to 4094.

29.19 show dhcp-server ip-pool

Command Function

View the configuration of the DHCP address pool.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
name	Pool name.	String<1-32>.

29.20 show dhcp-client bind

Command Function

View dhcp-client binding table entry.

Command Format

show dhcp-client bind [enter | *ip-address* **|** *mac-address***]**

30 DHCP-Relay Configuration

30.1 dhcp-relay

Command Function

In global or port mode, enable dhcp-relay.

Command Format

dhcp-relay

no dhcp-relay

Parameter Instructions

None

30.2 dhcp-relay hide server-ip

Command Function

Enable hide server IP.

Command Format

dhcp-relay hide server-ip

no dhcp-relay hide server-ip

Parameter Instructions

None

30.3 dhcp-relay max-hops

Command Function

In global mode, configure the maximum number of hops..

Command Format

dhcp-relay max-hops <*number***>**

no dhcp-relay max-hops

Parameter Instructions

Parameter	Parameter Instructions	Value
number	Value	1 to 16.

30.4 show dhcp-relay

Command Function

View dhcp relay configuration.

Command Format

show dhcp-relay

Parameter Instructions

None

31 IGMP-Snooping Configuration

31.1 igmp-snooping

Command Function

In global mode, enable igmp snooping function.

Command Format

igmp-snooping

no igmp-snooping

Parameter Instructions

None

31.2 igmp-snooping enable-vlan

Command Function

In global mode, enable multicast snooping for the specified VLAN.

Command Format

igmp-snooping enable-vlan <*vlan-list***>**

no igmp-snooping enable-vlan<*vlan-list***>**

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-list	VLAN list.	String<1-128>, example: 8, 9, 11-15.

31.3 igmp-snooping host-aging-time

Command Function

In global mode, configure the aging time of dynamic multicast port members..

Command Format

igmp-snooping host-aging-time <*time***> [vlan** *vid***]**

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

Parameter Instructions

Parameter	Parameter Instructions	Value
time	Aging time.	0 to 1000000 seconds.
vid	VLAN ID.	1 to 4094.

31.4 igmp-snooping overflow-replace

Command Function

In global or port mode, configure the function of learning the full specification of multicast entries. When the function is disabled, after learning the full specification of multicast entries, no new entries will be learned; when the function is enabled, after learning the full specification of multicast entries, the new entries will be used to replace the old ones..

Command Format

[no] igmp-snooping overflow-replace

Parameter Instructions

None

31.5 igmp-snooping max-response-time

Command Function

In global mode, configure the query maximum response time.

Command Format

igmp-snooping max-response-time <*time***>**

no igmp-snooping max-response-time

Parameter Instructions

Parameter	Parameter Instructions	Value
time	Max response time.	1 to 100 seconds.

31.6 igmp-snooping static-group

Command Function

Configure a static multicast group.

Command Format

igmp-snooping static-group *group-ip* **[source-ip** *src-ip***] vlan** *vid* **{all | ethernet** *port-id***}**

no igmp-snooping static-group *group-ip* **[source-ip** *src-ip***] vlan** *vid* **[all | ethernet** *port-id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
group-ip	Multicast group address.	Decimal, format: x.x.x.x.
src-ip	Client IP.	Decimal, format: x.x.x.x.
vid	VLAN ID.	1 to 4094.
port-id	\	String<5-6>, format: device number/slot number/port number.

31.7 igmp-snooping static-group proxy

Command Function

Enable static multicast proxy.

Command Format

igmp-snooping static-group proxy [interval *interval***]**

no igmp-snooping static-group proxy

Parameter Instructions

Parameter	Parameter Instructions	Value
interval	The interval for the static group proxy to send report packets to the upstream.	30 to 300 seconds.

31.8 igmp-snooping version

Command Function

In global mode, configure the igmp snooping version.

Command Format

igmp-snooping version <*ver-num***>**

Parameter Instructions

Parameter	Parameter Instructions	Value
ver-num	IGMP version number, default is IGMP v2.	2, 3.

31.9 igmp-snooping source-learning

Command Function

Configure igmpv3 multicast source learning.

Command Format

[no] igmp-snooping source-learning

Parameter Instructions

None

31.10 igmp-snooping querier

Command Function

In global mode, enable the querier.

Command Format

igmp-snooping querier

no igmp-snooping querier

Parameter Instructions

None

31.11 igmp-snooping querier-vlan

Command Function

In global mode, configure the query function in vlan.

Command Format

igmp-snooping querier-vlan <*vlan-list***>**

no igmp-snooping querier-vlan [*vlan-list***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
vlan-list	VLAN list.	String<1-128>, example: 8, 9, 11-15.

31.12 igmp-snooping query-interval

Command Function

In global mode, configure the time interval for query packets.

Command Format

igmp-snooping query-interval <*time***>**

no ip igmp snooping query-interval

Parameter Instructions

Parameter	Parameter Instructions	Value
time	The interval for sending query packets.	1 to 30000 seconds, the default is 60 seconds.

31.13 igmp-snooping last-member-query-interval

Command Function

Configure the multicast-specific query sending intervals.

Command Format

igmp-snooping last-member-query-interval <*time***>**

no igmp-snooping last-member-query-interval

Parameter Instructions

Parameter	Parameter Instructions	Value
time	Intervals.	1 to 5 seconds, default is 1 second.

31.14 igmp-snooping robust-count

Command Function

Configure the multicast robustness coefficient.

Command Format

igmp-snooping robust-count <*count***>**

no igmp-snooping robust-count

Parameter Instructions

Parameter	Parameter Instructions	Value
count	Robustness coefficient.	1 to 5, default is 2.

31.15 igmp-snooping query-source

Command Function

In global mode, configure the source address for sending group query packets.

Command Format

igmp-snooping query-source <*ipv4***>**

no igmp-snooping query-source

Parameter Instructions

Parameter	Parameter Instructions	Value
Ipv4	Query packets address.	Decimal, format: x.x.x.x.

31.16 igmp-snooping query-proxy

Command Function

In global mode, enable the igmp-snooping query proxy.

Command Format

igmp-snooping query-proxy

no igmp-snooping query-proxy

Parameter Instructions

None

31.17 igmp-snooping route-port forward

Command Function

In global mode, configure the hybrid routing port function.

Command Format

igmp-snooping route-port forward

no igmp-snooping route-port forward

Parameter Instructions

None

31.18 igmp-snooping router-aging-time

Command Function

In global mode, configure the aging time of dynamic routing ports.

Command Format

igmp-snooping router-aging-time <*time***>**

no igmp-snooping router-aging-time

Parameter Instructions

Parameter	Parameter Instructions	Value
time	Routing port aging time.	10 to 1000000, default is 300 seconds.

31.19 igmp-snooping route-port

Command Function

In global mode, configure static routing port.

Command Format

igmp-snooping route-port vlan <*vid***> [all | ethernet <***port-id***>]**

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

Parameter Instructions

Parameter	Parameter Instructions	Value
vid	VLAN ID.	1 to 4094.
port-id	\	String<5-6>, format: device number/slot number/port number.

31.20 igmp-snooping preview

Command Function

In port mode, enable the multicast preview function.

Command Format

igmp-snooping preview

no igmp-snooping preview

Parameter Instructions

None

31.21 igmp-snooping preview group-ip

Command Function

In global mode, configure the multicast preview function for a multicast group.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
ipv4	Multicast group address.	Decimal, format: x.x.x.x.
vid	VLAN ID.	String<1-128>, example: 8, 9, 11-15.
port-id	\	String<5-6>, format: device number/slot number/port number.

31.22 igmp-snooping preview time

Command Function

Configure the number of previews, the duration of a single preview, the interval between each preview, and the preview reset duration.

Command 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 Instructions

Parameter	Parameter Instructions	Value
time-once	Single preview duration.	60 to 300.
time-interval	Preview interval.	180 to 600.
time-reset	Preview reset duration.	1800 to 7200.
permit-times	Number of previews allowed.	1 to 10.

31.23 igmp-snooping profile

Command Function

Configure the profile index in global mode, and configure the profile attribute in profile mode.

Command Format

igmp-snooping profile <*profile-id***>**

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

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

Parameter Instructions

Parameter	Parameter Instructions	Value
profile-id	Profile index.	1 to 128.
type	Profile type.	permit, deny.
start-ipv4	End ipv4 multicast address.	Decimal, format: x.x.x.x. example:225.0.0.1.
end-ipv4	End ipv4 multicast address.	Decimal, format: x.x.x.x. example:228.0.0.1.
start-mac	End MAC multicast address.	Hexadecimal, format: x:x:x:x:x:x.
end-mac	End MAC multicast address.	Hexadecimal, format: x:x:x:x:x:x.
name	Profile name.	String<1-32>.

31.24 igmp-snooping profile refer

Command Function

In port or vlan mode, configure the reference profile..

Command Format

igmp-snooping profile refer <*profile-id***>**

no igmp-snooping profile refer

Parameter Instructions

Parameter	Parameter Instructions	Value
profile-id	Profile index.	1 to 128.

31.25 igmp-snooping {permit | deny} group all

Command Function

In global mode, configure to allow learning of all multicast groups.

Command Format

igmp-snooping {permit | deny} group all

Parameter Instructions

None

31.26 igmp-snooping {permit | deny} group

Command Function

In port mode, configure the multicast black and white list .

Command Format

igmp-snooping *type* **{group** *mac* **| group-range** *mac* **multi-count** *num***} vlan** *vid*

no igmp-snooping *type* **group [***mac* **vlan** *vid***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
Type	List type.	permit, deny.
Mac	MAC address.	Hexadecimal, format: x:x:x:x:x:x.
Num	Multicast number.	1 to 64.
Vid	VLAN ID.	1 to 4094.

31.27 igmp-snooping group-limit

Command Function

In port mode, configure the maximum number of multicasts learned.

Command Format

igmp-snooping group-limit <*num***>**

no igmp-snooping group-limit

Parameter Instructions

Parameter	Parameter Instructions	Value
Num	Number of multicast groups.	0 to 1024.

31.28 igmp-snooping fast-leave

Command Function

In port mode, turn on(off) the quick leave function.

Command Format

[no] igmp-snooping fast-leave

Parameter Instructions

None

31.29 igmp-snooping multicast vlan

Command Function

Configure multicast vlan in port mode.

Command Format

igmp-snooping multicast-vlan <*vid***>**

no igmp-snooping multicast-vlan

Parameter Instructions

Parameter	Parameter Instructions	Value
vid	VLAN ID.	1 to 4094.

31.30 igmp-snooping drop

Command Function

In port mode, configure to discard query or report packets.

Command Format

igmp-snooping drop {query | **repor**t}

no igmp-snooping drop {query | **repor**t}

Parameter Instructions

None

31.31 show igmp-snooping

Command Function

View the configuration of igmp snooping.

Command Format

show igmp-snooping

Parameter Instructions

None

31.32 show igmp-snooping router-port

Command Function

View routing port.

Command Format

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

Parameter Instructions

None

31.33 show igmp-snooping mcast-table

Command Function

View dynamic multicast group entries.

Command Format

show ip igmp snooping mcast-table [**ethernet** *port-id* | **ip-address** *group-ip*]

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.
group-ip	Multicast group IP address.	Decimal, format: x.x.x.x.

31.34 show igmp-snooping static-table

Command Function

View static multicast group entries.

Command Format

show igmp-snooping static-table

Parameter Instructions

None

31.35 show igmp-snooping fib-table

Command Function

View simple table entry information based on IP forwarding.

Command Format

show igmp-snooping fib-table

Parameter Instructions

None

31.36 show igmp-snooping preview

Command Function

View multicast preview information.

Command Format

show igmp-snooping preview [status]

Parameter Instructions

None

31.37 show igmp-snooping profile

Command Function

View the current profile configuration and references to the profile.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
profile-list	Index number list.	String<1-128>, example: 8, 9, 11-15.
vid	VLAN ID.	1 to 4094.
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

31.38 show igmp-snooping statistics

Command Function

View multicast packets statistics.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
vid	VLAN ID.	1 to 4094.
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

31.39 configuration example

#Network diagram:

TC A ---------- 22 switch 21 --------- TC B
14
|
PC

#Enable IGMP.

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

#TC A sends a report packet (joins the multicast group 225.1.1.1)

#View the multicast member ports

switch(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

switch(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

32 Static Layer 2 Multicast Configuration

32.1 multicast mac-address

Command Function

Configure MAC Static layer 2 multicast.

Command 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 Instructions

Parameter	Parameter Instructions	Value
mac	MAC multicast address.	Hexadecimal, format: x:x:x:x:x:x.
vid	VLAN ID.	1 to 4094.
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

32.2 show multicast

Command Function

View multicast table information.

Command Format

show multicast [mac-address <*mac***>]**

Parameter Instructions

Parameter	Parameter Instructions	Value
mac	MAC multicast address.	Hexadecimal, format: x:x:x:x:x:x.

32.3 configuration example

Network diagram:

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

#Configure static multicast group members.

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

switch(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

33 System Information

33.1 show version

Command Function

View version information.

Command Format

show version

Parameter Instructions

None

33.2 show system

Command Function

View system information.

Command Format

show system

Parameter Instructions

None

34 User Management Configuration

34.1 username

Command Function

Create user.

Command Format

username *user-name* **privilege** *level* **password {0 | 7}** *password*

no username *user-name*

Parameter Instructions

Parameter	Parameter Instructions	Value
user-name	\	String<1-64>.
level	Level of authority	0 to 15.
password	\	String<1-128>.

34.2 username change-password

Command Function

Change password.

Command Format

username change-password

Parameter Instructions

None

34.3 username failmax

Command Function

Configure the maximum number of failed logins for a user.

Command Format

username failmax [*user-name***]** *fail_times*

no username failmax [*user-name***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
user-name	\	String<1-64>.
fail-times	\	3 to 8.

34.4 username silent-time

Command Function

Configure the silent time during which users cannot log in.

Command Format

username silent-time <*min***>**

Parameter Instructions

Parameter	Parameter Instructions	Value
min	Time.	2 to 1440 minutes.

34.5 username online-max user

Command Function

Configure the number of online users for the same user at the same time.

Command Format

(no)username online-max *user-name num*

Parameter Instructions

Parameter	Parameter Instructions	Value
user-name	User name .	String<1-64>.
num		1 to 100

34.6 username terminal

Command Function

Configure user login terminal.

Command Format

username *user-name* **terminal {all | console | telnet | ssh| web | None}**

Parameter Instructions

None

34.7 stop user_name

Command Function

Force user offline in privileged mode.

Command Format

stop *user-name*

Parameter Instructions

Parameter	Parameter Instructions	Value
user-name	\	String<1-64>.

34.8 show username

Command Function

View user information.

Command Format

show username [*user-name***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
user-name	\	String<1-64>.

34.9 show users

Command Function

View online user information.

Command Format

show users

Parameter Instructions

None

34.10 show username silent

Command Function

View silent users.

Command Format

show username silent

Parameter Instructions

None

34.11 configuration example

#Create user aa, view user.

switch(config)#username aa password 0 123456

switch(config)#show username

display user information

User Name	Role
admin	ADMIN
aa	NORMAL

35 SSH Configuration

35.1 ssh

Command Function

Enable SSH function in global mode.

Command Format

ssh

no ssh

Parameter Instructions

None

35.2 ssh limit

Command Function

In global mode, configure the limit on the number of SSH connection users.

Command Format

ssh limit <*limit***>**

no ssh limit

Parameter Instructions

Parameter	Parameter Instructions	Value
limit	Login user limit	0 to 5.

35.3 crypto key generate[dss | ecdsa | rsa]

Command Function

In privileged mode, generate a key.

Command Format

crypto key generate [dss | ecdsa | rsa]

Parameter Instructions

None

35.4 crypto key zeroize [dss | ecdsa | rsa]

Command Function

In privileged mode, clear the encryption key.

Command Format

crypto key zeroize [dss | ecdsa | rsa]

Parameter Instructions

None

35.5 stop vty

Command Function

In privileged mode, force close the virtual terminal.

Command Format

stop vty [all | <*id*>]

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Virtual terminal ID.	0 to 5.

35.6 configuration example

Network diagram:

PC---------- switch

Configuration:

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

 # The PC uses SSH to connect to the switch through the Xshell virtual terminal software.
[D:\~]$ ssh 192.168.1.11
Connecting to 192.168.1.11:22...
Connection established.
To escape to local shell, press 'Ctrl+Alt+]'.

WARNING! The remote SSH server rejected X11 forwarding request.
Password(1-32 chars):*****

Admin>

36 Manage IP Restriction Configuration

36.1 login-access-list telnet

Command Function

Configure the network address accessed via telnet.

Command Format

login-access-list telnet *ip-address wildcard*

no login-access-list telnet {**all** | *ip-address wildcard*}

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Networks allowed to access.	Decimal, format: x.x.x.x.
wildcard	Antimask.	Decimal, format: x.x.x.x.

36.2 login-access-list ssh

Command Function

Configure the network address accessed via ssh.

Command Format

login-access-list ssh *ip-address wildcard*

no login-access-list ssh {**all** | *ip-address wildcard*}

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Networks allowed to access.	Decimal, format: x.x.x.x.
wildcard	Antimask.	Decimal, format: x.x.x.x.

36.3 login-access-list snmp

Command Function

Configure the network address accessed via snmp.

Command Format

login-access-list snmp *ip-address wildcard*

no login-access-list snmp {**all** | *ip-address wildcard*}

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Networks allowed to access.	Decimal, format: x.x.x.x.
wildcard	Antimask.	Decimal, format: x.x.x.x.

36.4 login-access-list web

Command Function

Configure the network address accessed via web.

Command Format

login-access-list web *ip-address wildcard*

no login-access-list web {**all** | *ip-address wildcard*}

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Networks allowed to access.	Decimal, format: x.x.x.x.
wildcard	Antimask.	Decimal, format: x.x.x.x.

36.5 login-access-list privilege-limit

Command Function

Configure the number of users allowed to log in via Telnet at the same time.

Command Format

login-access-list privilege-limit *num*

no login-access-list privilege-limit

Parameter Instructions

Parameter	Parameter Instructions	Value
num	\	0 to 5.

36.6 show login-access-list

Command Function

View login access list.

Command Format

show login-access-list

Parameter Instructions

None

37 Telnet Server Configuration

37.1 telnet enable

Command Function

Enable telnet function.

Command Format

telnet enable

Parameter Instructions

None

37.2 telnet disable

Command Function

Disable telnet function.

Command Format

telnet disable

Parameter Instructions

None

37.3 telnet limit

Command Function

Configure the limit on the number of telnet login users.

Command Format

telnet limit <*num*>

no telnet limit

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Number.	0 to 5.

37.4 stop vty

Command Function

In privileged mode, forcibly stop the virtual terminal.

Command Format

stop vty [all | <*id*>]

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Virtual terminal ID.	0 to 5.

37.5 show telnet limit

Command Function

View the telnet limit on the number of login users.

Command Format

show telnet limit

Parameter Instructions

None

37.6 configuration example

Network diagram:

PC----------switch

Configuration:

switch(config)#interface vlan-interface 1
switch(config-if-vlanInterface-1)# ip address 192.168.1.61 255.255.255.0
switch(config-if-vlanInterface-1)# ipv6 address 2001:1000::61/64
#Configure the limit on the number of telnet login users.
switch(config)#telnet limit 2
#//Enable telnet function.
switch(config)#telnet enable

#The PC uses the Xshell virtual terminal software to telent the switch using the IPv6 address.
[D:\~]$ telnet 2001:1000::61
Connecting to 2001:1000::61:23...
Connection established.
To escape to local shell, press 'Ctrl+Alt+]'.

Linux 4.19.1 (switch) (11:07 on Monday, 06 September 2021)
Username(1-64 chars):admin
Password(1-128 chars):*****
switch>

#The PC uses the Xshell virtual terminal software to telent the switch using the IPv4 address.
[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 (switch) (11:12 on Monday, 06 September 2021)

Username(1-64 chars):admin
Password(1-128 chars):*****

switch>enable
switch#show telnet limit //View the telnet limit on the number of login users..
Telnet user limit is 2, current is 2.login is 2

38 Telnet Client Configuration

38.1 Telnet

Command Function

In privileged mode, telnet to the connection server.

Command Format

telnet <*ip***> [<***port***>]**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip	Server IP address.	Decimal, format: x.x.x.x.

38.2 configuration example

Network diagram:

switch---------- Server（192.168.1.11）

Configuration:

switch#telnet 192.168.1.11
Trying to connect to 192.168.1.11 ...
Connected to 192.168.1.11 successfully."Ctr+]" to exit.
Username(1-32 chars):admin
Password(1-32 chars):*****
Server>exit
The telnet client has exited..
switch#

39 WEB Configuration

39.1 http

Command Function

In global mode, enable http function.

Command Format

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

http disable

Parameter Instructions

Parameter	Parameter Instructions	Value
port	Protocol port number.	3-65535, default is 80.

39.2 http enable ssl

Command Function

In global mode, enable https function.

Command Format

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

http disable

Parameter Instructions

Parameter	Parameter Instructions	Value
port	Protocol port number.	3 to 65535.

39.3 load server-certificate

Command Function

In privileged mode, download the certificate files required for the https protocol.

Command Format

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

load server-certificate tftp {inet | inet6} <*server-ip***> <***filename***>**

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Server IP address.	Decimal, format: x.x.x.x.
filename	Certificate file name.	String<1-64>.
user	FTP login username.	String<1-32>.
password	FTP login password.	String<1-32>.

39.4 load private-key

Command Function

In privileged mode, the key file required to download the https protocol.

Command Format

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

load private-key tftp [inet | inet6] <*server-ip***> <***filename***>**

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Server IP address.	Decimal, format: x.x.x.x.
filename	Key file name.	String<1-64>.
user	FTP login username.	String<1-32>.
password	FTP login password.	String<1-32>.

39.5 http timeout

Command Function

In global mode, configure the http request timeout period.

Command Format

http timeout <*time-value***>**

no http timeout

Parameter Instructions

Parameter	Parameter Instructions	Value
time-value	Http login timeout time.	60 to 36000.

39.6 configuration example

Network diagram:

PC----------switch

Configuration

#Enable http.

switch(config)#http enable

40 SNMP Management Configuration

40.1 snmp-server contact

Command Function

Configure system contact.

Command Format

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

no snmp-server contact

Parameter Instructions

Parameter	Parameter Instructions	Value
value	Contact information.	String<1-255>.

40.2 snmp-server location

Command Function

Configure system location.

Command Format

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

no snmp-server location

Parameter Instructions

Parameter	Parameter Instructions	Value
value	Location.	String<1-255>.

40.3 snmp-server name

Command Function

Configure system name.

Command Format

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

no snmp-server name

Parameter Instructions

Parameter	Parameter Instructions	Value
value	System name.	String<1-255>.

40.4 snmp-server max-packet-length

Command Function

Configure the maximum packet length of the system.

Command Format

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

no snmp-server max-packet-length

Parameter Instructions

Parameter	Parameter Instructions	Value
value	Packets length.	484 to 8000.

40.5 snmp-server view

Command Function

Configure view.

Command Format

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

no snmp-server view <*view-name* **>** <*oid*>

Parameter Instructions

Parameter	Parameter Instructions	Value
view-name	View name.	String<1-32>.
oid	The mib tree oid.	String<1-64>.
exclude	The configured OID is not included.	
incline	Only inclued the configured OID.	

40.6 snmp-server community

Command Function

Configure community name.

Command Format

snmp-server community *name privilege type* **[view** *view***]**

no snmp-server community *id*

Parameter Instructions

Parameter	Parameter Instructions	Value
name	The community name of the ciphertext	String<1-20>.
privilege	\	rw, ro.
type	\	permit, deny.
view	View name.	String<1-32>.
id	Community name number.	1 to 8.

40.7 snmp-server group

Command Function

Configure the v3 group.

Command 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 Instructions

Parameter	Parameter Instructions	Value
name	Group name.	String<1-32>.

Parameter	Parameter Instructions	Value
authentication-type	Authentication encryption type.	noauthpriv:No authentication, no encryption. auth:Only authentication. pri:Authentication and encryption.
context	Configured context.	String<1-32>.
read-view	Read view, must be configured.	String<1-32>.
write-view	Write view, must be configured.	String<1-32>.
notify-view	Message view, must be configured.	String<1-32>.

40.8 snmp-server user

Command Function

Configure v3 users.

Command Format

snmp-server user *username groupname* **[remote** *serverip* **[udp-port** *port-id***]] [auth {md5 | sha} {auth-key [encrypt-authkey]** *authkey* **| auth-password [encrypt-authpassword]** *authpassword***}] [priv des {priv-key [enrypt-privkey]** *privkey* **| priv-password [encrypt-privpassword]** *privpassword***}]**

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

Parameter Instructions

Parameter	Parameter Instructions	Value
username	\	String<1-32>.
groupname	Group name.	String<1-32>.
serverip	Server IP address.	Decimal, format: x.x.x.x.
port-id	UDP port number.	1 to 65535.
authkey	Authentication key.	When the secret algorithm is MD5,value is 32 strings. When the secret algorithm is SHA,value is 40 strings.
authpassword	Authentication password.	String<1-32>.
privkey	Encryption key.	String<1-32>.
privpassword	Encryption password.	String<1-32>.

40.9 snmp-server enable [traps|informs]

Command Function

Enable traps/informs.

Command Format

snmp-server enable [traps | informs] [bridge | gbn | gbnsavecfg | interfaces | rmon | snmp]*

no snmp-server enable traps/informs

Parameter Instructions

None

40.10 snmp-server trap-source

Command Function

Configure the source for sending trap messages.

Command Format

snmp-server trap-source <*ip-address***>**

no snmp-server trap-source

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Interface ip address.	Decimal, format: x.x.x.x.

40.11 snmp-server host

Command Function

Configure the alarm destination host.

Command Format

snmp-server host *ip-address* **[version {1 | 2c | 3}** *security-name* **[udp-port** *portid***] [notify-type [bridge | gbn | gbnsavecfg | interfaces | rmon | snmp]*]**

no snmp-server host *ip-address security-name* **{1 | 2c | 3}**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Destination host IP address.	Decimal, format: x.x.x.x.
security-name	\	String<1-32>.
portid	UDP port number.	1 to 65535.

40.12 snmp-server engineid

Command Function

Configure the engine ID.

Command Format

snmp-server engineid {local | remote *ip-address* **[udp-port** *port-id***]}** *engine-id*

no snmp-server engineid {local | remote *ip-address* **[udp-port** *port-id***]}**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Remote server address.	Decimal, format: x.x.x.x.
port-id	UDP destination port ID.	1 to 65535.
engine-id	\	String<1-24>.

40.13 show snmp-server community

Command Function

View community information.

Command Format

show snmp-server community

Parameter Instructions

None

40.14 show snmp-server contact

Command Function

View contact information.

Command Format

show snmp-server contact

Parameter Instructions

None

40.15 show snmp-server engineid

Command Function

View engine ID information.

Command Format

show snmp-server engineid {local | remote}

Parameter Instructions

None

40.16 show snmp-server group

Command Function

View group information.

Command Format

show snmp-server group

Parameter Instructions

40.17 show snmp-server host

Command Function

View announcement information hosts.

Command Format

show snmp-server host

Parameter Instructions

None

40.18 show snmp-server location

Command Function

View location information.

Command Format

show snmp-server location

Parameter Instructions

None

40.19 show snmp-server max-packet-length

Command Function

View the maximum packet length of snmp.

Command Format

show snmp-server max-packet-length

Parameter Instructions

None

40.20 show snmp-server name

Command Function

View snmp name.

Command Format

show snmp-server name

Parameter Instructions

None

40.21 show snmp-server notify

Command Function

View notify.

Command Format

show snmp-server notify

Parameter Instructions

None

40.22 show snmp-server user

Command Function

View v3 user information.

Command Format

show snmp-server user

Parameter Instructions

None

40.23 show snmp-server view

Command Function

View the oid corresponding to the view.

Command Format

show snmp-server view

Parameter Instructions

None

40.24 configuration example

#Configure the ip address of the interface on the switch.

switch(config)#int vlan-interface 1

switch(config-if-vlanInterface-1)#ip add 192.168.1.10 255.0.0.0

switch(config-if-vlanInterface-1)#exit

#Configure the readable and writable community name and enable the snmp function.

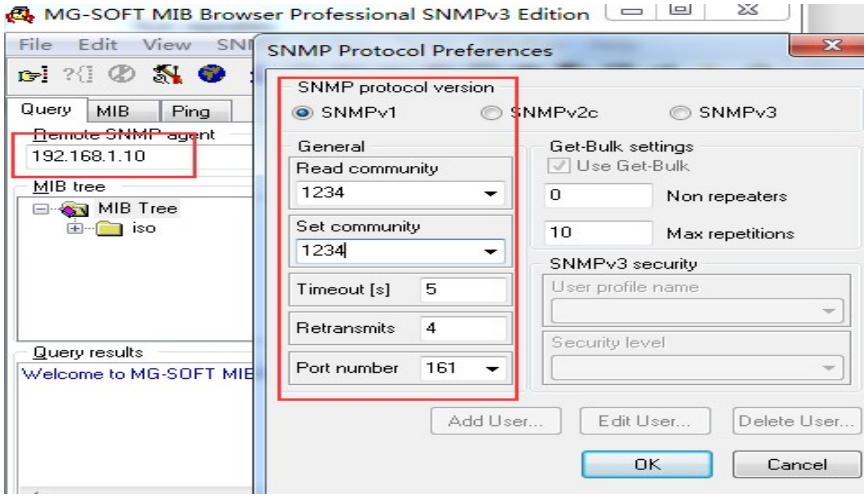
switch(config)#snmp-server community 1234 rw permit

#Configure the alarm host.

switch(config)#snmp-server host 192.168.1.1 version 1 1234

switch(config)#snmp-server enable traps

#Install the MIB brower software and open it for connection.



#View the snmp community, verify the configuration result.

switch(config)#show snmp-server community

Show snmp community information

index community priority state view-name

1 1234 rw permit iso

#View the alarm host.

switch(config)#show snmp-server host

Show SNMP trap host information

SNMP host ip security version

192.168.1.1 1234 1

41 RMON Configuration

41.1 rmon statistics

Command Function

In port mode, create a statistics group.

Command Format

rmon statistics *statisticid* [**owner** *name*]

no rmon statistics [*statistic-id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
statistic-id	Statistics group ID.	1 to 65535.
name	Username.	String<1-127>.

41.2 rmon history

Command Function

In port mode, create a history group.

Command Format

rmon history *history-id* **bucket** *bucket-num* **interval** *interval* [**owner** *name*]

no rmon history [*history-id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
history-id	History group ID.	1 to 65535.
bucket-num	Number of buckets.	1 to 65535.
interval	Sampling interval.	1 to 3600.
name	Username.	String<1-127>.

41.3 rmon alarm

Command Function

In port mode, create an alarm group.

Command Format

rmon alarm *alarm-id mib-oid interval* **{absolute | delta} rising** *thresholdval event-id* **falling** *thresholdval event-id* **[owner** *name***]**

no rmon alarm [*alarm-id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
alarm-id	Alarm group ID.	1 to 65535.
mib-oid	MIB Object ID.	String<1-127>, example :1.3.6.
interval	Sampling interval.	1 to 3600.
thresholdval	Thresholds for sampling statistics	1 to 2147483647.
Event-id	Event ID.	1 to 65535.

Parameter	Parameter Instructions	Value
name	Username.	String<1-127>.

41.4 rmon event

Command Function

In port mode, create an event group.

Command Format

rmon event *eventid* **[description** *desc***] {None | log | trap** *commname* **| log-trap** *commname***} [owner** *name***]**

no rmon event [*eventid***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
event-id	Event group ID.	1 to 65535.
desc	Description.	String<1-127>.
commname	Community name.	String<1-127>.
name	Username.	String<1-127>.

41.5 show rmon alarm

Command Function

View alarm group information.

Command Format

show rmon alarm [*alarm-id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
alarm-id	Alarm group ID.	1 to 65535.

41.6 show rmon event

Command Function

View event information.

Command Format

show rmon event [*event-id***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
event-id	Event group ID.	1 to 65535.

41.7 show rmon eventlog

Command Function

View event log information.

Command Format

show rmon eventlog [*index***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
index	Form index.	1 to 65535.

41.8 show rmon history

Command Function

View historical group information.

Command Format

show rmon history interface [**ethernet** *port-i*d [**to ehternet** *port-id*]*]

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

41.9 show rmon statistics

Command Function

View statistics group information.

Command Format

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

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number.

41.10 configuration example

Network diagram:

PC----- switch

Configuration:

switch(config)#interface ethernet 0/0/1
switch(config-if-ethernet-0/0/1)#rmon statistics 1
switch(config-if-ethernet-0/0/1)#exit
switch(config)#interface ethernet 0/0/2
switch(config-if-ethernet-0/0/2)#rmon history 10 buckets 5 interval 10
switch(config-if-ethernet-0/0/1)#exit
switch(config)#rmon event 1 log
switch(config)#rmon alarm 1 1.3.6.1.2.1.16.1.1.1.5.1 10 absolute rising 10000 1 falling 500 1

42 System Debug Configuration

42.1 ping

Command Function

Check if the ipv4 host is reachable.

Command Format

ping [-s *src-ip***] [-c** *number* **] [-i** *ttl***][-l** *length***] [-t** *timeout***]** *dst-ip*

Parameter Instructions

Parameter	Parameter Instructions	Value
src-ip	Source IP address.	Decimal, format: x.x.x.x.
number	Number of packages.	1 to 2147483647.
ttl	\	1 to 255.
length	Packet length.	0 to 4064, unit is byte.
timeout	Timeout time.	1 to 60 seconds.
dst-ip	Destination IP address.	Decimal, format: x.x.x.x.

42.2 ping6

Command Function

Check if the ipv6 host is reachable.

Command Format

ping6 [-h *hop***][-s** *len***][-c** *count* **][-a** *src-ip* **][-w** *timeout***] [-t]** *dst-ip*

Parameter Instructions

Parameter	Parameter Instructions	Value
hop	Number of hops.	1 to 255.
len	Packet length.	20 to 8100, unit is byte.
count	Number of packages.	1 to 2147483647.
src-ip	Source IP address.	Hexadecimal, example:2001::1.
timeout	Timeout time.	1 to 60 seconds.
dst-ip	Destination IP address.	Hexadecimal, example:2001::1.

42.3 tracert

Command Function

Detect the path traversed by the destination host.

Command Format

tracert [-c | -u | -s *src-ip***] [-f** *ttl***] [-h** *maxhops***] [-w** *timeout***]** *dst-ip*

Parameter Instructions

Parameter	Parameter Instructions	Value
-c	ICMP mode.	
-u	UDP mode.	

Parameter	Parameter Instructions	Value
src-ip	Source IP address.	Decimal, format: x.x.x.x.
ttl	\	1 to 255.
maxhops	Maximum hop count.	1 to 255.
timeout	Timeout time.	1 to 60 seconds.
dst-ip	Destination IP address.	Decimal, format: x.x.x.x.

42.4 hostname

Command Function

Configure the hostname.

Command Format

hostname <*name***>**

Parameter Instructions

Parameter	Parameter Instructions	Value
name	\	String<1-64>.

42.5 help

Command Function

View help information.

Command Format

help

Parameter Instructions

None

42.6 screen-rows per-page

Command Function

In privileged mode, configure the number of lines displayed per screen.

Command Format

screen-rows per-page *number*

no screen-rows per-page

Parameter Instructions

Parameter	Parameter Instructions	Value
number	Lines per screen.	0 to 256, default is 25,0 means display all.

42.7 show screen-rows per-page

Command Function

View split screen configuration information.

Command Format

show screen-rows per-page

Parameter Instructions –None

42.8 line width

Command Function

In privileged mode, configure the maximum number of characters that can be displayed per line.

Command Format

line width *number*

no line width

Parameter Instructions

Parameter	Parameter Instructions	Value
number	Maximum number of characters per line.	78 to 256, default is 78.

42.9 show line width

Command Function

View line width configuration information.

Command Format

show line width

Parameter Instructions

None

42.10 cls

Command Function

Clear screen.

Command Format

cls

Parameter Instructions

None

42.11 terminal language

Command Function

In privileged mode, configure the terminal display language.

Command Format

terminal language { chinese | english }

Parameter Instructions

None

42.12 show tech-support

Command Function

View technical support information.

Command Format

show tech-support [nowat | product-sn]

Parameter Instructions –None

42.13 buildrun mode

Command Function

Configure load mode in privileged mode.

Command Format

buildrun mode {continue | stop}

Parameter Instructions

Parameter	Parameter Instructions	Value
continue	Keyword, failed to load the configuration, continue to loading the configuration.	None.
stop	Keyword, failed to load the configuration, immediately stop loading the configuration	None.

42.14 configuration mode (view) toggle

Command Function

Configure the mode (view) toggle.

Command Format

Enter execution mode immediately after login (Switch>).

enable : Enter privileged (enable) mode from execution mode (Switch#).

configure terminal : Enter global mode from privileged (enable) mode (Switch(config)#).

end : Switch to enable mode, also called privileged mode.

exit : Return to previous mode.

quit : Log out.

Parameter Instructions

None

42.15 show memory

Command Function

View memory information.

Command Format

show memory

Parameter Instructions

None

42.16 show cpu-utilization

Command Function

View cpu utilization.

Command Format

show cpu-utilization

Parameter Instructions

None

43 Manage Timeout Configuration

43.1 timeout

Command Function

In privileged mode, configure the access timeout time.

Command Format

timeout <*num*>

no timeout

Parameter Instructions

Parameter	Parameter Instructions	Value
num	Timeout time.	1 to 480 minutes, default is 20 minutes.

43.2 show timeout

Command Function

In privileged mode, view the timeout configuration.

Command Format

show timeout

Parameter Instructions

None

44 Reboot Configuration

44.1 reboot

Command Function

In privileged mode, reboot the system.

Command Format

reboot

Parameter Instructions

None

44.2 auto-reboot in

Command Function

Configure a single automatic restart.

Command Format

auto-reboot in hours *hour* **minutes** *min*

no auto-reboot

Parameter Instructions

Parameter	Parameter Instructions	Value
hour	\	0 to 23.
min	\	0 to 59.

44.3 auto-reboot at

Command Function

Configure periodic automatic restart.

Command Format

auto-reboot at *hh:mm:ss* **[***yyyy/mm/dd | daily | fri| mon| sat|sun|thu|tue|wed weekly***]**

no auto-reboot

Parameter Instructions

Parameter	Parameter Instructions	Value
hour	\	0 to 23.
min	Minute.	0 to 59.
hh:mm:ss	Hours:minutes:seconds.	Example: 8:10:10.
yyyy/mm/dd	Year:month:day.	Example: 2022/1/1.

44.4 show auto-reboot

Command Function

View auto-restart configuration.

Command Format

show auto-reboot

Parameter Instructions

None

44.5 configuration example

#Automatic restart at 12:00 every day.

switch(config)#auto-reboot at 12:00:00 daily

45 File Download

45.1 load application ftp

Command Function

In privileged mode, use ftp to download host program.

Command Format

load application ftp {inet *server-ip* **| inet6** *server-ipv6***}** *filename username password*

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Ftp server IP address.	Decimal, format: x.x.x.x.
server-ipv6	Ftp server ipv6 address.	Hexadecimal, example:2001::1.
filename	Host program filename.	String<1-64>.
username	Ftp server username.	String<1-32>.
password	Ftp server password.	String<1-32>.

45.2 load application tftp

Command Function

In privileged mode, use tftp to download host program.

Command Format

load application tftp {inet *server-ip* **| inet6** *server-ipv6***}** *filename*

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Tftp server IP address.	Decimal, format: x.x.x.x.
server-ipv6	Tftp server ipv6 address.	Hexadecimal, example:2001::1.
filename	Host program filename.	String<1-64>.

45.3 load application xmodem

Command Function

In privileged mode, use xmodem to download host program.

Command Format

load application xmodem

Parameter Instructions

None

45.4 load whole-bootrom ftp

Command Function

In privileged mode, use ftp to download the bootrom program.

Command Format

load whole-bootrom ftp {inet *server-ip* **| inet6** *server-ipv6***}** *filename username password*

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Ftp server IP address.	Decimal, format: x.x.x.x.
server-ipv6	Ftp server ipv6 address.	Hexadecimal, example:2001::1.
filename	Boortom program filename.	String<1-64>.
username	Ftp server username.	String<1-32>.
password	Ftp server password.	String<1-32>.

45.5 load whole-bootrom tftp

Command Function

In privileged mode, use tftp to download the bootrom program.

Command Format

load whole-bootrom tftp {inet *server-ip* **| inet6** *server-ipv6***}** *filename*

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Tftp server IP address.	Decimal, format: x.x.x.x.
server-ipv6	Tftp server ipv6 address.	Hexadecimal, example:2001::1.
filename	Boortom program filename.	String<1-64>.

45.6 load whole-bootrom xmodem

Command Function

In privileged mode, use xmodem to download the bootrom program.

Command Format

load whole-bootrom xmodem

Parameter Instructions

None

45.7 load configuration xmodem

Command Function

In privileged mode, use xmodem to download configuration files.

Command Format

load configuration xmodem

Parameter Instructions

None

45.8 load configuration tftp

Command Function

In privileged mode, use tftp to download configuration files.

Command Format

load configuration tftp {inet *server-ip* **| inet6** *server-ipv6***}** *filename*

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Tftp server IP address.	Decimal, format: x.x.x.x.
server-ipv6	Tftp server ipv6 address.	Hexadecimal, example:2001::1.
filename	Configuration filename.	String<1-64>.

45.9 load configuration ftp

Command Function

In privileged mode, use ftp to download configuration files.

Command Format

load configuration ftp {inet *serverip* **| inet6** *serveripv6***}** *filename username password*

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Ftp server IP address.	Decimal, format: x.x.x.x.
server-ipv6	Ftp server ipv6 address.	Hexadecimal, example:2001::1.
filename	Configuration filename.	String<1-64>.
username	Ftp server username.	String<1-32>.
password	Ftp server password.	String<1-32>.

45.10 show running-config

Command Function

View the run configuration.

Command Format

show running-config [*module-name***]* [perlines** *lines***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
module-name	Function module name.	According to the switch feature module.
lines	Display multiple lines at once.	0 to 4096.

45.11 copy running-config startup-config

Command Function

In privileged mode, save the current configuration.

Command Format

copy running-config startup-config

Parameter Instructions

None

45.12 copy startup-config running-config

Command Function

In privileged mode, load the startup configuration.

Command Format

copy startup-config running-config

Parameter Instructions

None

45.13 show startup-config

Command Function

In privileged mode, view the startup configuration.

Command Format

show startup-config [*module-name***]* [perlines** *lines***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
module-name	Function module name.	According to the switch feature module.
lines	Display multiple lines at once.	0 to 4096.

45.14 clear startup-config

Command Function

In privileged mode, clear the startup configuration.

Command Format

clear startup-config [with user-info]

Parameter Instructions

None

45.15 configuration example

```
switch#load configuration tftp inet 192.168.1.11 sw.txt      //Use ftp to download configuration files.
switch#load application tftp inet 192.168.1.11 test.img      //Use ftp to upgrade
```

46 File Upload

46.1 upload logging ftp

Command Function

In privileged mode, use ftp to upload log files.

Command Format

upload logging ftp {inet *server-ip* **| inet6** *server-ipv6***}** *filename username password*

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Ftp server IP address.	Decimal, format: x.x.x.x.
server-ipv6	Ftp server ipv6 address.	Hexadecimal, example:2001::1.
filename	Log filename.	String<1-64>.
username	Ftp server username.	String<1-32>.
password	Ftp server password.	String<1-32>.

46.2 upload logging tftp

Command Function

In privileged mode, use tftp to upload log files.

Command Format

upload logging tftp {inet *server-ip* **| inet6** *server-ipv6***}** *filename*

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Tftp server IP address.	Decimal, format: x.x.x.x.
server-ipv6	Tftp server ipv6 address.	Hexadecimal, example:2001::1.
filename	Log filename.	String<1-64>.

46.3 upload configuration ftp

Command Function

In privileged mode, use ftp to upload configuration files.

Command Format

upload configuration ftp {inet *server-ip* **| inet6** *server-ipv6***}** *filename username password*

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Ftp server IP address.	Decimal, format: x.x.x.x.
server-ipv6	Ftp server ipv6 address.	Hexadecimal, example:2001::1.
filename	Configuration filename.	String<1-64>.
username	Ftp server username.	String<1-32>.
password	Ftp server password.	String<1-32>.

46.4 upload configuration tftp

Command Function

In privileged mode, use tftp to upload configuration files.

Command Format

upload configuration tftp {inet *serverip* **| inet6** *serveripv6***}** *filename*

Parameter Instructions

Parameter	Parameter Instructions	Value
server-ip	Tftp server IP address.	Decimal, format: x.x.x.x.
server-ipv6	Tftp server ipv6 address.	Hexadecimal, example:2001::1.
filename	Configuration filename.	String<1-64>.

46.5 configuration example

#Use tftp to upload host logs.

switch#upload logging tftp inet 192.168.1.11 1.txt

#Use ftp to upload host logs.

switch#upload logging ftp inet 192.168.1.11 1.txt admin admin

#Use tftp to upload configuration files.

switch#upload configuration tftp inet 192.168.1.11 zz.txt

#Use ftp to upload configuration files.

switch#upload configuration ftp inet 192.168.1.11 zz.txt admin admin

47 Syslog Configuration

47.1 logging

Command Function

Enable logging function.

Command Format

[no] logging

Parameter Instructions

None

47.2 logging sequence-numbers

Command Function

Configure the logging sequence number.

Command Format

[no] logging sequence-numbers

Parameter Instructions

None

47.3 logging timestamps

Command Function

Configure Timestamp Type.

Command Format

logging timestamps {**notime | uptime | datetime**}

no logging timestamps

Parameter Instructions

Parameter	Parameter Instructions	Value
notime	Timestamp is not displayed.	None.
uptime	Show timestamp with boot time.	None.
datetime	Display timestamp in absolute time.	None.

47.4 terminal monitor

Command Function

In privileged mode, enable output to the terminal.

Command Format

[no] terminal monitor

Parameter Instructions

None

47.5 logging monitor

Command Function

In global mode, enable log output to vty.

Command Format

[no] logging monitor {**all** | *monitor-num*}

Parameter Instructions

Parameter	Parameter Instructions	Value
monitor-num	Monitor number.	0 to 5.

47.6 logging monitor filter

Command Function

Configure vty log filtering rules.

Command Format

logging monitor {all | *monitor-num***} [** *level-value* **| None | level-list** *start-level* **to** *end-level*] [**module** *module-name*]*

no logging monitor [all|*monitor-num*] **filter**

Parameter Instructions

Parameter	Parameter Instructions	Value
monitor-num	Monitor number.	0 to 5.
level-value	Information level.	0 to 7.
start-level	\	0 to 7.
end-level	\	0 to 7.
module-name	\	Switch feature module.

47.7 logging buffered

Command Function

Enable log output to buffer.

Command Format

[no] logging buffered

Parameter Instructions

None

47.8 logging buffered filter

Command Function

Configure buffer log filtering rules.

Command Format

logging buffered [*level-value* **| None | level-list** *start-level* **to** *end-level*] [**module** *module-name*]

no logging buffered filter

Parameter Instructions

Parameter	Parameter Instructions	Value
level-value	Information level.	0 to 7.
start-level	\	0 to 7.
end-level	\	0 to 7.
module-name	\	Switch feature module.

47.9 logging flash

Command Function

Enable log output to flash.

Command Format

[no] logging flash

Parameter Instructions

None

47.10 logging flash filter.

Command Function

Configure flash log filtering rules.

Command Format

logging flash [*level-value* | **None** | **level-list** [*start-leve* **to** *end-level* **|** *level-value*]] [**module** *module-name*]

no logging flash filter

Parameter Instructions

Parameter	Parameter Instructions	Value
level-value	Information level.	0 to 7.
start-level	\	0 to 7.
end-level	\	0 to 7.
module-name	\	Switch feature module.

47.11 logging snmp-agent

Command Function

Enable log output to snmp agent.

Command Format

[no] logging snmp-agent

Parameter Instructions

None

47.12 logging snmp-agent filter

Command Function

Configure snmp-agent log filtering rules.

Command Format

logging snmp-agent[*level-value* | **None** | **level-list** [*start-leve* **to** *end-level* **|** *level-value*]] [**module** *module-name*]

no logging snmp-agent filter

Parameter Instructions

None

47.13 logging ip-address

Command Function

Configure log server.

Command Format

[no] logging *ip-address*

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Syslog server IP address.	Decimal, format: x.x.x.x.

47.14 logging host

Command Function

Enable log server.

Command Format

[no] logging host [all | *ip-address*]

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Syslog server IP address.	Decimal, format: x.x.x.x.

47.15 logging host filter

Command Function

Configure host log filtering rules.

Command 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 Instructions

Parameter	Parameter Instructions	Value
ip-address	Syslog server IP address.	Decimal, format: x.x.x.x.
level-value	Information level.	0 to 7.
start-level	\	0 to 7.
end-level	\	0 to 7.
module-name	\	Switch feature module.

47.16 logging facility

Command Function

Configure the log tool name.

Command 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 Instructions

None

47.17 logging source

Command Function

Configure the source IP address of log packets.

Command Format

logging source {*ip-address* | **loopback-interface** *if-id*}

no logging source

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	\	Decimal, format: x.x.x.x.
if-id	Loopback interface ID.	0 to 1.

47.18 show logging

Command Function

View log configuration information.

Command Format

Show logging

Parameter Instructions

None

47.19 show logging filter

Command Function

View log filtering rules.

Command Format

show logging filter {buffered | flash | host *ip-address* **| snmp-agent |monitor** *monitor-num***}**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	Logging server IP address.	Decimal, format: x.x.x.x.
monitor-num	Monitor number.	0 to 5.

47.20 show logging buffered

Command Function

View the log information in buffer.

Command Format

show logging buffered [*level-value* **| level-list [** *start-level* **to** *end-level* **|** *value* **]] [module** *module-name* **]**

Parameter Instructions

Parameter	Parameter Instructions	Value
level-value	Information level.	0 to 7.
start-level	\	0 to 7.
end-level	\	0 to 7.
module-name	\	Switch feature module.

47.21 show logging flash

Command Function

View log information in flash memory.

Command Format

Show logging flash [*level-value* **| level-list [** *start-level* **to** *end-level* **|** *value* **]] [module** *module-name*]

Parameter Instructions

Parameter	Parameter Instructions	Value
level-value	Information level.	0 to 7.
start-level	\	0 to 7.
end-level	\	0 to 7.
module-name	\	Switch feature module.

47.22 configuration example

1.Configure log output to console.

#Enable output to terminal.

switch#terminal monitor

switch#configure terminal

#Enable terminal display function.

switch(config)#logging monitor all

#Enable logging function.

switch(config)#logging

2.Configure the log output to the log server 192.168.1.3.

#Configure log server.

switch(config)#logging 192.168.1.3

#Enable log server.

switch(config)#logging host 192.168.1.3

#View configuration information.

switch(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.

Telnet 2: state: on; display: off; 0 logged; 0 lost; 0 overflow.

Telnet 3: state: on; display: off; 0 logged; 0 lost; 0 overflow.

Telnet 4: state: on; display: off; 0 logged; 0 lost; 0 overflow.

Telnet 5: state: on; display: off; 0 logged; 0 lost; 0 overflow.

logging buffered: state: on; 182 logged; 0 lost; 57 overflow.

logging flash: state: on; 76 logged; 0 lost; 0 overflow.

logging loghost:

logging facility: localuse7;logging source: off

logging SNMP Agent: state: on; 0 logged; 0 lost; 0 overflow.

48 Alarm Configuration

48.1 alarm cpu

Command Function

In global mode, enable the CPU alarm function.

Command Format

[no] alarm cpu

Parameter Instructions

None

48.2 alarm cpu threshold

Command Function

Configure the CPU busy or idle threshold.

Command Format

alarm cpu threshold {busy <*percentage***> | unbusy <***percentage***>}***

no alarm cpu threshold

Parameter Instructions

Parameter	Parameter Instructions	Value
percentage	CPU utilization.	0 to 100.

48.3 alarm all-packets

Command Function

In global or port mode, enable the port alarm function.

Command Format

[no] alarm all-packets

Parameter Instructions

None

48.4 alarm all-packets threshold

Command Function

Configure the port busy or idle threshold.

Command Format

alarm all-packets threshold {exceed <*bandwidth***> normal <** *bandwidth***>}**

no alarm all-packets threshold

Parameter Instructions

Parameter	Parameter Instructions	Value
bandwidth	\	1 to 1000.

48.5 show alarm cpu

Command Function

View CPU alarm configuration.

Command Format

show alarm cpu

Parameter Instructions

None

48.6 show alarm all-packets

Command Function

View port alarm configuration.

Command Format

show alarm all-packets [interface [ethernet <*port-id***> [to eth <***port-id***>]]*]**

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	Port ID.	String<5-6>, format: device number/slot number/port number

49 LLDP

49.1 lldp

Command Function

In global mode, enable the lldp function.

Command Format

[no] lldp

Parameter Instructions

None

49.2 lldp hello-time

Command Function

Configure the hello time sending interval.

Command Format

lldp hello-time <*interval***>**

no lldp hello-time

Parameter Instructions

Parameter	Parameter Instructions	Value
interval	\	5 to 32768.

49.3 lldp hold-time

Command Function

Configure hold time.

Command Format

lldp hold-time <*value*>

no lldp hold-time

Parameter Instructions

Parameter	Parameter Instructions	Value
value	\	2 to 10.

49.4 lldp trap

Command Function

Enable lldp trap.

Command Format

lldp trap enable

lldp trap disable

Parameter Instructions

None

49.5 lldp [rxtx | rx | tx]

Command Function

In port mode, configure the transceiver type.

Command Format

lldp {rxtx | **rx** | **tx}**

no lldp

Parameter Instructions

49.6 lldp management-address

Command Function

Configure management address information.

Command Format

lldp management-address [supervlan-interface | vlan-interface] <*interface-id***>**

no lldp management-address

Parameter Instructions

Parameter	Parameter Instructions	Value
interface-id	\	super interface :1 to 128. vlan-interface :1 to 4094.

49.7 show lldp

Command Function

View lldp configuration and collected topology information.

Command Format

show lldp [ethernet <*port-id***> [to ethernet <***port-id***>]*]**

Parameter Instructions

Parameter	Parameter Instructions	Value
port-id	\	String<5-6>, format: device number/slot number/port number.

49.8 configuration example

Network diagram:

switch1 1---------- 18 switch2

Command Format

switch1(config)#interface vlan-interface 1

switch1(config-if-vlanInterface-1)#ip address 192.168.1.11 255.255.255.0

switch1(config-if-vlanInterface-1)#exit

switch1(config)#lldp

switch1(config)#interface ethernet 0/0/1

switch1(config-if-ethernet-0/0/1)#lldp rxtx

switch1(config-if-ethernet-0/0/1)#

switch2(config)#interface vlan-interface 1

```
switch2(config-if-vlanInterface-1)#ip address 192.168.1.12 255.255.255.0
switch2(config-if-vlanInterface-1)#exit
switch2(config)#lldp
switch2(config)#interface ethernet 0/0/18
switch2(config-if-ethernet-0/0/18)#lldp rxtx
switch2(config-if-ethernet-0/0/18)#

switch1(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
```

50 Static Time Configuration

50.1 clock set

Command Function

In privileged mode, configure the system time.

Command Format

clock set *<HH:MM:SS YYYY/MM/DD>*

Parameter Instructions

Parameter	Parameter Instructions	Value
HH:MM:SS	Hours : minutes : seconds.	Example: 8:00:00.
YYYY/MM/DD	Year / month / day.	Example: 2001/1/1.

50.2 clock timezone

Command Function

Configure time zone.

Command Format

clock timezone <*zone-name hours-offset minutes-offset >*

no clock timezone

Parameter Instructions

Parameter	Parameter Instructions	Value
zone-name	\	String<1-32>.
hours-offset	Offset hours.	Negative 23 to 23.
minutes-offset	Offset minutes.	0 to 59.

50.3 show clock

Command Function

View the current time and time zone information of the system.

Command Format

show clock

Parameter Instructions

None

51 SNTP-Client Configuration

51.1 sntp client

Command Function

In global mode, enable the sntp client.

Command Format

[no] sntp client

Parameter Instructions

None

51.2 sntp client mode

Command Function

In global mode, configure the working mode of the sntp client.

Command Format

sntp client mode {anycast | broadcast | multicast | unicast}

no sntp client mode

Parameter Instructions

Parameter	Parameter Instructions	Value
anycast	\	None
broadcast	\	None
multicast	\	None
unicast	\	None

51.3 sntp client authenticate

Command Function

In global mode, configure the sntp client authentication function.

Command Format

sntp client authenticate

no sntp client authenticate

Parameter Instructions

None

51.4 sntp client authentication-key

Command Function

In global mode, configure the authentication password of the trusted clock source of the sntp client.

Command Format

(no)sntp client authentication-key *key-num* **md5** *key-value*

Parameter Instructions

Parameter	Parameter Instructions	Value
key-num	Key number	1 to 4294967295.
key-value	Authentication key.	String<1-16>.

51.5 sntp client broadcastdelay

Command Function

In global mode, modify the broadcast delay.

Command Format

sntp client broadcastdelay *<delay >*

no sntp client broadcastdelay

Parameter Instructions

Parameter	Parameter Instructions	Value
delay	Delay time.	1 to 9999.

51.6 sntp client poll-interval

Command Function

In global mode, configure the polling interval.

Command Format

sntp client poll-interval <*interval***>**

no sntp client poll-interval

Parameter Instructions

Parameter	Parameter Instructions	Value
interval		64 to 1024.

51.7 sntp client retransmit

Command Function

In global mode, configure the number of retransmissions.

Command Format

sntp client retransmit <*times***>**

no sntp client retransmit

Parameter Instructions

Parameter	Parameter Instructions	Value
times	Retransmission times.	1 to 10.

51.8 sntp client retransmit-interval

Command Function

In global mode, configure the retransmission interval.

Command Format

sntp client retransmit-interval <*interval***>**

no sntp client retransmit-interval

Parameter Instructions

Parameter	Parameter Instructions	Value
interval	Retransmission interval.	3 to 30.

51.9 sntp client summer-time daily

Command Function

In global mode, configure sntp daylight saving time by date.

Command Format

sntp client summer-time dayly <*start-month start-day start-time end-month end-day end-tim***e >**

no sntp client summer-time

Parameter Instructions

Parameter	Parameter Instructions	Value
start-month	\	1 to 12.
start-day	\	1 to 31.
start-time	\	Example: 8:10:10.
end-month	\	1 to 12.
end-day	\	1 to 31.
end-time	\	Example: 8:10:10.

51.10 sntp client summer-time weekly

Command Function

In global mode, configure sntp daylight saving time by week.

Command 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 Instructions

Parameter	Parameter Instructions	Value
start-month	\	1 to 12.
start-week	\	1 to 5.
start-time	\	Example: 8:10:10..
end-month	\	1 to 12.
end-week	\	1 to 5.
end-time	\	Example: 8:10:10.
weekly	Day of week.	mon,tue,wen,thu,fri,sat,sun.

51.11 sntp client valid-server

Command Function

In global mode, configure the sntp server.

Command Format

sntp client valid-server <*ip*> < *wildcard***>**

no sntp client valid-server [all | <*ip***> < *wildcard***>]**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip	Server IP address.	Decimal, format: x.x.x.x.
wildcard	\	Decimal, format: x.x.x.x.

51.12 sntp trusted-key

Command Function

In global mode, configure the sntp trust password ID.

Command Format

sntp trusted-key <*keyid***>**

no sntp trusted-key

Parameter Instructions

Parameter	Parameter Instructions	Value
keyid	Key number.	1 to 4294967295.

51.13 sntp server key

Command Function

In global mode, configure the sntp server password ID.

Command Format

sntp server key <*keyid***>**

no sntp server key

Parameter Instructions

Parameter	Parameter Instructions	Value
keyid	Key number.	1 to 4294967295.

51.14 sntp server

Command Function

In global mode, configure the IP address of the master server.

Command Format

sntp server <*ip-address***>**

no sntp server

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	\	Decimal, format: x.x.x.x.

51.15 sntp server backup

Command Function

In global mode, configure the IP address of the backup server.

Command Format

sntp server backup <*ip-address***>**

no sntp server backup

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	\	Decimal, format: x.x.x.x.

51.16 sntp client mode anycast key

Command Function

Configure trust password ID.

Command Format

sntp client mode anycast <*key-id***>**

no sntp client anycastkey < *key-id* **>**

Parameter Instructions

Parameter	Parameter Instructions	Value
key-id	Password ID.	1 to 4294967295.

51.17 show sntp client

Command Function

View sntp client information.

Command Format

show sntp client

Parameter Instructions

None

51.18 show sntp client summer-time

Command Function

View sntp client daylight saving time status.

Command Format

show sntp client summer-time

Parameter Instructions

None

51.19 configuration example

Network diagram:

sntp Server ------- switch

Configuration:

#Enable sntp client

switch(config)#sntp client

#Configure the sntp client working mode to broadcast.

switch(config)#sntp client mode broadcast

#Configure the ip address of the sntp server

switch(config)#sntp client valid-server 192.168.1.0 0.0.0.255

#View sntp client information.

switch(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
```

52 IP Management Interface

52.1 interface internal-interface

Command Function

Enter management interface configuration mode.

Command Format

interface internal-interface *<id>*

no interface internal-interface *<id>*

Parameter Instructions

Parameter	Parameter Instructions	Value
id	Interface number.	0

52.2 ip address configuration

Command Function

Enter the management interface configuration mode.

Command Format

ip address *ipaddress mask*

no ipaddress [*ipaddress mask***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	IP addresss.	Decimal, format: x.x.x.x.
mask	Subnet mask.	Decimal, format: x.x.x.x.

52.3 configuration example

 # Configure management interface address 192.168.1.100/24.

switch(config)#interface internal-interface 0

switch(config-if-internalInterface-0)#ip address 192.168.1.100 255.255.255.0

53 IF-Vlan Interface Configuration

53.1 interface vlan-interface

Command Function

Configure a common VLAN interface and enter interface configuration mode.

Command Format

interface vlan-interface *vid*

no interface vlan-interface *vid*

Parameter Instructions

Parameter	Parameter Instructions	Value
vid	VLAN ID.	1 to 4094.

53.2 description

Command Function

In interface mode, configure the interface description information.

Command Format

description *desc*

no description

Parameter Instructions

Parameter	Parameter Instructions	Value
desc	Description.	String<1-31>, Any character except a question mark. Spaces require double quotes.

53.3 shutdown

Command Function

In interface mode, turn the interface on and off.

Command Format

[no] shutdown

Parameter Instructions

None

53.4 ip address

Command Function

In interface mode, configure a static IP address.

Command Format

ip address *ip-address mask*

no ip address [*ip-address mask***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	\	Decimal, format: x.x.x.x.
mask	Subnet mask.	Decimal, format: x.x.x.x.

53.5 ip address primary

Command Function

In interface mode, switch the primary IP address of the interface.

Command Format

ip address primary *ip-address*

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	\	Decimal, format: x.x.x.x.

53.6 ip address range

Command Function

In interface mode, configure the allowed communication range of the interface.By default, all IPs can communicate.

Command Format

ip addres range *startip endip*

no ip address range [*startip endip***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
start-ip	IP address.	Decimal, format: x.x.x.x.
end-ip	IP address.	Decimal, format: x.x.x.x.

53.7 ip address dhcp | bootp

Command Function

In interface mode, open the dhcp&bootp client, that is, dynamically obtain the IP address.

Command Format

[no] ip address {dhcp | bootp}

Parameter Instructions

None

53.8 ipv6 address

Command Function

In interface mode, configure the ipv6 address of the interface.

Command 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 Instructions

Parameter	Parameter Instructions	Value
linklocal	Link-local address.	Hexadecimal, example: fe80::1
ipv6	Unicast Address.	Hexadecimal, example: 2001::1
prefix	Length of address prefix.	1 to 128.

53.9 ipv6 forwarding

Command Function

Enable ipv6 forwarding.

Command Format

[no] ipv6 forwarding

Parameter Instructions

None

53.10 show ip dhcp lease

Command Function

View the dynamic address of the interface.

Command Format

show ip dhcp lease

Parameter Instructions

None

53.11 show ip interface vlan-interface

Command Function

View interface configuration information.

Command Format

show ip interface vlan-interface *vid*

show ipv6 interface vlan-interface *vid*

Parameter Instructions

Parameter	Parameter Instructions	Value
vid	VLAN interface ID.	1 to 4094.

53.12 configuration example

#Enter interface configuration mode.

switch(config)#interface vlan-interface 1

#Configure ip address.

switch(config-if-vlanInterface-1)#ip address 1.1.1.1 255.0.0.0

#Configure interface description information.

switch(config-if-vlanInterface-1)#description zz

#View interface configuration information.

switch(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.

54 SuperVlan Interface Configuration

54.1 interface supervlan-interface

Command Function

Configure the supervlan interface and enter the interface configuration mode.

Command Format

[no] interface supervlan-interface *sid*

Parameter Instructions

Parameter	Parameter Instructions	Value
sid	Super VLAN interface ID.	1 to 128.

54.2 subvlan vid

Command Function

In interface mode, configure the subvlan of the supervlan.

Command Format

[no] subvlan {*vid* **|** *v-list***}**

Parameter Instructions

Parameter	Parameter Instructions	Value
vid	VLAN ID.	1 to 4094.
v-list	VLAN list.	String<1-64>, example: 1,3,4-5.

54.3 description

Command Function

In interface mode, configure the interface description information.

Command Format

description *desc*

no description

Parameter Instructions

Parameter	Parameter Instructions	Value
desc	Description.	String<1-31>, Any character except a question mark. Spaces require double quotes.

54.4 shutdown

Command Function

In interface mode, turn the interface on and off.

Command Format

[no] shutdown

Parameter Instructions

None

54.5 ip address

Command Function

In interface mode, configure a static IP address.

Command Format

ip address *ip-address mask*

no ip address [*ip-address mask***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	\	Decimal, format: x.x.x.x.
mask	Subnet mask.	Decimal, format: x.x.x.x.

54.6 ip address primary

Command Function

In interface mode, switch the primary IP address of the interface.

Command Format

ip address primary *ip-address*

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	\	Decimal, format: x.x.x.x.

54.7 ip address range

Command Function

In interface mode, configure the allowed communication range of the interface.By default, all IPs can communicate.

Command Format

ip addres range *startip endip*

no ip address range [*startip endip***]**

Parameter Instructions

Parameter	Parameter Instructions	Value
start-ip	IP address.	Decimal, format: x.x.x.x.
end-ip	IP address.	Decimal, format: x.x.x.x.

54.8 ip address dhcp | bootp

Command Function

In interface mode, open the dhcp&bootp client, that is, dynamically obtain the IP address.

Command Format

[no] ip address {dhcp | bootp}

Parameter Instructions

None

54.9 ipv6 address

Command Function

In interface mode, configure the ipv6 address of the interface.

Command 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 Instructions

Parameter	Parameter Instructions	Value
linklocal	Link-local address.	Hexadecimal, example: fe80::1
ipv6	Unicast Address.	Hexadecimal, example: 2001::1
prefix	Length of address prefix.	1 to 128.

54.10 show ip dhcp lease

Command Function

View the dynamic address of the interface.

Command Format

show ip dhcp lease

Parameter Instructions

None

54.11 show ip interface supervlan-interface

Command Function

View interface configuration information.

Command Format

show ip interface supervlan-interface *sid*

show ipv6 interface supervlan-interface *sid*

Parameter Instructions

Parameter	Parameter Instructions	Value
sid	Super VLAN interface ID.	1 to 128.

54.12 configuration example

#Enter the supervlan interface.

switch(config)#interface supervlan-interface 1

#Add sub-vlan.

switch(config-if-superVLANInterface-1)#subvlan 1

switch(config-if-superVLANInterface-1)#ip address 2.2.2.1 255.0.0.0

This ipaddress will be the primary ipaddress of this interface.

switch(config-if-superVLANInterface-1)#description example

#View interface configuration information.

switch(config-if-superVLANInterface-1)#show ip interface supervlan-interface 1
Show informations of 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.

55 ARP

55.1 arp ip mac

Command Function

Configure static arp entries.

Command Format

arp *ip mac* [**vlan** *vid*] [**ethernet** *portid*]

Parameter Instructions

Parameter	Parameter Instructions	Value
ip	IP address.	Decimal, format: x.x.x.x.
mac	MAC address.	Hexadecimal, format: x.x.x.x.x.x.
vid	VLAN ID.	1 to 4094.
port-id	\	String<5-6>, format: device number/slot number/port number.

55.2 arp aging-time

Command Function

Configure arp aging time.

Command Format

arp aging-time *<age>*

no arp aging-time

Parameter Instructions

Parameter	Parameter Instructions	Value
aging-time	\	3 to 2880 minutes, default is 20 minutes.

55.3 arp bind dynamic

Command Function

Bind dynamic arp entries to static arp entries.

Command Format

arp bind dynamic {*ip-address* **| all}**

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	\	Decimal, format: x.x.x.x.

55.4 no arp

Command Function

Delete an arp entry.

Command Format

no arp {dynamic | static | all | *ip-address* }

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	\	Decimal, format: x.x.x.x.

55.5 show arp

Command Function

View the arp table.

Command Format

show arp {all | dynamic | static | *ip-address* [*mac*] }

Parameter Instructions

Parameter	Parameter Instructions	Value
ip-address	\	Decimal, format: x.x.x.x.
mac	MAC address.	Hexadecimal, format: x.x.x.x.x.x.

55.6 show arp aging-time

Command Function

View aging time of arp entries.

Command Format

show arp aging-time

Parameter Instructions

None

55.7 configuration example

#Configure a static arp entry.

switch(config)#arp 192.168.1.2 00:00:00:01:2:3 ethernet 0/0/1 vlan 1

#Bind dynamic arp entries to static arp entries.

switch(config)#arp bind dynamic 192.168.1.111

#View the arp table.

switch(config)#show arp all

Information of ARP

IpAddress	Mac_Address	Vlan	Port	Type
192.168.1.2	00:00:00:01:02:03	1	0/0/1	static
192.168.1.111	80:1f:02:4c:19:60	1	0/0/14	static

Total entries: 2, Printed entries: 2

56 ND

56.1 ipv6 neighbor

Command Function

In global mode, configure static IPv6 neighbors.

Command Format

ipv6 neighbor *ipv6 mac* **[vlan** *vid* **ethernet** *port-id***]**

no ipv6 neighbor *ipv6*

Parameter Instructions

Parameter	Parameter Instructions	Value
ipv6	IPv6 address.	Hexadecimal, example: 2001::1.
mac	MAC address.	Hexadecimal, format: x.x.x.x.x.x.
vid	VLAN ID	1 to 4094.
port-id	\	String<5-6>, format: device number/slot number/port number.

56.2 ipv6 neighbors max-learning-num

Command Function

Configure the maximum number of learnable IPv6 neighbors.

Command Format

ipv6 neighbors max-learning-num <*limit***>**

no ipv6 neighbors max-learning-num

Parameter Instructions

Parameter	Parameter Instructions	Value
limit	Maximum number of neighbors limit.	1 to 2048.

56.3 ipv6 nd dad attemps

Command Function

In interface mode, configure the number of DAD detections.

Command Format

ipv6 nd dad attemps <*times***>**

no ipv6 nd dad attemps

Parameter Instructions

Parameter	Parameter Instructions	Value
times	DAD detection times.	0 to 20.

56.4 ipv6 nd ns retrans-time

Command Function

In interface mode, configure the interval for sending NS packets.

Command Format

ipv6 nd ns retrans-time <*interval* >

no ipv6 nd ns retrans-time

Parameter Instructions

Parameter	Parameter Instructions	Value
interval	Interval time.	1 to 3600 seconds.

56.5 ipv6 nd reachable-time

Command Function

In interface mode, configure the neighbor reachable time.

Command Format

ipv6 nd reachable-time <*time***>**

no ipv6 nd reachable-time

Parameter Instructions

Parameter	Parameter Instructions	Value
time	Neighbor reachable time.	1 to 3600 seconds.

56.6 show ipv6 nd

Command Function

View neighbor discovery configuration.

Command Format

show ipv6 nd { dad | ns retrans-time | reachable-time}

Parameter Instructions

None

56.7 show ipv6 neighbors

Command Function

View IPv6 neighbor entries.

Command Format

show ipv6 neighbors {<*ipv6***> | <mac** *mac* **> | dynamic | static | all}**

Parameter Instructions

Parameter	Parameter Instructions	Value
ipv6	IPv6 address.	Hexadecimal, example: 2001::1.
mac	MAC address.	Hexadecimal, format: x.x.x.x.x.x.

56.8 configuration example

Network diagram:

PC----- 48 switch

Configuration:

switch(config)#interface ethernet 0/0/1

switch(config)#interface vlan-interface 4094

```
switch(config-if-vlanInterface-4094)#ipv6 address 2001:1000::62/112
switch(config-if-vlanInterface-4094)#exit
switch(config)# ipv6 neighbor 2001:1000::111 00:00:00:13:40:20 vlan 4094 ethernet 0/0/1
switch(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

switch(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
```

57 Static Routing

57.1 ip route

Command Function

Configure ipv4 static routing entries.

Command Format

ip route *dst-ip mask nexthop* [**distance** *distance*]

no ip route {**static all** | *dstnet mask* [*nexthop*]}

Parameter Instructions

Parameter	Parameter Instructions	Value
dst-ip	Destination IP address.	Decimal, format: x.x.x.x.
mask	Destination netmask.	Decimal, format: x.x.x.x.
nexthop	Next hop IP address.	Decimal, format: x.x.x.x.
distance	Management distance value.	1 to 255.

57.2 show ip route

Command Function

View ipv4 routing table entries.

Command Format

show ip route [*dst-ip* [*mask*]]

Parameter Instructions

Parameter	Parameter Instructions	Value
dst-ip	Destination IP address.	Decimal, format: x.x.x.x.
mask	Destination netmask.	Decimal, format: x.x.x.x.

57.3 show ip route rib-stats

Command Function

View routing statistics.

Command Format

show ip route rib-stats

Parameter Instructions

None

57.4 ipv6 route

Command Function

Configure ipv6 static routing entries.

Command Format

ipv6 route *dst-ip mask nexthop*

[no] ipv6 route *dst-ip/prefix nexthop*

Parameter Instructions

Parameter	Parameter Instructions	Value
dst-ip	Destination IP address.	Hexadecimal, example: 2001::1.
mask	Destination netmask.	Hexadecimal, example: ffff::.
prefix	Length of address prefix.	1 to 128.
nexthop	Next hop IP address.	Hexadecimal, example: 2001::1.

57.5 show ipv6 route

Command Function

View ipv6 routing table entries.

Command Format

show ipv6 route

Parameter Instructions

None

North America	Asia & Africa	Europe
IC Intracom America	IC Intracom Asia	IC Intracom Europe
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