Xentino

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COMMAND LINE (CLI) MANUAL

Xentino L2/L3 Switch Series

Models : **SI804xx**

www.xentino.com

Command line manual

Rev. 1.1.0

Preface

The purpose of this document is to provide software engineers with general information about the use of switch source files for chip development by the switch team.
Although every effort has been made to ensure that this document is up-to-date and accurate, more information may have been updated since this guide was prepared.

Version record

version	**time**	**description**
1.0	-	First draft
1.1	2019-08-31	Add static routing and POE

Contents

table of Contents

Command line usage guide

1.0 Using the command line

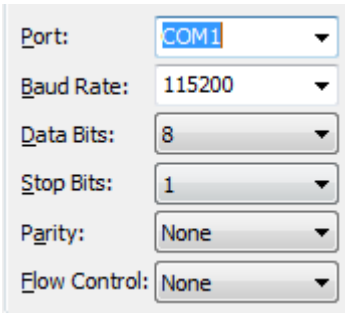
Users can log in to the switch in three ways to use the command line:

1. Log in locally through the Console port;
2. Use Telnet to log in locally or remotely through the Ethernet port;
3. Use SSH to log in locally or remotely through the Ethernet port.

1.1.1. Local login through the Console port

1. First, connect the serial port of the computer (or terminal) to the console port of the Ethernet switch through the configuration cable.

2. Open the terminal emulation program (such as Hyperterminal program) of the computer and configure the following parameters:



1.1.2Login via telnet

1. Please make sure that the switch and the computer are in the same LAN. Select start, enter "cmd" in the search box and enter enterKey to entercmd window.

2. A running window as shown in Figure 1-5 pops up, enter telnet 192.168.1.1, and click the OK button to enter the DOS interface.

3. Enter the login user name and password (the default value is "admin"), press Enter to enter the user mode

1.1.3Pass SSHSign in

Recommend the use of third-party client softwarePuTTY to establish an SSH connection. Please set it up before logging in using SSH for the first time

The password to enter the privileged mode. ,There are two authentication modes for SSH login

Password authentication mode: You need to log in and enter the user name and password. The default value is admin.

Key authentication mode: No need to log in user name and password, but need to

generate a pair of public key and private key through Putty key generator first

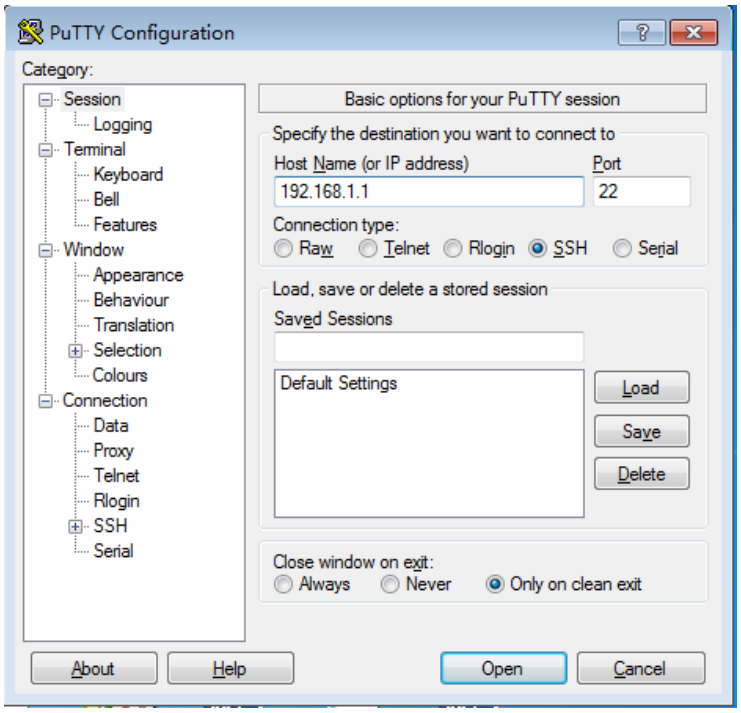
Import the public key into the switch, and import the private key into the client software for authentication.

get on Before SSH login, please follow the steps shown in the figure below to enable the SSH function of the switch in HyperTerminal

```
Username: admin
Password: *****
*Jan 02 2020 03:14:20: %AAA-5-CONNECT: New console connection for user admin, source async ACCEPTED
Switch# configure
Switch(config)# ip ssh
Switch(config)#
```

Password authentication mode

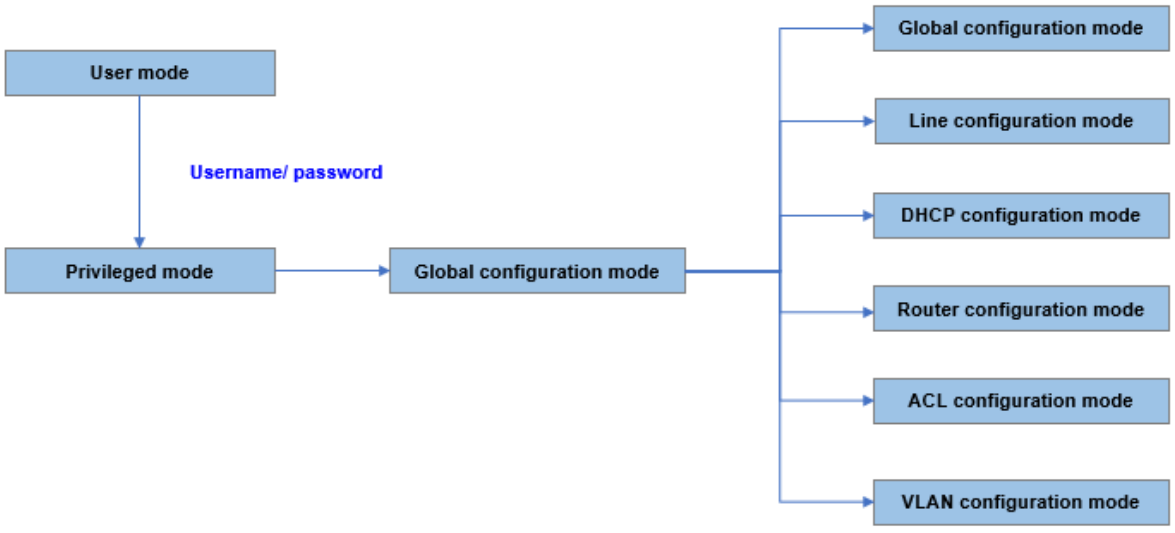
1. Open the software and log in to the main interface of PuTTY. Fill in the IP address of the switch in the "Host Name" field; keep the "Port" silentRecognized22; Select the SSH access method at "Connection type". As shown below



2. Click the <Open> button to log in to the switch. The operation method is the same as Telnet, enter the login user name and login password,You can continue the configuration operation. As shown below.

1.2 Command line mode

CLI is divided into the following modes by function: user mode, privileged mode, global configuration mode, line configuration mode, VLAN configuration mode, interface configuration mode, routing configuration mode, DHCP configuration mode, and MST configuration mode. The interface configuration mode is divided into Ethernet Network port configuration mode and aggregation port configuration mode, etc., as shown below



1.3 Description:

1.3.1. After establishing a connection with the switch through the Console port or Telnet, it enters the user mode.

1.3.2. Each mode has its own command. To configure the corresponding command, you must first enter the corresponding mode:

- Global configuration mode: Provide commands for global configuration, such as

spanning tree, queue scheduling mode, etc.;

- Interface configuration mode: Divided into multiple interfaces, each interface has its own corresponding command:
- VLAN configuration mode: Create a VLAN and add ports to the specified VLAN.
- Routing configuration mode: configure the relevant parameters of the three-layer function.

1.3.3. Some commands are global and can be executed in all command modes:

- show: Display various information of the switch, such as statistical information, port information, VLAN information, etc.
- history: Display history commands.

1.4. Command line security level

User levels 0-14 are the default guest users, you can execute the following commands

enable	Turn on privileged mode command
exit	Exit current mode and down to previous mode
ping	Send ICMP ECHO_REQUEST to network hosts
show	Show running system information
terminal	Terminal configuration
Traceroute	Trace route to network hosts

User level 15 is an administrator user who can execute all commands

Guest users can upgrade their privileges through the enable command, and enter the correct privileged mode password to upgrade to an administrator user.

Note: The default privileged mode password is empty, which can be set by the enable password command.

1.5 Command line format conventions

1.5.1. Basic format conventions

Command line format convention

Convention	description
Boldface	Command line keywords are in bold type.
italics	Command variables are in italics.
[]	Items (keywords or variables) are placed in square brackets[ ]In, it is optional.
{x | y | ...}	Alternative itemsGrouping, plusbracketsAnd useSeparated by vertical bars. onlyselectan item.
[x | y | ...]	Optional alternativeGrouping, plusSquare bracketsAnd useSeparated by vertical bars.selectAn item orNo item selected.
#	To#The comment line begins with the symbol.

1.5.2. Special characters

If the variable is in the form of a string, please note when inputting:

- ✧ "<>, \ & These six characters are not allowed to be entered.
- ✧ If the string contains spaces, you need to add single quotation marks" or double quotation marks "" at the beginning and end of the string, such as'hello world', "hello world".

Time listTwo (or more) words in /double quotes will be entered as a string parameter; if you do not add single/double quotes, they

Will be parsed into two (or more) characters

1.5.3 Various signs

 note	Remind the matters that should be paid attention to during operation, improper operation may cause data loss or equipment damage.
🕮 Description	The description of the operation content shall be supplemented and explained as necessary.

1.5.4 Error message

If you enter incorrect parameters or the command cannot be executed,thenThe following error message will be displayed on the screen.

1. Incomplete command
2. Type parameter error
3. Parameter value error
4. Command is not clear
5. Too many or wrong parameters
6. Invalid argument
7. parameterMissing
8. Command error

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User Interface

2.0 AAA

aaa authentication

format

aaa authentication(login | enable) (default | LISTNAME) METHODLIST [METHODLIST] [METHODLIST] [METHODLIST]
no aaa authentication (login | enable) LISTNAME

parameter

login	Add/Edit login authentication list
enable	Add/edit enable authentication list
default	Edit the default authentication list
LISTNAME	Specifies the name of the list of authentication types
METHODLIST	Specify the authentication method, including none, local, enable, tacacs+, radius

default

The default authentication list name is "Default" and the default method is "local".
The name of the default authentication list of type enable is "Default", and the default method is "enable"

mode

Global configuration mode

Instructions

When a user attempts to log in to the switch, login authentication is used. For example, CLI login dialog and WEB UI login webpage.
Enable authentication is only used for the CLI of users who are trying to switch from user EXEC mode to privileged EXEC mode.

They all support the following authentication methods
Local: Use the local user account database for authentication. (Enable authentication does not support this method)
Enable: Use a local password database for authentication

Tacacs+: Use remote Tacacs+ server for authentication

Radius: Use remote Radius server for authentication

None: Do nothing, only let the user be authenticated.

Each list allows you to combine these methods in a different order. For example, we want to use remoteThe Tacacs+ server authenticates the logged-in user, but the server may crash. Therefore, we need a backup plan, such as another Radius server. Therefore, we can configure the list as Tacacs+server as the first authentication method and Radius server as the second authentication method.

Use the no command to delete the existing list. However, it is not allowed to delete the "default" list.

Instance

How to add login authentication list to use tacacs+, radius, local for authentication.

Switch(config)# aaa authentication login test1 tacacs+ radius local

Query the existing login authentication list

Switch# show aaa authentication login lists

Login List Name Authentication Method List

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

default local

test1 tacacs+ radius local

Add an Enable authentication list to use the order tacacs+, radius, enable for authentication.

Switch(config)# aaa authentication enable test1 tacacs+ radius enable

Query the existing login authentication list

Switch# show aaa authentication enable lists

Enable List Name Authentication Method List

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

default enable

test1 tacacs+ radius enable

login authentication

format

login authentication LISTNAME

no login authentication

parameter

LISTNAME	Specify the name of the login authentication list to use

default

The default login authentication list is "default".

mode

Line configuration mode

Instructions

Allow different access methods to bind different login authentication lists. Use the "login authentication" command to bind the list to a specific line (console, telnet, ssh).

Use the no command to restore the configuration.

Instance

Create a new login authentication list and bind to telnet

```
Switch(config)# aaa authentication logintest1 tacacs+ radius local
Switch(config)# line telnet
Switch(config-line)# login authentication test1
```

Query list

```
Switch# show line lists
   Line Type   |       AAA Type        |   List Name
-------------+-----------------+-----------------
          console |                login | default
                  |               enable |
    default telnet |          login | test1
                  |               enable | default
              ssh |                login | default
                  |               enable | default
             http |                login | default
            https |                login | default
```

---

ip http login authentication

format

ip (http | https) login authentication*LISTNAME*

no ip (http | https) login authentication

parameter

http	Use the http protocol to bind the login authentication list to the user to access WEBUI
https	Use the https protocol to bind the login authentication list to the user to access the WEBUI
LISTNAME	Specifies the name of the login authentication list to be used.

default

The default login authentication list is "default"

mode

Global configuration mode

Instructions

Allow different access methods to bind different login authentication lists. Use the command "ip (http | https) login authentication" to bind the list to WEBUI access from http or https.

Use no to return to the default configuration.

Instance

Create two new login authentication lists and bind to http and https. Switch(config)# aaa authentication login test1 tacacs+ radius local Switch(config)# aaa authentication login test2 radius local Switch(config)# ip http login authentication test1

Switch(config)# ip https login authentication test2

Query bound list information

Switch# show line lists

Line Type | AAA Type | List Name

---+---+---

console | login | default
| enable | default
telnet | login | default
| enable |
default ssh | login |
default
| enable | default http | login |
test1 https | login |
test2

enable authentication

format

enable authentication LISTNAME

no enable authentication

parameter

LISTNAME	Specify the name of the Enable authentication list to be used

default

The default Enable authentication list is "default"

mode

Line configuration mode

Instructions

Allow different access methods to bind different lists of enabled authentication. Use the command "enable
authentication"Bind the list to a specific Line (console, telnet,

ssh). Use no to return to the default configuration

Instance

Create a new Enable authentication list and bind it to telnet.

```
Switch(config)# aaa authentication enable test1 tacacs+ radius enable
Switch(config)# line telnet
Switch(config-line)# enable authentication test1

Query binding information
Switch# show line lists
Line Type      |      AAA Type      |      List Name
-------------+-----------------+-----------------
console |       login       | default
|      enable    | default
telnet      |      login       | default
|      enable    | test1
ssh |       login       | default
|            enable          | default http |       login       |
default https |       login                    | default
```

show aaa authentication

format

show aaa authentication (login | enable) lists

parameter

login	Query login authentication list
enable	Query the Enable certification list

default

mode

Privileged mode

Instructions

Use the command "show aaa authentication" to query the login authentication list or the list information of Enable authentication

---

Instance

Query the list of logged in authentication

```
Switch# show aaa authentication login lists
Login List Name   | Authentication Method List
------------------+------------------------------
default    | local
test1      | tacacs+ radius    local
```

How to query the list of existing Enable authentication

```
Switch# show aaa authentication enable lists
Enable List Name | Authentication Method List
------------------+------------------------------
default    | enable
test2      | tacacs+ radius    enable
```

show line lists

format

show line lists

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mode

Privileged mode

Instructions

Use the command "show line lists" to query all the binding list authentication, authorization and accounting functions.

Instance

Query all binding lists

Switch# show line lists

```
   Line Type   |       AAA Type        |   List Name
---------------+-----------------------+-----------------
        console |                 login | default
                |                enable |
      default telnet |           login | test1
                |                enable | default
            ssh |                 login | default
                |                enable | default
           http |                 login | default
          https |                 login | default
```

tacacs default-config

format

tacacs default-config[key TACACSKEY] [timeout <1-30>]

parameter

key	Specify the key value of the tacacs+ server
timeout	Specify tacacs+ server timeout

default

The default tacacs+ key is "".

The default tacacs+ timeout period is 5 seconds

mode

Global configuration mode

Instructions

Use the command "tacacs default-config" to modify the default values of the tacacs+ server. When a user tries to create a new tacacs+ server without assigning these values, the default values will be used.

Instance

Modify the configuration of tacacs+

```
Switch(config)# tacacs default-config timeout 20
Switch(config)# tacacs default-config key tackey
```

Query the configuration of tacass+
Switch# show tacacs default-config
Timeout | Key
--------+---------
10 | tackey

Create a new tacacs+ server with the default configuration above and display the results
Switch(config)# tacacs host 192.168.1.111
Switch# show tacacs
Prio | Timeout | IP Address | Port | Key
------+---------+-----------------+--------+----- -
1 | 10 | 192.168.1.111 | 49 | tackey

tacacs host

format

tacacs host*HOSTNAME* [port <0-65535>] [key TACPLUSKEY] [priority<0- 65535>] [timeout <1-30>]
no tacacs [host HOSTNAME]

parameter

host	Specify the host name of tacacs+ server, IP address and domain name are available
port	Specify the udp port number of the tacacs+ server
key	Specify the key value of tacacs+ server
priority	Specify the priority of tacacs+ server
timeout	Specify the timeout period of the tacacs+ server

default

The default tacacs+ key is "".
The default tacacs+ timeout period is 5 seconds

mode

Global configuration mode

Instructions

Use the command "tacacs host" to add or edit tacacs+ servers for authentication, authorization or accounting. Use no to delete one or more tacacs servers

Instance

Create a new tacacs+ server
Switch(config)# tacacs host 192.168.1.111 port 12345 key tacacs+ priority 100 timeout 10

Query tacacs+ server
Switch# show tacacs

```
Prio | Timeout |     IP Address     |      Port | Key
------+---------+------------------+--------+----- --- 100 |10   |
              192.168.1.111 |                12345 | tacacs+
```

show tacacs default-config

format

show tacacs default-config

Par

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ault

mode

Privileged mode

Instructions

Use the command "show tacacs default-config" to query the tacacs+ default configuration

Instance

Query tacacs+ configuration
Switch# show tacacs default-config

```
Timeout |      Key
--------+---------
10 |        tackey
```

show tacacs

format

show tacacs

Par

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ault

mode

Privileged mode

Instructions

Use the command "show tacacs" to query tacacs+ server configuration

Instance

Query tacacs+ server configuration

Switch# show tacacs

```
Prio | Timeout |     IP Address     |      Port | Key
------+---------+------------------+--------+----- - 100 |   10   |
              192.168.1.111 |                 12345 | tacacs+
```

---

show default-config

format

radius default-config [key RADIUSKEY] [retransmit <1-10>] [timeout <1-30>]

parameter

key	Specify the radius server key value
retransmit	Specify the number of retransmissions by the radius server
timeout	Specify the radius server timeout period

default

The default key of radius is ""

The default value of radius retransmission is 3 times

The default timeout of radius is 3 seconds

mode

Global configuration mode

Instructions

Use the command "radius default-config" to modify the default configuration of radius. When a user tries to create a new radius server without assigning these values, the default values will be used.

Instance

Modify the configuration of radius

Switch(config)# radius default-config timeout 20

Switch(config)# radius default-config key radiuskey

Switch(config)# radius default-config retransmit 5
Query radius configuration
Switch# show radius default-config
Retries| Timeout| Key
--------+--------+---------
5 | 20 | radiuskey radius host

Create a new radius server with the default
values above Switch(config)# radius host
192.168.1.111 Switch# show radius
Prio | IP Address | Auth-Port| Retries| Timeout| Usage-Type| Key
------+----------+----------+--------+----- ---+-----------+------
---
1 | 192.168.1.111 | 1812 | 5 | 20 | All |radiuskey

radius host

format

radius host HOSTNAME [auth-port <0-65535>] [key RADIUSKEY] [priority <0- 65535>] [retransmit <1-10>] [timeout <1-30>] [type (login|802.1x|all)]

no radius [host HOSTNAME]

parameter

host	Specify the radius server host name, IP address and domain name are available
auth-port	Specify the udp port number of the radius server
key	Specify the radius server key value
priority	Specify the radius server priority
retransmit	Specify the number of retransmissions by the radius server
timeout	Specify the radius server timeout period
type	Types, including: login, 802.1X authentication, login and 802.1x authentication

default

The default key of radius is ""
The default value of radius retransmission is 3 times
The default timeout of radius is 3 seconds

mode

Global configuration mode

Instructions

Use the command "radius host" to add or edit a radius server

Use no to delete one or more radius servers

Instance

Add a new radius server
Switch(config)# radius host 192.168.1.111 auth-port 12345 key radiuskey priority 100 retransmit 5 timeout 10 type all
Query radius
server. Switch#
show radius
Prio | IP Address | Auth-Port| Retries| Timeout| Usage-Type| Key
-----+----------+----------+--------+------- -+-----------+--------
-
100 | 192.168.1.111 | 12345 | 5 | 10 | All |radiuskey

show radius default-config

format

show radius default-config

parameter

default

mode

Privileged mode

Instructions

Use the command "show radius default-config" to query the radius configuration

Instance

Query radius configuration

Switch# show radius default-config

Retries| Timeout| Key

-------+--------+---------

5 | 20 |radiuskey

show radius

format **show radius**

parameter

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Privileged mode

Instructions

Use the command "show radius" to query the added radius server

Instance

Query the added radius server

Switch# show radius

Prio | IP Address | Auth-Port| Retries| Timeout| Usage-Type| Key

-----+----------------+----------+--------+------- -+-----------+--------

-

100 | 192.168.1.111| 12345 | 5 | 10 | All |radiuskey

9. ACL

mac acl

format

mac acl NAME
no mac acl NAME

parameter

NAME	Specify MAC ACL name

mode

Global configuration mode

Instructions

Use the command mac acl to create a MAC access list and enter the MAC acl configuration mode. The name of the ACL must be unique and cannot have the same name as other ACLs or QoS policies. After creating the ACL, create an implicit "deny any" ACE at the end of the ACL. That is, if there is no match, the packet is rejected.

Use no to delete the configuration

Instance

Create a mac acl. The configuration can be queried through the command show acl
Switch(config)# mac acl test
Switch(mac-al)# show acl
MAC access list test

---

permit (MAC)

format

[sequence <1-2147483647>] permit
(A:B:C:D:E:F/A:B:C:D:E:F|any) (A:B:C:D:E:F/A :B:C:D:E:F|any)
[vlan <1-4094>] [cos <0-7> <0-7>]
[ethtype <0x0600-0xFFFF>]
no sequence <1-2147483647>

parameter

sequence	(Optional) Specify the serial number of the ACE, the serial index represents Priority of ACE in ACL
A:B:C:D:E:F/A:B:C:D:E:F|any	Specify source or destination MAC address and mask or any
vlan	(Optional) Specify VLAN ID

cos	(Optional) Specify the COS value of 802.1P
ethtype	(Optional) Specify the value of the ether type

mode

MAC ACL configuration mode

Instructions

Use the command permit to add permission conditions for access to ACE for mac ACE that bypasses these packets. "Sequence" also indicates the priority of the ACL when binding to the interface. If the ACE is not specified
The "sequence" index will specify a sequence index, which is the maximum value of the existing index plus 20. If the message content can match multiple ACEs, the lowest sequence ACE will be hit. If it has the same conditions as an existing ACE, you cannot add an ACE.

Instance

Add a source MAC address of 22:33:44:55:66:77, VLAN 3 and Ethernet type 1999 ACE of the packet. The settings can be verified by the following show acl command Switch (config)#
mac acl test
Switch (mac-al)# sequence 999 permit 22:33:44:55:66:77/FF:FF:FF:FF:FF:FF **any vlan 3 ethtype 0x2800** Switch(mac-al)#
show acl MAC access list
test
sequence 999 permit 22:33:44:55:66:77/FF:FF:FF:FF:FF:FF any vlan 3 ethtype 0x2800

deny (MAC)

format

[sequence <1-2147483647>] deny (A:B:C:D:E:F/A:B:C:D:E:F|any) (A:B:C:D:E:F/A :B:C:D:E:F|any) [vlan <1-4094>] [cos <0-7> <0-7>] [ethtype
<0x0600-0xFFFF>]
[shutdown] no sequence <1-2147483647>

parameter

sequence	(Optional) Specify the serial number of the ACE, the serial index represents Priority of ACE in ACL
A:B:C:D:E:F/A:B:C:D:E:F|any	Specify source or destination MAC

	address and mask or any
vlan	(Optional) Specify VLAN ID
cos	(Optional) Specify the COS value of 802.1P
ethtype	(Optional) Specify the value of the ether type
shutdown	(Optional) Close interface when ACE hits

default

mode

MAC ACL configuration mode

Instructions

Use commanddeny adds a deny condition for mac ACE, so that the dropped packets hit the ACE. "Sequence" also indicates the priority of hits when the ACL is bound to the interface. If ACE does not specify a "sequence" index, it will specify a sequence index, which is the maximum value of the existing index plus 20. If the package content can match multiple
ACE, hit the lowest sequence ACE. If it has the same conditions as the existing ACE, you cannot add the ACE. Use the command "shutdown" to shut down the interface when the ACE hits.

Add an ACE that rejects packets whose destination MAC address is aa:bb:cc:xx:xx:xx and VLAN 9. The settings can be verified by the following show acl command

Switch(config)# mac acl test

Switch(mac-al)# sequence 30 permit any any
Switch(mac-al)# deny any aa:bb:cc:00:0:00/FF:FF:FF:00:00:00 vlan 9 shutdown

Switch(mac-al)# show acl

MAC access list test

sequence 30 permit any any

sequence 50 deny any AA:BB:CC:00:00:00/FF:FF:FF:00:00:00 vlan 9 shutdown

ip acl

format

ip aclNAME

no ip acl NAME

parameter

NAME	Specify the name of the IPv4 ACL

default

mode

Global configuration mode

Instructions

Use the command ip acl to create an IPv4 access list and enter the ip acl configuration mode. The name of the ACL must be unique and cannot have the same name as other ACLs or QoS policies. After creating the ACL, create an implicit "deny any" ACE at the end of the ACL. That is, if there is no match, the packet is rejected.

Use no to delete the configuration

Create an IP ACL. You can verify the settings through the show acl command
Switch(config)#ip acl iptest
Switch(ip-al)# show acl
IP access list iptest

permit (IP)

format

[sequence <1-2147483647>] permit (<0- 255>|ipinip|egp|igp|hmp|rdp|ipv6| ipv6:rout|ipv6:frag|rsvp|ipv6:icmp|ospf|pim|l2tp|ip) (ABCD/ABCD|any) (ABCD/ABCD|any) [(dscp|precedence) VALUE]]
[sequence <1-2147483647>] permit icmp (ABCD/ABCD|any) (ABCD/ABCD|any) (<0-255>|echo-reply|destination-unreachable|source-quench|echo- request|router-advertisement |router-solicitation|time-exceeded|timestamp| timestamp-reply|traceroute|any) (<0- 255>|any) [(dscp|precedence) VALUE]
[sequence <1-2147483647>] permit tcp (ABCD/ABCD|any) (<0-65535>|echo|discard|daytime|ftp-data|ftp|telnet|smtp|time|hostname|whois|tacacs- ds| domain|www| pop2|pop3|syslog|talk|klogin|kshell|sunrpc|drip|PORT_RANG E|any) (ABCD/ABCD|any) (<0-65535>|echo|discard|daytime|ftp- data|ftp |telnet|smtp|time|hostname|whois| tacacs-ds|domain|www|pop2|pop3|syslog|talk|klogin|kshell|sunrpc|dri p|PORT_RANGE|any)[match-all TCP_FLAG] [(dscp| precedence) VALUE] [sequence <1-2147483647>] permit udp (ABCD/ABCD|any) (<0- 65535>|echo|discard| time|nameserver|tacacs-ds|domain|bootps|bootpc|tftp|sunrpc| ntp|netbios-ns|snmp| snmptrap|who|syslog|talk|rip|PORT_RANGE|any) (ABCD/ABCD|any) (<0- 65535>|echo|discard|time|nameserver|tacacs-ds|domain|bootps|bootpc|tftp|sunrpc|ntp|netbios-ns| snmp|snmptrap|who|syslog|PORT_RANGE|any) [(dscp|precedence) VALUE] no sequence <1-2147483647>

parameter

sequence	(Optional) Specify the sequence index of the sequence number to indicate the priority of the ACE in the ACL.
ABCD/ABCD|any	Specify the source and destination IPv4 address and mask of the packet or any IPv4 address.
dscp	(Optional) Specify the DSCP of the packet

precedence	(Optional) Specify the ip precedence of the message
icmp-type	Specify the ICMP message type used to filter ICMP packets. Input list Type name or number of ICMP message types.
icmp-code	Specify the ICMP message code used to filter ICMP packets
l4-source-port	Specify the TCP/UDP source port number to filter TCP/UDP data packets
l4-destination-port	Specify the TCP/UDP destination port number to filter TCP/UDP data packets
match-all	Specifies the tag of TCP packets. If you want to set a flag, its prefix is \"+\". If the flag should be unset, the prefix of the flag is \"-\". Available options are +urg, +ack, +psh, +rst, +syn, +fin,- urg, -ack, -psh, -rst, -syn, and -fin. To define multiple targets Please input other signs without spaces (for example, +syn ack).

default

mode

IP ACL configuration mode

Instructions

Use the command permit to add permission conditions for the IP ACE that bypasses these packets to access the ACE. "Sequence" also indicates the priority of hits when the ACL is bound to the interface. If ACE is not specified
The "sequence" index will specify a sequence index, which is the maximum value of the existing index plus 20. If the message content can match multiple ACEs, the lowest sequence ACE will be hit. If it has the same conditions as an existing ACE, you cannot add an ACE.

Instance

Add and set an ACE. Use the following command show acl to view the IP subnets allowed by the configuration

Switch(ip-al)# permit ip 192.168.1.0/255.255.255.0

Allowed ICMP request message

Switch(ip-al)# permit icmp any any echo-request any

Allow any IP address HTTP packet through DSCP
5 Switch(ip-al)# permit tcp any any any www dscp
5

Allow any source IP address SNMP packet to connect to the destination IP address
192.168.1.1

Switch(ip-al)# permit udp any any 192.168.1.1/255.255.255.255 snmp

---

Switch(ip-al)# show acl

IP access list iptest
sequence 1 permit ip 192.168.1.0/255.255.255.0 any sequence 21 permit icmp any any echo-request any sequence 41 permit tcp any any any www dscp 5
sequence 61 permit udp any any 192.168.1.1/255.255.255.255 snmp

deny (IP)

format

[sequence <1-2147483647>] deny (<0- 255>|ipinip|egp|igp|hmp|rdp|ipv6|
ipv6:rout|ipv6:frag|rsvp|ipv6:icmp|ospf|pim|l2tp|ip) (ABCD/ABCD|any)
(ABCD/ABCD|any) [(dscp|precedence) VALUE]]
[sequence <1-2147483647>] deny icmp (ABCD/ABCD|any)
(ABCD/ABCD|any) (<0-255>|echo-reply|destination-unreachable|source-
quench|echo- request|router-advertisement |router-solicitation|time-
exceeded|timestamp| timestamp-reply|traceroute|any) (<0- 255>|any)
[(dscp|precedence) VALUE]
[sequence <1-2147483647>] deny tcp (ABCD/ABCD|any) (<0-
65535>|echo|discard|daytime|ftp-
data|ftp|telnet|smtp|time|hostname|whois|tacacs- ds| domain|www|
pop2|pop3|syslog|talk|klogin|kshell|sunrpc|drip|PORT_RANG E|any)
(ABCD/ABCD|any) (<0-65535>|echo|discard|daytime|ftp- data|ftp
|telnet|smtp|time|hostname|whois| tacacs-
ds|domain|www|pop2|pop3|syslog|talk|klogin|kshell|sunrpc|dri
p|PORT_RANGE|any)[match-all TCP_FLAG] [(dscp| precedence)
VALUE] [sequence <1-2147483647>] deny udp (ABCD/ABCD|any) (<0-
65535>|echo|discard| time|nameserver|tacacs-
ds|domain|bootps|bootpc|tftp|sunrpc| ntp|netbios-ns|snmp|
snmptrap|who|syslog|talk|rip|PORT_RANGE|any) (ABCD/ABCD|any)
(<0- 65535>|echo|discard|time|nameserver|tacacs-
ds|domain|bootps|bootpc|tftp|sunrpc|ntp|netbios-ns|
snmp|snmptrap|who|syslog|PORT_RANGE|any) [(dscp|precedence)
VALUE] no sequence <1-2147483647>

parameter

sequence	(Optional) Specify the sequence index of the sequence number to indicate the priority of the ACE in the ACL.

ABCD/ABCD|any	Specify the source and destination IPv4 address and mask of the packet or any IPv4 address.

dscp	(Optional) Specify the DSCP of the packet
precedence	(Optional) Specify the ip precedence of the message
icmp-type	Specify the ICMP message type used to filter ICMP packets. Input list Type name or number of ICMP message types.
icmp-code	Specify the ICMP message code used to filter ICMP packets
l4-source-port	Specify the TCP/UDP source port number to filter TCP/UDP data packets
l4-destination-port	Specify the TCP/UDP destination port number to filter TCP/UDP data packets
match-all	Specifies the tag of TCP packets. If you want to set a flag, its prefix is \"+\". If the flag should be unset, the prefix of the flag is \"-\". Available options are +urg, +ack, +psh, +rst, +syn, +fin,- urg, -ack, -psh, -rst, -syn, and -fin. To define multiple targets Please input other signs without spaces (for example, +syn ack).

default

mode

IP ACL configuration mode

Instructions

Use the command deny to add deny conditions to the IP ACE that discards these packets.

"Sequence" also means
The hit priority when the ACL is bound to the interface. If ACE does not specify a "sequence" index, it will specify a sequence index, which is the maximum value of the existing index plus 20. If the message content can match multiple ACEs, the lowest sequence ACE is hit. If it has the same conditions as an existing ACE, you cannot add an ACE.

Make the command "shutdown" shut down the interface when the ACE hits.

Instance

Add an ACE that rejects packets whose source IP address is 192.168.1.80. The settings can be verified by the following show acl command

Switch(config)# ip acl iptest

Switch(ip-al)# deny ip 192.168.1.80/255.255.255.255 any

Switch(ip-al)# show acl
IP access list iptest
sequence 1 deny ip 192.168.1.80/255.255.255.255 any

ipv6 acl

format

Ipv6 acl NAME
no ipv6 acl NAME

parameter

NAME	Specify the name of the IPv6 ACL

default

mode

Global configuration mode

Instructions

Use the command ipv6 acl to create an IPv6 access list and enter the ipv6 acl configuration mode. The name of the ACL must be unique and cannot have the same name as other ACLs or QoS policies. After creating the ACL, create an implicit "deny any" ACE at the end of the ACL. That is, if there is no match, the packet is rejected.

Use no to delete the configuration

Instance

Create an IPv6 ACL. You can verify the settings with the show acl command Switch(config)#ip acl ipv6test
Switch(ip-al)# show acl
IPv6 access list ipv6test

permit (IPv6)

format

[sequence <1-2147483647>] permit (<0-255>|ipv6) (X:X::X:X/<0-128>|any) (X:X::X:X/<0-128>|any)[(dscp|precedence) VALUE]
[sequence <1-2147483647>] permit icmp (X:X::X:X/<0-128>|any)(X:X::X:X/<0-128>|any) (<0-255>|destination-unreachable|packet- too-big|time-exceeded|parameter-problem|echo-request|echo-reply| mld- query|mld-report|mldv2-report|mld-done| router-solicitation|router- advertisement|nd-ns|nd-na|any) (<0-255>|any)[(dscp|precedence) VALUE] [sequence <1-2147483647>] permit

tcp (X:X::X:X/<0- 128>|any) (<0- 65535>|echo|discard|daytime|ftp-data|ftp|telnet|smtp| time|hostname|whois|tacacs-ds|domain|www|pop2|pop3|syslog|talk|klogin|kshell|sunrpc|drip|PORT_RANGE| any) (X:X::X: X/<0-128>|any) (<0-65535>|echo|discard|daytime|ftp-data|ftp|telnet|smtp|time|hostname|whois|tacacs-ds|domain|www|pop2| pop3 |syslog|talk|klogin|kshell|sunrpc|drip|PORT_RANGE|any) [match-all TCP_FLAG] [(dscp|precedence) VALUE]
[sequence <1-2147483647>] permit udp (X:X::X:X/<0- 128>|any)(<0-65535>|echo|discard|time|nameserver|tacacs-ds|domain| bootps |bootpc|tftp|sunrpc|ntp|netbios-ns|snmp|snmptrap|who|syslog|talk|rip|PORT_RANGE|any) (X:X::X:X/<0- 128>|any) (<0 -65535>|echo|discard|time|nameserver|tacacs-ds|domain| bootps|bootpc|tftp|sunrpc|ntp|netbios-ns| snmp|snmptrap|who|syslog|PORT_RANGE|any) [(dscp|precedence) VALUE] no sequence <1-2147483647>

parameter

sequence	(Optional) Specify the sequence index of the sequence number to indicate the priority of the ACE in the ACL.
(X:X::X:X/<0-128>|any)	Specify the source and destination IP addresses and masks of IPv6 packets or whatever.
dscp	(Optional) Specify the DSCP of the packet
precedence	(Optional) Specify the ip precedence of the message
icmp-type	Specify the ICMP message type used to filter ICMP packets. Type of input list Name or number of ICMP message types.
icmp-code	Specify the ICMP message code used to filter ICMP packets
l4-source-port	Specify the TCP/UDP source port number to filter TCP/UDP data packets
l4-destination-port	Specify the TCP/UDP destination port number to filter TCP/UDP data packets
match-all	Specifies the tag of TCP packets. If you want to set a flag, its prefix is \"+\". If the flag should be unset, the prefix of the flag is \"-\". Available options are +urg, +ack, +psh, +rst, +syn, +fin, -urg, -ack, -psh, -rst, -syn, and -fin. If you want to define multiple flags, please enter one by one without spaces Other signs (for example, +syn ack).

default

mode

IPv6 ACL configuration mode

Instructions

Use the command permit to add permission conditions to access the

ACE for the IPv6 ACE that bypasses these packets. "Sequence" also indicates the priority of hits when the ACL is bound to the interface. If ACE is not specified
The "sequence" index will specify a sequence index, which is the maximum value of the existing index plus 20. If the message content can match multiple ACEs, the lowest sequence ACE will be hit. If it has the same conditions as an existing ACE, you cannot add an ACE.

Instance

Add and set up an ACE. The settings can be verified by the following show acl command. Allowed IPv6 subnet

Switch(ipv6-al)# permit permit ipv6 fe80:1122:3344:5566::1/64 any

Switch(ipv6-al)# show acl

IPv6 access list ipv6test

sequence 1 permit ipv6 fe80:1122:3344:5566::1/64 any

deny (IPv6)

format

[sequence <1-2147483647>] deny (<0-255>|ipv6) (X:X::X:X/<0-128>|any) (X:X::X:X/<0-128 >|any)[(dscp|precedence) VALUE]

[sequence <1-2147483647>] deny icmp (X:X::X:X/<0-128>|any)(X:X::X:X/<0-128>|any) (<0-255>|destination-unreachable|packet- too-big|time-exceeded|parameter-problem|echo-request|echo-reply| mld- query|mld-report|mldv2-report|mld-done| router-solicitation|router- advertisement|nd-ns|nd-na|any) (<0-255>|any)[(dscp|precedence) VALUE] [sequence <1-2147483647>] deny tcp (X:X::X:X/<0- 128>|any) (<0- 65535>|echo|discard|daytime|ftp-data|ftp|telnet|smtp| time|hostname|whois|tacacs-ds|domain|www|pop2|pop3|syslog|talk|klogin|kshell|sunrpc|drip|PORT_RANGE|

---

any) (X:X::X:X/<0-128>|any) (<0-65535>|echo|discard|daytime|ftp-data|ftp|telnet|smtp|time|hostname|whois|tacacs -ds|domain|www|pop2| pop3|syslog|talk|klogin|kshell|sunrpc|drip|PORT_RANGE|any) [match-all TCP_FLAG] [(dscp|precedence) VALUE]
[sequence <1-2147483647>] deny udp (X:X::X:X/<0- 128>|any)(<0-65535>|echo|discard|time|nameserver|tacacs-ds|domain| bootps |bootpc|tftp|sunrpc|ntp|netbios-ns|snmp|snmptrap|who|syslog|talk|rip|PORT_RANGE|any) (X:X::X:X/<0- 128>|any) (<0 -65535>|echo|discard|time|nameserver|tacacs-ds|domain| bootps|bootpc|tftp|sunrpc|ntp|netbios-ns| snmp|snmptrap|who|syslog|PORT_RANGE|any) [(dscp|precedence) VALUE] [shutdown]

no sequence <1-2147483647>

parameter

sequence	(Optional) Specify the sequence index of the sequence number to indicate the priority of the ACE in the ACL.

(X:X::X:X/<0-128>|any)	Specify the source and destination IP addresses and masks of IPv6 packets or whatever.
dscp	(Optional) Specify the DSCP of the packet
precedence	(Optional) Specify the ip precedence of the message
icmp-type	Specify the ICMP message type used to filter ICMP packets. Type of input list Name or number of ICMP message types.
icmp-code	Specify the ICMP message code used to filter ICMP packets
l4-source-port	Specify the TCP/UDP source port number to filter TCP/UDP data packets
l4-destination-port	Specify the TCP/UDP destination port number to filter TCP/UDP data packets
match-all	Specifies the tag of TCP packets. If you want to set a flag, its prefix is \"+\". If the flag should be unset, the prefix of the flag is \"-\". Available options are +urg, +ack, +psh, +rst, +syn, +fin, -urg, -ack, -psh, -rst, -syn, and -fin. If you want to define multiple flags, please enter one by one without spaces Other signs (for example, +syn ack).
shutdown	(Optional) Close interface when ACE hits

default

mode

IPv6 ACL configuration mode

Instructions

Use the deny command to add deny conditions to the IPv6 ACE that discards these packets. "Sequence" also means

The hit priority when the ACL is bound to the interface. If the ACE does not specify the "sequence" index, a sequence index will be assigned, which is the largest existing index plus 20. If the package content can match multiple ACEs, the lowest sequence ACE will be hit. If it has the same conditions as an existing ACE, you cannot add an ACE.

Instance

Add an ACE that rejects packets whose destination IP address is fe80::abcd. The settings can be verified by the following show acl command

Switch(config)# ipv6 acl ipv6test

Switch(ip-al)# deny ipv6 any fe80::abcd/128 Switch(ip-al)# show acl

IPv6 access list ipv6test

sequence 1 deny ipv6 any fe80::abcd/128

bind acl

format

(mac|ip|ipv6) acl NAME
no (mac|ip|ipv6) acl NAME

parameter

(mac|ip|ipv6)	Specify an ACL type binding interface
NAME	Specify the name of the ACL

default

mode

Interface configuration mode

Instructions

Use the command (mac|ip|ipv6) acl NAME to bind the ACL to the interface. Interface can only be bound to one ACL or QoS
Strategy.

Use no to unbind

Instance

Bind ACL to interface
switch(config)# interface ge1
switch(config-if)# mac acl test
switch(config-if)# do show running-config interfaces ge1
interface ge1 mac acl test

show acl

format

show acl
show (mac|ip|ipv6) acl
show (mac|ip|ipv6) acl NAME

parameter

(mac|ip|ipv6)	Specify an ACL type binding interface
NAME	Specify the name of the ACL

default

mode

Global
configuration
mode
privileged
mode

Instructions

Use the show acl command to display the created acl. You can use mac, ip, or ipv6 to display a specific type of ACL, or use a unique name string to display an ACL with that name.

Instance

Query all IP ACL
Switch(config)# show ip
acl IP access list iptest

sequence 1 deny ip 192.168.1.80/255.255.255.255 any

show acl utilization

format

show acl utilization

parameter

default

mode

Global configuration mode

Instructions

Use the command show acl utilization to display the usage of ASIC's PIE. When an ACL is bound to an interface, it requires ASIC resources to help filter packets. ASIC has limited resources. This command helps you understand AISC's PIE usage.

Instance

Query usage

Switch(config-if)# do show acl utilization

Type: sys usage: 128
Type: mac ACL usage: 128
Type: IPv4 ACL usage: 128
Type: IPv6 ACL usage: 128

3.0Administration

configure

format

configure

mode

Privileged configuration mode

Instructions

Make the command "configure" enter the global configuration mode. In the global configuration mode, the prompt will be displayed as "Switch(config)#"

Instance

Enter global configuration mode Switch# configure
Switch(config)#

clear arp

format

clear arp [ABCD]

parameter

ABCD	Specify the ARP address to be cleared

mode

Privileged mode

Instructions

Use the command "clear arp" to clear one or all ARP entries

Instance

Clear all ARP entries
Switch(config)# clear arp

clear service

format

clear (telnet | ssh)

parameter

telnet	Cancel all telnet sessions
ssh	Cancel all ssh sessions

default

mode

Privileged mode

Instructions

Use the command "clear service" to cancel a certain session service

Instance

Cancel telnet session
Switch# clear telnet

enable

format

enable [<1-15>]
disable [<1-14>]

parameter

enable	Specify a privilege level to enable
disable	Specify a certain privilege level to enable

default

If the privilege level is not specified on the enable command, the default privilege level is 15. If the permission level is not specified on the disable command, the default permission level is 1.

mode

Privileged mode

Instructions

Use the command "enable" to enter the privileged mode and perform more operations on the switch. Use the command "disable" command to specify the required permission level.

In privileged mode, the prompt will display "Switch#"

Instance

Enable in privileged mode and view the level

```
Switch> enable
Switch# show privilege
Current CLI Username: admin
Current CLI Privilege: 15
```

Disable and set the privilege level to 3

```
Switch# disable 3
Switch> show privilege
 Current CLI Privilege: 3
```

end

format

end

parameter

default

mode

All modes

Instructions

Use the command "end" to return to privileged mode

Instance

Enter interface configuration mode, and then use end fallback mode

```
Switch# configure
Switch(config)# interface
ge1 Switch(config-if)# end
Switch#
```

---

exit

format

exit

parameter

default

mode

All modes

Instructions

Use the exit command to close the current CLI session

Instance

Use the command exit to exit the current mode
Switch> enable
Switch# exit
Switch>

history

format

history <*1-256*>
no history

parameter

history	Maximum number of CLI history records

default

The default maximum number of history records is 128.

mode

Line configuration mode

Instructions

Use the command "history" to be the largest command history number of the CLI running on the console, telnet, or ssh service. Each command entered will be recorded in the history buffer. If all history commands exceed the configured history number, the old commands will be deleted from the buffer.
Use the command "no history" to cancel the
history record function Use the command "show
history" to view all history records

Instance

Configure the serial port command history record to 100, telnet to 150, and ssh to 200
Switch(config)# line console
Switch(config-line)# history 100
Switch(config-line)# exit
Switch(config)# line telnet
Switch(config-line)# history 150
Switch(config-line)# exit
Switch(config)# line ssh
Switch(config-line)# history 200
Switch(config-line)# exit

Query line type
information
Switch# show
line Console
==========
Session Timeout: 10 (minutes)
History Count: 100 Password Retry :
3 Silent Time : 0 (seconds)

Telnet
==========
Telnet Server: disabled Session Timeout: 10 (minutes) History Count:
150 Password Retry : 3
Silent Time : 0
(seconds) SSH
==========
SSH Server : disabled Session Timeout: 10 (minutes) History Count:
200 Password Retry : 3
Silent Time : 0 (seconds)

View historical command records
Switch# show history
Maximun History Count: 100
---

1. enable
2. configure
3. line console
4. exit
5. show history
6. line
7. exit
8. show history
9. configure
10. line
11. line console
12. exit
13. line console
14. history 100
15. exit

16. show history
17. exit
18. show history

hostname

format

hostname *WORD*

parameter

WORD	Specify the name of the switch

default

The default name of the switch is "Switch".

mode

Global configuration mode

Instructions

Use the command "hostname" to modify the name of the switch

Instance

Edit name
Switch(config)# hostname myname
myname(config)#

interface

format

interface IF_PORTS
interface range IF_PORTS

parameter

IF_PORTS	Specify the port to be selected. His parameters allow partial port names and ignore case. For example: fa1, FastEthernet3, Gigabit4 If a port range is specified, the list format is also available. For example: fa1,3,5,fa2,gi1-3

default

mode

Global configuration mode

Instructions

Some configurations are port-based. In order to configure these configurations, we need to enter the interface configuration mode to configure them. Use the command "interface" to enter the interface configuration mode and select the port to be configured.

Instance

Enter interface configuration mode
Switch# configure
Switch(config)# interface
fa1 Switch(config-if)#

ip address

format

ip addressABCD [mask ABCD]

parameter

address	Specify the switch IPv4 address
mask	Specify IP address mask

default

The default IP address of the switch is 192.168.2.1, and the mask is 255.255.255.0.

mode

Global configuration mode

Use the command "ip address" to modify the management IPv4 address of the switch. This address is very important. When we try to use telnet, ssh, http, https, snmp... to connect to the switch, we need to use this ip address to access it

Instance

Configure management address

Switch(config)# ip address 192.168.1.200 mask 255.255.255.0

Query management address

Switch# show ip
IP Address: 192.168.1.200
Subnet Netmask: 255.255.255.0
Default Gateway: 192.168.1.254

ip default-gateway

format

ip default-gatewayABCD
no ip default-gateway

parameter

ABCD	Specify the default gateway address for switch management

default

The default management gateway address of the switch is 192.168.2.254.

mode

Global configuration mode

Use the command "ip default-gateway" to modify the default gateway address of the switch management IP address.

Instance

Modify the default gateway of the management address
Switch(config)# ip default-gateway 192.168.1.100

Query management address
Switch# show ip
IP Address: 192.168.1.1
Subnet Netmask: 255.255.255.0
Default Gateway: 192.168.1.100

ip dhcp

format

ip dhcp
no ip dhcp

parameter

default

The default DHCP client is closed.

mode

Global configuration mode

Instructions

Use the command "ip dhcp" to enable the DHCP client function and obtain an IP address from the DHCP server

Instance

Enable the DHCP client function

Switch(config)# ip dhcp

Query DHCP client configuration Switch# show ip dhcp DHCP Status: enabled

ip dns

format

ip dns ABCD [ABCD]

no ip dns [ABCD]

parameter

ABCD	Specify the IP address of the DNS server

default

mode

Global configuration mode

Instructions

Use the command "ip dns" to specify the IP address of the DNS server.

Instance

Configure DNS

Switch(config)# ip dns 111.111.111.111 222.222.222.222

Query DNS
Switch# show ip dns
DNS lookup is enabled

DNS Server 1: 111.111.111.111
DNS Server 2: 222.222.222.222

ip dns lookup

format

ip dns lookup
no ip dns lookup

parameter

default

DNS lookup is enabled by default.

mode

Global configuration mode

Instructions

Use the command "ip dns lookup" to enable the domain name to IP address service

Instance

Enable DNS
Switch(config)# ip dns lookup

Query DNS
Switch# show ip dns
DNS Server 1: 111.111.111.111
DNS Server 2: 222.222.222.222

ipv6 autoconfig

format

ipv6 autoconfig
no ipv6 autoconfig

parameter

default

IPv6 auto configuration is enabled by default.

mode

Global configuration mode

Instructions

Use the command "ipv6 autoconfig" to enable IPv6 automatic configuration.

Instance

Disable IPv6 automatic configuration

```
Switch(config)# no ipv6 autoconfig
```

Query IPv6

```
Switch# show ipv6
###### Config ######
                State:
      enabled Auto Config:
      disabled
              DHCPv6:
            disabled
            Gateway: ::

###### Status ######
        IP Address:
fe80::1e2a:a3ff:fec4:292/64 Default
Gateway: ::
```

---

ipv6 address

format

ipv6 address *X:X::X:X* **prefix** *<0-128>*

parameter

address	Specify the switch IPv6 address
prefix	Specify IPv6 address prefix

default

mode

Global configuration mode

Instructions

Use the command "ipv6 address" to configure a static IPv6 address

Instance

Configure IPv6 address

Switch(config)# ipv6 address fe80::20e:2eff:fef1:4b3c prefix 128

Query IPv6 address

Switch# show ipv6

```
###### Config ######
                State:
      enabled Auto Config:
      disabled
              DHCPv6:
             disabled
             Gateway: ::
       IP Address: fe80::20e:2eff:fef1:4b3c/128

###### Status ######
       IP Address:
       fe80::1e2a:a3ff:fec4:292/64 IP
       Address: fe80::20e:2eff:fef1:4b3c/128
Default Gateway: ::
```

---

ipv6 default-gateway

format

ipv6 default-gateway *X:X::X:X*

parameter

default-gateway	Default IPv6 gateway address

default

Use the command "ipv6 default-gateway" to modify the default IPv6 gateway address.

mode

Global configuration mode

Instructions

Configure IPv6 gateway address

Switch(config)# ipv6 default-gateway fe80::dcad:beff:feef:103

Query IPv6

Switch# show ipv6

Config
State:
enabled Auto Config:
disabled
DHCPv6: disabled
Gateway: fe80::dcad:beff:feef:103
IP Address: fe80::20e:2eff:fef1:4b3c/128

Status
IP Address:
fe80::1e2a:a3ff:fec4:292/64 IP
Address: fe80::20e:2eff:fef1:4b3c/128
Default Gateway: ::

Instance

How to add a login authentication list to use tacacs+

ipv6 dhcp

format

ipv6 dhcp
no ipv6 dhcp

parameter

default

The default IPv6 DHCP client is disabled.

mode

Global configuration mode

Instructions

Use the command "ipv6 dhcp" to enable the dhcpv6 client to obtain an IP address from the remote dhcpv6 server

Instance

Enable IPv6 DHCP
Switch(config)# ipv6 dhcp

Query IPv6 DHCP
Switch# show ipv6 dhcp
DHCPv6 Status: enabled

---

ip service

format

ip (telnet | ssh | http | https)
no ip (telnet | ssh | http | https)

parameter

telnet	Enable or disable telnet service
ssh	Enable or disable ssh service
http	Enable or disable http service
https	Enable or disable https service

default

The telnet service is disabled by default
ssh service is disabled by default
http service is disabled by default
https service is disabled by default

mode

Global configuration mode

Instructions

Use the command "ip service" to enable various ip services. For example, telnet, ssh, http, and https.

Instance

Enable telnet service
and query
Switch(config)# ip telnet
Telnetd daemon
enabled. Switch(config)#
exit Switch# show line
telnet Telnet
==========

Telnet Server: enabled

Session Timeout: 10
(minutes) History Count: 128
Password Retry : 3
Silent Time : 0
(seconds)

Enable HTTPS service
and query
Switch(config)# ip https
Switch(config)# exit

Switch# show ip https
HTTPS daemon:
enabled
Session Timeout: 10 (minutes)

ip session-timeout

format

ip(http | https) session-timeout <0-86400>

parameter

http	Set the timeout period of http service type
https	Set the timeout period of the https service type
session-timeout	Timeout time, in minutes, 0 means never timeout

default

The default timeout time for http and https services is 10 minutes

mode

Global configuration mode

Instructions

Use the command "ip session-timeout" to set the timeout period for http and https service types.

Instance

Configure http and https timeout

Switch(config)# ip http session-timeout 15
Switch(config)# ip https session-timeout 20

Query http timeout time
Switch# show ip http
HTTPS daemon:
enabled
Session Timeout: 15 (minutes)

Query the timeout of
https Switch# show ip
https HTTPS daemon:
disabled
Session Timeout: 20 (minutes)

ip ssh

format

ip ssh(v1|v2|all)
no ip ssh (v1|v2|all)

parameter

v1	Generate/delete version 1 key file
v2	Generate/delete version 2 key file
all	Generate/delete version 1 and 2 key files

default

The default SSH version is V2

mode

Global configuration mode

Instructions

Use the command "ip ssh" to generate the key file for the ssh connection.

Instance

Cancel the SSH version file
Switch(config)# no ip ssh v2
Switch(config)# do show flash
File Name File Size
Modified
---------- ---------- ----------
startup-config 1913 2000-01-01 08:29:10
rsa1 976 2000-01-05 23:28:38
ssl_cert 875 2000-01-05 23:03:20
image0 (active) 4856825 2014-04-02 15:17:34

Configure SSH V2 file
Switch(config)# ip ssh
v2

Generating a SSHv2 default RSA Key.
This may take a few minutes, depending on the key size.

Generating a SSHv2 default DSA Key.
This may take a few minutes, depending on the key size.

Query FLASH files
Switch(config)# do show flash
File Name File Size Modified
---------- ---------- ----------

startup-config 1913 2000-01-01 08:29:10
rsa1 976 2000-01-05 23:28:38
rsa2 1675 2000-01-05 23:34:43
dsa2 668 2000-01-05 23:34:58
ssl_cert 875 2000-01-05 23:03:20
image0 (active) 4856825 2014-04-02 15:17:34

line

format

line (console | telnet | ssh)

parameter

console	Enter serial port mode configuration

telnet	Enter telnet mode to configure
ssh	Enter ssh mode configuration

default

mode

Global configuration mode

Instructions

Some configurations are line-based. In order to configure these configurations, we need to enter the row configuration mode to configure them. Use the command "line" to enter the line configuration mode and select the line to be configured.

Instance

Enter serial port configuration mode
Switch# configure
Switch(config)# line
console Switch(config-
line)#

reboot

format

reboot

parameter

default

mode

Privileged mode

Instructions

Use the command "reboot" to warm up the system.

Instance

Reboot the system
Switch# reboot

enable password

format

enable [privilege <1-15>] (password UNENCRYPY-PASSWORD | secrect UNENCRYPY-PASSWORD | secret encrypted ENCRYPT-PASSWORD)
no enable [privilege <0-15>]

parameter

privilege	Specify permission level
password	Set the password string and make it unencrypted
secrect	Set the password string and make it encrypted
secret encrypted	Enter the encryption password. Use this keyword to enter the encrypted password (example For example, a password copied from the configuration file of another device

default

The default enable password for all permission levels is ""

mode

Global configuration mode

Instructions

Use the command "enable password" to edit the password of each permission level to enable authentication.

Instance

Edit the password of the permission level

Switch(config)# enable secret enblpasswd

exec-timeout

format

exec-timeout*<0-65535>*

parameter

<0-65535>	Specify the session timeout time, 0 means never timeout

default

The default timeout period for all login sessions is 10 minutes

mode

Line configuration mode

Instructions

Use the command "**exec-timeout**"On the serial port,The specified session timeout value of CLI running on telnet or ssh service. When logging in to the system CLI without doing any operation, the system will log out of the login session after the timeout period expires.

Instance

Modify the serial port timeout time to 15 minutes, telnet to 20 minutes and SSH to 25 minutes Switch(config)# line console
Switch(config-line)# exec-timeout 15
Switch(config-line)# exit
Switch(config)# line telnet
Switch(config-line)# exec-timeout 20
Switch(config-line)# exit

Switch(config)# line ssh

Switch(config-line)# exec-timeout 25

Switch(config-line)# exit

Query configuration

Switch# show line

Console

==========

Session Timeout: 15
(minutes) History Count: 128
Password Retry : 3
Silent Time : 0
(seconds)

Telnet

==========

Telnet Server: disabled
Session Timeout: 20
(minutes) History Count: 128
Password Retry : 3
Silent Time : 0
(seconds)

SSH

==========

SSH Server : disabled
Session Timeout: 25
(minutes) History Count: 128
Password Retry : 3
Silent Time : 0
(seconds)

password-thresh

format

password-thresh <0-120>

parameter

<0-120>	The number of retries after password verification fails, 0 means no limit

---

default

The default number of retries is 3.

mode

Line configuration mode

Instructions

Use the command "password-thresh" to set the number of failed password retries for the CLI running on the console, telnet, or ssh service. When the password login authentication fails, the number of failed retries increases by one. After the number of failed retries exceeds the configured number, the CLI will block login during the silent time period configured by the command "silent time"

Instance

Configure password failure retry times
Switch(config)# line console
Switch(config-line)# password-thresh 4
Switch(config-line)# exit
Switch(config)# line telnet

Switch(config-line)# password-thresh 5
Switch(config-line) # exit
Switch(config)# line ssh
Switch(config-line)# password-thresh 6
Switch(config-line)# exit

Query line status
Switch# show
line Console
==========
Session Timeout: 10
(minutes) History Count: 128
Password Retry : 4
Silent Time : 0
(seconds) Telnet
==========
Telnet Server: disabled
Session Timeout: 10
(minutes) History Count: 128
Password Retry : 5
Silent Time : 0
(seconds) SSH
==========
SSH Server : disabled
Session Timeout: 10
(minutes) History Count: 128
Password Retry : 6
Silent Time : 0
(seconds)

ping

format

ping HOSTNAME [count <1-999999999>]

parameter

HOSTNAME	Specify IPv4/IPv6 address or domain name to ping
count	Configure the number of pings

default

mode

Privileged mode

Instructions

Use the command "ping" for network diagnosis.

Instance

ping remote host
192.168.1.111. Switch#
ping 192.168.1.111

PING 192.168.1.111 (192.168.1.111): 56 data bytes
64 bytes from 192.168.1.111: icmp_seq=0 ttl=128 time=10.0
ms 64 bytes from 192.168.1.111: icmp_seq=1 ttl=128
time=0.0 ms 64 bytes from 192.168.1.111: icmp_seq=2
ttl=128 time=0.0 ms 64 bytes from 192.168.1.111:
icmp_seq=3 ttl=128 time=0.0 ms

--- 192.168.1.111 ping statistics ---
4 packets transmitted, 4 packets received, 0% packet
loss round-trip min/avg/max = 0.0/2.5/10.0 ms

traceroute

format

traceroute ABCD [max_hop <2-255>]

parameter

ABCD	Specify IPv4 address for traceroute
max_hop	Maximum next hop

default

mode

Privileged mode

Instructions

Use the command "traceroute" for network diagnosis.

Instance

Traceroute remote host 192.168.1.111.

Switch# traceroute 192.168.1.111

traceroute to 192.168.1.111 (192.168.1.111), 30 hops max, 40 byte packets

1 192.168.1.111 (192.168.1.111) 0 ms 10 ms 0 ms

silent-time

format

silent-time <0-65535>

parameter

<0-65535>	Quiet time, in seconds, 0 means never silent.

default

The default is 0.

mode

Line configuration mode

Instructions

Use the command "silent time" to set the silent time for the CLI running on the console, telnet or ssh service. When the user enters a password to log in and fails to verify, the number of failed retries will increase by one. After the number of failed retries exceeds the configured number, the CLI will block login during the silent time period configured by the "silent time" command.

Instance

Configure quiet time

Switch(config)# line console

Switch(config-line)# silent-time 10

Query line
information
Switch# show
line Console

==========

Session Timeout: 10
(minutes) History Count: 128

Password Retry : 3

Silent Time : 10 (seconds)

---

ssl

format

ssl

parameter

default

mode

Global configuration mode

Instructions

Use the command "ssl" to generate a security certificate file, such as RSA, DSA

Instance

Configure SSL
Switch(config)#
ssl

Query flash file
Switch# show flash
File Name File Size Modified
---------- ---------- ---------- ----------
startup-config 1191 2000-01-01 00:00:23
backup-config 1607 2000-01-01 08:36:23
rsa1 974 2000-01-01 00:00:18
rsa2 1675 2000-01-01 00:00:18
dsa2 668 2000-01-01 00:00:18
ssl_cert 993 2000-01-01 00:00:18

---

system name

format

system name NAME

parameter

NAME	Specify system name

default

The default system name is "Switch"

mode

Global configuration mode

Instructions

Use the command "system name" to specify the system name.

Instance

Configure system name
Switch(config)# system name myname
myname(config)#

system contact

format

system contact CONTACT

CONTACT	Specify contact information

default

mode

Global configuration mode

Instructions

Use the command "system contact" to specify the system contact information.

Instance

Configure contact information and query

Switch(config)# system contact callme

Switch# show info

System Name: Switch
System Location : Default
Location System Contact :
callme
MAC Address:
DE:AD:BE:EF:01:02 IP Address
: 192.168.1.1
Subnet Mask: 255.255.255.0
Loader Version :
1.3.0.26225
Loader Date: Thu May 17 15:19:42 CST 2012
Firmware Version: 2.5.0-beta.32811
Firmware Date : Mon Sep 24 19:33:42 CST
2012 System Object ID: 1.3.6.1.4.1.27282.3.2.10
System Up Time : 0 days, 0 hours, 2 mins, 37 secs

system location

format

system location LOCATION

LOCATION	Specify system local information

default

mode

Global configuration mode

Instructions

Use the command "system location" to specify system local information.

Instance

Configure contact information and query

```
Switch(config)# system location home
Switch# show info
System Name: Switch
System Location  :
home System Contact
                        :
MAC Address:
DE:AD:BE:EF:01:02 IP Address
                  : 192.168.1.1
Subnet Mask: 255.255.255.0
Loader Version    :
1.3.0.26225
Loader Date: Thu May 17 15:19:42 CST 2012
Firmware Version: 2.5.0-beta.32811
Firmware Date     : Mon Sep 24 19:33:42 CST
2012 System Object ID: 1.3.6.1.4.1.27282.3.2.10
System Up Time  : 0 days, 0 hours, 2 mins, 37 secs
```

terminal length

format

terminal length <0-24>

length	Set the length of the terminal printing table, 0 means never limit.

default

The default is 24.

mode

Privileged mode

Instructions

Use the command "terminal length" to set the maximum line number that the terminal can print.

Instance

Configure the terminal display line number

Switch# terminal length 3

Switch# show running-config SYSTEM CONFIG FILE ::= BEGIN

! System Description: RTK RTL8380-24FE-4GEC Switch

! System Version: v3.0.4.46766

--More--

username

format

username WORD<0-32> [privilege (admin|user|<0-15>)] (nopassword | password UNENCRYPY-PASSWORD | secrect UNENCRYPY-PASSWORD | secret encrypted ENCRYPT-PASSWORD)

no username WORD<0-32>

parameter

WORD<0-32>	User name, you can add, delete, modify by name
privilege admin	The permission level is administrator (privilege 15)
privilege user	The permission level is user (privilege 1)
privilege <0-15>	Custom user permission level
nopassword	No password
password	Unencrypted password string
secrect	Encrypted password string
secret encrypted	Enter the encrypted password string

default

The default user name is admin, the password is admin, and the permission level is 15.

mode

Global configuration mode

Instructions

Use the command "username" to add/modify a user.

Instance

Add a user

Switch(config)# username test secret passwd

Query all users of the system

Switch# show username

```
 Priv   |   Type   |                User Name                  |                Password
-------+--------+-------------------------------+ ----------------------
-----------
   15     | secret |                                    admin |
MjEyMzJmMjk3YTU3YTVhNzQzODk0YTBlNGE4MDFmYzM=
   15     | secret |                                     test |
NzZhMjE3M2JlNjM5MzI1NGU3MmZmYTRkNmRmMTAzMGE=
```

show arp

format

show arp

parameter

default

mode

Privileged mode

Instructions

Use the command "show arp" to query all ARP entries.

Instance

Query ARP entries

Switch# show arp

```
Address HWtype HWaddress    Flags Mask
                                Iface 192.168.1.111 ether
                                00:0E:2E:F1:4B:3C C  eth0
```

show cpu utilization

format

show cpu utilization

parameter

default

mode

Privileged mode

Instructions

Use the command "show cpu utilization" to query the CPU usage.

Instance

Query CPU usage
Switch# show cpu utilization
CPU utilization

Current: 30%

show history

format

show history

parameter

default

mode

Privileged mode

Instructions

Use the command "show history" to query the command line history.

Instance

Query historical information
Switch# show history
Maximun History Count: 100
---
1. enable
2. configure
3. line console
4. exit
5. show history
6. line
7. exit

8. show history
9. configure
10. line
11. line console
12. exit
13. line console
14. history 100

show info

format

show info

parameter

default

mode

Privileged mode

Instructions

Use the command "show info" to query the system summary information.

Instance

Query system summary information Switch# show info System Name: Switch
System Location : Default Location System Contact : Default Contact

---

MAC Address: DE:AD:BE:EF:01:02 IP Address : 192.168.1.1
Subnet Mask: 255.255.255.0
Loader Version : 1.3.0.26225
Loader Date: Thu May 17 15:19:42 CST 2012
Firmware Version: 2.5.0-beta.32811
Firmware Date : Mon Sep 24 19:33:42 CST 2012 System Object ID: 1.3.6.1.4.1.27282.3.2.10
System Up Time : 0 days, 1 hours, 49 mins, 29 secs

show ip

format

show ip

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip" to query the system management IP address.

Instance

Query IP address
Switch# show ip
IP Address: 192.168.1.200
Subnet Netmask: 255.255.255.0
Default Gateway: 192.168.1.254

---

show ip dhcp

format

show ip dhcp

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip dhcp" to query the IPv4 DHCP client enable status.

Instance

Query DHCP client configuration Switch# show ip dhcp DHCP Status: enabled

show ip dns

format

show ip dns

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip dns" to query the system IPv4 DNS address.

Instance

Query DNS
Switch# show ip dns
DNS lookup is enabled
DNS Server 1: 111.111.111.111
DNS Server 2: 222.222.222.222

show ip http

format

show ip (http|https)

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip http" to query http and https service information.

Instance

Switch# show ip http
HTTP daemon: enabled
Session Timeout: 10
(minutes)

show ipv6

format

show ipv6

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip" to query the system management IPv6 address.

Instance

Query IPv6 address

```
Switch# show ipv6
###### Config ######
                State:
      enabled Auto
      Config: enabled
              DHCPv6:
            disabled
            Gateway: ::

###### Status ######
        IP Address:
fe80::1e2a:a3ff:fec4:292/64 Default
Gateway: ::
```

show ipv6 dhcp

format

show ipv6 dhcp

parameter

default

mode

Privileged mode

Instructions

Use the command "show ipv6 dhcp" to query the system IPv6 status.

Instance

Query IPv6 DHCP
Switch# show ipv6 dhcp
DHCPv6 Status: enabled

show line

format

show line[(console | telnet | ssh)]

parameter

console	Query configuration in serial port mode
telnet	Query configuration in telnet mode
ssh	Query configuration in ssh mode

default

mode

Privileged mode

Instructions

Use the command "show line" to display all line configurations, including session timeout, history count, password retries, and silent time. For telnet and ssh, it also displays the service enable/disable status.

Instance

Query line
information
Switch# show
line Console
==========
Session Timeout: 15
(minutes) History Count: 128
Password Retry : 3
Silent Time : 0
(seconds)

Telnet
==========
Telnet Server: disabled

Session Timeout: 20
(minutes) History Count: 128
Password Retry : 3
Silent Time : 0
(seconds)

SSH

==========

SSH Server : disabled
Session Timeout: 25
(minutes)

History Count: 128
Password Retry : 3
Silent Time : 0
(seconds)

show memory statistics

format

show memory statistics

parameter

default

mode

Privileged mode

Instructions

Use the command "show memory statistics" to query system memory usage information.

Instance

Query memory usage information

```
Switch# show memory statistics
                total(KB)       used(KB)       free(KB)    shared(KB)    buffer(KB)
cache(KB)
--------------------+------------+------------+--- ---------+------------
+------------
Mem:             126192           70752           55440               0               0
0
-/+ buffers/cache:               70752           55440
Swap:                 0               0               0
```

---

show privilege

format

show privilege

parameter

default

mode

Privileged mode

Instructions

Use the command "show privilege" to query the privilege level of the current user.

Instance

Query the current user
privilege level Switch# show
privilege Current CLI
username: admin Current
CLI Privilege: 15

show username

format

show username

parameter

default

mode

Privileged mode

Instructions

Use the command "show username" to query current usage information.

Instance

Query user information
Switch# show username
Priv | Type | user Name | Password
------+--------+-------------------+------------ ----------
01 | secret | | dnXencJRwflV6
15 | secret | admin | FzjrGO6vfbERY

15 | secret | test | 7p57T9yMkViSUS

show users

format

show users

parameter

default

mode

Privileged mode

Instructions

Use the command "show users" to query the current active user information.

Instance

Query active user information
Switch# show users
username Protocol Location
--- --- ---
admin console 0.0.0.0
admin telnet 192.168.1.111
admin ssh 192.168.1.111

show version

format

show version

parameter

default

mode

Privileged mode

Instructions

Use the command "show version" to query the system loader and firmware version information.

Instance

Query version information

Switch# show version

Loader Version : 1.3.0.26225

Loader Date: Thu May 17 15:19:42 CST 2012
Firmware Version: 2.5.0-beta.32811

Firmware Date : Mon Sep 24 19:33:42 CST 2012

4. Authentication Manager

authentication

format

authentication (dot1x|mac|web)

no authentication (dot1x|mac|web)

parameter

default

All authentication is disabled by default

mode

Global configuration mode

Instructions

Use the command "authentication" to enable the global settings of 802.1x/MAC/WEB authentication network access control.

Instance

Enable 802.1x/MAC/WEB
authentication Switch(config)#
authentication dot1x Switch(config)#
authentication mac Switch(config)#
authentication web

Query certification

Switch# show authentication

Autentication dot1x state: enabled

Autentication mac state: enabled
Autentication web state: enabled
Guest VLAN: enabled (3)
Mac-auth Radius user ID Format: XXXXXXXXXXXX
……

authentication(Interface)

format

authentication (dot1x|mac|web)
no authentication (dot1x|mac|web)

parameter

default

All authentication is disabled by default

mode

Interface configuration mode

Instructions

Use the command "authentication" to enable 802.1x/MAC/WEB authentication network access control under the interface.

Instance

Enable interface 802.1x/MAC/WEB
authentication Switch(config)#
interface g1 Switch(config-if)#
authentication dot1x Switch(config-if)#
authentication mac Switch(config-if)#
authentication web

Query authentication under the interface
Switch# show authentication interface g1

Interface
GigabitEthernet11 Admin
Control : disable
Host Mode : multi-auth
Type dot1x State: enabled
Type mac State :
enabled Type web State :
enabled
……

authentication mac radius

format

authentication mac radius [mac-case (lower|upper)]
[mac- delimiter(colon|dot|hyphen|none) [gap (2|4|6)]]

parameter

mac-case	Select the radius user ID as uppercase or lowercase upper: uppercase; lower: lowercase
mac-delimiter	Select radius user ID separator colon: XX:XX:XX:XX:XX:XX; dot: XX.XX.XX.XX.XX.XX; hyphen: XX-XX-XX-XX-XX-XX; none: XXXXXXXXXXXX
gap	Select separator spacing 2: XX-XX-XX-XX-XX-XX; 4: XXXX-XXXX-XXXX 6: XXXXXX-XXXXXX

default

The default radius identifier format is upper, and the separator is none.

mode

Global configuration mode

Instructions

Use the command "authentication mac radius" to configure the format of the radius user ID.

Instance

Configure user ID format

Switch(config)# authentication mac radius mac-case upper

Switch(config)# authentication mac radius mac-delimiter colon gap 2

Query configuration
Switch# show authentication
Autentication dot1x state :
enabled Autentication mac state:
disabled Autentication web state:
disabled Guest VLAN: disabled

Mac-auth Radius user ID Format: XX:XX:XX:XX:XX:XX

……

authentication mac local

format

authentication mac local mac-addr control auth [vlan <1-4094>] [reauth-period <300-4294967294>] [inactive-timeout <60-65535>] authentication

mac local mac-addr control unauth
no authentication mac local mac-addr

parameter

mac-addr	Locally authenticated MAC address
control auth	The host using the MAC address needs to be authenticated
control unauth	The host using the MAC address is not authenticated
vlan	VLAN assigned by MAC authentication host
reauth- period	Recertification cycle
inactive-timeout	The inactive timeout period of the authentication host

default

MAC address authentication is not enabled by default

mode

Global configuration mode

Instructions

Use the command "authentication mac local" for local MAC authentication to the database.
When MAC authentication is
When "local", the local host database is used, and the MAC authentication module queries and authenticates the local host database
MAC address.

Instance

Add MAC local authentication
Switch(config)# authentication mac local 00:11:22:33:00:01 control auth vlan 3 reauth-period 500 inactive-timeout 300

Query certification
Switch# show authentication
……

Mac-auth Local Entry:
Reauth Inactive MAC Address Control VLAN Period Timeout
---------- ---------- ------ ----------- -------- 00:11:22:33:00:01
Authorized 3 500 300
……

authentication guest-vlan

format

authentication guest-vlan<1-4094>
no authentication guest-vlan

parameter

guest-vlan	Guest's VLAN ID

default

mode

Global configuration mode

Instructions

Use the command "authentication guest-vlan" to configure the guest's VLAN ID.

Instance

Add guest VLAN
Switch(config)# authentication guest-vlan 3

authentication guest-vlan (Interface)

format

authentication guest-vlan
no authentication guest-vlan

parameter

default

Disabled by default.

mode

Interface configuration mode

Instructions

Use the command "authentication guest-vlan" to enable the VLAN ID of the interface guest.

Instance

Enable VLAN Switch for
interface guest(config)#

interface gi1
Switch(config)# authentication guest-vlan

authentication host-mode

format

authentication host-mode (multi-auth|multi-host|single-host)
no authentication host-mode

parameter

multi-auth	Multiple authentication modes. In this mode, each client needs to be individually authenticated
multi-host	Multi-host mode. In this mode, only one client needs to be authenticated, other clients End will get the same accessibility
single-host	Single host mode. Only one host is allowed to be authenticated. Multi-authentication mode Same, the maximum number of hosts is configured as 1.

default

The default is multi-auth

mode

Interface configuration mode

Instructions

Use the command "authentication host-mode" to configure the host authentication mode.

Instance

Configure interface authentication mode
Switch(config)# interface gi1
Switch(config-if)# authentication host-mode multi-host

Query the authentication mode of the interface
Switch# show authentication interface gi1
Interface FastEthernet1
Admin Control : auto
Host Mode : multi-host
Type dot1x State: disabled

Type mac State :
disabled Type web State:
disabled
……

authentication max-hosts

format

authentication max-hosts<1-
256> no authentication max-hosts

parameter

max-hosts	The maximum number of hosts available in multiple authentication mode.

default

The maximum number of hosts in the system multi-identity authentication mode is 256.

mode

Interface configuration mode

Instructions

Use the command "authentication max-hosts" to configure the maximum number of hosts on the interface in multiple authentication mode. When the number of hosts exceeds the maximum, the creation of authentication sessions and authentication are not allowed.

Instance

Configure the maximum number of authentication hosts for the interface

```
Switch(config)# interface g1
Switch(config-if)# authentication max-hosts 100
```

Query authentication under interface

```
Switch# show mac-auth interface g1
Interface GigabitEthernet1
Admin Control      : disable
Host Mode    : multi-auth
Type dot1x State: disabled
Type mac State    :
disabled Type web State:
disabled
Type Order    : dot1x
MAC/WEB Method Order
                : radius Guest
```

VLAN: disabled
Reauthentication: disabled
Max Hosts : 100
……

authentication port-control

format

authentication port-control (auto|force-auth|force-unauth)
no authentication port-control

parameter

auto	Need to go through the authentication process to gain network accessibility
force-auth	The port is authorized by force, and all clients have network accessibility.
force-unauth	The port is forced to be unauthorized, and all clients have no network accessibility.

default

Disabled by default.

mode

Interface configuration mode

Instructions

Use the command "authentication port-control" to enable the port authentication control mode.

Instance

Configure port authentication control mode

Switch(config)# interface g1
Switch(config-if)# authentication port-control auto
Switch# show authentication interface g1
Interface GigabitEthernet1
Admin Control : auto
Host Mode : multi-auth
Type dot1x State: disabled
Type mac State :
disabled Type web State:
disabled
……

clear authentication sessions

format

clear authentication sessions
clear authentication sessions interfaces
IF_PORTS clear authentication sessions mac
mac-addr clear authentication sessions session-
id WORD
clear authentication sessions type (dot1x|mac|web)

parameter

interfaces	Clear according to interface
mac	Clear by MAC
session-id	Clear according to session ID
type	Clear according to session authentication type

default

mode

Privileged mode

Instructions

Use the command "clear authentication sessions" to delete existing sessions. If no parameters are specified, all sessions will be deleted. After the session is deleted, the user needs to re-authenticate.

Instance

Clear all sessions and query
Switch# clear authentication sessions
Switch# show authentication sessions
No Auth Manager sessions currently
exist

show authentication

format

show authentication

show authentication interfaces *IF_PORTS*

parameter

interfaces	Query authentication information through the specified interface

default

mode

Privileged mode

Instructions

Use the command "show authentication" to query all authentication configurations. Use the command "show authentication interface" to query the authentication configuration under the interface.

Instance

Check all certifications
Switch# show authentication
Autentication dot1x state :
enabled Autentication mac state :
disabled Autentication web state:
disabled Guest VLAN: disabled
Mac-auth Radius user ID Format: XXXXXXXXXXXX

Mac-auth Local Entry:
Reauth Inactive MAC Address Control VLAN Period Timeout
---------- ---------- ------ ----------- -------- 00:11:22:33:44:55
Authorized 3 30000 123

Web-auth Local Entry:
Reauth Inactive
user Name VLAN Period Timeout
---------- ------ ---------- - ------- acct1 5
12345 333

Interface Configurations Interface
GigabitEthernet1 Admin Control : disable
Host Mode : multi-auth
Type dot1x State: disabled
Type mac State :
disabled Type web State:
disabled
Type Order : dot1x
MAC/WEB Method Order

: radius Guest
VLAN: disabled
Reauthentication: disabled
Max Hosts : 256
VLAN Assign Mode : static Common Timers
Reauthenticate Period: 3600 Inactive Timeout:
60 Quiet Period: 60 802.1x Parameters
EAP Max Request: 2
EAP TX Period: 30 Supplicant Timeout: 30 Server Timeout: 30

Web-auth
Parameters Login
Attempt: 3
……

Query authentication by interface
Switch# show authentication interface g7
Interface ConfigurationsInterface
GigabitEthernet7 Admin Control : auto
Host Mode : multi-auth
Type dot1x State :
enabled Type mac State :
disabled
Type web State : disabled
Type Order : dot1x MAC/WEB
Method Order: radius Guest
VLAN : disabled
Reauthentication :
disabled Max Hosts
256
VLAN Assign Mode : static
Common Timers Reauthenticate Period:
3600 Inactive Timeout 60
Quiet Period 60
802.1x Parameters
EAP Max Request 2
EAP TX Period
3
0
Supplicant Timeout 30
Server Timeout :
65535 Web-auth
Parameters
Login Attempt

show authentication sessions

format

show authentication sessions [detail]
show authentication sessions interface
IF_PORTS show authentication sessions session-id
WORD show authentication session type
(dot1x|mac|web)

parameter

detail	Query session details

interface	Query session information according to the specified interface
session-id	Query session information based on the specified ID
type	Query session information based on authentication type

default

mode

Privileged mode

Instructions

Use the command "show authentication sessions" to query session information.

Instance

Query session information

Switch# show authentication sessions

Interface MAC Address Type Status Session ID
---------- ----------------- ------- ------------ ---- ------------ g7
00:01:6C:CB:29:4A dot1x Authorized 000000010000A028

Query session details

Switch# show authentication sessions detail

Interface: GigabitEthernet7
MAC Address:
00:01:6C:CB:29:4A Session ID :
000000010000A028

Current Type: dot1x
Status : Authorized Authorized
Information VLAN : 5 (from RADIUS)
Reauthenticate Period: 301 (from
RADIUS) Inactive Timeout: 600 (from
RADIUS) Operational Information VLAN:
5 Session Time: 1143
Inactive Time: 168
Quiet Time : N/A

5. Diagnostic

show cable-diag

format

show cable-diag interfaces*IF_NMLPORTS*

parameter

interfaces	Display the interface ID of the copper medium or the cable diagnostic information of the interface ID list.

default

mode

Privileged mode

Instructions

Use the command "show cable-diag" to display the estimated copper cable length connected to a specific interface. In order to get the correct cable length information, the interface must be active and connected.

Instance

Interface G1 and G2 for line diagnosis

Switch# show cable-diag interfaces g1-2

```
 Port    |  Speed | Local pair | Pair length | Pair status
--------+--------+------------+-------------+----- ----------
  gi1    |  auto  |     Pair A  |       1.00      | Open
                       Pair B  |       0.96      | Open
                       Pair C  |       0.92      | Open
                       Pair D  |       0.88      | Open

  gi2    |  auto  |     Pair A  |       2.12      | Open
                       Pair B  |       2.11      | Open
                       Pair C  |       2.03      | Open
                       Pair D  |       2.06      | Open
```

show fiber-transceiver

format

show fiber-transceiver interfaces *IF_NMLPORTS*

parameter

interfaces	Display the interface ID of the fiber optic transceiver or diagnostic information of the interface ID list.

default

mode

Privileged mode

Instructions

Use the command "show fiber-transceiver" to display the diagnostic information of the fiber transceiver.

Instance

Query optical module DDM information

Switch# showfiber-transceiver interfaces gi1-2

Port | Temperature | Voltage | Current | Output power | Input power|| [C] | [Volt] | [mA] | [mWatt]| [mWatt]|

========== ========== ========== ========== ========== ========== ===== ========== ========== ========== ========== ========== ========== ==========

gi1 | N/S | N/S | N/S | N/S | N/S | Insert |gi2 | N/S | N/S | N/S | N/S | N/S | N/S | Insert |

Temp -Internally measured transceiver temperature Voltage-Internally measured supply voltage

Current-Measured TX bias current
Output Power-Measured TX output power in milliWatts
Input Power-Measured RX received power in milliWatts
OE-Present -SFP Presetn or Not Present

LOS-Loss of signal

N/A-Not Available, N/S-Not Supported, W-Warning, E-Error

6. DHCP Snooping

ip dhcp snooping

format

ip dhcp snooping
no ip dhcp snooping

parameter

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "ip dhcp snooping" to enable the DHCP Snooping function.

Instance

Enable DHCP Snooping function and
query switch(config)# ip dhcp snooping
switch(config)# ip dhcp snooping vlan 1
switch(config)# show ip dhcp snooping
DHCP Snooping: enabled Enable on following
Vlans 1 circuit-id default format: vlan-port
remote-id: 00:11:22:33:44:55 (Switch Mac in Byte Order)

---

ip dhcp snooping vlan

format

ip dhcp snooping vlanVLAN-LIST

parameter

vlan	Specify VLAN ID or range to enable DHCP Snooping

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "ip dhcp snooping vlan" to enable the VLAN-level DHCP Snooping function.

Instance

Enable VLAN-level DHCP Snooping
function and query switch(config)# vlan 1-
100 switch(config)# exit
switch(config)# ip dhcp snooping
switch(config)# ip dhcp snooping vlan 1-100
switch(config)# show ip dhcp snooping
DHCP Snooping : enabled
Enable on following Vlans : 1-100
circuit-id default format: vlan-port
remote-id: 00:11:22:33:44:55 (Switch Mac in Byte Order)

---

ip dhcp snooping trust

format

ip dhcp snooping trust
no ip dhcp snooping trust

parameter

default

mode

Interface configuration mode

Instructions

Use the command "ip dhcp snooping trust" to set the interface trust switch. The switch does not check the DHCP packet received on the trusted interface; it just forwards it.

Instance

Configure interface G1 as a trusted port
and query switch(config)# interface gi1
switch(config-if)# ip dhcp snooping trust
switch(config-if)# do show ip dhcp snooping interface gi1
Interfaces | Trust State | Rate (pps) | hwaddr Check | Insert Option82 |
----------+--------------+-----------+-------- ----------+----------
--------+
gi1 | Trusted | None | disabled | disabled |

ip dhcp snooping verify

format

ip dhcp snooping verify mac-address
no ip dhcp snooping verify mac-address

parameter

Def

ault

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Interface configuration mode

Instructions

Use the command "ip dhcp snooping verify" to enable the MAC address verification function on the interface.

Instance

Enable MAC authentication of the interface

```
switch(config)# interface gi1
switch(config-if)# ip dhcp snooping verify mac-address
switch(config-if)# do show ip dhcp snooping interface gi1
Interfaces | Trust State | Rate (pps) | hwaddr Check | Insert
Option82 |
------------+---------------+------------+-------- ----------+-----------
--------+
gi1 | Unrusted | None | disabled       | disabled      |
```

ip dhcp snooping rate-limit

format

ip dhcp snooping rate-limit<1-300>

no ip dhcp snooping rate-limit

parameter

rate-limit	Set the DHCP packet rate limit from 1 to 300 PPS

default

Unlimited speed by default

mode

Interface configuration mode

Instructions

Use the command "ip dhcp snooping rate-limit" to set the rate limit on the interface. The switch discards DHCP packets after receiving more than the configured packet rate per second

Instance

Configure the interface DHCP message rate

```
switch(config)# interface gi1
switch(config-if)# ip dhcp snooping rate-limit 30
switch(config-if)# do show ip dhcp snooping interfaces gi1
Interfaces|Trust State|Rate (pps)|hwaddr Check|Insert
Option82|
----------+-----------+----------+-----------+---- -----------+
gi1 | Untrusted | 30      | disabled      | disabled      |
```

clear ip dhcp snooping statistics

format

clear ip dhcp snooping interfaces IF_PORTS statistics

parameter

interfaces	Clear the statistics of the specified interface

default

mode

Privileged mode

Instructions

Use the command "clear ip dhcp snooping interfaces statistics" to clear the statistics under the interface.

Instance

Clear the statistics of GE1 interface

```
switch# clear ip dhcp snooping interfaces gi1 statistics
switch# show ip dhcp snooping interfaces gi1 statistics
Interfaces | Forwarded | Chaddr Check Dropped | Untrust Port Dropped | Untrust
Port With Option82 Dropped | Invalid Drop
-------+-----------+-----------------+------------ ----------+-----------
--------------+--------
gi1    | 0 | 0     | 0    | 0    | 0
```

show ip dhcp snooping

format

show ip dhcp snooping

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip dhcp snooping" to query the DHCP Snooping configuration.

Instance

Query DHCP Snooping

switch(config)# show ip dhcp snooping
DHCP Snooping : enabled
Enable on following Vlans : 1
circuit-id default format: vlan-port
remote-id: : 00:11:22:33:44:55 (Switch Mac in Byte Order)

7. DOS

dos

format

dos (daeqsa-deny|icmp-frag-pkts-deny|icmpv4-ping-max-check|icmpv6-ping-max-check|ipv6-min-frag-size-check|land-deny|nullscan-deny|pod- deny|smurf-deny|syn-sportl1024-deny|synfin- deny|synrst-deny|tcp-frag-off-min-check|tcpblat-deny|tcphdr-min- check|udpblat-deny|xmas-deny)
dos icmp-ping-max-length MAX_LEN
dos ipv6-min-frag-size-length MIN_LEN
dos smurf-netmask MASK

dos tcphdr-min-length HDR_MIN_LEN
no dos (tcp-frag-off-min-check|synrst-deny|synfin-deny|xma-deny|nullscan-deny|syn-sportl1024-deny|tcphdr-min-check|smurf-deny|icmpv6-ping-max -check|icmpv4-ping-max-check|icmp-frag-pkts- deny|ipv6-min-frag-size-check|pod-deny|tcpblat- deny|udpblat-

deny|land-deny|daeqsa-deny)

parameter

daeqsa-deny	If the destination MAC address is equal to the source MAC address, the packet is discarded.
icmp-frag-pkts-deny	Delete fragmented ICMP packets
icmpv4-ping-max-check	Check the maximum size of the ICMP ping packet and delete the one that is larger than the command definition Maximum packet size packet
icmpv6-ping-max-check	Check the maximum size of the ICMPv6 ping packet, and delete the command definition greater than The maximum packet size of the packet
ipv6-min-frag-size-	Check the minimum size of the IPv6 fragment and discard the minimum size less than the command defined

check	Packets
land-deny	Drop packets with the same source and destination IP
nullscan-deny	Delete empty scanned packets
pod-deny	Avoid death attacks
smurf-deny	Avoid man-in-the-middle attacks
syn-sportl1024-deny	Discard synchronization packets whose source port is less than 1024
synfin-deny	Discard SYN-FIN packets
synrst-deny	Discard SNY-RST packets
tcp-frag-off-min-check	Discard TCP fragment packets with offset equal to 1
tcpblat-deny	If the TCP source port is equal to the TCP destination port, delete the packet
tcphdr-min-check	Check the minimum TCP header and delete the TCP whose header is less than the minimum size defined by the command data pack
udpblat-deny	If the UDP source port is equal to the UDP destination port, the packet is discarded
xmas-deny	If the serial number is zero and the FIN, URG and PSH bits are set, the number is discarded According to the package
icmp-ping-max-length	Specify the maximum size of ICMPv4/ICMPv6 ping packets. The valid range is 0 To 65535 bytes, the default value is 512 bytes.
ipv6-min-frag-size-length	Specify the minimum size of IPv6 fragments. The valid range is from 0 to 65535 bytes, the default Value is 1240 bytes

smurf-netmask	Specify the mask for man-in-the-middle attacks. The length ranges from 0 to 323 bytes, the default length 0 bytes
tcphdr-min-length	Specify the minimum TCP header length. The length ranges from 0 to 31 bytes, the default length is 20 byte

default

By default, all DoS protections are enabled. The default parameters are:
The maximum size of an ICMP ping packet is 512 bytes
The minimum size of the IPv6 fragment is 1240 bytes
Smurf netmask length is 0 bytes
The minimum length of the TCP header is 20 bytes

mode

Global configuration mode

Instructions

Use the command "dos" to enable specific denial of service (DoS) protection.

Instance

Configure the minimum size of the IPv6 fragment to
be 1024 bytes, and enable the check
Switch(config)# dos ipv6-min-frag-size-length 1024
Switch(config)# dos ipv6-min-frag-size-check

dos(interface)

format

dos
no
dos

parameter

default

Disabled by default

mode

Interface configuration mode

Instructions

To enable DoS on a specific interface, command the DoS command in the interface configuration mode

Instance

Enable interface DOS function

Switch(config)# interface GigabitEthernet1

Switch(config-if)# dos

---

show dos

format

show dos

show dos interface IF_PORTS

parameter

interface	Query DOS configuration based on interface

default

mode

Privileged mode

Instructions

Use the command "show dos" to display the DoS protection configuration globally or under the interface.

Instance

Query DOS configuration

Switch# show dos

```
   Type                                | State (Length)
---------------------------+--------------------- ------------
   DMAC equal to SMAC             |
   enabled Land (DIP = SIP)  | enabled
   UDP Blat (DPORT = SPORT)
                                  | enabled
   TCP Blat (DPORT = SPORT)
                                 | enabled
   POD (Ping of Death)          | enabled
   IPv6 Min Fragment Size     | enabled   (1240
   Bytes) ICMP Fragment Packets                    |
   enabled
   IPv4 Ping Max Packet Size | enabled  (512
   Bytes) IPv6 Ping Max Packet Size | enabled
```

(512
Bytes)
Smurf Attack | enabled (Netmask Length:
0) TCP Min Header Length | enabled (20 Bytes)
TCP Syn (SPORT <1024) | enabled

Null Scan Attack | enabled
X-Mas Scan Attack | enabled
TCP SYN-FIN Attack | enabled
TCP SYN-RST Attack |
enabled TCP Fragment (Offset = 1) |
enabled

Query the DOS configuration under the interface
Switch# show dos interfaces GigabitEthernet 1
Port | DoS Protection
----------+----------
gi1 | disabled

8. Dynamic ARP Inspection

ip arp inspection

format

ip arp inspection
no ip arp inspection

parameter

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "ip arp inspection" to enable dynamic ARP inspection.

Instance

Enable DAI
switch(config)# ip arp inspection
switch(config)# ip arp inspection vlan 1
switch(config)# show ip arp inspection
Dynamic ARP Inspection :

enabled Enable on Vlans 1

ip arp inspection vlan

format

ip arp inspection vlanVLAN-LIST
no ip arp inspection vlan VLAN-LIST

parameter

vlan	Specify VLANID or range to enable dynamic ARP inspection

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "ip arp inspection vlan" to enable the VLAN DAI switch.

Instance

Enable the DAI function under
VLAN switch(config)# vlan 1-
100 switch(config)# exit
switch(config)# ip arp inspection

---

switch(config)# ip arp inspection vlan 1-100
switch(config)# show ip arp inspection
Dynamic ARP Inspection : enabled
Enable on Vlans : 1-100

ip arp inspection trust

format

ip arp inspection trust
no ip arp inspection
trust

parameter

default

Disabled by default

mode

Interface configuration mode

Instructions

Use the command "ip arp inspection trust" to set the trusted interface. The switch does not check the ARP packets received on the trusted interface.

Instance

Configure DAI information interface

switch(config)# interface gi1

switch(config)# ip arp inspection trust

Query interface DAI information

switch(config)# do show ip arp inspection interface gi1

Interfaces | Trust State | Rate (pps) | SMAC Check | DMAC Check | IP Check/Allow Zero

|------------+--------------+--------------+------ ----------|-------------

----+------------------------+

gi1 | Trusted | None | disabled | disabled | disabled/disabled

---

ip arp inspection validate

format

ip arp inspection validatesrc-mac

ip arp inspection validatedst-mac

ip arp inspection validate ip[allow-zeros]

no ip arp inspection validate src-mac

no ip arp inspection validate dst-mac

no ip arp inspection validate ip [allow-zeros]

parameter

default

All verifications are disabled by default

mode

Interface configuration mode

Instructions

Use the command "ip arp inspection validate" to enable the interface verification function. "Src-mac" discards the ARP request and replies to packets that do not match the ARP sender mac and the Ethernet source mac. "Dst mac" drops ARP target

ARP reply packet with mismatch between mac and Ethernet dstmac. "Ip" discards sending ARP request and response packets with invalid ip, such as broadcast, multicast, all-zero ip address and discard ARP response packets with invalid target ip. "Allow zeros" means that all zero IP addresses will not be deleted.

Instance

Enable interface DAI verification

```
switch(config)# interface gi1
switch(config-if)# ip arp inspection validate src-mac
switch(config-if)# ip arp inspection validate dst-ma
switch(config-if)# ip arp inspection validate ip allow-zeros
switch(config)# do show ip arp inspection interface gi1
Interfaces | Trust State | Rate (pps) | SMAC Check | DMAC Check | IP Check/Allow Zero
|------------+--------------+--------------+------ ----------|-------------
----+------------------------+
gi1 | Untrusted | None | enabled| enabled| enabled/ enabled
```

ip arp inspection rate-limit

format

ip arp inspection rate-limit<1-50>

no ip arp inspection rate-limit

parameter

<1-50>	Set the limit of ARP packets, 1-50PPS.

default

Unlimited by default

mode

Interface configuration mode

Instructions

Use the command "ip arp inspection rate-limit" to set the interface limit. The switch discards ARP packets after receiving more than the configured packet rate per second.

Instance

Configure interface ARP restriction

```
switch(config)# interface gi1
switch(config)# ip arp inspection rate-limit 30
```

clear ip arp inspection statistics

format

clear ip arp inspection interfaces IF_PORTS statistics

parameter

interfaces	Query DAI's specified interface statistics

default

mode

Privileged mode

Instructions

Use the command "clear ip arp inspection interfaces statistics" to clear the DAI statistics under the interface.

Instance

Clear DAI statistics under the interface

switch# clear ip arp inspection interfaces gi1 statistics

show ip arp inspection

format

show ip dhcp snooping

parameter

Def

ault

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Privileged mode

Instructions

Use the command "show ip arp inspection" to query DAI configuration information.

Instance

Query DAI configuration
switch(config)# show ip arp inspection
Dynamic ARP Inspection :
enabled Enable on Vlans 1

show ip arp inspeciton interface

format

show ip arp inspection interfaces IF_PORTS
show ip arp inspection interfaces IF_PORTS statistics

parameter

interfaces	Query the DAI configuration under the interface

default

mode

Privileged mode

Instructions

Use the command "show ip arp inspection interfaces" to query the DAI configuration and statistics under the specified interface.

Instance

Query the DAI configuration of interface GE1
switch# show ip arp inspection interface gi1
Interfaces | Trust State | Rate (pps) | SMAC Check | DMAC Check | IP Check/Allow Zero|
-----------+-------------+-------------+------- ---------|-------------
----+------------------------+
gi1 | Trusted | None | disabled | disabled | disabled/disabled

Query DAI statistics of interface GE1
switch# show ip arp inspection interfaces gi1
statistics Port| Forward |Source MAC Failures|Dest MAC Failures|SIP
Validation Failures|DIP Validation Failures|IP-MAC Mismatch Failures
----+---------+------------+-------------+-------- ----+--------------+--
----
gi1| 0 | 0 | 0 | 0 | 0 | 0

9. GVRP

gvrp (Global)

format

gvrp
no
gvrp

parameter

default

GVRP is disabled by default.

Global configuration mode

Instructions

Use the command "gvrp" to enable the GVRP global switch.

Instance

Configure GVRP
Switch(config)# gvrp

Query GVRP
Switch# show gvrp

GVRP Status

GVRP : Enabled
Join time : 200 ms
Leave time : 600 ms
LeaveAll time : 10000 ms

gvrp (Interface)

format

gvrp
no
gvrp

parameter

default

GVRP is disabled by default.

Interface configuration mode

Instructions

Use the command "gvrp" to enable the interface GVRP function, and GVRP must work on the trunk port.

Instance

GVRP
Switch(config)#gvrp
to enable interface

Query GVRP of the interface

Switch# show gvrp configuration interfaces gi1

Port | GVRP-Status | Registration | Dynamic VLAN Creation

--------+--------------+--------------+--------- ----------

gi1 Enabled Normal Disabled

gvrp registration-mode

format

gvrp registration-mode(normal | fixed | forbidden)

parameter

normal	Register dynamic vlan and transfer all vlan attributes
fixed	Do not register dynamic VLANs, only transmit static VLAN attributes
forbidden	Do not register dynamic VLANs, only transmit default VLAN attributes

default

The default works in normal

mode

Interface configuration mode

Instructions

When the registration mode is set to fixed or prohibited, the port will be removed from the vlan and switched to a dynamic port. do not study
vlan.

Instance

Configure GVRP working mode
Switch(config-if)# gvrp registration-mode fixed

Query interface GVRP configuration
Switch# show gvrp configuration interfaces gi1
Port | GVRP-Status | Registration | Dynamic VLAN Creation
--------+---------------+---------------+--------- ----------
gi1 Enabled Fixed Disabled

gvrp vlan-create-forbid

format

gvrp vlan-creation-forbid
no gvrp vlan-creation-forbid

parameter

default

Disabled by default.

mode

Interface configuration mode

Instructions

Using the command "gvrp vlan-creation-forbid" will not delete the dynamic port from the vlan instantly.

Instance

Configure GVRP to delete interfaces instantly
Switch(config)#interface gi1
Switch(config-if)# gvrp vlan-creation-forbid

clear gvrp statistics

format

clear gvrp (error-statistics | statistics) [interfaces IF_PORTS]

parameter

error-statistics	Incorrect GVRP packet statistics
statistics	GVRP event message
interfaces	Designated interface

default

mode

Privileged mode

Instructions

Use the command "clear gvrp" to clear the GVRP statistics of the interface.

Instance

Clear GVRP statistics of the interface
Switch# clear gvrp statistics
Switch# clear gvrp error-statistics

---

show gvrp statistics

format

show gvrp (error-statistics | statistics) [interfaces IF_PORTS]

parameter

error-statistics	Incorrect GVRP packet statistics
statistics	GVRP event message
interfaces	Specify an interface, if no interface is specified, query all interfaces

default

mode

Privileged mode

Instructions

Use the command "show gvrp" to query the GVRP statistics of all or connected interfaces.

Instance

Query GVRP statistics

```
Switch# show gvrp statistics
Port id    : gi1
Total RX:      0
JoinEmpty RX:     0
JoinIn RX      :          0
Empty RX                  :                    0
LeaveIn RX                :               0
LeaveEmpty RX   :               0
LeaveAll RX                    :                    0
Total TX:                 0
JoinEmpty TX           :               0
JoinIn TX      :                    0
Empty TX       :          0
```

```
LeaveIn TX   :     0
LeaveEmpty TX :      0
LeaveAll TX        :          0
```

show gvrp

format

show gvrp

parameter

default

mode

Privileged mode

Instructions

Use the command "show gvrp" to query the global information of GVRP.

Instance

Query GVRP

Switch# show gvrp

GVRP Status

GVRP : Disabled
Join time: 200 ms
Leave time : 600
ms
LeaveAll time: 10000 ms

---

show gvrp configuration

format

show gvrp configuration [interface IF_PORTS]

parameter

interface	Specify the interface, if not specified, it means all interfaces

default

mode

Privileged mode

Instructions

Use the command "show gvrp configuration" to query all interface configuration information.

Instance

Query GVRP configuration information

Switch# show gvrp configuration

Port | GVRP-Status | Registration | Dynamic VLAN Creation

--------+---------------+---------------+--------- ----------

gi1 Disabled Normal Enabled

gi 2 Disabled Normal Enabled

---

10. IGMP Snooping

ip igmp snooping

format

ip igmp snooping
no ip igmp
snooping

parameter

default

Enabled by default.

mode

Global configuration mode

Instructions

Use the command "ip igmp snooping" to enable igmp snooping.

Instance

Enable igmp snooping function
Switch(config)# ip igmp snooping

ip igmp snooping version

format

ip igmp snooping version (2|3)

parameter

(2|3)	IGMP version

default

The default is V2.

mode

Global configuration mode

Instructions

Use the command "ip igmp snooping version" to configure the version of IGMP. v3 only supports basic mode. When the version is changed from v3 to v2, all query program versions will be updated to version 2.

Instance

Configure IGMP version

Switch(config)# ip igmp snooping version 3

ip igmp snooping querier

format

ip igmp snooping vlan <VLAN-LIST> querier [version (2|3)]
no ip igmp snooping [vlan <VLAN-LIST>] querier

parameter

vlan	Specify VLAN ID for setting
(2|3)	Query version number

default

mode

Global configuration mode

Instructions

Use the command "ip igmp snooping querier" to add the querier. When the igmp vlan querier is enabled, router selection will be processed, and general and specific queries will be sent after the selection is successful.

Instance

Configure IGMP Querier
Switch(config)# ip igmp snooping vlan 2 querier version 3

ip igmp snooping vlan

format

ip igmp snooping vlanVLAN-LIST
no ip igmp snooping vlan VLAN-LIST

parameter

vlan	Specify VLAN ID

default

All VLANs are disabled by default.

mode

Global configuration mode

Instructions

Disabling will clear all IPigmp snooping dynamic groups and dynamic router ports, and enable all static IPigmp groups
The VLAN is invalid. No longer will learn dynamic groups and router ports through igmp messages. Use the command "ip igmp snooping vlan" to enable the VLAN-level IGMP function.

Instance

Enable IGMP multicast VLAN function
Switch(config)# ip igmp snooping
Switch(config)# ip igmp snooping vlan 2

ip igmp snooping vlan fastleave

format

ip igmp snooping vlan<VLAN-LIST> fastleave
no ip igmp snooping vlan <VLAN-LIST> fastleave

parameter

vlan	Specify VLAN list

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "ip igmp snooping vlan fastleave" to enable the fast leave function. When a leave packet is received, the group will immediately remove the port.

Instance

Enable quick leave
Switch(config)# ip igmp snooping vlan 1 fastleave

ip igmp snooping vlan query-interval

format

ip igmp snooping vlan <VLAN-LIST> query-interval <30-18000>
no ip igmp snooping vlan <VLAN-LIST> query-interval

parameter

vlan	Specify VLAN
query-interval	Query interval setting

default

The default is 125 seconds.

mode

Global configuration mode

Instructions

Use the command "ip igmp snooping vlan query-interval" to set the general query interval.

Instance

Set general query interval
Switch(config)# ip igmp snooping vlan 1 query-interval 100

---

ip igmp snooping vlan response-time

format

ip igmp snooping vlan<VLAN-LIST> response-time <5-20>
no ip igmp snooping vlan <VLAN-LIST> response-time

parameter

vlan	Specify VLAN
response-time	Response time setting

default

The default is 10.

mode

Global configuration mode

Instructions

Use the command "ip igmp snooping vlan response-time" to set the response time.

Instance

Set response time
Switch(config)# ip igmp snooping vlan 1 response-time 12

ip igmp snooping vlan router

format

ip igmp snooping vlanVLAN-LIST router learn pim-dvmrp no
ip igmp snooping vlan VLAN-LIST router learn pim-dvmrp

parameter

vlan	Specify VLAN

default

Enabled by default.

mode

Global configuration mode

Instructions

Use the command "ip igmp snooping vlan router" to pass routing protocol packets (such as PIM/PIMv2,
DVMRP, MOSPF) enable learning router ports.

Instance

Configure routing
Switch(config)# ip igmp snooping vlan 99 router

ip igmp snooping vlan forbidden-port

format

ip igmp snooping vlan <VLAN-LIST> forbidden-port IF_PORTS
no ip igmp snooping vlan <VLAN-LIST> forbidden-port IF_PORTS

parameter

vlan	Specify VLAN
forbidden-port	Designated port

default

mode

Global configuration mode

Instructions

ip igmp listens to vlan 1 static port gi1-2 will add static port gi1-2 to vlan 1. All known vlan 1 The ipv4 group will add a static port.
ip igmp listens to vlan 1 disabled port gi3-4 will add disabled port gi3-4 to vlan 1. All known vlan 1
The ipv4 group will delete the disabled port.
Use the command "ip igmp snooping vlan forbidden-port" to add static non-forwarding ports, and all known vlan 1 ipv4 groups will delete the disabled ports.

Instance

Configure disable interface
Switch(config)# ip igmp snooping vlan 1 forbidden -port gi3-4

ip igmp snooping vlan static-port

format

ip igmp snooping vlan <VLAN-LIST> static-port IF_PORTS
no ip igmp snooping vlan <VLAN-LIST> static-port IF_PORTS

parameter

vlan	Specify VLAN
static -port	Designated port

default

mode

Global configuration mode

Instructions

Use the command "ip igmp snooping vlan static-port" to add static forwarding ports, and all known vlan 1 ipv4 groups will add static ports.

Instance

Configure static forwarding port

Switch(config)# ip igmp snooping vlan 1 static -port gi1-2

ip igmp snooping vlan static-router-port

format

ip igmp snooping vlan<VLAN-LIST> static-router-port IF_PORTS
no ip igmp snooping vlan <VLAN-LIST> static-router-port IF_PORTS

parameter

vlan	Specify VLAN
static-router-port	Designated port

default

mode

Global configuration mode

Instructions

Use the command "ip igmp snooping vlan static-router-port" to add a static route port. All query packets will be forwarded to this port.

Instance

Configure static routing port
Switch(config)# ip igmp snooping vlan 1 static-router-port gi1-2

ip igmp snooping vlan static-group

format

ip igmp snooping vlan<VLAN-LIST> static-group [<ip-addr>] interfaces IF_PORTS
no ip igmp snooping vlan <VLAN-LIST> static-group [<ip-addr>]
interfaces IF_PORTS

parameter

vlan	Specify VLAN
static-group	Static IPv4 multicast address

interfaces	Designated port

default

mode

Global configuration mode

Instructions

Use the command "ip igmp snooping vlan static-group" to add a static group. The static group will not learn other dynamic ports. If the dynamic group exists, the static group will overlap with the dynamic group. The configuration of the static group is valid unless igmp snooping global and vlan are enabled.

Instance

Configure static groups

Switch(config)# ip igmp snooping vlan 1 static-group 224.1.1.1 interfaces gi1-2

---

ip igmp snooping vlan group

format

no ip igmp snooping vlan <VLAN-LIST> group <ip-addr>

parameter

vlan	Specify VLAN
group	Static IPv4 multicast address

default

mode

Global configuration mode

Instructions

Use the command "no ip igmp snooping vlan group" to delete a dynamic or static multicast group.

Instance

Delete multicast group

Switch(config)# no ip igmp snooping vlan 1 group 224.1.1.1

ip igmp profile

format

ip igmp profile<1-128>
no ip igmp profile <1-128>

parameter

<1-128>	Specify the ID of the generated template

default

mode

Global configuration mode

Instructions

Use the command "ip igmp profile" to enter the IGMP template configuration mode.

Instance

Enter IGMP template configuration
Switch(config)# ip igmp profile 1

profile range

format

profile range ip <ip-addr> [ip-addr] action (permit | deny)

parameter

ip	Set the start and end IPv4 addresses of multicast
permit	Allow address learning within the multicast address range
deny	Prohibit address learning in the multicast address range

default

mode

igmp profile configuration mode

Instructions

Use the command "profile range" to generate an IGMP template.

Instance

Configure IGMP template
Switch(config)# ip igmp profile 1
Switch(config-igmp-profile)# profile range ip 224.1.1.1 224.1.1.8 action permit

ip igmp filter

format

ip igmp filter<1-128>
no ip igmp filter

parameter

<1-128>	Configure the ID of the IGMP filter template

default

mode

Interface configuration mode

Instructions

Use the command "ip igmp filter" to bind a template to the interface. When the port is bound to the template, the port learning group will be updated. If the group does not match the filtering template rules, it will delete the port from the group. Static groups are excluded.

Instance

Bind filter template
Switch(config)# interface gi1
Switch(config-if)#ip igmp filter 1

---

ip igmp max-groups

format

ip igmp max-groups<0-1024>
no ip igmp max-groups

parameter

max-groups	Largest multicast group

default

The default is 1024.

mode

Interface configuration mode

Instructions

Use the command "ip igmp max-groups" to configure the maximum number of learning multicast groups on the interface.

Instance

Configure the maximum number of learned multicast groups on the interface

Switch(config-if)#ip igmp max-groups 10

ip igmp max-groups action

format

ip igmp max-groups action(deny | replace)

parameter

deny	When the interface reaches the maximum number of multicast groups, discard new groups
replace	When the interface reaches the maximum number of multicast groups, replace the old group

default

Default is deny

mode

Interface configuration mode

Instructions

Use the command "ip igmp max-groups action" to configure the operation processing when the interface reaches the maximum multicast group.

Instance

Configuration replacement operation

Switch(config-if)#ip igmp max-groups action replace

clear ip igmp snooping groups

format

clear ip igmp snooping groups [(dynamic | static)]

parameter

none	When dynamic or static is not specified, clear all groups
dynamic	Clear dynamic group
static	Clear static group

default

mode

Privileged mode

Instructions

Use the command "clear ip igmp snooping groups" to clear the multicast group of the system.

Instance

Clear multicast group

Switch# clear ip igmp snooping groups

Query multicast group

Switch# show ip igmp snooping groups

VLAN | Group IP Address | Type | Life(Sec) | Port

------+-----------------+--------+-----------+--- ---------------

Total Number of Entry = 0

clear ip igmp snooping statistics

format

clear ip igmp snooping statistics

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip igmp snooping statistics" to clear IGMP statistics.

Instance

Clear IGMP statistics
Switch# clear ip igmp snooping statistics

Query IGMP information
Switch# show ip igmp snooping
IGMP Snooping Status

Snooping : Enabled Report Suppression :
Enabled Operation Version: v2
Forward Method: mac Unknown IP Multicast Action : Flood

Packet
Statistics Total
RX: 0
Valid RX: 0
Invalid RX 0
Other RX: 0
Leave RX: 0
Report RX : 0
General Query RX 0
Specail Group Query RX 0
Specail Group & Source Query RX 0
Leave TX: 0
Report TX : 0
General Query TX 0
Specail Group Query TX 0
Specail Group & Source Query TX 0

show ip igmp snooping groups counters

format

show ip igmp snooping groups counters

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip igmp snooping groups counters" to query the multicast group count, including static and dynamic.

Instance

Query multicast group count

Switch# show ip igmp snooping group counters
Total ip igmp snooping group number: 2
Total ip igmp snooping static mac number:
0

show ip igmp snooping groups

format

show ip igmp snooping groups [(dynamic | static)]

parameter

none	When dynamic or static is not specified, query all groups
dynamic	Query dynamic group
static	Query static group

mode

Privileged mode

Instructions

Use the command "show ip igmp snooping groups" to query the multicast group of the system.

Instance

Query multicast group

Switch# show ip igmp snooping groups

VLAN | Group IP Address | Type | Life(Sec) | Port

------+-----------------+--------+-----------+--- ---------------

1 | 224.1.2.3 | Static| - | gi9
1 | 224.1.2.4 | Static| - | gi10

Total Number of Entry = 2

show ip igmp snooping router

format

show ip igmp snooping router [(dynamic | forbidden |static)]

parameter

none	If not specified, query all groups
dynamic	Query dynamic group
forbidden	Query disabled group
static	Query static group

mode

Privileged mode

Instructions

Use the command "show ip igmp snooping router" to query IGMP routing information.

Instance

Query routing
Switch# show ip igmp snooping router
Dynamic Router Table
VID | Port | Expiry Time(Sec)
------+---------+-----------------

Total Entry 0

Static Router Table VID | Port Mask
------+-----------------------
1 | gi4

Total Entry 1

Forbidden Router Table VID | Port Mask
------+-----------------------
1 | gi8

Total Entry 1

show ip igmp snooping querier

format

show ip igmp snooping querier

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip igmp snooping querier" to query all IGMP querier information.

Instance

Show querier information

```
Switch# show ip igmp snooping querier
VID |      State      |      Status | Version | Querier IP
-------+-------------+-------------+------------+- -------------------
1 |   Disabled     | Non-Querier |    No      |      ------

   Total Entry 1
```

show ip igmp snooping

format

show ip igmp snooping

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip igmp snooping" to query the IGMP global configuration information.

Instance

Query IGMP information

```
Switch# show ip igmp snooping
IGMP Snooping Status
--------------------

Snooping      : Enabled Report Suppression         :
Enabled Operation Version: v2
```

Forward Method: mac Unknown IP Multicast Action : Flood

Packet
Statistics Total
RX: 0
Valid RX: 0
Invalid RX 0
Other RX: 0
Leave RX: 0
Report RX : 0
General Query RX 0
Specail Group Query RX 0
Specail Group & Source Query RX 0
Leave TX: 0
Report TX : 0
General Query TX 0
Specail Group Query TX 0
Specail Group & Source Query TX 0

show ip igmp snooping vlan

format

show ip igmp snooping vlan [VLAN-LIST]

parameter

none	If not specified, query all VLANs
vlan	Specify VLAN query

default

mode

Privileged mode

Instructions

Use the command "show ip igmp snooping vlan" to query the IGMP multicast VLAN configuration information.

Instance

Query IGMP multicast VLAN information
Switch# show ip igmp snooping vlan 1
IGMP Snooping is globaly enabled
IGMP Snooping VLAN 1 admin: disabled
IGMP Snooping operation mode: disabled
IGMP Snooping robustness: admin 2 oper

2
IGMP Snooping query interval: admin 125 sec oper 125 sec
IGMP Snooping query max response: admin 10 sec oper 10
sec IGMP Snooping last member query counter: admin 2
oper 2
IGMP Snooping last member query interval: admin 1 sec oper 1
sec IGMP Snooping last immediate leave: disabled
IGMP Snooping automatic learning of multicast router ports: enabled

show ip igmp snooping forward-all

format

show ip igmp snooping forward-all [vlan VLAN-LIST]

parameter

none	If not specified, query all forwarding information
vlan	Specify VLAN query

default

mode

Privileged mode

Instructions

Use the command "show ip igmp snooping forward-all" to query all forwarding information.

Instance

Query forwarding information
Switch# show ip igmp snooping forward-all 1
IGMP Snooping VLAN 1
IGMP Snooping static port: None
IGMP Snooping forbidden port: None

show ip igmp profile

format

show ip igmp profile [<1-128>]

parameter

none	Not specified, means all templates
<1-128>	Specify the ID of the template

default

mode

Privileged mode

Instructions

Use the command "show ip igmp profile" to query the IGMP profile configuration information.

Instance

Query IGMP template information

Switch# show ip igmp profile

IP igmp profile index: 1

IP igmp profile action: permit

Range low ip: 224.1.1.1 Range high ip: 224.1.1.8

IP igmp profile index: 2

IP igmp profile action: deny

Range low ip: 225.1.1.0 Range high ip: 225.1.2.1

show ip igmp filter

format

show ip igmp filter [interfaces IF_PORTS]

parameter

none	Not specified, means all ports
interfaces	According to the specified interface

default

mode

Privileged mode

Instructions

Use the command "show ip igmp filter" to query the IGMP filter template information.

Instance

Query filter template

Switch# show ip igmp filter

Port ID | Profile ID
---------+--------------
gi1: 1
gi2: None
gi3: None
gi4: None
gi5: None
--More—

show ip igmp max-group

format

show ip igmp max-group [interfaces IF_PORTS]

parameter

none	Not specified, means all ports
interfaces	According to the specified interface

default

mode

Privileged mode

Instructions

Use the command "show ip igmp max-group" to query the maximum learning number of the interface multicast group.

Instance

Query the maximum learning number of the interface multicast group
Switch# show ip igmp max-group

Port ID | Max Group
---------+--------------
gi1: 50
gi2: 256
gi3: 256
gi4: 256
gi5: 256
--More—

show ip igmp max-group action

format

show ip igmp max-group action [interfaces IF_PORTS]

parameter

none	Not specified, means all ports
interfaces	According to the specified interface

default

Default is deny

mode

Privileged mode

Instructions

Use the command "show ip igmp max-group action" to query the operation processing.

Instance

Query operation

Switch# show ip igmp max-group action

Port ID | Max-groups Action

---------+----------

gi1: replace

gi2: deny
gi3: deny
gi4: deny
gi5: deny

--More--

11. IP Source Guard

ip source verify

format

ip source verify [mac-and-ip] no ip source verify

parameter

verify	Verify the MAC and IP binding entries

default

The IPSG function under the interface is disabled and only the IP is verified by default.

mode

Interface configuration mode

Instructions

Use the command "ip source verify" to enable the IP source protection function. By default, IPSG will filter the source IP address. Selecting "mac-and-ip" will filter not only IP but also MAC.

Instance

Enable IPSG function of the interface Switch(config)# interface gi1 switch(config-if)# ip source verify

---

```
Switch(config)# do show ip source interfaces gi1
   Port   |        Status        | Max Entry | Current Entry
--------+----------------+-----------+------------ ---
      gi1 |           disabled | No Limit   |     0
```

ip source binding

format

ip source bindingA:B:C:D:E:F vlan <1-4094> ABCD interface IF_PORT
no ip source binding A:B:C:D:E:F vlan <1-4094> ABCD interface IF_PORT

parameter

A:B:C:D:E:F	Specify the MAC address of a binding table entry
vlan	Specify the VLAN ID of a binding entry
ABCD	Specify the IP address of a binding entry
interface	Specify a binding table entry interface

default

mode

Global configuration mode

Instructions

Use the command "ip source binding" to create a static IP source binding entry with an IP address and its associated

MAC address, VLAN ID, interface

Instance

Configure static binding entries
Switch(config)# ip source binding 00:11:22:33:44:55 vlan 1 192.168.1.55 interface g1
switch(config)# do show ip source binding
Bind Table: Maximun Binding Entry Number 192
Port | VID | MAC Address |IP | Type | Lease Time
----+------+-------------------+----------------- ----------------------
+------------+-----------
g1 |1 | 00:11:22:33:44:55 |192.168.1.55(255.255.255.255)| Static | NA

show ip source interfaces

format

show ip source interfaces IF_PORTS

parameter

interfaces	Query the IPSG configuration under the specified interface

default

mode

Privileged mode

Instructions

Use the command "show ip source interface" to query the IPSG configuration under the specified interface.

Instance

Query the IPSG configuration under the interface
Switch# show ip source interfaces gi1
Port | Status | Max Entry | Current Entry
--------+----------------+-----------+------------ ---
gi1 | disabled | No Limit | 0

show ip source binding

format

show ip source binding [(dynamic|static)]

dynamic	Query entries learned dynamically
static	Query entries learned through static methods

default

mode

Privileged mode

Instructions

Use the command "show ip source binding" to query all dynamic or static entries.

Instance

Query binding entries

```
switch# show ip source binding
Bind Table: Maximun Binding Entry Number 192
Port | VID | MAC Address  |IP    | Type | Lease
Time
----+------+-------------------+----------------- ----------------------
+------------+-----------
   g1 |1 | 00:11:22:33:44:55 |192.168.1.55(255.255.255.255)| Static | NA
```

12. Link Aggregation

lag

format

lag *<1-8>* **mode** (static | active | passive)
no lag

<1-8>	Aggregation group ID
static	Specify a static aggregation group and add the interface to the aggregation group
active	Specify a dynamic aggregation group, and add the interface as an activation port to the LACP aggregation group
passive	Specify a dynamic aggregation group and add the interface as a passive port to the LACP aggregation group

default

mode

Interface configuration mode

Instructions

The link aggregation group function allows you to aggregate multiple physical ports into one logical port to increase bandwidth. This command makes the normal port connect to the specific hysteresis logic port in static or dynamic mode.

Instance

Configure aggregation group

Switch(config)# interface range g1-3

Switch(config-if)# lag 1 mode active

Query aggregation group

Switch# show lag

Load Balancing: src-dst-mac-ip.

Group ID | Type | Ports

---------+--------+------------------------------ -

1 | LACP | Inactive: gi1-3 2 | ------ | 3

| ------ |

4 | ------ |

5 | ------ |

6 | ------ |

7 | ------ |

8 | ------ |

---

lag load-balance

format

lag load-balance (src-dst-mac | src-dst-mac-ip) no lag load-balance

parameter

src-dst-mac	Use the source and destination MAC address load balancing strategy of all packets
src-dst-mac-ip	Use the source and destination MAC and IP address load balancing strategies of all packets

default

The default load balancing policy is src-dst-mac

mode

Global configuration mode

Instructions

The port of the link aggregation group should transmit data packets to all ports to balance the traffic load. Two algorithms are supported. This command allows you to select an algorithm.

Instance

Configure load balancing

Switch(config)# lag load-balance src-dst-mac-ip

lacp port-priority

format

lacp port-priority *<1-65535>*

no lacp port-priority

parameter

<1-65535>	Port priority

default

The default port priority is 1

mode

Interface configuration mode

Instructions

Use the command "lacp port-priority" to configure the port priority of LACP aggregation group members.

Instance

Configure the interface
priority as 100
Switch(config)# interface g1

Switch(config-if)# lacp port-priority 100

lacp system-priority

format

lacp system-priority<*1-65535*>
no lacp system-priority

parameter

<*1-65535*>	System priority

default

The default system priority is 32768

mode

Global configuration mode

Instructions

Use the command "lacp port-priority" to configure the system priority of the LACP aggregation group.

Instance

Configure the system priority to 1000
Switch(config)# lacp system-priority 1000

show lacp

format

show lacp sys-id
show lacp [<1-8>] counters
show lacp [<1-8>] (internal | neighbor) [detail]

parameter

default

mode

Privileged mode

Instructions

Use the command "show lacp sys-id" to display the system identifier specified by the LACP command. The system identifier is determined by
The LAPC system priority is composed of the MAC address of the switch. Use the command "show lacp counter" to query LACP
statistics. Use the command "show lacp internal" to query local information. Use the

command "show lacp
neighbor"Query remote information.

Instance

Query LACP
Switch# show lacp sys-id
32768, 1c2a.a3c4.0292

Switch# show lacp counters
LACPDUs LACPDUs
Port Sent Recv Pkts Err
---

show lag

format

show lag

parameter

default

mode

Privileged mode

Instructions

Use the command "show lag" to query the configuration information of the aggregation group.

Instance

Query aggregation group
Switch# show lag
Load Balancing: src-dst-mac-ip.

Group ID | Type | Ports
---+---+--- -
1 | LACP | Inactive: gi1-3 2 | ------ |
3 | ------ |
4 | ------ |
5 | ------ |
6 | ------ |
7 | ------ |

8 | ------ |

13. LLDP

lldp

format

lldp
no lldp

parameter

default

Enabled by default

mode

Global configuration mode

Instructions

Use the command "lldp" to enable the neighbor discovery protocol.

Instance

Enable LLDP
Switch (config)# lldp

Query LLDP
Switch# show lldp

State: Enabled
Timer: 30
Seconds
Hold multiplier: 4
Reinit delay: 2
Seconds Tx delay: 2
Seconds
LLDP packet handling: Flooding

Port	State	Optional TLVs	Address
gi1	RX,TX		192.168.2.100
gi2	RX,TX		192.168.2.100
gi3	RX,TX		192.168.2.100

gi4 | RX,TX | |192.168.2.100
gi5 | RX,TX | |192.168.2.100
gi6 | RX,TX | |192.168.2.100
gi7 | RX,TX | |192.168.2.100

lldp rx

format

lldp rx
no lldp rx

parameter

default

Enabled by default

mode

Interface configuration mode

Instructions

Use the command "lldp rx" to enable the LLDP receiving function on the interface.

Instance

Enable interface LLDP to
receive Switch(config)#
interface gi1 Switch(config-
if)# lldp rx

lldp tx

format

lldp tx
no lldp
tx

parameter

default

Enabled by default

mode

Interface configuration mode

Instructions

Use the command "lldp rx" to enable the LLDP transmission function on the interface.

Instance

Enable interface LLDP to
send Switch(config)#
interface gi1 Switch(config-
if)# lldp tx

---

lldp lldpdu

format

lldp lldpdu (filtering|flooding|bridging)

parameter

filtering	When LLDP is globally disabled, LLDP packets are filtered (deleted)
flooding	When LLDP is globally disabled, LLDP packets are flooded (forwarded to all interfaces)
bridging	When LLDP is globally disabled, LLDP packets are being bridged (Bridge LLDP PDU To VLAN member port)

default

The default LLDP PDU processing behavior when LLDP is disabled is flooding

mode

Global configuration mode

Instructions

Use the command "lldp lldpdu" to configure the LLDP PDU processing behavior when LLDP is globally disabled. It should be noted that if LLDP is globally enabled and the LLDP RX status of each port is configured to be disabled, then the received LLDP PDU will be discarded instead of globally disabled.

Instance

Configure LLDPDU

Switch(config)# lldp lldpdu bridging

Query LLDP

Switch# show lldp
State: Enabled Timer: 30
Seconds Hold multiplier: 4
Reinit delay: 2
Seconds Tx delay: 2
Seconds
LLDP packet handling: Bridging

---

lldp tlv-select

format

lldp tlv-select*TLV* [TLV] [TLV] [TLV] [TLV] [TLV] [TLV] [TLV]
no lldp tlv-select

parameter

TLV	Optional TLV field
sys-name	system name
sys-desc	System specification
sys-cap	System functions
mac-phy	802.3 mac address
lag	802.3 link aggregation
max- frame-size	Maximum frame
management-addr	Management address

default

mode

Interface mode

Instructions

Use the command "lldp tlv-select" to append the selected TLV to the PDU.

Instance

Configure TLV

Switch(config)# interface range gi 1,3
Switch(config-if-range)# lldp tlv-select port-desc sys-name sys-desc sys-cap mac-phy lag max-frame-size management-addr

Query TLV configuration

Switch# show lldp interfaces gi1,3

State: Enabled
Timer: 30
Seconds
Hold multiplier: 4
Reinit delay: 2
Seconds Tx delay: 2
Seconds
LLDP packet handling: Flooding

Port | State | Optional TLVs | Address
-------- + ------ + -------------- + -------- gi1 | RX,TX |
PD, SN, SD , SC |192.168.2.100 gi3 |
RX,TX | PD, SN, SD, SC |192.168.2.100

Port ID: gi1
802.3 optional TLVs: 802.3-mac-phy, 802.3-lag, 802.3-max-frame-size,
management- addr
802.1 optional
TLVs PVID:
Enabled

Port ID: gi3
802.3 optional TLVs: 802.3-mac-phy, 802.3-lag, 802.3-max-frame-size,
management- addr
802.1 optional
TLVs PVID:
Enabled

lldp tlv-select pvid

format

lldp tlv-select pvid
(disable|enable) no lldp tlv-select pvid

parameter

disable	Disable LLDP 802.1 PVID TLV connection status
enable	Enable LLDP 802.1 PVID TLV connection status

default

Enabled by default

mode

Interface configuration mode

Instructions

Use the command "lldp tlv-select pvid" to configure the 802.1 PVID TLV connection status.

Instance

Configure optional TLV
PVID Switch(config)#
interface gi1
Switch(config-if)# lldp tlv-select pvid disable

Query interface LLDP configuration
Switch# show lldp interfaces gi1

State: Enabled
Timer: 30
Seconds
Hold multiplier: 4
Reinit delay: 2
Seconds Tx delay: 2
Seconds
LLDP packet handling: Flooding

Port | State | Optional TLVs | Address
-------- + ------ + -------------- + -------- gi1 |
RX,TX | PD, SN, SD, SC
|192.168.2.100

Port ID: gi1
802.3 optional TLVs: 802.3-mac-phy, 802.3-lag, 802.3-max-frame-size,
management- addr
802.1 optional
TLVs PVID:
Disabled

lldp tlv-select vlan-name

format

lldp tlv-select vlan-name (add|remove)*VLAN-LIST*

parameter

add	Add the name of the VLAN
remove	Delete the name of the VLAN

default

Default without VLAN name

mode

Interface configuration mode

Instructions

Use the command "lldp tlv-select vlan-name" to configure the VLAN name in the LLDPDU packet.

Instance

Configure optional TLV
PVID Switch(config)#
interface gi1
Switch(config-if)# lldp tlv-select vlan-name add 1

Query interface LLDP configuration
Switch# show lldp interfaces gi1

State: Enabled
Timer: 30
Seconds
Hold multiplier: 4
Reinit delay: 2
Seconds Tx delay: 2
Seconds
LLDP packet handling: Flooding

Port | State | Optional TLVs | Address
-------- + ------ + -------------- + -------- gi1 |
RX,TX | PD, SN, SD, SC
|192.168.2.100

Port ID: gi1
802.3 optional TLVs: 802.3-mac-phy, 802.3-lag, 802.3-max-frame-size,
management- addr

802.1 optional
TLVs PVID:
Disabled VLANs: 1

show lldp

format

show lldp
show lldp interface *IF_NMLPORTS*

parameter

interface	Query LLDP configuration by interface

default

mode

Privileged mode

Instructions

Use the command "show lldp" to query the system LLDP configuration.

Instance

Switch# show lldp

State: Enabled
Timer: 30
Seconds
Hold multiplier: 4
Reinit delay: 2
Seconds Tx delay: 2
Seconds
LLDP packet handling: Flooding

Port | State | Optional TLVs | Address
-------- + ------ + -------------- + -------- gi1 |
RX,TX |
|192.168.2.100

---

gi2 | RX,TX | |192.168.2.100
gi3 | RX,TX | |192.168.2.100
gi4 | RX,TX | |192.168.2.100
gi5 | RX,TX | |192.168.2.100
gi6 | RX,TX | |192.168.2.100
gi7 | RX,TX | |192.168.2.100

show lldp local-device

format

show lldp local-device
show lldp interfaces *IF_NMLPORTS* **local-device**

parameter

interfaces	Query LLDP local device information by interface

default

mode

Privileged mode

Instructions

Use the command "show lldp local-device" to query the local device information in the LLDP PDU packet.

Instance

Query local information

Switch# show lldp local-device

LLDP Local Device Information:
Chassis Type: Mac Address
Chassis ID :
1C:2A:A3:C4:02:92
System Name : Switch
System Description : Switch
System Capabilities Support: Bridge,
Router

System Capabilities Enable : Bridge, Router
Management Address: 192.168.2.100(IPv4)
Management Address:
fe80::1e2a:a3ff:fec4:292(IPv6)

show lldp neighbor

format

show lldp neighbor

show lldp interfaces *IF_NMLPORTS* **neighbor**

parameter

interfaces	Query LLDP neighbor information by interface

default

mode

Privileged mode

Instructions

Use the command "show lldp neighbor" to query the received LLDP neighbor information.

Instance

Query LLDP neighbor information

Switch# show lldp neighbor

```
 Port |     Device ID          |        Port ID         |         SysName         |  Capabilities
|   TTL
 ---- + ----------------- + ---------------- + ---------- ------- + ---------
----- + -----
 gi25 | 00:E0:4C:00:53:35 |00:E0:4C:00:53:35 |                        |                        |
3380
 gi25 | F0:76:1C:F5:DF:F1 |F0:76:1C:F5:DF:F1 |                        |                        |
3385
```

14. Logging

logging

format

logging
no logging

parameter

default

Enabled by default

mode

Global configuration mode

Instructions

Use the "logging" command to enable the logging function on the switch.

Instance

Enable log
Switch(config)# logging

logging host

format

logging host (ip-addr| hostname) [facility facility] [port port] [severity sev]
no logging host (ip-addr|hostname)

parameter

ip-addr	IP address of the remote log server

hostname	Host name of the remote log server
facility	Specify the level of log information, it can use the following values: local0, local1, local2, local3, local4, local5, local6 and local7, the default is local7
port	The port number of the remote log server. The range is 0~65535, and the default is 512.
severity	Specify the minimum severity level of log information. The default value for the lowest severity level is 5
emerg	0 emergency
alert	1 alarm
critical	2 serious
error	3 errors
warning	4 warning
notice	5 notice
info	6 information
debug	7 debugging

default

mode

Global configuration mode

Instructions

Use the command "logging host" to define the log server.

Instance

Configure log server
Switch(config)# logging host 1.2.3.4
Switch(config)# logging host SYSLOG

logging severity

format

logging (buffered|console|file) [severity sev]

no logging (buffered|console|file)

parameter

buffered	Log information is recorded to RAM
console	Log information to the serial port
file	Log information is recorded to flash

severity	Specify the minimum severity level of log information. The default value for the lowest severity level is 5
emerg	0 emergency
alert	1 alarm
critical	2 serious
error	3 errors
warning	4 warning
notice	5 notice
info	6 information
debug	7 debugging

default

Buffered and console are enabled by default, and the default value of the lowest severity level is 5

mode

Global configuration mode

Instructions

Use the command "logging severity" to set the minimum severity level of the log and specify the log to be stored in RAM, serial port,
flash.

Instance

Configuration log
Switch(config)# logging buffered 7
Switch(config)# logging flash 7

---

show logging

format

show logging [buffered|file]

parameter

buffered	Query log information recorded by RAM
file	Query the log information recorded by the flash

default

mode

Privileged mode

Instructions

Use the command "show logging" to query the system log information.

Instance

Switch# show logging

Logging service is

enabled Aggregation:

enabled
Aggregation aging time: 300 sec

Console Logging: level
notice Buffer Logging: level
notice File Logging :
disabled

Buffer Logging
---
*Mar 20 2020 18:27:26: AAA-5-CONNECT: New console connection for user admin, source async ACCEPTED

*Mar 20 2020 18:27:24: AAA-4-REJECT: New console connection, source async REJECTED
*Mar 20 2020 18:16:08: AAA-5-DISCONNECT: console connection for user admin, source async TERMINATED
*Mar 20 2020 18:12:21: PORT-5-LINK_DOWN: Interface GigabitEthernet19 link down
*Mar 20 2020 17:58:23: PORT-5-LINK_UP: Interface GigabitEthernet19 link up, aggregated (2)
*Mar 20 2020 17:58:22: PORT-5-LINK_DOWN: Interface GigabitEthernet19 link down, aggregated (2)

clear logging

format

clear logging (buffered|file)

parameter

buffered	Clear RAM log information
file	Clear flash log information

default

mode

Privileged mode

Instructions

Use the command "clear logging" to delete the logs recorded by RAM and Flash.

Instance

Clear log records
Switch# clear logging buffered
Switch# clear logging file

---

15. MAC Address Table

mac address-table aging-time

format

mac accress-table aging-time seconds

parameter

seconds	Set the MAC address aging time, the default is 300 seconds.

default

300 seconds by default

mode

Global configuration mode

Instructions

Use the command "mac address-table aging-time" to specify the aging time of dynamic MAC address table entries.

Instance

Configure the aging time
Switch(config)# mac address-table aging-time 500

mac address-table static

format

mac address-table static mac-addr vlan vlan-id interfaces IF_PORTS
mac address-table static mac-addr vlan vlan-id
drop no mac address-table static mac-addr vlan vlan-
id

parameter

mac-addr	Designated MAC address
vlan-id	Designated VLAN
IF_PORTS	Designated interface
drop	Drop the packet when the MAC of the packet is matched

default

mode

Global configuration mode

Instructions

Use the command "mac address-table static" to add static MAC table entries.

Instance

Add a static MAC entry
Switch# mac address-table static 00:11:22:33:44:55 vlan 1 interfaces g5

clear mac address-table

format

clear mac address-table dynamic [interfaces *IF_PORTS*|vlan vlan-id]

parameter

interfaces	Clearing of designated interfaces
vlan	Clear of designated VLAN

default

mode

Privileged mode

Instructions

Use the command "clear mac address-table" to clear the MAC address of the system or specify the interface and VLAN
Make a specific deletion.

Instance

Clear the MAC in the interface
Switch# clear mac address-table dynamic interfaces gi1

show mac address-table

format

show mac address-table [dynamic|static] [interface IF_PORTS] [vlan vlan- id]
show mac address-table [mac-addr] [vlan vlan-id]

parameter

dynamic	Query all dynamically learned MAC addresses of the system
static	Query all statically configured MAC addresses of the system
interface	Query system MAC address by interface
vlan	Query system MAC address by VLAN

default

mode

Privileged mode

Instructions

Use the command "show mac address-table" to query system MAC address table entries.

Instance

Query the MAC address table
Switch# show mac address-table

```
 VID   | MAC Address          | Type                    | Ports
------+------------------+-------------------+--- -------------
      1 | 1C:2A:A3:C4:02:92 | Management          | CPU
      1 | 00:0B:0E:0F:00:ED | Dynamic             | gi25
      1 | 00:E0:4C:2E:2C:DD | Dynamic             | gi15
      1 | 00:E0:70:68:35:7F | Dynamic             | gi25
```

show mac address-table counters

format

show mac address-table counters

parameter

default

mode

Privileged mode

Instructions

Use the command "show mac address-table counters" to query the total number of system MAC address tables.

Instance

Query the total number of MAC tables

Switch# show mac address-table counters

Total number of entries: 5

show mac address-table aging-time

format

show mac address-table aging-time

parameter

default

mode

Privileged mode

Instructions

Use the command "show mac address-table aging-time" to query the MAC address aging time.

Instance

Query MAC aging time

Switch# show mac address-table aging-time

Mac Address Table aging time: 300 sec

16. MAC VLAN

vlan mac-vlan group (Global)

format

vlan mac-vlan group<1-2147483647> mac-address mask <9-48>
no vlan mac-vlan group mac-address mask <9-48>

parameter

<1-2147483647>	MAC VLAN group ID
mac-address	Designated MAC address
mask	Specified MAC address mask

default

mode

Global configuration mode

Instructions

Use the command "vlan mac-vlan group" to specify the MAC group.

Instance

Configure MAC VLAN group
Switch(config)# vlan mac-vlan group 333 22:33:44:55:66:77 mask 48

vlan mac-vlan group (Interface)

format

vlan mac-vlan group<1-2147483647> vlan <1-4094>
no vlan mac-vlan group <1-2147483647>

parameter

none	Not specified, which means all groups
<1-2147483647>	MAC VLAN group ID
vlan	Designated VLAN

default

mode

Interface configuration mode

Instructions

Use the command "vlan mac-vlan group" to map the MAC group and VLAN on the interface.

Instance

Configure MAC VLAN group
Switch(config)# interface gi1
Switch(config-if)# vlan mac-vlan group 333 VLAN 100

show vlan mac-vlan groups

format

show vlan mac-vlan groups

parameter

default

mode

Privileged mode

Instructions

Use the command "show vlan mac-vlan groups" to query the MAC group configuration.

Instance

Query MAC group

```
Switch# show vlan mac-vlan groups
Mac Address Mask     Group Id
-------------------- -------------------- -------- -------------
22:33:44:55:66:7  48   222
          7
44:55:66:77:88:9  48   333
          9
88:99:00:aa:bb:c  40   444
          c
88:99:00:ab:bb:1  48   111
          0
```

show vlan mac-vlan interfaces

format

show vlan mac-vlan [interfaces IF_PORTS]

parameter

interfaces	Designated interface

default

mode

Privileged mode

Instructions

Use the command "show vlan mac-vlan interface" to query the MAC VLAN interface configuration.

Configure MAC VLAN interface configuration

Switch# show vlan mac-vlan interfaces gi1

Port gi1:

Mac based VLANs: Group ID Vlan ID

---

333 444

444 1

17. Management ACL

management access-list

format

management access-list NAME

no management access-list NAME

parameter

NAME	The name of the management ACL

default

mode

Global configuration mode

Instructions

Use the command "management access-list" to create a management ACL and enter the management ACL configuration mode. The name of the ACL must be unique and cannot be the same name as other management ACLs.

Configure management ACL
Switch(config)# management access-list test

management access-class

format

management access-class NAME
no management access-class

parameter

NAME	The name of the management ACL

default

mode

Global configuration mode

Instructions

Use the command "management access-class" to activate a management ACL.

Instance

Activate management ACL
Switch(config)# management access-list test

deny

format

[sequence <1-65535>] deny interfaces IF_PORTS service (all|http|https|snmp|ssh|telnet)

[sequence <1-65535>] deny ip ABCD/ABCD interfaces IF_PORTS service (all|http|https|snmp|ssh|telnet)
[sequence <1-65535>] deny ipv6 X:X::X:X/<0-128> interfaces IF_PORTS **service** (all|http|https|snmp|ssh|telnet)

parameter

sequence	(Optional) specifyThe sequence number of the ACE, the sequence index indicates the ACL ACE priority
interfaces	Designated interface
ip	Specify IP address and mask
ipv6	Specify IPv6 address and prefix length
service	Specify related service types

default

mode

Management ACL configuration mode

Instructions

Use the command "deny" to reject the rule of discarding packets that conform to the rule.

Instance

Add drop rule

```
Switch(config)# management access-list test
Switch(config-macl)# sequence 1 deny ip 1.1.1.1/255.255.255.255 interfaces gi1
service all
```

permit

format

[sequence <1-65535>] permit interfaces IF_PORTS service (all|http|https|snmp|ssh|telnet)

[sequence <1-65535>] permit ip ABCD/ABCD interfaces IF_PORTS **service** (all|http|https|snmp|ssh|telnet)

[sequence <1-65535>] permit ipv6 X:X::X:X/<0-128> interfaces IF_PORTS **service** (all|http|https|snmp|ssh|telnet)

parameter

sequence	(Optional) specifyThe sequence number of the ACE, the sequence index indicates the ACL ACE priority
interfaces	Designated interface

ip	Specify IP address and mask
ipv6	Specify IPv6 address and prefix length
service	Specify related service types

default

mode

Management ACL configuration mode

Instructions

Use the command "permit" to add permission rules that allow packets that meet the rules to pass.

Instance

Add allow rules

Switch(config)# management access-list test
Switch(config-macl)# sequence 2 permit ip 2.2.2.2/255.255.255.255 interfaces gi1 service http

no sequence

format

no sequence <1-65535>

parameter

sequence	Specify the serial number of the ACE

default

mode

Management ACL configuration mode

Instructions

Use the command "no sequence" to delete the management ACL rules.

Instance

Delete rule

Switch(config)# management access-list test
Switch(config-macl)# no sequence 10

show management access-list

format

show management access-list NAME

parameter

NAME	The name of the management ACL

default

mode

Privileged mode

Instructions

Use the command "show management access-list" to query management ACL information.

Instance

Query management ACL

Switch#Switch# show management access-list 1

management access-list is created test

---

sequence 1 deny ip 1.1.1.1/255.255.255.255 interfaces gi1 service all

! (Note: all other access implicitly denied)

show management access-class

format

show management access-class

parameter

default

mode

Privileged mode

Instructions

Use the command "show management access-class" to query the activated management ACL.

Instance

Query activation management ACL
Switch# show management access-class
Management access-class is enabled, using access-list test

---

18. MLD Snooping

ipv6 mld snooping

format

ipv6 mld snooping
no ipv6 mld snooping

parameter

default

Disabled by default.

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping" to enable the IPv6 MLD snooping function. Disabling will clear all ipv6 mld listening dynamic groups and dynamic router ports, and invalidate static ipv6 mld groups. Will no longer learn dynamic groups and router ports generated by mld messages.

Instance

Enable ipv6 mld snooping function
Switch(config)# ipv6 mld snooping

ipv6 mld snooping report-suppression

format

ipv6 mld snooping report-suppression
no ipv6 mld snooping report-suppression

parameter

default

Enabled by default.

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping report-suppression" to enable the MLD snooping report suppression function

Instance

Enable MLD monitoring report suppression function
Switch(config)# no ipv6 mld snooping report-suppression

ipv6 mld snooping version

format

ipv6 mld snooping version (1|2)

parameter

(1|2)	IPv6 MLD version

default

The default is V1

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping version" to configure the MLD version. If you select version 1, then version 2 packets will not be processed.

Instance

Configure MLD version
Switch(config)# ipv6 mld snooping version 2

ipv6 mld snooping unknown-multicast action

format

ipv6 mld snooping unknown-multicast action (drop | flood |router-port)
no ipv6 mld snooping unknown-multicast action

parameter

drop	Unknown multicast packet drop
flood	Unknown multicast packet flooding
router-port	Unknown multicast packets are forwarded to the routing port

default

The default is flood

mode

Interface configuration mode

Instructions

When igmp and mld monitoring is disabled, it cannot set the action router port.
When igmp snooping and mld snooping are disabled, it sets the flood of unknown multicast operations. When the action is the router port to flood or drop, it will delete the unknown multicast group entry
Use the command "ipv6 mld snooping unknown-multicast action" to configure the IPv6 MLD unknown multicast policy.

Instance

Configure unknown multicast policy
Switch(config)# ipv6 mld snooping unknown-multicast action router-port

ipv6 mld snooping vlan

format

ipv6 mld snooping vlan VLAN-LIST
no ipv6 mld snooping vlan VLAN-LIST

parameter

vlan	Specify VLAN ID

default

All VLANs are disabled by default.

mode

Global configuration mode

Instructions

Disabling will clear all ipv6 mld listening dynamic groups and dynamic router ports, and make all static ips of this vlan
The igmp group is invalid. Will no longer learn dynamic groups and router ports through igmp messages. Use the command "ipv6 mld snooping vlan" to enable the VLAN-level MLD function.

Instance

Enable IPv6 multicast VLAN function
Switch(config)# ipv6 mld snooping vlan 1

---

ipv6 mld snooping vlan fastleave

format

ipv6 mld snooping vlan <VLAN-LIST> fastleave
no ipv6 mld snooping vlan <VLAN-LIST> fastleave

parameter

vlan	Specify VLAN list

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping vlan fastleave" to enable the fast leave function. When a leave packet is received, the group will immediately remove the port.

Instance

Enable quick leave
Switch(config)# ipv6 mld snooping vlan 1 fastleave

ipv6 mld snooping vlan last-member-query-count

format

ipv6 mld snooping vlan <VLAN-LIST> last-member-query-count <1-7>
no ipv6 mld snooping vlan <VLAN-LIST> last-member-query-count

parameter

vlan	Specify VLAN list
<1-7>	Specify the last member query count to be set

default

The default is 2

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping vlan last-member-query-count" to configure how many packets are sent.

Instance

Configure the number of sent member query messages
Switch(config)# ipv6 mld snooping vlan 1 last-member-query-count 5

ipv6 mld snooping vlan last-member-query-interval

format

ipv6 mld snooping vlan <VLAN-LIST> last-member-query-interval <1-60>
no ipv6 mld snooping vlan <VLAN-LIST> last-member-query-interval

parameter

vlan	Specify VLAN list
<1-7>	Specify the last member query interval to be set

default

Default is 1

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping vlan last-member-query-interval" to configure the interval for sending member query messages.

Instance

Configure the interval for sending member query messages
Switch(config)# ipv6 mld snooping vlan 1 last-member-query-interval 3

ipv6 mld snooping vlan query-interval

format

ipv6 mld snooping vlan <VLAN-LIST> query-interval <30-18000>
no ipv6 mld snooping vlan <VLAN-LIST> query-interval

parameter

vlan	Specify VLAN
query-interval	Query interval setting

default

The default is 125 seconds.

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping vlan query-interval" to set the general query interval.

Instance

Set general query interval
Switch(config)# ipv6 mld snooping vlan 1 query-interval 100

ipv6 mld snooping vlan response-time

format

ipv6 mld snooping vlan <VLAN-LIST> response-time <5-20>
no ipv6 mld snooping vlan <VLAN-LIST> response-time

parameter

vlan	Specify VLAN
response-time	Response time setting

default

The default is 10.

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping vlan response-time" to set the response time.

Instance

Set response time
Switch(config)# ipv6 mld snooping vlan 1 response-time 12

---

ipv6 mld snooping vlan router

format

ipv6 mld snooping vlan VLAN-LIST router learn pim-dvmrp
no ipv6 mld snooping vlan VLAN-LIST router learn pim-dvmrp

parameter

vlan	Specify VLAN

default

Enabled by default.

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping vlan router" to pass routing protocol packets (such as PIM/PIMv2,
DVMRP, MOSPF) enable learning router ports.

Instance

Configure routing
Switch(config)# ipv6 mld snooping vlan 99 router

ipv6 mld snooping vlan static-port

format

ipv6 mld snooping vlan <VLAN-LIST> static-port IF_PORTS
no ipv6 mld snooping vlan <VLAN-LIST> static-port IF_PORTS

parameter

vlan	Specify VLAN
static -port	Designated port

default

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping vlan static-port" to add static forwarding ports, all known
Static ports will be added to the vlan 1 ipv6 group.

Instance

Configure static forwarding port
Switch(config)# ipv6 mld snooping vlan 1 static -port gi1-2

ipv6 mld snooping vlan forbidden-router-port

format

ipv6 mld snooping vlan <VLAN-LIST> forbidden-router-port IF_PORTS
no ipv6 mld snooping vlan <VLAN-LIST> forbidden-router-port IF_PORTS

parameter

vlan	Specify VLAN
IF_PORTS	Designated port

default

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping vlan forbidden-router-port" to add static forbidden routing ports. This will also remove the port from the static routed port.

Prohibited routing ports will not forward received query packets.

Instance

Configure to disable routing

Switch(config)# ipv6 mld snooping vlan 1 forbidden-router-port gi2

ipv6 mld snooping vlan static router port

format

ipv6 mld snooping vlan <VLAN-LIST> static-router-port IF_PORTS

no ipv6 mld snooping vlan <VLAN-LIST> static -router-port IF_PORTS

parameter

vlan	Specify VLAN
IF_PORTS	Designated port

default

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping vlan static-router-port" to add a static route port. This port will forward all query messages.

Instance

Configure routing port

Switch(config)# ipv6 mld snooping vlan 1 static-router-port gi1-2

ipv6 mld snooping vlan static-group

format

ipv6 mld snooping vlan <VLAN-LIST> static-group [<ipv6-addr>]

interfaces IF_PORTS

no ipv6 mld snooping vlan <VLAN-LIST> static-group [<ipv6-addr>]

interfaces IF_PORTS

parameter

vlan	Specify VLAN
static-group	Static IPv6 multicast address

interfaces	Designated port

default

mode

Global configuration mode

Instructions

Use the command "ipv6 mld snooping vlan static-group" to add a static group. The static group will not learn other dynamic ports. If the dynamic group exists, the static group will overlap with the dynamic group. The configuration of the static group is valid unless igmp snooping global and vlan are enabled.

Instance

Configure static groups

Switch(config)# ipv6 mld snooping vlan 1 static-group ff13::1 interfaces gi1-2

ipv6 mld snooping vlan group

format

no ipv6 mld snooping vlan <VLAN-LIST> group <ipv6-addr>

parameter

vlan	Specify VLAN
group	Static IPv6 multicast address

default

mode

Global configuration mode

Instructions

Use the command "no ipv6 mld snooping vlan group" to delete a dynamic or static multicast group.

Instance

Delete multicast group

Switch(config)# no ipv6 mld snooping vlan 1 group ff13::1

ipv6 mld profile

format

ipv6 mld profile <1-128>

parameter

<1-128>	Specify the ID of the generated template

default

mode

Global configuration mode

Instructions

Use the command "ipv6 mld profile" to enter the MLD template configuration mode.

Instance

Enter MLD template configuration
Switch(config)# ipv6 mld profile 1

profile range

format

profile range ipv6 <ipv6-addr> [ipv6-addr] action (permit | deny)

parameter

ipv6	Set the start and end IPv6 addresses of multicast
permit	Allow address learning within the multicast address range
deny	Prohibit address learning in the multicast address range

Default

mode

mld profile configuration mode

Instructions

Use the command "profile range" to generate an MLD template.

Instance

Configure IGMP template

Switch(config)# ipv6 mld profile 1

Switch(config-igmp-profile)# profile range ip v6 ff13::1 ff13::10 action permit

ipv6 mld filter

format

ipv6 mld filter <1-128>

no ipv6 mld filter

parameter

<1-128>	Configure the ID of the MLD filter template

default

mode

Interface configuration mode

Instructions

Use the command "ipv6 mld filter" to bind a template to the interface. When the port is bound to the template, the port learning group will be updated. If the group does not match the filtering template rules, it will delete the port from the group. Static groups are excluded.

instance

Bind filter template

Switch(config)# interface gi1

Switch(config-if)#ipv6 mld filter 1

ipv6 mld max-groups

format

ipv6 mld max-groups <0-1024>

no ipv6 mld max-groups

parameter

max-groups	Largest multicast group

default

The default is 1024.

mode

Interface configuration mode

Instructions

Use the command "ipv6 mld max-groups" to configure the maximum number of interface multicast groups to learn.

Instance

Configure the maximum number of learned multicast groups on the interface

Switch(config-if)#ipv6 mld max-groups 10

---

ipv6 mld max-groups action

format

ipv6 mld max-groups action (deny | replace)

parameter

deny	When the interface reaches the maximum number of multicast groups, discard new groups
replace	When the interface reaches the maximum number of multicast groups, replace the old group

default

Default is deny

mode

Interface configuration mode

Instructions

Use the command "ipv6 mld max-groups action" to configure the action processing when the interface reaches the maximum multicast group.

Instance

Configuration replacement operation

Switch(config-if)#ipv6 mld max-groups action replace

clear ipv6 mld snooping groups

format

clear ipv6 mld snooping groups [(dynamic | static)]

parameter

none	When dynamic or static is not specified, clear all groups
dynamic	Clear dynamic group
static	Clear static group

default

mode

Privileged mode

Instructions

Use the command "clear ipv6 mld snooping groups" to clear the multicast groups of the system.

Instance

Clear multicast group

Switch# clear ipv6 mld snooping groups

clear ipv6 mld snooping statistics

format

clear ipv6 mld snooping statistics

parameter

default

mode

Privileged mode

Instructions

Use the command "show ipv6 mld snooping statistics" to clear MLD statistics.

Instance

Clear IGMP statistics

Switch# clear ipv6 mld snooping statistics

show ipv6 mld snooping groups counters

format

show ipv6 mld snooping groups counters

parameter

default

mode

Privileged mode

Instructions

Use the command "show ipv6 mld snooping groups counters" to query the multicast group count, including static and dynamic.

Instance

Query multicast group count

Switch# show ipv6 mld snooping group counters

Total ipv6 mld snooping group number: 2

show ipv6 mld snooping groups

format

show ipv6 mld snooping groups [(dynamic | static)]

parameter

none	When dynamic or static is not specified, query all groups
dynamic	Query dynamic group
static	Query static group

default

mode

Privileged mode

Instructions

Use the command "show ipv6 mld snooping groups" to query the multicast group of the system.

Instance

Query multicast group

```
Switch# show ipv6 mld snooping groups
VLAN |   Group IP Address | Type | Life(Sec) | Port
------+---------------------------------------+-- ------+-----------+---
---------------
1 |   ff13::1 | Static|  --| gi1
1 |   ff13::2 | Static|  --| gi2

Total Number of Entry = 2
```

---

show ipv6 mld snooping router

format

show ipv6 mld snooping router [(dynamic | forbidden |static)]

parameter

none	If not specified, query all groups
dynamic	Query dynamic group
forbidden	Query disabled group
static	Query static group

default

mode

Privileged mode

Instructions

Use the command "show ipv6 mld snooping router" to query MLD routing information.

Instance

Query routing

```
Switch# show ipv6 mld snooping router
Dynamic Router Table
VID | Port | Expiry Time(Sec)
------+---------+-----------------

Total Entry 0
```

Static Router Table VID | Port Mask

------+----------

1 | gi4

Total Entry 1

Forbidden Router Table VID | Port Mask

------+----------

1 | gi8

Total Entry 1

show ipv6 mld snooping

format

show ipv6 mld snooping

parameter

default

mode

Privileged mode

Instructions

Use the command "show ipv6 mld snooping" to query global MLD configuration information.

Instance

Query IGMP information

Switch# show ipv6 mld snooping

MLD Snooping Status

Snooping : Enabled
Report Suppression :
Enabled Operation Version: v1

Forward Method: mac

Unknown IP Multicast Action : Flood

Packet
Statistics Total
RX: 0
Valid RX: 0

Invalid RX 0
Other RX: 0
Leave RX: 0
Report RX : 0
General Query RX 0
Specail Group Query RX 0
Specail Group & Source Query RX 0
Leave TX: 0
Report TX : 0
General Query TX 0
Specail Group Query TX 0
Specail Group & Source Query TX 0

show ipv6 mld snooping vlan

format

show ipv6 mld snooping vlan [VLAN-LIST]

parameter

none	If not specified, query all VLANs
vlan	Specify VLAN query

default

mode

Privileged mode

Instructions

Use the command "show ipv6 mld snooping vlan" to query the MLD multicast VLAN configuration information.

Query MLD multicast VLAN information
Switch# show ipv6 mld snooping vlan 1
MLD Snooping is globaly enabled
MLD Snooping VLAN 1 admin: disabled
MLD Snooping operation mode: disabled
MLD Snooping robustness: admin 2 oper
2
MLD Snooping query interval: admin 125 sec oper 125 sec
MLD Snooping query max response: admin 10 sec oper 10
sec MLD Snooping last member query counter: admin 2 oper
2
MLD Snooping last member query interval: admin 1 sec oper 1
sec MLD Snooping last immediate leave: disabled
MLD Snooping automatic learning of multicast router ports: enabled

show ipv6 mld snooping forward-all

format

show ipv6 mld snooping forward-all [vlan VLAN-LIST]

parameter

none	If not specified, query all forwarding information
vlan	Specify VLAN query

default

mode

Privileged mode

Instructions

Use the command "show ipv6 mld snooping forward-all" to query all forwarding information.

Query forwarding information

Switch# show ipv6 mld snooping forward-all 1

MLD Snooping VLAN 1
MLD Snooping static port : None
MLD Snooping forbidden port: None

show ipv6 mld profile

format

show ipv6 mld profile [<1-128>]

parameter

none	Not specified, means all templates
<1-128>	Specify the ID of the template

default

mode

Privileged mode

Instructions

Use the command "show ipv6 mld profile" to query the IGMP profile configuration information.

Instance

Query IGMP template information

Switch# show ipv6 mld profile

IPv6 mldprofile index: 1
IPv6 mld profile action:
permit Range low ip: ff13::1

Range high ip: ff13::10

---

show ipv6 mld filter

format

show ipv6 mld filter [interfaces IF_PORTS]

parameter

none	Not specified, means all ports
interfaces	According to the specified interface

default

mode

Privileged mode

Instructions

Use the command "show ipv6 mld filter" to query MLD filter template information.

Instance

Query filter template

Switch# show ipv6 mld filter

Port ID | Profile ID

---------+--------------

gi1: 1
gi2: None
gi3: None
gi4: None
gi5: None

--More—

---

show ipv6 mld max-group

format

show ipv6 mld max-group [interfaces IF_PORTS]

parameter

none	Not specified, means all ports
interfaces	According to the specified interface

default

mode

Privileged mode

Instructions

Use the command "show ipv6 mld max-group" to query the maximum learning number of the interface multicast group.

Instance

Query the maximum learning
number of the interface multicast
group Switch# show ipv6 mld max-
group Port ID | Max Group
---------+--------------
gi1: 50
gi2: 256
gi3: 256
gi4: 256
gi5: 256
--More—

---

show ipv6 mld max-group action

format

show ipv6 mld max-group action [interfaces IF_PORTS]

parameter

none	Not specified, means all ports
interfaces	According to the specified interface

default

Default is deny

mode

Privileged mode

Instructions

Use the command "show ipv6 mld max-group action" to query the operation processing.

Instance

Query operation
Switch# show ipv6 mld max-group action
Port ID | Max-groups Action
---------+--------------------
gi1: replace
gi2: deny
gi3: deny
gi4: deny
gi5: deny
--More—

---

19. MVR

mvr

format

mvr
no mvr

parameter

default

Disabled by default.

mode

Global configuration mode

Instructions

Use the command "mvr" to enable the MVR function.

Instance

Configure MVR
Switch(config)# mvr

Switch(config)# no mvr

Query MVR
Switch# show mvr
MVR Running:
Disabled MVR
Multicast VLAN: 1
MVR Group Range: None
MVR Max Multicast Groups: 128
MVR Current Multicast Groups:
0
MVR Global query response time: 1
sec MVR Mode: compatible

---

mvr vlan

format

mvr vlan[VLAN-LIST]

parameter

vlan	Specify the VLAN of the MVR, which must be created first

default

Default is 1

mode

Global configuration mode

Instructions

Use the command "mvr vlan" to configure the MVR VLAN. Changing the mvr vlan id will delete the old mvr vlan and the new mvr vlan group. If there is a configured source or sink port, it will check that the source must only be in the mvr vlan, and the sink port cannot be in the mvr vlan member.

Instance

Configure MVR VLAN
Switch(config)# mvr vlan
2
The operation will delete the old and new MVR VLAN groups
include static MVR groups.Continue? [yes/no]:y

mvr group

format

mvr group<ip-address> [<1-128>]

parameter

<ip-address>	MVR multicast address
[<1-128>]	Consecutive IP address sequence

default

mode

Global configuration mode

Instructions

Use the command "mvr group" to configure the sequence of MVR multicast group addresses.

Instance

Configure MVR group
Switch(config)# mvr group 224.1.1.1 8
The operation will delete the MVR VLAN groups include static MVR groups.Continue? [yes/no]:y

mvr mode

format

mvr mode(dynamic | compatible)

parameter

dynamic	Allow dynamic MVR membership on the source port
compatible	Does not support IGMP dynamic connection on the source port

default

The default is compatible

mode

Global configuration mode

Instructions

Use the command "mvr mode" to configure and modify the MVR mode.

Instance

Configure MVR mode
Switch(config)#mvr mode dynamic

mvr query-time

format

mvr query-time<1-10>
no mvr query-time

parameter

<1-10>	Specify query or response time

default

The default is 1 second

mode

Global configuration mode

Instructions

Use the command "mvr query-time" to configure the MVR query time.

Instance

Configure MVR query time
Switch(config)# mvr query-time 10

mvr port type

format

mvr type(source | receiver)
no mvr type

parameter

source	Configure the upstream port that receives and sends multicast data as the source port. Subscribers cannot connect directly Connect to the source port. All source ports on the switch belong to a single multicast VLAN
receiver	If the port is a subscriber port and should only receive multicast data, configure it as a receiver port. It will not receive data unless it becomes a member of a multicast group (statically or by using IGMP leave and join messages). The receiver port cannot belong to the multicast VLAN

default

mode

Interface configuration mode

Instructions

Use the command "mvr port type" to configure the MVR port type.

Instance

Configure MVR port type
Switch(config)# interface gi1
Switch(config-if)# switchport trunk allowed vlan 2
Switch(config-if)# mvr type source
Switch(config-if)#exit
Switch(config)# interface gi2
Switch(config-if)# switchport mode access

Switch(config-if)#mvr type receiver

Query interface MVR configuration
Switch# show mvr interface
Port | Type | Immediate Leave
--------+---------+-----------------
gi1 | Source|
Disabled gi2 |
Receiver|
Disabled

mvr immediate

format

mvr immediate
no mvr
immediate

parameter

default

mode

Interface configuration mode

Instructions

Use the command "mvr immediate" to configure the MVR to leave immediately.
Description: This command only applies to the receiver port, and should only be used in the receiver connected to a single receiver device

Enabled on the port.

Instance

Configure MVR to leave immediately Switch(config)# interface gi1 Switch(config-if)#mvr immediate

---

mvr vlan group

format

mvr vlan<VLAN-ID> group <ip-addr> interfaces IF_PORTS
no mvr vlan <VLAN-ID> group <ip-addr> interfaces IF_PORTS

parameter

vlan	MVR static multicast group VLAN
group	MVR static multicast address
interfaces	Designated port

default

mode

Global configuration mode

Instructions

Use the command "mvr vlan group" to configure a static MVR multicast group and multicast member ports.
Description: In compatibility mode, this command only applies to the receiver port. In dynamic mode, it applies to
receiverPort and source port. When deleting the static mvr group all ports, the static group will be deleted.

Instance

Configure MVR static multicast group
Switch(config)# mvr vlan 2 group 224.1.1.1 interfaces gi2

clear mvr members

format

clear mvr members [dynamic|static]

parameter

dynamic	MVR dynamic multicast group
static	MVR static multicast group
none	Not specified, which means all static and dynamic members

default

mode

Privileged mode

Instructions

Use the command "clear mvr members" to clear the MVR multicast group members.

Instance

Clear MVR multicast group members
Switch# clear mvr members

show mvr members

format

show mvr members

parameter

default

mode

Privileged mode

Instructions

Use the command "show mvr members" to query the MVR multicast group members.

Instance

Query MVR multicast group members
Switch# show mvr members

show mvr interface

format

show mvr interface [IF_PORTS]

parameter

none	Not specified, means all ports
interfaces	According to the specified interface

default

mode

Privileged mode

Instructions

Use the command "show mvr interface" to query the interface MVR configuration.

Instance

Query interface MVR configuration
Switch# show mvr interface
Port | Type | Immediate Leave
--------+---------+-----------------
gi1 | Source|
Disabled gi2 |
Receiver|
Disabled

show mvr

format

show mvr

parameter

default

mode

Privileged mode

Instructions

Use the command "show mvr" to query MVR information.

Instance

Query MVR

Switch# show mvr
MVR Running:
Disabled MVR
Multicast VLAN: 1
MVR Group Range: None
MVR Max Multicast Groups: 128
MVR Current Multicast Groups:
0
MVR Global query response time: 1
sec MVR Mode: compatible

20. POE

poe

format

poe
no poe

parameter

default

POE is enabled on all ports by default.

mode

Interface configuration mode

Instructions

Use the command "poe" to enable the port's POE function.

Instance

Enable port POE
Switch(config)# interface GigabitEthernet 1
Switch(config-if)# poe

Query POE configuration
Switch# show poe
Get poe power:

Port | Enable | State | type | level | actual- | volatge(V) | current(mA)
| | | | | power(mW) | |
--------+---------+-------+------+-------+-------- ---+-----------+----
----

gi1 enable on AT 4 676 52 13

gi2	enable	off	AF	0	N/A	N/A	N/A
gi3	enable	off	AF	0	N/A	N/A	N/A
gi4	enable	off	AF	0	N/A	N/A	N/A
gi5	enable	off	AF	0	N/A	N/A	N/A
gi6	enable	off	AF	0	N/A	N/A	N/A
gi7	enable	off	AF	0	N/A	N/A	N/A
gi8	enable	off	AF	0	N/A	N/A	N/A

Total used power: 676
(mW) Current
Temperature: 65 (C)

poe schedule

format

poe schedule weekdays hour hours
no poe schedule week days hour hours

parameter

days	Port poe power supply days
hours	Port poe power supply hours

default

POE power supply is turned on by default for all dates and times.

mode

Interface configuration mode

Instructions

Use the command "poe schedule" to set the port poe power supply time.

Instance

Set interface POE time
Switch(config)# interface GigabitEthernet 1
Switch(config-if)# poe schedule week mon hour 1

Note: The configured time has a deviation of about 0~10 minutes.

show poe

format

show poe

parameter

default

mode

Privileged mode

Instructions

Use the command "show poe" to query the POE function of the system.

Instance

Query POE configuration
Switch# show poe
Get poe power:

Port	Enable	State	type	level	actual-power(mW)	volatge(V)	current(mA)
gi1	enable	on	AT	4	676	52	13
gi2	enable	off	AF	0	N/A	N/A	N/A
gi3	enable	off	AF	0	N/A	N/A	N/A
gi4	enable	off	AF	0	N/A	N/A	N/A
gi5	enable	off	AF	0	N/A	N/A	N/A
gi6	enable	off	AF	0	N/A	N/A	N/A
gi7	enable	off	AF	0	N/A	N/A	N/A
gi8	enable	off	AF	0	N/A	N/A	N/A

Total used power: 676
(mW) Current
Temperature: 65 (C)

21. Port Mirror

mirror session source interface

format

mirror session <1-4> source interfaces IF_PORTS (both | rx | tx)
no mirror session<1-4> source interfaces IF_PORTS (both | rx |
tx) no mirror session (<1-4> | all)

parameter

<1-4>	Configurable mirroring session
interfaces	Source port of mirrored packets
both	The direction of the mirror message is bidirectional
rx	The direction of the mirrored message is the receiving direction
tx	The direction of the mirrored message is the sending direction

default

mode

Global configuration mode

Instructions

Use the command "mirror session source interface" to configure port mirroring and specify the source port and packet direction.

Configure the mirror source port
Switch(config)# mirror session 1 source interface gi2-5 both
Switch(config)# mirror session 1 destination interface gi1
Switch(config)# do show mirror session 1
Session 1 Configuration
Source RX Port: gi2-5
Source TX Port : gi2-5
Destination port : gi1
Ingress State: disabled

mirror session destination interface

format

mirror session <1-4> destination interface IF_NMLPORT [allow-ingress]
no mirror session <1-4> destination interface IF_NMLPORT
no mirror session (<1-4> | all)

parameter

<1-4>	Configurable mirroring session
interfaces	Destination port of mirrored packets

allow-ingress	Enable ingress traffic forwarding

default

mode

Global configuration mode

Instructions

Use the command "mirror session destination interface" to configure port mirroring and specify the destination port.

Switch(config)# mirror session 1 destination interface gi1
Switch(config)# do show mirror session 1
Session 1 Configuration
Source RX Port: gi2-5
Source TX Port : gi2-5
Destination port : gi1
Ingress State: disabled

show mirror

format

show mirror [session <1-4>]

parameter

<1-4>	Configurable mirroring session

default

mode

Privileged mode

Instructions

Use the command "show mirror" to query the mirroring session configured by the system.

Instance

Switch#show mirror session 1
Session 1 Configuration

Source RX Port: gi2-5

Source TX Port : gi2-5
Destination port : gi1
Ingress State: disabled

22. Port

description

format

description *WORD<1-32>*
no description

parameter

description	Interface description information

default

mode

Interface mode

Instructions

Use the command "description" to easily configure the name information for the interface.

Instance

Configuration interface description
Switch(config)# interface gi1
Switch(config-if)# description "uplink port"

Query interface status
Switch# show interfaces gi1 status

Port	Name	Status	Vlan	Duplex	Speed	
	Type gi1	uplink port	connected	1		a-full
	a-10M	Copper				

speed

format

speed (10 | 100 | 1000)
speed auto [(10 | 100 | 1000 | 10/100)] speed nonegtiate

no speed nonegtiate

parameter

10	The rate of the specified interface is mandatory 10Mbit/s or auto-negotiation 10Mbit/s
100	The rate of the designated interface is mandatory 100Mbit/s or auto-negotiation 100Mbit/s
1000	The rate of the specified interface is mandatory 1000Mbit/s or auto-negotiation 1000Mbit/s
10/100	The rate of the designated interface is auto-negotiation 10Mbit/s and 100Mbit/s

default

The default port rate is auto-negotiation

mode

Interface configuration mode

Instructions

Use the command "speed" to modify the port rate, but it cannot be configured to exceed the maximum supported rate of the port.

Instance

Configure interface speed
Switch(config)# interface gi1
Switch(config-if)# speed
100 Switch(config-if)# exit
Switch(config)# interface gi2
Switch(config-if)# speed auto 10/100

Query interface configuration
Switch# show running-config interfaces gi1-2

```
interface
 gi1 speed
 100
!
interface gi2
 speed auto 10/100
!
```

Query port status
Switch# show interfaces gi1-2 status

Port	Name	Status	Vlan	Duplex	Speed	Type
gi1		notconnect	1	auto	100M	Copper

gi2 notconnect 1 auto auto Copper

duplex

format

duplex (auto | full | half)

parameter

auto	Specify the duplex mode of the interface as auto-negotiation
full	The duplex mode of the specified interface is full duplex
half	The duplex mode of the specified interface is half duplex

default

The duplex of the default interface is auto-negotiation mode

mode

Interface configuration mode

Instructions

Use the command "duplex" to modify the duplex mode of the interface.

Switch(config)# interface gi1
Switch(config-if)# duplex full

Query interface configuration

Switch# show running-config interfaces gi1
interface
 gi1 duplex
 full

Query interface status

Switch# show interfaces gi1 status

Port	Name	Status	Vlan	Duplex	Speed	Type
gi1		connected	1	full	a-10M	Copper

shutdown

format

shutdown
no

shutdown

parameter

default

The default configuration is no shutdown

mode

Interface configuration mode

Instructions

Use the command "shutdown" to shut down the interface. Use the command "no shutdown" to open the interface.

Configure the interface to
shut down Switch(config)#
interface gi1 Switch(config-
if)# shutdown

Query interface configuration

```
Switch# show running-config interfaces gi1
interface
 gi1
 shutdown
```

Query interface status

```
Switch# show interfaces gi1 status
Port   Name                    Status      Vlan   Duplex   Speed     Type
gi1                            disable     1      full     auto      Copper
```

flowcontrol

format

flowcontrol(auto | off | on)
no flowcontrol

parameter

auto	The flow control of the designated interface is auto-negotiation
off	The flow control of the specified interface is closed
on	The flow control of the specified interface is open

default

The default interface flow control is off

mode

Interface configuration mode

Instructions

Use the command "flowcontrol" to modify the flow control configuration of the interface.

Instance

Configure interface flow control

```
Switch(config)# interface gi1
Switch(config-if)# flowcontrol on
```

Query interface

```
Switch# show interfaces gi1
GigabitEthernet1 is up
   Hardware is Gigabit
   Ethernet
   Full-duplex, Auto-speed, media type is
   Copper flow-control is enable, status is off
  back-pressure is enabled
      151 packets input, 9920 bytes, 0 throttles
      Received 0 broadcasts (151 multicasts)
      0 runs, 0 giants, 0 throttles
      0 input errors, 0 CRC, 0 frame
      151 multicast, 0 pause input
      0 input packets with dribble condition detected
      25358 packets output, 2250933 bytes, 0
      underrun
      0 output errors, 0 collisions
      0 babbles, 0 late collision, 0 deferred
      0 PAUSE output
```

jumbo-frame

format

jumbo-frame *<1518-10000>*

parameter

jumbo-frame	Supported jumbo frames

default

The jumbo frame in the default interface is 1522.

mode

Global configuration mode

Instructions

Use the command "jumbo-frame" to configure the maximum jumbo frame of the interface.

Instance

Configure interface jumbo frames
Switch(config)# jumbo-frame 9216

Query configuration
Switch# show running-config
jumbo-frame 9216

protected

format

protected
no protected

parameter

default

The default is not isolated

mode

Interface configuration mode

Instructions

Use the command "protected" to enable the port isolation function. Isolated ports are only allowed to communicate with unisolated ports. In other words, the isolated port is not allowed to communicate with another isolated port.

Instance

Configure interface isolation
Switch(config)# interface range gi1-2
Switch(config-if-range)# protected

Query interface isolation

Switch# show interfaces gi1-2 protected
Port | Protected State
-------+-----------------
gi1
|enabled
gi2
|enabled

eee

format

eee
no eee

parameter

default

Disabled by default

mode

Interface configuration mode

Instructions

Use the command "eee" to start the energy-efficient Ethernet function of the interface.

Instance

Configure EEE
Switch(config)# interface gi1
Switch(config-if)# eee

Query configuration
Switch# show running-config interface gi1
interface
gi1 eee

clear interface

format

clear interfaces *IF_PORTS* **counters**

parameter

interfaces	Designated interface

default

mode

Privileged mode

Instructions

Use the command "clear interface" to clear the statistics of the specified interface.

Instance

Clear interface statistics

Switch(config)# clear interfaces gi1 counters

Query interface

Switch# show interfaces gi1

GigabitEthernet1 is up
Hardware is Gigabit Ethernet
Full-duplex, Auto-speed, media type is Copper back-pressure is enabled
0 packets input, 0 bytes, 0 throttles
Received 0 broadcasts (0 multicasts)
0 runts, 0 giants, 0 throttles
0 input errors, 0 CRC, 0 frame
0 multicast, 0 pause input
0 input packets with dribble condition detected 6 packets output, 488 bytes, 0 underrun
0 output errors, 0 collisions
0 babbles, 0 late collision, 0 deferred
0 PAUSE output

show interface

format

show interfaces *IF_PORTS*
show interfaces *IF_PORTS* **status**
show interfaces *IF_PORTS*
potected

parameter

interfaces	Designated interface

default

mode

Privileged mode

Instructions

Use the command "show interface" to query the detailed statistics and status information of the interface. Use the command "show interface status" to query the interface status information. Use the command "show interface protected" to query interface isolation information.

Instance

Query interface

```
Switch# show interfaces gi1
GigabitEthernet1 is up
  Hardware is Gigabit
  Ethernet
  Full-duplex, Auto-speed, media type is
  Copper back-pressure is enabled
    0 packets input, 0 bytes, 0 throttles
    Received 0 broadcasts (0 multicasts)
    0 runts, 0 giants, 0 throttles
    0 input errors, 0 CRC, 0 frame
    0 multicast, 0 pause input
    0 input packets with dribble condition
    detected 6 packets output, 488 bytes, 0
    underrun
    0 output errors, 0 collisions
    0 babbles, 0 late collision, 0 deferred
    0 PAUSE output
```

23. Port Error Disable

errdisable recovery cause

format

errdisable recovery cause(all|acl|arp-inspection|bpduguard|broadcast-flood|dhcp-rate-limit|psecure-violation|selfloop|unicast-flood|unknown-multicastflood)
no errdisable recovery cause (all|acl|arp-inspection|bpduguard|broadcast-flood|dhcp-rate-limit|psecure-violation|selfloop|unicast-flood|unknown-multicastflood)

parameter

all	Enable automatic recovery for port errors disabled for all

	reasons
acl	Enable automatic recovery for port errors disabled by acl
arp-inspection	Enable automatic recovery for port errors disabled for DAI reasons
bpduguard	Enable automatic recovery for port errors disabled for bpdu protection reasons
broadcast-flood	Enable automatic recovery for port errors disabled for broadcast flooding reasons
dhcp-rate-limit	Enable automatic recovery for port errors disabled for DHCP rate limiting reasons
psecure-violation	Enable automatic recovery for port errors disabled for security violation reasons
selfloop	Enable automatic recovery for port errors disabled for loop reasons
unicast-flood	Enable automatic recovery for port errors disabled for unknown unicast flooding reasons
unknown-multicastflood	Enable automatic recovery for port errors disabled for unknown multicast reasons

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "errdisable recovery cause" when the port will be disabled because the protocol detects an invalid operation. To enable port errors, disable recovery from specific causes.

Instance

Enable errdisable function

Switch(config)# errdisable recovery cause bpduguard

Switch(config)# errdisable recovery cause selfloop

errdisable recovery cause udld

format

errdisable recovery cause udld

no errdisable recovery cause udld

parameter

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "errdisable recovery cause udld" to enable automatic recovery of unidirectional link detection (UDLD).

Instance

Configure the errdisable function of UDLD

```
switch(config)# errdisable recovery cause udld
switch# show errdisable recovery
ErrDisable Reason Timer Status
--------------------------+---------------
bpduguard     |
disabled udld|enabled
…
```

errdisable recovery interval

format

errdisable recovery interval seconds

parameter

interval	Error disable recovery time interval, default 300 seconds

default

300 seconds by default

mode

Global configuration mode

Instructions

Use the command "errdisable recovery interval" to set the recovery interval for the port that disables errors.

Instance

Set errdisable interval time

Switch(config)# errdisable recovery interval 60

show errdisable recovery

format

show errdisable recovery

parameter

default

mode

Privileged mode

Instructions

Use the command "show errdisable recovery" to query the error disable configuration and interface error disable status.

Instance

Query error disable configuration

```
Switch# show errdisable recovery
  ErrDisable Reason            | Timer
  Status
-------------------------+---------------
                            bpduguard |
                                  disabled udld |
                                  disabled
                             selfloop |
                       disabled broadcast-flood
                       | disabled
-------------------------------------------------------------------------
          unknown-multicast-flood | disabled
                        unicast-flood | disabled
                                    acl |
                    disabled psecure-violation |
                    disabled
                       dhcp-rate-limit | disabled
                       arp-inspection | disabled

Timer Interval: 300 seconds


Interfaces that will be enabled at the next

timeout: Port |                        Error Disable
```

```
Reason                          | Time Left
-----+--------------------------+-----------
```

24. Port Security

port-security (Global)

format

port-security
no port-
security

parameter

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "port-security" to enable the port security global switch.

Instance

Enable port security
switch(config)# port-security
switch# show port-security
port-security is: Enabled

port-security (Interface)

format

port-security
no port-
security

parameter

default

Disabled by default

mode

Interface configuration mode

Instructions

Use the command "port-security" to enable the port security interface switch.

Instance

Enable port security under the
interface switch(config)#
interface gi1 switch(config-if)#
port-security

switch(config)# show port-security interfaces gi1

Port | Security | CurrentAddr | Action

--------+------------------+---------------+----- -----------------

gi1 | Enabled (1) |0 | Discard

---

port-security address-limit

format

port-security address-limit <1-256>

port-security violation (protect | restrict |shutdown)
no port-security address-
limit no port-security
violation

parameter

<1-256>	The number of MAC addresses learned under the specified interface
protect	When MAC learning exceeds the limit, discard new MAC data frames
restrict	When MAC learning exceeds the limit, forward new MAC data frames and count
shutdown	Shut down the interface when MAC learning exceeds the limit

default

The default number of MAC address learning is 1, and packets are discarded when the threshold is exceeded.

mode

Interface configuration mode

Instructions

Use the command "port-security address-limit" to set the MAC learning limit, and use the command "port-security violation" to set the violation operation after the threshold is exceeded.

Instance

Configure port security

```
switch(config)# interface gi1
switch(config-if)#  port-security  address-limit  10
switch(config-if)#  port-security  violation  protect
switch(config-if)# port-security
```

Query the port security configuration of the interface

```
Switch# show port-security interfaces gi1
```

Port	Status	MaxAddr	TotalAddr	ConfigAddr	Violation	Action
gi1	Up	10	0	0	0	Protect

show port-security

format

show port-security

parameter

default

mode

Privileged mode

Instructions

Use the command "show port-security" to query the global configuration of system port security.

Instance

Query port security global configuration switch# show port-security port-security is: Enabled

show port-security interface

format

show port-security interface *IF_PORTS*

parameter

interface	Specify the interface for query

default

mode

Privileged mode

Instructions

Use the command "show port-security interfaces" to query the security configuration information of the specified port.

Instance

Query the port security configuration of the interface

```
Switch# show port-security interfaces gi1
Port   Status        MaxAddr   TotalAddr    ConfigAddr   Violation       Action
----- ----------- -------- ----------- ----------- ---- -------- ---------
gi1    Up              10          0              0              0              Protect
```

25. Protocol VLAN

vlan protocol-vlan group (Global)

format

vlan protocol-vlan group<1-8> frame-type (ethernet_ii|llc_other|snap_1042) protocol-value VALUE
no vlan protocol-vlan group <1-8>

parameter

group	Protocol VLAN group ID
frame-type	Specify frame type
protocol-value	Specified protocol value

default

mode

Global configuration mode

Instructions

Use the command "vlan protocol-vlan group" to specify the protocol type to add a protocol VLAN group.

Instance

Add protocol VLAN group
Switch(config)# vlan protocol-vlan group 1 frame-type ethernet_ii protocol-value 0x806
Switch(config)# vlan protocol-vlan group 2 frame-type llc_other protocol- value 0x800

Query protocol VLAN group
Switch# show vlan protocol-vlan

```
Group ID   | Status      |     Type      |     value
---------------+------------------+-------------- -------+---------------
---
1     | Enabled|     Ethernet     | 0x0806
2     | Enabled|    LLC other   | 0x0800
3     | Disabled     |     -     |     -
4     | Disabled     |     -     |     -
5     | Disabled     |     -     |     -
6     | Disabled     |     -     |     -
7     | Disabled     |     -     |     -
8     | Disabled     |     -     |     -
```

vlan protocol-vlan group (Interface)

format

vlan protocol-vlan group<1-8> vlan <1-4094>
no vlan protocol-vlan group <1-8>

parameter

none	Not specified, which means all groups
<1-8>	Protocol VLAN group ID
vlan	Designated VLAN

default

mode

Interface configuration mode

Instructions

Use the command "vlan protocol-vlan group" to map the protocol group and VLAN on the interface.

Instance

Configure Protocol VLAN Group

Switch(config)# interface gi1

Switch(config-if)# vlan protocol-vlan group 1 vlan 2

show vlan protocol-vlan

format

show vlan mac-vlan [group <1-8>]

parameter

group	Protocol VLAN group ID

mode

Privileged mode

Instructions

Use the command "show vlan protocol-vlan" to query the protocol VLAN group configuration.

Instance

Query protocol VLAN group

Switch# show vlan protocol-vlan

Group ID | Status | Type | value

---

1 | Enabled| Ethernet | 0x0806

2 | Enabled| LLC other | 0x0800

3 | Disabled | - | -

4 | Disabled | - | -

5 | Disabled | - | -

6 | Disabled | - | -

7 | Disabled | - | -

8 | Disabled | - | -

show vlan protocol-vlan interfaces

format

show vlan protocol-vlan interfaces IF_PORTS

parameter

interfaces	Designated interface

mode

Privileged mode

Instructions

Use the command "show vlan protocol-vlan interface" to query the interface configuration of the protocol VLAN.

Instance

Configure protocol VLAN interface configuration

```
Switch# show vlan protocol-vlan interfaces gi1
Port gi1: Group 1
Status:    Enabled
VLAN ID: 2
Group 2
Status    :
Enabled VLAN
ID: 3
Group 3
Status:  Disabled  Group  4
Status:  Disabled  Group  5
Status:  Disabled  Group  6
Status:  Disabled  Group  7
Status:  Disabled  Group  8
Status: Disabled
```

26. QOS

qos

format

qos
no

qos

parameter

default

Not enabled by default

mode

Global configuration mode

Instructions

Use the command "qos" to assign the quality of service to the packet queue according to the basic trust type, and the higher priority packets can be sent first.

Instance

Enable QOS
Switch(config)#
qos

Query QOS
configuration
Switch# show
qos QoS Mode:
basic Basic trust:
cos

qos cos

format

qos cos <*0-7*>

parameter

cos	Cos value of the interface

default

The default interface COS value is 0.

mode

Interface configuration mode

Instructions

Sometimes, there is noqos information, such as CoS, DSCP, IP priority, etc. But we

can still give priority to the package by configuring the interface default cos value. If there is no qos information in the packet, the device will use this default cos value and find the cos queue mapping to obtain the final target queue. Use the command "qos" to specify the priority of the port.

Instance

Configure the COS value of the interface

Switch(config)# interface GigabitEthernet 1

Switch(config-if)# qos cos 7

Query the QOS configuration of the interface

Switch# show qos interface GigabitEthernet 1

Port | CoS | Trust State | Remark Cos | Remark DSCP | Remark IP Prec

--------+-------+---------------+------------+---- ---------+---------

gi1 | 7 | enabled |disabled | disabled | disabled |

qos map

format

qos map(cos-queue | dscp-queue | precedence-queue) SEQUENCE to <1-8>

qos map(queue-cos | queue-precedence) SEQUENCE to <0-7>

qos map queue-dscpSEQUENCE to <0-63>

parameter

cos-queue	Configure and query the mapping relationship between COS and queue
dscp-queue	Configure and query the mapping relationship between DSCP and queue
precedence-queue	Configure and query the mapping relationship between TOS and queue
queue-cos	Configure and query the mapping relationship between queues and COS
queue-precedence	Configure and query the mapping relationship between queues and TOS
queue-dscp	Configure and query the mapping relationship between queues and DSCP
SEQUENCE	Cos, dscp, priority or queue with one or more values
<1-8>	Queue ID
<0-7>	COS or TOS value
<0-63>	DSCP value

default

Default COS to queue mapping

CoS	Queue ID
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8

Default DSCP to queue mapping

DSCP	Queue ID
0~7	1
8~15	2
16~23	3
24~31	4
32~39	5
40~47	6
48~55	7
56~63	8

Default TOS to queue mapping

IP Precedence	Queue ID
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8

Default queue to COS mapping

Queue ID	CoS
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7

Default queue to DSCP mapping

Queue ID	DSCP
1	0
2	8

3	16
4	twenty four
5	32
6	40
7	48
8	56

Default queue to TOS mapping

Queue ID	IP Precedence
1	0
2	1
3	2
4	3
5	4
6	5
7	6
8	7

mode

Global configuration mode

Instructions

According to different trust types, data packets are assigned to different queues according to specific qos mapping. For example, if the trust type is trust cos, the device will obtain the cos value in the data packet and refer to the cos queue mapping to allocate the correct queue.
The queue to cos, dscp, or priority mapping is used by the remarking function. If the port marking function is enabled, the marking function will reference these 3 tables to mark the data packet.

Instance

ConfigurationCOSTo queue mapping

Switch(config)# qos map cos-queue 6 7 to 1

InquireCOSTo queue mapping

Switch# show qos map cos-queue

```
 CoS to Queue mappings
 COS    0    1    2    3    4    5    6    7
 --------------------------------
 Queue 2     1    3    4    5    6    1    1
```

Configure queue toCOSMapping

Switch(config)# qos map queue-cos 4 5 to 7

Query queue toCOSMapping

```
Switch# show qos map queue-cos
 Queue to CoS mappings
 Queue 1    2    3    4    5    6    7    8
 ---------------------------------
 CoS    1    0    2    7    7    5    6    7
```

qos queue

format

qos queue strict-priority-num<0-8>
qos queue weight SEQUENCE

parameter

strict-priority-num	Specify strict priority scheduling policy
weight	Specify WRR weight strategy and specify weight distribution

default

When the value of strict-priority-num is 8, it means that strict priority scheduling is adopted.
WRR weight scheduling default weight

Queue ID	Queue Weight
1	1
2	2
3	3
4	4
5	5
6	9
7	13
8	15

mode

Global configuration mode

Instructions

The device supports a total of 8 QoS queues. It can set the queue to a strict priority queue or a weighted queue to prevent starvation. The higher the id value, the higher the priority of the queue.
First, you need to decide how many strict priority queues you need. The strict priority queue will always occupy the higher priority queue. For example, if the strict priority number is set to 2, then queues 7 and 8 will be strict priority queues, and the other queues will be weighted queues.
After setting the number of strict priority queues, you need to use the "qos queue" command to set the weight of the weighted queue. The bandwidth will be shared by the weights you configure between these weighted queues.

Instance

Configure QOS scheduling strategy

Switch(config)# qos queue strict-priority-num 3

Switch(config)# qos queue weight 5 10 15 20 25

Query QOS queue scheduling

Switch# show qos queueing

qid-weights Ef-Priority
1-5 dis- N/A 2-10 dis-
N/A 3-15 dis- N/A 4-
20 dis- N/A 5-25 dis-
N/A

6 -N/A ena- 6

7 -N/A ena- 7

8 -N/A ena- 8

---

qos remark

format

qos remark (cos | dscp | precedence)

no qos remark (cos | dscp | precedence)

parameter

cos	Enable or disable COS re-marking
dscp	Enable or disable DSCP remarking
precedence	Enable or disable TOS re-marking

default

The default COS/DSCP/TOS is re-marked as disabled.

mode

Interface configuration mode

Instructions

The QoS marking function allows you to change the priority information in the packet according to the egress queue. For example, if you want all packets from queue 1 of interface gi1 to mark the cos value as 5 in the next layer of the device, you can enable the cos marking function on gi1 and configure the cos mapping of queue 1 to cos 5.

Use the command "qos remark" to enable the marking function on a specific type.

Instance

Configure priority re-marking
Switch(config)# interface GigabitEthernet 1
Switch(config-if)# qos remark cos
Switch(config-if)# qos remark dscp
Switch(config-if)# qos remark precedence

Query interface QOS configuration

Switch# show qos interface GigabitEthernet 1

Port | CoS | Trust State | Remark Cos | Remark DSCP | Remark IP Prec

--------+-------+---------------+------------+---- ---------+-------

gi1 | 0 | enabled |enabled |enabled | enabled |

qos trust

format

qos trust(cos | cos-dscp | dscp | precedence)

parameter

cos	Specify the device trust COS priority
cos-dscp	Specify the device to trust the DSCP of IP packets or the COS priority of non-IP packets
dscp	Specifies that the device trusts the DSCP of IP packets
precedence	Specifies that the device trusts the TOS of IP packets

default

COS is trusted by default.

mode

Global configuration mode

Instructions

In the QoS basic mode, there are 4 types of trust for the device to determine the appropriate queue for the packet. This command can switch between these trust types.

COS:
IEEE 802.1p defines a 3-bit priority value in the vlan tag. Trust this value in the data packet and allocate queues according to the cos queue mapping.

DSCP:
IETF RFC2474 defines a 6-bit priority value (the highest 6 bits in the ToS field) in the IP packet. Trust this value in the data packet and allocate queues according to the dscp queue mapping.

IP priority:
The highest 3-bit priority value in the ToS field of an IP packet. Trust this value in the data packet and assign queues based on priority queue mapping.

CoS-DSCP:

Trust DSCP for IP packets and allocate queues based on DSCP queue mapping. Trust the CoS of non-IP packets, and according to the CoS team

---

Column mapping allocation queue.

Instance

Configure device trust type

Switch(config)# qos trust precedence

Query QOS
configuration
Switch# show
qos QoS Mode:
basic
Basic trust: ip-precedence

qos trust (Interface)

format

qos trust

no qos trust

parameter

default

The default interface trust is enabled.

mode

Interface configuration mode

Instructions

After enabling the QoS function in the basic mode, the device also supports enabling/disabling the QoS function for each interface. If the trust status on the interface is enabled, all ingress packets of this interface will be remapped according to the trust type and qos mapping
Shoot. Otherwise, all ingress packets will be
allocated to queue 1. Use the command
"qos trust" to enable the interface trust
switch.

Instance

Configure interface trust

Switch(config)# interface GigabitEthernet 1

Switch(config-if)# no qos trust

Query interface QOS configuration

```
Switch# show qos interface GigabitEthernet 1
Port | CoS     | Trust State | Remark Cos | Remark DSCP | Remark IP Prec
--------+-------+---------------+------------+---- ---------+----------
gi1 | 0    |      disabled |      disabled |      disabled | disabled |
```

show qos

format

show qos

parameter

default

mode

Privileged mode

Instructions

Use the command "show qos" to query the QOS configuration including status and trust type.

Instance

Query QOS configuration
Switch# show qos QoS Mode: basic Basic trust: cos

---

show qos interface

format

show qos interface *IF_PORTS*

parameter

interface	Specify interface to query QOS configuration

default

mode

Privileged mode

Instructions

Use the command "show qos interface" to query the QOS configuration under the interface, including the default COS, priority marking, status and remarking type.

Instance

Query the QOS configuration of the interface

Switch# show qos interface GigabitEthernet 1

Port | CoS | Trust State | Remark Cos | Remark DSCP | Remark IP Prec

--------+-------+---------------+------------+---- ---------+---------

gi1 | 7 | enabled |disabled | disabled | disabled |

show qos map

format

show qos map [(cos-queue | dscp-queue | precedence-queue | queue-cos | queue-dscp | queue-precedence)]

cos-queue	Query the mapping relationship between COS and queue
dscp-queue	Query the mapping relationship between DSCP and queue
precedence-queue	Query the mapping relationship between TOS and queue
queue-cos	Query the mapping relationship between queue and COS
queue-precedence	Query the mapping relationship between the queue and TOS
queue-dscp	Query the mapping relationship between queue and DSCP

default

mode

Privileged mode

Instructions

Use the command "show qos map" to query various types of mapping relationships in QOS.

Instance

Query queue toCOSMapping

Switch# show qos map queue-cos

Queue to CoS mappings
Queue 1 2 3 4 5 6 7 8

CoS 1 0 2 7 7 5 6 7

show qos queueing

format

show qos queueing

default

mode

Privileged mode

Instructions

Use the command "show qos queueing" to query QOS queue information.

Instance

Query QOS queue scheduling
Switch# show qos queueing
qid-weights Ef-Priority
1-5 dis- N/A 2-10 dis-
N/A 3-15 dis- N/A 4-
20 dis- N/A 5-25 dis-
N/A
6 -N/A ena- 6
7 -N/A ena- 7
8 -N/A ena- 8

27. Rate Limit

rate-limit egress

format

rate-limit egress <16-1000000>
no rate-limit egress

egress	Specify the rate limit in the sending direction of the interface

default

Disabled by default

mode

Interface configuration mode

Instructions

Use the command "rate-limit egress" to configure the rate limit in the next sending direction.

Instance

Configure interface rate limit
Switch(config)# interfaces gi1
Switch(config-if)# rate-limit egress 2048

Query interface speed limit
Switch# show running-config interfaces gi1
interface gi1
    rate-limit egress 2048

rate-limit ingress

format

rate-limit ingress <16-1000000>
no rate-limit ingress

parameter

ingress	Specify the rate limit in the receiving direction of the interface

default

Disabled by default

mode

Interface configuration mode

Instructions

Use the command "rate-limit egress" to configure the rate limit in the receiving direction.

Instance

Configure interface rate limit
Switch(config)# interfaces gi1
Switch(config-if)# rate-limit ingress 128

Query interface speed limit
Switch# show running-config interfaces gi1
interface gi1
rate-limit ingress 128

rate limit egress queue

format

rate-limit egress queue <1-8> <16-1000000>
no rate-limit egress queue <1-8>

parameter

<1-8>	Specifies the queue of the interface
<16-1000000>	Specify the rate limit value of the interface

default

Disabled by default

mode

Interface configuration mode

Instructions

Use the command "rate-limit egress queue" to configure the rate limit of the queue in the sending direction of the interface.

Instance

Configure egress queue rate limit
Switch(config)# interfaces gi1
Switch(config-if)# rate-limit egress queue 3 2048
Switch# show running-config interfaces gi1 interface gi1
rate-limit egress queue 3 2048

28. SNMP

snmp

format

snmp

parameter

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "snmp" to open the SNMP service of the device.

Instance

Enable SNMP service
Switch(config)# snmp

snmp view

format

snmp viewview-name subtree oid-tree oid-mask (all|oid-mask) viewtype (included|excluded)
no snmp view view-name subtree (all|oid-tree)

parameter

view-name	SNMP view name, up to 30 characters
oid-tree	Specify the ASN.1 subtree object identifier to be included or excluded from the SNMP view (OID)
oid-mask	Specify the OID family mask. It is used to define the view subtree family. For example, OID mask FA.80 is 11111010.10000000. The length of the OID mask must be less than the subtree The length of the OID.

iewtype	Include or exclude selected MIBs in the view

default

mode

Global configuration mode

Instructions

Use the command "snmp view" to configure the SNMP view.

Configure SNMP view
Switch(config)# snmp view private subtree 1.3.3.1 oid-mask all viewtype included

snmp group

format

snmp groupgroup-name (1|2c|3) (noauth|auth|priv) read-view read-view
write-view write-view [notify-view notify-view]
no snmp group group-name security-mode version (1|2c|3)

parameter

group-name	SNMP group name, maximum support 30 characters
1|2c|3	SNMP version
noauth	Do not perform packet authentication
auth	Perform packet authentication. It only works in SNMPv3 security mode
priv	Perform packet authentication. It only works in SNMPv3 security mode
read-view	Configure the view that allows read permissions
write-view	Configure the view that allows write permissions
notify-view	Set to send only the view name of TRAP, the content of TRAP is included in the selected to be notified SNMP view

default

mode

Global configuration mode

Instructions

Inst

To define an SNMP group, use the command "snmp group" to configure it in global mode. SNMP group configuration is used to map SNMP V3 users to SNMP groups. These users will be mapped to the group's view. The security level of SNMP v1 or v2 is always noauth.

Configure SNMP group
Switch(config)# snmp group v3 version 3 auth read-view all write-view all notify-view all

snmp community

format

snmp communitycommunity-name [view view-name] (ro|rw)

snmp communitycommunity-name group group-name

no snmp communitycommunity-name

parameter

community-name	Configure SNMP community name, up to 20 characters
view	Specify the related view name
ro	Read-only access
rw	Read and write permissions
group	Configure the relationship between SNMP groups

default

The system default read-only community name is public

mode

Global configuration mode

Instructions

Use the command "snmp community" to configure the read/write community name of SNMP V1/V2C.

Instance

Configure community name
Switch(config)# snmp community private ro

snmp user

format

snmp userusername group-name [auth (md5|sha) AUTHPASSWD]
snmp user username group-name auth (md5|sha) AUTHPASSWD
priv PRIVPASSWD

no snmp user username

parameter

username	Configure the name of the V3 user
group-name	Configure the name of the SNMP group to which V3 belongs
md5	Specify HMAC-MD5-96 authentication protocol as user authentication
sha	Specify HMAC-SHA-96 authentication protocol as user authentication
AUTHPASSWD	Password used for authentication, ranging from 8 to 32 characters
priv	The dedicated password for the private key, the length range is 8 to 64 characters

default

mode

Global configuration mode

Instructions

Use the command "snmp user" to configure SNMP V3 users.

Instance

Configure SNMP users
Switch(config)# snmp Use the command r v3 v3 auth md5 12345678

---

snmp engineid

format

snmp engineid(default|ENGINEID)

parameter

default	The default engine ID generated based on the MAC address of the switch
ENGINEID	Specify the SNMP engine ID. Engine ID is 10 to 64 hexadecimal characters, hexadecimal The system number must be divided by 2

default

The default SNMP engine ID on the switch is based on the switch MAC address

mode

Global configuration mode

Instructions

Use the command "snmp engineid" to define the engine ID of the switch.

Instance

Configuration engine
Switch(config)# snmp engineid 00036D001122

snmp engineid remote

format

snmp engineid remote(ip-addr|ipv6-addr) ENGINEID
no snmp engineid remote (ip-addr|ipv6-addr)

parameter

ip-addr	IPv4 address of the remote host
ipv6-addr	IPv6 address of the remote host
ENGINEID	Specify the SNMP engine ID. Engine ID is 10 to 64 hexadecimal characters, hexadecimal The system number must be divided by 2

default

mode

Global configuration mode

Instructions

Use the command "snmp engineid remote" to define the engine ID of the remote host.

Instance

Configure remote engine
Switch(config)# snmp engineid remote 192.168.1.11 00036D10000A

snmp trap

format

snmp trap(auth|cold-start|linkUpDown|warm-start)
no snmp trap (auth|cold-start|linkUpDown|warm-start)

parameter

auth	Failed TRAP
cold-start	TRAP for system cold start
linkUpDown	TRAP for link UP/DOWN status changes
warm-start	TRAP for system hot start

default

All TRAP functions are enabled by default

mode

Global configuration mode

Instructions

When you need to report system messages to the TRAP host, use the command "snmp trap" to enable the TRAP reporting function.

Instance

Enable TRAP
Switch(config)# snmp trap linkUpDown

snmp host

format

snmp host (ip-addr|ipv6-addr|hostmane) [traps|informs] [version (1|2c)] community-name [udp-port udp-port] [timeout timeout] [retries retries]
snmp host (ip-addr| ipv6-addr|hostmane) [traps|informs] version 3[(auth|noauth|priv)] community-name [udp-port udp-port] [timeout timeout] [retries retries]
no snmp host (ip-addr|ipv6-addr|hostmane) [traps|informs] [version (1|2c|3)]

parameter

ip-addr	The IPv4 address of the TRAP receiving host
ipv6-addr	The IPv6 address of the TRAP receiving host
hostname	The host name of the TRAP receiving host

traps	Report TRAP to the host, this is the default configuration
informs	Report messages to the host
version (1|2c|3)	Report the SNMP version number of TRAP

noauth	Specifies not to perform packet authentication. It only works in SNMPv3 security mode
auth	Specifies not to perform packet authentication without entryption. It only applies to SNMPv3 security mode
priv	Specifies not to use entryption to perform packet authentication. It only applies to SNMPv3 security mode
community-name	Community name carried in TRAP message
udp-port udp-port	Specify UDP port number
timeout timeout	Specify the timeout period of SNMP messages
retries retries	Specify SNMP notification retry timer

default

mode

Global configuration mode

Instructions

When the host is required to receive system TRAP notification, use the command "snmp host" to configure the host.

Instance

Configure TRAP host

Switch(config)# snmp host 192.168.1.11 private

show snmp view

format

show snmp view

default

mode

Privileged mode

Instructions

Use the command "show snmp view" to query the system configuration SNMP view.

Instance

Query system SNMP view
Switch# show snmp view
View Name Subtree OID
OID Mask View Type
--- --- -
--- ---
all .1 all
included

Total Entries: 1

show snmp group

format

show snmp group

default

mode

Privileged mode

Instructions

Use the command "show snmp group" to query the SNMP group configured by the system

Instance

Query configuration SNMP group
Switch# show snmp group
Group Name Model Level ReadView
WriteView NotifyView
--- --- --- - ---
--- --- --- ---
ikuaigroup v3 priv all
all all

Total Entries: 1

show snmp community

format

show snmp community

default

mode

Privileged mode

Instructions

Use the command "show snmp community" to query the read/write community name configuration of the system SNMP V1/V2C version.

Instance

Query group name

Switch# show snmp community
Commnunity Name Group Name
View Access
---------- ---------- ----------
------- ------
public all
ro

Total Entries: 1

show snmp user

format

show snmp user

default

mode

Privileged mode

Instructions

Use the command "show snmp user" to query SNMP V3 users.

Instance

Query SNMP users

```
Switch# show snmp user
Username:                    test
Password:                    ********
Privilege Mode:              rw
Access GroupName:
                             test
Authentication Protocol: md5
Encryption Protocol:         des
Access SecLevel:             priv


Total Entries: 1
```

show snmp engineid

format

show snmp engineid

default

mode

Privileged mode

Instructions

Use the command "show snmp engineid" to query the engine configuration of the switch, including the local and remote engines.

Instance

Query engine configuration

```
Switch# show snmp engineid
Local SNMPV3 Engine id: 80006a92031c2aa3c40292

        IP address                      Remote SNMP engineID
--------------------------------- ----------------- ----------------------
-------------------------

Total Entries: 0
```

show snmp trap

format

show snmp trap

default

mode

Privileged mode

Instructions

Use the command "show snmp trap" to query the system's TRAP configuration.

Instance

Query TRAP configuration

```
Switch# show snmp trap
SNMP auth failed trap   : Enable
SNMP linkUpDown trap            :
Enable SNMP cold-start trap
                                : Enable
SNMP warm-start trap    : Enable
```

show snmp host

format

show snmp host

parameter

default

mode

Privileged mode

Instructions

Use the command "show snmp host" to query the system's TRAP host configuration items.

Instance

Query TRAP host

```
Switch# show snmp host
Server                  Community/User Name     Notification Version       Notification
Type       UDP Port      Retries        Timeout
```

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

192.168.2.20 test v3 trap
162 - -

Total Entries: 1

29. RMON

rmon event

format

rmon event<1-65535> [log] [trap COMMUNITY] [description DESCRIPTION] [owner NAME]

no rmon event <1-65535>

parameter

<1-65535>	Configure RMON event index
log	(Optional) Specify to display in the system log
trap	(Optional) Specify to be displayed in the SNMP TRAP message
description	(Optional) Description of the event
owner	(Optional) Owner of the event

default

mode

Global configuration mode

Instructions

Use the command "rmon event" to add or modify an RMON event.

Instance

Configure RMON events

switch(config)# rmon event 1 log trap public description test owner admin

Query RMON events

switch# show rmon event 1

Rmon Event Index 1
Rmon Event Type: Log and Trap Rmon Event Community: public Rmon Event Description: test

Rmon Event Last Sent:

Rmon Event Owner : admin

rmon alarm

format

rmon alarm<1-65535> interface IF_PORT (drop-events|octets|pkts|broadcast-pkts| multicast-pkts|crc-align-errors|undersize-pkts|oversize-pkts|fragments|jabbers|collisions|pkts64octets|pkts65to127octets|pkts128to255ocets|pkts128t o255ocets |pkts256to511octets|pkts512to1023octets|pkts1024to1518octe ts) <1-2147483647> (absolute|delta) rising <0-2147483647> <0-65535> **falling** <0-2147483647> <0-65535> startup (rising|rising-falling|falling) [owner NAME]

no rmon alarm <1-65535>

parameter

<1-65535>	Configure a RMON alarm index
interface	Specify a RMON sample interface
(variable)	Specify a MIB object to be collected
<0-2147483647>	Specify the time (seconds) for the alarm to monitor MIB variables
(absolute|delta)	absolute: absolute comparison sample counter; delta: incremental comparison sample counter
rising <0-2147483647>	The specified event rises and triggers the alarm threshold
rising <0-65535>	Index of the RMON event that triggered the rising threshold alarm
falling <0-2147483647>	The specified event falls and triggers the alarm threshold
falling <0-65535>	Index of the RMON event that triggered the falling threshold alarm
startup	Specifies to send an alarm when rising or falling or both take effect
owner	Specify the owner of the alarm

default

mode

Global configuration mode

Instructions

Use the command "rmon alarm" to configure or modify RMON alarm items.

Instance

Configure RMON events and
alarms switch(config)# rmon
event 1 log switch(config)# rmon
event 2 log

Switch(config)# rmon alarm 1 interface gi1 pkts 300 delta rising 10000 1 falling

100 1 startup rising-falling owner admin

Query RMON alarms

Switch# show rmon alarm 1

Rmon Alarm Index1
Rmon Alarm Sample Interval
30
0 Rmon Alarm Sample Interface:
gi1 Rmon Alarm Sample Variable:
Pkts Rmon Alarm Sample Type:
delta

Rmon Alarm Type: Rising or Falling
Rmon Alarm Rising Threshold:
10000 Rmon Alarm Rising Event
1
Rmon Alarm Falling Threshold
100
Rmon Alarm Falling Event 1
Rmon Alarm Owner : admin

rmon history

format

rmon history<1-65535> interface IF_PORT [buckets <1-65535>] [interval <1-3600>] [owner NAME]

no rmon history <1-65535>

parameter

<1-65535>	Configure RMON history index
interface	Specify a RMON sample interface
buckets	Specify the maximum depth of RMON history
interval	Specify the interval between each sample collection
owner	Specify the owner of RMON history

default

mode

Global configuration mode

Instructions

Use the command "rmon history" to add or modify the history configuration of RMON.

Instance

Configure RMON history

switch(config)# rmon history 1 interface gi1 interval 60 owner admin

Query the history of RMON

```
switch(config)# show rmon history 1
Rmon History Index    1
Rmon Collection Interface:
gi1 Rmon History Bucket
                          50
Rmon history Interval 60
Rmon History Owner   :
admin
```

clear rmon interfaces statistics

format

clear rmon interfaces IF_PORTS statistics

parameter

interfaces	Clear RMON statistics of the specified interface

default

mode

Privileged mode

Instructions

Use the command "clear rmon interfaces statistics" to clear the RMON count on the interface.

Instance

Clear RMON interface statistics

switch# clear rmon interfaces gi1 statistics

Query RMON interface statistics

```
switch# show rmon interfaces gi1 statistics
==== Port gi1 ============================
etherStatsDropEvents 0
etherStatsOctets 0
etherStatsPkts     0
etherStatsBroadcastPkts    0
```

etherStatsMulticastPkts 0
etherStatsCRCAlignErrors 0
etherStatsUnderSizePkts 0
etherStatsOverSizePkts 0
etherStatsFragments 0
etherStatsJabbers 0
etherStatsCollisions 0
etherStatsPkts64Octets 0
etherStatsPkts65to127Octets 0
etherStatsPkts128to255Octets 0
etherStatsPkts256to511Octets 0
etherStatsPkts512to1023Octets 0
etherStatsPkts1024to1518Octets0

show rmon interfaces statistics

format

show rmon interfaces IF_PORTS statistics

parameter

interfaces	Query RMON statistics of a specified interface

default

mode

Privileged mode

Instructions

Use the command "show rmon interface statistics" to query the RMON count statistics on the interface.

Instance

Query RMON interface statistics
switch# show rmon interfaces gi1 statistics
==== Port gi1 ==========

---

etherStatsDropEvents 0
etherStatsOctets 0
etherStatsPkts 0
etherStatsBroadcastPkts 0
etherStatsMulticastPkts 0
etherStatsCRCAlignErrors 0

etherStatsUnderSizePkts 0
etherStatsOverSizePkts 0
etherStatsFragments 0
etherStatsJabbers 0
etherStatsCollisions 0
etherStatsPkts64Octets 0
etherStatsPkts65to127Octets 0
etherStatsPkts128to255Octets 0
etherStatsPkts256to511Octets 0
etherStatsPkts512to1023Octets 0
etherStatsPkts1024to1518Octets0

show rmon event

format

show rmon event (<1-65535> | all)

parameter

<1-65535>	Query the event index of the specified RMON
all	Query all RMON events

default

mode

Global configuration mode

Instructions

Use the command "show rmon event" to query the RMON events of the system.

Instance

Query RMON events
switch# show rmon event 1
Rmon Event Index 1
Rmon Event Type: Log and Trap Rmon Event Community: public Rmon Event Description: test
Rmon Event Last Sent:
Rmon Event Owner : admin

show rmon event log

format

show rmon event <1-65535> log

parameter

<1-65535>	Query the log of the specified RMON event

default

mode

Privileged mode

Instructions

Use the command "show rmon event log" to query the log triggered by the RMON alarm.

Instance

Query RMON event log
switch(config)# show rmon event 1 log
========== =====
Index 1
Alarm Index 1
Action : Startup Falling

Time : (32918334) 3 days, 19:26:23.34
Description: gi1.Pkts=0 <= 100

show rmon alarm

format

show rmon alarm (<1-65535> | all)

parameter

<1-65535>	Query the alarm index of the specified RMON
all	Query all RMON alarms

default

mode

Privileged mode

Instructions

Use the command "show rmon alarm" to query the alarm items of the system RMON.

Instance

Query RMON alarms

Switch# show rmon alarm 1

Rmon Alarm Index1
Rmon Alarm Sample Interval 300
Rmon Alarm Sample Interface: gi1
Rmon Alarm Sample Variable: Pkts
Rmon Alarm Sample Type: delta
Rmon Alarm Type: Rising or Falling
Rmon Alarm Rising Threshold:
10000 Rmon Alarm Rising Event
1
Rmon Alarm Falling Threshold
100
Rmon Alarm Falling Event 1
Rmon Alarm Owner : admin

---

show rmon history

format

show rmon history (<1-65535> | all)

parameter

<1-65535>	Query the historical index of the specified RMON
all	Query all RMON history

default

mode

Privileged mode

Instructions

Use the command "show rmon history" to query the history information of the system RMON.

Instance

Query the history of RMON

switch(config)# show rmon history 1
Rmon History Index 1
Rmon Collection Interface:
gi1 Rmon History Bucket
50
Rmon history Interval 60
Rmon History Owner :
admin

show rmon history statistic

format

show rmon history <1-65535> statistics

parameter

<1-65535>	Query the index of the historical statistics of the specified RMON

default

mode

Privileged mode

Instructions

Use the command "show rmon history statistic" to query the historical statistics of the system RMON.

Instance

Query RMON historical statistics

switch(config)# show rmon history 1 statistic

========== =====

Sample Index 2

Interval Start: (32940466) 3 days, 19:30:04.66

DropEvents 0

Octets : 117226

Pkts 763

BroadcastPkts

9

MulticastPkts

0

CRCAlignErrors 0

UnderSizePkts 0

OverSizePkts 0

Fragments 0

Jabbers 0

Collisions 0

Utilization 1

========== =====

Sample Index 1

Interval Start: (32939462) 3 days, 19:29:54.62

DropEvents 0

Octets 220
Pkts 3

BroadcastPkts
1
MulticastPkts
0
CRCAlignErrors 0
UnderSizePkts 0
OverSizePkts 0
Fragments 0
Jabbers 0
Collisions 0
Utilization 1

30. Spanning Tree

instance (MST)

format

instance instance-id vlan vlan-list
no instance instance-id vlan vlan-list

parameter

instance-id	MSTP instance ID, ranging from 0 to 15
vlan	VLAN of the MSTP instance

default

All VLANs are mapped to public and internal spanning tree (CIST), the instance is 0

mode

MST configuration mode

Instructions

To map a VLAN to a multiple spanning tree (MSTP) instance, use the command instance in the MST configuration mode. All VLANs that are not explicitly configured as MSTP instances are mapped to the CIST instance (instance 0). For two or more switches in the same MSTP area, their VLAN mapping, name and revision number configuration must be the same.

Instance

Configure multiple spanning tree instances

Switch(config)# spanning-tree mst configuration
Switch(config-mst)# instance 1 vlan 10-20
Switch(config-mst)# instance 2 vlan 100

name (MST)

format

name name-str
no name

parameter

name	The name of the MSTP, with a maximum of 32 characters

default

The default name of MSTP is System Bridge MAC

mode

MST configuration mode

Instructions

Use the command "name" to define the MSTP name.

Instance

Configure multiple spanning tree name
Switch(config)# spanning-tree mst configuration
Switch(config-mst)# name Valkyrie

revision (MST)

format

revision rev
no revision

parameter

revision	MSTP version number, ranging from 0 to 65535

default

The default version number is 0

mode

MST configuration mode

Instructions

Use the command "revision" to define the version number of MSTP.

Instance

Configure the version number of the multiple spanning tree
Switch(config)# spanning-tree mst configuration
Switch(config-mst)# revision 1

spanning-tree mst configuration

format

spanning-tree mst configuration

parameter

default

mode

Global configuration mode

Instructions

Use the command "spanning-tree mst configuration" to enter the MST configuration mode to modify the MSTP configuration.

Instance

Enter MST configuration mode
Switch(config)# spanning-tree mst configuration
Switch(config-mst)# instance 1 vlan 10-20

spanning-tree mst cost

format

spanning-tree mst instance-id cost cost
no spanning-tree mst instance-id cost cost

parameter

instance-id	MSTP instance ID

cost	The path cost of the interface on a specific MSTP instance. For the long path cost method, the effective range is 0 to 200000000; for the short path cost method, the effective range is 0 to 65535. Value 0 means Automatic, port path cost is determined by port speed and path cost method

default

The default port path cost is 0, which is determined by the port speed and path cost method (long or short)

Interface	Long	Short
Gigabit Ethernet (1000Mbps)	20000	4
Fast Ethernet (100Mbps)	200000	19
Ethernet (10Mbps)	2000000	100

mode

Interface configuration mode

Instructions

Use the command "spanning-tree mst cost" to configure the cost value of the interface. If a loop occurs, MSTP will consider the path cost when selecting the interface that enters the forwarding state.

Instance

MST instance cost of the enabled interface

Switch(config)# interface gi1

Switch(config-if)# spanning-tree mst 1 cost 30000

spanning-tree mst port-priority

format

spanning-tree mst instance-id port-priority priority

no spanning-tree mst instance-id port-priority

parameter

instance-id	MSTP instance ID
port-priority	Specify the port priority of the instance

default

The port priority of the default instance is 128.

mode

Interface configuration mode

Instructions

Use the command "spanning-tree mst port-priority" to configure the interface priority on a specific instance. The priority value must be a multiple of 16. When configuring the port priority on CIST (instance 0), it is equivalent to using the command "spanning-tree port-priority" in the interface configuration mode

Instance

Configure MSTP instance interface priority

Switch(config)# interface gi1

Switch(config-if)# spanning-tree mst 1 port-priority 144

Switch(config-if)# spanning-tree mst 0 port-priority 96

spanning-tree mst priority

format

spanning-tree mst instance instance-id priority priority

no spanning-tree mst instance instance-id priority

parameter

instance-id	MSTP instance ID
priority	Specify the priority of the instance, in the range of 0-61440. It ensures that the switch is selected as the root bridge Possibility, and a lower value has a higher priority for selecting the switch as the root bridge.

default

The default instance priority is 32768.

mode

Global configuration mode

Instructions

Use the command "spanning-tree mst priority" to configure the bridge priority on a specific instance. The bridge priority value must be a multiple of 4096. The switch with the lowest priority is the root of the STP topology. For the bridge priority configuration on CIST (instance 0), it is equivalent to using the command "spanning-tree priority" in global mode

Instance

Configure MSTP instance priority
Switch(config)# spanning-tree mst 1 priority 4096
Switch(config)# spanning-tree mst 0 priority 4096

spanning-tree

format

spanning-tree
no spanning-tree

parameter

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "spanning-tree" to enable the STP spanning tree ring function of the system.

Instance

Enable STP spanning tree
Switch(config)# spanning-tree

---

spanning-tree mode

format

spanning-tree mode (mstp|rstp|stp)
no spanning-tree force-version

parameter

mstp	Enable multiple spanning tree protocol
rstp	Enable Rapid Spanning Tree Protocol
stp	Enable Spanning Tree Protocol

default

The default is rstp

mode

Global configuration mode

Instructions

Use the command "spanning-tree mode" to configure the STP spanning tree mode. When the switch is configured in MSTP mode, STP and RSTP can be used to be backward compatible with switches that work in STP and RSTP modes, respectively. for

With RSTP configuration, the switch can also use STP for the switch working in STP operation.

Instance

Configure MSTP Spanning Tree

Switch(config)# spanning-tree mode mstp

---

spanning-tree bpdu

format

spanning-tree bpdu (filtering|flooding)

no spanning-tree bpdu

parameter

filtering	Filter BPDU packets when STP is disabled
flooding	STP is disabled and BPDU packets are flooded

default

The default is flooding

mode

Global configuration mode

Instructions

Use the command "spanning-tree bpdu" to configure the operation of bridge protocol data unit (BPDU) processing when STP is disabled.

Instance

Configure BPDU packet processing

Switch(config)# spanning-tree bpdu filtering

spanning-tree bpdu-filter

format

spanning-tree bpdu-filter
no spanning-tree bpdu-filter

parameter

default

Disabled by default

mode

Interface configuration mode

Instructions

Use the command "spanning-tree bpdu-filter" to enable the BPDU filtering function on the interface.

Instance

Enable interface BPDU filtering

Switch(config)# interface gi1

Switch(config-if)# spanning-tree bpdu-filter

spanning-tree bpdu-guard

format

spanning-tree bpdu-guard

no spanning-tree bpdu-guard

parameter

default

Disabled by default

mode

Interface configuration mode

Instructions

Use the command "spanning-tree bpdu-guard" to enable the BPDU guard function of the interface.

Instance

Enable interface BPDU protection

Switch(config)# interface gi1

Switch(config-if)# spanning-tree bpdu-guard

spanning-tree cost

format

spanning-tree cost cost

no spanning-tree cost

parameter

cost	STP spanning tree cost value. For the long path cost method, the effective range is 0 to 200000000; for the short path cost method, the effective range is 0 to 65535. A value of 0 means automatic, and the port path cost is determined by The port speed and path cost method are determined.

default

The default port path cost is 0, which is determined by the port speed and path cost method (long or short)

Interface	Long	Short
Gigabit Ethernet (1000Mbps)	20000	4
Fast Ethernet (100Mbps)	200000	19
Ethernet (10Mbps)	2000000	100

mode

Interface configuration mode

Instructions

Use the command "spanning-tree cost" to configure the cost of the interface.

Instance

Enable interface cost value

Switch(config)# interface gi1

Switch(config-if)# spanning-tree cost 30000

spanning-tree forward-delay

format

spanning-tree forward-delay seconds
no spanning-tree forward-delay

parameter

forward-time	STP forwarding delay, the range is 4-30 seconds

default

The default forwarding delay is 15 seconds.

mode

Global configuration mode

Instructions

To configure the STP bridge forwarding delay time, that is, the amount of time the port stays in the listening and learning state before entering the forwarding state, use the command "spanning-tree forward-delay" to specify the forwarding delay time.

When configuring the forward delay time, the following relationship should be maintained:

2 * (forward-time-1) >= Max-Age

Instance

Configure STP forwarding delay

Switch(config)# spanning-tree forward-time 25

spanning-tree hello-time

format

spanning-tree hello-time seconds
no spanning-tree hello-time

parameter

hello-time	STP hello message sending time, the range is 1-10 seconds

default

The default hello message time is 2 seconds

mode

Global configuration mode

Instructions

STP hello time is the time interval for broadcasting its hello message to other bridges. Use the command "spanning-tree hello-time" to configure the STP hello time.

When configuring the hello time, the following relationships should be maintained:

Max-Age >= 2 * (hello-time + 1)

Instance

Configure STP Hello Time

Switch(config)# spanning-tree hello-time 4

spanning-tree maximum-age

format

spanning-tree maximum-age seconds

no spanning-tree maximum-age

parameter

maximum	Maximum aging time of STP messages.

default

The default maximum aging time is 20 seconds

mode

Global configuration mode

Instructions

To set the time interval (in seconds) that the switch can wait without receiving configuration messages before attempting to redefine its own configuration, use the command "spanning-tree hello-time" to configure the maximum aging time. When configuring the maximum aging time, the following relationships should be maintained:

2 * (forward-time-1)>= Max-Age >= 2 * (hello-time + 1)

Instance

Configure the maximum aging time of STP

Switch(config)# spanning-tree maximum-age 10

spanning-tree edge

format

spanning-tree edge
no spanning-tree edge

parameter

default

Disabled by default

mode

Interface configuration mode

Instructions

Use the command "spanning-tree edge" to specify the port as an edge port. In edge mode, the interface enters the forwarding state immediately after connection. If edge mode is enabled for the interface and the interface is received
BPDU, it may circulate in a short time

Instance

Configure edge ports
Switch(config)# interface gi1
Switch(config-if)# spanning-tree edge

spanning-tree link-type

format

spanning-tree link-type (point-to-point|shared)
no spanning-tree link-type

parameter

point-to-point	Port connection is a point-to-point network
shared	Port connection is shared broadcast network

default

For ports with full-duplex configuration, the default configuration link type is point-to-point; for ports with half-duplex settings, the default configuration link type is shared

mode

Interface configuration mode

Instructions

Use the command "spanning-tree link-type" to set the RSTP link type of the interface.

Instance

Configure port connection type
Switch(config)# interface gi1
Switch(config-if)# spanning-tree link-type point-to-point

spanning-tree max-hops

format

spanning-tree max-hops counts
no spanning-tree max-hops

parameter

max-hops	Specifies the number of hops in the MSTP area before discarding BPDUs. The range is 1~40

default

The default is 20.

mode

Global configuration mode

Instructions

Use the command "spanning-tree max-hops" to specify the number of hops of BPDUs to be forwarded in the MSTP area.

Instance

Configure the maximum number of hops
Switch(config)# spanning-tree max-hops 10

---

spanning-tree mcheck

format

spanning-tree mechek

parameter

default

mode

Interface configuration mode

Instructions

Use the command "spanning-tree mcheck" to restart the Spanning Tree Protocol (STP) migration process on a specific interface (mandatory negotiation with its neighbors).

Instance

Configure STP protocol negotiation

Switch(config)# interface gi1

Switch(config-if)# spanning-tree mecheck

spanning-tree pathcost method

format

spanning-tree pathcost method (long|short)

parameter

long	The range of path cost is 1-200000000
short	The range of path cost is 1-65535

default

The default is long

mode

Global configuration mode

Instructions

Use the command "spanning-tree pathcost method" to specify the spanning tree protocol path cost mode.

Instance

Configure path cost mode

Switch(config)# spanning-tree pathcost method short

spanning-tree port-priority

format

spanning-tree port-priority priority
no spanning-tree port-priority

parameter

port-priority	Specify the interface priority, the range is 0-240.

default

The default port priority is 128.

mode

Interface configuration mode

Instructions

Use the command "spanning-tree port-priority" to specify the priority of the interface.
Priority value must be
Multiples of 16.

Instance

Configure interface priority
Switch(config)# interface gi1
Switch(config-if)# spanning-tree port-priority 96

spanning-tree priority

format

spanning-tree priority priority
no spanning-tree priority

parameter

priority	Set the bridge STP priority. The range is 0-61440. It guarantees the possibility of selecting the switch as the root bridge of the STP topology. A lower value has a higher value for selecting the switch as the root bridge of the STP topology. Priority of

default

The default priority is 32768.

mode

Global configuration mode

Instructions

Use the command "spanning-tree priority" to configure the bridge priority. The bridge priority value must be a multiple of 4096. The switch with the lowest priority is the root of the STP topology. When there are switches with the same priority configuration in the environment, the switch with the lowest MAC address will be selected as the root bridge.

Instance

Configuration priority

Switch(config)# spanning-tree priority 4096

spanning-tree tx-hold-count

format

spanning-tree tx-hold-count count

no spanning-tree tx-hold-count

parameter

count	Specifies the tx hold count that limits the maximum number of packets transmitted per second. The range is 1-10.

default

The default is 6

mode

Global configuration mode

Instructions

Use the command "spanning-tree tx-hold-count" to limit the maximum number of data packets transmitted per second.

Instance

Configure the maximum limit for sending

Switch(config)# spanning-tree tx-hold-count 4

show spanning-tree

format

show spanning-tree

parameter

default

mode

Privileged mode

Instructions

Use the command "show spanning-tree" to query the system spanning tree information.

Instance

Query spanning tree information
Switch# show spanning-tree

Spanning tree enabled mode
RSTP Default port cost method:
long

Root ID Priority 32768
Address
1c:2a:a3:c4:02:
92This switch is the root
Hello Time 2 sec Max Age 20 sec Forward Delay 15 sec

Number of topology changes 3 last change occurred 00:00:03
ago Times: hold 0, topology change 0, notification 0
hello 2, max age 20, forward delay 15

Interfaces

Name	State	Prio.Nbr	Cost	Sts	Role	EdgePort	Type
gi1	enabled	128.1	20000	Frw	Desg		No P2P (RSTP)
gi15	enabled	128.15	200000	Frw	Desg		No P2P (RSTP)
gi25	enabled	128.25	200000	Frw	Desg		No P2P (RSTP)

show spanning-tree interface

format

show spanning-tree interface *IF_PORTS* [statistic]

parameter

interface	Query interface spanning tree configuration
statistic	Query interface spanning tree statistics

default

mode

Privileged mode

Instructions

Use the command "show spanning-tree interface" to query interface spanning tree information and statistics.

Instance

Query interface spanning tree information

Switch# show spanning-tree interfaces gi1

Port gi1 enabled

State: forwarding Role: designated

Port id: 128.1 Port cost: 20000

Type: P2P (RSTP) Edge Port: No

Designated bridge Priority: 32768 Address: 1c:2a:a3:c4:02:92

Designated port id: 128.1 Designated path cost: 0

BPDU Filter: Disabled BPDU guard:

Disabled BPDU: sent 90, received 0

Query interface spanning tree statistics

Switch# show spanning-tree interfaces gi1 statistics

STP Port Statistics

==========

Port : gi1

Configuration BDPUs Received 0

TCN BDPUs Received 0

MSTP BDPUs Received 0

Configuration BDPUs Transmitted 0

TCN BDPUs Transmitted 0

MSTP BDPUs Transmitted 119

==========

show spanning-tree mst

format

show spanning-tree mst instace-id

parameter

instance-id	MSTP instance ID

default

mode

Privileged mode

Instructions

Use the command "show spanning-tree mst" to query the MSTP information of the specified instance.

Instance

Query the spanning tree information of an instance

Switch# show spanning-tree mst 0

```
  MST Instance Information
================================================ =====
=====
                  Instance Type: CIST (0)
             Bridge Identifier: 32768/ 0/1C:2A:A3:C4:02:92
------------------------------------------------ ----------
     Designated Root Bridge: 32768/
   0/1C:2A:A3:C4:02:92 External Root Path Cost: 0
        Regional Root Bridge: 32768/
   0/1C:2A:A3:C4:02:92 Internal Root Path Cost: 0
           Designated Bridge: 32768/
                     0/1C:2A:A3:C4:02:92 Root Port: 0/0
                        Max Age: 20
                  Forward Delay: 15
              Topology changes: 3
         Last Topology Change:
         374
------------------------------------------------ ----------
  VLANs mapped: 1-4094
================================================ =====
=====

Interface            Role Sts Cost        Prio.Nbr Type
---------------- ---- --- --------- -------- ---------- --------------------
-
```

gi1	Desg FWD 20000	128.1	P2P (RSTP)
gi15	Desg FWD 200000	128.15	P2P (RSTP)
gi25	Desg FWD 200000	128.25	P2P (RSTP)

show spanning-tree mst interface

format

show spanning-tree mst instance-id interface IF_PORTS

parameter

instance-id	MSTP instance ID
interface	Query interface spanning tree instance configuration

default

mode

Privileged mode

Instructions

Use the command "show spanning-tree mst interface" to query the spanning tree instance information of the interface.

Instance

Query interface spanning tree instance information

Switch# show spanning-tree mst 0 interfaces g1

```
 MST Port Information
================================================ =====
=====
 Instance Type: CIST (0)
------------------------------------------------ ----------

        Port Identifier: 128/1
    External Path-Cost: 0           /20000
    Internal Path-Cost: 0           /20000
------------------------------------------------ ----------
   Designated Root Bridge:
        32768/1C:2A:A3:C4:02:92 External Root
        Cost: 0
     Regional Root Bridge:
        32768/1C:2A:A3:C4:02:92 Internal Root
        Cost: 0
```

Designated Bridge:
32768/1C:2A:A3:C4:02:92 Internal Port Path Cost:
20000
Port Role:
Designated Port State:
Forwarding
---------- ----------

---

show spanning-tree mst configuration

format

show spanning-tree mst configuration

parameter

default

mode

Privileged mode

Instructions

Use the command "show spanning-tree mst configuration" to query MSTP configuration information.

Instance

Query MSTP configuration information
Switch# show spanning-tree mst configuration
Name [1C:2A:A3:C4:02:92]
Revision 0 Instances configured 1

Instance Vlans mapped
-------- ---------- --------------
-----
0 1-4094
---------- ----------

---

31. Static Routing

interface vlan (IPv4)

format

interface vlan vlanid

ip addressipaddr mask
no interface vlan vlanid
no ip address

parameter

ipaddr	IPv4 address of the interface
mask	Subnet mask of the interface IPv4 address

default

mode

Global configuration mode
VLAN interface configuration mode

Instructions

Use the command "interface vlan" to configure the Layer 3 interface of the VLAN. Use the command "ip address" to configure
The IP address of the VLAN interface.

Instance

Configure Layer 3 VLAN interface
Switch(config)# interface vlan 2
Switch(config-if)# ip address 192.168.3.1 255.255.255.0

Query VLAN interface information
Switch# show ip interface vlan 2

```
IP Address              I/F          I/F Status admin/oper     Type      Status
------------------ ---------- ---------- ------- ----- -
192.168.3.1/24      VLAN 2      UP/DOWN                  Static     Valid
```

ip route

format

ip routedest-ipaddr mask router-ipaddr
no ip route dest-ipaddr mask router-ipaddr

parameter

dest-ipaddr	The prefix of the destination IP address
mask	The mask of the destination IP address prefix
router-ipaddr	The next hop address of the forwarding route

default

mode

Global configuration mode

Instructions

Use the command "ip route" to add system static routing table entries.

Instance

Configure static routing
Switch(config)# ip route 1.1.1.1 255.0.0.0 192.168.3.11

Query routing information
Switch# show ip route
Codes:>-best, C-connected, S-static

S> 1.0.0.0/8 [1/1] via 192.168.3.11, VLAN 2
C> 192.168.0.0/24 is directly connected, MGMT
VLAN C> 192.168.3.0/24 is directly connected,
VLAN 2

---

arp

format

arpip-addr mac-addr vlan vlanid
no arp ip-addr mac-addr vlan vlanid

parameter

ip-addr	IP address of ARP entry
mac-addr	MAC address of ARP entry
vlan	VLAN to which the ARP entry belongs

default

mode

Global configuration mode

Instructions

Use the command "arp" to add static ARP entries.

Instance

Add static ARP
Switch(config)# arp 192.168.3.22 00:00:11:11:11:11 vlan 2

Query ARP entries
Switch# show arp

```
VLAN Interface      IP address          HW address          Status
----------------- --------------- ------------------ ----------
vlan 1              192.168.0.112   00:D0:00:00:00:01 Dynamic
vlan 2              192.168.3.22     00:00:11:11:11:11 Static
```

---

interface vlan (IPv6)

format

interface vlan vlanid
ipv6 enable
no interface vlan vlanid
no ipv6 enable

parameter

vlanid	VLAN ID of the VLAN interface

default

mode

Global configuration mode
VLAN interface configuration mode

Instructions

Use the command "interface vlan" to configure the Layer 3 interface of the VLAN.
Use the command "ipv6 enable" to enable the IPv6 function of the interface.

Instance

ConfigurationIPv6Layer 3
interfaceSwitch(config)#
interface vlan 2 Switch(config-
if)# ipv6 enable

Query interfaceIPv6
Switch# show ipv6 interface vlan 2

VLAN 2 is up/up

IPv6 is enabled, link-local address is
fe80::2e0:4cff:fe00:0 IPv6 Forwarding is enabled
No global unicast address is
configured Joined group address(es):

---

ff02::1:ff00:
0ff02::1
ff01::1
ND DAD is enabled, number of DAD attempts:
1 Stateless autoconfiguration is enabled

ipv6 address

format

ipv6 address ipv6-addr

no ipv6 address

parameter

ipv6-addr	Configure IPv6 address

default

mode

Global configuration mode

VLAN interface configuration mode

Instructions

Use the command "ipv6 address" to configure the IPv6 address of the Layer 3 VLAN interface.

Instance

ConfigurationIPv6address

Switch(config)# interface vlan 2

Switch(config-if)# ipv6 address 2001:01::01:01/64

Query interfaceIPv6

Switch# show ipv6 interface vlan 2

VLAN 2 is up/up
IPv6 is enabled, link-local address is
fe80::2e0:4cff:fe00:0 IPv6 Forwarding is enabled

Global unicast address(es):

IPv6 Global Address	Type
2001:1::1:1/64	Manual

Joined group
address(es):

ff02::1:ff01:1
ff02::1:ff00:
0ff02::1
ff01::1
ND DAD is enabled, number of DAD attempts: 1
Stateless autoconfiguration is enabled Stateless autoconfiguration is enabled

ipv6 route

format

ipv6 route ipv6-addr/length route-ipv6-addr
no ipv6 route ipv6-addr/length

parameter

ipv6-addr/length	The prefix of the destination IPv6 address
route-ipv6-addr	Next hop address for forwarding IPv6 routes

default

mode

Global configuration mode

Instructions

Use the command "ipv6 route" to add system static IPv6 routing table entries.

Instance

Configure IPv6 static routing
Switch(config)# ipv6 route 2002:01::01:01/96 2001:01::01:02

Query IPv6 static routes

Switch# show ipv6 route static
Codes: A-active, I-inactive

I 2002:1::/96 [1/1] via 2001:1::1:2, inactive

ipv6 neighbors

format

ipv6 neighbor ipv6-addr vlan vlanid macaddr
no ipv6 neighbor

parameter

ipv6-addr	Neighbor IPv6 address
vlan	ID of the VLAN interface
macaddr	MAC address of neighbor IPv6 address

default

mode

Global configuration mode

Instructions

Use the command "ipv6 neighbor" to add static IPv6 neighbor entries.

Instance

Configure IPv6 neighbors

Switch(config)# ipv6 neighbor 2001:01::01:11 vlan 2 00:00:00:11:11:12

Query IPv6 neighbors

Switch# show ipv6 neighbors

VLAN Interface IPv6 address HW address Status Router State

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

vlan 2 2001:1::1:11 00:00:00:11:11:12 Static No

Total number of entries: 1

show ip interface vlan

format

show ip interface vlan vlanid

parameter

vlan	VLAN ID of the Layer 3 interface

default

mode

Privileged mode

Instructions

Use the command "show ip interface vlan" to query the interface information.

Instance

Query VLAN interface information
Switch# show ip interface vlan 2

```
IP Address          I/F          I/F Status admin/oper   Type    Status
------------------- ---------- ---------- ------- ----- -
192.168.3.1/24      VLAN 2       UP/DOWN                Static  Valid
```

show ipv6 interface vlan

format

show ipv6 interface vlan vlanid

parameter

vlanid	VLAN ID of the VLAN interface

default

mode

Privileged mode

Instructions

Use the command "show ipv6 interface vlan" to query the IPv6 information of the interface

Instance

Query interfaceIPv6
Switch# show ipv6 interface vlan 2

```
VLAN 2 is up/up
IPv6 is enabled, link-local address is
fe80::2e0:4cff:fe00:0 IPv6 Forwarding is enabled
No global unicast address is
configured Joined group address(es):
ff02::1:ff00:
0ff02::1
ff01::1
ND DAD is enabled, number of DAD attempts:
1 Stateless autoconfiguration is enabled
```

show ip route

format

show ip route

parameter

default

mode

Privileged mode

Instructions

Use the command "show ip route" to query system IP routing table entries.

Instance

Query routing information
Switch# show ip route
Codes:>-best, C-connected, S-static

S> 1.0.0.0/8 [1/1] via 192.168.3.11, VLAN 2
C> 192.168.0.0/24 is directly connected, MGMT
VLAN C> 192.168.3.0/24 is directly connected,
VLAN 2

show ipv6 route

format

show ipv6 route

parameter

default

mode

Privileged mode

Instructions

Use the command "show ipv6 route" to query the system static IPv6 routing table entries.

Instance

Query IPv6 static routes
Switch# show ipv6 route static

Codes: A-active, I-inactive

I 2002:1::/96 [1/1] via 2001:1::1:2, inactive

show arp

format

show arp

parameter

default

mode

Privileged mode

Instructions

Use the command "show arp" to query static ARP entries.

Instance

Query ARP entries

Switch# show arp

VLAN Interface	IP address	HW address	Status
vlan 1	192.168.0.112	00:D0:00:00:00:01	Dynamic
vlan 2	192.168.3.22	00:00:11:11:11:11	Static

show ipv6 neighbors

format

show ipv6 neighbor

parameter

default

mode

Privileged mode

Instructions

Use the command "show ipv6 neighbor" to query the system's IPv6 neighbor entries.

Instance

Query IPv6 neighbors

```
Switch# show ipv6 neighbors
VLAN Interface                IPv6 address                    HW
address Status                Router State
----------------- ------------------------------- ------- ----------------
- ---------- ------ ----------
vlan 2                2001:1::1:11                                00:00:00:11:11:12
Static        No

Total number of entries: 1
```

32. Storm Control

storm-control

format

storm-control
no storm-control

storm-control (broadcast | unknown-unicast | unknown-multicast)

no storm-control (broadcast | unknown-unicast | unknown-multicast)

parameter

broadcast	Broadcast storm type
unknown-unicast	Unknown unicast type
unknown-multicast	Unknown multicast type

default

Both are disabled by default.

mode

Interface configuration mode

Instructions

Use the command "storm-control" to enable and disable the storm suppression function under the interface. Not only ports can be enabled and disabled on ports. Each storm control type can also be enabled and disabled on each port. Use the command "storm-control (broadcast | unknown-unicast | unknown-multicast)" to enable and disable the storm suppression type of the interface.

Instance

Enable storm suppression
function Switch(config)#
interface gi1 Switch(config-if)#
storm-control

Configure storm suppression type

Switch(config)# interface gi1

Switch(config-if)# storm-control broadcast

Query storm suppression configuration

Switch# show storm-control interfaces gi1

```
   Port      | State |   Broadcast   |    Unkown-Multicast    | Unknown-Unicast
| Action
             |       |       kbps    |          kbps          |         kbps          |
----------+-------+-------------+----------------- ---+-----------------|-
----------
   gi1          enable         10000       Off(   10000)            Off(   10000)
Drop
```

storm-control action

format

storm-control action (drop | shutdown)
no storm-control action

parameter

drop	After the storm exceeds the threshold, the operation is processed as discard
shutdown	After the storm exceeds the threshold, the operation is processed as closing the interface

default

The default is drop

mode

Interface configuration mode

Instructions

Use the command "storm-control action" to set the operation when the received storm control data packet exceeds the maximum rate on the interface

Instance

Configure storm suppression operations beyond the threshold

Switch(config)# interface gi1

Switch(config-if)# storm-control action shutdown

Query storm suppression configuration

Switch# show storm-control interfaces gi1

```
   Port      | State |   Broadcast   |    Unkown-Multicast    | Unknown-Unicast
| Action
             |       |       kbps    |          kbps          |        kbps          |
----------+-------+-------------+----------------- ---+-----------------|-
----------
   gi1          enable        10000       Off(    10000)            Off(
                10000) shutdown
```

storm-control ifg

format

storm-control ifg (include | exclude)

parameter

include	When including preamble and IFG (20 bytes), count the ingress storm control rate
exclude	Exclude the preamble and IFG (20 bytes), when the count enters the storm control rate

default

The default storm control frame gap is exclude

mode

Global configuration mode

Instructions

The storm control mechanism will try to calculate whether the ingress packet exceeds the configured rate and perform corresponding operations. Use the command "storm-control ifg" to include/exclude the preamble and inter-frame gaps in the calculation.

Instance

Configuration includes interframe gap

Switch(config)# storm-control ifg include

Query and calculate IFG

Switch# show storm-control
Storm control preamble and IFG:
Included Storm control unit: pps
.....

storm-control level

format

storm-control (broadcast | unknown-unicast | unknown-multicast) level <1-1000000>
no storm-control (broadcast | unknown-unicast | unknown-multicast) level

parameter

broadcast	Broadcast storm type
unknown-unicast	Unknown unicast type
unknown-multicast	Unknown multicast type
level	Set the storm control rate of the selected type. For bps, the range is 16-1000000,
	For pps, the range is 1-262143

default

The default broadcast storm suppression rate is 10000
The default unknown unicast storm suppression rate is 10000 The default unknown multicast storm suppression rate is 10000

mode

Interface configuration mode

Instructions

Use the command "storm-control (broadcast | unknown-unicast | unknown-multicast) **level**"For each type of storm, different storm control rates are allowed.

Instance

Configure interface storm suppression
Switch(config)# interface gi1
Switch(config-if)# storm-control broadcast
Switch(config-if)# storm-control broadcast level 200

Query storm suppression configuration
Switch# show storm-control interfaces gi1

```
   Port      | State |   Broadcast   |    Unkown-Multicast    | Unknown-Unicast
| Action
             |       |       kbps    |          kbps          |        kbps          |
----------+-------+-------------+----------------- ---+-----------------|-
----------
   gi1          enable        200       Off(   10000)           Off(
                10000) shutdown
```

storm-control unit

format

storm-control unit (bps | pps)

parameter

bps	Bit-based storm control rate calculation
pps	Packet-based storm control rate calculation

default

The default storm suppression calculation unit is bps

mode

Global configuration mode

Instructions

The storm control mechanism will try to calculate whether the ingress packet exceeds the configured rate and perform corresponding operations. Use the command "storm-control unit" to change the unit of the calculation method.

Instance

Configure the unit of storm calculation

Switch(config)# storm-control unit pps

Query storm suppression

Switch# show storm-control
Storm control preamble and IFG:
Excluded Storm control unit: pps

show storm-control

format

show storm-control

show storm-control interface IF_PORTS

parameter

interface	Query storm suppression by interface

default

mode

Privileged mode

Instructions

Use the command "show storm-control" to display all storm control-related configurations, including global configuration and each port configuration.
Use the command "show storm-control interface" to query the storm suppression configuration of the specified interface.

Instance

Query storm suppression

```
Switch# show storm-control
Storm control preamble and IFG:
Excluded Storm control unit: pps
```

Query storm suppression configuration

```
Switch# show storm-control interfaces gi1

   Port      | State |   Broadcast   |   Unkown-Multicast    | Unknown-Unicast
| Action
             |       |       kbps    |          kbps         |        kbps         |
----------+-------+-------------+----------------- ---+----------------|-
----------
   gi1          enable         200       Off(   10000)            Off(
                10000) shutdown
```

33. System File

copy

format

copy (flash:// | tftp://) (flash:// | tftp://)
copy tftp:// (backup-config | running-config | startup-config)

---

copy (backup-config | running-config | startup-config) tftp://
copy (backup-config | startup-config) running-config

copy (backup-config | running-config) startup-config
copy (running-config | startup-config) backup-config

parameter

tftp://	Specify the remote server and file name in the format "Tftp://192.168.1.111/remote_file_name"
running-config	Run configuration file
startup-config	Startup configuration file
backup-config	Backup configuration file

default

mode

Privileged mode

Instructions

There are many types of files in the system. These files are very important for the administrator to manage the switch. The most common file operation is copying. By using these copy commands, we can upgrade and backup the following types of files.

- **Firmware Image**
- **Configuration Files**
- **Syslog Files**
- **Language Files**
- **Security Certificate**

Instance

Copy running configuration to startup configuration

Switch# copy running-config startupst-config

Upload running file to remote host

Switch# copy running-config tftp://192.168.1.111/test1.cfg

Uploading file...Please Wait... Uploading Done

Download the configuration file to the startup configuration

Switch# copy tftp://192.168.1.111/test2.cfg startup-config

Downloading file...Please Wait... Downloading
Done Upgrade config success.

Do you want to reboot now? (y/n)n

Upload FLASH file to remote host

Switch# copy flash://dsa2 tftp://192.168.1.111/dsa2

Uploading file...Please Wait... Uploading Done

delete

format

delete (startrup-config | backup-config | flash://)

parameter

flash://	Set the configuration file stored in the flash to delete. Available documents include: flash://startup-config flash://backup-config
startrup-config	Delete startup configuration file
backup-config	Delete the backup configuration file

default

mode

Privileged mode

Instructions

Use the command "delete" to delete the system configuration file.

Instance

Delete backup files
Switch# delete backup-config

Query FLASH files
Switch# show flash

```
              File Name             File Size          Modified
------------------------ ---------------- ---------- --------------
 startup-config                1485                2020-01-01 00:24:52
 rsa2                           1679                 2020-01-01 00:00:35
 dsa2                           668                  2020-01-01 00:00:58
 ssl_cert                      1245                2020-01-01 00:01:07
 image                          8620992              2020-03-22 13:41:58
```

restore-defaults

format

restore-defaults [interfaces IF_PORTS]

parameter

interfaces	Reset the running configuration under the interface

default

mode

Privileged mode

Instructions

Use the command "restore-defaults" to restore the factory configuration of the system.

Instance

Restore system factory
configuration Switch#
restore-defaults Restore
Default Success.
Do you want to reboot now? (y/n)n

---

save

format

save

parameter

default

mode

Privileged mode

Instructions

Use the command "save" to save the system running configuration to the startup configuration.

Instance

Save
Switch#
save
Success

show config

format

show (running-config | startrup-config)
show running-config interfaces IF_PORTS

parameter

running-config	Query running configuration file
startup-config	Query startup configuration file
interfaces	Query the running configuration under the interface

---

default

mode

Privileged mode

Instructions

Our configuration file is text based. Therefore, we can display the configuration on the terminal and read it with this command. Use the command "show (running-config | startrup-config)" to query the required configuration.

Instance

Query startup configuration

Switch# show startup-config

! System Description: RTK RTL8328-24FE-4GE Switch

! System Version: v2.5.0-beta.32811

! System Name: SwitchEF0102

! System Up Time: 0 days, 4 hours, 31 mins, 43 secs

!

!

!

!

username "" privilege user secret "dnXencJRwflV6" username "admin" secret "FzjrGO6vfbERY"

voice-vlan vpt 0

voice-vlan dscp 0

.....

Query running configuration

Switch# show running-config

! System Description: RTK RTL8328-24FE-4GE Switch

! System Version: v2.5.0-beta.32811

! System Name: SwitchEF0102

! System Up Time: 0 days, 5 hours, 23 mins, 42 secs
!
!
!
!
username "" privilege user secret "dnXencJRwflV6" username "admin" secret "FzjrGO6vfbERY"

---

voice-vlan vpt 0
voice-vlan dscp 0
....

Query the running configuration under the interface
Switch# show running-config interfaces gi1
interface gi1
  rate-limit ingress 128

show flash

format

show flash

parameter

default

mode

Privileged mode

Instructions

Use the command "show flash" to query all files saved in flash.

Instance

Query FLASH files
Switch# show flash

File Name	File Size	Modified
startup-config	1485	2020-01-01 00:24:52
rsa2	1679	2020-01-01 00:00:35
dsa2	668	2020-01-01 00:00:58
ssl_cert	1245	2020-01-01 00:01:07
image	8620992	2020-03-22 13:41:58

---

34. Surveillance VLAN

surveillance-vlan (Global)

format

surveillance-vlan
no surveillance-vlan

parameter

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "surveillance-vlan" to enable the video VLAN global switch.

Instance

Enable video VLAN

```
Switch(config)# surveillance-vlan
```

Query video VLAN configuration

```
Switch# show surveillance -vlan
Administrate Surveillance VLAN state:
disabled Surveillance VLAN ID : none
(disable) Surveillance VLAN Aging :
1440 minutes Surveillance VLAN CoS
6
Surveillance VLAN 1p Remark: disabled
```

---

surveillance-vlan (Interface)

format

surveillance-vlan
no surveillance-vlan

parameter

default

mode

Interface configuration mode

Instructions

Use the command "surveillance-vlan" to enable OUI video VLAN configuration on the interface.

Instance

Enable the video VLAN of the
interface Switch(config)#interface
range gi1-3 Switch(config-
if)#surveillance-vlan

Query the video VLAN configuration of the interface
Switch# show surveillance-vlan interfaces gi1-3
Surveillance VLAN Aging : 1440 minutes
Surveillance VLAN CoS 7
Surveillance VLAN 1p Remark: enabled

OUI table
OUI MAC | Description
------------------+-----------------
00:01:02 | Test

Port | State| Port Mode | Cos Mode
---------+-----------+-----------------+---------- -
gi1 | Disabled | Auto | Src
gi2 | Disabled | Auto | Src
gi3 | Disabled | Auto | Src

surveillance-vlan vlan

format

surveillance-vlan vlan<1-4094>
no surveillance-vlan vlan

parameter

vlan	Specify VLAN to enable video VLAN function

default

mode

Global configuration mode

Instructions

Use the command "surveillance-vlan vlan" to statically configure the VLAN identifier of the video VLAN.

Instance

Configure video VLAN

```
Switch(config)# surveillance-vlan vlan 128
```

Query video VLAN

```
Switch# show surveillance-vlan
Administrate Surveillance VLAN state:
enabled Surveillance VLAN ID    128
Surveillance VLAN Aging    : 1440
minutes Surveillance VLAN CoS
                                  6
Surveillance VLAN 1p Remark: disabled
```

---

surveillance-vlan oui-table

format

surveillance-vlan oui-tableA:B:C [DESCRIPTION]

no surveillance-vlan oui-table[A:B:C]

parameter

A:B:C	Add or delete OUI MAC
DESCRIPTION	Set the description of the specified MAC address as the video VLAN OUI table

default

mode

Global configuration mode

Instructions

Use the command "surveillance-vlan oui-table" to configure the OUI table entry of the MAC address.

Instance

Configure OUI entries

Switch(config)# surveillance-vlan oui-table 00:01:02 “Test”

Query interface video VLAN configuration
Switch# show surveillance-vlan interfaces all
Surveillance VLAN Aging : 1440 minutes
Surveillance VLAN CoS 7
Surveillance VLAN 1p Remark: enabled

OUI table
OUI MAC | Description
------------------+-----------------
00:01:02 | Test

Port | State| Port Mode | Cos Mode
---------+-----------+-----------------+---------- -
gi1 | Disabled | Auto | Src
gi2 | Disabled | Auto | Src
gi3 | Disabled | Auto | Src
...

surveillance-vlan cos (Global)

format

surveillance-vlan cos <0-7> [remark]
no surveillance-vlan cos

parameter

cos	Set the COS value of video VLAN packets
remark	Enable re-marking COS value

default

The default COS value is 6, and re-marking is disabled.

mode

Global configuration mode

Instructions

Use the command "surveillance vlan cos" to configure the priority and remark switch of the video VLAN packet.

Instance

Configure the COS value of the video VLAN
Switch(config)# surveillance-vlan cos 7 remark

Query video VLAN

Switch# show surveillance-vlan

Administrate Surveillance VLAN state: disabled

Surveillance VLAN ID 128
Surveillance VLAN Aging : 1440
minutes Surveillance VLAN CoS
7

Surveillance VLAN 1p Remark: enabled

surveillance-vlan cos (Interface)

format

**surveillance-vlan cos (src |
all) no surveillance-vlan cos**

parameter

src	Set QoS attributes to be applied to packets with OUIs in the source MAC address
all	Set QoS attributes to be applied to packets classified into the video VLAN.

default

The default is src.

mode

Interface configuration mode

Instructions

Use the command "surveillance vlan cos" to configure the OUI video VLAN cos mode configuration on the interface.

Instance

Configure the COS value of the video
VLAN under the interface
Switch(config)#interface range gi1-3
Switch(config-if)# surveillance-vlan cos all

Query interface video VLAN configuration
Switch# show surveillance-vlan interfaces gi1-3
Surveillance VLAN Aging : 1440 minutes
Surveillance VLAN CoS 7

Surveillance VLAN 1p Remark: enabled

OUI table
OUI MAC | Description
------------------+-----------------
00:01:02 | Test

Port | State| Port Mode | Cos Mode
---------+-----------+-----------------+---------- -
gi1 | Disabled | Auto | Src
gi2 | Disabled | Auto | Src
gi3 | Disabled | Auto | Src

surveillance-vlan mode

format

surveillance-vlan mode(auto|manual)
no surveillance-vlan mode

parameter

auto	The designated port is identified as a candidate port for joining the video VLAN. When a data packet with the source OUI MAC address identifying the remote device as a video device is seen on the port, the port connects the video VLAN Marked port
manual	Specify to manually assign the port to the video VLAN

default

The default is auto

mode

Interface configuration mode

Instructions

Use the command "surveillance-vlan mode" to configure the video VLAN mode of the interface.

Instance

Configure the mode of the video VLAN under the
interface Switch(config)#interface range gi1-3
Switch(config-if)# surveillance-vlan mode manaul

Query interface video VLAN configuration
Switch# show surveillance-vlan interfaces gi1-3
Surveillance VLAN Aging : 1440 minutes
Surveillance VLAN CoS 7

Surveillance VLAN 1p Remark: enabled

OUI table
OUI MAC | Description
------------------+-----------------
00:01:02 | Test

Port | State| Port Mode | Cos Mode
---------+-----------+-----------------+---------- -
gi1 | Disabled | Auto | Src
gi2 | Disabled | Auto | Src
gi3 | Disabled | Auto | Src

surveillance-vlan aging-time

format

surveillance-vlan aing-time <30-65536>
no surveillance-vlan aing-time

parameter

aing-time	Video VLAN aging time interval, in minutes

default

The default aging time is 1440 minutes.

mode

Global configuration mode

Instructions

Use the command "surveillance vlan aging-time" to configure the aging interval of the video VLAN.

Instance

Configure the video VLAN aging interval
Switch(config)# surveillance-vlan aging-time 720

Query video VLAN configuration
Switch# show surveillance-vlan
Administrate Surveillance VLAN state:
disabled Surveillance VLAN ID 1
Surveillance VLAN Aging : 720
minutes Surveillance VLAN CoS

5

Surveillance VLAN 1p Remark: enabled

show surveillance-vlan

format

show surveillance-vlan

show surveillance-vlan interfaces[IF_PORTS]

parameter

interfaces	Query video VLAN configuration by interface

default

mode

Privileged mode

Use the command "show surveillance-vlan" to query the global configuration of the video VLAN. Use the command "show surveillance-vlan interface" to query the video VLAN interface configuration.

Instance

Query video VLAN configuration

Switch# show surveillance-vlan
Administrate Surveillance VLAN state:
disabled Surveillance VLAN ID 1
Surveillance VLAN Aging : 720
minutes Surveillance VLAN CoS
5
Surveillance VLAN 1p Remark: enabled

35. Time

clock set

format

clock set HH:MM:SS (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec)
<1-31> <2000-2035>

parameter

set	Set static time of year, month, day, hour, minute, second

default

The system default startup time is 2000/01/01 08:00:00

mode

Privileged mode

Use the command "clock set" to device system static time. The static time will not be saved to the configuration file.

Instance

Configure system time
switch# clock set 11:03:00 sep 21 2012
11:03:00 DFL(UTC+8) Sep 21 2012

Query system time
switch# show clock
11:03:21 DFL(UTC+8) Sep 21 2012
No time source

clock timezone

format

clock timezone ACRONYM HOUR-OFFSET [minutes <0-59>]
no clock timezone

parameter

ACRONYM	Specify the abbreviated name of the time zone
HOUR-OFFSET	Specify time zone hour offset
minutes	Specify time zone minute offset

default

The default time zone is UTC+8

mode

Global configuration mode

Instructions

Use the command "clock timezone" to set the system time zone.

Instance

Set the system time zone
switch(config)# clock timezone test +5
switch(config)# show clock detail
10:13:27 test(UTC+5)
Sep 21 2012
No time source

Time zone: Acronym is test Offset is UTC+5

clock source

format

clock source (local | sntp)

parameter

local	Use local static clock
sntp	Enable remote SNTP clock synchronization

default

The system default clock source is local

mode

Global configuration mode

Instructions

Use the command "clock source" to configure the system clock source.

Instance

Configure the system clock source
switch(config)# clock source sntp
switch(config)# show clock detail
08:32:12 test(UTC+5) Sep 21
2012
Time source is sntp

Time zone: Acronym is DFL Offset is UTC+8

clock summer-time

format

clock summer-time ACRONYM date (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) <1-31> <2000-2037>HH:MM (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec) <1-31> <2000-2037> HH:MM [<1-1440>]
clock summer-time ACRONYM recurring (usa|eu) [<1-1440>] clock summer-time ACRONYM recurring (<1-5>|first|last) (sun|mon|tue|wed|thu|fri|sat) (jan|feb |mar|apr|may|jun|jul|aug|sep|oct|nov|dec) HH:MM (<1-5>|first|last) (sun|mon|tue|wed|thu|fri|sat) (jan|feb|mar|apr|may|jun|jul|aug|sep|oct|nov|dec)HH:MM [<1-1440>]
no clock summer-time

parameter

ACRONYM	Abbreviated name of time zone
date	Non-recurring daylight saving time duration
<1-1440>	Adjust the daylight saving time offset
usa	Daylight saving time is used in the United States from the second Sunday of March to the first of November Ends on Sunday
eu	Daylight saving time is used in Europe, starting from the last Sunday in March and ending in October End on last Sunday
recurring	Duration of daylight saving time

mode

Global configuration mode

Instructions

Use the command "clock summer-time" to set the summer time of the system time.

Instance

Set system daylight saving time
switch(config)# clock summer-time test recurring usa
switch(config)# show clock detail
08:32:12 test(UTC+5) Sep 21 2012
No time source

Time zone: Acronym is DFL Offset is UTC+8

Summertime: Acronym is test Recurring every year. Begins at 2 0 3 2:0

Ends at 1 0 11 2:0
Offset is 60
minutes.

sntp

format

sntp hostHOSTNAME [port <1-65535>]
no sntp

parameter

HOSTNAME	The IP address or host name of the SNTP server
port	SNTP server port number

mode

Global configuration mode

Instructions

Use the command "sntp" to configure the remote SNTP synchronization clock server.

Instance

Configure SNTP server
switch(config)# clock source sntp
switch(config)# sntp host
192.168.1.100 switch(config)# show
sntp
SNTP is Enabled
SNTP Server address:
192.168.1.100 SNTP Server port:
123

show clock

format

show clock [detail]

parameter

detail	Query detailed clock information

default

mode

Privileged mode

Instructions

Use the command "show clock" to query the system clock information.

Instance

Query system clock
switch# show clock
11:03:21 DFL(UTC+8) Sep 21 2012
No time source

show sntp

format

show sntp

parameter

default

mode

Privileged mode

Instructions

Use the command "show sntp" to query the remote SNTP server information.

Instance

Query SNTP server
information
switch(config)# show
sntp SNTP is Enabled
SNTP Server address:
192.168.1.100 SNTP Server port:
123

---

36. UDLD

udld

format

udld
no udld

parameter

default

Disabled by default.

mode

Interface configuration mode

Instructions

Use the command "udld" to enable the normal mode of unidirectional link detection (UDLD) of the interface.

Instance

Enable interface UDLD
switch(config)# interface gi1
switch(config-if)# udld

UDLD query interface
switch# show udld interfaces gi1
Port enable administrative configuration setting:
Enabled Port enable operational state: Enabled
Current bidirectional state: Bidirectional
Current operational state: Advertisement-SINGLE NEIGHBOR DETECTED

---

udld aggressive

format

udld ggressive
no udld aggressive

parameter

default

Disabled by default.

mode

Interface configuration mode

Instructions

Use the command "udld ggressive" to enable the unidirectional link detection (UDLD) attack mode of the interface.

Instance

Configure the interface to UDLD
attack mode switch(config)#
interface gi1 switch(config-if)#
udld aggressive

UDLD query interface

Switch# show udld interfaces g1

Interface gi1

Port enable administrative configuration setting: Enabled / in aggressive mode Port enable operational state: Enabled / in aggressive mode
Current bidirectional state: Unknown
Current operational state:
Advertisement Message interval: 7

Time out interval: 5

No neighbor cache information stored

---

udld message time

format

udld message timemessage-time-interval

parameter

time	Specify the interval for sending messages. The range is 1-90 seconds

default

The default is 15 seconds.

mode

Global configuration mode

Instructions

Use the command "udld message time" to set the interval of unidirectional link detection (UDLD) sending messages.

Instance

Configure UDLD message interval
switch(config)# udld message time 30

udld reset

format

udld reset

parameter

Def

ault

mo

de

Privileged mode

Instructions

Use the command "udld reset" to reset all interfaces disabled by unidirectional link detection (UDLD) and allow communication traffic to start passing through them again.
If the interface configuration is still enabled for UDLD, these ports will run UDLD again, if the problem is not corrected, these ports will be disabled for the same reason

Instance

Reset UDLD
Switch# udld reset
1 ports shutdown by UDLD were reset.

show udld

format

show udld
show udld interfaces IF_NMLPORTS

parameter

interfaces	Query the UDLD configuration of the specified interface

default

mode

Privileged mode

Instructions

Use the command "show udld" to display the unidirectional link detection (UDLD) management and operation status of all ports or designated ports.

Instance

UDLD query interface

Switch# show udld interfaces g1

Interface gi1

Port enable administrative configuration setting: Enabled / in aggressive mode Port enable operational state: Enabled / in aggressive mode
Current bidirectional state: Unknown
Current operational state:
Advertisement Message interval: 7

Time out interval: 5

No neighbor cache information stored

37. VLAN

vlan

format

vlan
no
vlan

parameter

default

VLAN 1 exists by default in the system

mode

Global configuration mode

Instructions

Use the command "vlan" to add the VLAN of the system.

Instance

Configure VLAN
Switch# configure
Switch (config)# vlan 100

Query VLAN configuration
Switch# show vlan
VID | VLAN Name | Untagged Ports | Tagged Ports | Type
-------+---------------------------+------------ ----------------+------
---------------+---------
1 | default | gi1-48,gi1-4,lag1-8 | --- | Default
100 | VLAN0100 | --- | --- | Static

Name (vlan)

format

name NAME

parameter

name	Configure VLAN alias

The default name of the new vlan is VLANxxxx. xxxx is a 4-digit vlan number

mode

VLAN configuration mode

Instructions

Use the command "name" to configure or modify the VLAN alias.

Instance

Configure VLAN name
Switch(config)# vlan 100
Switch(config-vlan)# name VLAN-one-hundred

Query VLAN configuration

Switch# show vlan

VID | VLAN Name | Untagged Ports | Tagged Ports | Type

-------+--------------------------+-------------- -------------+---------

------------+---------

1 | default | gi1-48,gi1-4,lag1-8 | --- | Default
100 | VLAN-one-hundred | --- | --- | Static

switchport mode

format

switchport mode (access | hybrid | trunk [uplink] | tunnel)

parameter

access	VLAN mode is Access port
hybrid	VLAN mode is hybrid port
trunk	VLAN mode is trunk port
uplink	Set the upstream attributes of the trunk port
tunnel	VLAN mode is Dot1Q tunnel port

By default, all interfaces are trunk

mode

Interface configuration mode

Instructions

Use the command "switchport mode" to configure port VLAN attributes for different port roles.

Access: Only accept untagged frames and join untagged VLANs.

Hybrid: Supports all functions defined in the IEEE 802.1Q specification.
Trunk: untagged member of at most one VLAN, and is a tagged member of zero or more VLANs, if it is an uplink port, it can identify the double-tagged on this port

Tunnel: Port-based Q-in-Q mode

Instance

Configure VLAN attributes of the interface

Switch(config)# interface gi12

Switch(config-if)# switchport mode access

Query interface configuration

Switch# show interfaces switchport gi12

Port: gi12
Port Mode: Access
Ingress Filtering:
enabled
Acceptable Frame Type: untagged-
only Ingress UnTagged VLAN
(NATIVE): 1 Trunking VLANs Enabled:

Port is member in:

Vlan	Name	Egress rule
1	default	Untagged

Forbidden VLANs:

Vlan	Name

---

switchport hybrid pvid

format

switchport hybrid pvid <1-4094>

parameter

pvid	Default VLAN of the port

default

The default is 1.

mode

Port configuration mode

Instructions

Use the command "switch hybrid pivd" to configure the default VLAN of the hybrid port.

Instance

Configure the default VLAN of the hybrid
port Switch(config)# interface gi10
Switch(config-if)# switchport mode hybrid
Switch(config-if)# switchport hybrid pvid 100

Query interface configuration

Switch# show interfaces switchport gi10

Port: gi10

Port Mode: Hybrid Ingress Filtering:
enabled Acceptable Frame Type: all
Ingress UnTagged VLAN (NATIVE): 100 Trunking VLANs Enabled:

Port is member in:

Vlan	Name	Egress rule
1	default	Untagged

Forbidden VLANs:

Vlan	Name

switchport hybrid ingress-filtering

format

switchport bybrid ingress-filtering
no switchport hybrid ingress-filtering

parameter

default

Enabled by default

mode

Interface configuration mode

Instructions

Use the command "switchport hybrid ingress-filtering" to enable VLAN filtering in the ingress direction of the interface.

Instance

Enable VLAN filtering on the interface
Switch(config)# interface gi10
Switch(config-if)# switchport mode hybrid
Switch(config-if)#no switchport hybrid ingress-filtering

switchport hybrid acceptable-frame-type

format

switchport hybrid acceptable-frame-type (all | tagged-only | untagged-only)

parameter

all	Receive all frame types
tagged-only	Only receive frame type with TAG
untagged-only	Only receive frame types with UNTAG

default

The default is all

mode

Interface configuration mode

Instructions

Use the command "switchport hybrid accept-frame-type" to configure which type of frame the interface can receive.

Instance

Configure the interface receiving frame type

Switch(config)# interface gi10

Switch(config-if)# switchport mode hybrid

Switch(config-if)# switchport hybrid acceptable-frame-type tagged-only

---

switchport hybrid allowed vlan

format

switchport hybrid allowed vlan add VLAN-LIST [(tagged|untagged)]

switchport hybrid allowed vlan remove VLAN-LIST

parameter

VLAN-LIST	Specify VLAN list to add or delete
tagged|untagged	Specify member type is TAG or UNTAG

default

By default, only vlan 1 is a member of UNTAG. It is a TAG member by default when added.

mode

Interface configuration mode

Instructions

Use the command "switchport hybrid allow vlan add" to add the list of VLANs allowed by the interface.

Instance

Configure the list of allowed VLANs

```
Switch(config)# interface gi10
Switch(config-if)# switchport hybrid allowed vlan add 100-105
Switch(config-if)# switchport hybrid allowed vlan remove 105
```

Query the configuration of the interface

```
Switch# show interfaces switchport gi10
Port: gi10
Port Mode: Hybrid
Ingress Filtering:
disabled
Acceptable Frame Type: tagged-only
Ingress UnTagged VLAN (NATIVE):
100 Trunking VLANs Enabled:

Port is member in:
Vlan Name    Egress rule
------- ---------------------------------- ------- ----------
1     default    Untagged
100 VLAN-one-hundred Tagged
101 VLAN0101    Tagged
102 VLAN0102    Tagged
103 VLAN0103    Tagged
104 VLAN0104    Tagged

Forbidden
VLANs: Vlan
Name
------- ----------------------
```

switchport access vlan

format

switchport access vlan <1-4094>

no switchport access vlan

parameter

vlan	Specify the VLAN ID of Access

default

Default is 1

mode

Interface configuration mode

Instructions

Use the command "switchport access vlan" to configure the default VLAN of the Access port.

Instance

Configure the default VLAN
of the access port
Switch(config)# interface gi10
Switch(config-if)# switchport mode access
Switch(config-if)# switchport access vlan 100

switchport tunnel vlan

format

switchport tunnel vlan <1-4094>
no switchport tunnel vlan

parameter

vlan	Specify the VLAN ID of the tunnel

default

Default is 1

mode

Interface configuration mode

Instructions

Use the command "switchport tunnel vlan" to set the dot1q tunnel vlan on the interface.

Instance

Configure tunnel vlan
Switch(config)# interface gi10
Switch(config-if)# switchport mode tunnel
Switch(config-if)# switchport tunnel vlan 100

switchport trunk native vlan

format

switchport trunk native vlan <1-4094>
no switchport trunk native vlan

parameter

vlan	Specify the VLAN ID of the trunk

default

Default is 1

mode

Interface configuration mode

Instructions

Use the command "switchport trunk native vlan" to configure the default VLAN of the trunk port.

Instance

Configure the default vlan
Switch of the Trunk
port(config)# interface gi10
Switch(config-if)# switchport mode trunk
Switch(config-if)# switchport trunk native vlan 100

switchport trunk allowed vlan

format

switchport trunk allowed vlan (add | remove) (VLAN-LIST | all)

parameter

(add | remove)	Add or delete VLAN of Trunk port
(VLAN-LIST | all)	Specify VLAN or all VLANs

default

Default is 1

mode

Interface configuration mode

Instructions

Use the command "switchport trunk allow vlan add" to configure the VLAN allowed through the trunk port. Use the command "switchport trunk allow vlan remote" to delete the VLAN of the trunk port.

Instance

Configure the vlan allowed through the
trunk port Switch(config)# interface gi10
Switch(config-if)# switchport mode trunk
Switch(config-if)# switchport trunk allowed vlan add 100

switchport default-vlan tagged

format

switchport default-vlan tagged
no switchport default-vlan tagged

parameter

default

The default is untagged

mode

Interface configuration mode

Instructions

Use the command "switchport default vlan tagged" to become the default vlan tagged member.

Instance

Configure default VLAN tag members
Switch(config)# interface gi10
Switch(config-if)# switchport default-vlan tagged

switchport forbidden default-vlan

format

switchport forbidden default-vlan
no switchport forbidden default-vlan

parameter

default

Default is allowed

mode

Interface configuration mode

Instructions

Use the command "switchport forbidden default-vlan" to forbid the use of the default vlan on the interface.

Instance

The configuration prohibits the
use of the default VLAN under
the interface Switch(config)#
interface gi10

Switch(config-if)# switchport forbidden default-vlan

switchport forbidden vlan

format

switchport forbidden vlan (add | remove) VLAN-LIST

parameter

(add | remove)	Add or remove disabled members operation
VLAN-LIST	VLAN ID of the disabled member

default

mode

Interface configuration mode

Instructions

Use the command "switchport forbidden vlan add" to configure a forbidden VLAN on the interface. Use the command "switchport forbidden vlan remove" to configure the unbanned VLAN on the interface.

Instance

Configure VLAN Disabled
Interface Switch(config)#

interface gi10
Switch(config-if)# switchport forbidden vlan add 100

---

switchport vlan tpid

format

switchport vlan tpid (0x8100|0x88a8|0x9100|0x9200)

parameter

tpid	Choose and set a TPID

default

The default is 0x8100

mode

Interface configuration mode

Instructions

Use the command "switchport vlan tpid" to configure the TPID of the interface.

Instance

Configure the TPID of the
interface Switch(config)#
interface gi10
Switch(config-if)# switchport vlan tpid 0x9100

management-vlan

format

management-vlan vlan<1-4094>
no management-vlan

parameter

vlan	Specify a VLAN as the management VLAN

default

Default is 1

mode

Global configuration mode

Instructions

Use the command "management vlan" to configure or modify the management VLAN.
Must be created before configuring the management VLAN
VLAN.

Instance

Configure VLAN
Switch(config)#vlan
2

Configure Management VLAN
Switch(config)# management-vlan vlan 2

show vlan

format

show vlan [(VLAN-LIST|dynamic|static)]

parameter

vlan	Query all VLAN or specified VLAN information
dynamic	Query all dynamic VLAN information
static	Query all static VLAN information

default

mode

Privileged mode

Instructions

Use the command "show vlan" to query the VLAN information of the system.

Instance

Query VLAN configuration
Switch# show vlan
VID | VLAN Name | Untagged Ports | Tagged Ports | Type
-------+----------------------------+------------ ----------------+------
---------------+---------
1 | default | gi1-48,gi1-4,lag1-8 | --- | Default
100 | VLAN0100 | --- | --- | Static

show vlan interface membership

format

show vlan VLAN-LIST interfaces IF_PORTS membership

parameter

vlan	Query by VLAN
interfaces	Query by interface

default

mode

Privileged mode

Instructions

Use the command "show vlan interfface memebership" to query the member information of the interface VLAN.

Instance

Query VLAN member information under the interface

Switch# show vlan 1 interfaces gi1 membership

```
------------------------ VLAN
 ID              : 1
 VLAN Type: Default
---------+--------------
   Port     |   Membership
---------+--------------
   gi1      |      Untagged
---------+--------------
```

show interface switchport

format

show interface switchport IF_PORTS

parameter

IF_PORTS	Query by interface

default

mode

Privileged mode

Instructions

Use the command "show interface switchport" to query information about the default VLAN by interface.

Configure interface default VLAN information

Switch# show interfaces switchport g1

Port: gi1
Port Mode: Trunk
Gvrp Status:
disabled
Ingress Filtering: enabled
Acceptable Frame Type:
all
Ingress UnTagged VLAN (NATIVE):
1 Trunking VLANs Enabled:

Port is member in:

Vlan	Name	Egress rule
1	default	Untagged

Forbidden VLANs:

Vlan	Name

show management-vlan

format

show management-vlan

parameter

default

mode

Privileged mode

Instructions

Use the command "show management-vlan" to query the management VLAN information.

Query the management VLAN

Switch# show management-vlan

Management VLAN-ID: default(1)

38. Voice VLAN

voice-vlan (Global)

format

voice-vlan
no voice-vlan

parameter

default

Disabled by default

mode

Global configuration mode

Instructions

Use the command "voice-vlan" to enable the voice VLAN global switch.

Instance

Enable VOICE VLAN

Switch(config)# voice-vlan

Query VOICE VLAN configuration Switch# show voice-vlan

Administrate Voice VLAN state: disabled (disable)
Voice VLAN ID : none

Voice VLAN Aging: 1440 minutes Voice VLAN CoS 6

Voice VLAN 1p Remark: disabled

voice-vlan (Interface)

format

voice-vlan
no voice-vlan

parameter

default

Disabled by default

mode

Interface configuration mode

Instructions

Use the command "voice-vlan" to enable OUI voice VLAN configuration on the interface.

Instance

Enable VOICE-VLAN
Switch(config)#interface range gi1-3
Switch(config-if)#voice-vlan

Query the VOICE VLAN configuration of the interface
Switch# show voice-vlan interfaces gi1-8
Voice VLAN Aging : 1440 minutes
Voice VLAN CoS 6
Voice VLAN 1p Remark:

disabled OUI table

OUI MAC	Description
00:E0:BB	3COM
00:03:6B	Cisco
00:E0:75	Veritel
00:D0:1E	Pingtel
00:01:E3	Siemens
00:60:B9	NEC/Philips
00:0F:E2	H3C
00:09:6E	Avaya

Port	State	Port Mode	Cos Mode
gi1	Disabled	Auto	Src
gi2	Disabled	Auto	Src
gi3	Disabled	Auto	Src
gi4	Disabled	Auto	Src
gi5	Disabled	Auto	Src
gi6	Disabled	Auto	Src

gi7 | Disabled | Auto | Src
gi8 | Disabled | Auto | Src

voice-vlan vlan

format

voice-vlan vlan<1-4094>
no voice-vlan vlan

parameter

vlan	Specify VLAN to enable VOICE VLAN function

default

mode

Global configuration mode

Use the command "voice-vlan vlan" to statically configure the VLAN identifier of the voice VLAN.

Instance

Configure voice VLAN
Switch(config)# voice-vlan vlan 128

Query voice VLAN
Switch# show voice-vlan
Administrate Voice VLAN state:
enabled Voice VLAN ID 128
Voice VLAN Aging: 1440
minutes Voice VLAN CoS
6
Voice VLAN 1p Remark: disabled

voice-vlan oui-table

format

voice-vlan oui-tableA:B:C [DESCRIPTION]
no voice-vlan oui-table[A:B:C]

parameter

A:B:C	Add or delete OUI MAC

DESCRIPTION	Set the description of the specified MAC address as the voice VLAN OUI table

default

By default, the system creates 8 groups of OUI MAC addresses.

mode

Global configuration mode

Use the command "voice-vlan oui-table" to configure the OUI table entry of the MAC address.

Instance

Configure OUI entries
Switch(config)# voice-vlan oui-table 00:01:02 “Test”

Query interface voice VLAN configuration
Switch# show voice-vlan interfaces all
Voice VLAN Aging: 1440 minutes Voice VLAN CoS 6
Voice VLAN 1p Remark: disabled

OUI table
OUI MAC | Description
------------------+----------------- 00:E0:BB |
3COM
00:03:6B | Cisco
00:E0:75 | Veritel
00:D0:1E | Pingtel
00:01:E3 | Siemens
00:60:B9 |
NEC/Philips
00:0F:E2 | H3C
00:09:6E | Avaya
00:01:02 | Test

Port | State | Port Mode | Cos Mode
---------+-----------+------------------+--------- -
gi1 | Disabled | Auto | Src fa2 | Disabled | Auto | Src fa3 | Disabled | Auto | Src
...

voice-vlan cos (Global)

format

voice-vlan cos<0-7> [remark]
no voice-vlan cos

cos	Set the COS value of voice VLAN packets
remark	Enable re-marking COS value

default

The default COS value is 6, and re-marking is disabled.

mode

Global configuration mode

Instructions

Use the command "voice vlan cos" to configure the priority and remark switch of voice VLAN packets.

Instance

Configure the COS value of the voice VLAN
Switch(config)# voice-vlan cos 7 remark

Query voice VLAN
Switch# show voice-vlan
Administrate Voice VLAN state:
disabled Voice VLAN ID 128
Voice VLAN Aging: 1440
minutes Voice VLAN CoS
7
Voice VLAN 1p Remark: enabled

voice-vlan cos (Interface)

format

voice-vlan cos (src |
all) no voice-vlan cos

src	Set QoS attributes to be applied to packets with OUIs in the source MAC address
all	Set QoS attributes to be applied to packets classified into the voice VLAN.

default

The default is src.

mode

Interface configuration mode

Instructions

Use the command "voice vlan cos" to configure the OUI voice VLAN cos mode configuration on the interface.

Instance

Configure the COS value of the
voice VLAN under the interface
Switch(config)#interface range gi1-3
Switch(config-if)# voice-vlan cos all

Query interface voice VLAN configuration
Switch# show voice-vlan interfaces gi1-8
Voice VLAN Aging : 1440 minutes
Voice VLAN CoS 6
Voice VLAN 1p Remark: disabled

OUI table

OUI MAC	Description
00:E0:BB	3COM
00:03:6B	Cisco
00:E0:75	Veritel
00:D0:1E	Pingtel
00:01:E3	Siemens
00:60:B9	NEC/Philips
00:0F:E2	H3C
00:09:6E	Avaya

Port	State	Port Mode	Cos Mode
gi1	Disabled	Auto	All
gi2	Disabled	Auto	All
gi3	Disabled	Auto	All
gi4	Disabled	Auto	Src
gi5	Disabled	Auto	Src
gi6	Disabled	Auto	Src
gi7	Disabled	Auto	Src
gi8	Disabled	Auto	Src

voice-vlan mode

format

voice-vlan mode(auto|manual)
no voice-vlan mode

parameter

auto	The designated port is identified as a candidate port for joining the voice VLAN. When a data packet with the source OUI MAC address that identifies the remote device as a voice device is seen on the port, the port connects the voice VLAN Marked port
manual	Specify to manually assign the port to the voice VLAN

default

The default is auto

mode

Interface configuration mode

Instructions

Use the command "voice-vlan mode" to configure the voice VLAN mode of the interface.

Instance

Configure the voice VLAN mode under the
interface Switch(config)#interface range
gi1-3 Switch(config-if)# voice-vlan mode
manaul

Query interface voice VLAN configuration
Switch# show voice-vlan interfaces gi1-8
Voice VLAN Aging : 1440 minutes
Voice VLAN CoS 6
Voice VLAN 1p Remark: disabled

OUI table
OUI MAC | Description
---------- +---------- 00:E0:BB
| 3COM
00:03:6B | Cisco
00:E0:75 | Veritel
00:D0:1E | Pingtel
00:01:E3 | Siemens
00:60:B9 |
NEC/Philips 00:0F:E2
| H3C
00:09:6E | Avaya

```
   Port | State      | Port Mode     | Cos Mode
-------+----------+-------------+-----------
gi1      | Disabled |      manaul       | All
gi2      | Disabled |      manaul       | All
gi3      | Disabled |      manaul       | All
gi4      | Disabled |      Auto       | Src
gi5      | Disabled |      Auto       | Src
gi6      | Disabled |      Auto       | Src
gi7      | Disabled |      Auto       | Src
gi8      | Disabled |      Auto       | Src
```

voice-vlan aging-time

format

voice-vlan aing-time<30-65536>
no voice-vlan aing-time

aing-time	Voice VLAN aging interval, in minutes

default

The default aging time is 1440 minutes.

mode

Global configuration mode

Instructions

Use the command "voice vlan aging-time" to configure the voice VLAN aging interval.

Instance

Configure the voice VLAN aging interval
Switch(config)# voice-vlan aging-time 720

Query voice VLAN configuration
Switch# show voice-vlan
Administrate Voice VLAN state:
disabled Voice VLAN ID 1
Voice VLAN Aging: 720
minutes Voice VLAN CoS
5
Voice VLAN 1p Remark: enabled

show voice-vlan

format

show voice-vlan

show voice-vlan interfaces[IF_PORTS]

interfaces	Query voice VLAN configuration by interface

default

mode

Privileged mode

Instructions

Use the command "show voice-vlan" to query the voice VLAN global configuration. Use the command "show voice-vlan interface" to query the voice VLAN interface configuration.

Instance

Query voice VLAN configuration

```
Switch# show voice-vlan
Administrate Voice VLAN state:
disabled Voice VLAN ID 1
Voice VLAN Aging: 720
minutes Voice VLAN CoS
                              5
Voice VLAN 1p Remark: enabled
```

Query interface voice VLAN configuration

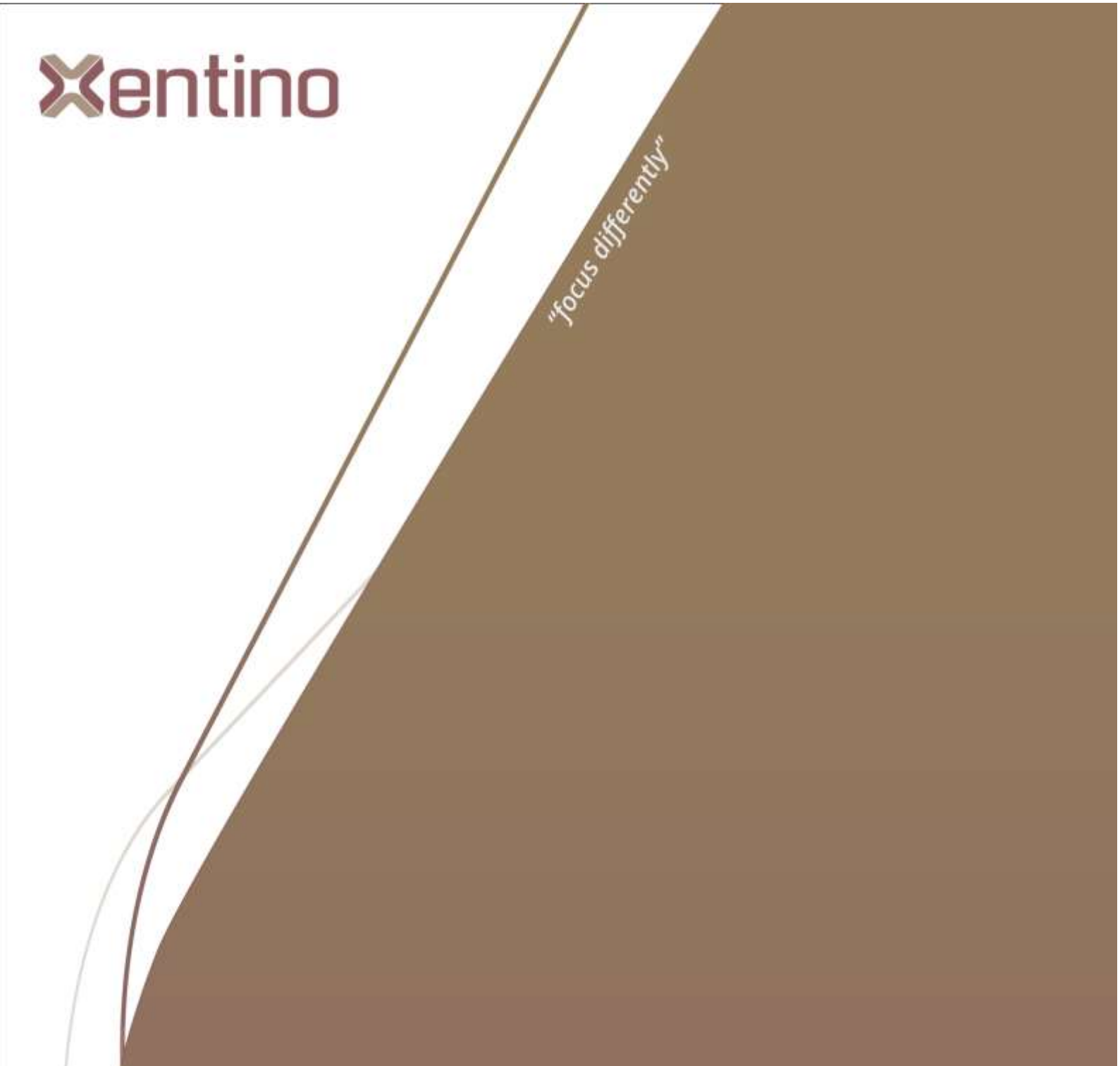
```
Switch# show voice-vlan interfaces gi1-8
Voice VLAN Aging      : 1440 minutes
Voice VLAN CoS          6
Voice VLAN 1p Remark: disabled
```

OUI table

```
    OUI MAC      |     Description
--------------+---------------- 00:E0:BB
                  | 3COM
    00:03:6B    | Cisco
    00:E0:75    | Veritel
    00:D0:1E    | Pingtel
    00:01:E3    |
    Siemens
    00:60:B9    |
    NEC/Philips 00:0F:E2
```

| H3C
00:09:6E | Avaya

Port	State	Port Mode	Cos Mode
gi1	Disabled	manaul	All
gi2	Disabled	manaul	All
gi3	Disabled	manaul	All
gi4	Disabled	Auto	Src
gi5	Disabled	Auto	Src
gi6	Disabled	Auto	Src
gi7	Disabled	Auto	Src
gi8	Disabled	Auto	Src


Xentino
"focus differently"