L3 24 SFP port switch

CLI command manual

Content

Ch 1 System Status Commands

1.1 Command mode

How to enter and exit various mode states (privileged mode, global mode, interface mode, etc.

Parameter

nil

default

nil

Command Mode

nil

example

Switch Login: admin

password: admin（hidden）

switch>

//enter user mode

switch>enable

switch#

//enter privileged mode

switch# configure terminal

switch(config)# exit

switch#

//enter global mode，exit global mode to provileged mode

switch# configure terminal

switch(config)# interface G1

switch(config-if)# exit

switch(config)#

// in global mode，enter G1 interface mode，Exit to interface mode

switch(config)# vlan1

switch(config-vlan)# exit

switch(config)#

// in global mode，enter vlan1 interface mode，exit vlan1

1.2 System information

This module can query software version, compile time, device name, device serial number, mac address, CPU utilization, memory utilization, current system time and other information。

1.2.1 show system

command Description

This command can query software version, compilation time, device name, device serial number, mac address, etc.

Parameter

nil

default

nil

Command Mode

User mode (connect to the serial port, enter the device user name and password enter user mode, use exit to exit the current mode

example

Switch Login: admin

password: admin（hidden）

switch> show system

```
Switch> show system
Product Model     :  switch
Hardware Version  :  V1
Serial Number     :  SN20210220
MAC Address       :  AC:90:00:3F:3A:60
Firmware Version  :  V1.0.0.1-gd06e45122
Compile Time      :  Mar 23 2021 08:04:22
System Uptime     :  0 Day 0 Hours 56 Minutes 12 Seconds
System Time       :  1970-01-10 09:18:30
```

1.3 Log information

This module can view some system log information during the operation of the device, which is convenient for maintenance personnel to analyze problems.

1.3.1 show logging

command Description

View the current log-in information of the switch

Parameter

nil

default

nil

Command Mode

user mode

example

Switch> show logging

1.4 Port statistics

In the port statistics module, you can view the number of packets sent/received by the global port, the number of bytes, and the number of packets filtered by the port.

1.4.1 show interface

command Description

View switch port statistics

Parameter

<cr>	View All switch port statistics
G<1-24>	View specific switch port statistics

default

nil

Command Mode

Privileged mode

example

switch# show interface G1

```
switch# show interface G1
G1 is down
  Hardware address is 22-00-00-55-11-23
  Media type is MEDIUM_COPPER, loopback not set
  Autonegotiation enable, Flow control is on
  Speed: 1000, Duplex-auto, Max frame size: 1518
  Ifindex: 0x2010001
  Port link-type: access, PVID is 1
    Untag vid: 1
   0 packets input, 0 bytes
   0 broadcast, 0 multicast
   0 jabber, 0 pause
   0 input errors, 0 CRC, 0 drops
   0 packets output, 0 bytes
   0 broadcast, 0 multicast
   0 output errors, 0 drops
   0 late collision, 0 pause
```

1.5 View route

This function module is used to view the global routing information of the switch

1.5.1 show ip route

command Description

View the current routing information of the switch

Parameter

bgp	View bgp routing information
connected	View direct routing information

ospf	View ospfrouting information
rip	View rip routing information
static	View static routing information
A.B.C.D	View contain specific ip's routing information
A.B.C.D/M	View specific network segment routing information
summary	View All route summary information

default

nil

Command Mode

user mode

example

switch# show ip route

```
Switch> show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, P - PIM, A - Babel, N - NHRP,
       V - VRRP, D - DHCP, M - MRIB, D - PTP,
       > - selected route, * - FIB route

S   10.1.1.0/24 [1/0] via 10.0.0.1 inactive
S   10.1.2.0/24 [2/0] via 10.0.0.2 inactive
C>* 127.0.0.0/8 is directly connected, lo
C>* 192.168.10.0/24 is directly connected, vlanif1
Switch>
```

Ch 2 system setup command

2.1 IP config

IP configuration commands are：

ip address

ip address dhcp

ip address old_ip A.B.C.D/M new_ip A.B.C.D/M

show ip interface

Note：A.B.C.D/M，Example Format：192.168.1.1/24

Ip Configuration modules can be added and modified or viewswitch interface's ip information；

2.1.1 ip address

command Description

Configure ports ip as A.B.C.D/M

no ip address A.B.C.D/M，Indicates to delete the port ip A.B.C.D/M

Parameter

nil

default

vlan Interface mode

Command Mode

Configure this command in port configuration mode

example

switch(config)# interface vlanif1

switch(config-vif)#ip address 192.168.100.1/24

switch(config-vif)#no ip address 192.168.100.1/24

2.1.2 ip address dhcp

command Description

Configure ports ip for automatic acquisition（dhcp server will assign a dynamic ip in the network）

no ip address dhcp，indicates the disabled port ip as auto acquire

Parameter

nil

default

enable the port

Command Mode

Configure this command in interface mode.

example

switch(config)# interface vlanif1

switch(config-vif)#ip address dhcp

switch(config-vif)#no ip address dhcp

2.1.3 ip address old_ip

command Description

ip address old_ip A.B.C.D/M new_ip A.B.C.D/M

modify the interface's ip config（change old_ip to new_ip）

Parameter

nil

default

nil

Command Mode

Interface mode

example

switch(config)# interface vlanif1

switch(config-vif)#ip address old_ip 192.168.255.1/24 new_ip 192.168.10.1/24

2.1.4 show interface

command Description

view interface 's ipconfig

Parameter

nil

default

enable interface

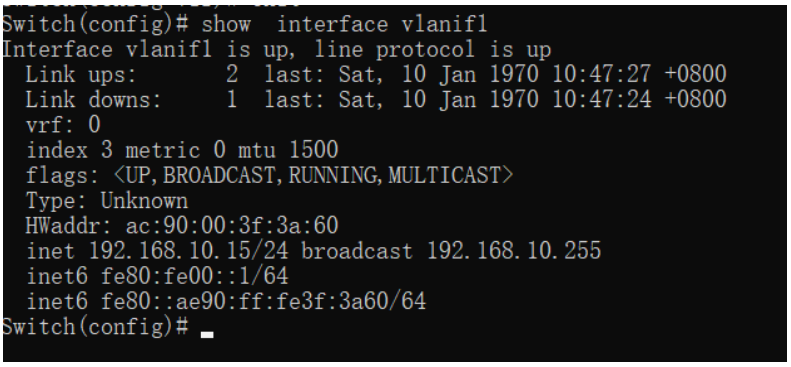
Command Mode

Privilege mode or global mode

example

switch(config)#show interface vlanif1

switch#show interface vlanif1



2.2 User config

User configuration commands are

username

show user

Note：name indicates the user name, up to 32 characters; passwd indicates the password, up to 32 characters

Feature

This function module can view, modify or add user information, which can achieve the purpose of protecting the switch configuration.

2.2.1 username name

command Description

username name password passwd

change a user’s password

Parameter

default

Command Mode

Global mode

example

switch(config)#username admin password simple 123456

//change user ：admin，password：123456，

show user

command Description

viewAll current user configuration information of the switch

Parameter

nil

default

nil

Command Mode

privilege mode

example

Switch#show user

2.3 Time setting

This configuration command has：

sntp enable|disable

sntp unicast-server

sntp auto-sync timer

sntp connect

sntp timezone

This function can be turned on to make the switch automatically synchronize with the network time

2.3.1 sntp enable|disable

command Description

sntp enable，enable ntp function；

sntp disable，disable ntp function；

Parameter

nil

default

disable

Command Mode

perform the command in global mode

example

switch(config)#sntp enable

switch(config)#sntp disable

2.3.2 sntp unicast-server

command Description

sntp unicast-server A.B.C.D

config sntp server address

no sntp unicast-server A.B.C.D，delete an ntpserver address

Parameter

nil

default

nil

Command Mode

global mode

example

Switch(config)#sntp unicast-server 210.21.196.6

2.3.3 sntp auto-sync timer

command Description

configsntp synchronize time interval

Parameter

sntp auto-sync timer time，time range 5-65535s，default 300s；

default

300s

Command Mode

global mode

example

Switch(config)#sntp auto-sync timer 5

2.3.4 sntp connect

command Description

sntp connect A.B.C.D

Use this command to select the current sntp service to be connected。

Parameter

nil

default

nil

Command Mode

perform the command in global mode

example

switch(config)#sntp connect 210.21.196.6

2.3.5 timezone

command Description

switch(config)# timezone

Use this command to select the time zone of the region where the switch is

located

Parameter

default

0

Command Mode

global mode

example

switch(config)# timezone UTC-8

//modify the time zone to subtracts 8 hours from Coordinated Universal Time

Ch 3 port config command

3.1 Port config

Port config command

duplex

speed

flow-control

shutdown

Description

This module config every basic Parameter in the switch。Basic Port Parameter shall affect the functions of switch。

3.1.1 speed

command Description

speed {10-(auto/full) | 100-(auto/full/half) | 1000-(auto,full,half)|10000|auto }

Set the port’s speed and duplex mode

Parameter

Parameter	ParameterCommand Mode
1000M-auto	Set the port speed as 1000M，auto duplex mode
1000M-full	Set port speed as1000M, Duplex mode as Full Duplex
100M-auto	Set port speed as100M, Duplex mode as Auto
100M-full	Set port speed as100Mk, Duplex mode as Full Duplex
100M-half	Set port speed as100M, Duplex mode as Half Duplex
10G	Set port speed as10G
10M-auto	Set port speed as10M, Duplex mode as Auto
10M-full	Set port speed as10M, Duplex mode as Full Duplex
10M-half	Set port speed as10M, Duplex mode as Half Duplex
auto	Set port speed as auto negotiation

default

all ports are auto negotiation（auto）,

Command Mode

Interface mode

example

Set G1port speed as 100M Full Duplex。

Switch(config)# interface G1

switch(config-if)# speed 100M-full

3.1.2 flow-control

command Description

flowctrl

no flowctrl

Configure ports data flow control。

Parameter

nil

default

enable the flow control。

Command Mode

Interface mode

example

enable the port's flow control

switch(config-if)# flowctrl

3.1.3 shutdown

command Description

shutdown

no shutdown

Configure the port's open / close

default port : enable

Command Mode

Interface mode

example

shut down port

switch(config-if)# shutdown

3.1.4 description

command Description

Configure port's description, for easier management (Composed of letters, numbers and underscores)

default

nil

Command Mode

Interface mode

example

switch(config-if)# description A1

3.2 Rate limit

Configure ports: it limits the rate of all packets entering and leaving the port。

3.2.1 rate-limit

command Description

rate-limit {1-10000000 } {1-65535}{1-10000000 }{1-65535 }

no rate-limit

Configure ports: The exit/entry speed limit function, use the no form, the port returns to the default setting.

Parameter

1-10000000	Port rate limit range : 1-10000000kbps
1-65535	Port Rate Limit Burst Size Range 1-65535kbits

default

speed limit as 0。

Command Mode

Interface mode

example

exit speed 10000kbps burst size 1000kbits，no limit for entry

switch(config-if)# rate-limit 10000 1000 0 0

3.3 Port mirroring

Port mirroring is also called port monitoring. Port monitoring is a data packet acquisition technology. Through the config switch, the data packets of one/several ports (mirror source ports) can be copied to a specific port (mirror destination port), and an installation is connected to the mirror destination port. It uses the host computer with data packet analysis software to analyze the collected data packets, so as to achieve the purpose of network monitoring and troubleshooting.

3.3.1 monitor

command Description

mirror to <IFNAME>

mirror sources direction {both|egress|ingress}

no mirror

Configure ports mirroring，use the no command，delete the mirroring setting

Parameter

Parameter	ParameterCommand Mode
IFNAME	Port no，example G1，X1

default

nil

Command Mode

Under global configconfig destination port

config source port in interface config mode

example

config Destination port as G3，source port as G1、G2，

switch(config)# monitor to G3

switch(config)# interface G1

switch(config-if)# mirror source direction both

switch(config-if)#exit

switch(config)# interface G2

switch(config-if)# mirror source direction both

3.4 Link aggregation

port static aggregation config command

Trunk

port dynamic aggregation config：

lacp enable | disable

lacp active | passive

lacp key

lacp port-priority

Link aggregation is to form multiple physical ports of a switch into a logical port, and multiple links belonging to the same aggregation group can be regarded as a larger bandwidth logical link. Link aggregation can realize the sharing of communication traffic among the member ports in the aggregation group to increase the bandwidth. At the same time, each member port of the same aggregation group is backed up dynamically with each other, which improves the reliability of the link. Member ports belonging to the same aggregation group must have the same config. These configs mainly include STP, QoS, VLAN, port attributes, MAC address learning, ERPSconfig, loop Protectconfig, mirroring, 802.1x, IP filtering, Mac filtering, and port isolation etc.

3.4.1 trunk

command Description

interface trunk [Aggregation group ID]

config Aggregation group ID

trunk [Aggregation group ID]

default

nil

Command Mode

Under global mode config to config this command

example

switch(config)# interface trunk 1

switch(config)# interface G1

switch(config-if)# trunk 1

3.4.2 load-balance

command Description

trunk load-balance to set the load balancing mode for static aggregation

Parameter

srcdst-mac	Load balancing based on source and destination mac
dst-mac	Load balancing based on destination mac
src-mac	Load balancing based on source mac

default

disable

Command Mode

Interface mode

example

Load balancing based on source and destination mac

switch(config)# trunk load-balance both-mac

3.4.3 lacp enable | disable

command Description

lacp enable，Configure ports Dynamic Aggregation Enable

lacp disable，Dynamic Aggregation Disable

Parameter

nil

default

Disable

Command Mode

Interface mode

example

switch(config-if)# lacp disable

3.4.4 lacp active | passive

command Description

lacp activity-mode active，Set the port to active state

lacp activity-mode passive，Set the port to passive state

Parameter

nil

default

passive

Command Mode

Interface mode

example

switch(config-if)# lacp activity-mode active

3.4.5 lacp port-key

command Description

Lacp key，It refers to the management key value of the dynamic aggregation port, which is one of the identifiers of the port that can be added to an aggregation group. An operation key generated by the LACP protocol according to the port's config (that is, rate, duplex, basic config, and management key). For a dynamic aggregation group, members of the same group must have the same operation key for successful aggregation.

Parameter

<1-65535>

Manual range 1-65535；

default

Command Mode

Interface mode

example

switch(config)# interface G1

switch(config-if)# lacp port-key 100

3.4.6 lacp port-priority

command Description

lacp port-priority *<1-32768>*，configlacp port to have higher priority

Parameter

<1-32768>，Priority range, the smaller the value, the higher the priority

default

0

Command Mode

Interface mode

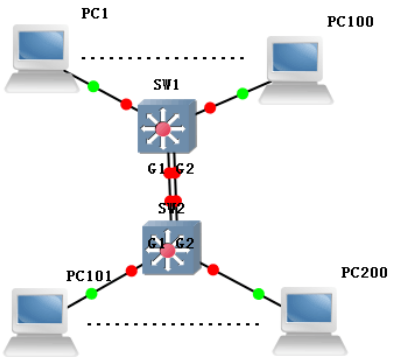
example

switch(config)# interface G1

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

3.4.7 example

Use link aggregation to increase device cascading port bandwidth and implement load balancing based on source and destination MAC addresses



SW1/SW2:

switch# configure terminal

switch(config)#trunk load-balance both-mac

switch(config)# interface G1

switch(config-if)# trunk 1

switch(config-if)# exit

switch(config)# interface G2

switch(config-if)# trunk 1

Phenomenon

After aggregation, the two links form a logical link, doubling the bandwidth, and load balancing is performed according to the source or destination MAC address. cause communication interruption.

Ch 4 Advance Configuation Command

4.1 VLAN config

Vlanconfig commands：

switchport mode

switchport pvid

switchport trunk|hybrid| access

show vlan

Ethernet is a shared communication medium based on CSMA/CD (Carrier Sense Multiple Access with Collision Detection) technology. A local area network constructed with Ethernet technology is both a collision domain and a broadcast domain. When the number of hosts in the network is large, it will lead to serious conflicts, flooding of broadcasts, significant performance degradation, and even network unavailability. By deploying bridges or Layer 2 switches in Ethernet, serious conflicts can be resolved, but broadcast packets cannot be isolated. In this case, the VLAN (Virtual Local Area Network, virtual local area network) technology appears, which can divide a physical LAN into multiple logical LANs—VLANs. Hosts in the same VLAN can communicate with each other directly, but hosts in different VLANs cannot communicate with each other directly. In this way, broadcast packets are limited to the same VLAN, that is, each VLAN is a broadcast domain.

The advantage of VLAN asbelow:

1) Improve network performance. The broadcast packets are limited to the VLAN, so as to effectively control the broadcast storm of the network, save the network bandwidth, and thus improve the network processing capacity. 2) Enhance network security. Devices in different VLANs cannot access each other, and hosts in different VLANs cannot communicate directly. Packets need to be forwarded at Layer 3 through network layer devices such as routers or Layer 3 switches. 3) Simplify network management. The hosts of the same virtual work group are not limited to a certain physical range, which simplifies network management and facilitates the establishment of work groups by people in different areas.

4.1.1 switchport mode

command Description

switchport mode {access | trunk | hybrid }

Configure ports mode

Parameter

Parameter	ParameterCommand Mode
access	Access mode
trunk	Trunk mode
Hybrid	Hybrid mode (mixed)

default

access mode

Command Mode

Port config mode

Using Command Mode

The switch port supports the following modes: Access, Trunk, Hybrid

The access mode means that the port is subordinate to only one VLAN and only sends and receives Ethernet frame with nil tags

Trunk mode means that the port is connected to other switches and can send and receive tagged Ethernet frames

Hybrid mode means that the port can be connected to both computers, switches and routers (is a collection of access mode and trunk mode Access mode

example

change port config to VLAN Trunk / Hybrid / Accress mode

Switch(config)# interface G1

Switch(config-if)#switchport mode trunk /hybrid/access

4.1.2 switchport pvid

command Description

switchport pvid { vlan-id}

Parameter

Parameter	ParameterCommand Mode
Vlan-id	Vlan range: 1-4094.

default

Vlan1

Command Mode

Port config mode

Use Command Mode

This command can change the default of the port vlan

example

Set the port's default VLAN to vlan2

Switch(config)# interface G1

Switch(config-if)# switchport pvid 2

4.1.3 switchport trunk|hybrid| access

command Description

switchport trunk tag {vlan-id}

switchport hybrid tag|untag|unpvid {vlan-id}

switchport access {vlan-id}

Parameter

Parameter	ParameterCommand Mode
Vlan-id	Vlan range: 1-4094.

default

All ports are member of vlan1, not other vlan

Command Mode

Port config mode

Use Command Mode

This command adds port settings to one or more vlan

example

The following command is to add a trunk mode port to a vlan or more vlan

switch(config)# interface G1

switch(config-if)# switchport mode trunk

switch(config-if)# switchport trunk tag 2

switch(config-if)# switchport trunk tag 3-4

The following command is to add a hybrid mode port to a VLAN or more vlan

switch(config-if)# switchport mode hybrid

switch(config-if)# switchport hybrid tag|untag 2

switch(config-if)# switchport hybrid tag| untag 3-4

The following command is to add an access mode port to a VLAN or more vlan2

switch(config-if)# switchport access 2

4.1.4 show vlan

command Description

show vlan [vlan-id]

Parameter

Parameter	ParameterCommand Mode
vlan-id	Show the value of VLAN set。Range：1－4094。

default

nil

Command Mode

user mode

Use Command Mode

This command can viewvlan member

example

show all VLAN message

Switch#show vlan

Vid Status Name Ports

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

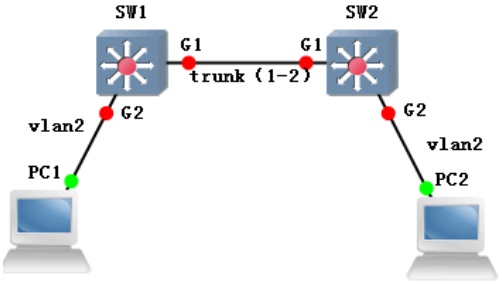
1 static vlan1 G1 G2 G3 G4 G5 G6 G7 G8 G9 G10 G11 G12 G13 G14 G15 G16 G17 G18 G19 G20 G21 G22 G23 G24 X1 X2 X3 X4

2 static vlan2

3 static vlan3

4.1.5 example

Implement vLAN communication across switches (pc1 and pc2 can be accessed normally)



SW1/SW2： switch# configure terminal
switch(config)# interface G1
switch(config-if)# switchport mode trunk
switch(config-if)# switchport trunk tag 2
switch(config-if)# exit
switch(config)# interface G2
switch(config-if)# switchport mode access
switch(config-if)# switchport access vlan 2

phenomenon

pc1（192.168.222.107）& pc2（192.168.222.94）can ping each other

4.1.5 QinQ config

This configuration command has：

Qinq

Qinq otpid

QinQ technology effectively expands the number of VLANs by stacking two 802.1Q headers in ether frames, bringing the number of VLANs up to 4096x4096。

4.2.1 qinq

command Description

port enable qinq function

no qinq means Disable this function

Parameter

nil

default

nil

Command Mode

Interface mode

example

switch(config)# interface g1

switch(config-if)# qinq

4.2.2 qinq otpid

command Description

configQinQ layer tag protocol type

Parameter

<0x0000-0x9999>	QinQ layer tag protocol type

default

0x8100

Command Mode

Interface mode

example

switch(config-if)# qinq otpid 0x88a8

4.3 MAC config

This configuration command has：

mac-address aging-time

show mac-addres

The most critical technology for the switch to be able to send packets directly to the destination node, rather than sending packets to all nodes in a broadcast manner like a hub, is that the switch can identify the MAC address of the network card of the node connected to the network and put them in a place called the MAC address table. This MAC address table is stored in the switch's cache and remembers these addresses, so that when data needs to be sent to the destination address, the switch can find the node location of the MAC address in the MAC address table and send it directly to the node in this location. The so-called number of MAC addresses refers to the maximum number of MAC addresses that can be stored in the MAC address table of the switch, and the more MAC addresses are stored, the higher the speed and efficiency of data forwarding.

4.3.1 mac-address aging-time

command Description

mac-address aging-time {10-1000000}

no mac-address aging-time

configMac aging time, in the form of no using this command, reverts to the default settings

Parameter

Parameter	ParameterCommand Mode
time	Mac address aging time in seconds。

default

300

Command Mode

Global config mode

Use Command Mode

In Global configmode configmac aging time of the address

example

set MAC aging time of the address config to100 秒

Switch(config)# mac-address aging-time 100

Restore the MAC address aging time to the default 300 seconds

Switch(config)# no mac-address aging-time

4.3.2 show mac-address

command Description

show mac-addres{ aging-time}

Parameter

nil

default

nil

Command Mode

user mode 或 global mode

Use Command Mode

After using this command, can view the aging time of the mac address and the mac address

example

Following command viewmac address and mac address ‘s aging time

```
switch# show mac-address
MAC                    Vlan Port                    Type
-------------------------------------------------------------------------------
94-de-80-dc-cf-38    1       G4                        dynamic
60-92-17-9d-30-c3    1       G4                        dynamic
Switch# show mac-address aging-time
Mac address aging-time : 100
```

4.4 ARP config

This configuration command has：

show arp

arp static

arp timeout

This function module can view the arp entry information learned by the switch, add arp static entry to prevent illegal host access, and modify the arp entry aging time。

4.4.1 show arp

command Description

show arp

If want to view dynamic ARP table entries, use this command。

Parameter

nil

default

nil

Command Mode

In global config mode config this command

example

view dynamic ARP table entries。

Switch(config)# show arp

4.4.2 arp static

command Description

arp static ip_addr mac_addr

no arp static ip_addr

If you wish to add a static ARP, you can use this command config. Cancel this config using the no form of this command.

Parameter

Parameter	ParameterCommand Mode
ip_addr	Ip address, value range X.X.X.X。
mac_addr	Mac address，value range：H.H.H

default

nil

Command Mode

In global config mode config command。

example

Add a static ARP table entry。

switch(config)# arp static 192.168.111.1 00-00-a1-b2-c3-d4

4.4.3 arp timeout

command Description

arp timeout seconds

no arp timeout

If you want to set the ARP aging time, you can use this command config. Use the no form of the command cancel this config。

Parameter

Parameter	ParameterCommand Mode
seconds	unit ： sec ， value range 1-2147483。

default

nil

Command Mode

In Interface mode configthis command。

example

Set ARP aging time 3000 sec。

switch(config)# interface vlanif1

switch(config-vlanif1)# arp timeout 3000

4.5 MSTP config

This configuration command has：

spanning-tree

spanning-tree mode

spanning-tree max-age

spanning-tree hello-time

spanning-tree forward-delay

spanning-tree max-hop

spanning-tree instance

show spanning-tree

show spanning-tree interface brief

STP（Spanning Tree Protocol) is a protocol established according to the IEEE 802.1D standard for eliminating physical loops at the data link layer in a local area network. The devices running the protocol discover the loops in the network by interacting with each other, and selectively block some ports, and finally prune the loop network structure into a tree-type network structure of the NIL loop, so as to prevent the continuous proliferation of messages in the loop network and the nil limit cycle, and avoid the problem of the device's packet processing power degradation caused by repeatedly receiving the same packet.

4.5.1 spanning-tree

command Description

spanning-tree

no spanning-tree

Enable STP settings and use the no form of this command to turn off STP。

Parameter

nil

default

default enable STP mode

Command Mode

global mode

example

switch(config)# spanning-tree

switch(config)# no spanning-tree

4.5.2 spanning-tree mode

command Description

spanning-tree mode {stp|rstp|mstp}

Parameter

Stp	Enable STP mode
rstp	Enable RSTP mode。
mstp	Enable MSTP mode。

default

default enable STP mode

Command Mode

global mode

Use Command Mode

configspanning-tree Operating mode

example

Following command enable STP mode

switch(config)# spanning-tree mode rstp

4.5.3 spanning-tree max-age

command Description

spanning-tree max-age {6-40}

Parameter

seconds	BPDU Maximum live time. Value range:6-40s。

default

20s

Command Mode

global mode

Use Command Mode

configSTP BPDU max live time

example

below command set configSTPmax live time to 24

Switch(config)# spanning-tree max-age 24

4.5.4 spanning-tree hello-time

command Description

spanning-tree hello-time｛1-10｝

Parameter

Time	Hello message send interval, value range：1-10s。

default

2s

Command Mode

Global config mode

example

Following command set configSTP hello message send interval time to 10 sec

Switch(config)# spanning-tree hello-time 10

4.5.5 spanning-tree forward-delay

command Description

spanning-tree forward-delay｛4-30｝

Parameter

time	Forward latency. Value range:: 4-30s。

default

15 seconds

Command Mode

Globabl config mode

example

The following command delays the forwarding of configSTP to 20 seconds

Switch(config)# spanning-tree forward-delay 20

4.5.6 spanning-tree max-hop

command Description

spanning-tree max-hop｛1-40｝

Parameter

hop	The maximum number of hop that a BPDU protocol package is valid for. Value range: 1-40。

default

20

Command Mode

Global config mode

example

The following command places the configBPDU protocol package with a valid maximum hop count of 40

Switch(config)# spanning-tree max-hop 40

4.5.7 spanning-tree instance

command Description

spanning-tree instanceconfig mapping relationship between MSTP's vLANs and instances

Parameter

default

nil

Command Mode

Global config mode

example

switch(config)# spanning-tree instance 44 vid 4

4.5.8 spanning-tree mstp name

command Description

spanning-tree mstp name configmstp’s domain

Parameter

default

nil

Command Mode

Global config mode

example

switch(config)# spanning-tree mstp name 2

4.5.9 spanning-tree mstp revision

command Description

spanning-tree mstp revisionconfigmstp revision number

Parameter

default

nil

Command Mode

Global config mode

example

switch(config)# spanning-tree mstp revision 2

4.5.10 show spanning-tree

command Description

show spanning-tree

Parameter

nil

default

nil

Command Mode

privilege mode/global mode

Use Command Mode

Use this command，can viewmstp message

example

Below command can viewmstp message：

switch# show spanning-tree

Spanning-tree is disable:

max age 20 bridge forward delay 20

forward delay 15 max hops 20

hello time 2 orce protocol version mstp

4.5.11 show spanning-tree interface brief

command Description

show spanning-tree interface brief

Parameter

nil

default

nil

Command Mode

privilege mode/global mode

Use Command Mode

Use this command，can viewmstp message

exampleswitch(config)# show spanning-tree interface brief

```
switch(config)# show spanning-tree interface brief
MSTID Port        Role              State
----------------------------------------
0     G1          Disabled          discarding
0     G2          Disabled          discarding
0     G3          Disabled          discarding
0     G4          Disabled          discarding
0     G5          Disabled          discarding
0     G6          Disabled          discarding
0     G7          Designated        forwarding
0     G8          Disabled          discarding
```

4.6 IGMP-snooping

This configuration command has：

igmp-snooping

igmp-snooping host-age-time

igmp-snooping fast-leave

igmp-snooping static-group

show igmp-snooping group

IGMP Snooping: Internet Group Management Protocol Snooping is a multicast constraint mechanism that runs on Layer 2 devices to manage and control multicast groups.

4.6.1 igmp-snooping

command Description

igmp-snooping

no igmp-snooping

config enable IGMP snooping function，Use this command ‘s no form ， disable the function 。

Parameter

nil

default

disable

Command Mode

global mode

example

Below command will config enable and disable igmp-snooping：

Switch(config)# igmp-snooping

Switch(config)#no igmp-snooping

4.6.2 igmp-snooping host-age-time

command Description

igmp-snooping host-age-time｛200-1000｝

Parameter

Parameter	ParameterCommand Mode
time	host aging time. value range ： 200-1000s。

default

300

Use Command Mode

config host aging time

Command Mode

global config mode

example

Below command will config host aging time 为 200s：

Switch(config)# igmp-snooping host-age-time 200

4.6.3 igmp-snooping fast-leave

command Description

igmp-snooping fast-leave

no igmp-snooping fast-leave

config enable Port quick leave function，Use this command ‘s no form ， disable the function 。

Parameter

nil

default

disable

Command Mode

Interface mode

example

switch(config)# vlan 1

switch(config-vlan)# igmp-snooping fast-leave

4.6.4 igmp-snooping static-group

command Description

igmp-snooping static-group Add static multicast group

no igmp-snooping static-group Delete Added static multicast group

Parameter

nil

default

disable

Command Mode

Interface mode

example

switch(config)# interface G1

switch(config-if)# igmp-snooping static-group 224.1.1.1 vlan 2

switch(config-if)# no igmp-snooping static-group 224.1.1.1 vlan 2

4.6.5 show igmp-snooping group

command Description

show igmp-snooping group

Parameter

nil

default

nil

Command Mode

user mode

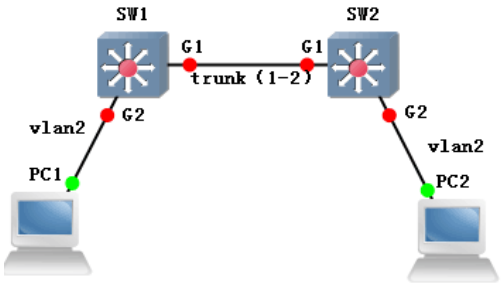
example

Below command will view Multicast groups message：

```
switch# show igmp-snooping group
VID   SOURCE          GROUP          interFACE
---------------------------------------------- ----------------------
1     0.0.0.0         233.45.18.88       G4
1     0.0.0.0         239.255.255.250    G4 G2
1      0.0.0.0          224.0.0.252        G2 G4
```

4.6.6 example

Implement vLAN communication across switches (pc1 and pc2 can be accessed normally)



SW1/SW2：switch# configure terminal

switch(config)# interface G1

switch(config-if)# switchport mode trunk

switch(config-if)# switchport trunk tag 2

switch(config-if)# exit

switch(config)# interface G2

switch(config-if)# switchport mode access

switch(config-if)# switchport access vlan 2

phenomenon

pc1（192.168.222.107）and pc2（192.168.222.94）can ping together

4.7 DHCP server

this config command are：

dhcp-server

network

default-router

dns-server

static

lease

domain-name

netbios-name-server

DHCP Server: Refers to a computer that manages the DHCP standard on a specific network. The DHCP server's responsibility is to assign an IP address when a workstation logs in, and to ensure that the IP address assigned to each workstation is different, the DHCP server greatly simplifies some of the network management tasks that previously needed to be done manually。

4.7.1 ip dhcpd

command Description

dhcp-server enable enable DHCP Server function

dhcp-server disable disable DHCP Server function

Parameter

nil

default

disable

Use Command Mode

Use this command，can

Command Mode

global mode

example

enable DHCP Server function

switch(config)# dhcp-server enable

4.7.2 pool

command Description

dhcp-server pool <NAME>establish DHCP address pool

no dhcp-server pool <NAME> delete DHCP address pool

Parameter

Parameter	ParameterCommand Mode

NAME	address pool name，eg, dizhichi

default

nil

Command Mode

global mode

example

establish 1 as address pool

switch(config)# dhcp-server pool 1

4.7.3 network

network A.B.C.D/M vlanif-id set DHCP as address cinderage issued

Parameter

Parameter	ParameterCommand Mode
A.B.C.D/M	address pool range eg,192.168.1.0/24
vlanif-id	From which vlan issue configID

default

nil

Command Mode

dhcp-serverconfig mode

example

set DHCP address pool range as 192.168.1.0/24

switch(config-dhcps)#Network 192.168.1.0/24

4.7.4 default-router

command Description

default-router A.B.C.D use set DHCP address of the gateway that was issued

Parameter

Parameter	ParameterCommand Mode
A.B.C.D	DHCP issue address gateway

default

nil

Command Mode

dhcp-serverconfig mode

example

switch(config-dhcps)#Default-router 192.168.1.1

set DHCP address gateway

4.7.5 dns-server

command Description

dns-server A.B.C.Dcan set DHCP 的 DNS

Parameter

Parameter	ParameterCommand Mode
A.B.C.D	DHCP issue DNS address

default

nil

Command Mode

dhcp-serverconfig mode

example

set DNSserver address as 192.168.1.1 114.114.114.114

switch(config-dhcps)#dns-server 192.168.1.1 114.114.114.114

4.7.6 static

command Description

static A.B.C.D MAC

no static A.B.C.D

set Static binding entries，Use this command ‘s no form ， delete Static binding entries。

Parameter

Parameter	ParameterCommand Mode
A.B.C.D	Static binding IP address
MAC	Static binding MAC address

default

nil

Command Mode

dhcp-serverconfig mode

example

Static Binding 192.168.1.1 与 11-11-11-11-11-11，then delete that entry

switch(config-dhcps)#static 192.168.1.1 11-11-11-11-11-11

switch(config-dhcps)#no static 192.168.1.1

4.7.7 lease

command Description

lease <0-31536000>/infinite

set dhcp address Lease duration

Parameter

Parameter	ParameterCommand Mode
<0-31536000>	time unit . second
infinite	Lease duration nil

default

Infinite

Command Mode

dhcp-serverconfig mode

example

configdhcp address pool Lease duration 3600 sec

switch(config-dhcp)# lease 3600

4.7.8 domain-name

command Description

domain-name domain

set dns domain name

Parameter

Parameter	ParameterCommand Mode
domain	Domain name ，eg：www.dahua.com

default

nil

Command Mode

dhcp-serverconfig mode

example

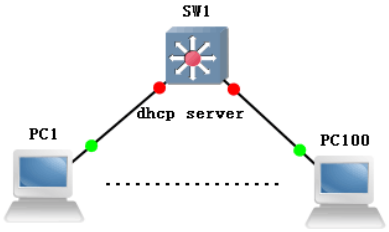
set main DNSdomain name as www.dahua.com

switch(config)# dhcp pool 1

switch(config-dhcp)# domain-name www.dahua.com

4.7.9 example

The config switch is a dhcp server, and the client IP message is uniformly distributed by the server



switch# configure terminal

switch(config)# dhcp-server enable

switch(config)# dhcp-server pool a

switch(config-dhcps)# default-router 192.168.1.1

switch(config-dhcps)#dns-server 8.8.8.8

switch(config-dhcps)# lease 1000

switch(config-dhcps)# network 192.168.1.0/24

phenomenon

pc1-pc100 and other clients can get the correct one from dhcp server (sw1).ip message。

Note: Configvlan's dhcp server requires config with vlan's three-layer interface，dhcp server In order to send to the client under the corresponding VLANip message

4.8 DHCP relay

function introduction

If the DHCP client is in the same physical network segment as the DHCP server, the client can correctly obtains a dynamically assigned IP address. If it is not in the same physical network segment, a DHCP Relay Agent is required. With dhcp relay agentcan, remove the need for a DHCP server in each physical network segment, it can pass messages to DHCP servers that are not on the same physical subnet, and can will send messages back to DHCP clients that are not on the same physical subnet.

4.8.1 dhcp-relay

command Description

dhcp-relay

Parameter

nil

default

Disable

Command Mode

privilege mode，Interface mode

example

enable DHCP server delay function 。

switch(config)# dhcp-relay enable

5 在 vlan1 enable 192.168.1.1DHCP server delay function 。

6 switch(config-vif)# dhcp-relay remote-server 192.168.1.1

4.9 DHCP snooping

this config command are：

dhcp-snooping

4.9.1 dhcp-snooping

command Description

dhcp-snooping

no dhcp-snooping

enable DHCP 侦听 function ， Use this command ‘s no form ， disable the function 。

Parameter

nil

default

Disable

Command Mode

global mode

example

nil

4.9.2 dhcp-snooping

command Description

dhcp-snooping untrust

no dhcp-snooping untrust

set port mode as untrust，Use this command ‘s no form ， port mode config as trust。

Parameter

nil

default

untrust

Command Mode

port mode

example

set port 1 的 mode as trust

Switch(config-if)# no dhcp-snooping untrust

4.9.3 show dhcp-snooping

command Description

show dhcp-snooping

Parameter

nil

default

nil

Command Mode

privilege mode

example

switch# show dhcp-snooping

4.10 QoS config

this config command are：

qos

cos default

cos map

dscp map

scheduler police

function 介绍

QoS (Quality of Service) refers to a network can use a variety of basic technologies to provide better service capabilities for specified network communications, is a security mechanism of the network, is used to

solve network latency and congestion and other issues of a technology. Under normal circumstances, if the network is only used for specific NIL time limit applications, QoS is not required, such as web applications, or e-mail sets. But it is necessary for critical applications and multimedia applications. When the network is overloaded or congested, QoS ensures that important traffic is not delayed or dropped, and ensures efficient network operation。

4.10.1 QOS

command Description

Qos remask<all/cos/dscp>

Change QoS trust mode weight。

Parameter

nil

default

cos

Command Mode

Interface mode

example

change G1 port ‘s qos trust mode as dscp

switch(config)# interface G1

switch(config-if)# qos trust dscp

4.10.2 cos default

command Description

cos default<0-7>

Parameter

nil

default

0

Command Mode

Interface mode

example

change G1 port default cos as higher priority

switch(config)# interface g1

switch(config-if)# cos default 6

4.10.3 cos map

command Description

cos map

set cos mapping relationship of priority to queue

Parameter

nil

default

Prioritizes are mapped to queues one by one

Command Mode

global mode

example

will cos Priority 0 maps to queue 3

switch(config)# cos map 0 3

4.10.4 dscp map

command Description

dscp map

set dscp priority cos mapping relationship of the priority

Parameter

nil

default

Dscp priority	Cos priority
0-7	0
8-15	1
16-23	2
24-31	3
32-39	4
40-47	5
48-55	6
56-63	7

Command Mode

global mode

example

will dscp priority 45 map to cospriority 7

switch(config)# dscp map 45 7 7

4.10.5 scheduler policy

command Description

scheduler police

set Qos scheduling algorithm

Parameter

sp	Strict priority mode: First serve the highest priority queue until this priority is empty, then serve the next highest priority queue, and so on。
wrr	Weighted polling scheduling algorithm: Support different bandwidth requirements, can allocate different proportions of output bandwidth for different queues。

default

sp

Command Mode

global mode

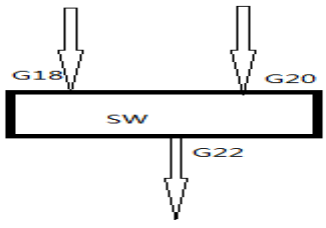
example

switch(config)# scheduler policy wrr 1 2 3 4 5 6 7 8

4.10.6 example

Test topology (test port-based QoS)

IxiaPorts 1-3 of the tester correspond to those of the switch G18-G22



（1）config

// When a packet entering the port without any priority flag, it enters the corresponding queue with the priority of the port set

set Packets entered by 18 ports on the switch are hit with priority 7, and packets with 20 ports entered by ports are hit with priority 6。

switch(config)#interface G18

switch(config-if)cos default 7

switch(config-if)no qos trust

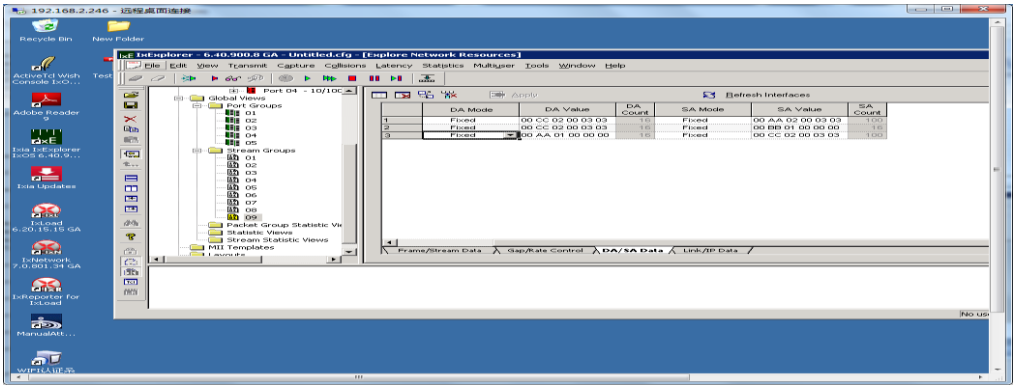
switch(config-if)exit

switch(config)#interface G20

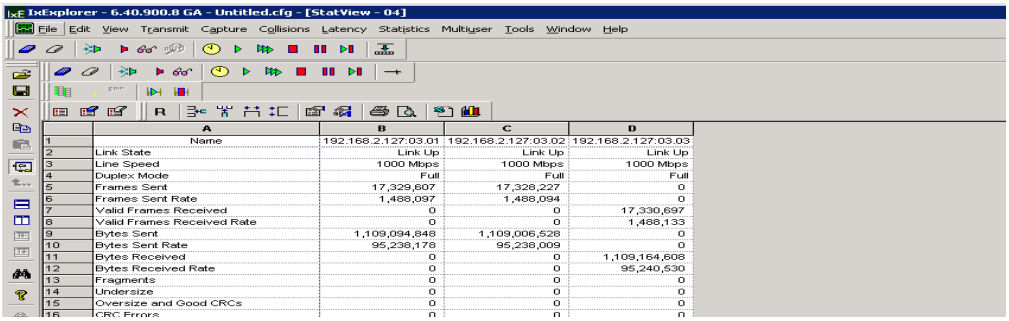
switch(config-if)cos default 6

switch(config-if)no qos trust

b、 set Ixia1-2 port designated address as Ixia3



c、After learning the MAC address, start the 1-2 port packet issuance action



	A	B	C	D
1	Name	192.168.2.127:03.01	192.168.2.127:03.02	192.168.2.127:03.03
2	Link State	Link Up	Link Up	Link Up
3	Line Speed	1000 Mbps	1000 Mbps	1000 Mbps
4	Duplex Mode	Full	Full	Full
5	Frames Sent	17,329,607	17,328,227	0
6	Frames Sent Rate	1,488,097	1,488,094	0
7	Valid Frames Received	0	0	17,330,697
8	Valid Frames Received Rate	0	0	1,488,133
9	Bytes Sent	1,109,094,848	1,109,006,528	0
10	Bytes Sent Rate	95,238,178	95,238,009	0
11	Bytes Received	0	0	1,109,164,608
12	Bytes Received Rate	0	0	95,240,530
13	Fragments	0	0	0
14	Undersize	0	0	0
15	Oversize and Good CRCs	0	0	0
16	CRC Errors	0	0	0

（二）Test Result

conclusion：pass

On the 3 port grab packet observation the original MAC address can see that the received packet is from port 1

Queue high packets first to pass

Ch 5 Router Config command

5.1 Interface config

This configuration command are：

interface

shutdown

ip address

show interface

According to the switch layer 3 routing principle, a virtual interface is established for each VLAN, thereby setting the layer 3 address message of each Vlan

5.1.1 Interface

command Description

interface｛IFNAME｝enter vlanInterface mode

Parameter

Parameter	ParameterCommand Mode
IFNAME	Vlan port value range ： vlan1-vlan4094。

default

nil

Command Mode

global config mode

example

Below command enter VLAN1 Interface mode:

switch(config)# interface vlan1

5.1.2 shutdown / no shutdown

command Description

shutdown/no shutdown enable and disable vlan port

Parameter

nil

default

enable

Command Mode

port config mode

Use Command Mode

Use this command，can enable and disable vlan port

example

Below command enable and disable vlan port :

switch(config-vif)# shutdown

switch(config-vif)# no shutdown

5.1.3 ip address

command Description

ip address { A.B.C.D/M}

no ip address{ A.B.C.D/M}

Parameter

Parameter	ParameterCommand Mode
A.B.C.D/M	Ipv4 address 。

default

Vlan port address as 192.168.255.1

Command Mode

port config mode

example

Below command config and delete port address :

switch(config)# interface vlan1

switch(config-vif)# ip address 10.0.0.1/8

switch(config-vif)# no ip address 10.0.0.1/8

5.1.4 show interface

show interface{ IFNAME}

Parameter

Parameter	ParameterCommand Mode
IFNAME	vlan port 。

default

nil

Command Mode

user mode

example

Below command view vlan1 port address :

switch# show interface vlan1

5.2 Static routing

This configuration command has：

ip route

show ip route

Static routing refers to routing information that is manually configured by a user or network administrator. When the topology of the network or the state of the link changes, the network administrator needs to manually modify the static routing information related in the routing table. Static routing information is private in the case of default and is not passed to other routers. Of course, the network administrator can also set the router to make it shared. Static routing is generally suitable for relatively simple network environments, where the network administrator can easily understand the topology of the network and set the correct routing information.

5.2.1 ip route

command Description

ip route {A.B.C.D/M}{ gateway}{ 1-255}

ip route { A.B.C.D}{mask}gateway}{ 1-255}

set Static route entries

no ip route {A.B.C.D/M}{ gateway}{ 1-255}

no ip route { A.B.C.D}{mask}gateway}{ 1-255}

delete setting of Static route entries

Parameter

Parameter	ParameterCommand Mode
A.B.C.D	Ipv4 address 。
A.B.C.D/M	Ipv4 address and mask.
Distance	Routing manage distance. value range :1-255.

default

nil

Command Mode

global mode

example

Below command config and delete Static route:

switch(config)# ip route 0.0.0.0/8 0.0.0.0 1

switch(config)# no ip route 0.0.0.0/8 0.0.0.0 1

switch(config)# ip route 10.0.0.2 10.255.255.255.0 10.0.0.1 1

switch(config)# no ip route 10.0.0.2 10.255.255.255.0 10.0.0.1 1

5.2.2 show ip route

command Description

show ip route staticview Static routing

Parameter

nil

default

nil

Command Mode

user mode

example

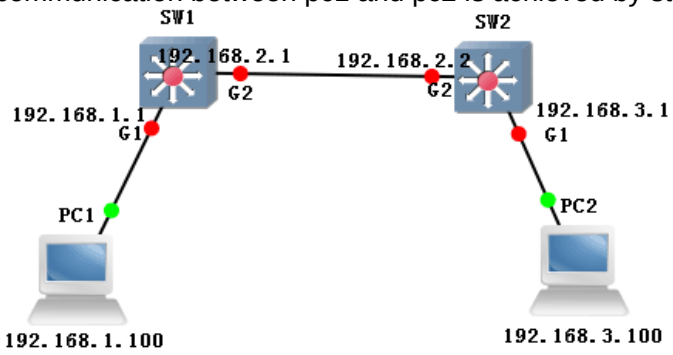
Below command can view Statistic route:

switch> show ip route static

S>* 0.0.0.0/8 [1/0] via 192.168.255.1, vlanif1 S>* 0.0.0.0/8 [1/0] via 192.168.255.1, vlanif1

5.2.3 example

Cross-segment communication between pc1 and pc2 is achieved by static routes



sw1： switch# configure terminal

switch(config)# interface vlan1

switch(config-if-vlan)# ip address 192.168.1.1 /24

switch(config-if-vlan)# exit

switch(config)# interface vlan2

switch(config-if-vlan)# ip address 192.168.2.1/24

switch(config)# interface G2

switch(config-if)# switchport mode access

switch(config-if)# switchport pvid 2

switch(config-if)#exit

switch(config)# ip route 192.168.3.0/24 192.168.2.2 2

sw2： switch# configure terminal

switch(config)# interface vlan 1

switch(config-if-vlan)# ip address 192.168.3.1/24

switch(config-if-vlan)# exit

switch(config)# interface vlan 2

switch(config-if-vlan)# ip address 192.168.2.2/24

switch(config)# interface G2

switch(config-if)# switchport mode access

switch(config-if)# switchport pvid 2

switch(config-if)#exit

switch(config)# ip route 192.168.1.0/24 192.168.2.1 2

pc1： ip 192.168.1.100 gateway 192.168.1.1

Pc2： ip 192.168.3.100 gateway 192.168.3.1

phenomenon :

pc1 ping pc2

pc2 ping pc1

5.3 OSPF config

this config command are：

router OSPF

network address wildmask area area-ID

router-id A.B.C.D

timers throttle spf

default-metric

passive-interface

redistribute rip|static|connected

default-information originate

ip ospf

Show ip ospf

OSPF (Open Shortest Path First) is an Interior Gateway Protocol (IGP) for routing decisions within an autonomous system (AS). It is an implementation of the Link State Routing Protocol, which is subordinate to the Internal Gateway Protocol (IGP) and therefore operates inside an autonomous system. OSPF is divided into two versions, OSPFv2 and OSPFv3, of which OSPFv2 is used in IPv4 networks and OSPFv3 is used in IPv6 networks. OSPFv2 is defined by RFC 2328 and OSPFv3 is defined by RFC 5340. Compared to RIP, OSPF is the link state protocol, while RIP is the distance vector protocol。

5.3.1 router ospf

command Description

router ospf

no router ospf

Parameter

nil

default

nil

Command Mode

global mode

Use Command Mode

Use this command，can enable or disable OSPF function

example

switch(config)#Router OSPF

enable OSPF function

5.3.2 network

command Description

network A.B.C.D/M area area-id declares OSPFnetwork and region

no network A.B.C.D/M area area-id delete announced OSPF network and region

Parameter

Parameter	ParameterCommand Mode
A.B.C.D/M	network address and mask

area-id	Region, value range : <0-4294967295>

default

nil

Command Mode

global mode

Use Command Mode

Use this command，can enable

example

announce 192.168.1.0 network segment is divided into zones 0

switch(config-ospf)#Network 192.168.1.0/24 area 0

5.3.3 router-id

command Description

router-id A.B.C.D

no router-id

config router ID，Use this command ‘s no form ，router ID default value as 0.0.0.0

Parameter

Parameter	ParameterCommand Mode
A.B.C.D	routerID address

default

0.0.0.0

Command Mode

global mode

Use Command Mode

Use this command，can change router ID

example

routerID set as 1.1.1.1

switch(config-ospf)#router-id 1.1.1.1.

5.3.4 timers throttle spf

command Description

timers throttle spf TIME1 TIME2 TIME3

no timers throttle spf

config throttling SPF timer，Use this command ‘s no form ，

throttling SPF timer value reverts to the default value。

Parameter

Parameter	ParameterCommand Mode
TIME1	Delay time，range：0-600000s
TIME2	Initialize hold time，range：0-600000s
TIME3	Maximum hold time，range：0-600000s

default

delay 200，Initialize the hold time 1000，Maximum hold time 10000

Command Mode

global mode

example

set delay，Initialize the hold time，maximum hold time 111

switch(config-ospf)#timers throttle spf 111 111 111

5.3.5 default-metric

command Description

default-metric metric

no default-metric

configOSPF default distance，Use this command ‘s no form，OSPF default distance as default tvalue。

Parameter

Parameter	ParameterCommand Mode
Metric	Default distance，range：0-16777214

default

nil

Command Mode

global mode

example

default distance set as 111

switch(config-ospf)#default-metric 111

5.3.6 passive-interface default

command Description

passive-interface default

no passive-interface default

config enable OSPF port default passive，Use this command ‘s no form ， disable OSPF port default passive。

passive-interface IFNAME

no passive-interface IFNAME

configOSPF passive port ，Use this command ‘s no form ， delete that passive port

Parameter

Parameter	ParameterCommand Mode
IFNAME	port No，example G1，X1

default

nil

Command Mode

global mode

Use Command Mode

Use this command，can set OSPF passive port

example

set G1 port as passive port

switch(config-ospf)#passive-interface G1

5.3.7 redistribute

command Description

redistribute RIP|static|connected

no redistribute RIP|static|connected

will External routes are fully embedded in the OSPF network。

Parameter

nil

default

nil

Command Mode

global mode

Use Command Mode

Use this command，can set OSPF republish

example

set RIP Republish in OSPF

switch(config-ospf)#redistribute RIP

Static routes are republished OSPF

switch(config-ospf)#redistribute static

Direct-attached routes are republished OSPF

switch(config-ospf)#redistribute connected

5.3.8 **default-information originate**

command Description

default-information originate [always] [metric] [metric-type] [route-map]

no default-information originate [always] [metric] [metric-type] [route-map]

default-information originate command to config local router Generate a default ospf route and associated Parameter and advertise it to neighbors.

The no default-information originate command is used to cancel the generation of default routes or to alter the associated Parameter.

Parameter

always	Always message default router cost。
always	Message default route。
metric-type	message the type of default route, with a value of 1 or 2 and default is 2。
route-map	When Message default route, use the rule of route-map。

default

nil

Command Mode

OSPFInterface mode 下

example

configospf process 11 generates a default route with a metric of 12：

switch(config-ospf-11)#default-information originate metric 12

5.3.9 ospf

command Description

ospf cost/network/priority/hello-interval/dead-interval/authentication/ authentication-key

Change the various properties of the OSPF network under port。

Parameter

cost	cost，can increase this port measure value。
network	Network type: such as point-to-point, broadcast multi-access, non-broadcast multi-access, etc。
priority	port priority，Broadcast multiplexed access networks as DR
hello-interval	Valid interval time
dead-interval	Failure interval time
authentication	authentication type: MD5、SIMPLE
authentication-key	Authentication key

default

nil

Command Mode

VLANInterface mode 下

example

change cost to 20

switch(config-vlanif2)# ip ospf cost 20

Modify the network type to Point-to-Point Network

switch(config-vlanif2)# ip ospf network point-to-point

change port priority as 254

switch(config-vlanif2)# ip ospf priority 254

change Valid interval time to 30s

switch(config-vlanif2)# ip ospf hello-interval 30

change Failure interval time as 300s

switch(config-vlanif2)# ip ospf dead-interval 300

Modify the authentication type to MD5 and the authentication key to MD5 abc

switch(config-vlanif2)# ip ospf authentication message-digest

switch(config-vlanif2)# ip ospf authentication-key abc

5.3.10 **show ip ospf**

command Description

viewOSPF various properties

show ip ospf border-routers/database/interface/neighbor/route

Parameter

border-routers	Border router,to display border router
database	Link state database, viewOSPF link state database
interface	display port ‘s OSPF message
neighbor	neighbor：viewOSPF neighbor list
route	viewOSPF route

default

nil

Command Mode

privilege mode or global mode

example

view border router

Switch> show ip ospf border-routers

view Link state database

Switch> show ip ospf database

view port OSPF message

Switch> show ip ospf interface vlanif1

view neighbor list

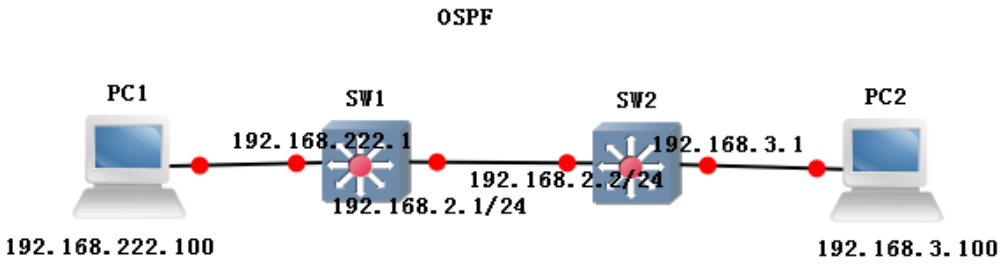
Switch> show ip ospf neighbor

viewOSPF route

Switch> show ip ospf route

5.3.11 example

Network by figure:



sw1：

```
switch(config)#interface vlanif1
switch(config-vlanif1)# ip address 192.168.222.1/24
switch(config)#interface vlanif2
switch(config-vlanif2)# ip address 192.168.2.1/24
switch(config-vlanif2)#exit
switch(config)#interface G22
switch(config-G22)# switchport mode access
switch(config-G22)# switchport pvid 2
switch(config)# router ospf
switch(config-ospf)# ospf router-id 1.1.1.1
switch(config-ospf)# network 192.168.2.0/24 area 0
switch(config-ospf)# network 192.168.222.0/24 area 0
```

sw1：

```
switch(config)#interface vlanif3
switch(config-vlanif3)# ip address 192.168.3.1/24
switch(config-vlanif3)#exit
switch(config)#interface G23
switch(config-G23)# switchport mode access
switch(config-G23)# switchport pvid 3
switch(config)#interface vlanif2
switch(config-vlanif2)# ip address 192.168.2.2/24
switch(config-vlanif2)#exit
switch(config)#interface G22
switch(config-G22)# switchport mode access
switch(config-G22)# switchport pvid 2
switch(config)# router ospf
switch(config-ospf)# ospf router-id 2.2.2.2
switch(config-ospf)# network 192.168.2.0/24 area 0
switch(config-ospf)# network 192.168.3.0/24 area 0
```

phenomenon : Serial view routing

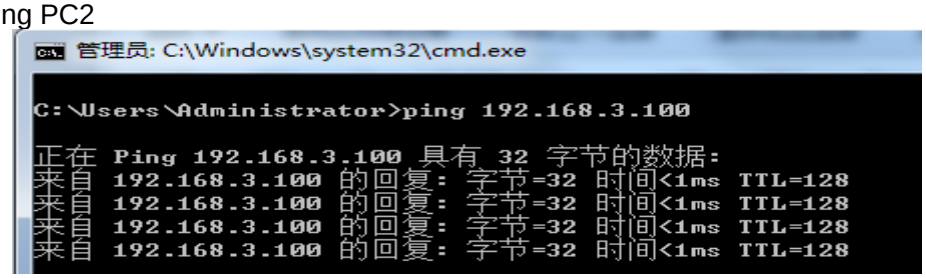
SW1：

```
switch# show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, A - Babel,
       > - selected route, * - FIB route

O   192.168.2.0/24 [110/10] is directly connected, vlanif2, 00:18:04
C>* 192.168.2.0/24 is directly connected, vlanif2
O>* 192.168.3.0/24 [110/20] via 192.168.2.2, vlanif2, 00:17:21
O   192.168.222.0/24 [110/10] is directly connected, vlanif1, 00:19:22
C>* 192.168.222.0/24 is directly connected, vlanif1
```

SW2：

```
switch# show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, A - Babel,
       > - selected route, * - FIB route

O   192.168.2.0/24 [110/10] is directly connected, vlanif2, 00:18:54
C>* 192.168.2.0/24 is directly connected, vlanif2
O   192.168.3.0/24 [110/10] is directly connected, vlanif3, 00:18:10
C>* 192.168.3.0/24 is directly connected, vlanif3
O>* 192.168.222.0/24 [110/20] via 192.168.2.1, vlanif2, 00:18:04
```

PC1 ping PC2



5.4 RIP config

this config command are：

default-information

default-metric

distance

end

exit/quit

network

offset-list

passive-interface

redistribute

timers

version

function introduction

routing information Protocol (RIP) is the first protocol in the interior

gateway protocol IGP to be widely used. RIP is a distributed distance vector-based routing protocol, which is the standard protocol of the Internet, but RIP also has many disadvantages. First, it limits the size of the network, with a maximum distance of 15 (16 indicates unreachable). Secondly, the message exchanged by router is the complete routing table of routers, so as the size of the network increases, the overhead increases. Finally, "bad news spreads slowly," leaving the Use RIP protocol in the majority of previously smaller networks.

5.4.1 default-information originate

command Description

default-information originate

no default-information originate

Parameter

nil

default

nil

Command Mode

Interface mode

Use Command Mode

Enable rip to generate a function for default rip routing

example

Switch(config)# router rip

Switch(config-router)#default-information originate

Enable ripto generate default rip route's function

5.4.2 default-metric

command Description

default-metric XX

no default-metric XX

Parameter

Parameter	ParameterCommand Mode
XX	Default is 1，range 1-16

default

nil

Command Mode

Interface mode

Use Command Mode

Use this command，Specifies the default cost when rip introduces routing

example

set default metric as 5

switch(config-router)# default-metric 5

5.4.3 distance

command Description

distance XX

Parameter

Parameter	ParameterCommand Mode
XX	1-255. default as 120

default

120

Command Mode

Interface mode

Use Command Mode

Modify the default value for administrative distance。

example

Modify the default value for administrative distance as 110.

switch(config-router)# distance 110

5.4.4 end

command Description

end

Parameter

nil

default

nil

Command Mode

Interface mode

Use Command Mode

Use this command，return to privilege mode

example

switch(config-router)# end

5.4.5 exit

command Description

Exit

Parameter

nil

default

nil

Command Mode

Interface mode

Use Command Mode

Return to the previous menu

example

switch(config-router)# exit

5.4.6 network

command Description

Network A.B.C.D/M

Network WORD

set rip operating network segment。

Parameter

Parameter	ParameterCommand Mode
A.B.C.D/M	192.168.1.0/24
WORD	port

default

nil

Command Mode

Interface mode

Use Command Mode

nil

example

Switch(config-router)#network 192.168.1.0/24

5.4.7 offset-list

command Description

offset-list <acl-name> {in | out} <metric> [<if-name>]

No offset-list <acl-name> {in | out} <metric> [<if-name>]

Parameter

Parameter	Parameter details set
acl-name	Invoke the access control list name
In| out	Invoke ACL application direction
Metric	set offset defaults as 1 . range is-16
If-name	Apply the rules of port，default all applied

default

nil

Command Mode

Interface mode

Use Command Mode

nil

example

at G2inlet port increase the rule of ACL1，offset value set as 16。

switch(config-router)# offset-list 1 in 16 G2

5.4.8 passive-interface

command Description

passive-interface <if-name>

No passive-interface <if-name>

passive-interface command to config port as passive port ，After config, the port can receive RIP packets, but cannot send RIP packets。

Parameter

nil

default

nil

Command Mode

Interface mode

Use Command Mode

nil

example

#config port vlan3 as passive port

Switch(config-router)#passive-interface vlan3

5.4.9 redistribute

command Description

redistribute <protocol> [metric <metric>] [route-map <route-map>]

no redistribute <protocol> [metric <metric>] [route-map <route-map>]

Parameter

Parameter	Parameter details set
protocol	The types of routing protocols that need to be introduced into RIP such as is-is, ospf, bgp, static, connect, etc
Metric	Specify the metric value of inlet route
Route-map	When Introduce route, need to reference the route-map name

default

nil

Command Mode

Interface mode

Use Command Mode

nil

example

The ingest direct route is introduced into the RIP routing table and, through the route-map rule "list123" rule, specifies that the metric value of the incoming route is 9.

Switch(config-router)#redistribute connected metric 9 route-map list123

5.4.10 timer

command Description

timers basic <update-interval> <dead-interval> <garbage-interval>

no timers basic

Change the time interval between RIP periodic update packets, the

wait time for RIP routes, and the interval between RIP route set unavailability and complete deletion from the routing table

。

Parameter

Parameter	Parameter detail
update-interval	Change RIP time interval，default 30S
dead-interval	Change RIP route waiting time，default 180S
garbage-interval	Change RIP route set time interval, not able to completely delete the time interval from the routing table, the default is 120S。

default

nil

Command Mode

Interface mode

Use Command Mode

nil

example

#configRIP periodic update time of the protocol is 20 seconds, the death time is 100 seconds, and the garbage collection time is 60 seconds

Switch(config-router)#timers basic 20 100 60

5.4.11 version

command Description

Version

Change RIP version

Parameter

nil

default

nil

Command Mode

Interface mode

Use Command Mode

nil

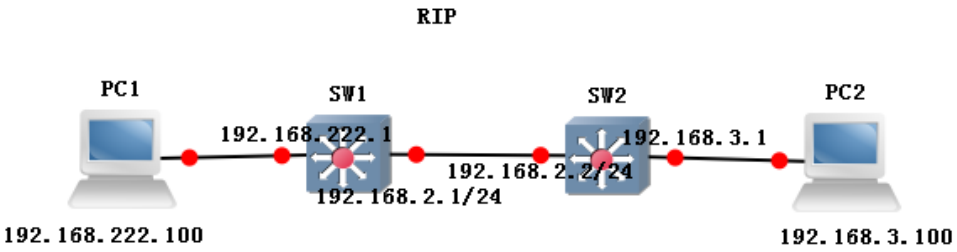
example

change rip versionh to V2

Switch(config-rip)#version 2

5.4.12 example

Network according to the diagram



sw1：

```
switch(config)#interface vlanif1
switch(config-vif)# ip address 192.168.222.1/24
switch(config)#interface vlanif2
switch(config-vif)# ip address 192.168.2.1/24
switch(config-vif)#exit
switch(config)#interface G22
switch(config-if)# switchport mode access
switch(config-if)# switchport pvid 2
switch(config)# router rip
switch(config-router)# network 192.168.2.0/24
switch(config-router)# network 192.168.222.0/24
```

sw2：

```
switch(config)#interface vlanif3
switch(config-vif)# ip address 192.168.3.1/24
switch(config-vif)#exit
switch(config)#interface G23
switch(config-if)# switchport mode access
switch(config-if)# switchport pvid 3
switch(config)#interface vlanif2
switch(config-vif)# ip address 192.168.2.2/24
switch(config-vif)#exit
switch(config)#interface G22
switch(config-if)# switchport mode access
switch(config-if)# switchport pvid 2
switch(config)# router rip
switch(config-router)# network 192.168.2.0/24
switch(config-router)# network 192.168.3.0/24
```

phenomenon　　port view route

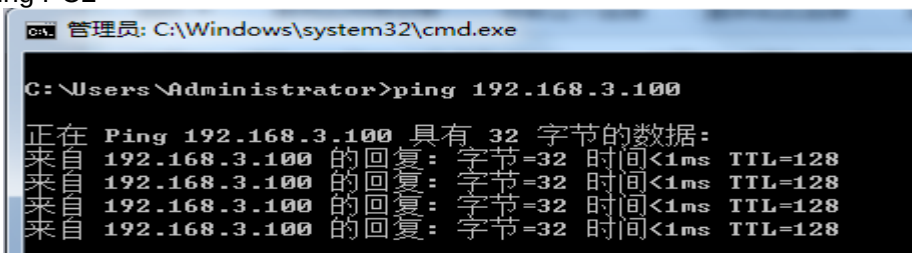
SW1：

```
switch# show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, A - Babel,
       > - selected route, * - FIB route

C>* 192.168.2.0/24 is directly connected, vlanif2
R>* 192.168.3.0/24 [120/2] via 192.168.2.2, vlanif2, 00:00:55
C>* 192.168.222.0/24 is directly connected, vlanif1
```

SW2：

```
switch# show ip route
Codes: K - kernel route, C - connected, S - static, R - RIP,
       O - OSPF, I - IS-IS, B - BGP, A - Babel,
       > - selected route, * - FIB route

C>* 192.168.2.0/24 is directly connected, vlanif2
C>* 192.168.3.0/24 is directly connected, vlanif3
R>* 192.168.222.0/24 [120/2] via 192.168.2.1, vlanif2, 00:00:00
```

PC1 ping PC2



Ch 6 Web Security Command

6.1 Anti-attack

Ant-attack config commands are：

system ignore icmp-echo

system protection syn-ack

system rate-limit

function intro

The anti-attack config is used to ignore the ICMP request of the device, defend against the TCP SYN attack to the device, and control the threshold value of the data received by the CPU.

6.1.1 system ignore icmp-echo

command Description

If want to ignore ICMP requests destined for this device, can use this command config。Use this command ‘s no form disable this config。

system ignore icmp-echo

no system ignore icmp-echo

Parameter

nil

default

nil

Command Mode

In global config mode set this config command。

example

config ignore the ICMP request with the purpose of this device。

switch(config)# system ignore icmp-echo

6.1.2 system protection ddos

command Description

If want to defend against ddos attacks on this device, can use this command to configure。Use this command ‘s no form disable this config。

system protection ddos

no system protection ddos

Parameter

default

nil

Command Mode

global mode

example

config defend against ddos attacks on this device。

switch(config)# system protection ddos

6.1.3 system rate-limit

command Description

If you want to control the threshold of CPU receiving data, you can use this command config. Use this command 's no form to cancel this config。

system rate-limit value

no system rate-limit

Parameter

Parameter	ParameterCommand Mode
value	<0-100000> pps , default value 0 :disable limited。

default

nil

Command Mode

global mode

example

configCPU threshold for receiving data is1000。

switch(config)# system rate-limit 1000

disable CPU Threshold control for receiving data function 。

switch(config)# no system rate-limit

6.2 MAC binding

MAC binding config command：

mac-address static

6.2.1 mac-address static

command Description

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

no mac-address static mac-addr vlan vlan-id

If want to add a static MAC address, can pass this command config. Use

this command 's no form to cancel this config。

Parameter

Parameter	ParameterCommand Mode
mac-addr	MAC address 。 value range ： H.H.H。
vlan-id	This MAC address belong to VLAN。 value range ： 1－4094。
interface-id	This MAC address own physical port 。

default

nil

Command Mode

under global config mode to config the command。

example

configMAC address 00-00-0 0-00-00-01binding to belong VLAN2's port G10

switch(config)# mac-address static 00-00-00-00-00-01 vlan 2 interface G10

6.3 ARP binding

this config command are：

arp

function Introduction

In order to better manage the computers in the network, you can use the ARP binding function to control the access between computers in the network (IP binding).。

6.3.1 arp static

command Description

arp static

Parameter

default

nil

Command Mode

In global config mode to config command。

example

switch(config)# arp static 192.168.1.1 50-46-5D-E2-D5-50

6.3.2 show arp

command Description：

view the arp binding address

show arp

Parameter：

default

nil

Command Mode

In priviledge config mode to configthe command。

example

show ARP binding list

switch(config)# show arp

6.4 ACL config

this config command are：

mac acl

ip acl

rule

ip/mac access-group

function intro

The Access Control List (ACL) is used to control the incoming and outgoing data packets of the port. Message point-to-point communication and internal and external network communication are essential business requirements in the enterprise network. In order to ensure the security of the internal network, it is necessary to use security policies to ensure that unauthorized users can only access specific network resources, so as to achieve access to specific network resources. purpose of control. In short, ACLcan filters traffic in the network and is a network technical means to control access. After configACL, you can restrict network traffic, allow specific devices to access, specify to forward specific port packets, etc. Such as can configACL, prohibit the devices in the LAN from accessing the external public network, or only use the FTP service. ACL can be configured not only on the router, but also on the service software with ACL function. ACL is an important technology to ensure system security in the Internet of Things. Based on the security of the device hardware layer, it controls the communication between devices at the software layer and uses the programmable method to specify access rules to prevent illegal devices from destroying system security. Get system data.

6.4.1 mac acl

command Description

mac acl <1-99>

no mac acl <1-99>

If want to add a mac acl group, you can config through this command. Use this command ‘s no form delete the group。

Parameter

Parameter	ParameterCommand Mode
<1-99>	mac acl group number ，range：1-99

default

nil

Command Mode

global mode

Use Command Mode

Use this command，can add 1 mac acl group

example

switch(config)#mac acl 1

6.4.2 ip acl

command Description

ip acl <100-999>

no ip acl <100-999>

If want to add a ip acl group，can perform this config。Use this command ‘s no form to delete the group。

Parameter

Parameter	ParameterCommand Mode
<100-999>	ip acl group number, range：100-999

default

nil

Command Mode

global mode

example

switch(config)#ip acl 100

6.4.3 rule

command Description

rule <1-127> deny/permit <source mac> <destination mac> cos <0-7>/vlan <1-4094>/eth_type ETHTYPE

rule <1-127> deny/permit icmp/igmp/tcp/udp/ip <source ip> <destination ip> ip_pri<0-7> / tos_pri<0-15>/ dscp_pri<0-63>

no rulel <1-127>

If want to add an rule for acl，can perform this config。Use this command ‘s no form to delete group。

Parameter

Parameter	ParameterCommand Mode
<1-127>	Rule number，range：1-127
source mac	Source mac address ，any
destination mac	target mac address ，any
1-4094	Vlan number，range：1-4094
ETHTYPE	ETHERNET RANGE 0x0000-0xFFFF; 0x0000 or leave out the field indicating a mismatched type
source ip	Source ip address ，any
destination ip	Target ip address ，any
<0-7>	To match IP priority ，range 0-7
<0-15>	to match TOS，range 0-15
<0-63>	to match DSCP，range 0-63

default

nil

Command Mode

global mode

Use Command Mode

Use this command，can add a rule for acl

example

add 1 mac acl rule 1

switch(config)#mac acl 1

switch(config-acl-mac)#rule 1 deny any any

6.4.4 ip/mac access-group

command Description

ip access-group <100-999>

no ip access-group <100-999>

mac access-group <1-99>

no mac access-group <1-99>

Use this command，can bind port, Use acl rule

Parameter

Parameter	ParameterCommand Mode
<100-999>	ip acl group number，range：100-999
<1-99>	mac aclgroup number，range：1-99

default

nil

Command Mode

port mode

example

Switch(config-if)# ip access-group <100-999>

6.5 802.1X config

this config command are：

dot1x auth-port system-auth-ctrl

dot1x initialize interface IFNAME

dot1x radius-client source-interface HOSTNAME PORT

dot1x radius-server deadtime MIN

dot1x radius-server host HOSTNAME auth-port PORTNO key STRING retransmit RETRIES timeout SEC

dot1x re-authenticate interface IFNAME

function Intro

802.1x protocol is an access control and authentication protocol based on Client/Server. It can restrict unauthorized users/devices to access LAN/WLAN through access port (access port). 802.1x authenticates users/devices connected to the switch port before obtaining various services provided by the switch or LAN. Before passing the authentication, 802.1x only allows EAPoL (Extensible Authentication Protocol over Local Area Network) data to pass through the port of the switch connected to the device; after passing the authentication, normal data can pass through the Ethernet port smoothly.

6.5.1 dot1x auth-port system-auth-ctrl

command Description

dot1x auth-port system-auth-ctrl

no dot1x auth-port system-auth-ctrl

enable disable base on port 的 Dot1x function 。

Parameter

nil

default

nil

Command Mode

global mode

Use Command Mode

Use this command，can enable 802.1X function ，Use this command ‘s no form ， disable the function 。

example

switch(config)# dot1x auth-port system-auth-ctrl

6.5.2 dot1x initialize interface IFNAME

command Description

dot1x initialize interface IFNAME

Initialize port 802.1X authentication。

Parameter

Parameter	ParameterCommand Mode
IFNAME	Specify port name，eg. G1，X1 etc

default

nil

Command Mode

global mode

Use Command Mode

Use this command，Initial number authentication, the connected session will be disconnected。

example

switch(config)# dot1x initialize interface G1

6.5.3 dot1x radius-client source-interface HOSTNAME PORT

command Description

dot1x radius-client source-interface HOSTNAME PORT

Parameter

Parameter	ParameterCommand Mode
HOSTNAME	RADIUS client end（hostname or IP）
PORT	client port No（default as 1812）

default

nil

Command Mode

global mode

Use Command Mode

Use this command，can set radius client IP and port no

example

Switch(config)#dot1x radius-client source-interface 192.168.200.200 1812

6.5.4 dot1x radius-server deadtime MIN

command Description

dot1x radius-server deadtime MIN

configIP address of the accounting server and the backup server IP address and secret key。

Parameter

Parameter	ParameterCommand Mode
MIN	RADIUS Server dead time in minutes <0-1440>，default 0

default

nil

Command Mode

global mode

Use Command Mode

Use this command，can set Radius Server dead time

example

Switch(config)# dot1x radius-server deadtime 5

6.5.5 dot1x radius-server

command Description

dot1x radius-server host HOSTNAME auth-port PORTNO key STRING retransmit RETRIES timeout SEC

config Authentication server update interval/maintain authentication time。

Parameter

Parameter	ParameterCommand Mode
HOSTNAME	RADIUS Server (hostname or IP)
PORTNO	Radius Server port no（default 1812）
STRING	RADIUS server keystring
RETRIES	Retry numbers（range 1-100）
SEC	RADIUSServer time out（in sec）<1-1000>

default

nil

Command Mode

global mode

Use Command Mode

Use this command，can set Radius related server Parameter

example

switch(config)#Dot1x radius-server host 192.168.200.1 auth-port 1812 key 123456 retransmit 3 timeout 5

6.5.6 dot1x re-authenticate

command Description

dot1x re-authenticate interface IFNAME

Manually reauthenticate the specified port

Parameter

IFNAME	Specify port name. eg. G1，X1 etc

default

nil

Command Mode

global mode

Use Command Mode

Use this command，Specify the port for reauthentication

example

Configure portsG1 reauthentication

Switch(config)# dot1x re-authenticate interface

6.5.7 dot1x initialize

command Description

dot1x initialize

Initialize the specified port, ie. Disable port and try to re-authenticate。

Parameter

nil

default

nil

Command Mode

port mode

Use Command Mode

Use this command，specific port reauthenticate

example

port G1 initialize

Switch(config)# interface G1

Switch(config-if)# dot1x initialize

6.5.8 dot1x keytxenabled

command Description

dot1x keytxenabled enable/disable

Enable/disable password transfer switch for specified port。

Parameter

nil

default

nil

Command Mode

port mode

Use Command Mode

Use this command，Enable/disable password transfer switch for specified port

example

port G1 initialize

Switch(config)# interface G1

Switch(config-if)# dot1x keytxenabled enable

6.5.9 dot1x port-control

command Description

dot1x port-control auto

dot1x port-control dir both/in

dot1x port-control force-authorized

dot1x port-control unforce-authorized

config specify port authentication mode 。

Parameter

nil

default

nil

Command Mode

port mode

Use Command Mode

Use this command set specific port authentication mode

example

configG1 port authentication mode is automatic, and the control direction is bidirectional

Switch(config)# interface G1

Switch(config-if)#dot1x port-control auto

Switch(config-if)# dot1x port-control dir both

6.5.10 dot1x protocol-version

command Description

dot1x protocol-version 1/2

config specific port authentication ， default as 2。

Parameter

nil

default

nil

Command Mode

port mode

Use Command Mode

Use this command set specific port authentication version

example

configG1 port authentication protocol version is 1

Switch(config)# interface G1

Switch(config-if)#dot1x protocol-version 1

6.5.11 dot1x quiet-period

command Description

dot1x quiet-period <1-65535>

Time in the nil prompt state after authentication fails, default is 60s。

Parameter

nil

default

nil

Command Mode

port mode

Use Command Mode

Use this command set the time in the nil prompt state after authentication failure

example

ConfigG1 the silent time of port is 60s

Switch(config)# interface G1

Switch(config-if)#dot1x quiet-period 60

6.5.12 dot1x re-authenticate

command Description

dot1x re-authenticate

Specify port re-authenticate。

Parameter

nil

default

nil

Command Mode

port mode

Use Command Mode

Use this command re-authenticates the specified port

example

configG1 re-authenticate

Switch(config)# interface G1

Switch(config-if)#dot1x re-authenticate

6.5.13 dot1x reauthMax

command Description

dot1x reauthMax <1-10>

Number of reauthentication attempts before authorization (default 2)

Parameter

nil

default

nil

Command Mode

port mode

Use Command Mode

Use this command set specify port, Number of reauthentication attempts before authorization

example

configG1 number of re-authentications is 5

Switch(config)# interface G1

Switch(config-if)#dot1x reauthMax 5

6.5.14 dot1x reauthentication

command Description

dot1x reauthentication

To enable the re-authentication of the specified port, add the no command to enable it。

Parameter

nil

default

nil

Command Mode

port mode

Use Command Mode

Use this command set specify port Reauthentication switch

example

enable G1 re-authentication

Switch(config)# interface G1

Switch(config-if)#dot1x reauthentication

6.5.15 dot1x timeout

command Description

dot1x timeout re-authperiod <1-4294967295>

seconds between reauthorization attempts (default 3600 seconds）

dot1x timeout server-timeout <1-65535>

Authentication server response timeout (default 30 seconds

dot1x timeout supp-timeout <1-65535>

Requester response timeout (default 30 seconds)

dot1x timeout tx-period <1-65535>

The number of seconds between consecutive request id attempts (default 30 seconds)

Parameter

nil

default

nil

Command Mode

port mode

Use Command Mode

Use this command set overtime time

example

nil

6.6 Port isolation

port isolate config commands：

switchport protected

function intro

Port isolation is to achieve Layer 2 isolation between packets. Different ports can be added to different VLANs, but limited VLAN resources will be wasted. Using the port isolation feature, can implement isolation between ports in the same VLAN. Users only need to add the port to the isolation group to achieve Layer 2 data isolation between ports in the isolation group. The port isolation function provides users with a safer and more flexible networking solution.

6.6.1 switchport protected

command Description

switchport protected

no switchport protected

If want Configure ports to be isolated, you can config through this command. Use this command 's no form to cancel this config。

Parameter

nil

default

nil

example

configG1 port isolate。

switch(config)# interface G1

switch(config-if)# switchport protected

6.7 Storm control

This configuration command has：

storm-control broadcast pps

storm-control multicast pps

storm-control unicast pps

function intro

Storm suppression means that the user can limit the size of broadcast traffic allowed to be received on the port. When this type of traffic exceeds the threshold set by the user, the system will discard the data frames that exceed the traffic limit to prevent the occurrence of storms and ensure the normal operation of the network.。

6.7.1 storm-control broadcast pps

command Description

storm-control broadcast pps vlaue

no storm-control broadcast

If you want to suppress the broadcast packets of the port, you can use this command config. Use this command 's no form to cancel this config。

Parameter

Parameter	ParameterCommand Mode
Value	value range ： 0-1000000 unit: pps,default 0, not suppress。

default

nil

Command Mode

Under port mode to config this command。

example

Suppress the rate of broadcast packets under port G1 to 1000pps。

switch(config)# interface G1

switch(config-if)# storm-control broadcast pps 1000

6.7.2 storm-control multicast pps

command Description

storm-control multicast pps value

no storm-control multicast

If want to suppress the multicast packets of the port, can use this command config. Use this command 's no form to cancel this config。

Parameter

Parameter	ParameterCommand Mode
value	value range ： 0-1000000. unit : pps，Default 0, not suppress。

default

nil

Command Mode

In port mode, config this command。

example

suppress multicast packet rate of the G1 port to 1000pps。

switch(config)# interface G1

switch(config-if)# storm-control multicast pps 1000

6.7.3 storm-control unicast pps

command Description

storm-control unicast pps vlaue

no storm-control unicast

If want to suppress unicast packets of the port, can use this command config. Use this command 's no form to cancel this config。

Parameter

Parameter	ParameterCommand Mode
value	value range ： 0-1000000 unit: pps，Default 0，Not suppress。

default

nil

Command Mode

In port mode to config this command。

example

Suppress unicast packet rate in G1 port to 1000pps。

switch(config)# interface G1

switch(config-if)# storm-control unicast pps 1000

6.8 ERPS config

function intro

ERPS（Ethernet Ring Protection Switching）：Ethernet multi-ring protection technology, the protocol standard is ITU-TG.8032 multi-ring standard. ERPS pursues higher performance and more security, which is the permanent development direction of the network. The Ethernet ring network technology has become an important redundancy protection method in the Layer 2 network. In the Layer 2 network, the STP protocol is generally used for network reliability, as well as the loop protection protocol mentioned in the previous section. The STP protocol is a standard ring network protection protocol developed by IEEE and has been widely used. The application is limited by the size of the network, and the convergence time is affected by the network topology. Generally, the convergence time of STP is in the second level. When the network diameter is large, the convergence time is longer. Although RSTP/MSTP can reduce the convergence time to the millisecond level, it still cannot meet the requirements for services with high service quality requirements such as 3G/NGN voice. In order to further shorten the convergence time and eliminate the influence of network size, the ERPS protocol came into being. ERPS is a link layer protocol specially applied to the Ethernet ring. It can prevent broadcast storms caused by data loops in the Ethernet ring; when a link on the Ethernet ring is disconnected, it can quickly enable the backup link to Communication between nodes on the ring network is restored. Compared with the STP protocol, the ERPS protocol has the characteristics of fast topology convergence (less than 20ms) and the convergence time is related to the number of nodes on the ring.

6.8.1 erps

command Description

Erps enable/disable

Parameter

nil

default

disable

Command Mode

global

Use Command Mode

Use this command，can perform global mode on erps

example

Switch(config)# erps enable

Switch(config)# erps disable

6.8.2 erps xx

command Description

erps physical-ring Ring ID east-interface PORT(A) west-interface PORT(B)

erps instance Instance ID

ring type major-ring/sub-ring

raps-cannel-vlan VLAN ID

node-role owner/neighbour/normal/interconnection

data-traffic-vlan reference-stg STG ID

Parameter

Parameter	ParameterCommand Mode
Ring ID	1-255
PORT(A)	any port
PORT(B)	Except the above specified port
Instance ID	1-64
VLAN ID	Protocol vlan, range 2-4094, cannot duplicate with business vlan
node-role	There is one and only one Owner node in an ERPS ring
STG ID	Business vlan example

default

disable

Command Mode

global mode

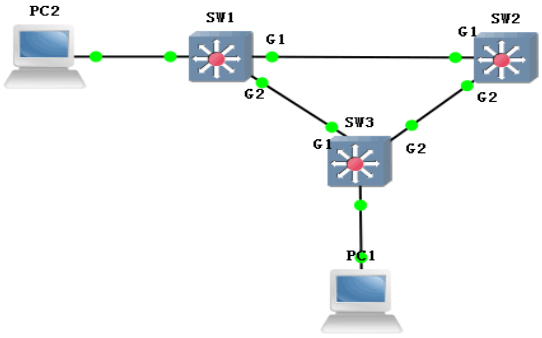
6.8.3 example

Three devices group erps ring, G1 on set sw1 is the main port (responsible for controlling the forwarding state, that is, this port will be blocked when there is a loop

During the loop, pc1 and pc2 access normally

When other links other than the link where the blocking port is located fails, erps can

achieve faster switching



sw1：switch(config)#erps enable

switch(config)#erps physical-ring 1 east-interface G1 west-interface G2

swtich(config)#erps instance 1

swtich(config-erps-instance)#physical-ring 1

swtich(config-erps-instance)#ring-type major-ring

swtich(config-erps-instance)#node-role owner east-interface

swtich(config-erps-instance)#raps-channel-vlan 3001

swtich(config-erps-instance)#data-traffic-vlan reference-stg 0

swtich(config-erps-instance)#erps enable

sw2/sw3：switch(config)#erps enable

switch(config)#erps physical-ring 1 east-interface G1 west-interface G2

swtich(config)#erps instance 1

swtich(config-erps-instance)#physical-ring 1

swtich(config-erps-instance)#ring-type major-ring

swtich(config-erps-instance)#node-role normal

swtich(config-erps-instance)#raps-channel-vlan 3001

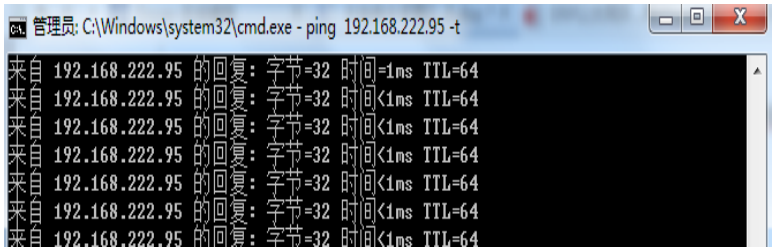
swtich(config-erps-instance)#data-traffic-vlan reference-stg 0

swtich(config-erps-instance)#erps enable

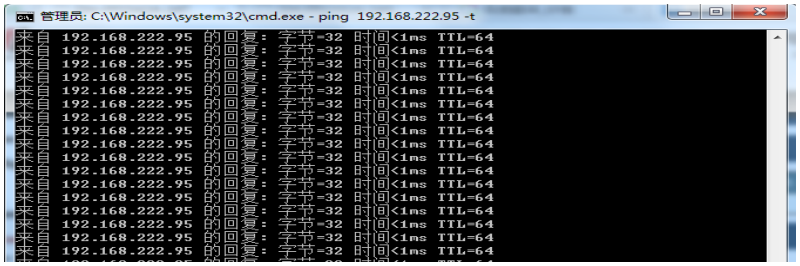
phenomenon

block G1 port on SW1

pc1（192.168.222.107） ping pc2（192.168.222.95）



Manually cut off the link other than the link where the blocked port is located, which can realize fast switching, and the ping is not interrupted



6.9 IP source guard

This configuration command has：

ip source-guard

ip source-guard trust<0/1/2/3>

ip dhcp-snooping binding

function Intro

Through the IP source protection function, can filter and control the packets forwarded by the port to prevent illegal packets from passing through the port, thereby limiting the illegal use of network resources (such as illegal hosts imitating legitimate users' IP access to the network), and improving the port's performance. safety. If the port of the switch is configured with IP source protection, when a packet arrives at the port, the device will check the IP source protection entry, and the packet that conforms to the entry can be forwarded or enter the subsequent process, and the packet that does not conform to the entry can be forwarded. will be discarded. The binding function is for the port. After a port is bound, only the port is restricted, and other ports are not affected by the binding.

6.9.1 ip source-guard

command Description

ip source-guard

no ip source-guard

config enable IP source guard function ， Use this command ‘s no form ，

disable the function S

Parameter

nil

default

prohibit

Command Mode

global mode

Use Command Mode

Use this command，can enable IP source guard function

example

Switch(config)#Ip source-guard

6.9.2 ip source-guard trust

command Description

ip source-guard trust<0/1/2/3>

no ip ip source-guard trust

Parameter

Parameter	ParameterCommand Mode
0/1/2/3	maximum number of dynamic clients is 0/1/2, 3 means nil limit

default

prohibit

Command Mode

port mode

Use Command Mode

Use this command，can enable port IP source guard function ，Use this command 's no form ， port restore default value。

example

Switch(config-if)#Ip source-guard trust 1

6.9.3 ip dhcp-snooping binding

command Description

ip dhcp-snooping binding <MAC> vlan <VLANID> ip <A.B.C.D> mask <Msak> interface < IFNAME>

no ip dhcp-snooping binding <MAC> vlan <VLANID> ip <A.B.C.D>

interface < IFNAME>

Parameter

Parameter	ParameterCommand Mode
MAC	static bound MAC address
VLANID	static bound VLAN No
A.B.C.D	static bound IP address
Mask	static bound IP address mask
IFNAME	port no

default

Command Mode

user mode

Use Command Mode

Use this command，can enable IP Source Guard Static Binding function ，Use this command ‘s no form ，disable the binding。

example

switch(config)#ip dhcp-snooping binding 40-50-11-11-11-11 vlan 1 ip 192.168.1.1 mask 255.255.255.0 interface G1

Ch 7 Network Management commands

7.1 HTTP config

This configuration command has：

ip http-server http

ip http-server https

function Intro

The HTTP config command is described. This command can config The switch accepts HTTP/HTTPS service requests at the specified port, processes the request and returns the processing result to the browser。

7.1.1 ip http-server http

command Description

ip http-server http

no ip http-server

If you want to enable the switch http service, you can pass this command config. Use this command 's no form to cancel this config, at this time will nil method Use http method to manage the switch

Parameter

nil

default

nil

Command Mode

In global config mode to configthe command。

example

Enable the switch http service。

Switch(config)# ip http-server http

7.1.2 ip http-server https

command Description

ip http-server https

no ip http-server

If you want to enable the switch https service, you can pass this command config. Use this command 's no form to cancel this config, at this time will nil method Use https method to manage the switch

Parameter

nil

default

nil

Command Mode

In global config mode to config the command。

example

Enable the switch http service。

Switch(config)# ip http-server https

7.2 SNMP config

This configuration command has：

community

syscontact

syslocation

sysname

trap

trap2sink

trapsink

user

function intro

Simple Network Management Protocol (SNMP) consists of a set of network management standards, including an application layer protocol, a database schema and a set of data objects. The protocol enables network management systems to monitor devices connected to the network for any management concerns. This protocol is part of the internet protocol suite defined by the Internet Engineering Task Force (IETF)。

7.2.1 snmp

command Description

snmp

no snmp

If want to enable snmp function, can configure it through this command. Use this command ‘s no form to Disable this function。

Parameter

nil

default

enable

Command Mode

global mode

example

enable switch' snmp function 。

switch(config)# snmp

7.2.2 snmp-server trap2sink

command Description

snmp-server trap2sink ip

snmp-server trapsink ip

choose snmp version，and the config that receives address, can config through this command.

Parameter

nil

default

snmp

Command Mode

global mode

example

config switch snmpProtocol version。

switch(config)# snmp-server trap2sink 192.168.1.1

7.2.3 snmp-server trap

command Description

snmp-server trap

no snmp-server trap

enable / disable snmp trap function 。

Parameter

nil

default

disable

Command Mode

global mode

example

switch(config)# snmp-server trap

7.2.4 snmp-server community

command Description

community

// set authentication name and rights

Parameter

ro；read Only

rw：read & write

default

public

Command Mode

global mode

example

config switch

switch(config)#snmp-server community ro 111

// authentication name 111，right read only

7.2.5 snmp host

command Description

snmp-server sysname

// set server name

Parameter

nil

default

nil

Command Mode

global mode

example

switch(config)#snmp-server sysname 1111

//server name as 1111

7.2.6 snmp-server user

command Description

snmp-server

Parameter

nil

default

nil

Command Mode

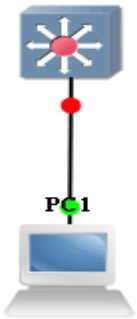
global mode

example

switch(config)#snmp-server user ro 111

7.2.7 example

switch enable snmp，pc1 install MIB Browser，use to get switch node message



sw： switch(config)# snmp-server

switch(config)#snmp-server version v2c

switch(config)#snmp-server community v2c 123 RO

switch(config)#snmp-server community v2c 123 RW

//snmpVersions and Read and Write Communities config

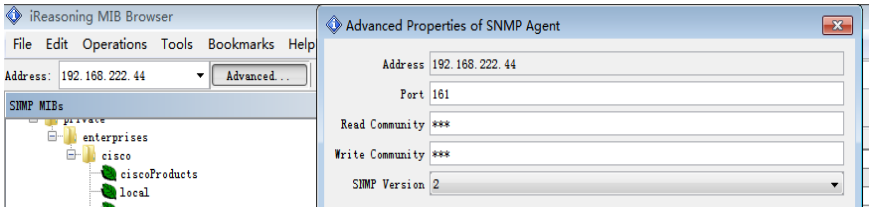
switch(config)# snmp-server host aa

switch(config-snmps-host)# no shutdown

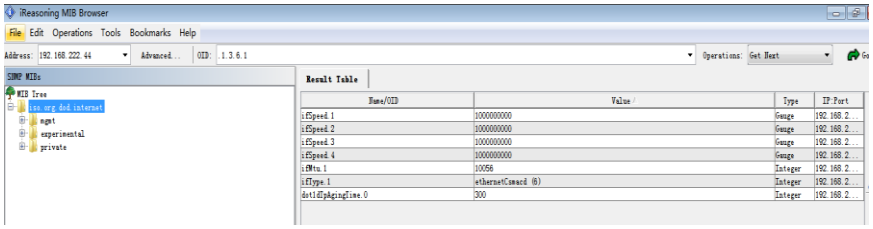
switch(config-snmps-host)# host 192.168.222.107

//snmp trap messageconfig

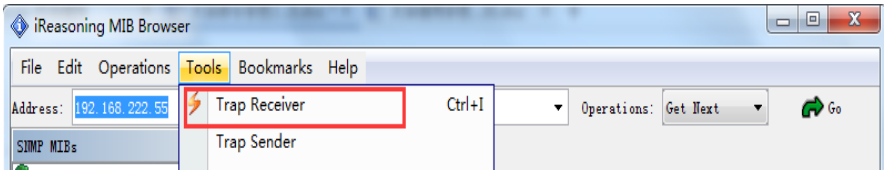
pc： pc open MIB Browser，add switch ip，with corresponding group name



Right-click iso.org.dod.internet, click work, and the relevant message will be displayed on the message display page。



Click trap receive under tools to view uploaded trap message



Ch 8 System Maintenance commands

8.1 Reboot

command Description

If want to restart the device, can config through this command。

reboot

Parameter

nil

default

nil

Command Mode

privilege mode to config this command。

example

After Save config, restart device。

switch# system config save

switch# reboot

8.2 System config restore

command Description

If want to restore the switch to the factory setting, can use this command config, and it will take effect after restarting.

Parameter

nil

default

nil

Command Mode

privilege mode to config this command。

example

Restore to factory setting config, effectrive after restart

switch# system config restore

swtich# reboot

8.3 System config save

command Description

If want to save the config of the switch, can execute this command config。

Parameter

nil

default

nil

Command Mode

privilege mode

example

save this config

switch# system config save

8.4 PING test

function intro

PING (Packet Internet Groper), the Internet packet explorer, a program for testing the amount of network connections. Ping sends an ICMP (Internet Control Messages Protocol), that is, the Internet Message Control Protocol; the echo request message is sent to the destination and reports whether the desired ICMP echo (ICMP echo response) is received. It is a command used to check whether the network is smooth or the speed of the network connection.

command Description

Ping ip

Test reachability with host。

Parameter

nil

default

nil

Command Mode

In privilege modecan Use this command。

example

Test reachability with host

switch# ping 192.168.1.100