

SMB Office Network Configuration Guide

Models: Redundancy Scheme

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1. Program Introduction

1.1 Background Introduction

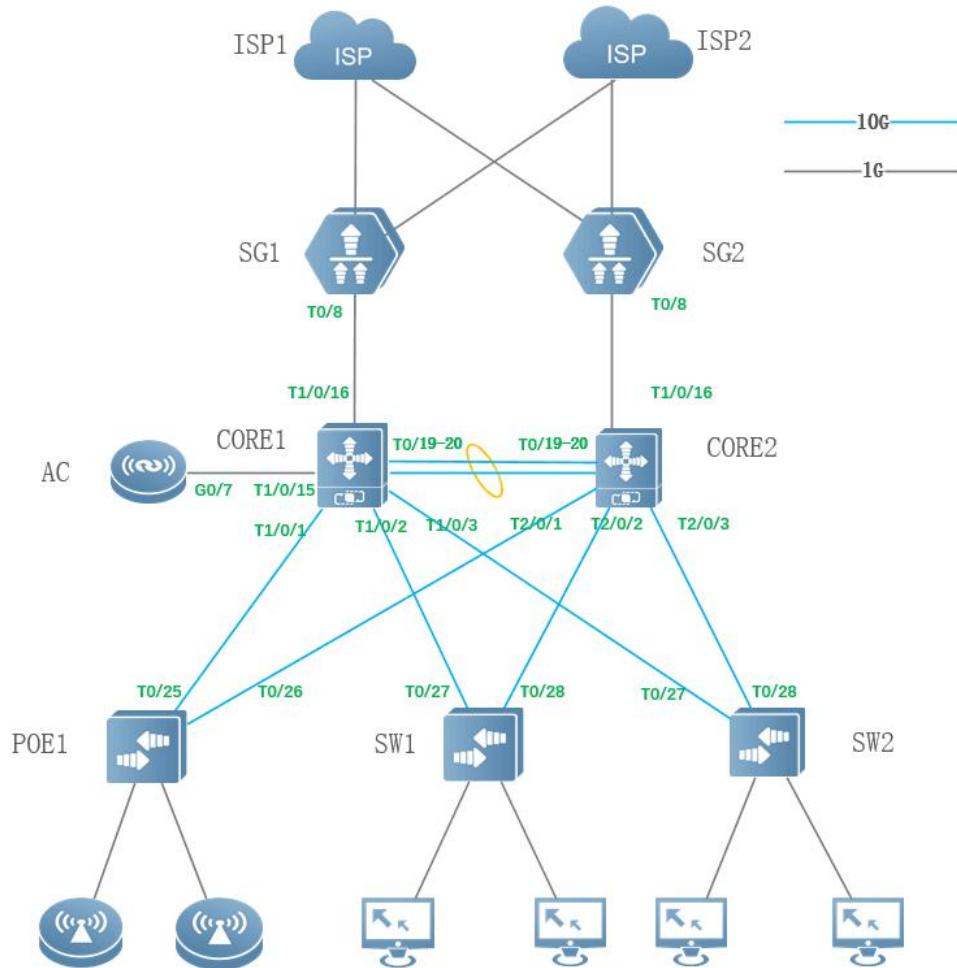
With the development of the network and mobile office, WiFi 6 has become the standard configuration of enterprise information construction, and it is also facing the complexity of network maintenance. Under this trend, network operation and maintenance are simple, and network architecture can be expanded flexibly. In the event of a sudden failure, the network can switch in time to ensure the stable operation of services, which is the core demand of the current campus office network.

1.2 Introduction to Networking

Considering the reliability and simplicity of the SME business, the ideas involved in this program are as follows:

- The network outlet of this solution adopts two SG5110, which realizes redundancy through VRRP, which can meet the Internet needs of 1500 users;
- The core adopts S5860, and the two cores are stacked, which simplifies management while ensuring business redundancy;
- Access-core interconnection adopts LACP dual link, which improves link reliability while increasing bandwidth resources, realizing high-speed intranet switching;
- The wireless AP uses the latest wifi 6 technology, and the high-speed access rate makes wireless performance no longer a bottleneck. It can be used with AC controller to realize rapid deployment and operation and maintenance.

2. Topology



3. Equipment Connection Planning Table

a. Device connection

Local Device	Local Interface	Peer Device	Peer Interface	Remarks
CORE1	T0/19	CORE2	T0/19	VSL
CORE1	T0/20	CORE2	T0/20	VSL
CORE	T1/0/1	POE1	T0/25	
CORE	T2/0/1	POE1	T0/26	
CORE	T1/0/16	SG1	0/8(T0/0)	
CORE	T2/0/16	SG2	0/8(T0/0)	
CORE	T1/0/15	AC	G0/7	
CORE	T1/0/2	SW1	T0/27	
CORE	T2/0/2	SW1	T0/28	
CORE	T1/0/3	SW2	T0/27	
CORE	T2/0/3	SW2	T0/28	
POE1	G0/1-24			AP
SW1	G0/1-24			user
SW2	G0/1-24			user

b. Device management IP planning

Device	Management Address
CORE	172.16.100.1
SG1	10.0.0.2
SG2	10.0.0.3
AC	172.16.100.253
POE	172.16.100.201
SW1	172.16.100.202
SW2	172.16.100.203

c. VLAN IP planning

Vlan	Gateway Address	Remarks
10	172.16.10.1/24	User vlan
20	172.16.20.1/24	User vlan
99	10.0.0.254/24	CORE-SG interconnection address
100	172.16.100.1/24	Ap vlan and management vlan
101	172.16.101.1/24	Wireless user vlan

4. Configuration Ideas

- a. Configure two core switch Stacking to realize core switch stacking;
- b. Complete the basic initial configuration of the switch in the plan, including login and account password;
- c. Complete the interconnection configuration between the switches in the plan, including VLAN and IP addresses;
- d. Complete the switch service configuration in the plan, including DHCP and routing;
- e. Wireless AP and AC configuration, including SSID and password configuration;
- f. Egress gateway configuration, including internal and external network port VRRP function, NAT and VRRP linkage, DLDP detects the reachability of the operator address.

5. Configuration Steps

5.1 Core Switch Configuration Stacking and Basic Configuration

5.1.1 Core1 and Core2 Stack Configuration

- a. Configure the stacking domain and priority of Core1, and add the T0/19 and T0/20 interfaces to the VSL

```

FS>enable
FS# configure terminal
FS(config)#hostname Core1
Core1(config)# switch virtual domain 100
Core1(config-vs-domain)# switch 1
Core1(config-vs-domain)# switch 1 priority 200
Core1(config-vs-domain)# switch 1 description SW-core-1
Core1(config-vs-domain)# exit
Core1(config)# vsl-port
Core1 (config-vsl-port)#port-member interface tenGigabitEthernet 0/19
Core1 (config-vsl-port)#port-member interface tenGigabitEthernet 0/20
Core1 (config-vsl-port)#end
Core1# switch convert mode virtual
Convert mode will backup and delete config file, and reload the switch. Are you sure to continue[yes/no]:yes
Do you want to recover config file from backup file in virtual mode (press 'ctrl + c' to cancel) [yes/no]: yes

```

- b. Configure the stacking domain and priority of Core1, and add the T0/19 and T0/20 interfaces to the VSL.

```

FS>enable
FS# configure terminal
FS(config)#hostname Core2
Core2(config)# switch virtual domain 100
Core2(config-vs-domain)# switch 2
Core2(config-vs-domain)# switch 2 priority 100
Core2(config-vs-domain)# switch 2 description SW-core-2
Core2(config-vs-domain)# exit
Core2(config)# vsl-port
Core2 (config-vsl-port)#port-member interface tenGigabitEthernet 0/19
Core2 (config-vsl-port)#port-member interface tenGigabitEthernet 0/20
Core2 (config-vsl-port)#end
Core2# switch convert mode virtual

```

Convert mode will backup and delete config file, and reload the switch. Are you sure to continue[yes/no]:yes

Do you want to recover config file from backup file in virtual mode (press 'ctrl + c' to cancel) [yes/no]: yes

c. Verify stack

```
Core1#show switch virtual
```

Switch_id	Domain_id	Priority	Position	Status	Role	Description
1(1)	100(100)	200(200)	LOCAL	OK	ACTIVE	SW-core-1
2(2)	100(100)	100(100)	REMOTE	OK	STANDBY	SW-core-2
Core1#						

5.1.2 Configure Dual-machine Detection Based on Aggregation Ports

a. Stacking switch configuration:

```
FS(config)# switch virtual domain 100
FS(config-vs-domain)# dual-active detection aggregateport
FS(config-vs-domain)# dual-active interface aggregatePort 1
FS(config-vs-domain)# exit
```

b. [Note] Enable DAD function configuration on access switch AP1:

```
FS(config)#interface aggregateport 1
FS(config-if-AggregatePort 1)# dad relay enable
FS(config-if-AggregatePort 1)# exit
```

5.1.3 Basic Configuration of The Switch

a. Basic configuration of ssh and telnet of the switch

```
FS>enable
FS (config)#enable service ssh-server
FS (config)#no enable service telnet-server 【Turn off telnet on demand】
FS (config)#username admin privilege 15 password admin
FS (config)#line vty 0 35
FS config-line)#login local
FS (config-line)#exit
```

b. Switch log configuration

```
FS>enable
FS(config)#logging file flash:syslog 7      ----->Set the log file name saved in the Flash to be syslog, with a level of 7, that is, all logs
with levels 0-7 are recorded to the flash, and the debug log level is 7
FS(config)#logging file flash:syslog 131072    ----->Set the size of the log file saved in Flash to 128K
FS(config)#logging buffered 131072            ----->Set the size of the log buffer to 128K
FS(config)#logging userinfo                  ----->Record user login information
FS(config)#logging userinfo command-log       ----->Record all configuration commands operated by user login
FS(config)#service sysname                   ----->Turn on display system name in log
FS(config)#service sequence-numbers         ----->Turn on display serial number in log
FS(config)#service timestamps                ----->Turn on display timestamp in log
FS(config)#end
```

FS#write ----->Save configuration

5.2 Switch Interconnect Configuration

5.2.1 Core Switch Interconnection Configuration

a. Core switch VLAN configuration

```
FS#conf t
FS(config)#hostname CORE
CORE(config)#
CORE(config)#vlan 10
CORE(config-vlan)#name User1-vlan
CORE(config-vlan)#exi
CORE(config)#vlan 20
CORE(config-vlan)#name User2-vlan
CORE(config-vlan)#exi
CORE(config)#vlan 99
CORE(config-vlan)#name To-SG
CORE(config-vlan)#exi
CORE(config)#vlan 100
CORE(config-vlan)#name Ap-vlan
CORE(config-vlan)#exi
CORE(config)#vlan 101
CORE(config-vlan)#name Wifi1
CORE(config-vlan)#exi
```

b. Core switch enables STP

```
CORE(config)#spanning-tree
CORE(config)#errdisable recovery interval 300
CORE(config)#+
```

c. Core switch management IP and SG gateway connection address configuration

```
CORE(config)#interface vlan 99
CORE(config-if-VLAN 99)#ip address 10.0.0.254/24
CORE(config-if-VLAN 99)#description To-SG
CORE(config-if-VLAN 99)#exit
CORE(config)#
CORE(config)#interface vlan 100
CORE(config-if-VLAN 99)#ip address 172.16.100.1/24
CORE(config-if-VLAN 99)#description Admin-vlan
CORE(config-if-VLAN 99)#exit
CORE(config)#
CORE(config)#inter rang ten 1/0/16 ,2/0/16
CORE(config-if-range)#switchport access vlan 99
CORE(config-if-range)#description To-SG
CORE(config-if-range)#exi
```

CORE(config)#

d. Core and AC connection interface configuration

```
CORE(config)#interface tenGigabitEthernet 1/0/15
CORE(config-if-TenGigabitEthernet 1/0/15)#description To-AC
CORE(config-if-TenGigabitEthernet 1/0/15)#speed 1000
CORE(config-if-TenGigabitEthernet 1/0/15)#switchport access vlan 100
```

e. LACP configuration

```
CORE(config)#
CORE(config)#interface range tenGigabitEthernet 1/0/1 ,2/0/1
CORE(config-if-range)#port-group 1 mode active
CORE(config-if-range)#description Down-link-1
CORE(config-if-range)#exit
CORE(config)#
CORE(config)#interface range tenGigabitEthernet 1/0/2 ,2/0/2
CORE(config-if-range)#port-group 2 mode active
CORE(config-if-range)#description Down-link-2
CORE(config-if-range)#exit
CORE(config)#
CORE(config)#interface range tenGigabitEthernet 1/0/3 ,2/0/3
CORE(config-if-range)#port-group 3 mode active
CORE(config-if-range)#description Down-link-3
CORE(config-if-range)#exit
CORE(config)#
CORE(config)#interface AggregatePort 1
CORE(config-if-AggregatePort 1)#description Down-link-1
CORE(config-if-AggregatePort 1)#switchport mode trunk
CORE(config-if-AggregatePort 1)#exit
CORE(config)#
CORE(config)#interface AggregatePort 2
CORE(config-if-AggregatePort 1)#description Down-link-2
CORE(config-if-AggregatePort 1)#switchport mode trunk
CORE(config-if-AggregatePort 1)#exit
CORE(config)#
CORE(config)#interface AggregatePort 3
CORE(config-if-AggregatePort 1)#description Down-link-3
CORE(config-if-AggregatePort 1)#switchport mode trunk
CORE(config-if-AggregatePort 1)#exit
CORE(config)#end
CORE#write
```

5.2.2 PoE Switch Interconnection Configuration

a. POE switch VLAN configuration

b. POE switch STP configuration

```
POE(config)#spanning-tree  
POE(config)#errdisable recovery interval 300  
POE(config)#
```

c. POE connection AP interface configuration

```
POE(config)#inter rang gigabitEthernet 0/1-24
POE(config-if-range)#description To-AP
POE(config-if-range)#sw mo trunk
POE(config-if-range)#sw trunk native vlan 100
POE(config-if-range)#exit
POE(config)#inter vlan 100
POE(config-if-VLAN 100)#ip address 172.16.100.201 255.255.255.0
POE(config-if-VLAN 100)#description admin-vlan
POE(config-if-VLAN 100)#exit
```

d. POE and core switch LACP configuration

```
POE (config)#interface range tenGigabitEthernet 0/25 -26
POE (config-if-range)#port-group 1 mode active
POE (config-if-range)#description Up-link-1
POE (config-if-range)#exit
POE (config)#
POE(config)#inter agg 1
POE(config-if-AggregatePort 1)#sw mo trunk
POE(config-if-AggregatePort 1)#dad relay enable
POE(config-if-AggregatePort 1)#description Up-link-1
```

```
POE(config-if-AggregatePort 1)#end
```

```
POE#write
```

e. Manage VLAN routing configuration

```
POE#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
POE(config)# ip route 0.0.0.0 0.0.0.0 172.16.100.1
```

```
POE(config)#end
```

```
POE#write
```

5.2.3 Access Switch Interconnection Configuration

a. Access switch vlan configuration

```
FS>
```

```
FS>ena
```

```
FS#conf t
```

```
Enter configuration commands, one per line. End with CNTL/Z.
```

```
FS(config)#hostname SW1
```

```
SW1(config)#
```

```
SW1(config)#vlan 10
```

```
SW1(config-vlan)#exi
```

```
SW1(config)#vlan 20
```

```
SW1(config-vlan)#exi
```

```
SW1(config)#vlan 100
```

```
SW1(config-vlan)#exi
```

b. Access switch STP configuration

```
SW1(config)#spanning-tree
```

```
SW1(config)#errdisable recovery interval 300
```

```
SW1(config)#
```

c. Wired users vlan10, vlan20 configuration

```
SW1(config)#inter rang gigabitEthernet 0/1-12
```

```
SW1(config-if-range)#description user-vlan
```

```
SW1(config-if-range)#sw access vlan 10
```

```
SW1(config-if-range)#spanning-tree portfast
```

```
SW1(config-if-range)#spanning-tree bpduguard enable
```

```
SW1(config-if-range)#exit
```

```
SW1(config)#
```

```
SW1(config)#inter rang gigabitEthernet 0/13-24
```

```
SW1(config-if-range)#description user-vlan
```

```
SW1(config-if-range)#sw access vlan 20
```

```
SW1(config-if-range)#spanning-tree portfast
```

```
SW1(config-if-range)#spanning-tree bpduguard enable
```

```
SW1(config-if-range)#exit
```

```
SW1(config)#
```

d. Access switch management address configuration

```
SW1(config)#inter vlan 100
SW1(config-if-VLAN 100)#ip address 172.16.100.202 255.255.255.0
SW1(config-if-VLAN 100)#description admin-vlan
SW1(config-if-VLAN 100)#exit
```

e. Access switch LACP configuration

```
SW1(config)#
SW1(config)#interface range tenGigabitEthernet 0/25 -26
SW1(config-if-range)#port-group 1 mode active
SW1(config-if-range)#description Up-link-1
SW1(config-if-range)#exit
SW1(config)#
SW1(config)#inter AggregatePort 1
SW1(config-if-AggregatePort 1)#sw mo trunk
SW1(config-if-AggregatePort 1)#dad relay enable
SW1(config-if-AggregatePort 1)#description Up-link-1
SW1(config-if-AggregatePort 1)#end
SW1#write
```

f. Manage VLAN routing configuration

```
SW1#conf t
Enter configuration commands, one per line. End with CNTL/Z.
SW1(config)# ip route 0.0.0.0 0.0.0.0 172.16.100.1
SW1(config)#end
SW1#write
```

g. Verify that the network is smooth:

```
CORE#ping 172.16.100.201
Sending 5, 100-byte ICMP Echoes to 172.16.100.201, timeout is 2 seconds:
< press Ctrl+C to break >
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/1/3 ms.
CORE#ping 172.16.100.202
Sending 5, 100-byte ICMP Echoes to 172.16.100.202, timeout is 2 seconds:
< press Ctrl+C to break >
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/2/3 ms.
CORE#ping 172.16.100.203
Sending 5, 100-byte ICMP Echoes to 172.16.100.203, timeout is 2 seconds:
< press Ctrl+C to break >
!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/2/3 ms.
CORE#
```

CORE#show vlan

VLAN	Name	Status	Ports
1 VLAN0001		STATIC	Te1/0/4, Te1/0/5, Te1/0/6, Te1/0/7 Te1/0/8, Te1/0/9, Te1/0/10, Te1/0/11 Te1/0/12, Te1/0/13, Te1/0/14, Te1/0/18 TF1/0/21, TF1/0/22, TF1/0/23, TF1/0/24 Fo1/0/25, Fo1/0/26, Te2/0/4, Te2/0/5 Te2/0/6, Te2/0/7, Te2/0/8, Te2/0/9 Te2/0/10, Te2/0/11, Te2/0/12, Te2/0/13 Te2/0/14, Te2/0/15, Te2/0/18, TF2/0/21 TF2/0/22, TF2/0/23, TF2/0/24, Fo2/0/25 Fo2/0/26, Ag1, Ag2, Ag3
10 User1-vlan		STATIC	Ag1, Ag2, Ag3
20 User2-vlan		STATIC	Ag1, Ag2, Ag3
99 To-SG		STATIC	Te1/0/16, Te2/0/16, Ag1, Ag2, Ag3
100 Ap-vlan		STATIC	Ag1, Ag2, Ag3
101 Wifi1		STATIC	Ag1, Ag2, Ag3

5.3 Switch Service Configuration

5.3.1 Core Switch DHCP Configuration

```
CORE>ena
CORE#conf t
CORE(config)#
CORE(config)#service dhcp
CORE(config)#ip dhcp snooping
CORE(config)#ip dhcp pool vlan10
CORE(dhcp-config)#default-router 172.16.10.1
CORE(dhcp-config)#network 172.16.10.0 255.255.255.0
CORE(dhcp-config)#dns-server 114.114.114.114 8.8.8.8
CORE(dhcp-config)#
CORE(dhcp-config)#ip dhcp pool vlan20
CORE(dhcp-config)#default-router 172.16.20.1
CORE(dhcp-config)#network 172.16.20.0 255.255.255.0
CORE(dhcp-config)#dns-server 114.114.114.114 8.8.8.8
CORE(dhcp-config)#
CORE(dhcp-config)#ip dhcp pool vlan100
CORE(dhcp-config)#default-router 172.16.100.1
CORE(dhcp-config)#network 172.16.100.0 255.255.255.0
CORE(dhcp-config)#dns-server 114.114.114.114 8.8.8.8
CORE(dhcp-config)#
CORE(dhcp-config)#ip dhcp pool vlan101
CORE(dhcp-config)#default-router 172.16.101.1
```

```
CORE(dhcp-config)#network 172.16.101.0 255.255.255.0
CORE(dhcp-config)#dns-server 114.114.114.114 8.8.8.8
CORE(dhcp-config)#
CORE(dhcp-config)#exit
CORE(config)#ip dhcp excluded-address 172.16.10.1
CORE(config)#ip dhcp excluded-address 172.16.20.1
CORE(config)#ip dhcp excluded-address 172.16.100.1
CORE(config)#ip dhcp excluded-address 172.16.101.1
CORE(config)#end
CORE#write
```

Configuration verification:

Pool	name	Total	Distributed	Remained	Percentage
vlan10		253	0	253	0.00000
vlan20		253	0	253	0.00000
vlan100		253	0	253	0.00000
vlan101		253	0	253	0.00000

5.3.2 Core Switch Routing Configuration

a. Core switch configuration:

```
CORE#configure terminal
CORE(config)#ip route 172.16.0.0 255.255.0.0 null 0
CORE(config)#ip route 10.0.0.0 255.0.0.0 null 0
CORE(config)#ip route 0.0.0.0 0.0.0.0 10.0.0.1
CORE(config)#end
CORE#write
```

b. Route configuration verification:

```
CORE#show ip route

Codes: C - Connected, L - Local, S - Static
      R - RIP, O - OSPF, B - BGP, I - IS-IS, V - Overflow route
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2
      SU - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
      IA - Inter area, EV - BGP EVPN, * - candidate default
```

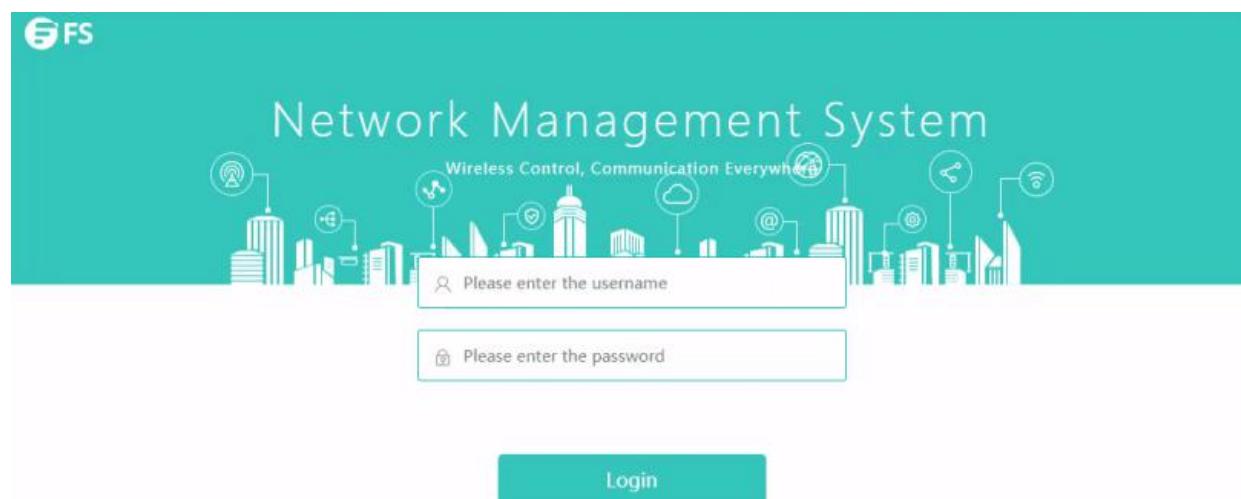
Gateway of last resort is 10.0.0.1 to network 0.0.0.0

```
S*    0.0.0.0/0 [1/0] via 10.0.0.1
S     10.0.0.0/8 is directly connected, Null 0
C     10.0.0.0/24 is directly connected, VLAN 99
C     10.0.0.254/32 is local host.
C     10.0.1.0/30 is directly connected, TenGigabitEthernet 1/0/15
```

```
C 10.0.1.1/32 is local host.  
S 172.16.0.0/16 is directly connected, Null 0  
C 172.16.10.0/24 is directly connected, VLAN 10  
C 172.16.10.1/32 is local host.  
C 172.16.20.0/24 is directly connected, VLAN 20  
C 172.16.20.1/32 is local host.  
C 172.16.100.0/24 is directly connected, VLAN 100  
C 172.16.100.1/32 is local host.  
C 192.168.1.0/24 is directly connected, VLAN 1  
C 192.168.1.200/32 is local host.  
CORE#
```

5.4 Wireless Configuration (Web)

- Log in to the AC management interface through the default management IP: 192.168.1.1



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b. Fill in the basic ac configuration information

Config Wizard

Configure AC

Configure AP

Configure WiFi

Preview Config

MGMT VLAN * 100

IP Address * 172.16.100.253

Submask * 255.255.255.0

Default Gateway * 172.16.100.1

Uplink Interface GigabitEthernet 0/7

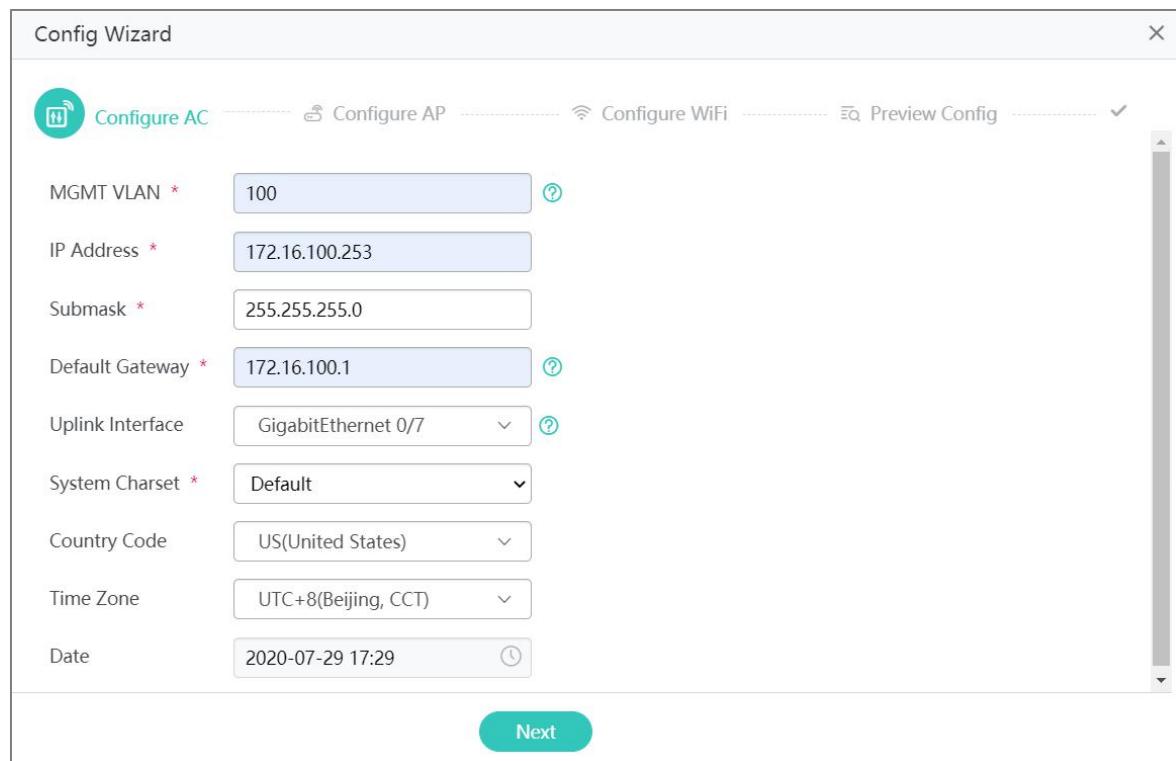
System Charset * Default

Country Code US(United States)

Time Zone UTC+8(Beijing, CCT)

Date 2020-07-29 17:29

Next



c. Configure AP parameters

Config Wizard

Configure AC

Configure AP

Configure WiFi

Preview Config

AP is in VLAN * 100

Interface Address 172.16.100.253

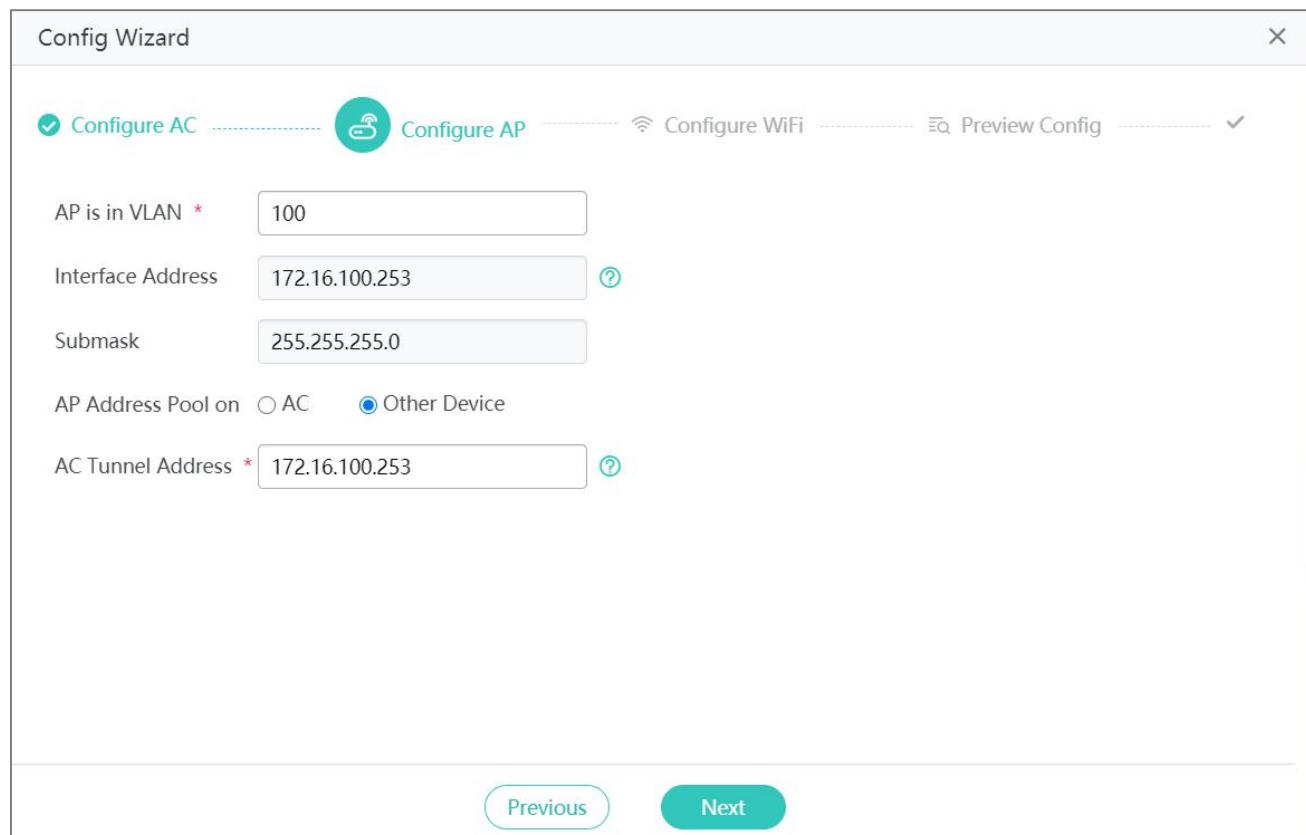
Submask 255.255.255.0

AP Address Pool on AC Other Device

AC Tunnel Address * 172.16.100.253

Previous

Next



d. Configure wifi signal parameters

Config Wizard

Configure AC Configure AP Configure WiFi Preview Config

Dual Radio Into One ON

SSID *

Encryption Type

WiFi Password

Forwarding Mode Centralized Forwarding Local Forwarding

STA is in VLAN *

Interface Address

Submask

STA Address Pool AC Other Device

e. Confirm configuration information

Config Wizard

Configure AC Configure AP Configure WiFi Preview Config

Show Command

Country Code	US(United States)
Time Zone	UTC+8(Beijing, CCT)
Date	2020-07-29 17:29
IP Address	172.16.100.253/255.255.255.0
MGMT VLAN	100
Default Gateway	172.16.100.1
Uplink Interface	GigabitEthernet 0/7
System Charset	Default

5.5 Outlet Gateway Configuration (CLI+Web)

5.5.1 VRRP Management Group Configuration (CLI)

a. External network port and VRRP configuration, take the main SG1 as an example

```
FS#conf t
FS(config)#hostname SG
SG(config)#interface GigabitEthernet 0/6
SG(config-if-range)#ip address 218.244.57.12 255.255.255.248
SG(config-if-range)# ip nat outside //Configure NAT
SG(config-if-range)#dldp 218.244.57.9 interval 100
SG(config-if-range)# nexthop 218.244.57.9
SG(config-if-range)# vrrp 10 ip 218.244.57.10 //Configure VRRP virtual address for VPN or NAT address mapping
SG(config-if-range)#vrrp 10 priority 115 //Configure priority, the other does not need to be configured, use the default value of 100
SG(config-if-range)#exit
SG(config)#
SG(config)#interface GigabitEthernet 0/7
SG(config-if-range)#ip address 106.38.82.141 255.255.255.248
SG(config-if-range)# ip nat outside //Configure NAT
SG(config-if-range)#dldp 106.38.82.137 interval 100
SG(config-if-range)# nexthop 218.244.57.9
SG(config-if-range)# vrrp 20 ip 106.38.82.138 //Configure VRRP virtual address for VPN or NAT
SG(config-if-range)#vrrp 20 priority 115 //Configure priority, the other does not need to be configured, use the default value of 100
SG(config)#ip nat pool nat_pool prefix-length 24 //Configure NAT
SG(config-ipnat-pool)#address interface GigabitEthernet 0/6 match interface GigabitEthernet 0/6
SG(config-ipnat-pool)#address interface GigabitEthernet 0/7 match interface GigabitEthernet 0/7
SG(config)#ip nat inside source list 1 pool nat_pool
```

b. Intranet port configuration and VRRP

```
SG(config)#interface Ten0/0
SG(config-if-range)# ip address 10.0.0.2 255.255.255.0
SG(config-if-range)# ip nat inside //Configure NAT
SG(config-if-range)# vrrp 30 ip 10.0.0.1 //Configure the VRRP virtual address, the data stream of the internal network is sent to the VRRP virtual address
SG(config-if-range)# vrrp 30 priority 115 //Configure priority, the other does not need to be configured, use the default value of 100
SG(config-if-range)# vrrp 30 version 3 //Configure VRRP version
SG(config-if-range)#vrrp 30 manage GigabitEthernet 0/6 group 10 //Manage the vrrp status of the external network port
SG(config-if-range)# vrrp 30 manage GigabitEthernet 0/7 group 20 //Manage the vrrp status of the external network port
SG(config-if-range)# vrrp 30 timers advertise csec 50 multiplier 6 //Configure the VRRP packet sending interval of 50 centiseconds, and the timeout multiple: 6 times, and the switch will be triggered when 6 consecutive vrrp packets are lost within 3 seconds
SG(config-if-range)# vrrp 30 track GigabitEthernet 0/6 link 20
```

//Track the layer 2 status of the external network port. After the layer 2 of the interface is down, the priority is reduced by 20 to ensure that it can be reduced to a lower priority than the peer end to trigger VRRP switching

```
SG(config-if-range)#vrrp 30 track GigabitEthernet 0/7 link 20
```

//Track the layer 2 status of the external network port. After the layer 2 of the interface is down, the priority is reduced by 20 to ensure that it can be reduced to a lower priority than the peer end to trigger VRRP switching

c. Global configuration of NAT linkage VRRP group

ip nat track vrrp 30 ten 0/0	//Configure the vrrp group for NAT linkage internal network port
------------------------------	--

ip nat arp-rate 1 30	//Configure NAT to limit the rate of sending ARP gratuitous packets, up to 30 per second
----------------------	--

ip nat keepalive 30	//Configure NAT to send gratuitous ARP packets regularly, which is sent every 30 seconds
---------------------	--

d. Configuration verification:

```
SG1(config)#show vrrp
```

GigabitEthernet 0/7 - Group 20

State is Master (**Set master state by manager group**)

Virtual IP address is 192.168.3.10 configured

Virtual MAC address is 0000.5e00.0114

Advertisement interval is 1 sec

Preemption is enabled

min delay is 0 sec

Priority is 255

Master Router is 192.168.3.10 (local), priority is 255

Master Advertisement interval is 1 sec

Master Down interval is 3.00 sec

TenGigabitEthernet 0/0 - Group 30

State is Master

Virtual IP address is 10.0.0.1 configured

Virtual MAC address is 0000.5e00.011e

VRRP standard version is V3

Advertisement interval is 0.50 sec

Preemption is enabled

min delay is 0 sec

Priority is 255

Master Router is 10.0.0.1 (local), priority is 255

Master Advertisement interval is 0.50 sec

Master Down interval is 3.00 sec

Tracking state of 1 interface, 1 up:

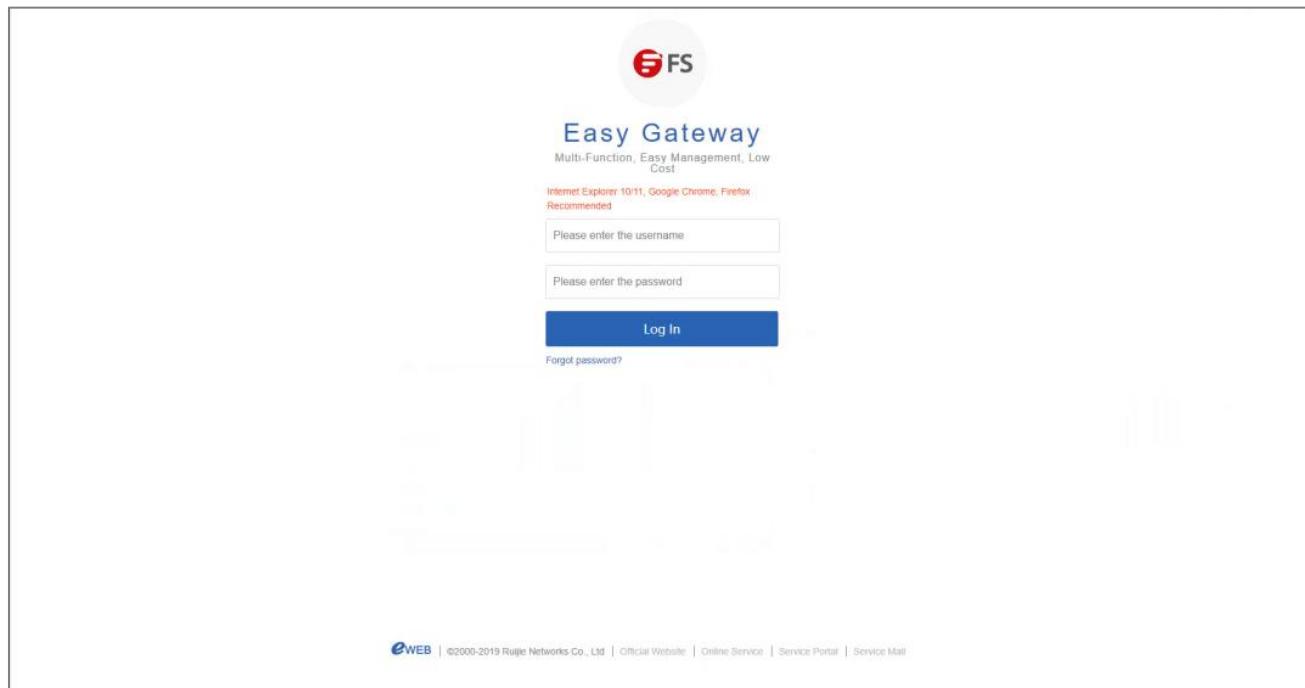
up GigabitEthernet 0/7 link priority decrement=200

Manage following group:

GigabitEthernet 0/7 group 20

5.5.2 Configuration Wizard (Web)

- Log in to the SG management interface through the default management ip: 192.168.1.1



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Easy Gateway
Multi-Function, Easy Management, Low Cost

Internet Explorer 10/11, Google Chrome, Firefox Recommended

Please enter the username

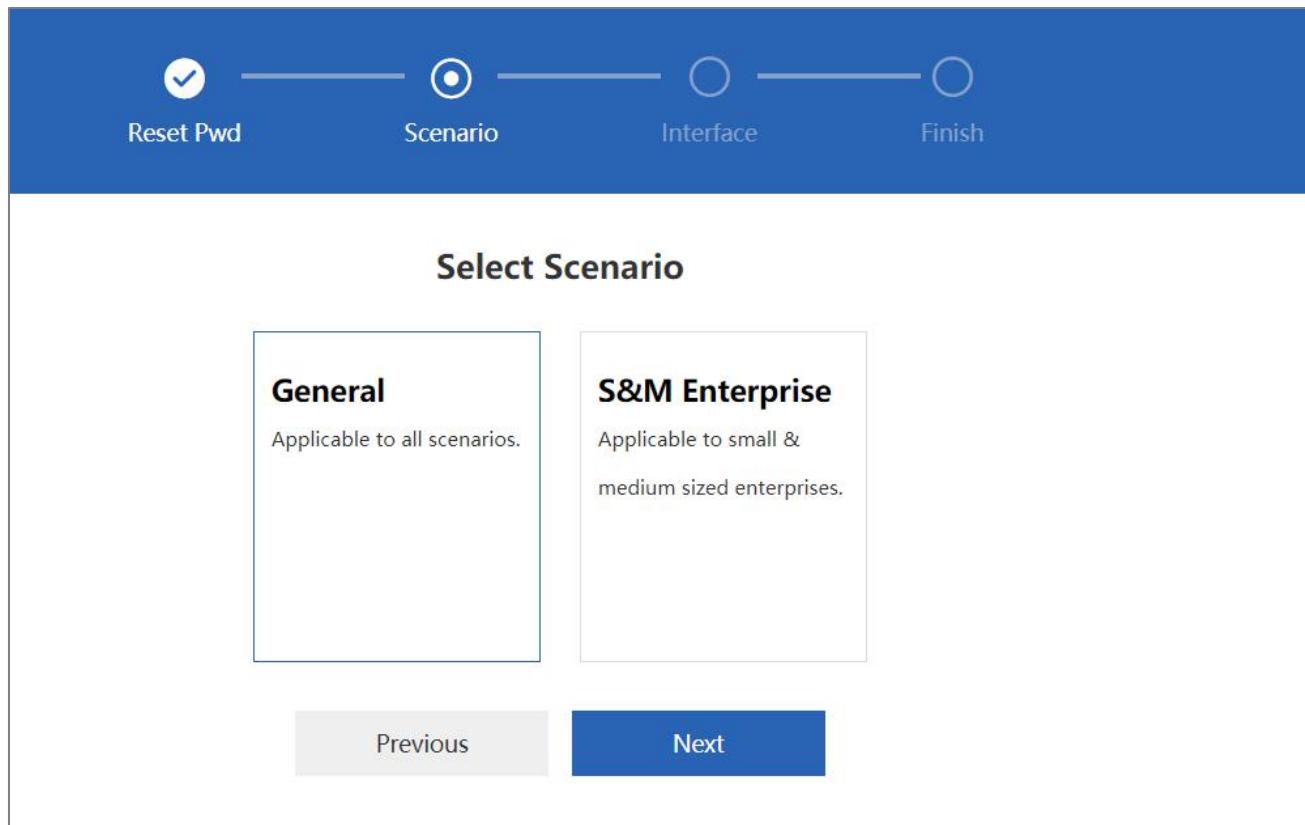
Please enter the password

Log In

Forgot password?

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- Configuration wizard



Reset Pwd Scenario Interface Finish

Select Scenario

General
Applicable to all scenarios.

S&M Enterprise
Applicable to small & medium sized enterprises.

Previous Next

c. Interface configuration

Scenario Interface Interface Finish

WAN Port: Gi0/6 Gi0/7 Gi0/9
6 7 9F(SFP)

6(Gi0/6):	Static IP Address	▼			
Interface IP:	218.244.57.12	-	255.255.255.248	-	218.244.57.9
7(Gi0/7):	Static IP Address	▼			
Interface IP:	106.38.82.141	-	255.255.255.248	-	106.38.82.137

LAN Port: Gi0/0 Gi0/1 Gi0/2 Gi0/3 Gi0/4 Gi0/5 Te0/0
0MGMT 1 2 3 4 5 8F(SFP|SFP+)

0MGMT(Gi0/0):	192.168.1.1	-	255.255.255.0
8F(SFP SFP+)(Te0/0):	10.0.0.2	-	255.255.255.0

[Previous](#) [Next](#)

d. Configuration wizard complete

Scenario Interface Interface Finish

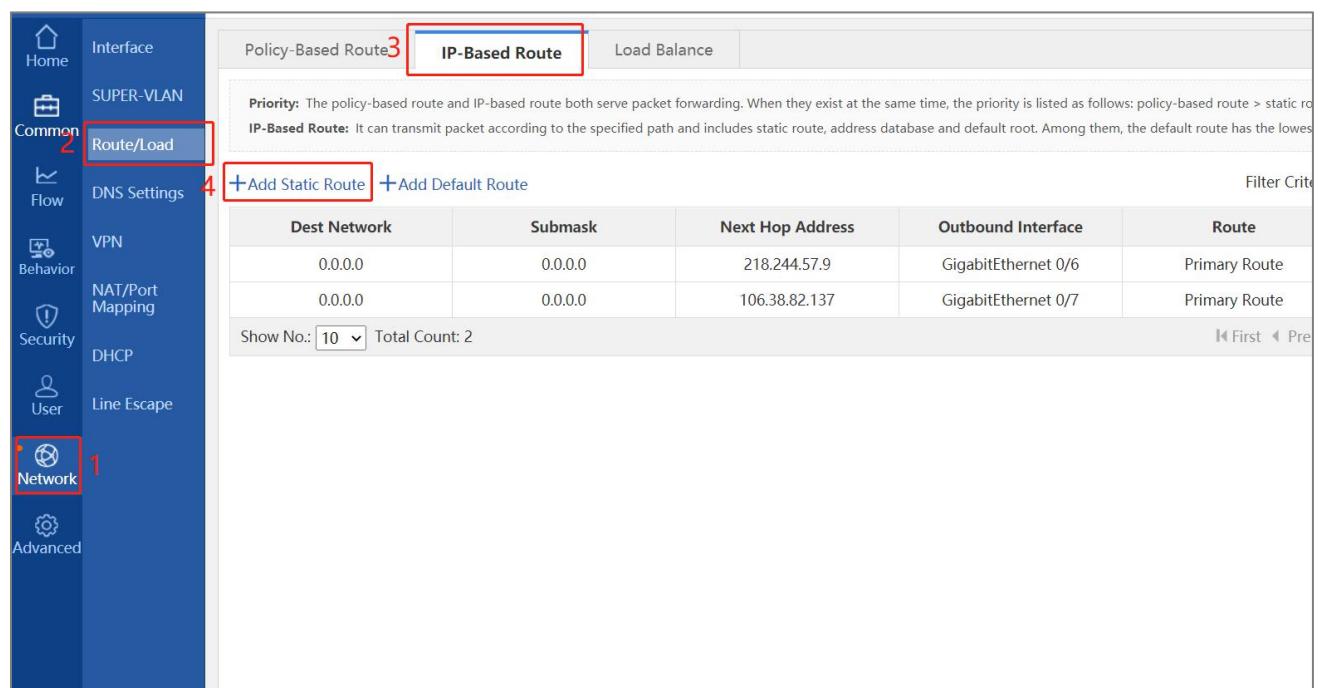


Operation succeeded.

[Dashboard](#)

[Interface](#)

e. Configure routing



Priority: The policy-based route and IP-based route both serve packet forwarding. When they exist at the same time, the priority is listed as follows: policy-based route > static route > IP-based route.

IP-Based Route: It can transmit packet according to the specified path and includes static route, address database and default root. Among them, the default route has the lowest priority.

Dest Network	Submask	Next Hop Address	Outbound Interface	Route
0.0.0.0	0.0.0.0	218.244.57.9	GigabitEthernet 0/6	Primary Route
0.0.0.0	0.0.0.0	106.38.82.137	GigabitEthernet 0/7	Primary Route

Show No.: 10 Total Count: 2

Add Static Route

Dest Network: *

Submask: *

Outbound Interface:

Next Hop IP: * (Gateway Address)

Route: * (The primary route will be given top priority. Backup route-N: A smaller N indicates a higher priority.)

OK **Cancel**

The screenshot shows the 'IP-Based Route' tab selected in the navigation bar. A note states: 'Priority: The policy-based route and IP-based route both serve packet forwarding. When they exist at the same time, the priority is listed as follows: policy-based route > static route > default route.' Below this, it says: 'IP-Based Route: It can transmit packet according to the specified path and includes static route, address database and default root. Among them, the default route has the lowest priority.' There are buttons for '+Add Static Route' and '+Add Default Route'. A table lists three routes:

Dest Network	Submask	Next Hop Address	Outbound Interface	Route	Action
0.0.0.0	0.0.0.0	218.244.57.9	GigabitEthernet 0/6	Primary Route	Edit Delete
0.0.0.0	0.0.0.0	106.38.82.137	GigabitEthernet 0/7	Primary Route	Edit Delete
172.16.0.0	255.255.0.0	10.0.0.254	TenGigabitEthernet 0/0	Primary Route	Edit Delete

Show No.: 10 Total Count: 3 Filter Criteria: All

5.5.3 Flow Control Configuration (Web)

a. Turn on flow control

The screenshot shows the 'Flow Control Policy' tab selected in the navigation bar. A note says: 'Note: Entertainment template and office template give priority to your entertainment and office application respectively. You can also customize a template by selecting the expert template.' A tip says: 'Tip: Please make sure that the bandwidth settings are correct.' A red box highlights the 'Flow Control' switch, which is currently set to 'OFF'. A red number '3' is placed next to the switch.

b. Select the exit interface and fill in the bandwidth configuration, select the expert mode.

The screenshot shows the 'Flow Control Policy' tab selected in the navigation bar. A note says: 'Note: Entertainment template and office template give priority to your entertainment and office application respectively. You can also customize a template by selecting the expert template.' A tip says: 'Tip: Please make sure that the bandwidth settings are correct.' A red box highlights the 'Flow Control' switch, which is now set to 'ON'. Another red box highlights the 'Select Template' dropdown, which is set to 'Expert'. A red box highlights the 'Interface' section where 'Gi0/6' and 'Gi0/7' are selected. Below this, two bandwidth configurations are shown for 'Gi0/6' and 'Gi0/7':

Gi0/6	Bandwidth: Downlink	100	Mbps Uplink	100	Mbps
Gi0/7	Bandwidth: Downlink	100	Mbps Uplink	100	Mbps

Save

c. Adjust the speed limit strategy. (Based on user source ip speed limit)

Smart Flow Control **Change Policy** 1

Note: The sum of min channel bandwidth cannot be greater than the min bandwidth of the parent channel.

+ Add Policy X Delete Selected C Copy Policy Interface: Gi0/6 Threshold: 92 % Save

Policy Name	Local User	External User	App Group	VPN	Advanced	Time	Channel	Priority	Enable	Status	Action
Match_Out_Server_of_NON_VPN	All Users	All Users	All	Cancel	External IP Object: Out_Server	Any Time	Key_Channel		<input checked="" type="checkbox"/>	Active	Edit Delete
Match_VIP_Group_of_NON_VPN	VIPUser	All Users	All	Cancel	External IP Object: All External IPs	Any Time	Key_Channel		<input checked="" type="checkbox"/>	Active	Edit Delete
Match_ALL_NON_VPN	All Users	All Users	All	Cancel	External IP Object: All External IPs	Any Time	default		<input checked="" type="checkbox"/>	Active	Edit Delete

Show No.: 10 Total Count: 3

First Previous 1 Next Last GO

d. Adjust as needed, here is adjusted to 10M per user IP rate limit for reference.

Edit Flow Control Policy

Select Channel No Rate Limit

Note: The edit operation will make channel-related policy unavailable

Channel Name: default *

Channel Level: 4 *

Downlink: Guaranteed Total [] kbps ?
Max 100000 kbps *

Uplink: Guaranteed Total [] kbps ?
Max 100000 kbps *

Advanced Settings (Set rate limit per IP/account)

Channel Type: Per IP

Max Total Downlink: 10000 kbps

Max Total Uplink: 10000 kbps

1 **2** **3** **4**

Save Please click Save and then click Next

Back Next

"Gi0/6" is configured with policy "Match_ALL_NON_VPN". Operation succeeded

Change Policy

nel bandwidth cannot be greater than the min bandwidth of the parent channel.

Edit Flow Control Policy

Active Time: Any Time [Time Management](#)

External IP Group: All External IPs [Select IP Group](#)

VPN Flow Control: Match VPN Traffic (If you select this option, this policy is applied to only VPN users)

Policy Name

Bandwidth

Local User

External User

Selected App

Advanced

Back

Finish

The screenshot shows a configuration interface for a network policy. At the top, there's a header with tabs for 'General', 'Config Wizard' (which is highlighted in red), and 'Online Ser...'. Below the header, a message box contains the text: '\"Gi0/6\" is configured with policy \"Match_ALL_NON_VPN\". Operation succeeded'. A blue '确定' (Confirm) button is located at the bottom right of this message box. The main area is titled 'Edit Flow Control Policy'. It includes fields for 'Active Time' (set to 'Any Time') and 'External IP Group' (set to 'All External IPs'). There's also a checkbox for 'VPN Flow Control' which is unchecked. To the right of the main area, there's a sidebar with several sections: 'Policy Name', 'Bandwidth', 'Local User', 'External User', 'Selected App', and 'Advanced' (which is highlighted in blue). At the bottom right of the main area, there are two buttons: 'Back' and 'Finish', with 'Finish' being highlighted by a red box.



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