**Comprehensive Application of Routing and Switching Technologies**

Student Version



Huawei Technologies Co., Ltd.

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# Comprehensive Application of Routing and Switching Technologies

## Background

You are the network administrator of an enterprise and now you need to set up an enterprise network. The enterprise has a headquarters and two branches. The networking requirements are as follows:

* The headquarters has two departments, which belong to different VLANs.
* The IP addresses of all hosts in the headquarters are on the same network segment, and different departments cannot communicate with each other.
* Managers of the two departments at the headquarters can communicate with each other.
* The headquarters and branches communicate with each other through static routes.
* All routers can be remotely logged in.

The IP address planning and interface planning can be referred in the appendix.

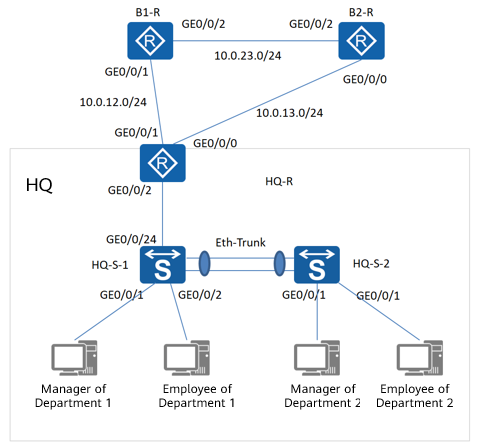
## Objectives

Upon completion of this task, you will be able to:

* Master the method of configuring IP addresses.
* Master the method of configuring VLANs.
* Master the method of configuring static routes.
* Master the method of setting up a Telnet login environment.
* Master the method of setting up an STelnet login environment.
* Master the method of managing device resources.
* Master the software upgrade operations.
* Master the operation and management of patches.

## Topology

Lab Topology



## Implementation

### Roadmap

1. Complete basic configurations.
2. Configure LAG（Link Aggregation）.
3. Create VLANs based on ports.
4. Plan IP addresses.
5. Configure static routes.
6. Configure Telnet login.
7. Configure STelnet login.
8. Configure web login.
9. Set up an FTP server.
10. Back up resources such as electronic labels and configuration files.

### Procedure

Complete basic configurations, such as the device name and interface description. The configurations on the HQ-R are used as an example. Basic configurations of other devices can be completed in a similar manner.

<Huawei>system-view

Enter system view, return user view with Ctrl+Z.

[Huawei]sysname HQ-R

[HQ-R]interface GigabitEthernet 0/0/0

[HQ-R-GigabitEthernet0/0/0]description to-B2-R

[HQ-R-GigabitEthernet0/0/0]quit

[HQ-R]interface GigabitEthernet 0/0/1

[HQ-R-GigabitEthernet0/0/1]description to-B1-R

[HQ-R-GigabitEthernet0/0/0]quit

[HQ-R]interface GigabitEthernet 0/0/2

[HQ-R-GigabitEthernet0/0/2]description to-HQ-S-1

[HQ-R-GigabitEthernet0/0/0]quit

Configure LAG. Configure the Eth-Trunk to work in static LACP mode and configure HQ-S-1 as the LACP Actor.

[HQ-S-1]

[HQ-S-2]

Create VLANs based on ports.

#Configure HQ-S-1.

[HQ-S-1]

#Configure HQ-S-2.

[HQ-S-2]

Perform IPv4 addressing. Configure IP addresses according to Table 1-2.

#Configure B1-R.

[B1-R]

#Configure B2-R.

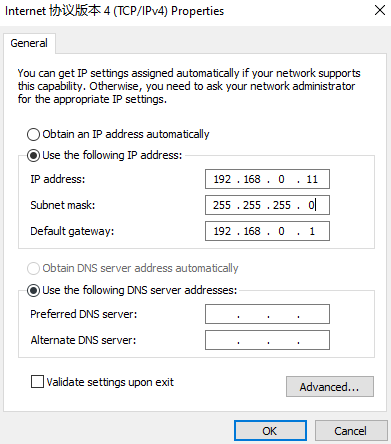
[B2-R]

#Configure HQ-R.

[HQ-R]

#The IP address of the manager of department 1 is used as an example. IP addresses of other PCs can be configured in a similar manner.

IP address configuration on a PC



Configure static routes. Assume that traffic from branches to the Internet needs to traverse HQ-R.

#Configure HQ-R. In the topology shown in Figure 1-1, network-wide interworking is required. The following static routes need to be configured on HQ-R:

[HQ-R]

#Configure B1-R. In the topology shown in Figure 1-1, configure a default route destined for HQ-R on B2-R. In addition, there is a direct link 10.0.23.0/24 between the two branches. Therefore, floating routes are used for communication between the branches. The primary route is the link between B1-R and B2-R, and the backup route is the link that traverses B1-R, HQ-R, and B2-R. The configuration is as follows:

[B1-R]

#Configure B2-R. Similar to the configuration on B1-R, configure a default route destined for HQ-R on B2-R. Floating routes are used for communication between the branches. The primary route is the link between B2-R and B1-R, and the backup route is the link that traverses B2-R, HQ-R, and B1-R. The configuration is as follows:

[B2-R]

Configure Telnet login.

#Configure B1-R to use password authentication for Telnet login, and set the password to **huawei@B1**. Set the default user privilege level to level 0 and the super password to **Huawei@B1**.

[B1-R]

#Configure B2-R to use AAA local authentication for Telnet login. Set the user name to **huawei** and password to **huawei@B2**. Set the default user privilege level to level 0 and the super password to **Huawei@B2**.

[B2-R]

Configure STelnet login. Configure HQ-R to allow STelnet login, configure AAA local authentication for VTY user interfaces, and configure password authentication for SSH users. The default user privilege level is level 0. Set the user name to **huawei**, password to **huawei@HQ**, and super password to **Huawei@HQ**.

#Configure a user for STelnet login in the AAA view.

[HQ-R]

#Configure the VTY user interface.

[HQR]

#Enable the STelnet server function, and create a local RSA key.

[HQ-R]

#Configure the password authentication mode for the SSH user.

[HQ-R]

Configure web login. Configure B1-R to allow web login. Set the user name to **webuser**, password to **huawei123**, and HTTPS port number to **8443**.

[B1-R]

Note: When you enable the HTTPS service, the system may display a message indicating that no SSL policy is configured and the service cannot be enabled. In this case, you can create an SSL policy and bind it to the HTTPS service. Then, enable the HTTPS service again.

[B1-R]pki realm default

[B1-R-pki-realm-default] enrollment self-signed

[B1-R-pki-realm-default]quit

[B1-R]ssl policy default type server

[B1-R-ssl-policy-default] pki-realm default

[B1-R-ssl-policy-default]quit

[B1-R]http secure-server ssl-policy default

Set up an FTP server. The configurations on devices are similar. To simplify operations, you only need to complete the configurations on HQ-R. Set up an FTP server on HQ-R. Set the FTP user name to **ftpuser** and the password to **huawei123**.

[HQ-R]

Back up resources such as electronic labels and configuration files.

#Back up the electronic label on HQ-R to the local computer. The recommended backup file name is *device*-elabel-*date*.

[HQ-R]backup elabel HQR-elabel-0506

#Back up the configuration file on HQ-R to the local computer. The recommended configuration file name is *device*-cfg-*date*.

<HQ-R>save HQR-cfg-0506.zip

Are you sure to save the configuration to HQR-cfg-0506.zip? (y/n)[n]:y

It will take several minutes to save configuration file, please wait.......

Configuration file had been saved successfully

Note: The configuration file will take effect after being activated

#On the maintenance terminal, save the electronic label and configuration file to the PC.

C:\Users>E:

E:\>cd backup

E:\backup>ftp 192.168.0.1

Connected to 192.168.0.1.

220 FTP service ready.

530 Please login with USER and PASS.

User(192.168.0.1:(none)): ftpuser

331 Password required for ftpuser.

Password:

230 User logged in.

ftp> dir

200 Port command okay.

150 Opening ASCII mode data connection for \*.

-rwxrwxrwx 1 noone nogroup 5470 May 06 12:04 hqr-elabel-0506

drwxrwxrwx 1 noone nogroup 0 May 06 04:49 dhcp

-rwxrwxrwx 1 noone nogroup 121802 May 26 2014 portalpage.zip

-rwxrwxrwx 1 noone nogroup 540 May 06 07:09 rsa\_server\_key.efs

-rwxrwxrwx 1 noone nogroup 684 May 06 07:09 rsa\_host\_key.efs

-rwxrwxrwx 1 noone nogroup 865 May 06 12:11 hqr-cfg-0506.zip

-rwxrwxrwx 1 noone nogroup 2263 May 06 04:49 statemach.efs

-rwxrwxrwx 1 noone nogroup 828482 May 26 2014 sslvpn.zip

-rwxrwxrwx 1 noone nogroup 223 May 06 04:56 private-data.txt

drwxrwxrwx 1 noone nogroup 0 May 06 12:11 .

-rwxrwxrwx 1 noone nogroup 779 May 06 07:20 vrpcfg.zip

226 Transfer complete.

ftp: 763 bytes received in 0.07Seconds 10.75Kbytes/sec.

ftp> binary

200 Type set to I.

ftp> get hqr-elabel-0506

200 Port command okay.

150 Opening BINARY mode data connection for hqr-elabel-0506.

226 Transfer complete.

ftp: 5470 bytes received in 0.01Seconds 1094.00Kbytes/sec.

ftp> get hqr-cfg-0506.zip

200 Port command okay.

150 Opening BINARY mode data connection for hqr-cfg-0506.zip.

226 Transfer complete.

ftp: 865 bytes received in 0.00Seconds 865.00Kbytes/sec.

ftp> bye

221 Server closing.

* 1. **Verification**

Check the LAG configuration.

[HQ-S-1]display eth-trunk 1

Eth-Trunk1's state information is:

Local:

LAG ID: 1 WorkingMode: STATIC

Preempt Delay: Disabled Hash arithmetic: According to SIP-XOR-DIP

System Priority: 100 System ID: 4c1f-ccd7-1786

Least Active-linknumber: 1 Max Active-linknumber: 8

Operate status: up Number Of Up Port In Trunk: 2

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

ActorPortName Status PortType PortPri PortNo PortKey PortState Weight

GigabitEthernet0/0/9 Selected 1GE 100 10 305 10111100 1

GigabitEthernet0/0/10 Selected 1GE 100 11 305 10111100 1

Partner:

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

ActorPortName SysPri SystemID PortPri PortNo PortKey PortState

GigabitEthernet0/0/9 32768 4c1f-ccf9-1a68 32768 10 305 10111100

GigabitEthernet0/0/10 32768 4c1f-ccf9-1a68 32768 11 305 10111100

[HQ-S-2]display eth-trunk 1

Eth-Trunk1's state information is:

Local:

LAG ID: 1 WorkingMode: STATIC

Preempt Delay: Disabled Hash arithmetic: According to SIP-XOR-DIP

System Priority: 32768 System ID: 4c1f-ccf9-1a68

Least Active-linknumber: 1 Max Active-linknumber: 8

Operate status: up Number Of Up Port In Trunk: 2

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

ActorPortName Status PortType PortPri PortNo PortKey PortState Weight

GigabitEthernet0/0/9 Selected 1GE 32768 10 305 10111100 1

GigabitEthernet0/0/10 Selected 1GE 32768 11 305 10111100 1

Partner:

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

ActorPortName SysPri SystemID PortPri PortNo PortKey PortState

GigabitEthernet0/0/9 100 4c1f-ccd7-1786 100 10 305 10111100

GigabitEthernet0/0/10 100 4c1f-ccd7-1786 100 11 305 10111100

Check the VLANs created based on ports and verify the connectivity.

#Check the VLANs created based on ports on HQ-S-1.

[HQ-S-1]display port vlan active

T=TAG U=UNTAG

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

Port Link Type PVID VLAN List

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

Eth-Trunk1 trunk 1 U: 1

T: 4 to 5

GE0/0/1 hybrid 4 U: 1 4 to 5

GE0/0/2 access 4 U: 4

GE0/0/3 hybrid 1 U: 1

GE0/0/4 hybrid 1 U: 1

GE0/0/5 hybrid 1 U: 1

GE0/0/6 hybrid 1 U: 1

GE0/0/7 hybrid 1 U: 1

GE0/0/8 hybrid 1 U: 1

GE0/0/11 hybrid 1 U: 1

GE0/0/12 hybrid 1 U: 1

GE0/0/13 hybrid 1 U: 1

GE0/0/14 hybrid 1 U: 1

GE0/0/15 hybrid 1 U: 1

GE0/0/16 hybrid 1 U: 1

GE0/0/17 hybrid 1 U: 1

GE0/0/18 hybrid 1 U: 1

GE0/0/19 hybrid 1 U: 1

GE0/0/20 hybrid 1 U: 1

GE0/0/21 hybrid 1 U: 1

GE0/0/22 hybrid 1 U: 1

GE0/0/23 hybrid 1 U: 1

GE0/0/24 hybrid 1 U: 1 4 to 5

#Check the VLANs created based on ports on HQ-S-2.

[HQ-S-2]display port vlan active

T=TAG U=UNTAG

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

Port Link Type PVID VLAN List

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

Eth-Trunk1 trunk 1 U: 1

T: 4 to 5

GE0/0/1 hybrid 5 U: 1 4 to 5

GE0/0/2 access 5 U: 5

GE0/0/3 hybrid 1 U: 1

GE0/0/4 hybrid 1 U: 1

GE0/0/5 hybrid 1 U: 1

GE0/0/6 hybrid 1 U: 1

GE0/0/7 hybrid 1 U: 1

GE0/0/8 hybrid 1 U: 1

GE0/0/11 hybrid 1 U: 1

GE0/0/12 hybrid 1 U: 1

GE0/0/13 hybrid 1 U: 1

GE0/0/14 hybrid 1 U: 1

GE0/0/15 hybrid 1 U: 1

GE0/0/16 hybrid 1 U: 1

GE0/0/17 hybrid 1 U: 1

GE0/0/18 hybrid 1 U: 1

GE0/0/19 hybrid 1 U: 1

GE0/0/20 hybrid 1 U: 1

GE0/0/21 hybrid 1 U: 1

GE0/0/22 hybrid 1 U: 1

GE0/0/23 hybrid 1 U: 1

GE0/0/24 hybrid 1 U: 1

#Verify the connectivity for employees. Employees of departments 1 and 2 can communicate with each other only within their own departments.

C:\>ping 192.168.0.11

Pinging 192.168.0.11 with 32 bytes of data:

Reply from 192.168.0.11: bytes=32 time=55ms TTL=128

Reply from 192.168.0.11: bytes=32 time=36ms TTL=128

Reply from 192.168.0.11: bytes=32 time=43ms TTL=128

Reply from 192.168.0.11: bytes=32 time=25ms TTL=128

Ping statistics for 192.168.0.11:

Packets: Sent = 4, Received =4, Lost = 0 (0% loss)

Estimated RTT (ms):

Minimum = 25ms, Maximum = 55ms, Average = 39ms

C:\>ping 192.168.0.22

Pinging 192.168.0.22 with 32 bytes of data:

Request timeout.

Request timeout.

Reply from 192.168.0.2: Destination host unreachable.

Request timeout.

Ping statistics for 192.168.0.22:

Packets: Sent = 4, Received = 1, Lost = 3 (75% loss)

C:\>ping 192.168.0.3

Pinging 192.168.0.3 with 32 bytes of data:

Request timeout.

Request timeout.

Request timeout.

Request timeout.

Ping statistics for 192.168.0.3:

Packets: Sent = 4, Received = 0, Lost = 4 (100% loss)

#Verify the connectivity for managers. The manager of department 1 can communicate with employees of department 1 and manager of department 2; the manager of department 2 can communicate with employees of department 2 and manager of department 1.

C:\>ping 192.168.0.2

Pinging 192.168.0.2 with 32 bytes of data:

Reply from 192.168.0.2: bytes=32 time=23ms TTL=128

Reply from 192.168.0.2: bytes=32 time=41ms TTL=128

Reply from 192.168.0.2: bytes=32 time=27ms TTL=128

Reply from 192.168.0.2: bytes=32 time=28ms TTL=128

Ping statistics for 192.168.0.2:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss)

Estimated RTT (ms):

Minimum = 23ms, Maximum = 41ms, Average = 29ms

C:\>ping 192.168.0.22

Pinging 192.168.0.22 with 32 bytes of data:

Reply from 192.168.0.22: bytes=32 time=93ms TTL=128

Reply from 192.168.0.22: bytes=32 time=47ms TTL=128

Reply from 192.168.0.22: bytes=32 time=61ms TTL=128

Reply from 192.168.0.22: bytes=32 time=49ms TTL=128

Ping statistics for 192.168.0.22:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss)

Estimated RTT (ms):

Minimum = 47ms, Maximum = 93ms, Average = 62ms

C:\>ping 192.168.0.3

Pinging 192.168.0.3 with 32 bytes of data:

Reply from 192.168.0.11: Destination host unreachable.

Request timeout.

Request timeout.

Request timeout.

Ping statistics for 192.168.0.3:

Packets: Sent = 4, Received = 1, Lost = 3 (75% loss)

Run the **display ip interface brief** command to check the Layer 3 interface and compare it with information in Table 1-2 to confirm the IPv4 addressing result.

<B1-R>display ip interface brief

\*down: administratively down

^down: standby

(l): loopback

(s): spoofing

The number of interface that is UP in Physical is 4

The number of interface that is DOWN in Physical is 1

The number of interface that is UP in Protocol is 4

The number of interface that is DOWN in Protocol is 1

Interface IP Address/Mask Physical Protocol

GigabitEthernet0/0/0 unassigned down down

GigabitEthernet0/0/1 10.0.12.2/24 up up

GigabitEthernet0/0/2 10.0.23.2/24 up up

LoopBack0 10.0.2.2/24 up up(s)

NULL0 unassigned up up(s)

<B2-R>display ip interface brief

\*down: administratively down

^down: standby

(l): loopback

(s): spoofing

The number of interface that is UP in Physical is 4

The number of interface that is DOWN in Physical is 1

The number of interface that is UP in Protocol is 4

The number of interface that is DOWN in Protocol is 1

Interface IP Address/Mask Physical Protocol

GigabitEthernet0/0/0 10.0.13.3/24 up up

GigabitEthernet0/0/1 unassigned down down

GigabitEthernet0/0/2 10.0.23.3/24 up up

LoopBack0 10.0.3.3/24 up up(s)

NULL0 unassigned up up(s)

<HQ-R>display ip interface brief

\*down: administratively down

^down: standby

(l): loopback

(s): spoofing

The number of interface that is UP in Physical is 5

The number of interface that is DOWN in Physical is 0

The number of interface that is UP in Protocol is 5

The number of interface that is DOWN in Protocol is 0

Interface IP Address/Mask Physical Protocol

GigabitEthernet0/0/0 10.0.13.1/24 up up

GigabitEthernet0/0/1 10.0.12.1/24 up up

GigabitEthernet0/0/2 192.168.0.1/24 up up

LoopBack0 10.0.1.1/24 up up(s)

NULL0 unassigned up up(s)

Check the static routes to verify the connectivity.

<B1-R>disp ip routing-table protocol static

Route Flags: R - relay, D - download to fib

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

Public routing table : Static

Destinations : 2 Routes : 3 Configured Routes : 3

Static routing table status : <Active>

Destinations : 2 Routes : 2

Destination/Mask Proto Pre Cost Flags NextHop Interface

0.0.0.0/0 Static 60 0 RD 10.0.12.1 GigabitEthernet0/0/1

10.0.3.0/24 Static 60 0 RD 10.0.23.3 GigabitEthernet0/0/2

Static routing table status : <Inactive>

Destinations : 1 Routes : 1

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.3.0/24 Static 80 0 R 10.0.12.1 GigabitEthernet0/0/1

<B2-R>display ip routing-table protocol static

Route Flags: R - relay, D - download to fib

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

Public routing table : Static

Destinations : 2 Routes : 3 Configured Routes : 3

Static routing table status : <Active>

Destinations : 2 Routes : 2

Destination/Mask Proto Pre Cost Flags NextHop Interface

0.0.0.0/0 Static 60 0 RD 10.0.13.1 GigabitEthernet0/0/0

10.0.2.0/24 Static 60 0 RD 10.0.23.2 GigabitEthernet0/0/2

Static routing table status : <Inactive>

Destinations : 1 Routes : 1

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.2.0/24 Static 80 0 R 10.0.13.1 GigabitEthernet0/0/0

<HQ-R>display ip routing-table protocol static

Route Flags: R - relay, D - download to fib

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

Public routing table : Static

Destinations : 3 Routes : 4 Configured Routes : 4

Static routing table status : <Active>

Destinations : 3 Routes : 4

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.2.0/24 Static 60 0 RD 10.0.12.2 GigabitEthernet0/0/1

10.0.3.0/24 Static 60 0 RD 10.0.13.3 GigabitEthernet0/0/0

10.0.23.0/24 Static 60 0 RD 10.0.12.2 GigabitEthernet0/0/1

Static 60 0 RD 10.0.13.3 GigabitEthernet0/0/0

Static routing table status : <Inactive>

Destinations : 0 Routes : 0

#Verify the connectivity between the headquarters and branch 1 and trace the route.

C:\>ping 10.0.2.2

Pinging 10.0.2.2 with 32 bytes of data:

Reply from 10.0.2.2: bytes=32 time=36ms TTL=254

Reply from 10.0.2.2: bytes=32 time=24ms TTL=254

Reply from 10.0.2.2: bytes=32 time=44ms TTL=254

Reply from 10.0.2.2: bytes=32 time=42ms TTL=254

Ping statistics for 10.0.2.2:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss)

Estimated RTT (ms):

Minimum = 24ms, Maximum = 44ms, Average = 36ms

C:\>tracert -d 10.0.2.2

Tracing route to 10.0.2.2 over a maximum of 30 hops

1 29 ms 42 ms 41 ms 192.168.0.1

2 31 ms 42 ms 41 ms 10.0.2.2

#Verify the connectivity between the headquarters and branch 2 and trace the route.

C:\>tracert -d 10.0.3.3

Tracing route to 10.0.3.3 over a maximum of 30 hops

1 28 ms 41 ms 42 ms 192.168.0.1

2 27 ms 41 ms 42 ms 10.0.3.3

Trace complete.

C:\>tracert -d 10.0.3.3

Tracing route to 10.0.3.3 over a maximum of 30 hops

1 39 ms 42 ms 41 ms 192.168.0.1

2 32 ms 42 ms 41 ms 10.0.3.3

Trace complete.

#On the PC at the headquarters, verify the connectivity to 10.0.23.0/24 and trace the route.

C:\>tracert -d 10.0.23.3

Tracing route to 10.0.23.3 over a maximum of 30 hops

1 26 ms 41 ms 42 ms 192.168.0.1

2 28 ms 42 ms 42 ms 10.0.12.2

3 65 ms 42 ms 43 ms 10.0.23.3

Trace complete.

C:\>tracert -d 10.0.23.2

Tracing route to 10.0.23.2 over a maximum of 30 hops

1 42 ms 42 ms 41 ms 192.168.0.1

2 33 ms 43 ms 41 ms 10.0.13.3

3 53 ms 44 ms 42 ms 10.0.23.2

#Run the **tracert –a 10.0.2.2 10.0.3.3** command on B1-R to trace the route to B2-R.

<B1-R>tracert -a 10.0.2.2 10.0.3.3

traceroute to 10.0.3.3(10.0.3.3), max hops: 30 ,packet length: 40,press CTRL\_C

to break

1 10.0.23.3 20 ms 20 ms 10 ms

#Shut down GE0/0/2 on B1-R to simulate an interface fault. In this case, the primary link between branches fails, and traffic is switched to the backup link (traffic will traverse HQ-R). Check the routing table and trace the routes to ensure that the switchover is successful.

<B1-R>display ip routing-table protocol static

Route Flags: R - relay, D - download to fib

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

Public routing table : Static

Destinations : 2 Routes : 3 Configured Routes : 3

Static routing table status : <Active>

Destinations : 2 Routes : 2

Destination/Mask Proto Pre Cost Flags NextHop Interface

0.0.0.0/0 Static 60 0 RD 10.0.12.1 GigabitEthernet0/0/1

10.0.3.0/24 Static 80 0 RD 10.0.12.1 GigabitEthernet0/0/1

Static routing table status : <Inactive>

Destinations : 1 Routes : 1

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.3.0/24 Static 60 0 10.0.23.3 Unknown

[B1-R]quit

<B1-R>tracert -a 10.0.2.2 10.0.3.3

traceroute to 10.0.3.3(10.0.3.3), max hops: 30 ,packet length: 40,press CTRL\_C

to break

1 10.0.12.1 30 ms 30 ms 20 ms

2 \* 10.0.13.3 30 ms 30 ms

Verify Telnet login to the router of branch 1.

#Log in to B1-R using Telnet on the terminal and switch the user privilege level.

C:\>telnet 10.0.12.2

Login authentication

Password:

<B1-R>sys

^

Error: Unrecognized command found at '^' position.

<B1-R>super

Password:

Now user privilege is level 3, and only those commands whose level is

equal to or less than this level can be used.

Privilege note: 0-VISIT, 1-MONITOR, 2-SYSTEM, 3-MANAGE

<B1-R>system-view

Enter system view, return user view with Ctrl+Z.

[B1-R]

#Check the Telnet server status and user login information on B1-R.

<B1-R>display telnet server status

TELNET IPV4 server :Enable

TELNET IPV6 server :Enable

TELNET server port :23

<B1-R>display users

User-Intf Delay Type Network Address AuthenStatus AuthorcmdFlag

129 VTY 0 00:00:53 TEL 192.168.0.11 pass

Username : Unspecified

Verify Telnet login to the router of branch 2.

#Log in to B2-R using Telnet on the terminal and switch the user privilege level.

C:\>telnet 10.0.12.2

Login authentication

Username:huawei

Password:

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

User last login information:

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

Access Type: Telnet

IP-Address : 192.168.0.11

Time : 2020-05-08 11:30:03-08:00

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

<B2-R>system-view

^

Error: Unrecognized command found at '^' position.

<B2-R>super

Password:

Now user privilege is level 3, and only those commands whose level is

equal to or less than this level can be used.

Privilege note: 0-VISIT, 1-MONITOR, 2-SYSTEM, 3-MANAGE

<B2-R>system-view

Enter system view, return user view with Ctrl+Z.

[B2-R]

#Check the Telnet server status and user login information on B2-R.

[B2-R]display telnet ser

[B2-R]display telnet server st

[B2-R]display telnet server status

TELNET IPV4 server :Enable

TELNET IPV6 server :Enable

TELNET server port :23

[B2-R]display users

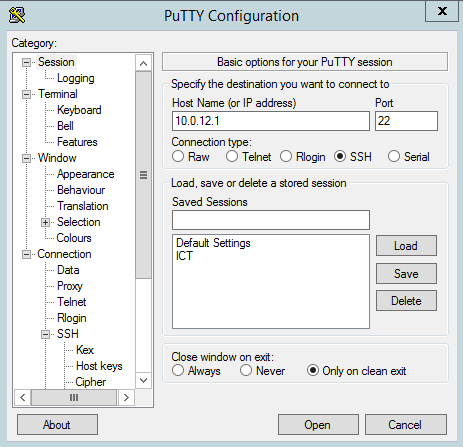
User-Intf Delay Type Network Address AuthenStatus AuthorcmdFlag

+ 129 VTY 0 00:00:00 TEL 192.168.0.11 pass Username : huawei

Verify STelnet login.

#Log in to HQ-R remotely through STelnet on the terminal and switch the user privilege level.

Putty STelnet login settings



Verifying STelnet login



#Check the STelnet server status and online user information on HQ-R.

[HQ-R]display ssh server status

SSH version :1.99

SSH connection timeout :60 seconds

SSH server key generating interval :0 hours

SSH Authentication retries :3 times

SFTP Server :Disable

Stelnet server :Enable

[HQ-R]display ssh server session

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

Conn Ver Encry State Auth-type Username

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

VTY 0 2.0 AES run password Huawei

[HQ-R]display ssh user-information

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

Username Auth-type User-public-key-name

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

huawei password null

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

Check the status of the web server and perform login management.

[B1-R]display http server

HTTP server status : Disabled (default: disable)

HTTP server port : 80 (default: 80)

HTTP timeout interval : 3 (default: 3 minutes)

Current online users : 0

Maximum users allowed : 5

HTTPS server status : Disabled (default: disable)

HTTPS server port : 443 (default: 443)

HTTPS SSL Policy :

On the terminal, enter the URL https://10.0.12.2:8443 and perform web login management.

Log in to the FTP server of HQ-R from the terminal and check the configuration and status of the FTP server.

[HQ-R]display ftp-server

FTP server is running

Max user number 5

User count 1

Timeout value(in minute) 30

Listening port 21

Acl number 0

FTP server's source address 0.0.0.0

[HQ-R]display ftp-users

username host port idle topdir

ftpuser 192.168.0.11 59143 1 flash:

## Appendix

VLAN plan

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Device | Interface | Description | Link Type | PVID | VLAN List |
| HQ-S-1 | GE0/0/1 | To\_manager | Hybrid | 4 | 4 (untagged)  5 (untagged) |
| GE0/0/2 | To\_staff | Access | 4 | 4 (untagged) |
| GE0/0/24 | To\_HQ-R | Access | 1 | 1 to 4094 (untagged) |
| Eth-Trunk 1  (GE0/0/9, GE0/0/10) | To\_HQ-AS-2 | Trunk | 1 | 1 (untagged)  2 to 4094 (tagged) |
| HQ-S-2 | GE0/0/1 | To\_manager | Hybrid | 5 | 4 (untagged)  5 (untagged) |
| GE0/0/2 | To\_staff | Access | 5 | 5 (untagged) |
| Eth-Trunk 1  (GE0/0/9, GE0/0/10) | To\_HQ-AS-1 | Trunk | 1 | 1 (untagged)  2 to 4094 (tagged) |

IP address plan

|  |  |  |  |
| --- | --- | --- | --- |
| Device | Interface | Description | IP Address |
| B1-R | Loopback0 | N/A | 10.0.1.1/24 |
| GE0/0/1 | To-HQ-R | 10.0.12.2/24 |
| GE0/0/2 | To-B2-R | 10.0.23.2/24 |
| B2-R | Loopback0 | N/A | 10.0.2.2/24 |
| GE0/0/0 | To-HQ-R | 10.0.13.3/24 |
| GE0/0/2 | To-B1-R | 10.0.23.3/24 |
| HQ-R | Loopback0 | N/A | 10.0.3.3/24 |
| GE0/0/0 | To-B2-R | 10.0.12.1/24 |
| GE0/0/1 | To-B1-R | 10.0.13.1/24 |
| GE0/0/2 | To-HQ-S-1 | 192.168.0.1/24 |
| PC | Local NICs | Manager of department 1 | 192.168.0.11/24 |
| Employees of department 1 | 192.168.0.2/24 |
| Manager of department 2 | 192.168.0.22/24 |
| Employees of department 2 | 192.168.0.3/24 |

User name and password plan

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Device | Service Type | User Name | Password | Super Password |
| B1-R | Telnet | huawei | huawei@B1 | Huawei@B1 |
| Web | webuser | huawei123 |
| B2-R | Telnet | huawei | huawei@B2 | Huawei@B2 |
| HQ-R | SSH | huawei | huawei@HQ | Huawei@HQ |
| ftp | ftpuser | huawei123 |