

4. IPv4

4.1

4.2

- IP
- VLAN
-
- Telnet
- STelnet
-
-
-

4.3

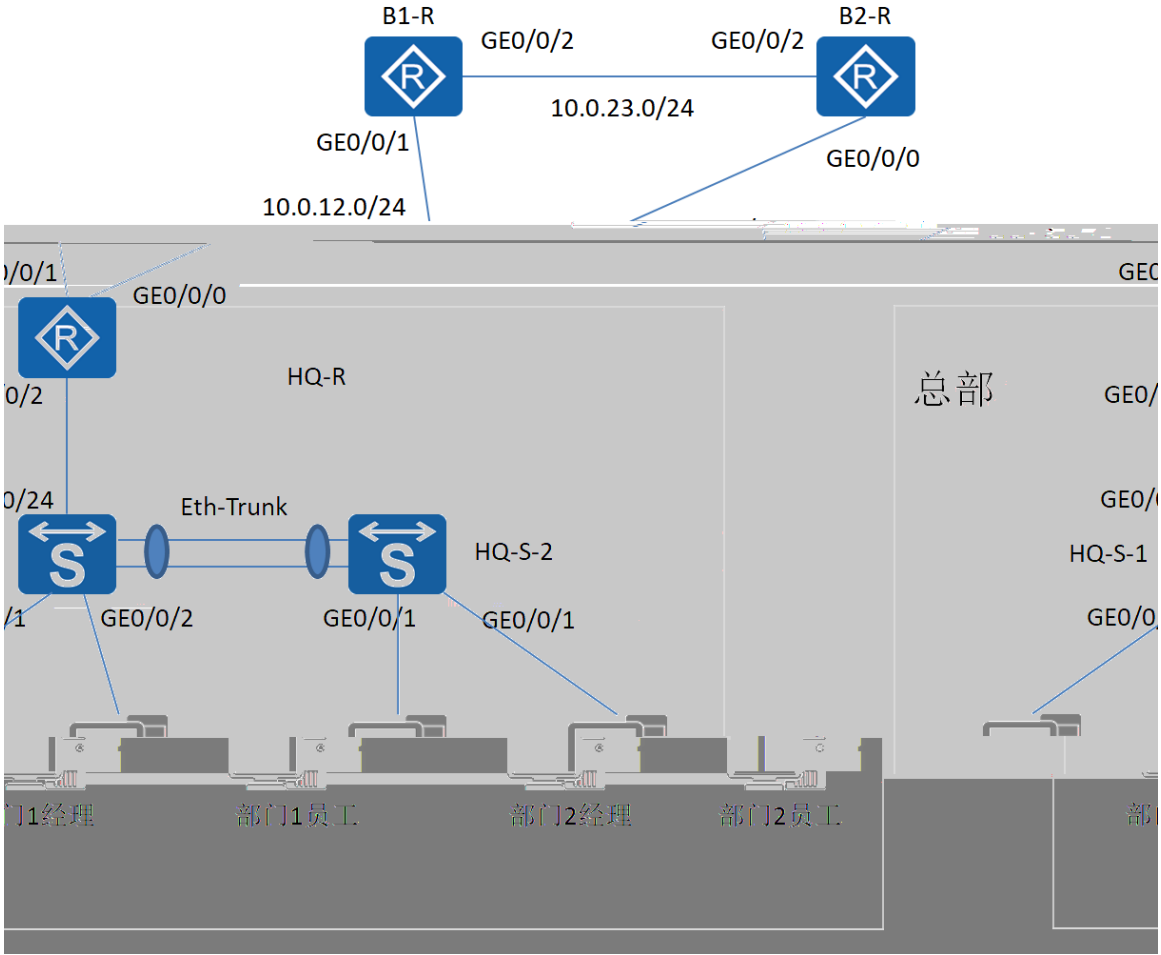


图 1.综合实验拓扑

4.4

4.4.1

1

2

4.4.2

1

2

3

VLAN

- 4 IP
- 5
- 6 Telnet
- 7 STelnet
- 8 Web
- 9 FTP
- 10

4.5

4.5.1

1

1.VLAN

				PVID	VLAN-List U=untagged T=tagged
HQ-S-1	GE0/0/1	To_manager	Hybrid	4	4(U) 5(U)
	GE0/0/2	To_staff	Access	4	4(U)
	GE0/0/24	To_HQ-R	Access	1	1~4094(U)
	Eth-Trunk 1 (GE0/0/9,GE0/0/10)	To_HQ-AS-2	Trunk	1	1(U) 2~4094(T)
HQ-S-2	GE0/0/1	To_manager	Hybrid	5	4(U) 5(U)
	GE0/0/2	To_staff	Access	5	5(U)
	Eth-Trunk 1 (GE0/0/9,GE0/0/10)	To_HQ-AS-1	Trunk	1	1(U) 2~4094(T)

2.IP

			IP
B1-R	Loopback0		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		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		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		1	192.168.0.11/24
		1	192.168.0.2/24
		2	192.168.0.22/24
		2	192.168.0.3/24

3.

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	

2

4. 5. 2

1

HQ-R

HQ-R

```

<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-GigabitEthernet0/0/1]quit
[HQ-R]interface GigabitEthernet 0/0/2
[HQ-R-GigabitEthernet0/0/2]description to-HQ-S-1
[HQ-R-GigabitEthernet0/0/2]quit

```

2

Eth-Trunk

LACP

HQ-S-1

LACP

```

[HQ-S-1]interface Eth-Trunk 1
[HQ-S-1-Eth-Trunk1]quit
[HQ-S-1-Eth-Trunk1]mode lacp-static
[HQ-S-1]lacp priority 100
[HQ-S-1]interface GigabitEthernet 0/0/9
[HQ-S-1-GigabitEthernet0/0/9]eth-trunk 1
[HQ-S-1-GigabitEthernet0/0/9]lacp priority 100
[HQ-S-1-GigabitEthernet0/0/9]quit
[HQ-S-1]interface GigabitEthernet 0/0/10
[HQ-S-1-GigabitEthernet0/0/10]eth-trunk 1
[HQ-S-1-GigabitEthernet0/0/10]lacp priority 100

[HQ-S-2]interface Eth-Trunk 1
[HQ-S-2-Eth-Trunk1]mode lacp-static
[HQ-S-2-Eth-Trunk1]quit
[HQ-S-2]interface GigabitEthernet 0/0/9
[HQ-S-2-GigabitEthernet0/0/9]eth-trunk 1
[HQ-S-2-GigabitEthernet0/0/9]quit
[HQ-S-2]interface GigabitEthernet 0/0/10
[HQ-S-2-GigabitEthernet0/0/10]eth-trunk 1

```

3

VLAN

- HQ-S-1

```

[HQ-S-1]vlan batch 4 5
[HQ-S-1]interface GigabitEthernet 0/0/1
[HQ-S-1-GigabitEthernet0/0/1]port link-type hybrid
[HQ-S-1-GigabitEthernet0/0/1]port hybrid pvid vlan 4
[HQ-S-1-GigabitEthernet0/0/1]port hybrid untagged vlan 4 5
[HQ-S-1-GigabitEthernet0/0/1]quit
[HQ-S-1]interface GigabitEthernet 0/0/2
[HQ-S-1-GigabitEthernet0/0/2]port link-type access
[HQ-S-1-GigabitEthernet0/0/2]port default vlan 4
[HQ-S-1-GigabitEthernet0/0/2]quit
[HQ-S-1]interface GigabitEthernet 0/0/24
[HQ-S-1-GigabitEthernet0/0/24]port hybrid untagged vlan all
[HQ-S-1-GigabitEthernet0/0/24]quit
[HQ-S-1]interface Eth-Trunk 1
[HQ-S-1-Eth-Trunk1]port link-type trunk
[HQ-S-1-Eth-Trunk1]port trunk allow-pass vlan all
[HQ-S-1-Eth-Trunk1]quit

```

- HQ-S-2

```
[HQ-S-2]vlan batch 4 5
[HQ-S-2]interface GigabitEthernet 0/0/1
[HQ-S-2-GigabitEthernet0/0/1]port link-type hybrid
[HQ-S-2-GigabitEthernet0/0/1]port hybrid pvid vlan 5
[HQ-S-2-GigabitEthernet0/0/1]port hybrid untagged vlan 4 5
[HQ-S-2-GigabitEthernet0/0/1]quit
[HQ-S-2]interface GigabitEthernet 0/0/2
[HQ-S-2-GigabitEthernet0/0/2]port link-type access
[HQ-S-2-GigabitEthernet0/0/2]port default vlan 5
[HQ-S-2-GigabitEthernet0/0/2]quit
[HQ-S-2]interface Eth-Trunk 1
[HQ-S-2-Eth-Trunk1]port link-type trunk
[HQ-S-2-Eth-Trunk1]port trunk allow-pass vlan all
[HQ-S-2-Eth-Trunk1]quit
```

4 IPv4 2IP

● B1-R

```
[B1-R]interface LoopBack 0
[B1-R-LoopBack0]ip address 10.0.1.1 24
[B1-R-LoopBack0]quit
[B1-R]interface GigabitEthernet 0/0/1
[B1-R-GigabitEthernet0/0/1]ip address 10.0.12.2 24
[B1-R-GigabitEthernet0/0/1]quit
[B1-R]interface GigabitEthernet 0/0/2
[B1-R-GigabitEthernet0/0/2]ip address 10.0.23.2 24
[B1-R-GigabitEthernet0/0/2]quit
```

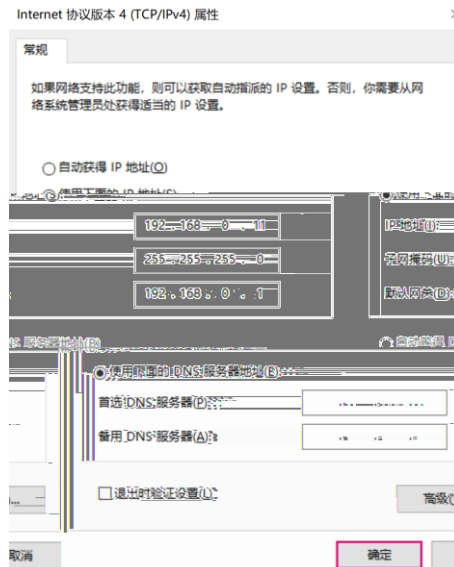
● B2-R

```
[B2-R]interface LoopBack 0
[B2-R-LoopBack0]ip address 10.0.2.2 24
[B2-R-LoopBack0]quit
[B2-R]interface GigabitEthernet 0/0/0
[B2-R-GigabitEthernet0/0/0]ip address 10.0.13.3 24
[B2-R-GigabitEthernet0/0/0]quit
[B2-R]interface GigabitEthernet 0/0/2
[B2-R-GigabitEthernet0/0/2]ip address 10.0.23.3 24
[B2-R-GigabitEthernet0/0/2]quit
```

● HQ-R

```
[HQ-R]interface LoopBack 0
[HQ-R-LoopBack0]ip address 10.0.3.3 24
[HQ-R-LoopBack0]quit
[HQ-R]interface GigabitEthernet 0/0/0
[HQ-R-GigabitEthernet0/0/0]ip address 10.0.13.1 24
[HQ-R-GigabitEthernet0/0/0]quit
[HQ-R]interface GigabitEthernet 0/0/1
[HQ-R-GigabitEthernet0/0/1]ip address 10.0.12.1 24
[HQ-R-GigabitEthernet0/0/1]quit
[HQ-R]interface GigabitEthernet 0/0/2
[HQ-R-GigabitEthernet0/0/2]ip address 192.168.0.1 24
[HQ-R-GigabitEthernet0/0/2]quit
```

● PC IP 1 PC



2 PC IP

5

HQ-R

● HQR

1

HQ-R

```
[HQ-R]ip route-static 10.0.2.0 24 10.0.12.2
[HQ-R]ip route-static 10.0.3.0 24 10.0.13.3
[HQ-R]ip route-static 10.0.23.0 24 10.0.12.2
[HQ-R]ip route-static 10.0.23.0 24 10.0.13.3
```

● B1R

1

HQ-R

HQ-R

B2R

10.0.23.0/24

B1R B2R

HQR

B2R

```
[B1-R]ip route-static 0.0.0.0 0 10.0.12.1
[B1-R]ip route-static 10.0.3.0 24 10.0.23.3
[B1-R]ip route-static 10.0.3.0 24 10.0.12.1 preference 80
```

● B2R

B1R B2R

HQ-R

B1R B2R

HQR

B1R

```
[B2-R]ip route-static 0.0.0.0 0 10.0.13.1
[B2-R]ip route-static 10.0.2.0 24 10.0.23.2
[B2-R]ip route-static 10.0.2.0 24 10.0.13.1 preference 80
```

6 Telnet

●

B1-R password

Telnet

huawei@B1

level 0

Huawei@B1

```
[B1-R]user-interface vty 0 4
[B1-R-ui-vty0-4]authentication-mode password
Please configure the login password (maximum length 16):huawei@B1
[B1-R-ui-vty0-4]user privilege level 0
[B1-R-ui-vty0-4]quit
```

```
[B1-R]super password cipher Huawei@B1
```

```
● B2-R AAA Telnet huawei
   huawei@B2 level 0 Huawei@B2
```

```
[B2-R]aaa
[B2-R-aaa]local-user huawei password cipher huawei@B2
[B2-R-aaa]local-user huawei service-type telnet
[B2-R-aaa]local-user huawei privilege level 0
[B2-R-aaa]quit
[B2-R]user-interface vty 0 4
[B2-R-ui-vty0-4]au
[B2-R-ui-vty0-4]authentication-mode aaa
[B2-R-ui-vty0-4]user privilege level 0
[B2-R-ui-vty0-4]quit
[B2-R]super password cipher Huawei@B2
```

```
7 STelnet HQ-R STelnet VTY
AAA SSH password Level 0
huawei huawei@HQ , Huawei@HQ

1 AAA STelnet
```

```
[HQ-R]aaa
[HQ-R-aaa]local-user huawei password cipher Huawei@HQ
[HQ-R-aaa]local-user huawei privilege level 0
[HQ-R-aaa]local-user huawei service-type ssh
```

```
2 VTY
```

```
[HQR]user-interface vty 0 4
[HQR-ui-vty0-4]authentication-mode aaa
[HQR-ui-vty0-4]protocol inbound ssh
[HQR-ui-vty0-4]user privilege level 0
```

```
3 STelnet RSA
```

```
[HQ-R]stelnet server enable
[HQ-R]rsa local-key-pair create
The key name will be: Host
% RSA keys defined for Host already exist.
Confirm to replace them? (y/n)[n]:y
The range of public key size is (512 ~ 2048).
NOTES: If the key modulus is greater than 512,
       It will take a few minutes.
Input the bits in the modulus[default = 512]:1024
Generating keys...
.....++++++
.....++++++
...+++++++
.....+++++++
```

```
4 SSH password
```

```
[HQ-R]ssh user huawei authentication-type password
```

```
8 Web B1-R Web webuser
   huawei123 https 8443
```

```
[B1-R] aaa
[B1-R-aaa] local-user webuser password cipher huawei123
[B1-R-aaa] local-user webuser privilege level 3
[B1-R-aaa] local-user webuser service-type http
[B1-R] http secure-server enable
[B1-R] http server enable
[B1-R] http secure-port 8443
[B1-R]http server port 8080
[B1-R]http server permit interface GigabitEthernet0/0/1
[B1-R]http timeout 15
```

```

      HTTPS      —      SSL
                HTTPS

```

```
[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
```

```

      9      FTP
                HQ-R      HQ-R      FTP      于
                ftpuser ,      huawei123      FTP

```

```
[HQ-R]ftp server enable
[HQ-R]set default ftp-directory flash:/
[HQ-R]aaa
[HQ-R -aaa]local-user ftpuser password cipher huawei123
[HQ-R -aaa]local-user ftpuser service-type ftp
[HQ-R -aaa]local-user ftpuser privilege level 15
[HQ-R -aaa]local-user ftpuser ftp-directory flash:
```

10

```
1                                     -elabel-
```

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

```
2      HQR      -cfg-
```

```
<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
```

```
C:\Users>E:
E:\>cd backup
E:\backup>ftp 192.168.0.1
192.168.0.1
220 FTP service ready.
530 Please login with USER and PASS.
(192.168.0.1:(none)): ftpuser
331 Password required for ftpuser.
```

```

:
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           0.07   10.75       /
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           0.01   1094.00     /
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           0.00    865.00     /
ftp> bye
221 Server closing.

```

4. 6

4. 6. 1.

1

```

[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

2 port vlan

1 HQ-S-1 port vlan

[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

2 HQ-S-2 port vlan

[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

3 1 2

```
C:\>ping 192.168.0.11
Ping 192.168.0.11 32 :
192.168.0.11 : =32 =55ms TTL=128
192.168.0.11 : =32 =36ms TTL=128
192.168.0.11 : =32 =43ms TTL=128
192.168.0.11 : =32 =25ms TTL=128
192.168.0.11 Ping :
: = 4 = 4 = 0 (0% )
( ):
= 25ms = 55ms = 39ms

C:\>ping 192.168.0.22
Ping 192.168.0.22 32 :
192.168.0.22 :
192.168.0.22 Ping :
: = 4 = 1 = 3 (75% )

C:\>ping 192.168.0.3
Ping 192.168.0.3 32 :
192.168.0.3 Ping :
```

```

:      = 4      = 0      = 4 (100%      )
4      1
C:\>ping 192.168.0.2
  Ping 192.168.0.2      32      :
    192.168.0.2      :      =32      =23ms TTL=128
    192.168.0.2      :      =32      =41ms TTL=128
    192.168.0.2      :      =32      =27ms TTL=128
    192.168.0.2      :      =32      =28ms TTL=128
192.168.0.2      Ping      :
      :      = 4      = 4      = 0 (0%      )
      (      ):
      = 23ms      = 41ms      = 29ms
C:\>ping 192.168.0.22
  Ping 192.168.0.22      32      :
    192.168.0.22      :      =32      =93ms TTL=128
    192.168.0.22      :      =32      =47ms TTL=128
    192.168.0.22      :      =32      =61ms TTL=128
    192.168.0.22      :      =32      =49ms TTL=128
192.168.0.22      Ping      :
      :      = 4      = 4      = 0 (0%      )
      (      ):
      = 47ms      = 93ms      = 62ms
C:\>ping 192.168.0.3
  Ping 192.168.0.3      32      :
    192.168.0.11      :
    192.168.0.11      :
    192.168.0.11      :
    192.168.0.11      :
192.168.0.3      Ping      :
      :      = 4      = 1      = 3 (75%      )

```

3 [display ip interface brief]

2 IPv4

<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


```
<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
```

```
PC          1
```

```
C:\>ping 10.0.2.2
```

```
    Ping 10.0.2.2      32      :
    #
```

PC 2

```
C:\>tracert -d 10.0.3.3
```

```
          30          10.0.3.3

 1    28 ms    41 ms    42 ms    192.168.0.1
 2    27 ms    41 ms    42 ms    10.0.3.3
```

```
C:\>tracert -d 10.0.3.3
```

```
          30          10.0.3.3

 1    39 ms    42 ms    41 ms    192.168.0.1
 2    32 ms    42 ms    41 ms    10.0.3.3
```

PC 10.0.23.0/24

```
C:\>tracert -d 10.0.23.3
```

```
          30          10.0.23.3

 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
```

```
C:\>tracert -d 10.0.23.2
```

```
          30          10.0.23.2

 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
```

B1-R tracert a 10.0.2.2 10.0.3.3 B2-R

```
<B1-R>tracert -a 10.0.2.2 10.0.3.3
```

```
tracert to 10.0.3.3(10.0.3.3), max hops: 30 ,packet length: 40,press CTRL_C
to break
```

B1-R GE0/0/2
 HQ-R

```
<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

tracert 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

```

5 1 Telnet

1 Telnet B1-R

```

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]

```

2 B1-R Telnet

```

<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

```

6 2 Telnet

1 Telnet B2-R

```

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]

2 B2-R

```

10.0.12.1 - PuTTY
login as: huawei
huawei@10.0.12.1's password:
-----
User last login information:
-----
Access Type: SSH
IP-Address : 192.168.0.11 ssh
Time      : 2020-05-08 11:41:13-08:00
-----
<HQ-R>system-view
Error: Unrecognized command found at '^' position.
<HQ-R>super
Password:
Password:
Password:
New user privilege level 2 used only those commands
equal to or less than this level can be used
Privilege level: 0 VISIT, 1 MONITOR, 2 SYSTEM, 3 MANAGE
<HQ-R>system-view
Enter system view, return user view with Ctrl-Z./
[TE-R]

```

3 STelnet

2 HQ-R STelnet

```

[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
-----

```

8 Web

```

[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        :

```

URL:<https://10.0.12.2:8443>,

Web

```
[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:
```

4. 6. 2.

```
<B1-R>display current-configuration
[V200R003C00]
#
 sysname B1-R
#
super password level 3 cipher %$$$n=z)5Gcqs:%"<_DrQDGO,,\f%$$$
#
http server port 8080
http timeout 15
http server enable
http secure-server port 8443
http secure-server ssl-policy default
http secure-server enable
http server permit interface GigabitEthernet0/0/1
#
pki realm default
 enrollment self-signed
#
#
ssl policy default type server
 pki-realm default
#
aaa
 local-user webuser password cipher %$$$`bv:%2Mi75)G\kG;7FwJW%2I%$$$
 local-user webuser privilege level 3
 local-user webuser service-type http
#
interface GigabitEthernet0/0/1
 description to-HQ-R
 ip address 10.0.12.2 255.255.255.0
#
interface GigabitEthernet0/0/2
 description to-B2-R
 shutdown
 ip address 10.0.23.2 255.255.255.0
#
interface LoopBack0
 ip address 10.0.2.2 255.255.255.0
#
ip route-static 0.0.0.0 0.0.0.0 10.0.12.1
ip route-static 10.0.3.0 255.255.255.0 10.0.23.3
ip route-static 10.0.3.0 255.255.255.0 10.0.12.1 preference 80
```

```
#
user-interface con 0
 authentication-mode password
user-interface vty 0 4
 authentication-mode password
 set authentication password cipher %$$$Bz1f7*~W3DH`jh8F}K8+,,]VnS`>@\G+`6bw7W!OxIP%,]Y,%$$$
user-interface vty 16 20
#
return
```

```
<B2-R>display current-configuration
[V200R003C00]
#
sysname B2-R
#
super password level 3 cipher %$$$xeW[&$3T"A>hg`Ur$[wV,,uv%$$$
#
aaa
 authentication-scheme default
 authorization-scheme default
 accounting-scheme default
 domain default
 domain default_admin
 local-user admin password cipher %$$$K8m.Nt84DZ}e#<0`8bmE3Uw}%$$$
 local-user admin service-type http
 local-user huawei password cipher %$$$>e60(ZMjLKrG-,,1!:=1Q5J@%$$$
 local-user huawei privilege level 0
 local-user huawei service-type telnet
#
interface GigabitEthernet0/0/0
 description to-HQ-R
 ip address 10.0.13.3 255.255.255.0
#
interface GigabitEthernet0/0/2
 description to-B1-R
 ip address 10.0.23.3 255.255.255.0
#
interface LoopBack0
 ip address 10.0.3.3 255.255.255.0
#
ip route-static 0.0.0.0 0.0.0.0 10.0.13.1
ip route-static 10.0.2.0 255.255.255.0 10.0.23.2
ip route-static 10.0.2.0 255.255.255.0 10.0.13.1 preference 80
#
user-interface con 0
 authentication-mode password
user-interface vty 0 4
 authentication-mode aaa
user-interface vty 16 20
#
return
```

```
[HQ-R]display current-configuration
[V200R003C00]
#
```

```
sysname HQ-R
ftp server enable
set default ftp-directory flash:/
#
super password level 3 cipher %$$$}*yM's@C3;Mio&)lIPVX,,1^%$$$
#
aaa
authentication-scheme default
authorization-scheme default
accounting-scheme default
domain default
domain default_admin
local-user admin password cipher %$$$K8m.Nt84DZ}e#<0`8bmE3Uw}%$$$
local-user admin service-type http
local-user huawei password cipher %$$$YCLW*3*{@<[\P&Pj3v8[51[%$$$
local-user huawei privilege level 0
local-user huawei service-type ssh
local-user ftpuser password cipher %$$$e@nR3tUEM%Hw:EL9!o}CRO^[%$$$
local-user ftpuser privilege level 15
local-user ftpuser ftp-directory flash:
local-user ftpuser service-type ftp

interface GigabitEthernet0/0/0
description to-B2-R
ip address 10.0.13.1 255.255.255.0
#
interface GigabitEthernet0/0/1
description to-B1-R
ip address 10.0.12.1 255.255.255.0
#
interface GigabitEthernet0/0/2
description to-HQ-
```

```
sysname HQ-S-1
#
vlan batch 4 to 5
#
lacp priority 100
#
interface Eth-Trunk1
 port link-type trunk
 port trunk allow-pass vlan 2 to 4094
 mode lacp-static
#
interface GigabitEthernet0/0/1
 description to-manager
 port hybrid pvid vlan 4
 port hybrid untagged vlan 4 to 5
#
interface GigabitEthernet0/0/2
 description to-Staff
 port link-type access
 port default vlan 4
#
interface GigabitEthernet0/0/9
 eth-trunk 1
 lacp priority 100
#
interface GigabitEthernet0/0/10
 eth-trunk 1
 lacp priority 100
#
interface GigabitEthernet0/0/24
 description to-HQ-R
 port hybrid untagged vlan 2 to 4094
#
return
```

```
<HQ-S-2>display current-configuration
#
sysname HQ-S-2
#
vlan batch 4 to 5
#
interface Eth-Trunk1
 port link-type trunk
 port trunk allow-pass vlan 2 to 4094
 mode lacp-static
#
interface GigabitEthernet0/0/1
 description to-manager
 port hybrid pvid vlan 5
 port hybrid untagged vlan 4 to 5
#
interface GigabitEthernet0/0/2
 description to-Staff
 port link-type access
 port default vlan 5
#
interface GigabitEthernet0/0/9
```

```
eth-trunk 1
#
interface GigabitEthernet0/0/10
eth-trunk 1
#
interface GigabitEthernet0/0/24
#
return
```