实验4-3 RIPv2路由汇总和认证

学习目标

* 掌握RIPv2路由汇总的配置方法
* 掌握配置RIP认证的方法
* 掌握RIP认证失败时故障排除的方法

## **拓扑图**

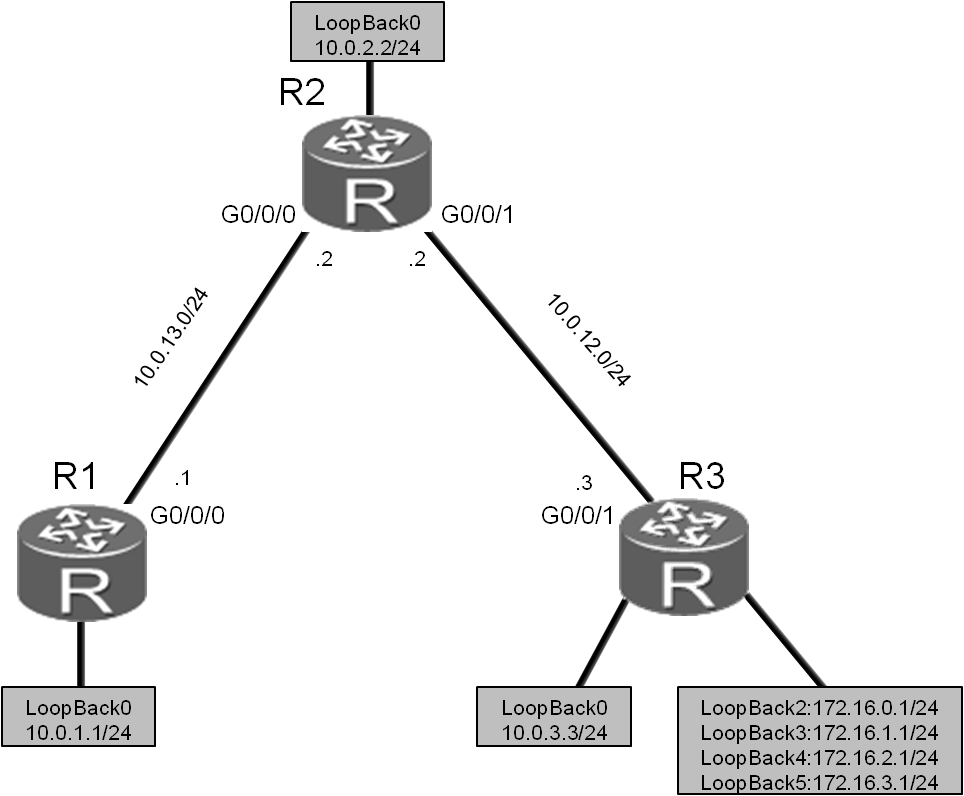


图4.3 RIPv2路由汇总和认证实验拓扑图

## **场景**

您是企业的网络管理员。为了更好地管理网络和优化路由表，需要在RIPv2网络中配置路由汇总来进行路由信息的控制和传递。

另外，为了防止恶意破坏者伪装成合法路由器，接收并修改路由信息，您还需要配置RIP认证功能来提高网络安全性。

## **操作步骤**

1. 实验环境准备

如果本任务中您使用的是空配置设备，那么从步骤1开始配置。如果使用的设备包含上一个实验的配置，请直接从步骤2开始配置。

R1、R2和R3的基础配置以及的IP地址的配置。

<Huawei>system-view

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

[Huawei]sysname R1

[R1]interface GigabitEthernet 0/0/0

[R1-GigabitEthernet0/0/0]ip address 10.0.13.1 24

[R1-GigabitEthernet0/0/0]quit

[R1]interface LoopBack 0

[R1-LoopBack0]ip address 10.0.1.1 24

<Huawei>system-view

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

[Huawei]sysname R2

[R2]interface GigabitEthernet 0/0/0

[R2-GigabitEthernet0/0/0]ip address 10.0.13.2 24

[R2-GigabitEthernet0/0/0]quit

[R2]interface GigabitEthernet 0/0/1

[R2-GigabitEthernet0/0/1]ip address 10.0.12.2 24

[R2-GigabitEthernet0/0/1]quit

[R2]interface LoopBack 0

[R2-LoopBack0]ip address 10.0.2.2 24

<Huawei>system-view

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

[Huawei]sysname R3

[R3]interface GigabitEthernet 0/0/1

[R3-GigabitEthernet0/0/1]ip address 10.0.12.3 24

[R3-GigabitEthernet0/0/1]quit

[R3]interface LoopBack 0

[R3-LoopBack0]ip address 10.0.3.3 24

配置完成后，检测网络连通性。

<R1>ping 10.0.13.2

PING 10.0.13.2: 56 data bytes, press CTRL\_C to break

Reply from 10.0.13.2: bytes=56 Sequence=1 ttl=255 time=30 ms

Reply from 10.0.13.2: bytes=56 Sequence=2 ttl=255 time=30 ms

Reply from 10.0.13.2: bytes=56 Sequence=3 ttl=255 time=30 ms

Reply from 10.0.13.2: bytes=56 Sequence=4 ttl=255 time=30 ms

Reply from 10.0.13.2: bytes=56 Sequence=5 ttl=255 time=30 ms

--- 10.0.13.2 ping statistics ---

5 packet(s) transmitted

5 packet(s) received

0.00% packet loss

round-trip min/avg/max = 30/30/30 ms

<R2>ping 10.0.12.3

PING 10.0.12.3: 56 data bytes, press CTRL\_C to break

Reply from 10.0.12.3: bytes=56 Sequence=1 ttl=255 time=31 ms

Reply from 10.0.12.3: bytes=56 Sequence=2 ttl=255 time=31 ms

Reply from 10.0.12.3: bytes=56 Sequence=3 ttl=255 time=41 ms

Reply from 10.0.12.3: bytes=56 Sequence=4 ttl=255 time=31 ms

Reply from 10.0.12.3: bytes=56 Sequence=5 ttl=255 time=41 ms

--- 10.0.12.3 ping statistics ---

5 packet(s) transmitted

5 packet(s) received

0.00% packet loss

round-trip min/avg/max = 31/35/41 ms

在R1、R2和R3上配置RIPv2路由协议。

[R1]rip 1

[R1-rip-1]version 2

[R1-rip-1]network 10.0.0.0

[R2]rip 1

[R2-rip-1]version 2

[R2-rip-1]network 10.0.0.0

[R3]rip 1

[R3-rip-1]version 2

[R3-rip-1]network 10.0.0.0

1. 配置环回地址。

在R3上创建多个环回接口并按照拓扑图配置IP地址。

[R3]interface LoopBack 2

[R3-LoopBack2]ip address 172.16.0.1 24

[R3-LoopBack2]quit

[R3]interface LoopBack 3

[R3-LoopBack3]ip address 172.16.1.1 24

[R3-LoopBack3]quit

[R3]interface LoopBack 4

[R3-LoopBack4]ip address 172.16.2.1 24

[R3-LoopBack4]quit

[R3]interface LoopBack 5

[R3-LoopBack5]ip address 172.16.3.1 24

1. 在RIP中发布环回接口地址

在R3上将环回接口的网段172.16.0.0发布到RIP协议中。

[R3]rip 1

[R3-rip-1]network 172.16.0.0

在R1上查看路由表。

<R1>display ip routing-table

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

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

Routing Tables: Public

Destinations : 17 Routes : 17

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.1.0/24 Direct 0 0 D 10.0.1.1 LoopBack0

10.0.1.1/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.1.255/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.2.0/24 RIP 100 1 D 10.0.13.2 GigabitEthernet0/0/0

10.0.3.0/24 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

10.0.12.0/24 RIP 100 1 D 10.0.13.2 GigabitEthernet0/0/0

10.0.13.0/24 Direct 0 0 D 10.0.13.1 GigabitEthernet0/0/0

10.0.13.1/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

10.0.13.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

127.0.0.0/8 Direct 0 0 D 127.0.0.1 InLoopBack0

127.0.0.1/32 Direct 0 0 D 127.0.0.1 InLoopBack0

127.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

172.16.0.0/24 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

172.16.1.0/24 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

172.16.2.0/24 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

172.16.3.0/24 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

255.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

路由表中灰色阴影标注的部分表明，R1已经学习到了指定路由，但是这些路由是没有汇总的明细路由。

测试R1到网段172.16.0.0的连通性。

<R1>ping 172.16.0.1

PING 172.16.0.1: 56 data bytes, press CTRL\_C to break

Reply from 172.16.0.1: bytes=56 Sequence=1 ttl=254 time=80 ms

Reply from 172.16.0.1: bytes=56 Sequence=2 ttl=254 time=79 ms

Reply from 172.16.0.1: bytes=56 Sequence=3 ttl=254 time=79 ms

Reply from 172.16.0.1: bytes=56 Sequence=4 ttl=254 time=79 ms

Reply from 172.16.0.1: bytes=56 Sequence=5 ttl=254 time=79 ms

--- 172.16.0.1 ping statistics ---

5 packet(s) transmitted

5 packet(s) received

0.00% packet loss

round-trip min/avg/max = 79/79/80 ms

1. 在R2上配置RIP手动路由汇总

在R2的G0/0/0接口执行**rip summary-address**命令，配置RIP路由汇总。四条路由172.16.0.0/24、172.16.1.0/24、172.16.2.0/24和172.16.3.0/24汇总成了一条172.16.0.0/16。

[R2]interface GigabitEthernet0/0/0

[R2-GigabitEthernet0/0/0]rip summary-address 172.16.0.0 255.255.0.0

查看R1的路由表中是否包含该汇总路由。

<R1>display ip routing-table

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

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

Routing Tables: Public

Destinations : 14 Routes : 14

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.1.0/24 Direct 0 0 D 10.0.1.1 LoopBack0

10.0.1.1/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.1.255/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.2.0/24 RIP 100 1 D 10.0.13.2 GigabitEthernet0/0/0

10.0.3.0/24 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

10.0.12.0/24 RIP 100 1 D 10.0.13.2 GigabitEthernet0/0/0

10.0.13.0/24 Direct 0 0 D 10.0.13.1 GigabitEthernet0/0/0

10.0.13.1/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

10.0.13.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

127.0.0.0/8 Direct 0 0 D 127.0.0.1 InLoopBack0

127.0.0.1/32 Direct 0 0 D 127.0.0.1 InLoopBack0

127.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

172.16.0.0/16 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

255.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

从路由表中灰色阴影标注部分可以看出，此时路由表里面只显示了汇总路由，不再显示明细路由。

测试R1到网段172.16.0.0的连通性。

<R1>ping 172.16.0.1

PING 172.16.0.1: 56 data bytes, press CTRL\_C to break

Reply from 172.16.0.1: bytes=56 Sequence=1 ttl=254 time=60 ms

Reply from 172.16.0.1: bytes=56 Sequence=2 ttl=254 time=59 ms

Reply from 172.16.0.1: bytes=56 Sequence=3 ttl=254 time=80 ms

Reply from 172.16.0.1: bytes=56 Sequence=4 ttl=254 time=60 ms

Reply from 172.16.0.1: bytes=56 Sequence=5 ttl=254 time=60 ms

--- 172.16.0.1 ping statistics ---

5 packet(s) transmitted

5 packet(s) received

0.00% packet loss

round-trip min/avg/max = 59/63/80 ms

上述信息表明，路由汇总减小了路由表的规模，而且并不影响网络的连通性。

1. 配置RIP认证

在R1和R2间配置明文认证，在R2和R3间配置MD5认证。认证密码均为“huawei”。

[R1]interface GigabitEthernet0/0/0

[R1-GigabitEthernet0/0/0]rip authentication-mode simple huawei

[R2]interface GigabitEthernet0/0/0

[R2-GigabitEthernet0/0/0]rip authentication-mode simple huawei

[R2-GigabitEthernet0/0/0]quit

[R2]interface GigabitEthernet0/0/1

[R2-GigabitEthernet0/0/1]rip authentication-mode md5 usual huawei

[R3]interface GigabitEthernet0/0/1

[R3-GigabitEthernet0/0/1]rip authentication-mode md5 usual huawei

配置完成后，验证路由是否受到了影响。

<R1>display ip routing-table

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

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

Routing Tables: Public

Destinations : 14 Routes : 14

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.1.0/24 Direct 0 0 D 10.0.1.1 LoopBack0

10.0.1.1/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.1.255/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.2.0/24 RIP 100 1 D 10.0.13.2 GigabitEthernet0/0/0

10.0.3.0/24 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

10.0.12.0/24 RIP 100 1 D 10.0.13.2 GigabitEthernet0/0/0

10.0.13.0/24 Direct 0 0 D 10.0.13.1 GigabitEthernet0/0/0

10.0.13.1/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

10.0.13.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

127.0.0.0/8 Direct 0 0 D 127.0.0.1 InLoopBack0

127.0.0.1/32 Direct 0 0 D 127.0.0.1 InLoopBack0

127.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

172.16.0.0/16 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

255.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

<R2>display ip routing-table

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

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

Routing Tables: Public

Destinations : 19 Routes : 19

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.1.0/24 RIP 100 1 D 10.0.13.1 GigabitEthernet0/0/0

10.0.2.0/24 Direct 0 0 D 10.0.2.2 LoopBack0

10.0.2.2/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.2.255/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.3.0/24 RIP 100 1 D 10.0.12.3 GigabitEthernet0/0/1

10.0.12.0/24 Direct 0 0 D 10.0.12.2 GigabitEthernet0/0/1

10.0.12.2/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/1

10.0.12.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/1

10.0.13.0/24 Direct 0 0 D 10.0.13.2 GigabitEthernet0/0/0

10.0.13.2/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

10.0.13.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

127.0.0.0/8 Direct 0 0 D 127.0.0.1 InLoopBack0

127.0.0.1/32 Direct 0 0 D 127.0.0.1 InLoopBack0

127.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

172.16.0.0/24 RIP 100 1 D 10.0.12.3 GigabitEthernet0/0/1

172.16.1.0/24 RIP 100 1 D 10.0.12.3 GigabitEthernet0/0/1

172.16.2.0/24 RIP 100 1 D 10.0.12.3 GigabitEthernet0/0/1

172.16.3.0/24 RIP 100 1 D 10.0.12.3 GigabitEthernet0/0/1

255.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

<R3>display ip routing-table

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

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Routing Tables: Public

Destinations : 25 Routes : 25

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.1.0/24 RIP 100 2 D 10.0.12.2 GigabitEthernet0/0/1

10.0.2.0/24 RIP 100 1 D 10.0.12.2 GigabitEthernet0/0/1

10.0.3.0/24 Direct 0 0 D 10.0.3.3 LoopBack0

10.0.3.3/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.3.255/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.12.0/24 Direct 0 0 D 10.0.12.3 GigabitEthernet0/0/1

10.0.12.3/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/1

10.0.12.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/1

10.0.13.0/24 RIP 100 1 D 10.0.12.2 GigabitEthernet0/0/1

127.0.0.0/8 Direct 0 0 D 127.0.0.1 InLoopBack0

127.0.0.1/32 Direct 0 0 D 127.0.0.1 InLoopBack0

127.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

172.16.0.0/24 Direct 0 0 D 172.16.0.1 LoopBack2

172.16.0.1/32 Direct 0 0 D 127.0.0.1 LoopBack2

172.16.0.255/32 Direct 0 0 D 127.0.0.1 LoopBack2

172.16.1.0/24 Direct 0 0 D 172.16.1.1 LoopBack3

172.16.1.1/32 Direct 0 0 D 127.0.0.1 LoopBack3

172.16.1.255/32 Direct 0 0 D 127.0.0.1 LoopBack3

172.16.2.0/24 Direct 0 0 D 172.16.2.1 LoopBack4

172.16.2.1/32 Direct 0 0 D 127.0.0.1 LoopBack4

172.16.2.255/32 Direct 0 0 D 127.0.0.1 LoopBack4

172.16.3.0/24 Direct 0 0 D 172.16.3.1 LoopBack5

172.16.3.1/32 Direct 0 0 D 127.0.0.1 LoopBack5

172.16.3.255/32 Direct 0 0 D 127.0.0.1 LoopBack5

255.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

1. RIPv2认证失败时故障排除

在R2的G0/0/0接口将认证密码修改为“huawei2”。

[R2]interface GigabitEthernet0/0/0

[R2-GigabitEthernet0/0/0]rip authentication-mode simple huawei2

然后查看R1的路由表，确认路由信息的学习情况。

<R1>display ip routing-table

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

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

Routing Tables: Public

Destinations : 10 Routes : 10

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.1.0/24 Direct 0 0 D 10.0.1.1 LoopBack0

10.0.1.1/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.1.255/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.13.0/24 Direct 0 0 D 10.0.13.1 GigabitEthernet0/0/0

10.0.13.1/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

10.0.13.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

127.0.0.0/8 Direct 0 0 D 127.0.0.1 InLoopBack0

127.0.0.1/32 Direct 0 0 D 127.0.0.1 InLoopBack0

127.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

255.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

由于R1与R2之间的RIP认证密码不匹配，所以R1收不到从R2发来的任何RIP路由信息。

在R2的G0/0/0接口将认证密码恢复为“huawei”。

[R2]interface GigabitEthernet0/0/0

[R2-GigabitEthernet0/0/0]rip authentication-mode simple huawei

在R2的G0/0/1接口将认证模式修改为明文认证。

[R2]interface GigabitEthernet0/0/1

[R2-GigabitEthernet0/0/1]rip authentication-mode simple huawei

使用如下命令清除R3在密码错误之前从R2学到的路由信息。

<R3>reset ip routing-table statistics protocol rip

查看R3的路由表。

<R3>display ip routing-table

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

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Routing Tables: Public

Destinations : 22 Routes : 22

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.3.0/24 Direct 0 0 D 10.0.3.3 LoopBack0

10.0.3.3/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.3.255/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.12.0/24 Direct 0 0 D 10.0.12.3 GigabitEthernet0/0/1

10.0.12.3/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/1

10.0.12.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/1

127.0.0.0/8 Direct 0 0 D 127.0.0.1 InLoopBack0

127.0.0.1/32 Direct 0 0 D 127.0.0.1 InLoopBack0

127.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

172.16.0.0/24 Direct 0 0 D 172.16.0.1 LoopBack2

172.16.0.1/32 Direct 0 0 D 127.0.0.1 LoopBack2

172.16.0.255/32 Direct 0 0 D 127.0.0.1 LoopBack2

172.16.1.0/24 Direct 0 0 D 172.16.1.1 LoopBack3

172.16.1.1/32 Direct 0 0 D 127.0.0.1 LoopBack3

172.16.1.255/32 Direct 0 0 D 127.0.0.1 LoopBack3

172.16.2.0/24 Direct 0 0 D 172.16.2.1 LoopBack4

172.16.2.1/32 Direct 0 0 D 127.0.0.1 LoopBack4

172.16.2.255/32 Direct 0 0 D 127.0.0.1 LoopBack4

172.16.3.0/24 Direct 0 0 D 172.16.3.1 LoopBack5

172.16.3.1/32 Direct 0 0 D 127.0.0.1 LoopBack5

172.16.3.255/32 Direct 0 0 D 127.0.0.1 LoopBack5

255.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

由于R2和R3使用不同的RIP认证模式，R3无法接收R2发布的RIP路由。

在R2的G0/0/1接口将认证模式恢复为MD5。

[R2]interface GigabitEthernet0/0/1

[R2-GigabitEthernet0/0/1]rip authentication-mode md5 usual huawei

验证R1、R2和R3的路由表中的路由条目是否已经恢复。注意，由于RIP是周期更新，因此可能需要稍等片刻才能恢复。

<R1>display ip routing-table

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

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

Routing Tables: Public

Destinations : 14 Routes : 14

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.1.0/24 Direct 0 0 D 10.0.1.1 LoopBack0

10.0.1.1/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.1.255/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.2.0/24 RIP 100 1 D 10.0.13.2 GigabitEthernet0/0/0

10.0.3.0/24 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

10.0.12.0/24 RIP 100 1 D 10.0.13.2 GigabitEthernet0/0/0

10.0.13.0/24 Direct 0 0 D 10.0.13.1 GigabitEthernet0/0/0

10.0.13.1/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

10.0.13.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

127.0.0.0/8 Direct 0 0 D 127.0.0.1 InLoopBack0

127.0.0.1/32 Direct 0 0 D 127.0.0.1 InLoopBack0

127.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

172.16.0.0/16 RIP 100 2 D 10.0.13.2 GigabitEthernet0/0/0

255.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

[R2]display ip routing-table

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

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

Routing Tables: Public

Destinations : 19 Routes : 19

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.1.0/24 RIP 100 1 D 10.0.13.1 GigabitEthernet0/0/0

10.0.2.0/24 Direct 0 0 D 10.0.2.2 LoopBack0

10.0.2.2/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.2.255/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.3.0/24 RIP 100 1 D 10.0.12.3 GigabitEthernet0/0/1

10.0.12.0/24 Direct 0 0 D 10.0.12.2 GigabitEthernet0/0/1

10.0.12.2/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/1

10.0.12.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/1

10.0.13.0/24 Direct 0 0 D 10.0.13.2 GigabitEthernet0/0/0

10.0.13.2/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

10.0.13.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/0

127.0.0.0/8 Direct 0 0 D 127.0.0.1 InLoopBack0

127.0.0.1/32 Direct 0 0 D 127.0.0.1 InLoopBack0

127.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

172.16.0.0/24 RIP 100 1 D 10.0.12.3 GigabitEthernet0/0/1

172.16.1.0/24 RIP 100 1 D 10.0.12.3 GigabitEthernet0/0/1

172.16.2.0/24 RIP 100 1 D 10.0.12.3 GigabitEthernet0/0/1

172.16.3.0/24 RIP 100 1 D 10.0.12.3 GigabitEthernet0/0/1

255.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

<R3>display ip routing-table

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

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

Routing Tables: Public

Destinations : 25 Routes : 25

Destination/Mask Proto Pre Cost Flags NextHop Interface

10.0.1.0/24 RIP 100 2 D 10.0.12.2 GigabitEthernet0/0/1

10.0.2.0/24 RIP 100 1 D 10.0.12.2 GigabitEthernet0/0/1

10.0.3.0/24 Direct 0 0 D 10.0.3.3 LoopBack0

10.0.3.3/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.3.255/32 Direct 0 0 D 127.0.0.1 LoopBack0

10.0.12.0/24 Direct 0 0 D 10.0.12.3 GigabitEthernet0/0/1

10.0.12.3/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/1

10.0.12.255/32 Direct 0 0 D 127.0.0.1 GigabitEthernet0/0/1

10.0.13.0/24 RIP 100 1 D 10.0.12.2 GigabitEthernet0/0/1

127.0.0.0/8 Direct 0 0 D 127.0.0.1 InLoopBack0

127.0.0.1/32 Direct 0 0 D 127.0.0.1 InLoopBack0

127.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

172.16.0.0/24 Direct 0 0 D 172.16.0.1 LoopBack2

172.16.0.1/32 Direct 0 0 D 127.0.0.1 LoopBack2

172.16.0.255/32 Direct 0 0 D 127.0.0.1 LoopBack2

172.16.1.0/24 Direct 0 0 D 172.16.1.1 LoopBack3

172.16.1.1/32 Direct 0 0 D 127.0.0.1 LoopBack3

172.16.1.255/32 Direct 0 0 D 127.0.0.1 LoopBack3

172.16.2.0/24 Direct 0 0 D 172.16.2.1 LoopBack4

172.16.2.1/32 Direct 0 0 D 127.0.0.1 LoopBack4

172.16.2.255/32 Direct 0 0 D 127.0.0.1 LoopBack4

172.16.3.0/24 Direct 0 0 D 172.16.3.1 LoopBack5

172.16.3.1/32 Direct 0 0 D 127.0.0.1 LoopBack5

172.16.3.255/32 Direct 0 0 D 127.0.0.1 LoopBack5

255.255.255.255/32 Direct 0 0 D 127.0.0.1 InLoopBack0

## **配置文件**

<R1>display current-configuration

[V200R007C00SPC600]

#

sysname R1

#

interface GigabitEthernet0/0/0

ip address 10.0.13.1 255.255.255.0

rip authentication-mode simple cipher %$%$S2AJ2\_mJ)Hf++RSng6^NN|Xl%$%$

#

interface LoopBack0

ip address 10.0.1.1 255.255.255.0

#

rip 1

version 2

network 10.0.0.0

#

user-interface con 0

authentication-mode password

set authentication password cipher %$%$+L'YR&IZt'4,)>-\*#lH",}%K-oJ\_M9+'lOU~bD (\WTqB}%N,%$%$

user-interface vty 0 4

#

return

<R2>display current-configuration

[V200R007C00SPC600]

#

sysname R2

#

interface GigabitEthernet0/0/0

ip address 10.0.13.2 255.255.255.0

rip authentication-mode simple cipher %$%$+Ob&JcQxU6mUJ(ZXLZY#OEXz%$%$

rip summary-address 172.16.0.0 255.255.0.0

#

interface GigabitEthernet0/0/1

ip address 10.0.12.2 255.255.255.0

rip authentication-mode md5 usual cipher %$%$C]'$.`NWGZ}|gLV%:XF>OG}|%$%$

#

interface LoopBack0

ip address 10.0.2.2 255.255.255.0

#

rip 1

version 2

network 10.0.0.0

#

user-interface con 0

authentication-mode password

set authentication password cipher %$%$1=cd%b%/O%Id-8X:by1N,+s}'4wD6TvO<I|/pd# #44C@+s#,%$%$

user-interface vty 0 4

#

return

<R3>display current-configuration

[V200R007C00SPC600]

#

sysname R3

#

interface GigabitEthernet0/0/1

ip address 10.0.12.3 255.255.255.0

rip authentication-mode md5 usual cipher %$%$\_5VL+wN6FNe]rVKbh[E(O=E>%$%$

#

interface LoopBack0

ip address 10.0.3.3 255.255.255.0

#

interface LoopBack2

ip address 172.16.0.1 255.255.255.0

#

interface LoopBack3

ip address 172.16.1.1 255.255.255.0

#

interface LoopBack4

ip address 172.16.2.1 255.255.255.0

#

interface LoopBack5

ip address 172.16.3.1 255.255.255.0

#

rip 1

version 2

network 10.0.0.0

network 172.16.0.0

#

user-interface con 0

authentication-mode password

set authentication password cipher %$%$ksXDMg7Ry6yUU:63:DQ),#/sQg"@\*S\U#.s.bHW xQ,y%#/v,%$%$

user-interface vty 0 4

#

return