Lab 2 Configuring RIPv1 and RIPv2

Learning Objectives

As a result of this lab section, you should achieve the following tasks:

- Establish routing loop prevention mechanisms for RIP
- Configuration of RIPv1.
- Enable RIP for a specified network and interface.
- Use of the **display** and **debugging** commands to view RIP operation.
- Procedure for testing connectivity of the RIP network.
- Configuration of RIPv2.

Topology

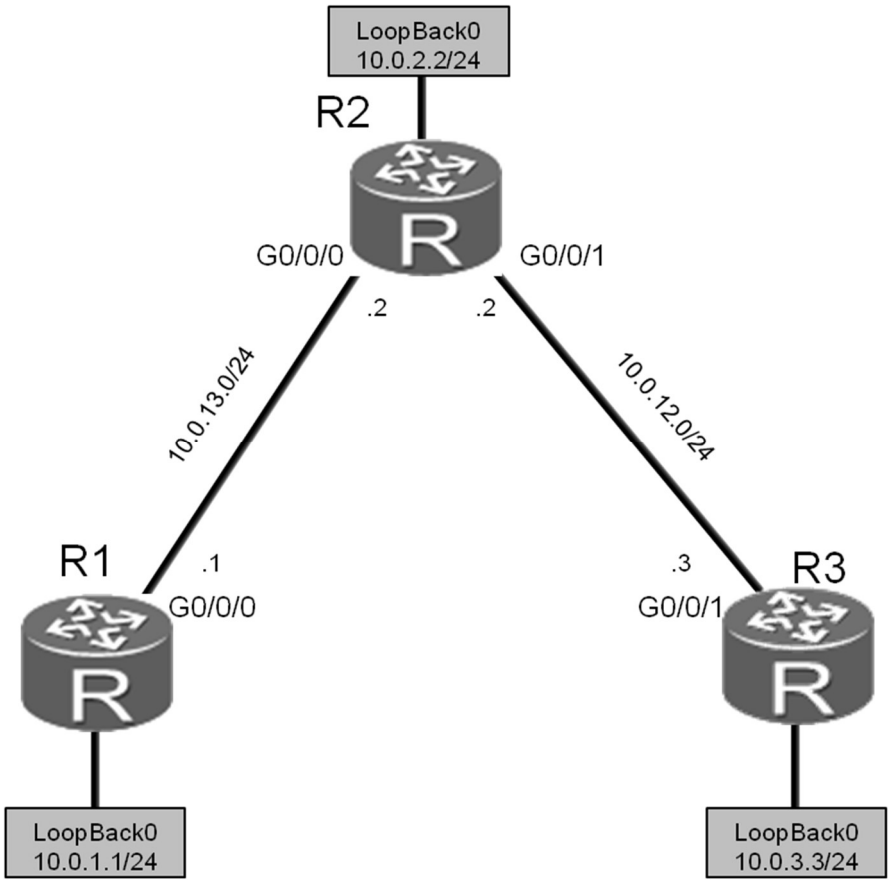

Figure 4.2 Lab topology for **RIPv1 and RIPv2**

Scenario

Assume that you are a network administrator in charge of managing a small administrative domain consisting of three routers and five networks. Due to the limited requirement, RIP is to be used to support routing. RIPv1 is initially configured, but you realize that RIPv2 has many advantages. After some consideration, you transition the domain to support RIPv2.

Tasks

Step 1 **Preparing the environment.**

```
<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 0/0/1
[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 LoopBack 0
[R3-LoopBack0]ip address 10.0.3.3 24
```

Step 2 **Additional address configuration**

Configure the following additional interfaces for R2 and R3.

```
[R2]interface GigabitEthernet 0/0/0
[R2-GigabitEthernet0/0/0]ip address 10.0.13.2 24

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

Verify that R1 and R2 can communicate with one another over the 10.0.13.0 network.

```
<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
```

Verify that R2 can successfully reach R3 over the 10.0.12.0 network.

```
<R2>ping 10.0.12.3
  PING 10.0.12.2: 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
```

Step 3 **Configure RIPv1.**

Enable RIP on R1, and then advertise the 10.0.0.0 network segment.

```
[R1]rip 1
[R1-rip-1]network 10.0.0.0
```

Enable RIP on R2, and then advertise the 10.0.0.0 network segment.

```
[R2]rip 1
[R2-rip-1]network 10.0.0.0
```

Enable RIP on R3, and then advertise the 10.0.0.0 network segment.

```
[R3]rip 1
[R3-rip-1]network 10.0.0.0
```

Step 4 **Verify RIPv1 routes.**

View the routing tables of R1, R2, and R3. Make sure that these routers have learned the RIP routes that are highlighted in gray in the following command

output.

```
<R1>display ip routing-table
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: Public
         Destinations : 13       Routes : 13

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
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 : 15       Routes : 15

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
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 : 13       Routes : 13

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
255.255.255.255/32  Direct  0    0           D   127.0.0.1       InLoopBack0
```

Test connectivity from R1 to IP address 10.0.23.3. R1 and R3 can communicate with one another.

```
[R1]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=254 time=70 ms
    Reply from 10.0.12.3: bytes=56 Sequence=2 ttl=254 time=65 ms
    Reply from 10.0.12.3: bytes=56 Sequence=3 ttl=254 time=65 ms
    Reply from 10.0.12.3: bytes=56 Sequence=4 ttl=254 time=65 ms
    Reply from 10.0.12.3: bytes=56 Sequence=5 ttl=254 time=65 ms

  --- 10.0.12.3 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 65/66/70 ms
```

The **debugging** command can be used to view RIP periodic updates.

Run the **debugging** command to enable the RIP debugging function. The **debugging** command can be used only in the user view. To identify the currently enabled debugging information, use the **display debugging** command. Run the **terminal debugging** command to display the debugging information.

The information about RIP interactions between routers is displayed.

```
<R1>debugging rip 1
<R1>display debugging
RIP Process id: 1
    Debugs ON: SEND, RECEIVE, PACKET, TIMER, EVENT, BRIEF,
```

```
               JOB, ROUTE-PROCESSING, ERROR,
               REPLAY-PROTECT, GR
<R1>terminal debugging
Info: Current terminal debugging is on.
<R1>
Mar 29 2016 09:45:07.860.1+00:00 R1 RIP/7/DBG: 6: 12734: RIP 1: Receiving v1 response
on GigabitEthernet0/0/0 from 10.0.13.2 with 3 RTEs
<R1>
Mar 29 2016 09:45:07.860.2+00:00 R1 RIP/7/DBG: 6: 12785: RIP 1: Receive response from
10.0.13.2 on GigabitEthernet0/0/0
<R1>
Mar 29 2016 09:45:07.860.3+00:00 R1 RIP/7/DBG: 6: 12796: Packet: Version 1, Cmd
response, Length 64
<R1>
Mar 29 2016 09:45:07.860.4+00:00 R1 RIP/7/DBG: 6: 12845: Dest 10.0.2.0, Cost 1
<R1>
Mar 29 2016 09:45:07.860.5+00:00 R1 RIP/7/DBG: 6: 12845: Dest 10.0.3.0, Cost 2
<R1>
Mar 29 2016 09:45:07.860.6+00:00 R1 RIP/7/DBG: 6: 12845: Dest 10.0.12.0, Cost 1
<R1>
Mar 29 2016 09:45:09.370.1+00:00 R1 RIP/7/DBG: 25: 5071: RIP 1: Periodic timer expired
for interface GigabitEthernet0/0/1
```

Run the **undo debugging rip <process-id>** or **undo debugging all** command to disable the debugging functions.

```
<R1>undo debugging rip 1
```

Individual parameters can be specified to control the debugging information viewed. For example, the **debugging rip 1 event** command allows for only periodical update events sent or received by routers to be viewed. The question mark (?) can be added to the command to query other parameters.

```
<R1>debugging rip 1 event
<R1>
Mar 29 2016 10:00:04.880.1+00:00 R1 RIP/7/DBG: 25: 5719: RIP 1: Periodic timer expired
for interface GigabitEthernet0/0/0 (10.0.13.1) and its added to periodic update queue
<R1>
Mar 29 2016 10:00:04.890.1+00:00 R1 RIP/7/DBG: 25: 6048: RIP 1: Interface
GigabitEthernet0/0/0 (10.0.13.1) is deleted from the periodic update queue

<R1>undo debugging all
Info: All possible debugging has been turned off
```

Warning: If too many debugging functions are enabled, a large number of router resources will be utilized that may result in system service failure. Therefore, the use of commands (such as **debug all**) for enabling debugging functions in batches should be performed with caution.

Step 5 **Configure RIPv2.**

After the preceding configuration, you need to configure only **version 2** in the RIP sub view.

```
[R1]rip 1
```

```
[R1-rip-1]version 2


[R2]rip 1
[R2-rip-1]version 2

[R3]rip 1
[R3-rip-1]version 2
```

Step 6 **Verify RIPv2 routes.**

View the routing tables of R1, R2, and R3.

Run the **display ip routing-table** command to view the routing tables of R1, R2, and R3. Compare the routes that are highlighted with RIPv1 routes.

```
<R1>display ip routing-table
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: Public
         Destinations : 13       Routes : 13

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
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 : 15       Routes : 15

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
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 : 13       Routes : 13

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
255.255.255.255/32  Direct  0    0             D   127.0.0.1 InLoopBack0
```

Test connectivity from R1 to the IP destination 10.0.12.3 on interface Gigabit Ethernet 0/0/1 of R3.

```
<R1>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=254 time=74 ms
    Reply from 10.0.12.3: bytes=56 Sequence=2 ttl=254 time=75 ms
    Reply from 10.0.12.3: bytes=56 Sequence=3 ttl=254 time=75 ms
    Reply from 10.0.12.3: bytes=56 Sequence=4 ttl=254 time=75 ms
    Reply from 10.0.12.3: bytes=56 Sequence=5 ttl=254 time=75 ms

  --- 10.0.12.3 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 74/74/75 ms
```

The **debugging** command can be used to view the RIPv2 periodic updates.

```
<R1>terminal debugging
Info: Current terminal debugging is on.
<R1>debugging rip 1 event
<R1>
```

```
Mar 29 2016 10:41:04.490.1+00:00 R1 RIP/7/DBG: 25: 5719: RIP 1: Periodic timer expired
for interface GigabitEthernet0/0/0 (10.0.13.1) and its added to periodic update queue
<R1>
Mar 29 2016 10:41:04.500.1+00:00 R1 RIP/7/DBG: 25: 6048: RIP 1: Interface
GigabitEthernet0/0/0 (10.0.13.1) is deleted from the periodic update queue

<R1>undo debugging rip 1

<R1>debugging rip 1 packet
<R1>
Mar 29 2016 10:43:07.770.1+00:00 R1 RIP/7/DBG: 6: 12776: RIP 1: Sending response on
interface GigabitEthernet0/0/0 from 10.0.13.1 to 224.0.0.9
<R1>
Mar 29 2016 10:43:07.770.2+00:00 R1 RIP/7/DBG: 6: 12796: Packet: Version 2, Cmd
response, Length 24
<R1>
Mar 29 2016 10:43:07.770.3+00:00 R1 RIP/7/DBG: 6: 12864: Dest 10.0.1.0/24, Nexthop
0.0.0.0, Cost 1, Tag 0

<R1>undo debugging rip 1
```

Additional Exercises: Analyzing and Verifying

When using RIPv1, a router sends network IDs and other route update information to its neighbor routers without sending subnet masks. How do neighbor routers process the route update information and generate the corresponding subnet masks?

How are RIPv1 and RIPv2 compatible with each other?

Final Configuration

```
<R1>display current-configuration
[V200R007C00SPC600]
#
 sysname R1
#
interface GigabitEthernet0/0/0
 ip address 10.0.13.1 255.255.255.0
#
interface GigabitEthernet0/0/1
 shutdown
 ip address 10.0.12.1 255.255.255.0
#
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 (\WTq
B}%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
#
interface GigabitEthernet0/0/1
 ip address 10.0.12.2 255.255.255.0
#
interface GigabitEthernet0/0/2
 shutdown
 ip address 10.0.23.2 255.255.255.0
#
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 GigabitEthernet0/0/0
 shutdown
 ip address 10.0.13.3 255.255.255.0
#
interface GigabitEthernet0/0/1
 ip address 10.0.12.3 255.255.255.0
#
interface GigabitEthernet0/0/2
 shutdown
 ip address 10.0.23.3 255.255.255.0
#
interface LoopBack0
 ip address 10.0.3.3 255.255.255.0
#
rip 1
 version 2
 network 10.0.0.0
#
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
```

Lab 4-3 RIPv2 Route Aggregation and Authentication

Learning Objectives

As a result of this lab section, you should achieve the following tasks:

- Aggregation of routes in RIPv2
- Implementation of authentication between RIP peers
- Troubleshoot RIP peer authentication failures.

Topology

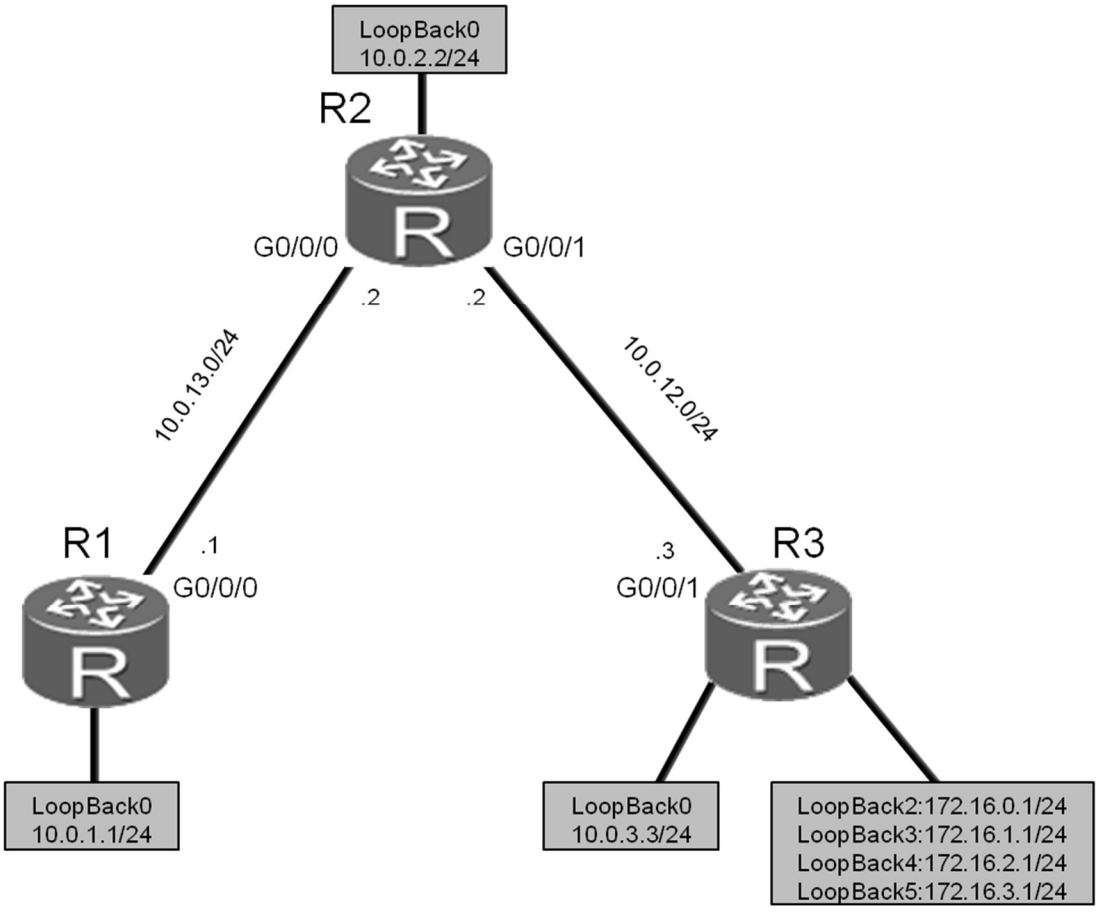

Figure 4.3 RIPv2 route aggregation and authentication topology

Scenario

As the network administrator of a small company you are responsible for the support of a RIPv2 based enterprise network. In order to better manage and optimize the routing table, route aggregation is required.

Additionally, concerns over the insertion of rogue devices into the network that may affect routing tables means that RIP authentication is required to protect the network.

Tasks

Step 1 Configuration of additional loopback addresses

Establish additional loopback interfaces to represent multiple networks on R3.

```
[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
```

Step 2 Advertize the loopback addresses in RIP.

The networks for the configured loopback interfaces need to be advertized.

Advertise the 172.16.0.0 network range on R3.

```
[R3]rip 1
[R3-rip-1]network 172.16.0.0
```

View the routing table of R1 to verify the new networks are being advertized.

```
<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
```

The information in grey shows that R1 has learned specific routes but not aggregated routes.

Test network connectivity from R1 to the 172.16.0.0 network range.

```
<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
```

Step 3 **Configure RIP manual route aggregation on R2.**

Run the **rip summary-address** command on S1/0/0 of R2 to configure RIP route aggregation. The four routes (172.16.0.0/24, 172.16.1.0/24, 172.16.2.0/24, and 172.16.3.0/24) are to be aggregated into one route, 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
```

View the routing table of R1 that should now include an aggregated route.

```
<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     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
```

The highlighted information shows the aggregated route. There is now no specific route is listed in the routing table.

Verify that the routes are still supported for the 172.16.0.0 network range.

```
<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
```

The preceding information shows that route aggregation reduces the size of the routing table without affecting communication to aggregated networks.

Step 4 **Configure RIP authentication.**

Configure plain text authentication between R1 and R2 and MD5 based

authentication between R2 and R3. The authentication password in all cases should be **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
```

After the configuration is complete, verify that the routes are not affected.

```
<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
```

Step 5 **Generate and rectify RIPv2 authentication faults.**

Change the authentication password on G0/0/0 of R2 to **huawei2**.

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

View the routing table of R1.

```
<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
```

Since R1 and R2 use different RIP authentication passwords, R1 will not receive any advertised RIP routes from R2.

Restore the authentication password on G0/0/0 of R2 to **huawei**.

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

Change the authentication mode on G0/0/1 of R2 to plain text authentication.

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

Run the following command to delete the routes learned by R3 from R2 before you change the authentication password.

View the routing table of R3.

```
<R3>display ip routing-table

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

Since R2 and R3 use different RIP authentication modes, R3 cannot receive any advertised RIP routes from R2.

Restore the authentication mode on G0/0/1 of R2 to MD5.

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

Verify that routes in routing tables of R1, R2, and R3 have been restored. Note that RIP updates routes periodically, so may take a moment to be restored.

```
<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
```

Final Configuration

```
<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 (\WTq
B}%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
```