Университет ИТМО

Факультет программной инженерии и компьютерной техники

Администрирование вычислительных систем

Лабораторная работа № 2

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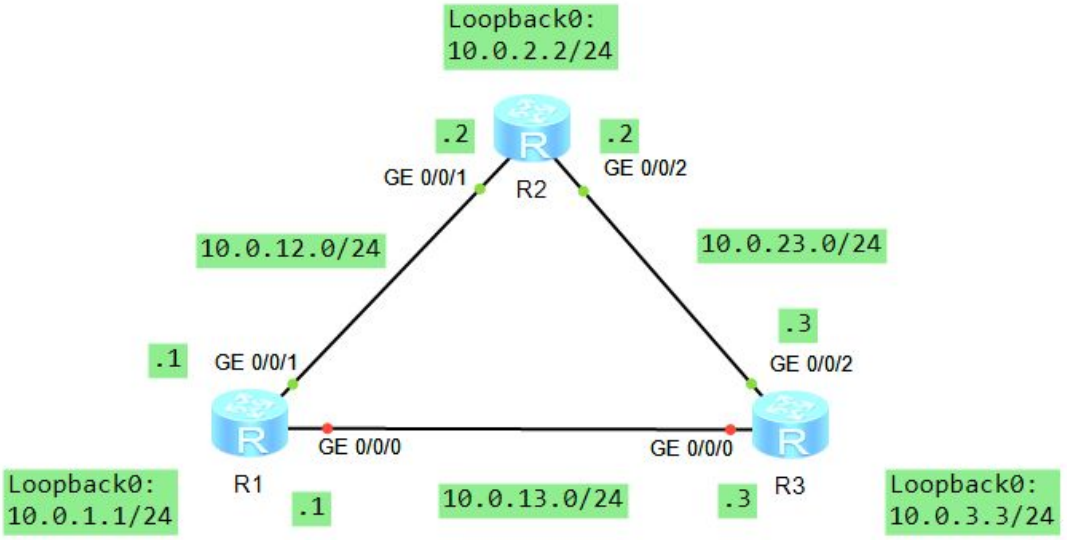
Задание 4.1

Реализованная топология:



1. Настраиваем устройство R1:

```
<Huawei>system-view
[Huawei]sysname R1
[R1]int gi0/0/0
[R1-GigabitEthernet0/0/0]ip address 10.0.13.1 24
[R1-GigabitEthernet0/0/0]quit
[R1]int gi0/0/1
[R1-GigabitEthernet0/0/1]ip address 10.0.12.1 24
[R1-GigabitEthernet0/0/1]quit
[R1]int LookBack0
[R1-LoopBack0]ip address 10.0.1.1 24
```

Проверяем конфигурацию:

```
[R1]disp ip int brief
...
Interface                         IP Address/Mask      Physical
Protocol
GigabitEthernet0/0/0              10.0.13.1/24         up       up
GigabitEthernet0/0/1              10.0.12.1/24         up
up
GigabitEthernet0/0/2              unassigned           up
down
LoopBack0                         10.0.1.1/24          up
up(s)
...
```

Настраиваем устройство R2:

```
<Huawei>system-view
[Huawei]sysname R2
[R2]int gi0/0/1
[R2-GigabitEthernet0/0/1]ip address 10.0.12.2 24
[R2-GigabitEthernet0/0/1]quit
[R2]int gi0/0/2
[R2-GigabitEthernet0/0/2]ip address 10.0.23.2 24
[R2-GigabitEthernet0/0/2]quit
[R2]int LookBack0
[R2-LoopBack0]ip address 10.0.2.2 24
```

Проверяем конфигурацию:

```
[R1]disp ip int brief
...
Interface                         IP Address/Mask      Physical
Protocol
GigabitEthernet0/0/0              unassigned           up      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)
...
```

Настраиваем устройство R3:

```
<Huawei>system-view
[Huawei]sysname R3
[R3]int gi0/0/0
[R3-GigabitEthernet0/0/0]ip address 10.0.13.3 24
[R3-GigabitEthernet0/0/0]quit
[R3]int gi0/0/2
[R3-GigabitEthernet0/0/2]ip address 10.0.23.3 24
[R3-GigabitEthernet0/0/2]quit
[R3]int LookBack0
[R3-LoopBack0]ip address 10.0.3.3 24
```

Проверяем конфигурацию:

```
[R3]disp ip int brief
...
Interface                         IP Address/Mask      Physical
Protocol
GigabitEthernet0/0/0              10.0.13.3/24         up         up
GigabitEthernet0/0/1              unassigned           up      down
GigabitEthernet0/0/2              10.0.23.3/24         up         up
LoopBack0                         10.0.3.3/24          up
up(s)
```

```
...
```

2. Проверяем соединение:

```
<R1>ping 10.0.12.2
  PING 10.0.12.2: 56  data bytes, press CTRL_C to break
    Reply from 10.0.12.2: bytes=56 Sequence=1 ttl=255 time=310 ms
    Reply from 10.0.12.2: bytes=56 Sequence=2 ttl=255 time=30 ms
    Reply from 10.0.12.2: bytes=56 Sequence=3 ttl=255 time=30 ms
    Reply from 10.0.12.2: bytes=56 Sequence=4 ttl=255 time=30 ms
    Reply from 10.0.12.2: bytes=56 Sequence=5 ttl=255 time=20 ms

  --- 10.0.12.2 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 20/84/310 ms

<R1>ping 10.0.13.3
  PING 10.0.13.3: 56  data bytes, press CTRL_C to break
    Reply from 10.0.13.3: bytes=56 Sequence=1 ttl=255 time=30 ms
    Reply from 10.0.13.3: bytes=56 Sequence=2 ttl=255 time=30 ms
    Reply from 10.0.13.3: bytes=56 Sequence=3 ttl=255 time=30 ms
    Reply from 10.0.13.3: bytes=56 Sequence=4 ttl=255 time=20 ms
    Reply from 10.0.13.3: bytes=56 Sequence=5 ttl=255 time=20 ms

  --- 10.0.13.3 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 20/26/30 ms

<R2>ping 10.0.23.3
  PING 10.0.23.3: 56  data bytes, press CTRL_C to break
    Reply from 10.0.23.3: bytes=56 Sequence=1 ttl=255 time=120 ms
    Reply from 10.0.23.3: bytes=56 Sequence=2 ttl=255 time=20 ms
    Reply from 10.0.23.3: bytes=56 Sequence=3 ttl=255 time=40 ms
    Reply from 10.0.23.3: bytes=56 Sequence=4 ttl=255 time=20 ms
    Reply from 10.0.23.3: bytes=56 Sequence=5 ttl=255 time=30 ms

  --- 10.0.23.3 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 20/46/120 ms

<R2>ping 10.0.13.3
  PING 10.0.13.3: 56  data bytes, press CTRL_C to break
    Request time out
    Request time out
    Request time out
    Request time out
    Request time out
```

```
  --- 10.0.13.3 ping statistics ---
    5 packet(s) transmitted
    0 packet(s) received
    100.00% packet loss

<R2>ping 10.0.3.3
  PING 10.0.3.3: 56  data bytes, press CTRL_C to break
    Request time out
    Request time out
    Request time out
    Request time out
    Request time out

  --- 10.0.3.3 ping statistics ---
    5 packet(s) transmitted
    0 packet(s) received
    100.00% packet loss
```

Выводим таблицу маршрутизации:

```
<R2>disp 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

       10.0.2.0/24  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
      10.0.12.0/24  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
      10.0.23.0/24  Direct  0    0           D   10.0.23.2
GigabitEthernet0/0/2
      10.0.23.2/32  Direct  0    0           D   127.0.0.1
GigabitEthernet0/0/2
    10.0.23.255/32  Direct  0    0           D   127.0.0.1
GigabitEthernet0/0/2
      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
```

3. Настраиваем статические маршруты на R2:

```
[R2]ip route-static 10.0.13.0 24 10.0.23.3
[R2]ip route-static 10.0.3.0 24 10.0.23.3
[R2]disp 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

       10.0.2.0/24  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  Static  60   0          RD   10.0.23.3
GigabitEthernet0/0/2
      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  Static  60   0          RD   10.0.23.3
GigabitEthernet0/0/2
...
```

4. Настраиваем резервные статические маршруты:

```
[R1]ip route-static 10.0.3.0 24 10.0.13.3
[R2]ip route-static 10.0.13.0 24 10.0.12.1 preference 80
[R2]ip route-static 10.0.3.0 24 10.0.12.1 preference 80
[R3]ip route-static 10.0.12.0 24 10.0.13.1
```

5. Проверяем статические маршруты:

```
[R2]disp 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
       10.0.2.0/24  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  Static  60   0          RD   10.0.23.3
GigabitEthernet0/0/2
      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  Static  60   0          RD   10.0.23.3
GigabitEthernet0/0/2
      10.0.23.0/24  Direct  0    0           D   10.0.23.2
GigabitEthernet0/0/2
      10.0.23.2/32  Direct  0    0           D   127.0.0.1
GigabitEthernet0/0/2
    10.0.23.255/32  Direct  0    0           D   127.0.0.1
GigabitEthernet0/0/2
      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>ping 10.0.13.3
  PING 10.0.13.3: 56  data bytes, press CTRL_C to break
    Reply from 10.0.13.3: bytes=56 Sequence=1 ttl=255 time=30 ms
    Reply from 10.0.13.3: bytes=56 Sequence=2 ttl=255 time=30 ms
    Reply from 10.0.13.3: bytes=56 Sequence=3 ttl=255 time=30 ms
    Reply from 10.0.13.3: bytes=56 Sequence=4 ttl=255 time=20 ms
    Reply from 10.0.13.3: bytes=56 Sequence=5 ttl=255 time=20 ms

  --- 10.0.13.3 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 20/26/30 ms

<R2>ping 10.0.3.3
  PING 10.0.3.3: 56  data bytes, press CTRL_C to break
    Reply from 10.0.3.3: bytes=56 Sequence=1 ttl=255 time=90 ms
    Reply from 10.0.3.3: bytes=56 Sequence=2 ttl=255 time=30 ms
    Reply from 10.0.3.3: bytes=56 Sequence=3 ttl=255 time=30 ms
```

```
    Reply from 10.0.3.3: bytes=56 Sequence=4 ttl=255 time=20 ms
    Reply from 10.0.3.3: bytes=56 Sequence=5 ttl=255 time=10 ms

  --- 10.0.3.3 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 10/36/90 ms

<R2>tracert 10.0.13.3
 traceroute to  10.0.13.3(10.0.13.3), max hops: 30 ,packet
length: 40,press CTRL_C
 to break
 1 10.0.23.3 30 ms  20 ms  40 ms

<R2>tracert 10.0.3.3
 traceroute to  10.0.3.3(10.0.3.3), max hops: 30 ,packet length:
40,press CTRL_C
 to break
 1 10.0.23.3 30 ms  20 ms  40 ms
```

6. Проверяем резервные статические маршруты:

```
[R2]int gi0/0/2
[R2-GigabitEthernet0/0/2]shutdown
[R2-GigabitEthernet0/0/2]quit

[R2]disp 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
        10.0.2.0/24  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  Static  60   0          RD   10.0.23.3       GigabitEthernet0/0/2
       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  Static  60   0          RD   10.0.23.3       GigabitEthernet0/0/2
       10.0.23.0/24  Direct  0    0           D   10.0.23.2       GigabitEthernet0/0/2
```

```
      10.0.23.2/32  Direct  0    0           D   127.0.0.1
GigabitEthernet0/0/2
    10.0.23.255/32  Direct  0    0           D   127.0.0.1
GigabitEthernet0/0/2
      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>ping 10.0.13.3
  PING 10.0.13.3: 56  data bytes, press CTRL_C to break
    Reply from 10.0.13.3: bytes=56 Sequence=1 ttl=255 time=30 ms
    Reply from 10.0.13.3: bytes=56 Sequence=2 ttl=255 time=30 ms
    Reply from 10.0.13.3: bytes=56 Sequence=3 ttl=255 time=30 ms
    Reply from 10.0.13.3: bytes=56 Sequence=4 ttl=255 time=20 ms
    Reply from 10.0.13.3: bytes=56 Sequence=5 ttl=255 time=20 ms

  --- 10.0.13.3 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 20/26/30 ms

<R2>ping 10.0.3.3
  PING 10.0.3.3: 56  data bytes, press CTRL_C to break
    Reply from 10.0.3.3: bytes=56 Sequence=1 ttl=255 time=90 ms
    Reply from 10.0.3.3: bytes=56 Sequence=2 ttl=255 time=30 ms
    Reply from 10.0.3.3: bytes=56 Sequence=3 ttl=255 time=30 ms
    Reply from 10.0.3.3: bytes=56 Sequence=4 ttl=255 time=20 ms
    Reply from 10.0.3.3: bytes=56 Sequence=5 ttl=255 time=10 ms

  --- 10.0.3.3 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 10/36/90 ms

<R2>tracert 10.0.13.3
 traceroute to  10.0.13.3(10.0.13.3), max hops: 30 ,packet
length: 40,press CTRL_C
 to break
 1 10.0.12.1 30 ms  20 ms  40 ms
 2 10.0.13.3 20 ms  20 ms  40 ms

<R2>tracert 10.0.3.3
 traceroute to  10.0.3.3(10.0.3.3), max hops: 30 ,packet length:
40,press CTRL_C
 to break
 1 10.0.12.1 30 ms  20 ms  40 ms
 2 10.0.13.3 20 ms  20 ms  40 ms
```

7. Проверяем и настраиваем маршруты по умолчанию

```
[R2]int gi0/0/2
[R2-GigabitEthernet0/0/2]undo shutdown

<R1>ping 10.0.23.3
  PING 10.0.23.3: 56  data bytes, press CTRL_C to break
    Request time out
    Request time out
    Request time out
    Request time out
    Request time out

  --- 10.0.23.3 ping statistics ---
    5 packet(s) transmitted
    0 packet(s) received
    100.00% packet loss

<R1>disp 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
      10.0.3.0/24  Static  60    0          RD   10.0.13.3       GigabitEthernet0/0/0
      10.0.12.0/24  Direct  0    0           D   10.0.12.1       GigabitEthernet0/0/1
      10.0.12.1/32  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   10.0.13.1       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
```

```
<R1>sys
[R1]ip route-static 0.0.0.0 0.0.0.0 10.0.13.3
[R1]ping 10.0.23.3
  PING 10.0.23.3: 56  data bytes, press CTRL_C to break
    Reply from 10.0.23.3: bytes=56 Sequence=1 ttl=254 time=30 ms
    Reply from 10.0.23.3: bytes=56 Sequence=2 ttl=254 time=30 ms
    Reply from 10.0.23.3: bytes=56 Sequence=3 ttl=254 time=30 ms
    Reply from 10.0.23.3: bytes=56 Sequence=4 ttl=254 time=40 ms
    Reply from 10.0.23.3: bytes=56 Sequence=5 ttl=254 time=30 ms

  --- 10.0.23.3 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 30/32/40 ms
```

8. Конфигурируем резервный маршрут по умолчанию

```
[R1]ip route-static 0.0.0.0 0.0.0.0 10.0.12.2 preference 80
[R3]ip route-static 10.0.12.0 24 10.0.23.2 preference 80
```

9. Тестируем резервный маршрут по умолчанию

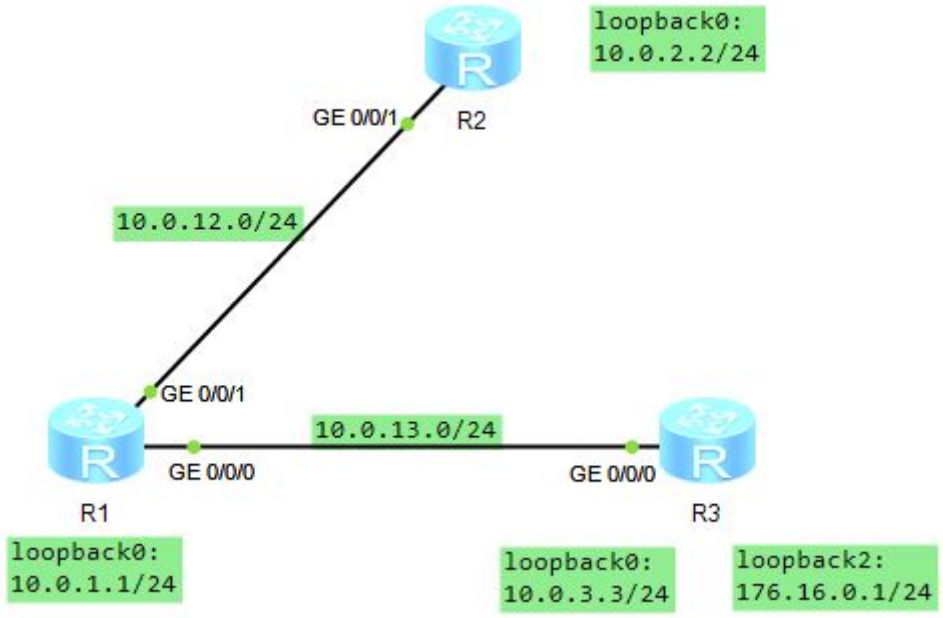
```
[R1]disp ip routing-table
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: Public
         Destinations : 15        Routes : 15
Destination/Mask    Proto   Pre  Cost      Flags NextHop         Interface
        0.0.0.0/0   Static  60   0           RD   10.0.13.3       GigabitEthernet0/0/0
       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
       10.0.3.0/24  Static  60   0           RD   10.0.13.3       GigabitEthernet0/0/0
      10.0.12.0/24  Direct  0    0           D    10.0.12.1       GigabitEthernet0/0/1
      10.0.12.1/32  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    10.0.13.1       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

[R1]int gi0/0/0
[R1-GigabitEthernet0/0/0]shutdown
[R1-GigabitEthernet0/0/0]quit

[R3]int gi0/0/0
[R3-GigabitEthernet0/0/0]shutdown
[R3-GigabitEthernet0/0/0]quit

[R1]disp ip routing-table
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: Public
         Destinations : 11        Routes : 11
Destination/Mask    Proto   Pre  Cost      Flags NextHop         Interface
        0.0.0.0/0   Static  80   0           RD   10.0.12.2       GigabitEthernet0/0/1
       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
      10.0.12.0/24  Direct  0    0           D   10.0.12.1       GigabitEthernet0/0/1
      10.0.12.1/32  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
255.255.255.255/32  Direct  0    0           D   127.0.0.1       InLoopBack0

[R1]ping 10.0.23.3
  PING 10.0.23.3: 56  data bytes, press CTRL_C to break
    Reply from 10.0.23.3: bytes=56 Sequence=1 ttl=254 time=30 ms
    Reply from 10.0.23.3: bytes=56 Sequence=2 ttl=254 time=20 ms
    Reply from 10.0.23.3: bytes=56 Sequence=3 ttl=254 time=30 ms
```

```
    Reply from 10.0.23.3: bytes=56 Sequence=4 ttl=254 time=20 ms
    Reply from 10.0.23.3: bytes=56 Sequence=5 ttl=254 time=30 ms

  --- 10.0.23.3 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 20/26/30 ms

[R1]tracert 10.0.23.3
 traceroute to  10.0.23.3(10.0.23.3), max hops: 30 ,packet
length: 40,press CTRL
_C to break
 1 10.0.12.2 30 ms  40 ms  10 ms
 2 10.0.23.3 30 ms  30 ms  20 ms
```

Задание 4.2

Реализованная топология:



1. Подготовка среды:

```
[Huawei]sysname R1
[R1]interface GigabitEthernet 0/0/1
[R1-GigabitEthernet0/0/1]ip address 10.0.12.1 24
[R1-GigabitEthernet0/0/1]quit
[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
[R1-LoopBack0]quit
```

```
[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
[R2-LoopBack0]quit
```

```
[Huawei]sysname R3
[R3]interface GigabitEthernet 0/0/0
[R3-GigabitEthernet0/0/0]ip address 10.0.13.3 24
[R3-GigabitEthernet0/0/0]quit
[R3]interface LoopBack 0
[R3-LoopBack0]ip address 10.0.3.3 24
[R3-LoopBack0]quit
[R3]interface LoopBack 2
```

```
[R3-LoopBack2]ip address 172.16.0.1 24
[R3-LoopBack2]quit
```

2. Настройка OSPF:

```
[R1]ospf 1 router-id 10.0.1.1
[R1-ospf-1]area 0
[R1-ospf-1-area-0.0.0.0]network 10.0.1.0 0.0.0.255
[R1-ospf-1-area-0.0.0.0]network 10.0.13.0 0.0.0.255
[R1-ospf-1-area-0.0.0.0]network 10.0.12.0 0.0.0.255
```

```
[R2]ospf 1 router-id 10.0.2.2
[R2-ospf-1]area 0
[R2-ospf-1-area-0.0.0.0]network 10.0.2.0 0.0.0.255
[R2-ospf-1-area-0.0.0.0]network 10.0.12.0 0.0.0.255

...
[R2-ospf-1-area-0.0.0.0]
Oct 23 2020 17:03:19-08:00 R2
%%01OSPF/4/NBR_CHANGE_E(l)[7]:Neighbor changes eve
nt: neighbor status changed. (ProcessId=256,
NeighborAddress=1.12.0.10, Neighbor
Event=LoadingDone, NeighborPreviousState=Loading,
NeighborCurrentState=Full)
```

```
[R3]ospf 1 router-id 10.0.3.3
[R3-ospf-1]area 0
[R3-ospf-1-area-0.0.0.0]network 10.0.3.0 0.0.0.255
[R3-ospf-1-area-0.0.0.0]network 10.0.13.0 0.0.0.255

...
[R3-ospf-1-area-0.0.0.0]
Oct 23 2020 17:06:34-08:00 R3
%%01OSPF/4/NBR_CHANGE_E(l)[5]:Neighbor changes eve
nt: neighbor status changed. (ProcessId=256,
NeighborAddress=1.13.0.10, Neighbor
Event=LoadingDone, NeighborPreviousState=Loading,
NeighborCurrentState=Full)
```

3. Проверки конфигурации OSPF

```
<R1>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  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
     10.0.2.2/32  OSPF     10   1          D   10.0.12.2
GigabitEthernet
0/0/1
     10.0.3.3/32  OSPF     10   1          D   10.0.13.3
GigabitEthernet
0/0/0
     10.0.12.0/24  Direct  0    0          D   10.0.12.1
GigabitEthernet
0/0/1
     10.0.12.1/32  Direct  0    0          D   127.0.0.1
GigabitEthernet
0/0/1
     10.0.12.255/32  Direct  0  0          D   127.0.0.1
GigabitEthernet
0/0/1
     10.0.13.0/24  Direct  0    0          D   10.0.13.1
GigabitEthernet
0/0/0
     10.0.13.1/32  Direct  0    0          D   127.0.0.1
GigabitEthernet
0/0/0
     10.0.13.255/32  Direct  0  0          D   127.0.0.1
GigabitEthernet
0/0/0
     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
<R1>display ospf peer

     OSPF Process 1 with Router ID 10.0.1.1
       Neighbors

 Area 0.0.0.0 interface 10.0.12.1(GigabitEthernet0/0/1)'s
neighbors
 Router ID: 10.0.2.2       Address: 10.0.12.2
   State: Full  Mode:Nbr is  Master  Priority: 1
   DR: 10.0.12.1  BDR: 10.0.12.2  MTU: 0
   Dead timer due in 37  sec
   Retrans timer interval: 5
   Neighbor is up for 00:13:30
   Authentication Sequence: [ 0 ]

       Neighbors

 Area 0.0.0.0 interface 10.0.13.1(GigabitEthernet0/0/0)'s
```

```
neighbors
 Router ID: 10.0.3.3       Address: 10.0.13.3
   State: Full  Mode:Nbr is  Master  Priority: 1
   DR: 10.0.13.1  BDR: 10.0.13.3  MTU: 0
   Dead timer due in 31  sec
   Retrans timer interval: 5
   Neighbor is up for 00:10:15
   Authentication Sequence: [ 0 ]
```

```
<R2>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

     10.0.1.1/32  OSPF     10   1           D   10.0.12.1       GigabitEthernet
0/0/1
     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
     10.0.3.3/32  OSPF     10   2           D   10.0.12.1       GigabitEthernet
0/0/1
     10.0.12.0/24  Direct  0    0           D   10.0.12.2       GigabitEthernet
0/0/1
     10.0.12.2/32  Direct  0    0           D   127.0.0.1       GigabitEthernet
0/0/1
     10.0.12.255/32  Direct  0  0           D   127.0.0.1       GigabitEthernet
0/0/1
     10.0.13.0/24  OSPF    10   2           D   10.0.12.1       GigabitEthernet
0/0/1
     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
<R2>ping 10.0.1.1
```

```
  PING 10.0.1.1: 56  data bytes, press CTRL_C to break
    Reply from 10.0.1.1: bytes=56 Sequence=1 ttl=255 time=30 ms
    Reply from 10.0.1.1: bytes=56 Sequence=2 ttl=255 time=40 ms
    Reply from 10.0.1.1: bytes=56 Sequence=3 ttl=255 time=30 ms
    Reply from 10.0.1.1: bytes=56 Sequence=4 ttl=255 time=30 ms
    Reply from 10.0.1.1: bytes=56 Sequence=5 ttl=255 time=20 ms

  --- 10.0.1.1 ping statistics ---
    5 packet(s) transmitted
    5 packet(s) received
    0.00% packet loss
    round-trip min/avg/max = 20/30/40 ms
<R2>display ospf peer brief

     OSPF Process 1 with Router ID 10.0.2.2
         Peer Statistic Information

----------------------------------------------------------------------
-----------
 Area Id         Interface                        Neighbor id
State
 0.0.0.0         GigabitEthernet0/0/1             10.0.1.1
Full

----------------------------------------------------------------------
-----------
```

```
<R3>display ip routing-table
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: Public
     Destinations : 16    Routes : 16

Destination/Mask     Proto   Pre  Cost      Flags NextHop
Interface

     10.0.1.1/32  OSPF     10   1           D   10.0.13.1
GigabitEthernet
0/0/0
     10.0.2.2/32  OSPF     10   2           D   10.0.13.1
GigabitEthernet
0/0/0
     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  OSPF    10   2           D   10.0.13.1
GigabitEthernet
0/0/0
     10.0.13.0/24  Direct  0    0           D   10.0.13.3
```

```
GigabitEthernet
0/0/0
     10.0.13.3/32  Direct  0    0          D   127.0.0.1
GigabitEthernet
0/0/0
     10.0.13.255/32  Direct  0  0          D   127.0.0.1
GigabitEthernet
0/0/0
     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  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
255.255.255.255/32  Direct  0   0          D   127.0.0.1
InLoopBack0

<R3>ping 10.0.3.3
  PING 10.0.3.3: 56  data bytes, press CTRL_C to break
     Reply from 10.0.3.3: bytes=56 Sequence=1 ttl=255 time=10 ms
     Reply from 10.0.3.3: bytes=56 Sequence=2 ttl=255 time=1 ms
     Reply from 10.0.3.3: bytes=56 Sequence=3 ttl=255 time=1 ms
     Reply from 10.0.3.3: bytes=56 Sequence=4 ttl=255 time=1 ms
     Reply from 10.0.3.3: bytes=56 Sequence=5 ttl=255 time=1 ms

  --- 10.0.3.3 ping statistics ---
     5 packet(s) transmitted
     5 packet(s) received
     0.00% packet loss
     round-trip min/avg/max = 1/2/10 ms
<R3>display ospf peer brief

     OSPF Process 1 with Router ID 10.0.3.3
         Peer Statistic Information

----------------------------------------------------------------------
-----------
 Area Id        Interface                       Neighbor id
State
 0.0.0.0        GigabitEthernet0/0/0            10.0.1.1
Full

----------------------------------------------------------------------
-----------
```

4. Изменение интервала “Hello” и интервала “Dead” OSPF

```
<R1>display ospf interface GigabitEthernet 0/0/0

     OSPF Process 1 with Router ID 10.0.1.1
       Interfaces


 Interface: 10.0.13.1 (GigabitEthernet0/0/0)
 Cost: 1        State: DR       Type: Broadcast MTU: 1500
 Priority: 1
 Designated Router: 10.0.13.1
 Backup Designated Router: 10.0.13.3
 Timers: Hello 10 , Dead 40 , Poll  120 , Retransmit 5 , Transmit
Delay 1
<R1>sys
[R1]interface GigabitEthernet 0/0/0
[R1-GigabitEthernet0/0/0]ospf timer hello 15
[R1-GigabitEthernet0/0/0]ospf timer dead 60
[R1-GigabitEthernet0/0/0]quit
<R1>display ospf interface GigabitEthernet 0/0/0

     OSPF Process 1 with Router ID 10.0.1.1
       Interfaces


 Interface: 10.0.13.1 (GigabitEthernet0/0/0)
 Cost: 1        State: DR       Type: Broadcast MTU: 1500
 Priority: 1
 Designated Router: 10.0.13.1
 Backup Designated Router: 0.0.0.0
 Timers: Hello 15 , Dead 60 , Poll  120 , Retransmit 5 , Transmit
Delay 1
```

```
<R3>sys
[R3]interface GigabitEthernet 0/0/0
[R3-GigabitEthernet0/0/0]ospf timer hello 15
[R3-GigabitEthernet0/0/0]ospf timer dead 60
[R3-GigabitEthernet0/0/0]quit
...
Oct 23 2020 17:52:37-08:00 R3
%%01OSPF/4/NBR_CHANGE_E(l)[4]:Neighbor changes eve
nt: neighbor status changed. (ProcessId=256,
NeighborAddress=1.13.0.10, Neighbor
Event=LoadingDone, NeighborPreviousState=Loading,
NeighborCurrentState=Full)
[R3]display ospf interface GigabitEthernet 0/0/0

     OSPF Process 1 with Router ID 10.0.3.3
       Interfaces


 Interface: 10.0.13.3 (GigabitEthernet0/0/0)
 Cost: 1        State: DR       Type: Broadcast MTU: 1500
```

```
 Priority: 1
 Designated Router: 10.0.13.3
 Backup Designated Router: 10.0.13.1
 Timers: Hello 15 , Dead 60 , Poll  120 , Retransmit 5 , Transmit
Delay 1
```

5. Объявление статических маршрутов по умолчанию

```
[R3]ip route-static 0.0.0.0 0.0.0.0 LoopBack 2
[R3]ospf 1
[R3-ospf-1]default-route-advertise
<R3>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

     0.0.0.0/0   Static  60   0           D   172.16.0.1
LoopBack2
     10.0.1.1/32  OSPF    10   1          D   10.0.13.1
GigabitEthernet
0/0/0
     10.0.2.2/32  OSPF    10   2          D   10.0.13.1
GigabitEthernet
0/0/0
     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  OSPF   10   2          D   10.0.13.1
GigabitEthernet
0/0/0
...
```

```
<R1>display ip routing-table
Route Flags: R - relay, D - download to fib
------------------------------------------------------------------------------
Routing Tables: Public
     Destinations : 16    Routes : 16

Destination/Mask     Proto   Pre  Cost      Flags NextHop
Interface

     0.0.0.0/0   O_ASE   150  1           D   10.0.13.3
GigabitEthernet
```

```
0/0/0
     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
     10.0.2.2/32  OSPF    10    1          D   10.0.12.2
GigabitEthernet
0/0/1
     10.0.3.3/32  OSPF    10    1          D   10.0.13.3
GigabitEthernet
0/0/0
...
```

```
<R2>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

     0.0.0.0/0   O_ASE   150  1           D   10.0.12.1
GigabitEthernet
0/0/1
     10.0.1.1/32  OSPF    10   1          D   10.0.12.1
GigabitEthernet
0/0/1
     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
…
<R2>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=40
ms
     Reply from 172.16.0.1: bytes=56 Sequence=2 ttl=254 time=30
ms
     Reply from 172.16.0.1: bytes=56 Sequence=3 ttl=254 time=10
ms
     Reply from 172.16.0.1: bytes=56 Sequence=4 ttl=254 time=30
ms
     Reply from 172.16.0.1: bytes=56 Sequence=5 ttl=254 time=30
ms

  --- 172.16.0.1 ping statistics ---
     5 packet(s) transmitted
```

```
     5 packet(s) received
     0.00% packet loss
     round-trip min/avg/max = 10/28/40 ms
```

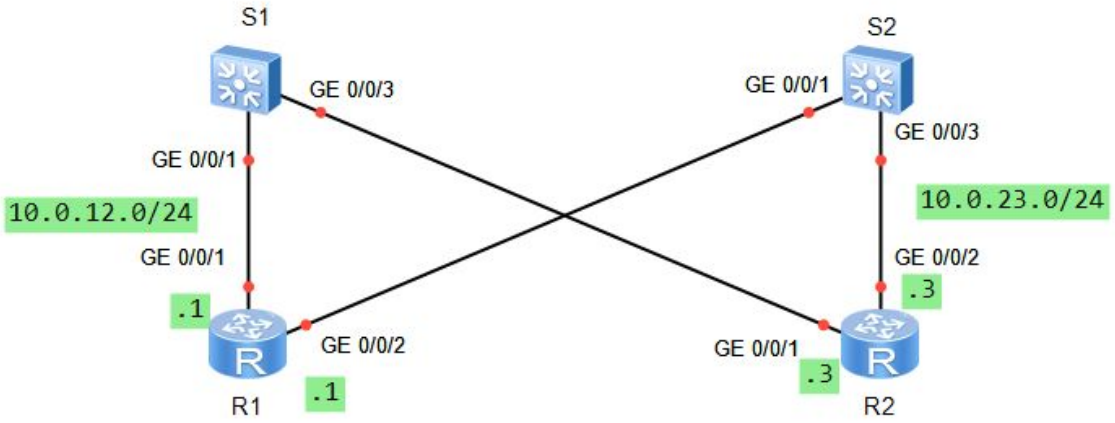
6. Управление выбором DR и BDR

```
<R1>display ospf peer 10.0.3.3

     OSPF Process 1 with Router ID 10.0.1.1
       Neighbors

 Area 0.0.0.0 interface 10.0.13.1(GigabitEthernet0/0/0)'s
neighbors
 Router ID: 10.0.3.3       Address: 10.0.13.3
   State: Full  Mode:Nbr is  Master  Priority: 1
   DR: 10.0.13.3  BDR: 10.0.13.1  MTU: 0
   Dead timer due in 48  sec
   Retrans timer interval: 5
   Neighbor is up for 00:20:44
   Authentication Sequence: [ 0 ]
<R1>sys
[R1]interface GigabitEthernet 0/0/0
[R1-GigabitEthernet0/0/0]ospf dr-pr
[R1-GigabitEthernet0/0/0]ospf dr-priority 200

[R1-GigabitEthernet0/0/0]shutdown
[R1-GigabitEthernet0/0/0]undo shutdown

[R1-GigabitEthernet0/0/0]display ospf peer 10.0.3.3

     OSPF Process 1 with Router ID 10.0.1.1
       Neighbors

 Area 0.0.0.0 interface 10.0.13.1(GigabitEthernet0/0/0)'s
neighbors
 Router ID: 10.0.3.3       Address: 10.0.13.3
   State: Full  Mode:Nbr is  Master  Priority: 100
   DR: 10.0.13.1  BDR: 10.0.13.3  MTU: 0
   Dead timer due in 51  sec
   Retrans timer interval: 5
   Neighbor is up for 00:00:38
   Authentication Sequence: [ 0 ]
```

```
R3-GigabitEthernet0/0/0]ospf dr-pri
[R3-GigabitEthernet0/0/0]ospf dr-priority 100
[R3-GigabitEthernet0/0/0]shutdown

[R3-GigabitEthernet0/0/0]undo shutdown
```

Задание 5.2

Реализованная топология:



1. Настройка устройств:

```
<Huawei>sys
[Huawei]sysname R1
[R1]int gi0/0/1
[R1-GigabitEthernet0/0/1]ip address 10.0.12.1 24
[R1-GigabitEthernet0/0/1]quit

[Huawei]sysname R3
[R3]int gi0/0/1
[R3-GigabitEthernet0/0/1]ip address 10.0.12.3 24
[R3-GigabitEthernet0/0/1]shutdown
[R3-GigabitEthernet0/0/1]
[R3-GigabitEthernet0/0/1]
[R3-GigabitEthernet0/0/1]quit
[R3]int gi0/0/2
[R3-GigabitEthernet0/0/2]ip address 10.0.23.3 24
[R3-GigabitEthernet0/0/2]
[R3-GigabitEthernet0/0/2]quit

<Huawei>sys
[Huawei]sysname S1

<Huawei>sys
[Huawei]sysname S2
```

3. Дополнительная конфигурация:

```
[S1]int gi0/0/9
[S1-GigabitEthernet0/0/9]shutdown
[S1-GigabitEthernet0/0/9]quit

[S1]int gi0/0/10
[S1-GigabitEthernet0/0/10]shutdown
[S1-GigabitEthernet0/0/10]quit
```

```
[S1]int gi0/0/13
[S1-GigabitEthernet0/0/13]shutdown
[S1-GigabitEthernet0/0/13]quit

[S1]int gi0/0/14
[S1-GigabitEthernet0/0/14]shutdown
[S1-GigabitEthernet0/0/14]quit

[S2]int gi0/0/9
[S2-GigabitEthernet0/0/9]shutdown
[S2-GigabitEthernet0/0/9]quit

[S2]int gi0/0/10
[S2-GigabitEthernet0/0/10]shutdown
[S2-GigabitEthernet0/0/10]quit

[S2]int gi0/0/7
[S2-GigabitEthernet0/0/7]shutdown
[S2-GigabitEthernet0/0/7]quit

[S2]int gi0/0/6
[S2-GigabitEthernet0/0/6]shutdown
[S2-GigabitEthernet0/0/6]quit

[R1]int gi0/0/2
[R1-GigabitEthernet0/0/2]ip address 10.0.23.1 24
[R1-GigabitEthernet0/0/2]shutdown


[S1]disp int brief
...
Interface                   PHY   Protocol InUti OutUti
inErrors  outErrors
GigabitEthernet0/0/1        up    up         0%     0%
0          0
GigabitEthernet0/0/2        down  down       0%     0%
0          0
GigabitEthernet0/0/3        down  down       0%     0%
0          0
GigabitEthernet0/0/4        down  down       0%     0%
0          0
GigabitEthernet0/0/5        down  down       0%     0%
0          0
GigabitEthernet0/0/6        down  down       0%     0%
0          0
GigabitEthernet0/0/7        down  down       0%     0%
0          0
GigabitEthernet0/0/8        down  down       0%     0%
0          0
GigabitEthernet0/0/9       *down down       0%     0%          0
0
GigabitEthernet0/0/10      *down down       0%     0%          0
0
GigabitEthernet0/0/11       down  down       0%     0%
```

```
0           0
GigabitEthernet0/0/12       down  down         0%      0%
0           0
GigabitEthernet0/0/13       *down down         0%      0%           0
0
GigabitEthernet0/0/14       *down down         0%      0%           0
0
…


[S2]disp int brief
...
Interface                   PHY   Protocol InUti OutUti
inErrors  outErrors
GigabitEthernet0/0/1        down  down         0%      0%
0           0
GigabitEthernet0/0/2        down  down         0%      0%
0           0
GigabitEthernet0/0/3        up    up           0%      0%
0           0
GigabitEthernet0/0/4        down  down         0%      0%
0           0
GigabitEthernet0/0/5        down  down         0%      0%
0           0
GigabitEthernet0/0/6        *down down         0%      0%           0
0
GigabitEthernet0/0/7        *down down         0%      0%           0
0
GigabitEthernet0/0/8        down  down         0%      0%
0           0
GigabitEthernet0/0/9        *down down         0%      0%           0
0
GigabitEthernet0/0/10       *down down         0%      0%           0
0
…

[R1]disp ip int brief
...
Interface                         IP Address/Mask      Physical
Protocol
GigabitEthernet0/0/0              unassigned           down
down
GigabitEthernet0/0/1              10.0.12.1/24         up
up
GigabitEthernet0/0/2              10.0.23.1/24         *down
down
NULL0                             unassigned           up
up(s)

<R3>disp ip int brief
...
Interface                         IP Address/Mask      Physical
Protocol
GigabitEthernet0/0/0              unassigned           down
down
```

```
GigabitEthernet0/0/1                10.0.12.3/24        *down
down
GigabitEthernet0/0/2                10.0.23.3/24        up
up
NULL0                               unassigned          up
up(s)
```

4. Включение DHCP:

```
[R1]dhcp enable
[R3]dhcp enable
```

5. Создание глобального пула IP-адресов

```
[R1]ip pool pool1
Info: It's successful to create an IP address pool.
[R1-ip-pool-pool1]network 10.0.12.0 mask 24
[R1-ip-pool-pool1]gateway-list 10.0.12.1
[R1-ip-pool-pool1]lease day 1 hour 12
[R1-ip-pool-pool1]quit
[R1]int gi0/0/1
[R1-GigabitEthernet0/0/1]dhcp select global
[R1-GigabitEthernet0/0/1]quit

[R3]ip pool pool2
Info: It's successful to create an IP address pool.
[R3-ip-pool-pool2]network 10.0.23.0 mask 24
[R3-ip-pool-pool2]gateway-list 10.0.23.3
[R3-ip-pool-pool2]lease day 1 hour 12
[R3-ip-pool-pool2]int gi0/0/2
[R3-GigabitEthernet0/0/2]dhcp select global
[R3-GigabitEthernet0/0/2]quit

[R1]disp ip pool name pool1
  Pool-name      : pool1
  Pool-No        : 0
  Lease          : 1 Days 12 Hours 0 Minutes
  Domain-name    : -
  DNS-server0    : -
  NBNS-server0   : -
  Netbios-type   : -
  Position       : Local           Status           : Unlocked
  Gateway-0      : 10.0.12.1
  Mask           : 255.255.255.0
  VPN instance   : --

------------------------------------------------------------------
------------
         Start           End     Total  Used  Idle(Expired)
Conflict  Disable

------------------------------------------------------------------
```

```
------------
       10.0.12.1     10.0.12.254   253     0        253(0)
0        0

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


[S1]dhcp enable
[S1]int Vlanif 1
[S1-Vlanif1]ip addr dhcp-alloc
[S1-Vlanif1]disp ip int brief
….
Interface                         IP Address/Mask      Physical
Protocol
MEth0/0/1                         unassigned           down
down
NULL0                             unassigned           up
up(s)
Vlanif1                           10.0.12.254/24       up
up

[S2]dhcp enable
[S2]int Vlanif 1
[S2-Vlanif1]ip addr dhcp-alloc
[S2-Vlanif1]disp ip int brief
….
Interface                         IP Address/Mask      Physical
Protocol
MEth0/0/1                         unassigned           down
down
NULL0                             unassigned           up
up(s)
Vlanif1                           10.0.23.254/24       up
up

<R1>disp ip pool name pool1
  Pool-name      : pool1
  Pool-No        : 0
  Lease          : 1 Days 12 Hours 0 Minutes
  Domain-name    : -
  DNS-server0    : -
  NBNS-server0   : -
  Netbios-type   : -
  Position       : Local           Status          : Unlocked
  Gateway-0      : 10.0.12.1
  Mask           : 255.255.255.0
  VPN instance   : --

-------------------------------------------------------------------
------------
         Start           End     Total  Used  Idle(Expired)
Conflict  Disable

-------------------------------------------------------------------
```

```
------------
       10.0.12.1     10.0.12.254   253     1         252(0)
0        0

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

<R3>disp ip pool name pool2
  Pool-name      : pool2
  Pool-No        : 0
  Lease          : 1 Days 12 Hours 0 Minutes
  Domain-name    : -
  DNS-server0    : -
  NBNS-server0   : -
  Netbios-type   : -
  Position       : Local           Status           : Unlocked
  Gateway-0      : 10.0.23.3
  Mask           : 255.255.255.0
  VPN instance   : --

------------------------------------------------------------------
------------
         Start           End     Total  Used  Idle(Expired)
Conflict  Disable

------------------------------------------------------------------
------------
       10.0.23.1     10.0.23.254   253     1         252(0)
0        0

------------------------------------------------------------------
------------
```

6. Создание пула IP-адресов на основе интерфейса:

```
[R1]int gi0/0/1
[R1-GigabitEthernet0/0/1]shutdown

[R3]int gi0/0/2
[R3-GigabitEthernet0/0/2]shutdown

[R1]int gi0/0/2
[R1-GigabitEthernet0/0/2]dhcp select interface

[R3]int gi0/0/1
[R3-GigabitEthernet0/0/1]dhcp select interface

[R1-GigabitEthernet0/0/2]dhcp server dns-list 10.0.23.254
[R1-GigabitEthernet0/0/2]dhcp server excluded-ip-address
10.0.23.254
[R1-GigabitEthernet0/0/2]dhcp server lease day 1 hour 12

[R3-GigabitEthernet0/0/1]dhcp server dns-list 10.0.12.254
```

```
[R3-GigabitEthernet0/0/1]dhcp server excluded-ip-address
10.0.12.254
[R3-GigabitEthernet0/0/1]dhcp server lease day 1 hour 12

[R1-GigabitEthernet0/0/2]display ip pool interface
GigabitEthernet0/0/2
  Pool-name      : GigabitEthernet0/0/2
  Pool-No        : 1
  Lease          : 1 Days 12 Hours 0 Minutes
  Domain-name    : -
  DNS-server0    : 10.0.23.254
  NBNS-server0   : -
  Netbios-type   : -
  Position       : Interface       Status           : Unlocked
  Gateway-0      : 10.0.23.1
  Mask           : 255.255.255.0
  VPN instance   : --

------------------------------------------------------------------
------------
         Start           End     Total  Used  Idle(Expired)
Conflict  Disable

------------------------------------------------------------------
------------
       10.0.23.1     10.0.23.254   253     0        252(0)
0        1

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

[S2]int Vlanif 1
[S2-Vlanif1]shutdown
[S2-Vlanif1]undo shutdown

[R1]int gi0/0/2
[R1-GigabitEthernet0/0/2]undo shutdown

[R1-GigabitEthernet0/0/2]disp ip pool interface
GigabitEthernet0/0/2
  Pool-name      : GigabitEthernet0/0/2
  Pool-No        : 1
  Lease          : 1 Days 12 Hours 0 Minutes
  Domain-name    : -
  DNS-server0    : 10.0.23.254
  NBNS-server0   : -
  Netbios-type   : -
  Position       : Interface       Status           : Unlocked
  Gateway-0      : 10.0.23.1
  Mask           : 255.255.255.0
  VPN instance   : --

------------------------------------------------------------------
------------
```

```
         Start           End     Total  Used  Idle(Expired)
Conflict  Disable

-------------------------------------------------------------------
------------
       10.0.23.1     10.0.23.254   253     1         251(0)
0         1

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


[S2-Vlanif1]disp ip int brief
….
Interface                         IP Address/Mask      Physical
Protocol
MEth0/0/1                         unassigned           down
down
NULL0                             unassigned           up
up(s)
Vlanif1                           10.0.23.253/24       up
up

[S1]int Vlanif 1
[S1-Vlanif1]shutdown
[S1-Vlanif1]undo shutdown

[R3]int gi0/0/1
[R3-GigabitEthernet0/0/1]undo shutdown

[R3-GigabitEthernet0/0/1]disp ip pool int GigabitEthernet0/0/1
  Pool-name      : GigabitEthernet0/0/1
  Pool-No        : 1
  Lease          : 1 Days 12 Hours 0 Minutes
  Domain-name    : -
  DNS-server0    : 10.0.12.254
  NBNS-server0   : -
  Netbios-type   : -
  Position       : Interface       Status           : Unlocked
  Gateway-0      : 10.0.12.3
  Mask           : 255.255.255.0
  VPN instance   : --

-------------------------------------------------------------------
------------
         Start           End     Total  Used  Idle(Expired)
Conflict  Disable

-------------------------------------------------------------------
------------
       10.0.12.1     10.0.12.254   253     1         251(0)
0         1

-------------------------------------------------------------------
------------
```

```
[S1-Vlanif1]disp ip int brief
….
Interface                         IP Address/Mask      Physical
Protocol
MEth0/0/1                         unassigned           down
down
NULL0                             unassigned           up
up(s)
Vlanif1                           10.0.12.253/24       up
up
```