Zadanie 10.1.1.13

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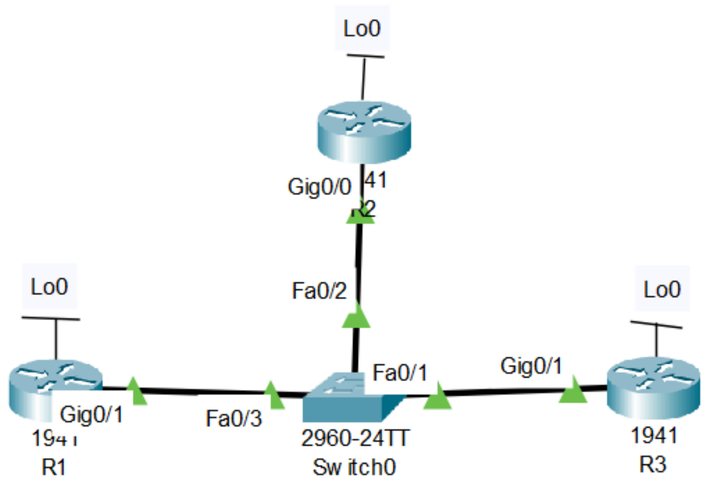
Konfiguracja trasowania protokołem OSPFv2 w sieci ze współdzielonym dostępem.

Topologia



Konfiguracja interfejsów

Device Name: R1
Device Model: 1941
Hostname: R1

Port	Link	VLAN	IP Address	IPv6 Address	MAC Address
GigabitEthernet0/0	Down	--	<not set>	<not set>	00D0.9711.DC01
GigabitEthernet0/1	Up	--	192.168.1.1/24	<not set>	00D0.9711.DC02
Loopback0	Up	--	192.168.31.11/32	<not set>	000C.CF5C.9C89
Vlan1	Down	1	<not set>	<not set>	0001.64B2.8848

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > R1

Device Name: R2
Device Model: 1941
Hostname: R2

Port	Link	VLAN	IP Address	IPv6 Address	MAC Address
GigabitEthernet0/0	Up	--	192.168.1.2/24	<not set>	0003.E4C0.0101
GigabitEthernet0/1	Down	--	<not set>	<not set>	0003.E4C0.0102
Loopback0	Up	--	192.168.31.22/32	<not set>	00D0.97A7.97A6
Vlan1	Down	1	<not set>	<not set>	0050.0FD5.06C3

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > R2

Device Name: R3
Device Model: 1941
Hostname: R3

Port	Link	VLAN	IP Address	IPv6 Address	MAC Address
GigabitEthernet0/0	Down	--	<not set>	<not set>	00D0.971E.9601
GigabitEthernet0/1	Up	--	192.168.1.3/24	<not set>	00D0.971E.9602
Loopback0	Up	--	192.168.31.33/32	<not set>	00D0.BA47.1C08
Vlan1	Down	1	<not set>	<not set>	0009.7C1A.B708

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > R3

Konfiguracja protokołu trasowania

```
R1>show ip protocols

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 192.168.31.11
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    192.168.1.0 0.0.0.255 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    192.168.31.11         110      00:04:23
    192.168.31.22         110      00:04:23
    192.168.31.33         110      00:04:23
  Distance: (default is 110)

R1>show ip ospf
 Routing Process "ospf 1" with ID 192.168.31.11
 Supports only single TOS(TOS0) routes
 Supports opaque LSA
 SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
 Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
 Number of external LSA 0. Checksum Sum 0x000000
 Number of opaque AS LSA 0. Checksum Sum 0x000000
 Number of DCbitless external and opaque AS LSA 0
 Number of DoNotAge external and opaque AS LSA 0
 Number of areas in this router is 1. 1 normal 0 stub 0 nssa
 External flood list length 0
    Area BACKBONE(0)
        Number of interfaces in this area is 1
        Area has no authentication
        SPF algorithm executed 2 times
        Area ranges are
        Number of LSA 4. Checksum Sum 0x01bd7b
        Number of opaque link LSA 0. Checksum Sum 0x000000
        Number of DCbitless LSA 0
        Number of indication LSA 0
        Number of DoNotAge LSA 0
        Flood list length 0
```

```
R1>show ip ospf neighbor


Neighbor ID     Pri   State           Dead Time   Address         Interface
192.168.31.22     0   FULL/DROTHER    00:00:37    192.168.1.2     GigabitEthernet0/1
192.168.31.33   100   FULL/BDR        00:00:37    192.168.1.3     GigabitEthernet0/1
```

```
R2>show ip protocols

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 192.168.31.22
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    192.168.1.0 0.0.0.255 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    192.168.31.11         110      00:07:26
    192.168.31.22         110      00:07:26
    192.168.31.33         110      00:07:26
  Distance: (default is 110)

R2>show ip ospf
 Routing Process "ospf 1" with ID 192.168.31.22
 Supports only single TOS(TOS0) routes
 Supports opaque LSA
 SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
 Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
 Number of external LSA 0. Checksum Sum 0x000000
 Number of opaque AS LSA 0. Checksum Sum 0x000000
 Number of DCbitless external and opaque AS LSA 0
 Number of DoNotAge external and opaque AS LSA 0
 Number of areas in this router is 1. 1 normal 0 stub 0 nssa
 External flood list length 0
    Area BACKBONE(0)
        Number of interfaces in this area is 1
        Area has no authentication
        SPF algorithm executed 2 times
        Area ranges are
        Number of LSA 4. Checksum Sum 0x01bd7b
        Number of opaque link LSA 0. Checksum Sum 0x000000
        Number of DCbitless LSA 0
        Number of indication LSA 0
        Number of DoNotAge LSA 0
        Flood list length 0

R2>show ip ospf neighbor

Neighbor ID     Pri   State           Dead Time   Address         Interface
192.168.31.33   100   FULL/BDR        00:00:37    192.168.1.3     GigabitEthernet0/0
192.168.31.11   255   FULL/DR         00:00:37    192.168.1.1     GigabitEthernet0/0
```

```
R3>show ip protocols

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 192.168.31.33
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    192.168.1.0 0.0.0.255 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    192.168.31.11         110      00:08:31
    192.168.31.22         110      00:08:31
    192.168.31.33         110      00:08:31
  Distance: (default is 110)

R3>show ip ospf
 Routing Process "ospf 1" with ID 192.168.31.33
 Supports only single TOS(TOS0) routes
 Supports opaque LSA
 SPF schedule delay 5 secs, Hold time between two SPFs 10 secs
 Minimum LSA interval 5 secs. Minimum LSA arrival 1 secs
 Number of external LSA 0. Checksum Sum 0x000000
 Number of opaque AS LSA 0. Checksum Sum 0x000000
 Number of DCbitless external and opaque AS LSA 0
 Number of DoNotAge external and opaque AS LSA 0
 Number of areas in this router is 1. 1 normal 0 stub 0 nssa
 External flood list length 0
    Area BACKBONE(0)
        Number of interfaces in this area is 1
        Area has no authentication
        SPF algorithm executed 3 times
        Area ranges are
        Number of LSA 4. Checksum Sum 0x01bd7b
        Number of opaque link LSA 0. Checksum Sum 0x000000
        Number of DCbitless LSA 0
        Number of indication LSA 0
        Number of DoNotAge LSA 0
        Flood list length 0
```

```
R3>show ip ospf neighbor


Neighbor ID     Pri   State           Dead Time   Address         Interface
192.168.31.11   255   FULL/DR         00:00:32    192.168.1.1     GigabitEthernet0/1
192.168.31.22     0   FULL/DROTHER    00:00:32    192.168.1.2     GigabitEthernet0/1
```

Test połączenie routerów

```
R1>ping 192.168.31.22

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.31.22, timeout is 2 seconds:
.!!!!
Success rate is 80 percent (4/5), round-trip min/avg/max = 0/2/11 ms

R1>ping 192.168.31.33

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 192.168.31.33, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 0/0/0 ms
```

Napotkane problemy

Zadanie nie wymagało samodzielnego rozwiązywania problemów.

Wnioski

Celem zadania było stworzenie prostej sieci ze współdzielonymi interfejsami sieciowymi z automatycznym trasowaniem poprzez protokół OSPFv2. W protokole możemy ustawić które routery powinny być najważniejsze pod względem przechowywania informacji o sieci. Priorytet ustawiany jest według kolejności wdrażania do strefy lub poprzez polecenie:

```
interface [nazwa int]
ip ospf priority [priorytet]
```

W takiej konfiguracji routery same ustalą kto ma najwyższe priorytety w sieci oraz nadadzą im odpowiednią klasyfikację DR, BDR, a reszcie - BDO. W przypadku ćwiczenia krok ten zmienił zupełnie strukturę sieci; R1 stał się głównym routerem, R3 zapasowym, a R2 innym. Oryginalny priorytet z wdrażania to: R3 - > R2 -> R1.