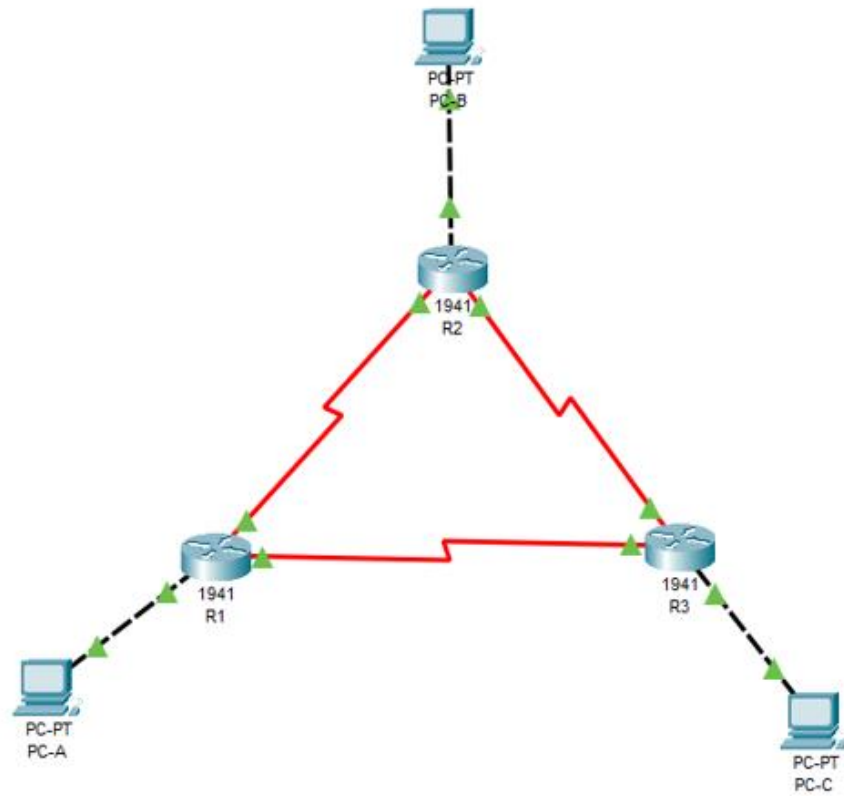


Zadanie 8.3.3.6

Piotr Boguszewski 63478 inis5_fd

Topologia sieci



Routery w zadaniu nie posiadają podstawowo interfejsów serialowych, należy je wyłączyć i dodać kartę.

Physical
Config
CLI
Attributes

MODULES

HWIC-1GE-SFP

HWIC-2T

HWIC-4ESW

HWIC-8A

WIC-Cover

GLC-LH-SMD

Zoom In

Original Size

Zoom Out

Customize Icon in Physical View

Customize Icon in Logical View

The HWIC-2T is a Cisco 2-Port Serial High-Speed WAN Interface Card, providing 2 serial ports.

☐ Top

Konfiguracja ip komputerów

PC-A

Physical

Config

Desktop

Programming

Attributes

IP Configuration

X

Interface

FastEthernet0

IP Configuration

DHCP

Static

IPv4 Address

Subnet Mask

Default Gateway

0.0.0.0

DNS Server

0.0.0.0

IPv6 Configuration

Automatic

Static

IPv6 Address

2001:DB8:ACAD:A::A

/ 64

Link Local Address

FE80::260:2FFF:FEE7:6098

Default Gateway

FE80::1

DNS Server

802.1X

Use 802.1X Security

Authentication

MD5

Username

Password

Top

PC-B

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address

Subnet Mask

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address 2001:DB8:ACAD:B::B / 64

Link Local Address FE80::2D0:D3FF:FE30:281D

Default Gateway FE80::2

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

PC-C

Physical Config **Desktop** Programming Attributes

IP Configuration X

Interface FastEthernet0

IP Configuration

☐ DHCP ☒ Static

IPv4 Address

Subnet Mask

Default Gateway 0.0.0.0

DNS Server 0.0.0.0

IPv6 Configuration

☐ Automatic ☒ Static

IPv6 Address 2001:DB8:ACAD:C::C / 64

Link Local Address FE80::202:4AFF:FEDC:3397

Default Gateway FE80::3

DNS Server

802.1X

☐ Use 802.1X Security

Authentication MD5

Username

Password

☐ Top

Ustawienia interfejsów ip routerów r1 r2 i r3

```
R1#show ipv6 interface brief
GigabitEthernet0/0      [up/up]
    FE80::1
    2001:DB8:ACAD:A::1
GigabitEthernet0/1      [administratively down/down]
    unassigned
Serial0/0/0              [up/up]
    FE80::1
    2001:DB8:ACAD:12::1
Serial0/0/1              [up/up]
    FE80::1
    2001:DB8:ACAD:13::1
Vlan1                    [administratively down/down]
    unassigned
```

```
R2#show ipv6 interface brief
GigabitEthernet0/0      [up/up]
    FE80::2
    2001:DB8:ACAD:B::2
GigabitEthernet0/1      [administratively down/down]
    unassigned
Serial0/0/0              [up/up]
    FE80::2
    2001:DB8:ACAD:12::2
Serial0/0/1              [up/up]
    FE80::2
    2001:DB8:ACAD:23::2
Vlan1                    [administratively down/down]
    unassigned
```

```
R3#show ipv6 interface brief
GigabitEthernet0/0      [up/up]
    FE80::3
    2001:DB8:ACAD:C::3
GigabitEthernet0/1      [administratively down/down]
    unassigned
Serial0/0/0              [up/up]
    FE80::3
    2001:DB8:ACAD:13::3
Serial0/0/1              [up/up]
    FE80::3
    2001:DB8:ACAD:23::3
Vlan1                    [administratively down/down]
    unassigned
```

Ustawienia ospf na routerach

```
R2#show ipv6 ospf interface brief
```

Interface	PID	Area	Intf ID	Cost	State	Nbrs	F/C
Gig0/0	1	0	1	1	DR	0/0	
Se0/0/0	1	0	3	64	POINT	0/0	
Se0/0/1	1	0	4	64	POINT	0/0	

```
----
```

```
R2#show ipv6 ospf interface
GigabitEthernet0/0 is up, line protocol is up
  Link Local Address FE80::2, Interface ID 1
  Area 0, Process ID 1, Instance ID 0, Router ID 2.2.2.2
  Network Type BROADCAST, Cost: 1
  Transmit Delay is 1 sec, State DR, Priority 1
  Designated Router (ID) 2.2.2.2, local address FE80::2
  No backup designated router on this network
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    No Hellos (Passive interface)
  Index 1/1, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 0, Adjacent neighbor count is 0
  Suppress hello for 0 neighbor(s)
Serial10/0/0 is up, line protocol is up
  Link Local Address FE80::2, Interface ID 3
  Area 0, Process ID 1, Instance ID 0, Router ID 2.2.2.2
  Network Type POINT-TO-POINT, Cost: 64
  Transmit Delay is 1 sec, State POINT-TO-POINT,
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    No Hellos (Passive interface)
  Index 2/2, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Suppress hello for 0 neighbor(s)
Serial10/0/1 is up, line protocol is up
  Link Local Address FE80::2, Interface ID 4
  Area 0, Process ID 1, Instance ID 0, Router ID 2.2.2.2
  Network Type POINT-TO-POINT, Cost: 64
  Transmit Delay is 1 sec, State POINT-TO-POINT,
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:09
  Index 3/3, flood queue length 0
  Next 0x0(0)/0x0(0)
  Last flood scan length is 1, maximum is 1
  Last flood scan time is 0 msec, maximum is 0 msec
  Neighbor Count is 1, Adjacent neighbor count is 1
    Adjacent with neighbor 3.3.3.3
  Suppress hello for 0 neighbor(s)
R2#
```

```
R2# show ipv6 protocols
IPv6 Routing Protocol is "connected"
IPv6 Routing Protocol is "ND"
IPv6 Routing Protocol is "ospf 1"
  Interfaces (Area 0)
    GigabitEthernet0/0
    Serial10/0/0
    Serial10/0/1
  Redistribution:
    None
```

```

R2#show ipv6 route
IPv6 Routing Table - 10 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
        U - Per-user Static route, M - MIPv6
        I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
        ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
        O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
        ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
        D - EIGRP, EX - EIGRP external
O  2001:DB8:ACAD:A::/64 [110/129]
    via FE80::3, Serial0/0/1
C  2001:DB8:ACAD:B::/64 [0/0]
    via GigabitEthernet0/0, directly connected
L  2001:DB8:ACAD:B::2/128 [0/0]
    via GigabitEthernet0/0, receive
O  2001:DB8:ACAD:C::/64 [110/65]
    via FE80::3, Serial0/0/1
C  2001:DB8:ACAD:12::/64 [0/0]
    via Serial0/0/0, directly connected
L  2001:DB8:ACAD:12::2/128 [0/0]
    via Serial0/0/0, receive
O  2001:DB8:ACAD:13::/64 [110/128]
    via FE80::3, Serial0/0/1
C  2001:DB8:ACAD:23::/64 [0/0]
    via Serial0/0/1, directly connected
L  2001:DB8:ACAD:23::2/128 [0/0]
    via Serial0/0/1, receive
L  FF00::/8 [0/0]
    via Null0, receive

```

W dalszej części zadania zdecydowano się na aktywację trybu pasywnego dla wybranych interfejsów, co doprowadziło do zmian w schemacie routingu oraz wzrostu kosztu trasy na routerze R1. Router R2, który wcześniej był widoczny w OSPF na R3, teraz nie jest już widoczny na R1.

Cały ruch kierowany do sieci 2001:DB8:ACAD:B::/64 z R1 będzie teraz przekierowany przez R3. Ponieważ interfejs S0/0/0 na R2 jest skonfigurowany jako pasywny, nie dochodzi do ogłaszania informacji o routingu przez OSPFv3 przez ten interfejs. Koszt połączenia wynoszący 129 jest efektem konieczności przekierowania ruchu przez dodatkowe urządzenie, zamiast bezpośredniego dostępu do docelowego adresata.

Do odwrócenia zmian wykorzystałem komendy:

```
R2(config)# ipv6 router ospf 1
```

```
R2(config-rtr)# no passive-interface s0/0/1
```

Koszt tras na R1 po zmianach

```

R1#show ipv6 route ospf
IPv6 Routing Table - 10 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
        U - Per-user Static route, M - MIPv6
        I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
        O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
        ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
        D - EIGRP, EX - EIGRP external
O  2001:DB8:ACAD:B::/64 [110/129]
    via FE80::3, Serial0/0/1
O  2001:DB8:ACAD:C::/64 [110/65]
    via FE80::3, Serial0/0/1
O  2001:DB8:ACAD:23::/64 [110/128]
    via FE80::3, Serial0/0/1

```

Podsumowanie

Identyfikator procesu OSPFv3 służy wyłącznie do celów lokalnych na danym routerze i nie wymaga dopasowania do identyfikatorów procesów stosowanych na innych urządzeniach w ramach tej samej strefy OSPFv3.

Eliminacja instrukcji sieciowej zmniejsza ryzyko pomyłek przy wpisywaniu adresów IPv6. Dodatkowo, na pojedynczy interfejs IPv6 można przypisać wiele adresów IPv6. Przydzielenie interfejsu do strefy OSPFv3 sprawia, że wszystkie adresy multicast dostępne na tym interfejsie są automatycznie dołączane do strefy OSPFv6, co skutkuje generowaniem odpowiadających im tras w tablicy routingu IPv6.