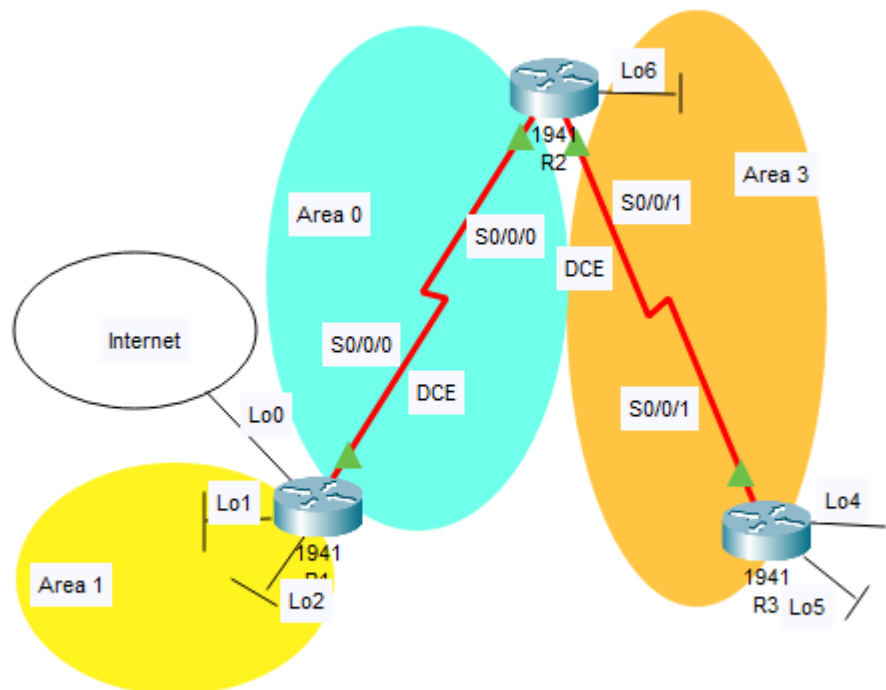


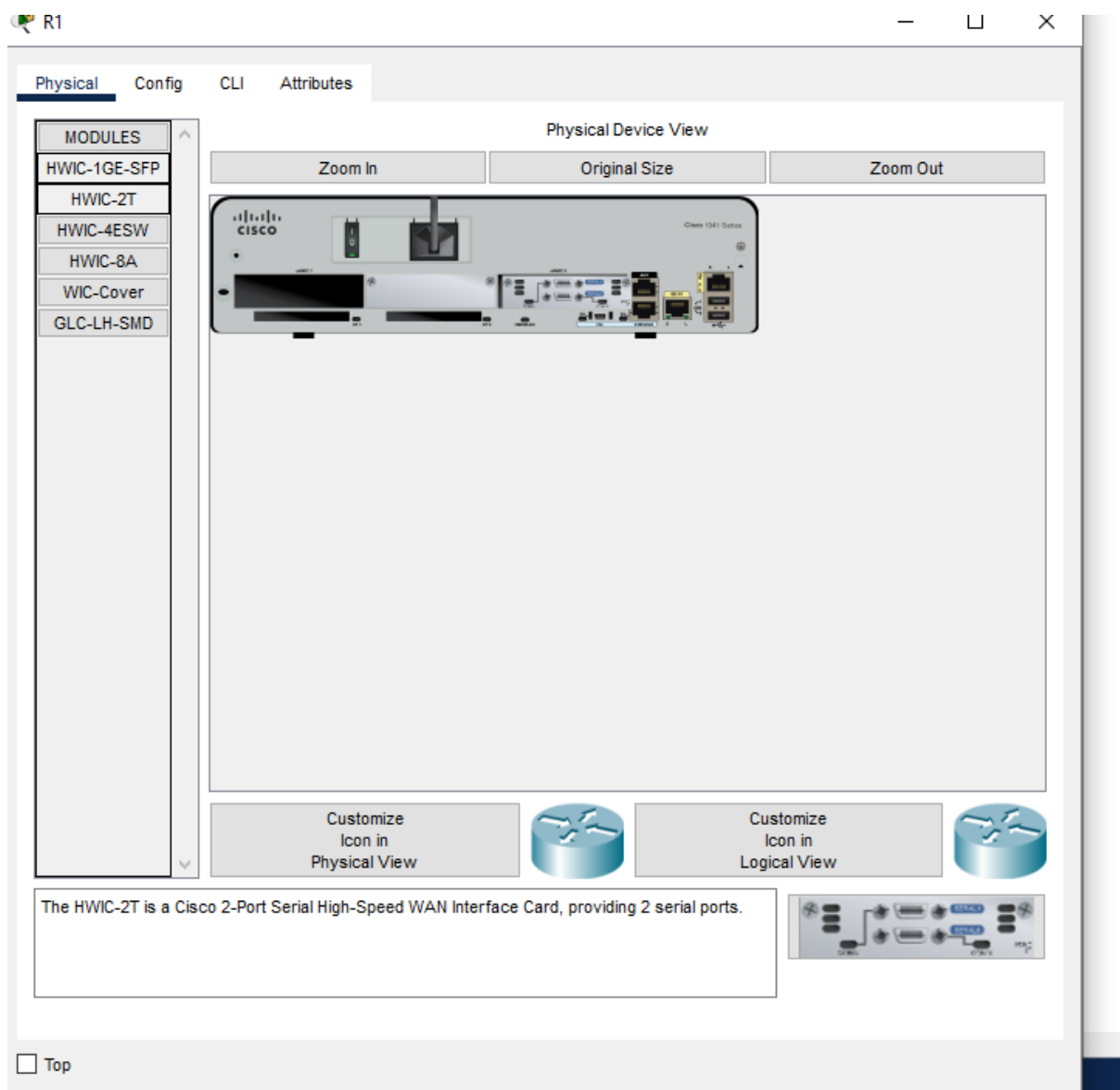
Zadanie 9.2.2.8

Piotr Boguszewski 63478 inis5_fd

Topologia sieci



Potrzeba dodać karty z interfejsami serialowymi gdyż routery ich domyślnie nie posiadają.



Ustawienia ip routerów

R1

R1

Physical

Config

CLI

Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

Serial0/0/0

Serial0/0/1

Serial0/0/0

Port Status ☒ On

Duplex ☐ Full Duplex

Clock Rate 128000

IP Configuration

IPv4 Address 192.168.12.1

Subnet Mask 255.255.255.252

Tx Ring Limit 10

Equivalent IOS Commands

```

R1(config)#interface GigabitEthernet0/1
R1(config-if)#
R1(config-if)#exit
R1(config)#interface Serial0/0/0
R1(config-if)#
R1(config-if)#exit
R1(config)#interface Serial0/0/1
R1(config-if)#
R1(config-if)#exit
R1(config)#interface Serial0/0/0
R1(config-if)#
R1(config-if)#exit
R1(config)#interface Serial0/0/0
R1(config-if)#

```

☐ Top

```

R1#show ip interface brief
Interface          IP-Address      OK? Method Status              Protocol
GigabitEthernet0/0 unassigned      YES unset  administratively down down
GigabitEthernet0/1 unassigned      YES unset  administratively down down
Serial0/0/0        192.168.12.1    YES manual  up                  up
Serial0/0/1        unassigned      YES unset  administratively down down
Loopback0          209.165.200.225 YES manual  up                  up
Loopback1          192.168.1.1     YES manual  up                  up
Loopback2          192.168.2.1     YES manual  up                  up
Vlan1              unassigned      YES unset  administratively down down
R1#

```

```
R1#show ip ospf interface
```

```
Loopback1 is up, line protocol is up
  Internet address is 192.168.1.1/24, Area 1
  Process ID 1, Router ID 1.1.1.1, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Loopback2 is up, line protocol is up
  Internet address is 192.168.2.1/24, Area 1
  Process ID 1, Router ID 1.1.1.1, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Serial0/0/0 is up, line protocol is up
  Internet address is 192.168.12.1/30, Area 0
  Process ID 1, Router ID 1.1.1.1, Network Type POINT-TO-POINT, Cost: 781
  Transmit Delay is 1 sec, State POINT-TO-POINT,
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:02
  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 2.2.2.2
  Suppress hello for 0 neighbor(s)
R1#
```

```
R1#show ip route ospf
  192.168.4.0/32 is subnetted, 1 subnets
O IA   192.168.4.1 [110/1563] via 192.168.12.2, 00:09:28, Serial0/0/0
  192.168.5.0/32 is subnetted, 1 subnets
O IA   192.168.5.1 [110/1563] via 192.168.12.2, 00:09:28, Serial0/0/0
  192.168.6.0/32 is subnetted, 1 subnets
O IA   192.168.6.1 [110/782] via 192.168.12.2, 00:40:42, Serial0/0/0
  192.168.23.0/30 is subnetted, 1 subnets
O IA   192.168.23.0 [110/1562] via 192.168.12.2, 00:40:42, Serial0/0/0
R1#
```

```
R1#show ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
2.2.2.2	0	FULL/ -	00:00:35	192.168.12.2	Serial0/0/0

```
R1#
```

R2

Physical

Config

CLI

Attributes

GLOBAL

Settings

Algorithm Settings

ROUTING

Static

RIP

SWITCHING

VLAN Database

INTERFACE

GigabitEthernet0/0

GigabitEthernet0/1

Serial0/0/0

Serial0/0/1

Serial0/0/0

Port Status ☒ On

Duplex ☐ Full Duplex

Clock Rate 2000000

IP Configuration

IPv4 Address 192.168.12.2

Subnet Mask 255.255.255.252

Tx Ring Limit 10

Equivalent IOS Commands

Loading Done

User Access Verification

Password:

R2>enable

Password:

Password:

R2#configure terminal

Enter configuration commands, one per line. End with CNTL/Z.

R2(config)#interface Serial0/0/0

R2(config-if)#

☐ Top

```
R2#show ip interface brief
Interface          IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0 unassigned      YES unset   administratively down down
GigabitEthernet0/1 unassigned      YES unset   administratively down down
Serial0/0/0        192.168.12.2    YES manual  up          up
Serial0/0/1        192.168.23.1    YES manual  up          up
Loopback6         192.168.6.1     YES manual  up          up
Vlan1             unassigned      YES unset   administratively down down
R2#
```

```
R2#show ip ospf interface
```

```
Loopback6 is up, line protocol is up
  Internet address is 192.168.6.1/24, Area 3
  Process ID 1, Router ID 2.2.2.2, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Serial0/0/1 is up, line protocol is up
  Internet address is 192.168.23.1/30, Area 3
  Process ID 1, Router ID 2.2.2.2, Network Type POINT-TO-POINT, Cost: 781
  Transmit Delay is 1 sec, State POINT-TO-POINT,
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:07
  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
  Neighbor Count is 1 , Adjacent neighbor count is 1
    Adjacent with neighbor 3.3.3.3
  Suppress hello for 0 neighbor(s)
Serial0/0/0 is up, line protocol is up
  Internet address is 192.168.12.2/30, Area 0
  Process ID 1, 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 00:00:02
  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 1.1.1.1
  Suppress hello for 0 neighbor(s)
```

```
R2#show ip route ospf
  192.168.1.0/32 is subnetted, 1 subnets
O IA   192.168.1.1 [110/65] via 192.168.12.1, 00:48:50, Serial0/0/0
  192.168.2.0/32 is subnetted, 1 subnets
O IA   192.168.2.1 [110/65] via 192.168.12.1, 00:48:50, Serial0/0/0
  192.168.4.0/32 is subnetted, 1 subnets
O      192.168.4.1 [110/782] via 192.168.23.2, 00:17:36, Serial0/0/1
  192.168.5.0/32 is subnetted, 1 subnets
O      192.168.5.1 [110/782] via 192.168.23.2, 00:17:36, Serial0/0/1
O*E2 0.0.0.0/0 [110/1] via 192.168.12.1, 00:48:50, Serial0/0/0
```

```
R2#show ip ospf neighbor
```

Neighbor ID	Pri	State	Dead Time	Address	Interface
3.3.3.3	0	FULL/ -	00:00:32	192.168.23.2	Serial0/0/1
1.1.1.1	0	FULL/ -	00:00:31	192.168.12.1	Serial0/0/0

```
R2#
```

R3

Physical
Config
CLI
Attributes

GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Serial0/0/0
Serial0/0/1

Serial0/0/1
Port Status

☒ On

Duplex

☐ Full Duplex

Clock Rate

2000000

IP Configuration
IPv4 Address

192.168.23.2

Subnet Mask

255.255.255.252

Tx Ring Limit

10

Equivalent IOS Commands

```

User Access Verification

Password:
R3>enable
Password:
Password:
R3#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
R3(config)#interface Serial0/0/0
R3(config-if)#
R3(config-if)#exit
R3(config)#interface Serial0/0/1
R3(config-if)#

```

☐ Top

```

R3#show ip interface brief
Interface      IP-Address      OK? Method Status      Protocol
GigabitEthernet0/0  unassigned      YES unset    administratively down down
GigabitEthernet0/1  unassigned      YES unset    administratively down down
Serial0/0/0        unassigned      YES unset    administratively down down
Serial0/0/1        192.168.23.2    YES manual  up          up
Loopback4         192.168.4.1     YES manual  up          up
Loopback5         192.168.5.1     YES manual  up          up
Vlan1             unassigned      YES unset    administratively down down
R3#

```

```

R3#show ip ospf interface

Loopback4 is up, line protocol is up
  Internet address is 192.168.4.1/24, Area 3
  Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Loopback5 is up, line protocol is up
  Internet address is 192.168.5.1/24, Area 3
  Process ID 1, Router ID 3.3.3.3, Network Type LOOPBACK, Cost: 1
  Loopback interface is treated as a stub Host
Serial0/0/1 is up, line protocol is up
  Internet address is 192.168.23.2/30, Area 3
  Process ID 1, Router ID 3.3.3.3, Network Type POINT-TO-POINT, Cost: 781
  Transmit Delay is 1 sec, State POINT-TO-POINT,
  Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5
    Hello due in 00:00:05
  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 2.2.2.2
  Suppress hello for 0 neighbor(s)
R3#

```

```

R3#show ip route ospf
  192.168.1.0/32 is subnetted, 1 subnets
O IA   192.168.1.1 [110/846] via 192.168.23.1, 00:24:25, Serial0/0/1
  192.168.2.0/32 is subnetted, 1 subnets
O IA   192.168.2.1 [110/846] via 192.168.23.1, 00:24:25, Serial0/0/1
  192.168.6.0/32 is subnetted, 1 subnets
O      192.168.6.1 [110/782] via 192.168.23.1, 00:24:25, Serial0/0/1
  192.168.12.0/30 is subnetted, 1 subnets
O IA   192.168.12.0 [110/845] via 192.168.23.1, 00:24:25, Serial0/0/1
O*E2 0.0.0.0/0 [110/1] via 192.168.23.1, 00:24:25, Serial0/0/1

```

```

R3#show ip ospf neighbor

```

Neighbor ID	Pri	State	Dead Time	Address	Interface
2.2.2.2	0	FULL/ -	00:00:36	192.168.23.1	Serial0/0/1

Podsumowanie

Aby uczynić protokół OSPF bardziej wydajnym i skalowalnym, protokół OSPF obsługuje routing hierarchiczny przy użyciu koncepcji obszarów.

Obszar OSPF to grupa routerów, które współdzielą te same informacje o stanie łącza w swoich bazach danych o stanie łącza (LSDB).

Kiedy duży obszar OSPF jest podzielony na mniejsze obszary, nazywa się to wieloobszarowym OSPF. Wieloobszarowy OSPF jest przydatny w większych wdrożeniach sieciowych, aby zmniejszyć obciążenie przetwarzania i pamięci.