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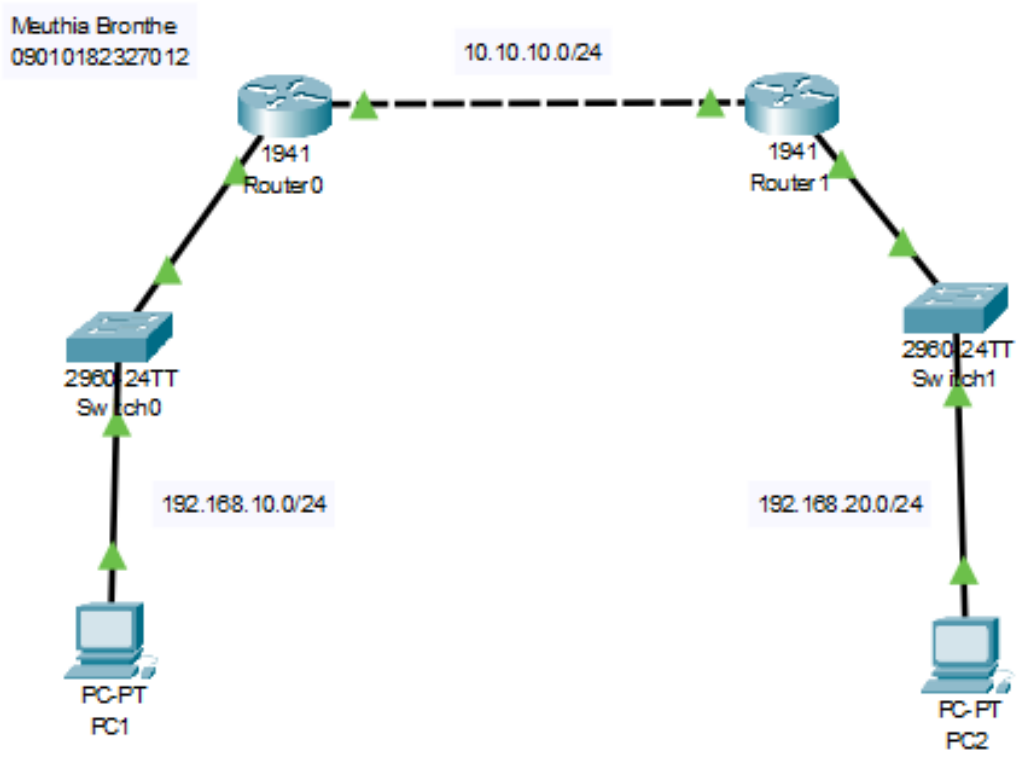
OSPF DYNAMIC ROUTING



ROUTER 0

```
Router0_012>en
Router0_012#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router0_012(config)#int gig0/1
Router0_012(config-if)#ip add 192.168.10.1 255.255.255.0
Router0_012(config-if)#no sh
Router0_012(config-if)#int gig0/0
Router0_012(config-if)#ip add 10.10.10.1 255.255.255.0
Router0_012(config-if)#no sh
Router0_012(config-if)#exit
Router0_012(config)#router ospf 10
Router0_012(config-router)#network 192.168.10.0 0.0.0.255 area 0
Router0_012(config-router)#network 10.10.10.0 0.0.0.255 area 0
Router0_012(config-router)#exit
Router0_012(config)#exit
Router0_012#
%SYS-5-CONFIG_I: Configured from console by console
show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.10.10.0/24 is directly connected, GigabitEthernet0/0
L       10.10.10.1/32 is directly connected, GigabitEthernet0/0
     192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.10.0/24 is directly connected, GigabitEthernet0/1
L       192.168.10.1/32 is directly connected, GigabitEthernet0/1
O    192.168.20.0/24 [110/2] via 10.10.10.2, 00:14:32, GigabitEthernet0/0
```

ROUTER 1

```
Router1_012>en
Router1_012#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
Router1_012(config)#int gig0/1
Router1_012(config-if)#ip add 192.168.20.1 255.255.255.0
Router1_012(config-if)#no sh
Router1_012(config-if)#int gig0/0
Router1_012(config-if)#ip add 10.10.10.2 255.255.255.0
Router1_012(config-if)#no sh
Router1_012(config-if)#exit
Router1_012(config)#router ospf 10
Router1_012(config-router)#network 192.168.20.0 0.0.0.255 area 0
Router1_012(config-router)#network 10.10.10.0 0.0.0.255 area 0
Router1_012(config-router)#exit
Router1_012(config)#exit
Router1_012#
%SYS-5-CONFIG_I: Configured from console by console
show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       10.10.10.0/24 is directly connected, GigabitEthernet0/0
L       10.10.10.2/32 is directly connected, GigabitEthernet0/0
O    192.168.10.0/24 [110/2] via 10.10.10.1, 00:17:48, GigabitEthernet0/0
     192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.20.0/24 is directly connected, GigabitEthernet0/1
L       192.168.20.1/32 is directly connected, GigabitEthernet0/1
```

Ping ke masing-masing PC untuk memeriksa koneksi

PC 1 → PC 2

```
C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Reply from 192.168.20.2: bytes=32 time<1ms TTL=126
Reply from 192.168.20.2: bytes=32 time<1ms TTL=126
Reply from 192.168.20.2: bytes=32 time=10ms TTL=126
Reply from 192.168.20.2: bytes=32 time=13ms TTL=126

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 13ms, Average = 5ms
```

PC 2 → PC 1

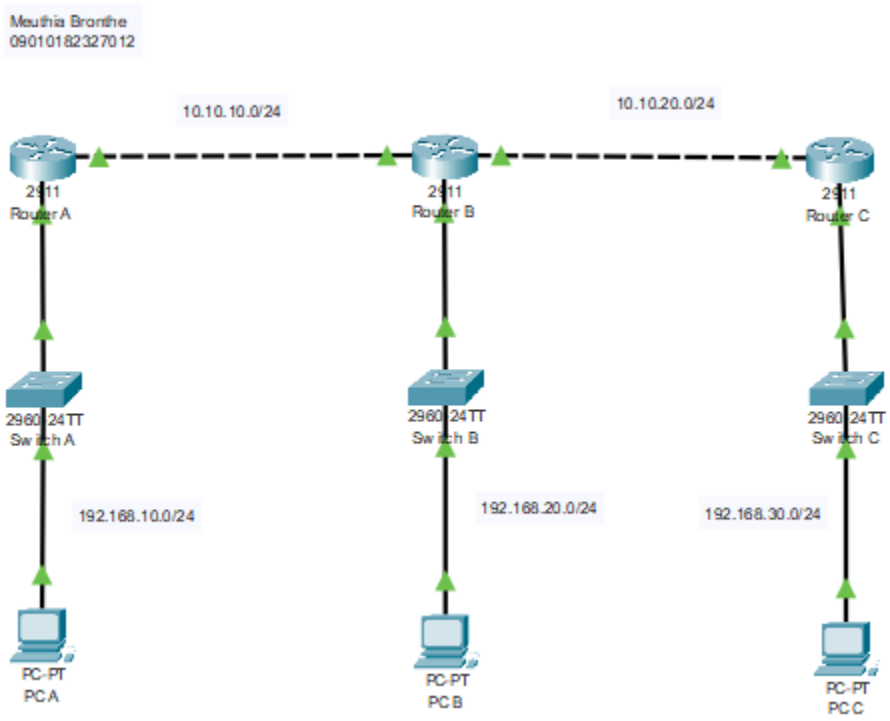
```
C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Reply from 192.168.10.2: bytes=32 time<1ms TTL=126
Reply from 192.168.10.2: bytes=32 time<1ms TTL=126
Reply from 192.168.10.2: bytes=32 time<1ms TTL=126
Reply from 192.168.10.2: bytes=32 time<1ms TTL=126

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

BGP DYNAMIC ROUTING



ROUTER A

```
RouterA_012>en
RouterA_012#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
RouterA_012(config)#int gig0/0
RouterA_012(config-if)#ip add 10.10.10.1 255.255.255.0
RouterA_012(config-if)#no sh
RouterA_012(config-if)#int gig0/1
RouterA_012(config-if)#ip add 192.168.10.1 255.255.255.0
RouterA_012(config-if)#no sh
RouterA_012(config-if)#exit
RouterA_012(config)#router bgp 10
RouterA_012(config-router)#neighbor 10.10.10.2 remote-as 20
RouterA_012(config-router)#network 10.10.10.0 mask 255.255.255.0
RouterA_012(config-router)#network 192.168.10.0 mask 255.255.255.0
RouterA_012(config-router)#exit
RouterA_012(config)#exit
```

```
show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/8 is variably subnetted, 3 subnets, 2 masks
C       10.10.10.0/24 is directly connected, GigabitEthernet0/0
L       10.10.10.1/32 is directly connected, GigabitEthernet0/0
B       10.10.20.0/24 [20/0] via 10.10.10.2, 00:00:00
     192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.10.0/24 is directly connected, GigabitEthernet0/1
L       192.168.10.1/32 is directly connected, GigabitEthernet0/1
B    192.168.20.0/24 [20/0] via 10.10.10.2, 00:00:00
B    192.168.30.0/24 [20/0] via 10.10.10.2, 00:00:00
```

ROUTER B

```
RouterB_012>en
RouterB_012#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
RouterB_012(config)#int gig0/0
RouterB_012(config-if)#ip add 10.10.10.2 255.255.255.0
RouterB_012(config-if)#no sh
RouterB_012(config-if)#int gig0/1
RouterB_012(config-if)#ip add 10.10.20.1 255.255.255.0
RouterB_012(config-if)#no sh
RouterB_012(config-if)#int gig0/2
RouterB_012(config-if)#ip add 192.168.20.1 255.255.255.0
RouterB_012(config-if)#no sh
RouterB_012(config-if)#exit
RouterB_012(config)#router bgp 20
RouterB_012(config-router)#neighbor 10.10.10.1 remote-as 10
RouterB_012(config-router)#neighbor 10.10.20.2 remote-as 30
RouterB_012(config-router)#network 10.10.10 0 mask 255.255.255.0
                                   ^
% Invalid input detected at '^' marker.

RouterB_012(config-router)#network 10.10.10.0 mask 255.255.255.0
RouterB_012(config-router)#network 10.10.20.0 mask 255.255.255.0
RouterB_012(config-router)#network 192.168.20.0 mask 255.255.255.0
RouterB_012(config-router)#exit
RouterB_012(config)#exit
```

```
show ip route
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       * - candidate default, U - per-user static route, o - ODR
       P - periodic downloaded static route

Gateway of last resort is not set

     10.0.0.0/8 is variably subnetted, 4 subnets, 2 masks
C       10.10.10.0/24 is directly connected, GigabitEthernet0/0
L       10.10.10.2/32 is directly connected, GigabitEthernet0/0
C       10.10.20.0/24 is directly connected, GigabitEthernet0/1
L       10.10.20.1/32 is directly connected, GigabitEthernet0/1
B    192.168.10.0/24 [20/0] via 10.10.10.1, 00:00:00
     192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.20.0/24 is directly connected, GigabitEthernet0/2
L       192.168.20.1/32 is directly connected, GigabitEthernet0/2
B    192.168.30.0/24 [20/0] via 10.10.20.2, 00:00:00
```

ROUTER C

```
RouterC_012>en
RouterC_012#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
RouterC_012(config)#int gig0/0
RouterC_012(config-if)#ip add 10.10.20.2 255.255.255.0
RouterC_012(config-if)#no sh
RouterC_012(config-if)#int gig0/1
RouterC_012(config-if)#ip add 192.168.30.1 255.255.255.0
RouterC_012(config-if)#no sh
RouterC_012(config-if)#exit
RouterC_012(config)#router bgp 30
RouterC_012(config-router)#neighbor 10.10.20.1 remote-as 20
RouterC_012(config-router)#network 10.10.20.0 mask 255.255.255.0
RouterC_012(config-router)#network 192.168.30.0 mask 255.255.255.0
RouterC_012(config-router)#exit
RouterC_012(config)#exit

RouterC_012>en
RouterC_012#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
RouterC_012(config)#int gig0/0
RouterC_012(config-if)#ip add 10.10.20.2 255.255.255.0
RouterC_012(config-if)#no sh
RouterC_012(config-if)#int gig0/1
RouterC_012(config-if)#ip add 192.168.30.1 255.255.255.0
RouterC_012(config-if)#no sh
RouterC_012(config-if)#exit
RouterC_012(config)#router bgp 30
RouterC_012(config-router)#neighbor 10.10.20.1 remote-as 20
RouterC_012(config-router)#network 10.10.20.0 mask 255.255.255.0
RouterC_012(config-router)#network 192.168.30.0 mask 255.255.255.0
RouterC_012(config-router)#exit
RouterC_012(config)#exit
```

Ping ke masing-masing PC untuk memeriksa koneksi

PC A → PC B, PC C

```
C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Reply from 192.168.20.2: bytes=32 time=11ms TTL=126
Reply from 192.168.20.2: bytes=32 time=11ms TTL=126
Reply from 192.168.20.2: bytes=32 time=11ms TTL=126
Reply from 192.168.20.2: bytes=32 time=13ms TTL=126

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 11ms, Maximum = 13ms, Average = 11ms

C:\>ping 192.168.30.2

Pinging 192.168.30.2 with 32 bytes of data:

Reply from 192.168.30.2: bytes=32 time=15ms TTL=125
Reply from 192.168.30.2: bytes=32 time=12ms TTL=125
Reply from 192.168.30.2: bytes=32 time=13ms TTL=125
Reply from 192.168.30.2: bytes=32 time=11ms TTL=125

Ping statistics for 192.168.30.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 11ms, Maximum = 15ms, Average = 12ms
```

PC B → PC A, PC C

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Reply from 192.168.10.2: bytes=32 time=11ms TTL=126
Reply from 192.168.10.2: bytes=32 time=11ms TTL=126
Reply from 192.168.10.2: bytes=32 time<1ms TTL=126
Reply from 192.168.10.2: bytes=32 time=11ms TTL=126

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 11ms, Average = 8ms

C:\>ping 192.168.30.2

Pinging 192.168.30.2 with 32 bytes of data:

Reply from 192.168.30.2: bytes=32 time=11ms TTL=126
Reply from 192.168.30.2: bytes=32 time<1ms TTL=126
Reply from 192.168.30.2: bytes=32 time=11ms TTL=126
Reply from 192.168.30.2: bytes=32 time=6ms TTL=126

Ping statistics for 192.168.30.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 11ms, Average = 7ms
```

PC C → PC A, PC B

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ping 192.168.10.2

Pinging 192.168.10.2 with 32 bytes of data:

Reply from 192.168.10.2: bytes=32 time=12ms TTL=125
Reply from 192.168.10.2: bytes=32 time=12ms TTL=125
Reply from 192.168.10.2: bytes=32 time=33ms TTL=125
Reply from 192.168.10.2: bytes=32 time=11ms TTL=125

Ping statistics for 192.168.10.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 11ms, Maximum = 33ms, Average = 17ms

C:\>ping 192.168.20.2

Pinging 192.168.20.2 with 32 bytes of data:

Reply from 192.168.20.2: bytes=32 time<1ms TTL=126
Reply from 192.168.20.2: bytes=32 time=11ms TTL=126
Reply from 192.168.20.2: bytes=32 time=13ms TTL=126
Reply from 192.168.20.2: bytes=32 time=12ms TTL=126

Ping statistics for 192.168.20.2:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 13ms, Average = 9ms
```