

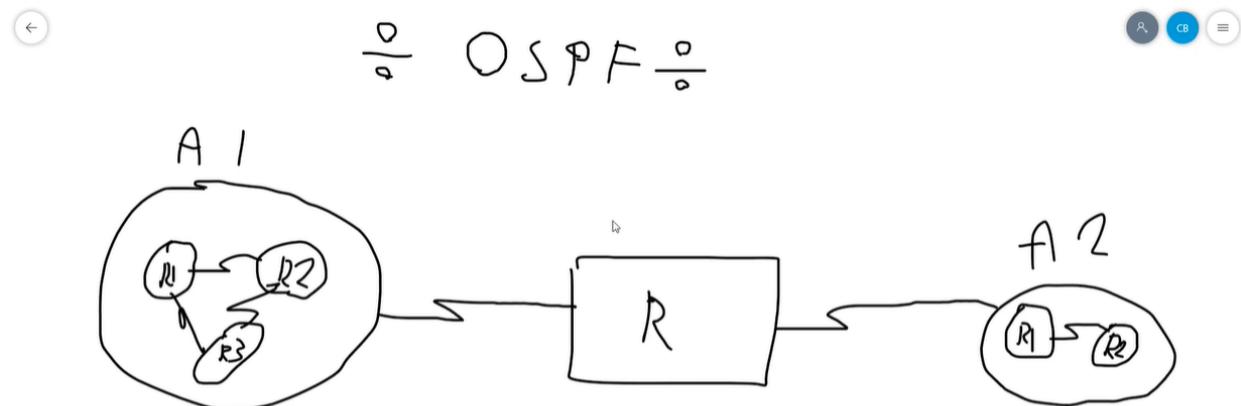
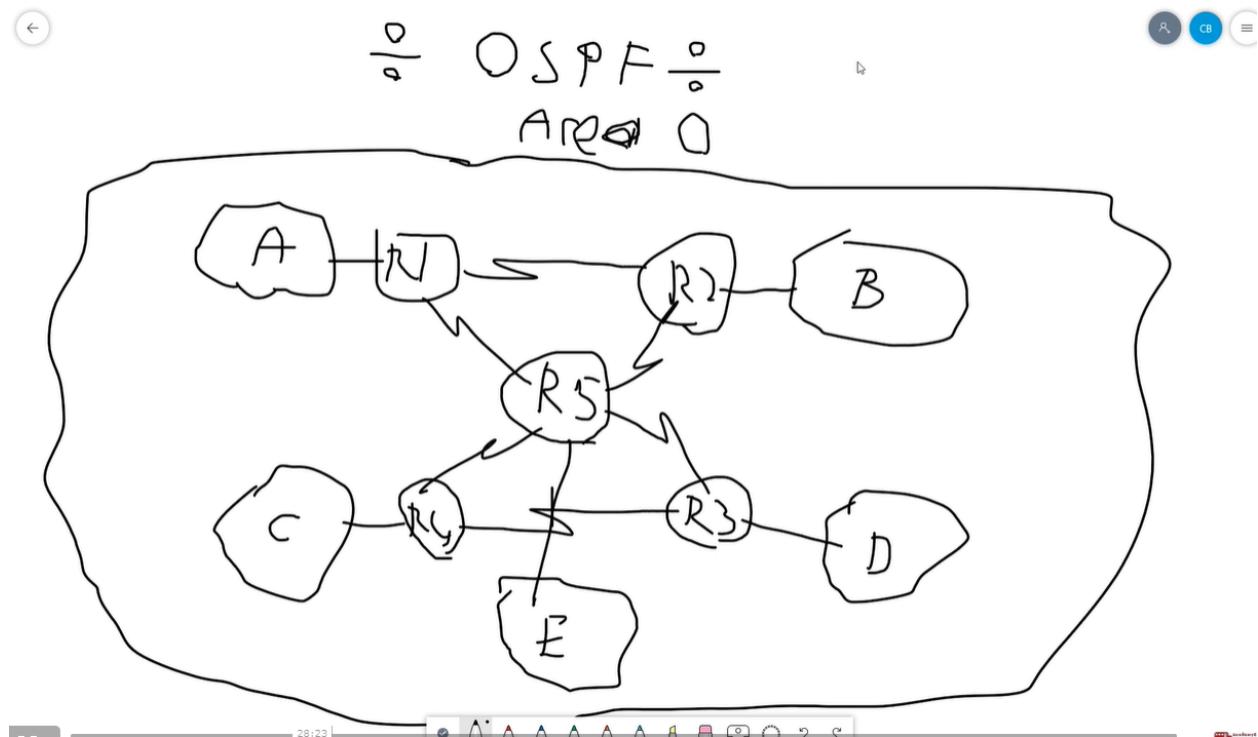
OSPF (Open Short Path First)

Asrı̄n Andırı̄n

Aim

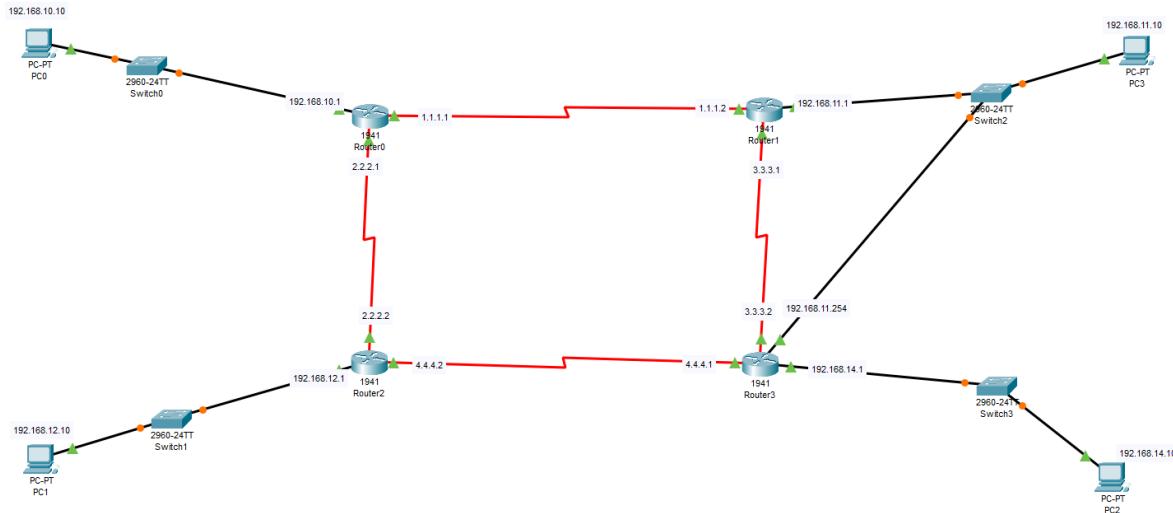
- Working and practicing on OSPF.

Single Area Project



Router OSPF Durumları :

- Down state
- Init Durumu
- 2 way state
- Extart state
- Loading state
- Full state



Router config for router 0

Bazı key pointler,

Router ospf 1, buradaki ospf 1 komşularda aynı olmak zorunda değil, ama aynı da olabilir.

Router ID tanıtılrken diğer routertara yazdığımız IP type ID'den farklı bir ID yazmamızı.

Network tanıtılrken white mask yazılır.

Network tanıtılrken area yazılır, bu projede tüm routerlar area 1 de olduğu için hepsine area 1 yazdık.

```
Router>
Router>
Router>ena
Router#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#
Router(config)#
Router(config)#rout
Router(config)#router osp
Router(config)#router ospf 1
Router(config-router)#rout
Router(config-router)#router-id 1.1.1.1
Router(config-router)#
Router(config-router)#
Router(config-router)##net
Router(config-router)#network 192.168.10.0 0.0.0.255 area 0
Router(config-router)#network 192.168.10.0 0.0.0.255 area 1
Router(config-router)#
Router(config-router)##net
Router(config-router)#network 1.1.1.0 0.0.0.255 area 0
Router(config-router)#network 1.1.1.0 0.0.0.255 area 1
Router(config-router)#
Router(config-router)##net
Router(config-router)#network 2.2.2.0 0.0.0.255 area 1
Router(config-router)#network 2.2.2.0 0.0.0.255 area 1
Router(config-router)#
Router(config-router)#
Router(config-router)##end
Router#
%SYS-5-CONFIG_I: Configured from console by console

Router#wri
Router#write
Building configuration

Ctrl+F6 to exit CLI focus
```

Router 1 config ekranı

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Router 1 routing table

```
8

Router>
Router>show ip r
Router>show ip rou
Router>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

      1.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        1.1.1.0/24 is directly connected, Serial0/1/0
L        1.1.1.1/32 is directly connected, Serial0/1/0
      2.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C        2.2.2.0/24 is directly connected, Serial0/1/1
L        2.2.2.1/32 is directly connected, Serial0/1/1
      3.0.0.0/24 is subnetted, 1 subnets
O          3.3.3.0/24 [110/128] via 1.1.1.2, 00:09:40, Serial0/1/0
      4.0.0.0/24 is subnetted, 1 subnets
O          4.4.4.0/24 [110/129] via 1.1.1.2, 00:04:29, Serial0/1/0
      192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C          192.168.10.0/24 is directly connected, GigabitEthernet0/0
--More--
```

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Router 1 Neighbor list

```
Router>
Router>
Router>en
Router>enable
Router#
Router#sho
Router#show ip
Router#show ip os
Router#show ip ospf ne
Router#show ip ospf neighbor

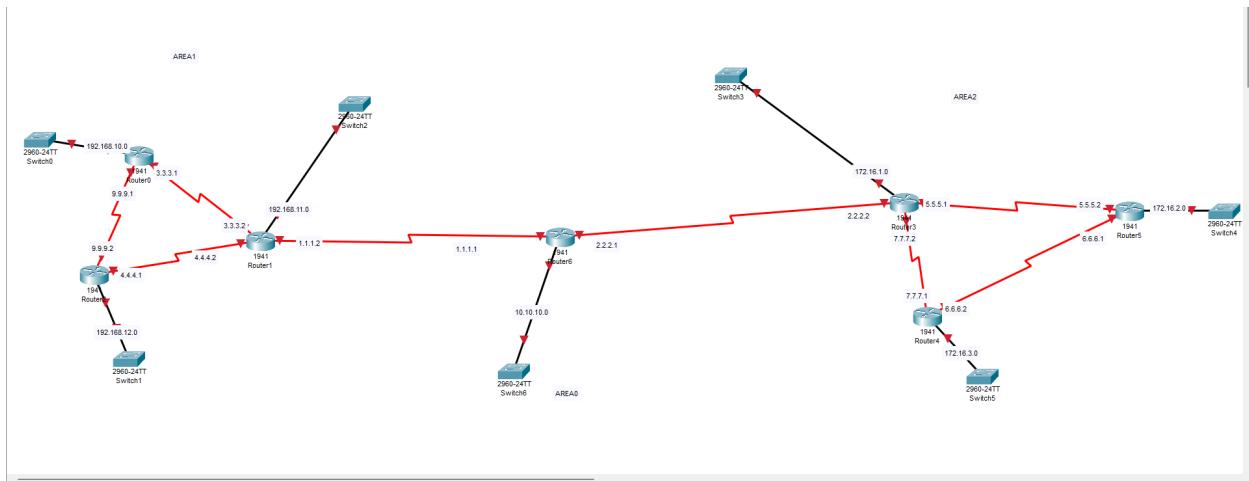
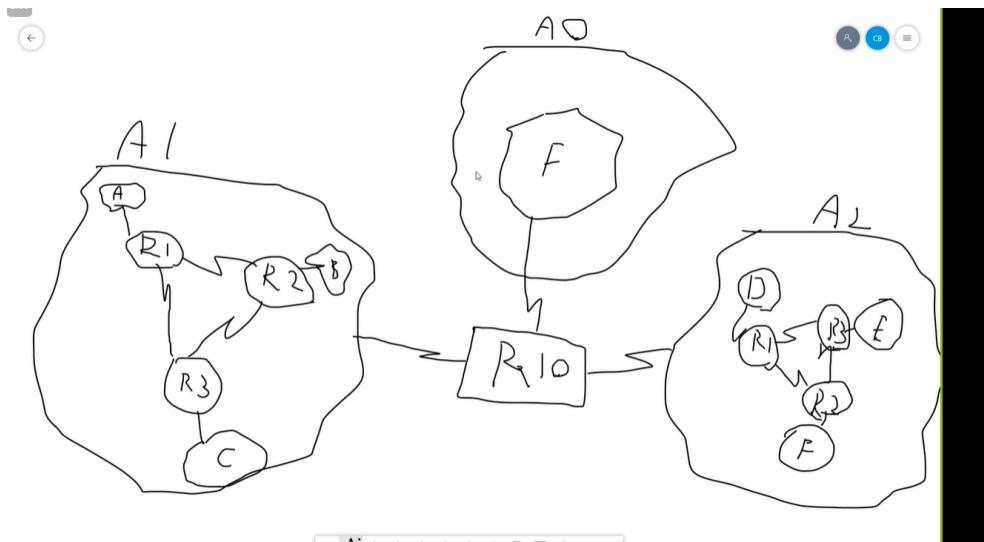
Neighbor ID      Pri   State        Dead Time    Address          Interface
3.3.3.3          1     FULL/BDR   00:00:33    192.168.11.254 GigabitEthernet0/0
1.1.1.1          0     FULL/ -    00:00:31    1.1.1.1        Serial0/1/0
3.3.3.3          0     FULL/ -    00:00:30    3.3.3.2        Serial0/1/1
Router#
```

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Multiple Area Project 2



Router 5 = Backbone Area Router.

Left side = internal area router.

Right side = internal area router.

Bu şekilde ağları böldüğümüzde, routing tablelar hafiflemiş oluyor ve router performansı artıyor.

R1 Config Commands

```
R1#  
R1#  
R1#  
R1#conf t  
Enter configuration commands, one per line. End with CNTL/Z.  
R1(config)#  
R1(config)#  
R1(config)#rou  
R1(config)#router os  
R1(config)#router ospf 1      |  
R1(config-router)#rou  
R1(config-router)#router-id 1.1.1.1  
R1(config-router)#netw  
R1(config-router)#network 9.9.9.0 0.0.0.255 area 1  
R1(config-router)#network 12.12.12.0 0.0.0.255 area 1  
R1(config-router)#network 192.168.10.0 0.0.0.255 area 1  
R1(config-router)#end  
R1#  
%SYS-5-CONFIG_I: Configured from console by console
```

Ctrl+F6 to exit CLI focus

Top

0
60-2-
switch

BBR Config Commands

BBR config yapılrken bölge dağıtımında area yazımına dikkat etmeliyiz.

```
Router(config)#  
Router(config)#rou  
Router(config)#router os  
Router(config)#router ospf 1  
Router(config-router)#  
Router(config-router)#rout  
Router(config-router)#router-id 4.4.4.4  
Router(config-router)#  
Router(config-router)#net  
Router(config-router)#network 1.1.1.0 0.0.0.255 are  
Router(config-router)#network 1.1.1.0 0.0.0.255 area 1  
Router(config-router)#  
Router(config-router)#net  
Router(config-router)#network 10.10.10.0 0.0.0.255 aer  
00:52:53: %OSPF-4-ERRRCV: Received invalid packet: mismatch area ID, from backbone area must be virtual-link but not found  
from 1.1.1.1, Serial0/1/0  
  
00:53:03: %OSPF-4-ERRRCV: Received invalid packet: mismatch area ID, from backbone area must be virtual-link but not found  
from 1.1.1.1, Serial0/1/0  
  
00:53:13: %OSPF-4-ERRRCV: Received invalid packet: mismatch area ID, from backbone area must be virtual-link but not found  
from 1.1.1.1, Serial0/1/0  
  
00:53:23: %OSPF-4-ERRRCV: Received invalid packet: mismatch area ID, from backbone area must be virtual-link but not found  
from 1.1.1.1, Serial0/1/0  
  
00:53:33: %OSPF-4-ERRRCV: Received invalid packet: mismatch area ID, from backbone area must be virtual-link but not found  
from 1.1.1.1, Serial0/1/0  
  
^  
* Invalid input detected at '^' marker.  
  
Router(config-router)#  
Router(config-router)#network 1.1.1.0 0.0.0.255 area 0  
Router(config-router)#  
00:53:40: %OSPF-6-AREACHG: 1.1.1.0/0 changed from area 1 to area 0  
  
00:53:43: %OSPF-5-ADJCHG: Process 1, Nbr 3.3.3.3 on Serial0/1/0 from LOADING to FULL, Loading Done  
  
Router(config-router)#  
Router(config-router)#network 2.2.2.0 0.0.0.255 area 0  
Router(config-router)#  
Router(config-router)#network 10.10.10.0 0.0.0.255 area 0  
Router(config-router)#end  
Router(config-router)#end  
Router#  
%SYS-5-CONFIG_I: Configured from console by console  
  
Router#  
Router#wri  
Router#write
```

Area 2 R3 Config Command

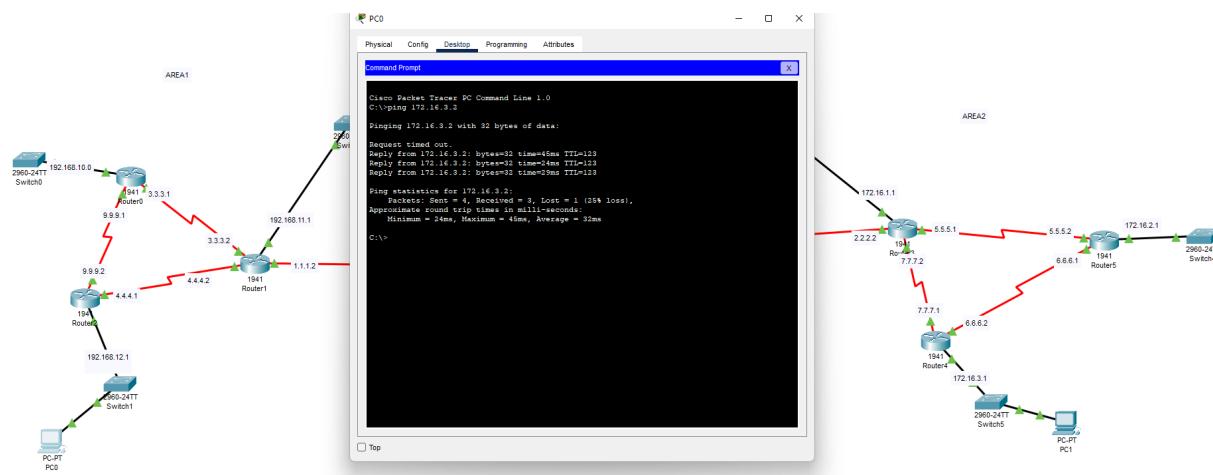
```

-----+
Router(config)#
Router(config)#
Router(config)#rou
Router(config)#router os
Router(config)#router ospf 1
Router(config-router)#
Router(config-router)#rou
Router(config-router)#rou
Router(config-router)#router-id 6.6.6.6
Router(config-router)#
Router(config-router)#net
Router(config-router)#network 172.16.1.0 0.0.0.255 area 0
Router(config-router)#
Router(config-router)#net
Router(config-router)#network 2.2.2.0 0.0.0.255 area 0
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
00:59:58: %OSPF-5-ADJCHG: Process 1, Nbr 4.4.4.4 on Serial0/0/0 from LOADING to
Loading Done

* Incomplete command.
Router(config-router)#
Router(config-router)#net
Router(config-router)#network 172.16.1.0 0.0.0.255 area 0
Router(config-router)#network 172.16.1.0 0.0.0.255 area 2
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#
Router(config-router)#

```

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Same Project made in GNS3 Software.

