ASSIGNMENT 9

OSPF:

The Open Shortest Path First (OSPF) protocol is a link-state Interior Gateway Protocol (IGP) developed by the Internet Engineering Task Force (IETF).

WHY DO WE NEED OSPF:

Before the emergence of OSPF, the Routing Information Protocol (RIP) was the most widely used IGP.

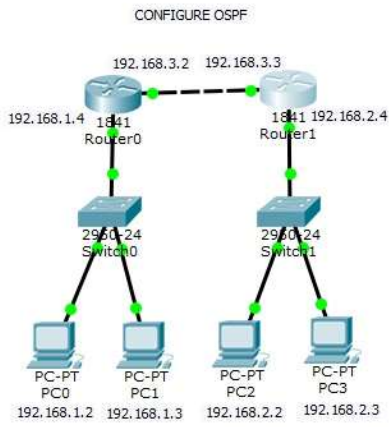
RIP is a distance-vector routing protocol which is gradually being replaced by OSPF, due to the former's slow convergence, tendency to form routing loops, and poor scalability.

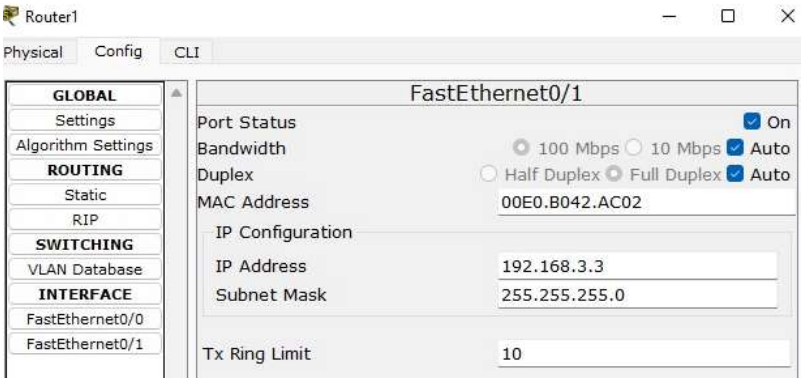
OSPF is a link-state routing protocol featuring:

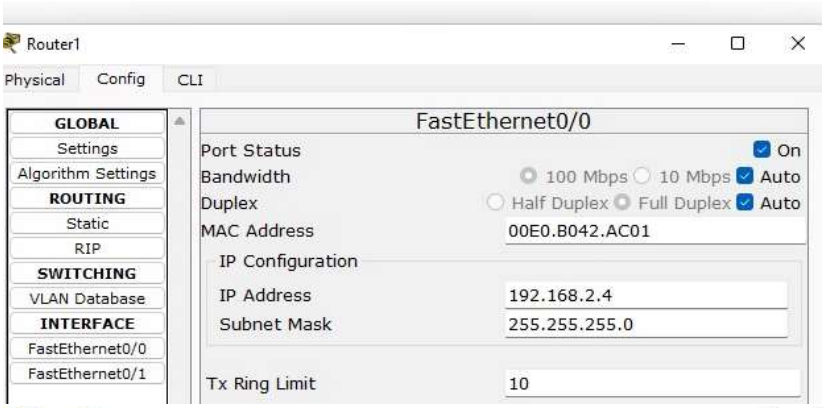
- Multicast packet transmission, reducing load on the routers that do not run OSPF
- Support for Classless Inter-Domain Routing (CIDR)
- Load balancing among equal-cost routes
- Packet authentication

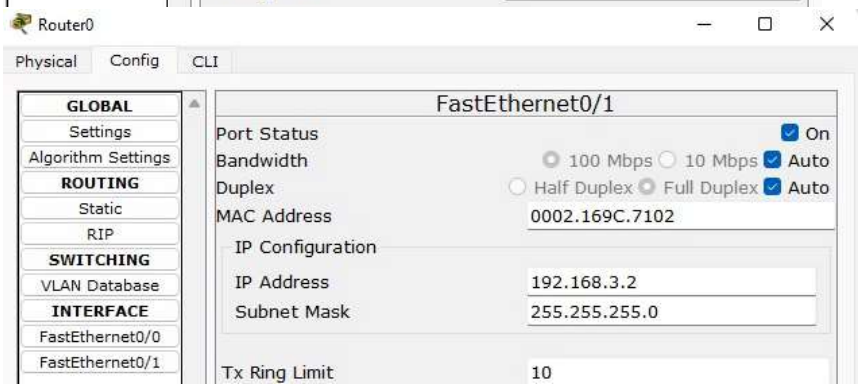
With the preceding advantages, OSPF is widely accepted and used as an IGP.

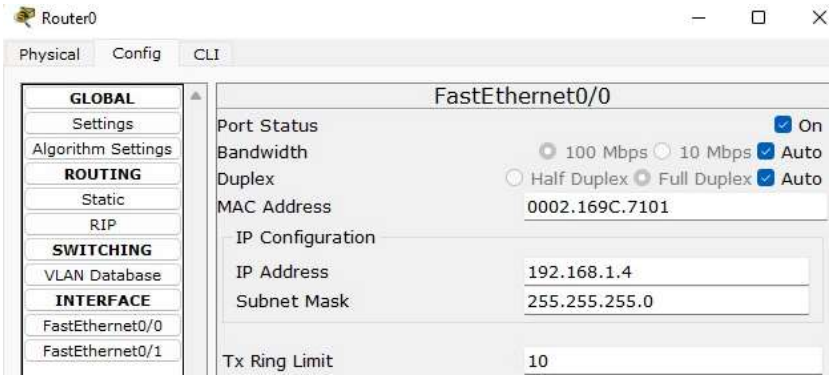
1.Configure OSPF using 2 routers, 2 switches, 4Pcs











Router1

Physical Config CLI

IOS Command Line Interface

```
Router>enable
Router#config terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 2
Router(config-router)#network 196 168.3.0 0.0.0.255 area 0
                              ^
% Invalid input detected at '^' marker.

Router(config-router)#network 196.168.3.0 0.0.0.255 area 0
Router(config-router)#network 196.168.2.0 0.0.0.255 area 0
Router(config-router)#exit
Router(config)#
```

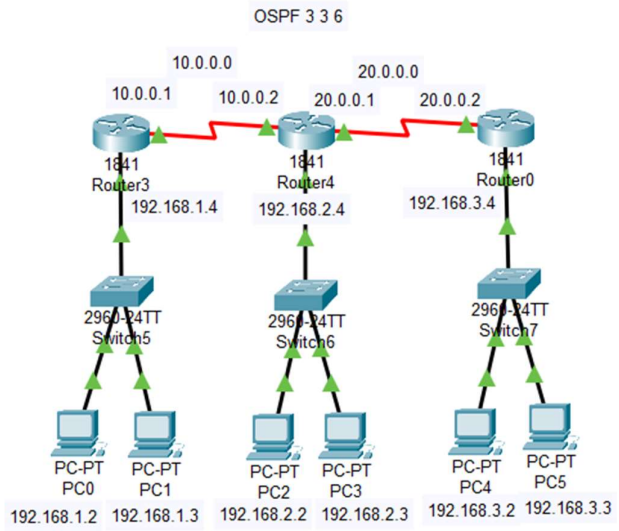
Router0

Physical Config CLI

IOS Command Line Interface

```
Router>ENABLE
Router#CONFIG TERMINAL
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#router ospf 1
Router(config-router)#network 196.168.1.0 0.0.0.255 area 0
Router(config-router)#network 196.168.3.0 0.0.0.255 area 0
Router(config-router)#exit
Router(config)#
```

2.Configure OSPF 3 routers,3 switches, 6Pcs

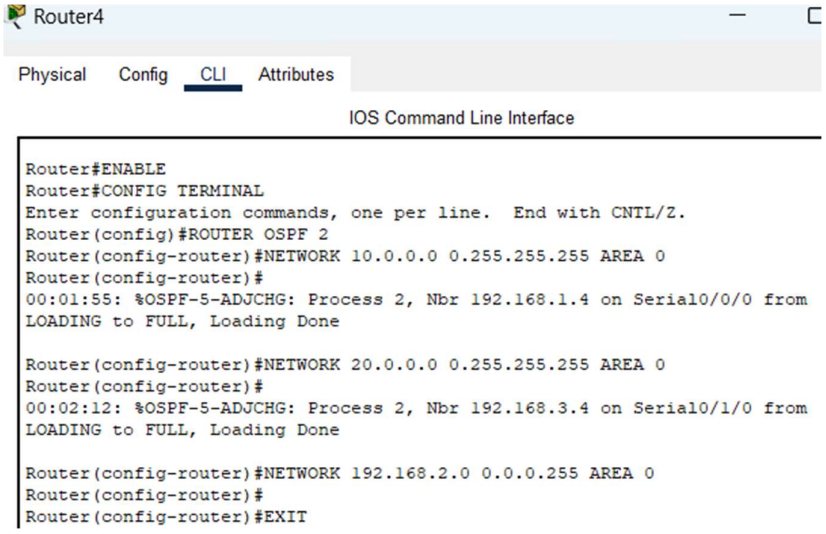


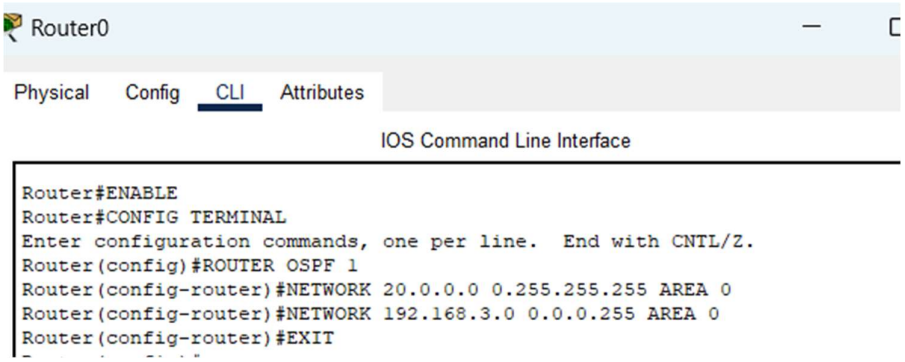
Router3

Physical Config CLI Attributes

IOS Command Line Interface

```
Router#ENABLE
Router#CONFIG TERMINAL
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#ROUTER OSPF 3
Router(config-router)#NETWORK 10.0.0.0 0.255.255.255 AREA 0
Router(config-router)#NETWORK 192.168.1.0 0.0.0.255 AREA 0
Router(config-router)#EXIT
```


Router4
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router#ENABLE
Router#CONFIG TERMINAL
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ROUTER OSPF 2
Router(config-router)#NETWORK 10.0.0.0 0.255.255.255 AREA 0
Router(config-router)#
00:01:55: %OSPF-5-ADJCHG: Process 2, Nbr 192.168.1.4 on Serial0/0/0 from
LOADING to FULL, Loading Done
Router(config-router)#NETWORK 20.0.0.0 0.255.255.255 AREA 0
Router(config-router)#
00:02:12: %OSPF-5-ADJCHG: Process 2, Nbr 192.168.3.4 on Serial0/1/0 from
LOADING to FULL, Loading Done
Router(config-router)#NETWORK 192.168.2.0 0.0.0.255 AREA 0
Router(config-router)#
Router(config-router)#EXIT


Router0
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router#ENABLE
Router#CONFIG TERMINAL
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ROUTER OSPF 1
Router(config-router)#NETWORK 20.0.0.0 0.255.255.255 AREA 0
Router(config-router)#NETWORK 192.168.3.0 0.0.0.255 AREA 0
Router(config-router)#EXIT