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Experiment-2

- **Aim:-** To make a complex network and applying EIGRP and OSPF routing protocol.

- **Task to be done:-** Build a Basic network Create the design in cisco Packet Tracer and applying EIGRP and OSPF routing protocols

- **Apparatus:-** Cisco Packet Tracer.

- **OSPF Routing Protocol:-**

. OSPF Stands for "Open Shortest Path first".
. It uses a link state routing algorithm and falls in the category of "IGRP" Interior Gateway Routing Protocol.
. OSPF routing Protocol is an application of Dijkstra's Algorithm
. It is completely classless routing protocol, which means it updates Subnets of the routes.

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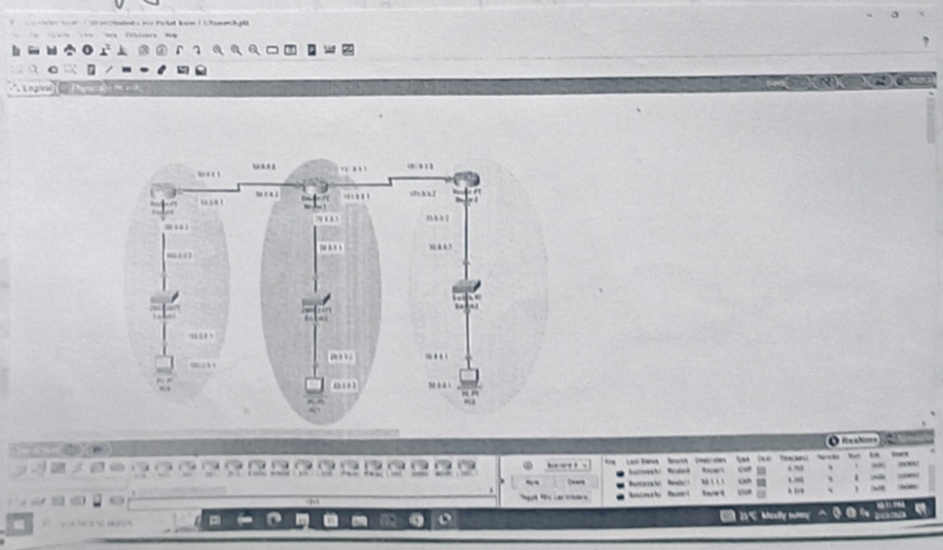
Router 0

>> enable
>> conft
Router (config.)# router OSPF 200
Router (config.-router) Network 192.168.4.0 0.0.0.255 area 1
(Net. ID; Wildcard mask)

Router (config.-router) Network 192.168.5.0 0.0.0.255 area 1
Router (config.-router) Network 192.168.6.0 0.0.0.255 area 1
Router (config.-router) Network 192.168.6.0 0.0.0.255 area 1
Router (config.-router) exit

Router 1.

>> enable
>> conf t
Router (config) #Network 192.168.2.0 0.0.0.255 area
Router (config-router) # Network 192.168.3.0 0.0.0.255 area
Router (config-router) # Network 192.168.1.0 0.0.0.255 area



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- Multicast address in OSPF routing.

  Sending → 224.0.0.5
  Receiving → 224.0.0.6.

- In OSPF, three tables a created and Maintained.
  → neighbour table :- contains the list of all the neighbouring routers.
  → Database Table (link State) :- Also known as topology table and contains a list of all possible routes to all known networks within an area
  → Routing Table :- Contains the best route from each known network

- While creating Multiple Areas during OSPF routing, there are two types of areas.
  → Backbone area Regular Area → Always refered to as Area 0.
  → Regular Area → can be 1, 2, 3...

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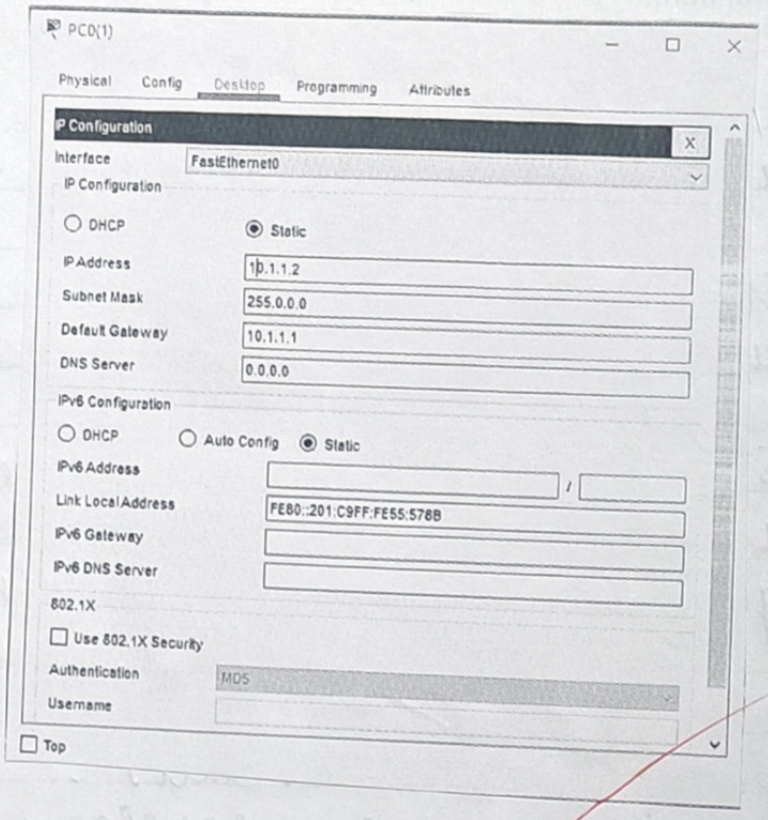
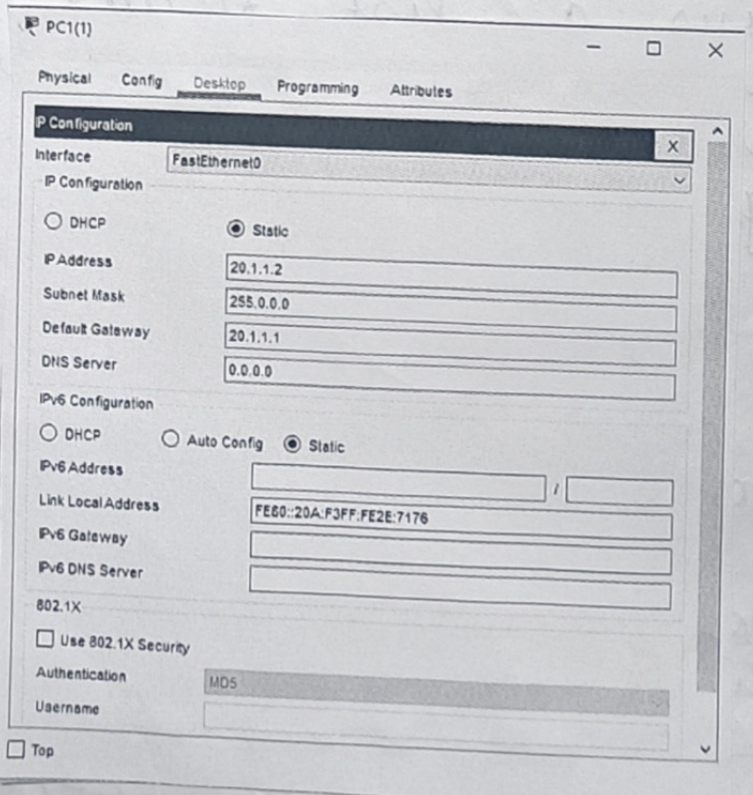

PC0(1)
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IP Address
10.1.1.2
Subnet Mask
255.0.0.0
Default Gateway
10.1.1.1
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::201:C9FF:FE55:578B
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Top


PC1(1)
Physical
Config
Desktop
Programming
Attributes
IP Configuration
Interface
FastEthernet0
IP Configuration
DHCP
Static
IP Address
20.1.1.2
Subnet Mask
255.0.0.0
Default Gateway
20.1.1.1
DNS Server
0.0.0.0
IPv6 Configuration
DHCP
Auto Config
Static
IPv6 Address
Link Local Address
FE80::20A:F3FF:FE2E:7176
IPv6 Gateway
IPv6 DNS Server
802.1X
Use 802.1X Security
Authentication
MD5
Username
Top

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- Each OSPF router is identified by a unique router ID.

The router ID can be determined in one of the 3 following ways.

1) The router ID can be manually specified.

2) If not manually assigned, the highest IP address on the router will become the router ID.

3) If no loopback interface exists the highest loopback virtual / physical Interface will become the router ID.

- Conclusion :-

~~EIGRP~~ and OSPF are implemented Successfully in a complex Network.

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(ii) EIGRP Routing Protocol

- EIGRP Stands for Enhanced Interior Gateway routing protocol.
- EIGRP is considered as a hybrid Routing Protocol. It is because EIGRP is having characteristics of both distance vector and link state routing protocols.
- EIGRP is a preprietary routing protocol which means that it only works on cisco router. There are more than 25000 cisco routers which Support EIGRP.
- In contrast with OSPF which has 3 tables maintained EIGRP maintains just 1 table, which is the routing table.
- EIGRP works on the network layer of the OSI Model and uses protocol number 88.
- Hello messages - These messages are the Kept alive messages which are

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exchanged between router and are used for neighbour discovery, if any device is operating EIGRP or if any device is being connected (EIGRP).

- EIGRP Multicast Address is 224.0.0.10
- Hello timer - The interval in which EIGRP sends a hello message on an interface.
- Dead timer - The interval in which the neighbour will be declared dead if it is not able to send the hello packet.
- EIGRP is classless and Support VLSM (Variable length Subnet mask).
- EIGRP uses Diffusing update Algorithm (DUAL) to calculate the best path to a destination Network. Dual considers both, the metrics and Topology Changes to Select the best path.

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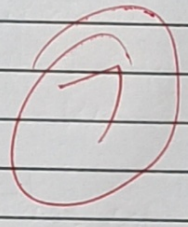
- EIGRP Commands :-
  - >> en
  - >> conf t
  - >> router eigrp <process-id>
  - >> network <network-id>
  - : :
  - >> exit.

- Conclusion :

EIGRP has been executed successfully.



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