Expt. 6 – 27/11/2024

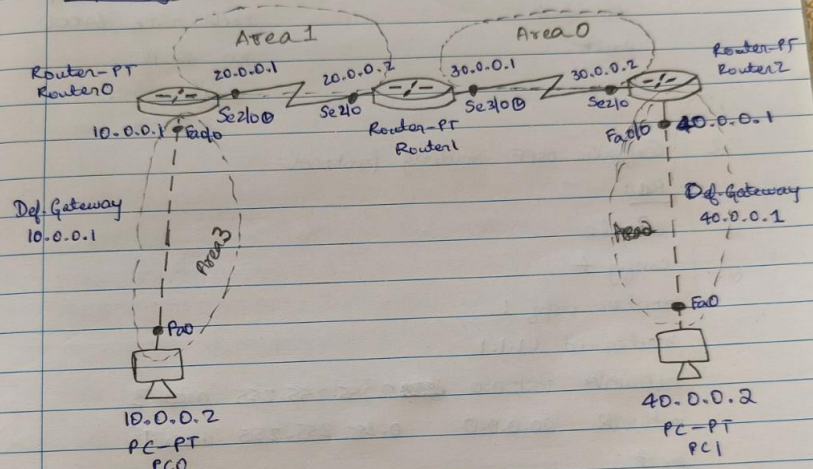
27/11

Date / /201

Expt. 6 :

Aim – OSPF Routing Protocol & Connect Areas

Topology –



Procedure –

1. Configure IP addresses of all the components.
2. R0 :

```
enable
config t
interface serial 2/0
encapsulation ppp
clock rate 64000
no shut
exit
```

R2 :

```
enable
config t
interface serial 2/0
encapsulation ppp
no shut
exit
```

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R1:
enable
config t
Interface serial 3/0
encapsulation ppp
no shut
exit

interface serial 3/0
encapsulation ppp
clock rate 64000
no shut
exit

3. Configure OSPF routing protocol:

R0:
enable
config t
router ospf 1
router-id 1.1.1.1
network 10.0.0.0 0.255.255.255 area 3
network 20.0.0.0 0.255.255.255 area 1
exit

R1:
router ospf 1
router-id 2.2.2.2
network 20.0.0.0 0.255.255.255 area 1
network 30.0.0.0 0.255.255.255 area 0
exit

R2:
router ospf 1
router-id 3.3.3.3
network 30.0.0.0 0.255.255.255 area 0
network 40.0.0.0 0.255.255.255 area 2
exit

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4. Check routing table of R0:
Router# show ip route

5. Configure loopback address to routers:

R0:
enable
config t
interface loopback 0
ip add 172.16.1.252 255.255.0.0
no shut

→ correction in pdf "cr config 27-11 commands.pdf"

R1:
interface loopback 0
ip add 172.16.1.253 255.255.0.0
no shut

R2:
interface loopback 0
ip add 172.16.1.254 255.255.0.0
no shut
~~R3# show~~

6. Check routing table of R2:
Router# show ip route

7. Create virtual link b/w R0 & R1 to connect area3 & area0

R0:
enable
config t
router ospf 1
area 1 virtual-link 2.2.2.2
"# message comes"
exit

R1:
enable
config t
router ospf 1
area 1 virtual-link 1.1.1.1
exit
"message comes"

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8. R1 & R2 get updates about area 3. check routing table of R2 now:

Ra # show ip route

O IA 20.0.0.0/8 via 30.0.0.1 , Serial 2/0

C 40.0.0.0/8 is directly connected, Fa 0/0

O IA 10.0.0.0/8 via 30.0.0.1 , Serial 2/0

C 30.0.0.0/8 is directly connected, Serial 2/0

9. Check connectivity b/w host 10.0.0.2 to 40.0.0.2

PC0 > ping 40.0.0.2

Pinging 40.0.0.2 with 32 bytes of data:

Reply from 40.0.0.2 : bytes=32 time=2ms TTL=125

=

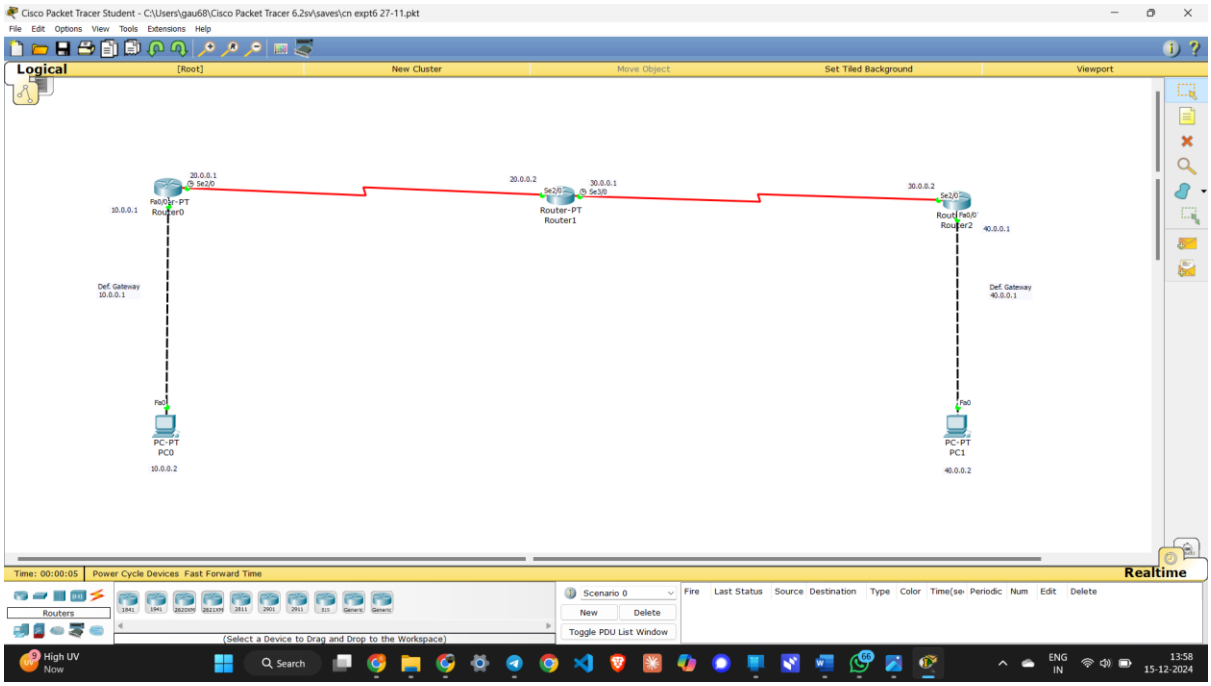
=

=

Ping statistics for 40.0.0.2:

Packets: Sent=4, Received=4, Loss=0 (0% Loss)

Topology:


Cisco Packet Tracer Student - C:\Users\gau68\Cisco Packet Tracer 6.2sv\saves\cn expt6 27-11.pkt
File Edit Options View Tools Extensions Help
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
20.0.0.1
Se2/0
Fa0/0
Router-PT
Router0
10.0.0.1
20.0.0.2
Se2/0
30.0.0.1
Se3/0
Router-PT
Router1
30.0.0.2
Se2/0
Router-PT
Router2
40.0.0.1
Def. Gateway
10.0.0.1
Def. Gateway
40.0.0.1
Fa0
PC-PT
PC0
10.0.0.2
Fa0
PC-PT
PC1
40.0.0.2
Time: 00:00:05
Power Cycle Devices Fast Forward Time
Realtime
Routers
(Select a Device to Drag and Drop to the Workspace)
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Periodic
Num
Edit
Delete
High UV
Now
Search
ENG
IN
13:58
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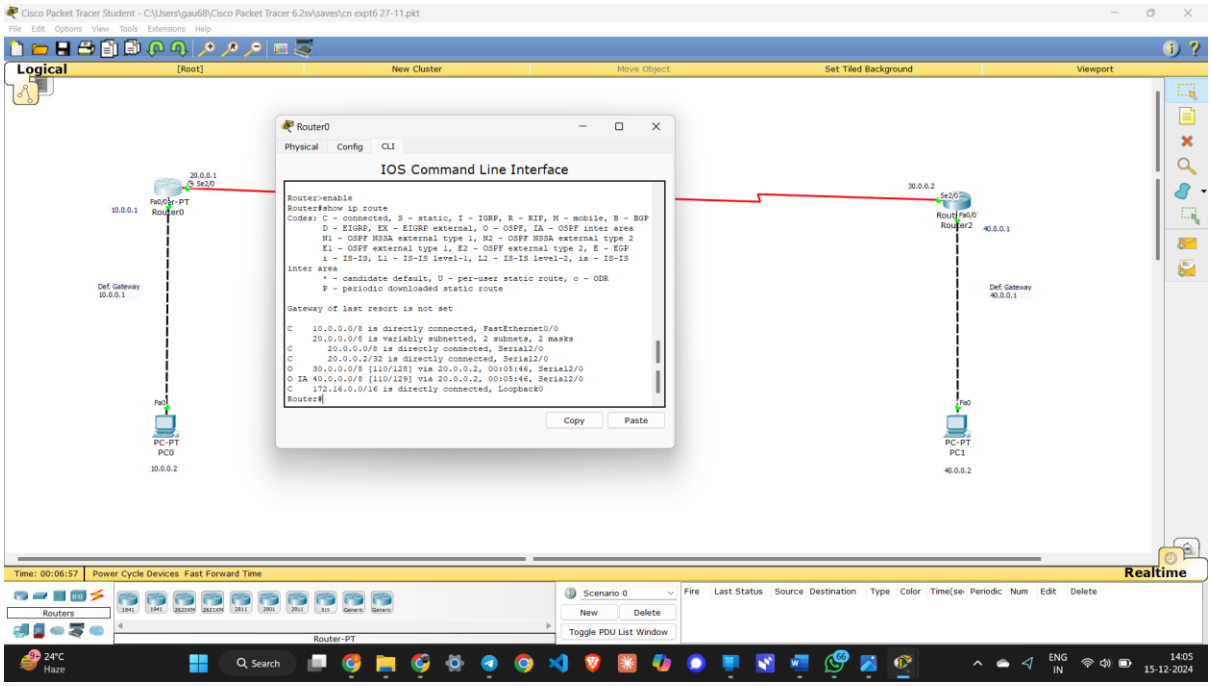
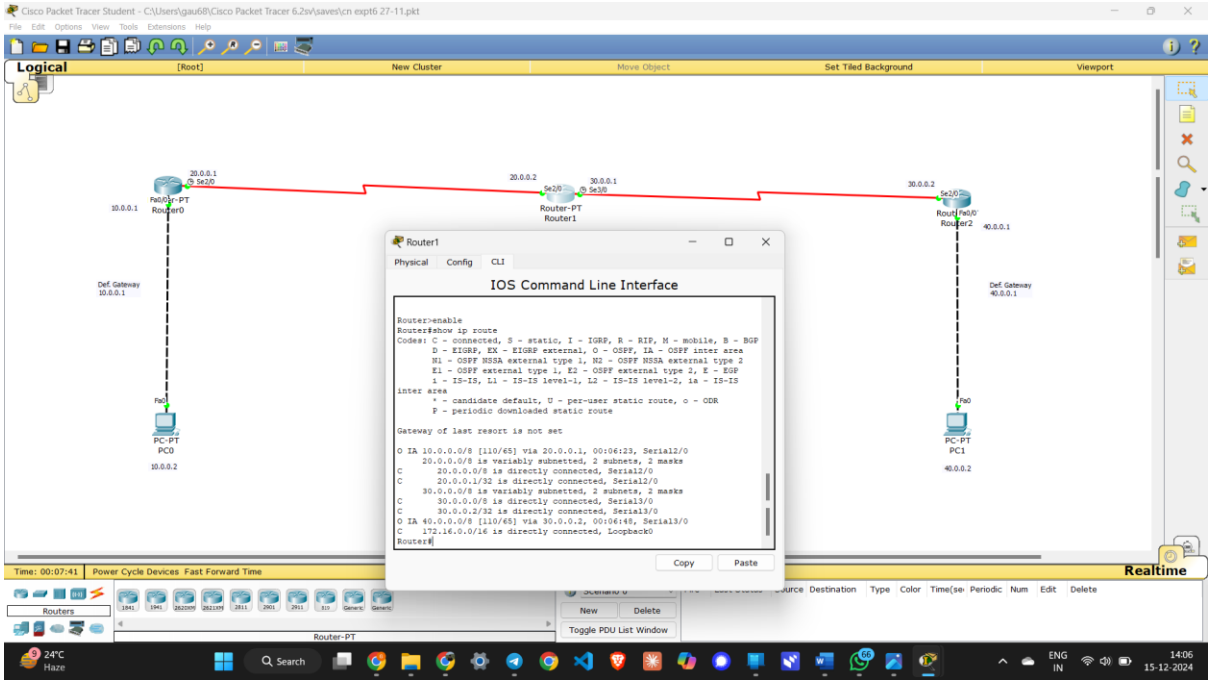
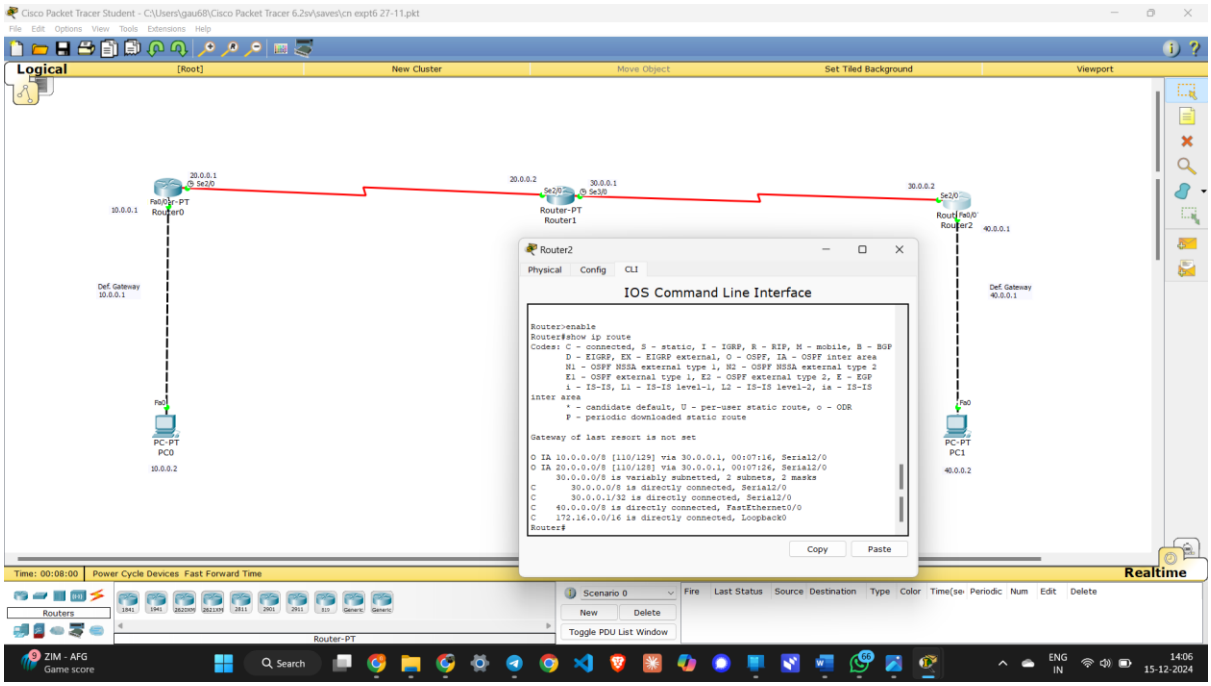
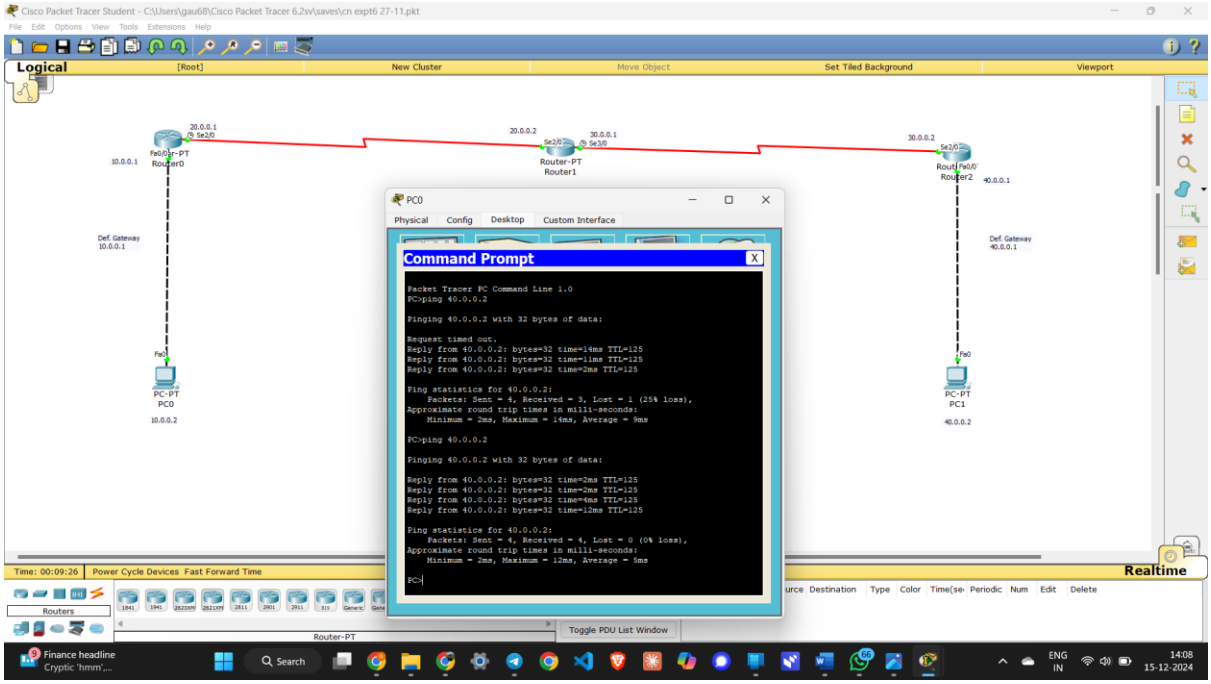

Router0
Physical
Config
CLI
IOS Command Line Interface
Router>enable
Router#show ip route
Codes: C - connected, S - static, I - IGRP, R - RIP, M - mobile, B - BGP
D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external 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
C 10.0.0.0/8 is directly connected, FastEthernet0/0
20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 20.0.0.0/8 is directly connected, Serial2/0
C 20.0.0.2/32 is directly connected, Serial2/0
O 30.0.0.0/8 [110/128] via 20.0.0.2, 00:05:46, Serial2/0
O IA 40.0.0.0/8 [110/129] via 20.0.0.2, 00:05:46, Serial2/0
C 172.16.0.0/16 is directly connected, Loopback0
Router#
Copy
Paste
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Time: 00:06:57
Power Cycle Devices
Fast Forward Time
Realtime
Router-PT
Scenario 0
New
Delete
Toggle PDU List Window
Fire
Last Status
Source
Destination
Type
Color
Periodic
Num
Edit
Delete
24°C
Haze
Search
ENG
IN
14:05
15-12-2024


Router1
Physical
Config
CLI
IOS Command Line Interface
Router>enable
Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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
O IA 10.0.0.0/8 [110/65] via 20.0.0.1, 00:06:23, Serial2/0
20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 20.0.0.0/8 is directly connected, Serial2/0
C 20.0.0.1/32 is directly connected, Serial2/0
30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 30.0.0.0/8 is directly connected, Serial3/0
C 30.0.0.2/32 is directly connected, Serial3/0
O IA 40.0.0.0/8 [110/65] via 30.0.0.2, 00:06:48, Serial3/0
C 172.16.0.0/16 is directly connected, Loopback0
Router#
Copy
Paste
Logical
[Root]
New Cluster
Move Object
Set Tiled Background
Viewport
Time: 00:07:41
Power Cycle Devices
Fast Forward Time
Realtime
Router-PT
Scenario 0
New
Delete
Toggle PDU List Window
24°C
Haze
Search
ENG
IN
14:06
15-12-2024


Router2
Physical
Config
CLI
IOS Command Line Interface
Router>enable
Router#show ip route
Codes: C - connected, S - static, I - IGRP, 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
O IA 10.0.0.0/8 [110/129] via 30.0.0.1, 00:07:16, Serial2/0
O IA 20.0.0.0/8 [110/128] via 30.0.0.1, 00:07:16, Serial2/0
30.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C 30.0.0.0/8 is directly connected, Serial2/0
C 30.0.0.1/32 is directly connected, Serial2/0
C 40.0.0.0/8 is directly connected, FastEthernet0/0
C 172.16.0.0/16 is directly connected, Loopback0
Router#
Copy
Paste
Logical
Realtime

Pinging:


PC0
Physical
Config
Desktop
Custom Interface
Command Prompt
Packet Tracer PC Command Line 1.0
PC>ping 40.0.0.2
Pinging 40.0.0.2 with 32 bytes of data:
Request timed out.
Reply from 40.0.0.2: bytes=32 time=14ms TTL=125
Reply from 40.0.0.2: bytes=32 time=11ms TTL=125
Reply from 40.0.0.2: bytes=32 time=2ms TTL=125
Ping statistics for 40.0.0.2:
Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 14ms, Average = 9ms
PC>ping 40.0.0.2
Pinging 40.0.0.2 with 32 bytes of data:
Reply from 40.0.0.2: bytes=32 time=2ms TTL=125
Reply from 40.0.0.2: bytes=32 time=2ms TTL=125
Reply from 40.0.0.2: bytes=32 time=4ms TTL=125
Reply from 40.0.0.2: bytes=32 time=12ms TTL=125
Ping statistics for 40.0.0.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = 2ms, Maximum = 12ms, Average = 5ms
PC>
Logical
Realtime