ASSIGNMENT REPORT

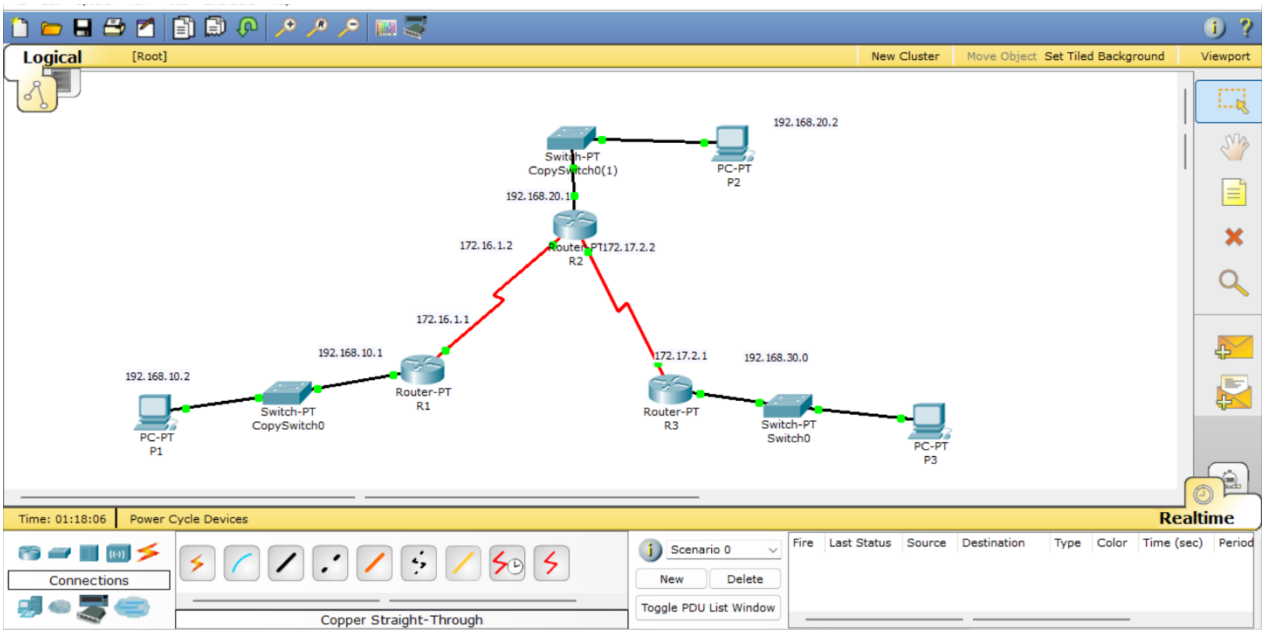
CISCO PACKET TRACER

PART 01 (EIGRP)

1. Introduction:

Static routing is a fundamental concept in CCNA networking that involves manually configuring routing paths on routers. Unlike dynamic routing protocols, where routers communicate with each other to dynamically learn and update routing information, static routing requires network administrators to manually specify the routes. This method is often used in smaller networks or in situations where network traffic patterns are stable and predictable.

2. Implementation:



ROUTING TABLES:

ROUTER01:

Routing Table for R1

Type	Network	Port	Next Hop IP	Metric
C	172.16.0.0/16	Serial2/0	---	0/0
C	192.168.10.0/24	FastEthernet0/0	---	0/0
D	172.17.0.0/16	Serial2/0	172.16.1.2	90/21024000
D	192.168.20.0/24	Serial2/0	172.16.1.2	90/20514560
D	192.168.30.0/24	Serial2/0	172.16.1.2	90/21026560

```
Router>
Router>EN
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    172.16.0.0/16 is directly connected, Serial2/0
D    172.17.0.0/16 [90/21024000] via 172.16.1.2, 00:42:10, Serial2/0
C    192.168.10.0/24 is directly connected, FastEthernet0/0
D    192.168.20.0/24 [90/20514560] via 172.16.1.2, 00:42:10, Serial2/0
D    192.168.30.0/24 [90/21026560] via 172.16.1.2, 00:42:09, Serial2/0
Router#
```

ROUTER02:

Routing Table for R2

Type	Network	Port	Next Hop IP	Metric
C	172.16.0.0/16	Serial2/0	---	0/0
C	172.17.0.0/16	Serial3/0	---	0/0
C	192.168.20.0/24	FastEthernet0/0	---	0/0
D	192.168.10.0/24	Serial2/0	172.16.1.1	90/20514560
D	192.168.30.0/24	Serial3/0	172.17.2.1	90/20514560

```
Router>
Router>en
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    172.16.0.0/16 is directly connected, Serial2/0
C    172.17.0.0/16 is directly connected, Serial3/0
D    192.168.10.0/24 [90/20514560] via 172.16.1.1, 00:42:44, Serial2/0
C    192.168.20.0/24 is directly connected, FastEthernet0/0
D    192.168.30.0/24 [90/20514560] via 172.17.2.1, 00:42:44, Serial3/0
Router#
```

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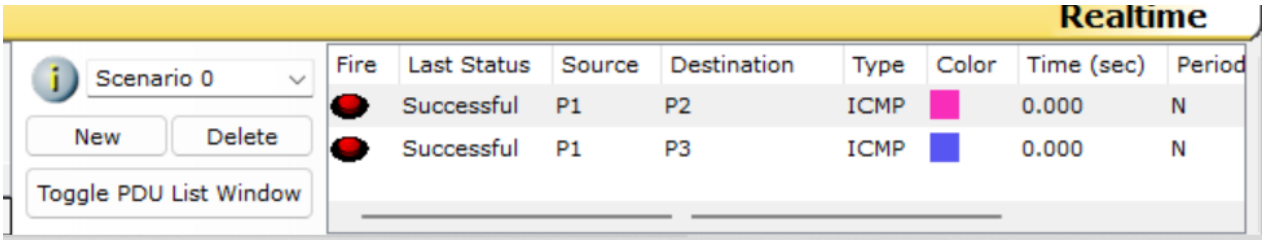
ROUTER03 :

Routing Table for R3

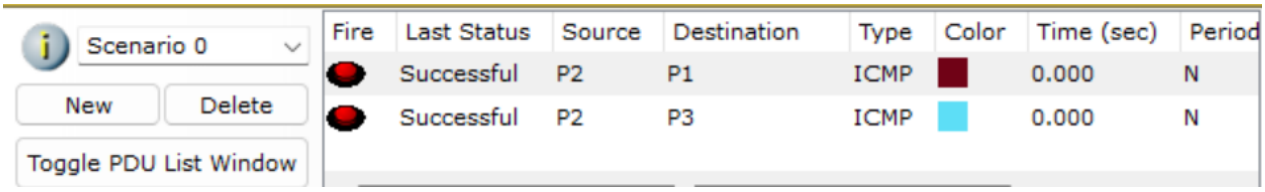
Type	Network	Port	Next Hop IP	Metric
C	172.17.0.0/16	Serial3/0	---	0/0
C	192.168.30.0/24	FastEthernet0/0	---	0/0
D	172.16.0.0/16	Serial3/0	172.17.2.2	90/21024000
D	192.168.10.0/24	Serial3/0	172.17.2.2	90/21026560
D	192.168.20.0/24	Serial3/0	172.17.2.2	90/20514560

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial3/0, changed state to up
%DUAL-5-NBRCHANGE: IP-EIGRP 2: Neighbor 172.17.2.2 (Serial3/0) is up: new adjace
ncy

Router>
Router>en
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

D    172.16.0.0/16 [90/21024000] via 172.17.2.2, 00:43:22, Serial3/0
C    172.17.0.0/16 is directly connected, Serial3/0
D    192.168.10.0/24 [90/21026560] via 172.17.2.2, 00:43:22, Serial3/0
D    192.168.20.0/24 [90/20514560] via 172.17.2.2, 00:43:22, Serial3/0
C    192.168.30.0/24 is directly connected, FastEthernet0/0
Router#
```

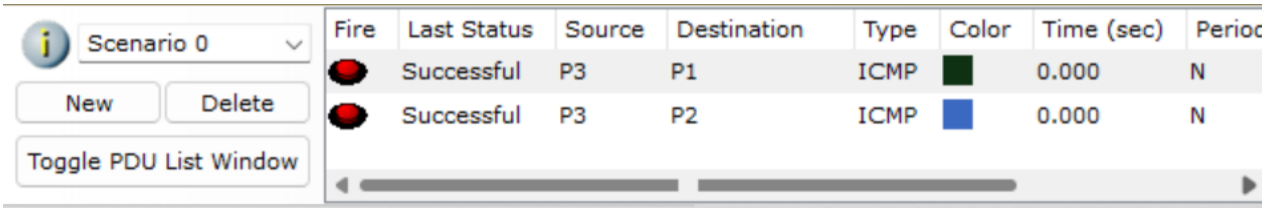
PC1 to PC2 and PC3



PC2 to PC1 and PC3



PC3 to PC1 and PC2

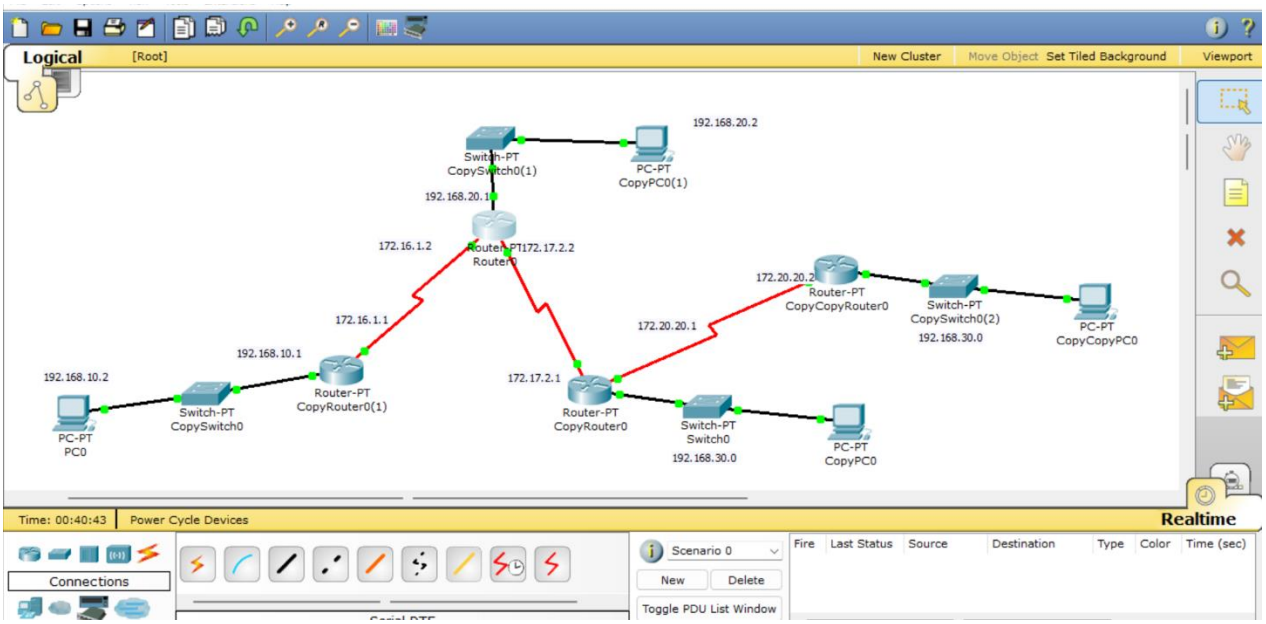


PART 02 (NAT)

1. Introduction:

Network Address Translation (NAT) in computer networking is a crucial mechanism used in CCN (Content-Centric Networking) to enable the mapping of private IP addresses of devices within a local network to a single public IP address. This process allows multiple devices within the local network to share a common public IP address, effectively masking the individual addresses from external networks. NAT plays a pivotal role in enhancing network security, conserving IPv4 address space, and facilitating seamless communication between devices in CCN architectures.

2. Implementation:



NAT IMPLEMENTATION:

```
Router>EN
Router#sh ip nat tra
Pro  Inside global     Inside local       Outside local      Outside global
---  10.0.0.2          192.168.20.2       ---                ---

Router#
```

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PC1,PC2,PC3 TO PC4:

Scenario 0

New Delete

Toggle PDU List Window

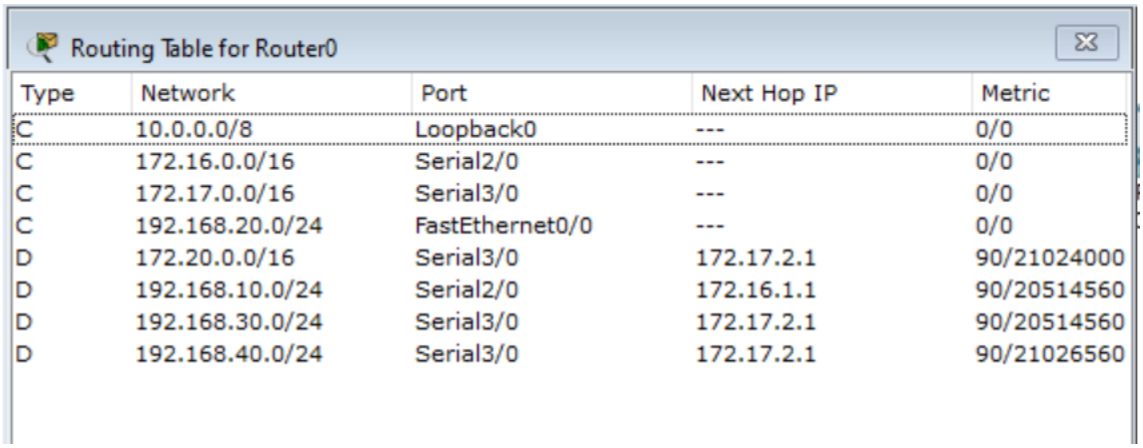
Fire	Last Status	Source	Destination	Type	Color	Time (sec
	Successful	PC0	PC4	ICMP		0.000
	Successful	CopyPC0(1)	PC4	ICMP		0.000
	Successful	CopyPC0	PC4	ICMP		0.000

UPDATED ROUTING TABLES:
ROUTER01:

Routing Table for CopyRouter0(1)

Type	Network	Port	Next Hop IP	Metric
C	172.16.0.0/16	Serial2/0	---	0/0
C	192.168.10.0/24	FastEthernet0/0	---	0/0
D	172.17.0.0/16	Serial2/0	172.16.1.2	90/21024000
D	172.20.0.0/16	Serial2/0	172.16.1.2	90/21536000
D	192.168.20.0/24	Serial2/0	172.16.1.2	90/20514560
D	192.168.30.0/24	Serial2/0	172.16.1.2	90/21026560
D	192.168.40.0/24	Serial2/0	172.16.1.2	90/21538560

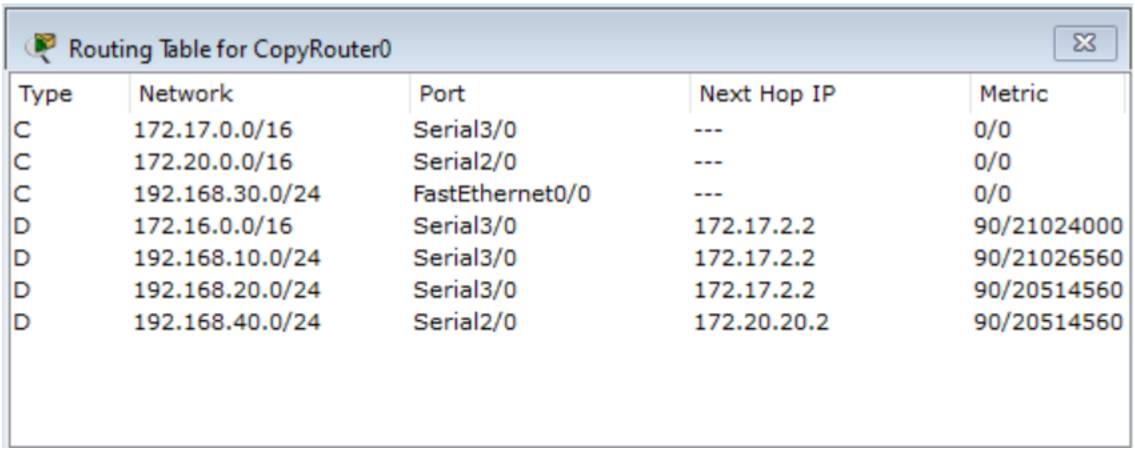
ROUTER02:



Routing Table for Router0

Type	Network	Port	Next Hop IP	Metric
C	10.0.0.0/8	Loopback0	---	0/0
C	172.16.0.0/16	Serial2/0	---	0/0
C	172.17.0.0/16	Serial3/0	---	0/0
C	192.168.20.0/24	FastEthernet0/0	---	0/0
D	172.20.0.0/16	Serial3/0	172.17.2.1	90/21024000
D	192.168.10.0/24	Serial2/0	172.16.1.1	90/20514560
D	192.168.30.0/24	Serial3/0	172.17.2.1	90/20514560
D	192.168.40.0/24	Serial3/0	172.17.2.1	90/21026560

ROUTER03 :



Routing Table for CopyRouter0

Type	Network	Port	Next Hop IP	Metric
C	172.17.0.0/16	Serial3/0	---	0/0
C	172.20.0.0/16	Serial2/0	---	0/0
C	192.168.30.0/24	FastEthernet0/0	---	0/0
D	172.16.0.0/16	Serial3/0	172.17.2.2	90/21024000
D	192.168.10.0/24	Serial3/0	172.17.2.2	90/21026560
D	192.168.20.0/24	Serial3/0	172.17.2.2	90/20514560
D	192.168.40.0/24	Serial2/0	172.20.20.2	90/20514560

…THE END…