# PRACTICAL NO 3 STATIC ROUTING

#### **TOPOLOGY DIAGRAM:-**





# ASSIGNING IP ADDRESSES TO PC1:-

😤 PC1		
IP Configuration	×	
IP Configuration	tatic	http://
IP Address	172.16.0.2	
Subnet Mask	255.255.0.0	Web Browser
Default Gateway	172.16.0.1	
DNS Server		
IPv6 Configuration – O DHCP O Auto IPv6 Address Link Local Address IPv6 Gateway IPv6 DNS Server	Config • Static / FE80::20A:F3FF:FE2D:1EB6	Cisco IP Communicator

# ASSIGNING IP ADDRESSES TO PC2:-

🤻 РС2		
IP Configuration	×	]
IP Configuration	tatic	http:
IP Address	192.168.0.2	
Subnet Mask	255.255.255.0	Web Browser
Default Gateway	192.168.0.1	
DNS Server		
IPv6 Configuration DHCP Auto IPv6 Address Link Local Address IPv6 Gateway IPv6 DNS Server	Config  Static / / FE80::230:A3FF:FE88:A3A7	Cisco IP Communicator

# ASSIGNING IP ADDRESSES TO PC3:-

🤗 PC3				
IP Configuration	×			
IP Configuration	atic	http:		
IP Address	10.0.0.2			
Subnet Mask	255.0.0.0	Web Browser		
Default Gateway	10.0.0.1			
DNS Server				
IPv6 Configuration O DHCP O Auto IPv6 Address Link Local Address IPv6 Gateway IPv6 DNS Server	Config  Static / FE80::260:3EFF:FEE6:EA77	Cisco IP Communicator		

## ASSIGNING IP ADDRESSES TO R1:-

## ASSIGNING IP ADDRESSES TO R2:-

Router>en Router#conf t Router(config)#host R2 R2(config)#interface GigabitEthernet0/0 R2(config-if)#ip address 100.0.0.2 255.255.255.252 R2(config-if)#no shut R2(config)#interface GigabitEthernet0/1 R2(config-if)#ip address 10.0.0.1 255.0.0.0 R2(config-if)#no shut R2(config-if)#no shut R2(config-if)#no shut

## **DISPLAYING IP ADDRESS DETAILS OF R1:-**

R1>show ip interface	brief			
Interface	IP-Address	OK?	Method Status	Protocol
GigabitEthernet0/0	100.0.0.1	YES	manual up	up
GigabitEthernet0/1	172.16.0.1	YES	manual up	up
GigabitEthernet0/2	192.168.0.1	YES	manual up	up
Vlan1	unassigned	YES	unset adminis	tratively down down

## **DISPLAYING IP ADDRESS DETAILS OF R2:-**

R2>show ip interface brief						
Interface	IP-Address	OK?	Method Status	Protocol		
GigabitEthernet0/0	100.0.0.2	YES	manual up	up		
GigabitEthernet0/1	10.0.0.1	YES	manual up	up		
Vlan1	unassigned	YES	unset administ	tratively down down		

## **CONFIGURING STATIC ROUTING ON R1:-**

R1>en R1#conf t R1(config)#ip route 10.0.0.0 255.0.0.0 100.0.0.2 R1(config)#^Z R1#exit

## **CONFIGURING STATIC ROUTING ON R2:-**

R2>en R2#conf t R2(config)#ip route 172.16.0.0 255.255.0.0 100.0.0.1 R2(config)#ip route 192.168.0.0 255.255.255.0 100.0.0.1 R2(config)#^Z R2#exit

## **DISPLAYING ROUTING TABLE OF R1:-**

## R1>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

- S 10.0.0/8 [1/0] via 100.0.0.2 100.0.0/8 is variably subnetted, 2 subnets, 2 masks
- С 100.0.0/30 is directly connected, GigabitEthernet0/0
- L 100.0.1/32 is directly connected, GigabitEthernet0/0 172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
- С 172.16.0.0/16 is directly connected, GigabitEthernet0/1
- L 172.16.0.1/32 is directly connected, GigabitEthernet0/1 192.168.0.0/24 is variably subnetted, 2 subnets, 2 masks
- С 192.168.0.0/24 is directly connected, GigabitEthernet0/2
- L 192.168.0.1/32 is directly connected, GigabitEthernet0/2

## **DISPLAYING ROUTING TABLE OF R2:-**

R2>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 10.0.0/8 is directly connected, GigabitEthernet0/1 100.0.0/30 is subnetted, 1 subnets
- C 100.0.0 is directly connected, GigabitEthernet0/0
- S 172.16.0.0/16 [1/0] via 100.0.0.1
- S 192.168.0.0/24 [1/0] via 100.0.0.1

## PINGING PC2 FROM PC1:-

🤻 PC1	
Physical Config Desktop Software/Services	
Command Prompt	X
Request timed out.	
Reply from 192.168.0.2: bytes=32 time=Oms TTL=127	
Reply from 192.168.0.2: bytes=32 time=0ms TTL=127	
Reply from 192.168.0.2: bytes=32 time=1ms TTL=127	
Piper statistics for 192 168 0 2	
Packets: Sent = 4, Received = 3, Lost = 1 ( $25$ loss),	
Approximate round trip times in milli-seconds:	
Minimum = Oms, Maximum = lms, Average = Oms	
PC>ping 192.168.0.2	
Pinging 192.168.0.2 with 32 bytes of data:	
Reply from 192.168.0.2: bytes=32 time=15ms TTL=127	
Reply from 192.168.0.2: bytes=32 time=Oms TTL=127	
Reply from 192.168.0.2: bytes=32 time=0ms TTL=127	
Reply from 192.168.0.2: bytes=32 time=0ms TTL=127	
Piper statistics for 192 168 0 2	
Packets: Sent = 4, Received = 4, Lost = 0 ( $0$ % loss),	
Approximate round trip times in milli-seconds:	
Minimum = Oms, Maximum = 15ms, Average = 3ms	
PC>	⊻
E Mail PPPoE Dialer Text Editor	

# PINGING PC3 FROM PC1:-

₹ PC1	
Physical Config Desktop Software/Services	
Command Prompt	
Request timed out.	~
Reply from 10.0.0.2: Bytes=32 time=Purs TL=126	
Reply from 10.00.2: bytes-32 time-Dms Hib-126	
Keply from 10.0.0.2. Dyces-of cime-ons fib-ico	
Ping statistics for 10.0.0.2:	
Packets: Sent = 4, Received = 3, Lost = 1 ( $25$ % loss),	
Approximate round trip times in milli-seconds:	
Minimum = Oms, Maximum = Oms, Average = Oms	
PC> ping 10.0.0.2	
Pinging 10.0.0.2 with 32 bytes of data:	
Reply from 10.0.0.2: bytes=32 time=0ms TTL=126	
Reply from 10.0.0.2: bytes=32 time=Oms TTL=126	
Reply from 10.0.0.2: bytes=32 time=15ms TTL=126	
Reply from 10.0.0.2: bytes=32 time=0ms TTL=126	
Dive statistics for 10.0.0.2.	
Packets: Sent = 4. Received = 4. Lost = 0 (0% loss).	
Approximate round trip times in milli-seconds:	
Minimum = Oms, Maximum = 15ms, Average = 3ms	
PC>	<u>×</u>
E Mail PPPoE Dialer Text Editor	

## PINGING PC1 FROM PC2:-

🥐 PC2
Physical Config Desktop Software/Services
Command Prompt X
Packet Tracer PC Command Line 1.0 PC>ping 172.16.0.2
Pinging 172.16.0.2 with 32 bytes of data:
Reply from 172.16.0.2: bytes=32 time=Ons TTL=127 Reply from 172.16.0.2: bytes=32 time=Ons TTL=127 Reply from 172.16.0.2: bytes=32 time=Ins TTL=127 Reply from 172.16.0.2: bytes=32 time=Ons TTL=127
<pre>Ping statistics for 172.16.0.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = lms, Average = Oms</pre>
PC>

## PINGING PC3 FROM PC2:-

Proce
Physical Config Desktop Software/Services
Physical Config Desktop Software/Services

Command Prompt
Pinging 172.16.0.2: with 32 bytes of data:
Reply from 172.16.0.2: bytes=32 time=Oms TTL=127
Reply from 172.16.0.2: bytes=32 time=lms TTL=127
Reply from 172.16.0.2: bytes=32 time=lms TTL=127
Ping statistics for 172.16.0.2:
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
Minimum = Oms, Maximum = Oms TTL=126
Reply from 10.0.0.2: bytes=32 time=Oms TTL=126
Reply from 10.0.0.2: byte



😤 РСЗ
Physical Config Desktop Software/Services
Command Prompt X
Packet Tracer PC Command Line 1.0 PC>ping 172.16.0.2
Pinging 172.16.0.2 with 32 bytes of data:
Reply from 172.16.0.2: bytes=32 time=Oms TTL=126 Reply from 172.16.0.2: bytes=32 time=Oms TTL=126 Reply from 172.16.0.2: bytes=32 time=Oms TTL=126 Reply from 172.16.0.2: bytes=32 time=Oms TTL=126
<pre>Ping statistics for 172.16.0.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = Oms, Maximum = Oms, Average = Oms</pre>
₽C>

## PINGING PC2 FROM PC3:-

🤻 PC3	X
Physical Config Desktop Software/Services	
	<u> </u>
Command Prompt	
Reply from 172.16.0.2: bytes=32 time=Oms TTL=126	
Reply from 172.16.0.2: bytes=32 time=Ons TTL=126	
Reply from 1/2.16.0.2: Bytes=32 time=0ms 11h=126	
Ping statistics for 172.16.0.2:	
Packets: Sent = 4, Received = 4, Lost = 0 ( $0$ % loss),	
Approximate round trip times in milli-seconds:	
Minimum = Oms, Maximum = Oms, Average = Oms	
TC-104 192 169 0 2	
True lid Command	
PC>ping 192.168.0.2	
Pinging 192.168.0.2 with 32 bytes of data:	
Reply from 192.168.0.2: bytes=32 time=16ms TTL=126	
Reply from 192.168.0.2: bytes=32 time=Oms TTL=126	
Reply from 192.168.0.2: bytes=32 time=15ms TTL=126	
Reply from 192.168.0.2: bytes=32 time=Oms TTL=126	
Ping statistics for 192 168 0 2	
Packets: Sent = 4. Received = 4. Lost = 0 (0% loss).	
Approximate round trip times in milli-seconds:	
Minimum = Oms, Maximum = 16ms, Average = 7ms	
	-

## PRACTICAL NO 4 <u>RIP</u>

**TOPOLOGY DIAGRAM:-**



□ × Cisco Packet Tracer File Edit Options View Tools Extensions Help 🗋 💳 🖶 🖆 📑 🗊 ቡ ዓ 🔎 🔎 🔎 📖 🍣 i) ? Logical [Root] New Cluster Move Object Set Tiled Background Viewport Sm × Q ..... F 0 Time: 00:56:39 Power Cycle Devices Fast Forward Time Realtime Last Status Source Destination Type Color Fire Scenario 0 1) 📸 🛲 🔳 📖 ≶ 4, 5 Connections New Delete Toggle PDU List Window W - 📘 🖓 12/9/2017

## ASSIGNING IP ADDRESSES TO PC1:-

R.	PC1	- U ×
IP Configuration	n X	
IP Configuration	tatic	http:
IP Address	10.0.0.2	
Subnet Mask	255.0.0.0	Web Browser
Default Gateway	10.0.0.1	
DNS Server		
IPv6 Configuration		
O DHCP O Auto	Config 🖲 Static	Cisco IP
IPv6 Address	/	Communicator
Link Local Address	FE80::250:FFF:FEBC:E427	
IPv6 Gateway		
IPv6 DNS Server		
COLONINIO ID AD		
SSIGNING IP AL	DRESSES TO PC2:-	
SSIGNING IP AL	PC2	- 🗆 ×
SIGNING IP AL     P     Configuration	PC2	- • ×
P Configuration	PC2	
IP Configuration	PC2	- C ×
SSIGNING IP AL  TP Configuration  DHCP  S	PC2	- C ×
IP Configuration DHCP  IP Address	PC2 PC2 tatic 30.0.0.2	- C ×
IP Configuration DHCP  Subnet Mask	PC2 x tatic 30.0.0.2 255.0.0.0	- C ×
SSIGNING IP AL Configuration IP Configuration DHCP  S IP Address Subnet Mask Default Gateway	PC2 Tatic 30.0.0.2 255.0.0.0 30.0.1 255.0.0 30.0.1 255.0 255.0 30.0	- C X
SSIGNING IP AL Configuration IP Configuration DHCP S IP Address Subnet Mask Default Gateway DNS Server	PC2 x tatic 30.0.0.2 255.0.0.0 30.0.1	- C ×
IP Configuration IP Configuration DHCP  S IP Address Subnet Mask Default Gateway DNS Server	PC2 x tatic 30.0.0.2 255.0.0.0 30.0.0.1	- C ×
IP Configuration DHCP  Subnet Mask Default Gateway DNS Server IPv6 Configuration – O DHCP	PC2	- C ×
IP Configuration IP Configuration DHCP  S IP Address Subnet Mask Default Gateway DNS Server IPv6 Configuration DHCP Auto IPv6 Address	PC2	- Cisco IP Communicator
IP Configuration IP Configuration DHCP  S IP Address Subnet Mask Default Gateway DNS Server IPv6 Configuration DHCP Auto IPv6 Address Link Local Address	PC2	-       -       ×         Web Browser       -       -         Web Browser       -       -         Cisco IP       -       -         Cisco IP       -       -
SSIGNING IP AL Configuration IP Configuration DHCP S IP Address Subnet Mask Default Gateway DNS Server IPv6 Configuration DHCP Auto IPv6 Address Link Local Address IPv6 Gateway	PC2  tatic  30.0.0.2  255.0.0.0  30.0.1  Config  Static  /  FE80::2E0:F9FF:FE19:E873	- Cisco IP Communicator
SSIGNING IP AL Configuration IP Configuration DHCP S IP Address Subnet Mask Default Gateway DNS Server IPv6 Configuration DHCP Auto IPv6 Address Link Local Address IPv6 Gateway IPv6 DNS Server	PC2	- Cisco IP Communicator
IP Configuration IP Configuration DHCP  S IP Address Subnet Mask Default Gateway DNS Server IPv6 Configuration DHCP Auto IPv6 Address Link Local Address IPv6 DNS Server	PC2	- Cisco IP Communicator

## ASSIGNING IP ADDRESSES TO R1:-

Router>en Router#conf t Router(config)#host R1 R1(config)#interface GigabitEthernet0/0 R1(config-if)#ip address 10.0.0.1 255.0.0.0 R1(config-if)#no shut R1(config)#interface Serial0/0/0 R1(config-if)#ip address 20.0.0.1 255.0.0.0 R1(config-if)#no shut R1(config-if)#no shut R1(config-if)#^Z R1#exit

## ASSIGNING IP ADDRESSES TO R2:-

Router>en Router#conf t Router(config)#host R2 R2(config)#interface GigabitEthernet0/0 R2(config-if)#ip address 30.0.0.1 255.0.0.0 R2(config-if)#no shut R2(config)#interface Serial0/0/0 R2(config-if)#ip address 20.0.0.2 255.0.0.0 R2(config-if)#no shut R2(config-if)#no shut R2(config-if)#^Z R2#exit

## **DISPLAYING IP ADDRESS DETAILS OF R1:-**

R1>show ip interface brief Interface **IP-Address OK?** Method Status Protocol 10.0.0.1 GigabitEthernet0/0 YES manual up up GigabitEthernet0/1 unassigned YES unset administratively down down Serial0/0/0 20.0.0.1 YES manual up up Serial0/0/1 YES unset administratively down down unassigned Vlan1 unassigned YES unset administratively down down

## **DISPLAYING IP ADDRESS DETAILS OF R2:-**

R2>show ip interface brief							
Interface	IP-Ado	dress	OK? Method Status	Protocol			
GigabitEthernet	0/0	30.0.0.1	YES manual up	up			

GigabitEthernet0/1 unassigned YES unset administratively down down Serial0/0/0 20.0.0.2 YES manual up up Serial0/0/1 YES unset administratively down down unassigned Vlan1 unassigned YES unset administratively down down

## **CONFIGURING RIP ON R1:-**

R1>en R1#conf t R1(config)#router rip R1(config-router)#network 10.0.0.0 R1(config-router)#network 20.0.0.0 R1(config-router)#^Z R1#exit

## **CONFIGURING RIP ON R2:-**

R2>en R2#conf t R2(config)#router rip R2(config-router)#network 20.0.0.0 R2(config-router)#network 30.0.0.0 R2(config-router)#^Z R2#exit

## **DISPLAYING ROUTING TABLE OF R1:-**

R1>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 10.0.0/8 is directly connected, GigabitEthernet0/0
- C 20.0.0/8 is directly connected, Serial0/0/0
- R 30.0.0/8 [120/1] via 20.0.0.2, 00:00:18, Serial0/0/0

#### **DISPLAYING ROUTING TABLE OF R2:-**

R2>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

- R 10.0.0.0/8 [120/1] via 20.0.0.1, 00:00:13, Serial0/0/0
- C 20.0.0/8 is directly connected, Serial0/0/0
- C 30.0.0/8 is directly connected, GigabitEthernet0/0

#### PINGING PC2 FROM PC1:-



# PINGING PC1 FROM PC2:-

ę	PC2	-		×
Physical Config Desktop	Custom Interface			
Command Prompt			X	
Packet Tracer PC Command PC>ping 10.0.0.2	Line 1.0			
Reply from 10.0.0.2: byte Reply from 10.0.0.2: byte Reply from 10.0.0.2: byte Reply from 10.0.0.2: byte Reply from 10.0.0.2: byte	bytes of data: s=32 time=5ms TTL=126 s=32 time=1ms TTL=126 s=32 time=1ms TTL=126 s=32 time=1ms TTL=126			
Ping statistics for 10.0. Packets: Sent = 4, Re Approximate round trip ti Minimum = 1ms, Maximu	0.2: ceived = 4, Lost = 0 (0% loss), mes in milli-seconds: m = 11ms, Average = 4ms			
PC>				

# PRACTICAL NO 5(A) **OSPF**

**TOPOLOGY DIAGRAM:-**



Cisco Packet Tracer						_ # X
File Edit Options View Tools Extensions Help						i) ?
Logical [Root]		Ne	w Cluster	Move Object Set 1	iled Background	Viewport
						= 🥙
						×
1841						Q
RÌ	R2					8.
						<b>F</b>
<					>	
Time: 00:04:01 Power Cycle Devices Fast Forward Time		1			R	ealtime
Connections	Scenario 0 V	Fire Last Status Sour	ce Destin	ation Type Color	Time (sec) Pe	eriodic Num
2	Toggle PDU List Window	1				~
Copper Cross-Over						2

## **ASSIGNING IP ADDRESSES TO R1:-**

Router>en Router#conf t Router(config)#host R1 R1(config)#ip address 192.168.1.1 255.255.255.252 R1(config)#interface GigabitEthernet0/0 R1(config-if)#ip address 192.168.1.1 255.255.255.252 R1(config-if)#no shut R1(config-if)#^Z R1#exit

## ASSIGNING IP ADDRESSES TO R2:-

Router>en Router#conf t Router(config)#host R2 R2(config)#interface GigabitEthernet0/0 R2(config-if)#ip address 192.168.1.2 255.255.255.252 R2(config-if)#no shut R2(config-if)#^Z R2#exit

## **DISPLAYING IP ADDRESS DETAILS OF R1:-**

R1>show ip interface brief Interface **IP-Address** OK? Method Status Protocol GigabitEthernet0/0 192.168.1.1 YES manual up up GigabitEthernet0/1 unassigned YES unset administratively down down Vlan1 unassigned YES unset administratively down down

## **DISPLAYING IP ADDRESS DETAILS OF R2:-**

R2>show ip interface brief Interface **IP-Address** OK? Method Status Protocol GigabitEthernet0/0 192.168.1.2 YES manual up up GigabitEthernet0/1 YES unset administratively down down unassigned Vlan1 unassigned unset administratively down down YES

## **CONFIGURING OSPF ON R1:-**

R1>en R1#conf t R1(config)#router ospf 1 R1(config-router)#network 192.168.1.0 0.0.0.3 area 0 R1(config-router)#^Z R1#exit

## **CONFIGURING OSPF ON R2:-**

R2>en R2#conf t R2(config)#router ospf 1 R2(config-router)#network 192.168.1.0 0.0.0.3 area 0 R2(config-router)#^Z R2#exit

# **DISPLAYING OSPF DETAILS OF R1:-**

R1>show ipospf interface GigabitEthernet0/0 GigabitEthernet0/0 is up, line protocol is up Internet address is 192.168.1.1/30, Area 0 Process ID 1, Router ID 192.168.1.1, Network Type BROADCAST, Cost: 1 Transmit Delay is 1 sec, State DR, Priority 1 Designated Router (ID) 192.168.1.1, Interface address 192.168.1.1 Backup Designated Router (ID) 192.168.1.2, Interface address 192.168.1.2 Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in 00:00:08 Index 1/1, flood queue length 0 Next 0x0(0)/0x0(0)Last flood scan length is 1, maximum is 1 Last flood scan time is 0 msec, maximum is 0 msec Neighbor Count is 1, Adjacentneighbor count is 1 Adjacent with neighbor192.168.1.2 (Backup Designated Router) Suppress hello for 0 neighbor(s)

## **DISPLAYING OSPF DETAILS OF R2:-**

R2>show ipospf interface GigabitEthernet0/0 GigabitEthernet0/0 is up, line protocol is up Internet address is 192.168.1.2/30, Area 0 Process ID 1, Router ID 192.168.1.2, Network Type BROADCAST, Cost: 1 Transmit Delay is 1 sec, State BDR, Priority 1 Designated Router (ID) 192.168.1.1, Interface address 192.168.1.1 Backup Designated Router (ID) 192.168.1.2, Interface address 192.168.1.2 Timer intervals configured, Hello 10, Dead 40, Wait 40, Retransmit 5 Hello due in 00:00:05 Index 1/1, flood queue length 0 Next 0x0(0)/0x0(0)Last flood scan length is 1, maximum is 1 Last flood scan time is 0 msec, maximum is 0 msec Neighbor Count is 1, Adjacentneighbor count is 1 Adjacent with neighbor192.168.1.1 (Designated Router) Suppress hello for 0 neighbor(s)

# CHANGING THE HELLO AND DEAD INTERVAL OF R1:-

R1>en R1#conf t R1(config)#interface GigabitEthernet0/0 R1(config-if)#ipospf hello-interval 20 R1(config-if)#ipospf dead-interval 80 R1(config-if)#^Z R1#exit

## **CHANGING THE HELLO AND DEAD INTERVAL OF R2:-**

R2>en R2#conf t R2(config)#interface GigabitEthernet0/0 R2(config-if)#ipospf hello-interval 20 R2(config-if)#ipospf dead-interval 80 R2(config-if)#^Z R2#exit

## DISPLAYING OSPF DETAILS OF R1 AFTER CHANGING HELLO AND DEAD **INTERVAL:-**

R1>show ipospfint fa0/0 GigabitEthernet0/0 is up, line protocol is up Internet address is 192.168.1.1/30, Area 0 Process ID 1, Router ID 192.168.1.1, Network Type BROADCAST, Cost: 1 Transmit Delay is 1 sec, State BDR, Priority 1 Designated Router (ID) 192.168.1.2, Interface address 192.168.1.2 Backup Designated Router (ID) 192.168.1.1, Interface address 192.168.1.1 Timer intervals configured, Hello 20, Dead 80, Wait 80, Retransmit 5 Hello due in 00:00:15 Index 1/1, flood queue length 0 Next 0x0(0)/0x0(0)Last flood scan length is 1, maximum is 1 Last flood scan time is 0 msec, maximum is 0 msec Neighbor Count is 1, Adjacentneighbor count is 1 Adjacent with neighbor192.168.1.2 (Designated Router) Suppress hello for 0 neighbor(s)

# DISPLAYING OSPF DETAILS OF R2 AFTER CHANGING HELLO AND DEAD **INTERVAL:-**

R2>show ipospfint fa0/0 GigabitEthernet0/0 is up, line protocol is up Internet address is 192.168.1.2/30, Area 0 Process ID 1, Router ID 192.168.1.2, Network Type BROADCAST, Cost: 1 Transmit Delay is 1 sec, State DR, Priority 1 Designated Router (ID) 192.168.1.2, Interface address 192.168.1.2 Backup Designated Router (ID) 192.168.1.1, Interface address 192.168.1.1 Timer intervals configured, Hello 20, Dead 80, Wait 80, Retransmit 5 Hello due in 00:00:16 Index 1/1, flood queue length 0 Next 0x0(0)/0x0(0)Last flood scan length is 1, maximum is 1 Last flood scan time is 0 msec, maximum is 0 msec Neighbor Count is 1, Adjacentneighbor count is 1 Adjacent with neighbor192.168.1.1 (Backup Designated Router) Suppress hello for 0 neighbor(s)

## **DISPLAYING OSPF NEIGHBOURS OF R1:-**

R1>show ip o	spf neighbor		
Neighbor ID	Pri State	Dead Time Address	Interface
192.168.1.2	1 FULL/DR	00:01:05 192.168.1.2	GigabitEthernet0/0

#### **DISPLAYING OSPF NEIGHBOURS OF R2:-**

R2>show ip o	spf neighbor		
Neighbor ID	Pri State	Dead Time Address	Interface
192.168.1.1	1 FULL/BDR	00:01:00 192.168.1.1	1 GigabitEthernet0/0

# PRACTICAL NO 5(B)

## **TOPOLOGY DIAGRAM:-**





# ASSIGNING IP ADDRESSES TO PC1:-

🥂 PC1		– 🗆 🗙
IP Configuration	X	
IP Configuration	atic	http://
IP Address	10.0.0.2	
Subnet Mask	255.0.0.0	Web Browser
Default Gateway	10.0.0.1	
DNS Server		
IPv6 Configuration O DHCP O Auto IPv6 Address Link Local Address IPv6 Gateway IPv6 DNS Server	Config  Static / / FE80::2D0:97FF:FE93:60C0	Cisco IP Communicator

# ASSIGNING IP ADDRESSES TO PC2:-

🥐 PC2		– 🗆 🗙
IP Configuration	×	
IP Configuration O DHCP		http:
IP Address 40.0.0.2		
Subnet Mask 255.0.0.0		Web Browser
Default Gateway 40.0.0.1		
DNS Server		
IPv6 Configuration		and the second s
○ DHCP ○ Auto Config   Static		Cisco IP
IPv6 Address	/	Communicator
Link Local Address FE80::260:2FFF:FEC4:E87B		
IPv6 Gateway		
IPv6 DNS Server		

## ASSIGNING IP ADDRESSES TO R1:-

Router>en Router#conf t Router(config)#host R1 R1(config)#interface GigabitEthernet0/0 R1(config-if)#ip address 10.0.0.1 255.0.0.0 R1(config-if)#no shut R1(config-if)#exit R1(config)#interface GigabitEthernet0/0 R1(config)#interface Serial0/0/0 R1(config-if)#exit R1(config-if)#ip address 20.0.0.1 255.0.0.0 R1(config-if)#no shut R1(config-if)#no shut R1(config-if)#^Z R1#exit

## ASSIGNING IP ADDRESSES TO R2:-

Router>en Router#conf t Router(config)#host R2 R2(config)#interface Serial0/0/0 R2(config-if)#ip address 20.0.0.2 255.0.0.0 R2(config-if)#no shut R2(config-if)#exit R2(config)#interface Serial0/0/0 R2(config-if)#exit R2(config)#interface Serial0/0/1 R2(config)#interface Serial0/0/1 R2(config-if)#ip address 30.0.0.1 255.0.0.0 R2(config-if)#no shut R2(config-if)#no shut R2(config-if)#AZ R2#exit

#### **ASSIGNING IP ADDRESSES TO R3:-**

Router>en Router# conf t Router(config)#host R3 R3(config)#interface GigabitEthernet0/0 R3(config-if)#ip address 40.0.0.1 255.0.0.0 R3(config-if)#no shut

R3(config-if)#exit R3(config)#interface GigabitEthernet0/0 R3(config-if)#exit R3(config)#interface Serial0/0/0 R3(config-if)#ip address 30.0.0.2 255.0.0.0 R3(config-if)#no shut R3(config-if)#^Z R3#exit

## **DISPLAYING IP ADDRESS DETAILS OF R1:-**

R1>show ip interface brief

Interface	IP-Address	OK?	Method	Status	Protocol
GigabitEthernet0/0	10.0.0.1	YES	manual	up	up
GigabitEthernet0/1	unassign	ed YES	5 unset	admini	stratively down down
Serial0/0/0	20.0.0.1	YES n	nanual	up	up
Serial0/0/1	unassigned	YES	unset ad	ministra	tively down down
Vlan1	unassigned	YES	unset ac	lministra	tively down down

## **DISPLAYING IP ADDRESS DETAILS OF R2:-**

R2>show ip interface brief

Interface	IP-Address	OK?	Method Sta	atus Protocol
GigabitEthernet0/0	unassigne	ed YI	ES unset	administratively down down
GigabitEthernet0/1	unassigne	ed YI	ES unset	administratively down down
Serial0/0/0	20.0.0.2	YES	manual up	up
Serial0/0/1	30.0.0.1	YES	manual up	up
Vlan1	unassigned	YES	unset a	dministratively down down

## **DISPLAYING IP ADDRESS DETAILS OF R3:-**

R3>show ip interfa	ce brief			
Interface	IP-Address	OK? Method S	tatus	Protocol
GigabitEthernet0/0	40.0.0.1	YES manual	up	up
GigabitEthernet0/1	unassigr	ned YES unset	administrati	vely down down
Serial0/0/0	30.0.0.2	YES manual u	р	up
Serial0/0/1	unassigned	YES unset adr	ninistratively	downdown
Vlan1	unassigned	YES unset ad	lministrativel	y downdown

# **CONFIGURING OSPF ON R1:-**

R1>en R1#conf t R1(config)#router ospf 1 R1(config-router)#network 10.0.00 0.255.255.255 area 0 R1(config-router)#network 20.0.00 0.255.255.255 area 0 R1(config-router)#^Z R1#exit

## **CONFIGURING OSPF ON R2:-**

R2>en R2#conf t R2(config)#router ospf 1 R2(config-router)#network 20.0.00 0.255.255.255 area 0 R2(config-router)#network 30.0.00 0.255.255.255 area 0 R2(config-router)#^Z R2#exit

## **CONFIGURING OSPF ON R3:-**

R3>en R3#conf t R3(config)#router ospf 1 R3(config-router)#network 30.0.0.0 0.255.255.255 area 0 R3(config-router)#network 40.0.0.0 0.255.255.255 area 0 R3(config-router)#^Z R3#exit

## **DISPLAYING ROUTING TABLE OF R1:-**

R1>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 10.0.0/8 is directly connected, GigabitEthernet0/0

C 20.0.0/8 is directly connected, Serial0/0/0

- O 30.0.0/8 [110/128] via 20.0.0.2, 00:10:05, Serial0/0/0
- O 40.0.0.0/8 [110/129] via 20.0.0.2, 00:10:05, Serial0/0/0

## **DISPLAYING ROUTING TABLE OF R2:-**

R2>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 10.0.0.0/8 [110/65] via 20.0.0.1, 00:10:46, Serial0/0/0
- C 20.0.0/8 is directly connected, Serial0/0/0
- C 30.0.0/8 is directly connected, Serial0/0/1
- O 40.0.0.0/8 [110/65] via 30.0.0.2, 00:10:46, Serial0/0/1

## **DISPLAYING ROUTING TABLE OF R3:-**

R3>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 10.0.0/8 [110/129] via 30.0.0.1, 00:10:24, Serial0/0/0
- O 20.0.0/8 [110/128] via 30.0.0.1, 00:10:34, Serial0/0/0
- C 30.0.0/8 is directly connected, Serial0/0/0
- C 40.0.0/8 is directly connected, GigabitEthernet0/0

## PINGING PC2 FROM PC1:-



#### PINGING PC1 FROM PC2:-

🤗 PC2	-	×
Physical Config Desktop Custom Interface		
Command Prompt		X
Packet Tracer PC Command Line 1.0		
PC>ping 10.0.0.2		
Pinging 10.0.0.2 with 32 bytes of data:		
Reply from 10.0.0.2: bytes=32 time=7ms TTL=125		
Reply from 10.0.0.2: bytes=32 time=8ms TTL=125 Reply from 10.0.0.2: bytes=32 time=7ms TTL=125		
Reply from 10.0.0.2: bytes=32 time=6ms TTL=125		
Ping statistics for 10.0.0.2:		
Approximate round trip times in milli-seconds:		
Minimum = 6ms, Maximum = 8ms, Average = 7ms		
PC>		
E Mail PPPoE Dialer Text Editor		

# PRACTICAL NO 6 DHCP

#### **TOPOLOGY DIAGRAM:-**



#### **ASSIGNING IP ADDRESSES TO R1:-**

Router>en Router#conf t Router(config)#host R1 R1(config)#interface GigabitEthernet0/0 R1(config-if)#ip address 192.168.10.1 255.255.255.0 R1(config-if)#no shut R1(config-if)#^Z R1#exit

#### **DISPLAYING IP ADDRESS DETAILS OF R1:-**

R1>show ip interface brief Interface **IP-Address** OK? Method Status Protocol GigabitEthernet0/0 192.168.10.1 YES manual up down GigabitEthernet0/1 YES unset administratively down down unassigned Vlan1 unassigned YES unset administratively down down

## **CONFIGURING DHCP ON R1:-**

R1>en R1#conf t R1(config)#ip dhcp pool sybscit R1(dhcp-config)#network 192.168.10.0 255.255.255.0 R1(dhcp-config)#default-router 192.168.10.1 R1(dhcp-config)#dns-server 4.2.2.2 R1(dhcp-config)#ip dhcp excluded-address 192.168.10.3 192.168.10.10 R1(config)#^Z R1#exit

## ASSIGNING IP ADDRESSES TO PC1 THROUGH DHCP:-

Click PC1>Desktop>IP Configuration Select DHCP

🥐 PC1		
IP Configuration	X	
IP Configuration	ic DHCP request successful.	http:
IP Address	192.168.10.2	
Subnet Mask	255.255.255.0	Web Browser
Default Gateway	192.168.10.1	
DNS Server	4.2.2.2	
IPv6 Configuration DHCP Auto Co IPv6 Address Link Local Address FE IPv6 Gateway IPv6 DNS Server	enfig  Static / 80::2D0:58FF:FED0:4419	Cisco IP Communicator

# ASSIGNING IP ADDRESSES TO PC2 THROUGH DHCP:-

🥐 РС2		
IP Configuration		X
IP Configuration	tic DHCP request successful.	http:
Subnet Mask	255.255.255.0	Web Browser
Default Gateway	192.168.10.1	
DNS Server	4.2.2.2	
-IPv6 Configuration		
O DHCP O Auto C	onfig 💿 Static	Cisco IP
IPv6 Address		/ Communicator
Link Local Address	80::250:FFF:FEA1:DAEC	
IPv6 Gateway		
IPv6 DNS Server		

## ASSIGNING IP ADDRESSES TO PC3 THROUGH DHCP:-

🧖 РСЗ		
IP Configuration		<
IP Configuration	tic DHCP request successful.	http:
IP Address	192.168.10.4	
Subnet Mask	255.255.255.0	Web Browser
Default Gateway	192.168.10.1	
DNS Server	4.2.2.2	
IPv6 Configuration DHCP Auto C IPv6 Address Link Local Address F IPv6 Gateway IPv6 DNS Server	onfig  Static / /	Cisco IP Communicator

## **DISPLAYING DHCP BINDINGS OF R1:-**

R1>show ip dhcp binding

IP address	Client-ID/	Lease expiration	Туре
Har	dware address		
192.168.10.2	0050.0FA1.DAEC		Automatic
192.168.10.4	0060.7017.8378		Automatic
192.168.10.3	00D0.58D0.4419		Automatic



Prepared by Prof. Raina Baji, SIES College of Commerce & Economics

2020

## **ASSIGNING IP ADDRESSES TO R1:-**

Router>en Router#conf t Router(config)#host R1 R1(config)#interface GigabitEthernet0/0 R1(config-if)#ip address 192.168.1.1 255.255.255.0 R1(config-if)#no shut R1(config-if)#^Z R1#exit

#### **DISPLAYING IP ADDRESS DETAILS OF R1:-**

R1>show ip inte	erface brief			
Interface	IP-Address	OK?	Method Status	Protocol
GigabitEthernet	192.16	8.1.1	YES manual up	up
GigabitEthernet	t0/1 unassi	gned	YES unset adm	inistratively down down
Vlan1	unassigned	YES ι	unset administrati	vely down down

## **ASSIGNING IP ADDRESS TO SERVER0:-**

(Click SERVER0/Desktop/IP Configuration)

http://
incep.
/eb Browser

# **CONFIGURING DHCP ON SERVER0:-**

(Click SERVER0/CONFIG/DHCP)

₹ Server0				×			
Physical Config	Desktop Custom Inte	erface					
GLOBAL	*	DHC	D				
Settings		DIC	P				
Algorithm Settings	Service	On	Off				
SERVICES							
HTTP DHCP	Pool Name	serverPool					
TFTP	Default Gateway	192.168.1.1					
DNS	DNS Server	DNS Server 192.168.1.3					
SYSLOG AAA	Start IP Address	Start IP Address : 198 168 1 4					
NTP	Subnet Mask:		255 255 255 0				
EMAIL FTP	Maximum number of Users :	252					
FIREWALL	TFTP Server:	0.0.0.0					
	Add	Save	Remove				
Tastemento	Pool Nai Default G server 192.168.1	atev DNS Serv Start .1 192.168 198.10	IP Add Subnet Mi Max Num TF 58.1.4 255.255 252 0.0	ſP S€ .0.0			
	*	III		•			
SSIGNING IP A	DDRESSES TO SEI	RVER1:-					

Server1		- L >
ysical Config Desktop	Custom Interface	
IP Configuration		X
Interface	astEthernet0	Thttp:
- IP Configuration		
O DHCP  Sta	tic	
		/eb Browser
IP Address	192.168.1.3	
Subnet Mask	255.255.255.0	
Default Gateway	192.168.1.1	
DNS Server	192.168.1.3	
IPv6 Configuration		
O DHCP O Auto C	onfig 🖲 Static	
IPv6 Address		·
Link Local Address	80::202:17FF:FEC8:7CD6	
IPv6 Gateway		
IPv6 DNS Server		

# ASSIGNING IP ADDRESSES TO PC1 THROUGH DHCP:-

RC1		—		$\times$
IP Configuration	×			
IP Configuration		h	ttp:	)
	DHCP request successful.			
IP Address	192.168.1.5			
Subnet Mask	255.255.255.0	Web	Brows	er
Default Gateway	192.168.1.1			
DNS Server	192.168.1.3			
IPv6 Configuration			-	2
O DHCP O Auto C	Config 🖲 Static	Ci	SCO TP	
IPv6 Address	1	Comr	nunica	tor
Link Local Address	E80::20B:BEFF:FEC4:668D			
IPv6 Gateway				
IPv6 DNS Server				
ACCESSING THE WI	EBSITE OF SERVER0 FROM PC1:-			
(Click PC1/Desktop/W	eb Browser)			
RC1		_		$\times$
Physical Config Des	ktop Custom Interface			

Physical	0	onfig	Desktop	Custom I	nterface			
					-			X
vver	) Bro	owse	er					X
<	>	URL	http://192.16	8.1.2			 Go	Stop
				Cisc	o Packe	t Tracer		^
Quick L <u>A small</u> <u>Copyris</u> <u>Image</u> <u>Image</u>	inks: page <u>jate</u> page							~
E	Mai	1	PPPoE	Dialer	Text	Editor		
ONFI	GUR	ING	DNS ON	SERVER	1:-			

# (Click SERVER1/CONFIG/DNS)

🧶 Server1										—		$\times$
Physical	Config	De	sktop	Custom	Interface							
GL	DBAL ttings	^				I	DNS					
Algorithr SER	n Settings VICES		DNS S	Service		● On			⊖ off			
н	TTP		Resou	rce Recor	ds			٦_				
Т	FTP		Name		cnpracti	cals.com		Туре		A Re	cord	•
C	NS		Addre	ss 192.16	58.1.2							
SY:	SLOG JAA			Add		:	Save			Remo	ve	
М	ITP		No.	Name		Туре			Details	;		
EN	1AIL		1	cnpractio	cals.com	A Reo	ord		192.16	8.1.2		
FIRE	EWALL											
IPv6 F	IREWALL											
INTE	RFACE											
FastEt	hernet0	<	DNS	Cache								

## ACCESSING THE WEBSITE OF SERVER0 FROM PC1 DNS NAME:-

RC1	_	$\Box$ $\times$
Physical Config Desktop Custom Interface		
Web Browser		X
< > URL http://cnpracticals.com	Go	Stop
Cisco Packet Tracer		^
Welcome to Cisco Packet Tracer. Opening doors to new opportunities, Mind Wide Open. Quick Links: <u>A small page</u> <u>Copyrights</u> <u>Image page</u> <u>Image</u>		~
E Mail PPPoE Dialer Text Editor		>

## **CONFIGURING EMAIL ON SERVER0:-**

# Computer Networks 2020

💘 Server0		
Physical Config	Desktop Custom Interface	
GLOBAL	FMATI	
Settings	SMTP Service POP3 Service	
SERVICES	ON OFF OFF	OFF
HTTP	Domain Name: contracticals com	Set
DHCP TETP		
DNS	User Password	
SYSLOG		
	cn2	
EMAIL	cns	
FTP		+
FIREWALL		-
INTERFACE		
FastEthernet0		Change Password
	·	
ADDING USERS	IN EMAIL SERVER:-	

💘 Server0		
Physical Config De	sktop Custom Interface	
GLOBAL Settings Algorithm Settings SERVICES	EMAIL SMTP Service ON OFF	OFF
HTTP DHCP	Domain Name: cnpracticals.com	Set
TFTP	User Setup	
DNS	User Password	
	cn1	
NTP	cn2	
EMAIL		
FTP		+
INTERFACE		
FastEthernet0		Change Password
-		

**CONFIGURE EMAIL ON PC1:-**

# (Click PC1/Desktop/Email)

🧶 PC	C1		
Phy	vsical Config	Desktop Custom Interface	
	Configure Mail		x
	User Information		
	Your Name:	cn1	
	Email Address	cn1@cnpracticals.com	
	Server Information		
	Incoming Mail Server	cnpracticals.com	
	Outgoing Mail Server	cnpracticals.com	
	Logon Information		
	User Name:	cn1	
	Password:	••••	
	Save		Clear Reset
	EICLIDE EMA	U ON DCO.	
CON	FIGURE EMA	<u>IL ON PC2:-</u>	
PC PC	C2		
Phy	vsical Config	Desktop Custom Interface	
	Configure Mail		x
	User Information		
	Your Name:	cn2	
	Email Address	cp2@cppracticals.com	
	Server Information		
	Incoming Mail Server	cnpracticals.com	
	Outgoing Mail Server	cnpracticals.com	
	Logon Information		
	Licer Name		
	User Name:	cn2	
	Password:	••••	
	Save		Clear Reset

# COMPOSING MAIL FROM PC1 TO PC2:-

PC1	sktop Custom Interface	
MAIL BROWSER		
Compose	Reply Receive	Delete Configure Mail
From	Subject	Received
		Cancel Send/Receive
PC1		
Physical Config De	esktop Custom Interface	
Compose Mail		
	co2@cooracticals.com	
Send Subjects	CN Netro	
Subject:	CN Notes	
I need the notes of Chapte	er 4 of CN. Please Email me quickly	
Regards,		
Sunaina.		

2020

# ACCESSING THE MAIL OF PC1 FROM PC2:-

MAIL BROWSER X								
Ma	ils Compose	Reply Receive	Delete Configure Mail	]				
	From	Subject	Received					
1	cn1@cnpractica	CN Notes	Fri Aug 11 2017 23:0					

# PRACTICAL NO 8 OSPF WITH MULTIPLE AREAS

#### **TOPOLOGY DIAGRAM:-**



## ASSIGNING IP ADDRESSES TO PC1:-

PC1		
IP Configuration	n X	
IP Configuration	tatic	http:
IP Address	172.25.1.2	
Subnet Mask	255.255.255.0	Web Browser
Default Gateway	172.25.1.1	
DNS Server		
IPv6 Configuration DHCP Auto IPv6 Address Link Local Address IPv6 Gateway IPv6 DNS Server	Config  Static / FE80::204:9AFF:FEC5:6770	Cisco IP Communicator

# ASSIGNING IP ADDRESSES TO PC2:-

IP Configuration       X         IP Configuration       IP Configuration         DHCP       IP Static         IP Address       172.22.1.2         Subnet Mask       255.255.255.0         Default Gateway       172.22.1.1	Web Browser
IP Configuration         O DHCP       ● Static         IP Address       172.22.1.2         Subnet Mask       255.255.255.0         Default Gateway       172.22.1.1	Web Browser
IP Address         172.22.1.2           Subnet Mask         255.255.0           Default Gateway         172.22.1.1	Web Browser
Subnet Mask255.255.255.0Default Gateway172.22.1.1	Web Browser
Default Gateway 172.22.1.1	
DNS Server	
IPv6 Configuration <ul> <li>DHCP</li> <li>Auto Config</li> <li>Static</li> </ul> <li>IPv6 Address</li> <li>Ink Local Address</li> <li>FE80::20D:BDFF:FE15:E3EA</li> <li>IPv6 Gateway</li> <li>IPv6 DNS Server</li>	Cisco IP Communicator

# ASSIGNING IP ADDRESSES TO PC3:-

PC3		
IP Configuration	X	
IP Configuration	atic	http:
IP Address	172.30.1.2	
Subnet Mask	255.255.255.0	Web Browser
Default Gateway	172.30.1.1	
DNS Server		
IPv6 Configuration DHCP Auto IPv6 Address Link Local Address IPv6 Gateway IPv6 DNS Server	Config  Static / FE80::203:E4FF:FE5A:81E1	Cisco IP Communicator
•		

## ASSIGNING IP ADDRESSES TO R1:-

Router>en Router#conf t Router(config)#host R1 R1(config)#interface GigabitEthernet0/0 R1(config-if)#ip address 172.25.1.1 255.255.255.0 R1(config-if)#no shut R1(config)#interface Serial0/0/0 R1(config-if)#ip address 10.1.1.1 255.255.255.0 R1(config-if)#no shut R1(config-if)#no shut R1(config-if)#^Z R1#exit

#### **ASSIGNING IP ADDRESSES TO R2:-**

Router>en Router#conf t Router(config)#host R2 R2(config)#interface GigabitEthernet0/0 R2(config-if)#ip address 172.22.1.2 255.255.255.0 R2(config-if)#no shut R2(config)#interface Serial0/0/0 R2(config-if)#ip address 10.1.2.1 255.255.255.0 R2(config-if)#ip address 10.1.2.1 255.255.255.0 R2(config-if)#ip address 10.1.2.1 255.255.255.0 R2(config-if)#ip address 10.1.2.1 255.255.255.0 R2(config-if)#ip address 10.1.2.1 255.255.255.0

## ASSIGNING IP ADDRESSES TO R3:-

Router>en Router#conf t Router(config)#host R3 R3(config)#interface Serial0/0/0 R3(config-if)#ip address 10.1.1.2 255.255.255.0 R3(config-if)#no shut R3(config)#interface Serial0/0/1 R3(config-if)#ip address 192.168.1.1 255.255.255.0 R3(config-if)#no shut R3(config-if)#no shut R3(config-if)#no shut R3(config-if)#^Z R3#exit

## ASSIGNING IP ADDRESSES TO R4:-

Router>en Router#conf t Router(config)#host R4 R4(config)#interface Serial0/0/0 R4(config-if)#ip address 10.1.2.2 255.255.255.0 R4(config-if)#no shut R4(config)#interface Serial0/0/1 R4(config-if)#ip address 192.168.2.1 255.255.255.0 R4(config-if)#no shut R4(config-if)#no shut R4(config-if)#^Z R4#exit

#### **ASSIGNING IP ADDRESSES TO R5:-**

Router>en Router#conf t Router(config)#host R5 R5(config)#interface Serial0/0/0 R5(config-if)#ip address 192.168.1.2 255.255.255.0 R5(config-if)#no shut R5(config)#interface Serial0/0/1 R5(config-if)#ip address 192.168.2.2 255.255.255.0 R5(config-if)#no shut R5(config)#interface GigabitEthernet0/0 R5(config-if)#ip address 172.30.1.1 255.255.255.0 R5(config-if)#no shut R5(config-if)#no shut R5(config-if)#no shut R5(config-if)#no shut

#### **DISPLAYING IP ADDRESS DETAILS OF R1:-**

R1>show ip interface brief **IP-Address OK?** Method Status Interface Protocol GigabitEthernet0/0 172.25.1.1 YES manual up up GigabitEthernet0/1 YES unset administratively down down unassigned Serial0/0/0 10.1.1.1 YES manual up up Serial0/0/1 unassigned YES unset administratively down down Vlan1 unassigned YES unset administratively down down

## **DISPLAYING IP ADDRESS DETAILS OF R2:-**

R2>show ip inte	erface brief				
Interface	IP-Address	OK?	Method Statu	us Protoco	ol
GigabitEthernet	0/0 172.2	2.1.1	YES manual	up up	
GigabitEthernet	0/1 unass	signed	YES unset	administratively	down down
Serial0/0/0	10.1.2.1	YES m	anual down	down	
Serial0/0/1	unassigned	YES	unset admir	nistratively down	down
Vlan1	unassigned	YES	unset admini	stratively down d	own

## **DISPLAYING IP ADDRESS DETAILS OF R3:-**

R3>show ip interface brief Interface **IP-Address** OK? Method Status Protocol GigabitEthernet0/0 unassigned YES unset administratively down down GigabitEthernet0/1 YES unset administratively down down unassigned YES manual up Serial0/0/0 10.1.1.2 up Serial0/0/1 192.168.1.1 YES manual down down unassigned YES unset administratively down down Vlan1

## DISPLAYING IP ADDRESS DETAILS OF R4:-

R4>show ip inte	erface brief			
Interface	IP-Address	OK? N	Method State	us Protocol
GigabitEthernet	t0/0 unas	signed	YES unset	administratively down down
GigabitEthernet	t0/1 unas	signed	YES unset	administratively down down
Serial0/0/0	10.1.2.2	YES man	nual up	up
Serial0/0/1	192.168.2.1	YES m	anual down	down
Vlan1	unassigned	YES u	nset admini	stratively down down

#### **DISPLAYING IP ADDRESS DETAILS OF R5:-**

R5>show ip inte	erface b	rief				
Interface	IP-Ad	dress	OK?	Method Stat	us Prot	cocol
GigabitEthernet	:0/0	172.30.	.1.1	YES manual	up ı	ıp
GigabitEthernet	:0/1	unassi	gned	YES unset	administrative	ly down down
Serial0/0/0	192.16	58.1.2	YES	manual up	up	
Serial0/0/1	192.10	58.2.2	YES	manual up	up	
Vlan1	unassig	gned	YES	unset admini	stratively down	n down

# **CONFIGURING OSPF ON R1:-**

R1>en R1#conf t R1(config)#router ospf 1 R1(config-router)#network 172.25.1.0 0.0.0.255 area 1 R1(config-router)#network 10.1.1.0 0.0.0.255 area 1 R1(config-router)#^Z R1#exit

## **CONFIGURING OSPF ON R2:-**

R2>en R2#conf t R2(config)#router ospf 1 R2(config-router)#network 172.22.1.0 0.0.0.255 area 2 R2(config-router)#network 10.1.2.0 0.0.0.255 area 2 R2(config-router)#^Z R2#exit

## **CONFIGURING OSPF ON R3:-**

R3>en R3#conf t R3(config)#router ospf 1 R3(config-router)#network 192.168.1.0 0.0.0.255 area 0 R3(config-router)#network 10.1.1.0 0.0.0.255 area 1 R3(config-router)#^Z R3#exit

#### **CONFIGURING OSPF ON R4:-**

R4>en R4#conf t R4(config)#router ospf 1 R4(config-router)#network 192.168.2.0 0.0.0.255 area 0 R4(config-router)#network 10.1.2.0 0.0.0.255 area 2 R4(config-router)#^Z R4#exit

## **CONFIGURING OSPF ON R5:-**

R5>en R5#conf t R5(config)#router ospf 1 R5(config-router)#network 192.168.1.0 0.0.0.255 area 0 R5(config-router)#network 192.168.2.0 0.0.0.255 area 0 R5(config-router)#network 172.30.1.0 0.0.0.255 area 0 R5(config-router)#^Z R5#exit

## **DISPLAYING ROUTING TABLE OF R1:-**

R1>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

10.0.0/24 is subnetted, 2 subnets

- C 10.1.1.0 is directly connected, Serial0/0/0
- O IA 10.1.2.0 [110/256] via 10.1.1.2, 00:10:21, Serial0/0/0 172.22.0.0/24 is subnetted, 1 subnets
- O IA 172.22.1.0 [110/257] via 10.1.1.2, 00:10:21, Serial0/0/0 172.25.0.0/24 is subnetted, 1 subnets
- C 172.25.1.0 is directly connected, GigabitEthernet0/0 172.30.0.0/24 is subnetted, 1 subnets
- O IA 172.30.1.0 [110/129] via 10.1.1.2, 00:03:02, Serial0/0/0
- O IA 192.168.1.0/24 [110/128] via 10.1.1.2, 00:11:56, Serial0/0/0
- O IA 192.168.2.0/24 [110/192] via 10.1.1.2, 00:10:21, Serial0/0/0

# **DISPLAYING ROUTING TABLE OF R2:-**

R2>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

10.0.0/24 is subnetted, 2 subnets

O IA 10.1.1.0 [110/256] via 10.1.2.2, 00:09:44, Serial0/0/0
C 10.1.2.0 is directly connected, Serial0/0/0
172.22.0.0/24 is subnetted, 1 subnets
C 172.22.1.0 is directly connected, GigabitEthernet0/0
172.25.0.0/24 is subnetted, 1 subnets
O IA 172.25.1.0 [110/257] via 10.1.2.2, 00:09:44, Serial0/0/0
172.30.0.0/24 is subnetted, 1 subnets
O IA 172.30.1.0 [110/129] via 10.1.2.2, 00:02:27, Serial0/0/0
O IA 192.168.1.0/24 [110/192] via 10.1.2.2, 00:09:54, Serial0/0/0

O IA 192.168.2.0/24 [110/128] via 10.1.2.2, 00:12:39, Serial0/0/0

## **DISPLAYING ROUTING TABLE OF R3:-**

R3>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

10.0.0/24 is subnetted, 2 subnets

- C 10.1.1.0 is directly connected, Serial0/0/0
- O IA 10.1.2.0 [110/192] via 192.168.1.2, 00:08:43, Serial0/0/1 172.22.0.0/24 is subnetted, 1 subnets
- O IA 172.22.1.0 [110/193] via 192.168.1.2, 00:08:43, Serial0/0/1 172.25.0.0/24 is subnetted, 1 subnets
- O 172.25.1.0 [110/65] via 10.1.1.1, 00:10:14, Serial0/0/0 172.30.0.0/24 is subnetted, 1 subnets

- O 172.30.1.0 [110/65] via 192.168.1.2, 00:01:24, Serial0/0/1
- C 192.168.1.0/24 is directly connected, Serial0/0/1
- O 192.168.2.0/24 [110/128] via 192.168.1.2, 00:08:43, Serial0/0/1

# DISPLAYING ROUTING TABLE OF R4:-

R4>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

10.0.0/24 is subnetted, 2 subnets

- O IA 10.1.1.0 [110/192] via 192.168.2.2, 00:07:53, Serial0/0/1
- C 10.1.2.0 is directly connected, Serial0/0/0 172.22.0.0/24 is subnetted, 1 subnets
- O 172.22.1.0 [110/65] via 10.1.2.1, 00:10:43, Serial0/0/0 172.25.0.0/24 is subnetted, 1 subnets
- O IA 172.25.1.0 [110/193] via 192.168.2.2, 00:07:53, Serial0/0/1 172.30.0.0/24 is subnetted, 1 subnets
- O 172.30.1.0 [110/65] via 192.168.2.2, 00:00:36, Serial0/0/1
- O 192.168.1.0/24 [110/128] via 192.168.2.2, 00:08:03, Serial0/0/1
- C 192.168.2.0/24 is directly connected, Serial0/0/1

# **DISPLAYING ROUTING TABLE OF R5:-**

R5>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

10.0.0/24 is subnetted, 2 subnets

- O IA 10.1.1.0 [110/128] via 192.168.1.1, 00:01:48, Serial0/0/0
- O IA 10.1.2.0 [110/128] via 192.168.2.1, 00:01:58, Serial0/0/1 172.22.0.0/24 is subnetted, 1 subnets
- O IA 172.22.1.0 [110/129] via 192.168.2.1, 00:01:58, Serial0/0/1 172.25.0.0/24 is subnetted, 1 subnets
- O IA 172.25.1.0 [110/129] via 192.168.1.1, 00:01:48, Serial0/0/0 172.30.0.0/24 is subnetted, 1 subnets
- C 172.30.1.0 is directly connected, GigabitEthernet0/0
- C 192.168.1.0/24 is directly connected, Serial0/0/0
- C 192.168.2.0/24 is directly connected, Serial0/0/1

## PINGING PC2 FROM PC1:-

🥐 PC1	
Physical Config Desktop Custom Interface	
Command Prompt	X
Pinging 172.22.1.2 with 32 bytes of data:	A
Request timed out.	
Reply from 172.22.1.2: bytes=32 time=4ms TTL=123	
Reply from 172.22.1.2: bytes=32 time=4ms TTL=123 Reply from 172.22.1.2: bytes=32 time=4ms TTL=123	
Ping statistics for 172.22.1.2: Packets: Sent = 4. Received = 3. Lost = 1 (25% loss).	
Approximate round trip times in milli-seconds:	
Minimum = 4ms, Maximum = 4ms, Average = 4ms	
PC>ping 172.22.1.2	
Pinging 172.22.1.2 with 32 bytes of data:	=
Reply from 172.22.1.2: bytes=32 time=4ms TTL=123	
Reply from 172.22.1.2: bytes=32 time=4ms TTL=123	
Reply from 172.22.1.2: bytes=32 time=15ms TTL=123 Reply from 172.22.1.2: bytes=32 time=5ms TTL=123	
Ping statistics for 172.22.1.2: Packets: Sent = 4 Paceived = 4 Lost = 0 (0% loss)	
Approximate round trip times in milli-seconds:	
Minimum = 4ms, Maximum = 15ms, Average = 7ms	
PC>	-

## PINGING PC3 FROM PC1:-



#### PINGING PC1FROM PC2:-



#### PINGING PC3 FROM PC2:-



## PINGING PC1 FROM PC3:-

PC3	
Physical Config Desktop Custom Interface	
Command Prompt	x
Packet Tracer PC Command Line 1.0 PC>ping 172.25.1.2	
Pinging 172.25.1.2 with 32 bytes of data:	
Reply from 172.25.1.2: bytes=32 time=3ms TTL=125 Reply from 172.25.1.2: bytes=32 time=12ms TTL=125 Reply from 172.25.1.2: bytes=32 time=12ms TTL=125 Reply from 172.25.1.2: bytes=32 time=2ms TTL=125	
<pre>Ping statistics for 172.25.1.2: Packets: Sent = 4, Received = 4, Lost = 0 (0% loss), Approximate round trip times in milli-seconds: Minimum = 2ms, Maximum = 12ms, Average = 7ms</pre>	
₽C>	

## PINGING PC2 FROM PC3:-

```
- 0 X
PC3
 Physical
          Config
                   Desktop
                             Custom Interface
  Command Prompt
                                                                                   Х
  Pinging 172.25.1.2 with 32 bytes of data:
  Reply from 172.25.1.2: bytes=32 time=3ms TTL=125
  Reply from 172.25.1.2: bytes=32 time=12ms TTL=125
  Reply from 172.25.1.2: bytes=32 time=12ms TTL=125
  Reply from 172.25.1.2: bytes=32 time=2ms TTL=125
  Ping statistics for 172.25.1.2:
     Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
     Minimum = 2ms, Maximum = 12ms, Average = 7ms
  PC>ping 172.22.1.2
  Pinging 172.22.1.2 with 32 bytes of data:
                                                                                    =
  Reply from 172.22.1.2: bytes=32 time=2ms TTL=125
  Reply from 172.22.1.2: bytes=32 time=12ms TTL=125
  Reply from 172.22.1.2: bytes=32 time=2ms TTL=125
  Reply from 172.22.1.2: bytes=32 time=12ms TTL=125
  Ping statistics for 172.22.1.2:
      Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
  Approximate round trip times in milli-seconds:
      Minimum = 2ms, Maximum = 12ms, Average = 7ms
  PC>
```