

Computer Networks

Lab Continuous Assessment

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Problem Statement :

Configure BGP using Cisco Packet Tracer.

Theory :

In Cisco Packet Tracer, you can simulate BGP (Border Gateway Protocol) to enable routing between different autonomous systems (ASes).

1) Topology Setup:

Create a network topology with routers representing different ASes.

Connect routers with appropriate interfaces and assign IP addresses.

2) Router Configuration:

Enable BGP protocol on routers using the router bgp <AS_number> command.

Define BGP neighbors with neighbor <neighbor_IP> remote-as <neighbor_AS>.

3) Network Advertisement:

Use network <network_address> mask <mask> under BGP configuration to advertise networks to BGP neighbors.

4) Verification:

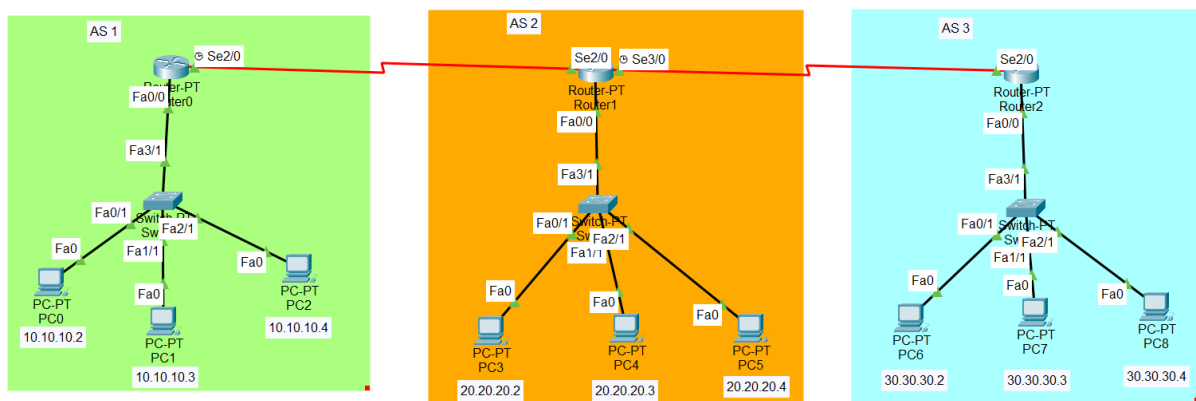
Verify BGP status and routing table using show ip bgp summary, show ip bgp, and show ip route commands.

5) Simulation:

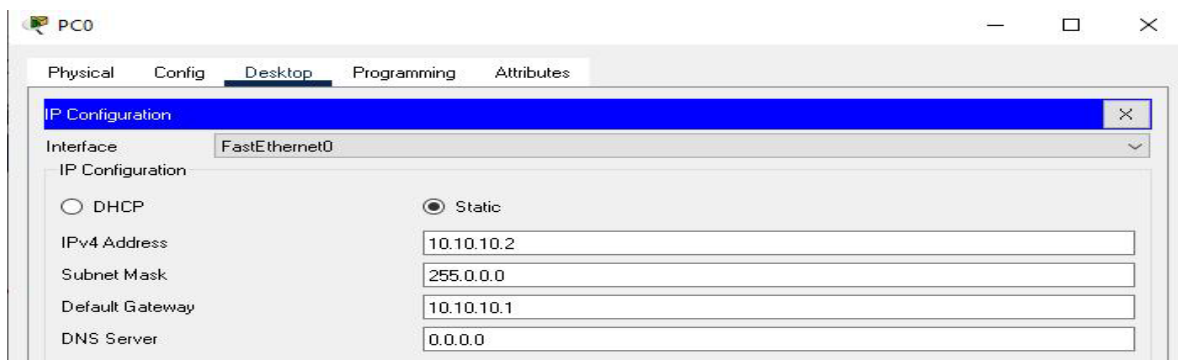
Run simulation mode to observe BGP updates and routing behavior between ASes.

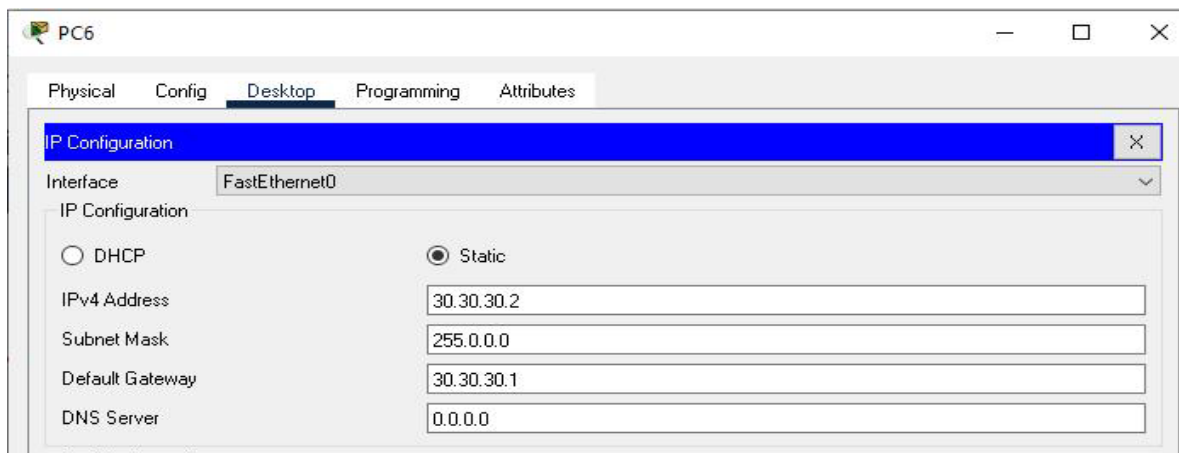
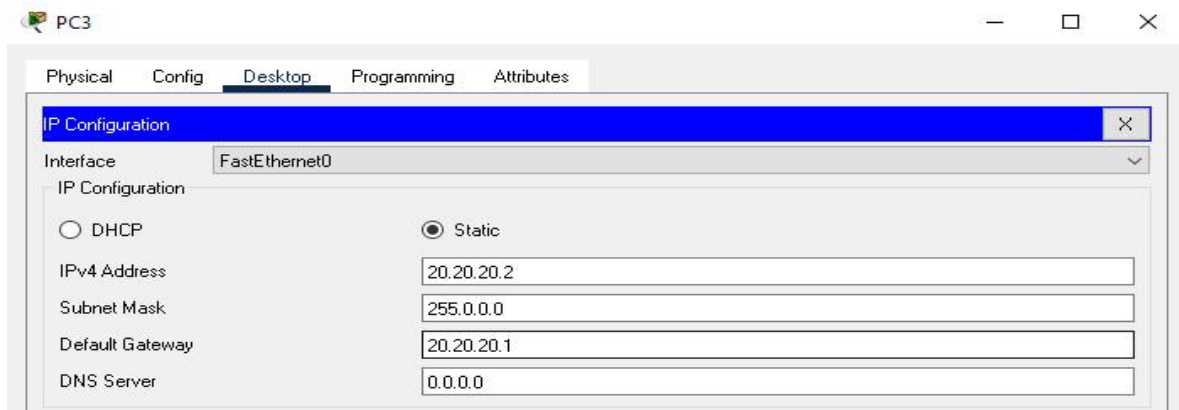
Input/Output:

Topology :



PC Configuration:





PDU :

PDU List Window										
Fire	Last Status	Source	Destination	Type	Color	Time(sec)	Periodic	Num	Edit	Delete
	Successful	PC6	PC7	ICMP		0.000	N	0	(edit)	
	Successful	PC3	PC2	ICMP		0.000	N	1	(edit)	
	Successful	PC3	PC2	ICMP		0.000	N	2	(edit)	
	Successful	PC3	PC2	ICMP		0.000	N	3	(edit)	
	Successful	PC3	PC2	ICMP		0.000	N	4	(edit)	

CLI:

The image displays three separate windows for configuring Cisco routers via their Command Line Interface (CLI). Each window has tabs for Physical, Config, CLI, and Attributes, with the CLI tab selected.

Router0

```
Router(config)#router rip
Router(config-router)#router bgp 1000
Router(config-router)#network 10.0.0.0
Router(config-router)#neighbor 40.40.40.2 remote-as 2000
Router(config-router)#network 40.0.0.0
Router(config-router)#exit
Router(config)%%BGP-5-ADJCHANGE: neighbor 40.40.40.2 Up
```

Router1

```
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#router bgp 2000
Router(config-router)#network 20.0.0.0
Router(config-router)#network 40.0.0.0
Router(config-router)#network 50.0.0.0
Router(config-router)#network 40.40.40.1 remote-as 1000
Router(config-router)#neighbor 40.40.40.1 remote-as 1000
Router(config-router)%%BGP-5-ADJCHANGE: neighbor 40.40.40.1 Up
Router(config-router)#neighbor 40.40.40.1 remote-as 1000
Router(config-router)#neighbor 50.50.50.2 remote-as 3000
Router(config-router)#exit
```

Router2

```
Router>configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#router rip
Router(config-router)#router bgp 3000
Router(config-router)#network 30.0.0.0
Router(config-router)#network 50.0.0.0
Router(config-router)#neighbor 50.50.50.1
Router(config-router)%%Incomplete command.
Router(config-router)#neighbor 50.50.50.1 remote-as 2000
Router(config-router)%%BGP-5-ADJCHANGE: neighbor 50.50.50.1 Up
Router(config-router)#neighbor 50.50.50.1 remote-as 2000
Router(config-router)#exit
```

Network Table :

HOST	INTERFACE	IP ADDRESS	NETWORK ADDRESS	DEFAULT GATEWAY
ROUTER3	GO/0	10.10.10.1	10.0.0.0	
	SO/1/0	40.40.40.1	40.0.0.0	
ROUTER1	GO/0	20.20.20.1	20.0.0.0	
	SO/1/0	40.40.40.2	40.0.0.0	
	SO/1/1	50.50.50.1	50.0.0.0	
ROUTER2	GO/0	30.30.30.1	30.0.0.0	
	SO/1/0	50.50.50.2	50.0.0.0	
PC0	FastEthernet0	10.10.10.2	10.0.0.0	10.10.10.1
PC1	FastEthernet0	10.10.10.3	10.0.0.0	10.10.10.1
PC2	FastEthernet0	10.10.10.4	10.0.0.0	10.10.10.1
PC3	FastEthernet0	20.20.20.2	20.0.0.0	20.20.20.1
PC4	FastEthernet0	20.20.20.3	20.0.0.0	20.20.20.1
PC5	FastEthernet0	20.20.20.4	20.0.0.0	20.20.20.1
PC6	FastEthernet0	30.30.30.2	30.0.0.0	30.30.30.1
PC7	FastEthernet0	30.30.30.3	30.0.0.0	30.30.30.1
PC8	FastEthernet0	30.30.30.4	30.0.0.0	30.30.30.1