



Student Name	Swanand Garge
PRN No	2280030433
Roll No	39
Program	Computer Engg.
Year	Third Year
Division	D
Subject	Computer Network Laboratory (BTECCE22506)
Assignment No	Four

Assignment Number - 04

Title : Configuration of router by using router commands and implementation of static routing

Problem Statement Using a Network Simulator (e.g. packet tracer) Configure routers for static routing

Theory :

Router – Router is a network device that allows you to direct data traffic to an appropriate destination. Router maintain routing table that contain IP addresses of computers over the network. A router has different components that enable proper functioning.

Cisco IOS supports various command modes, among those followings are the main command modes.

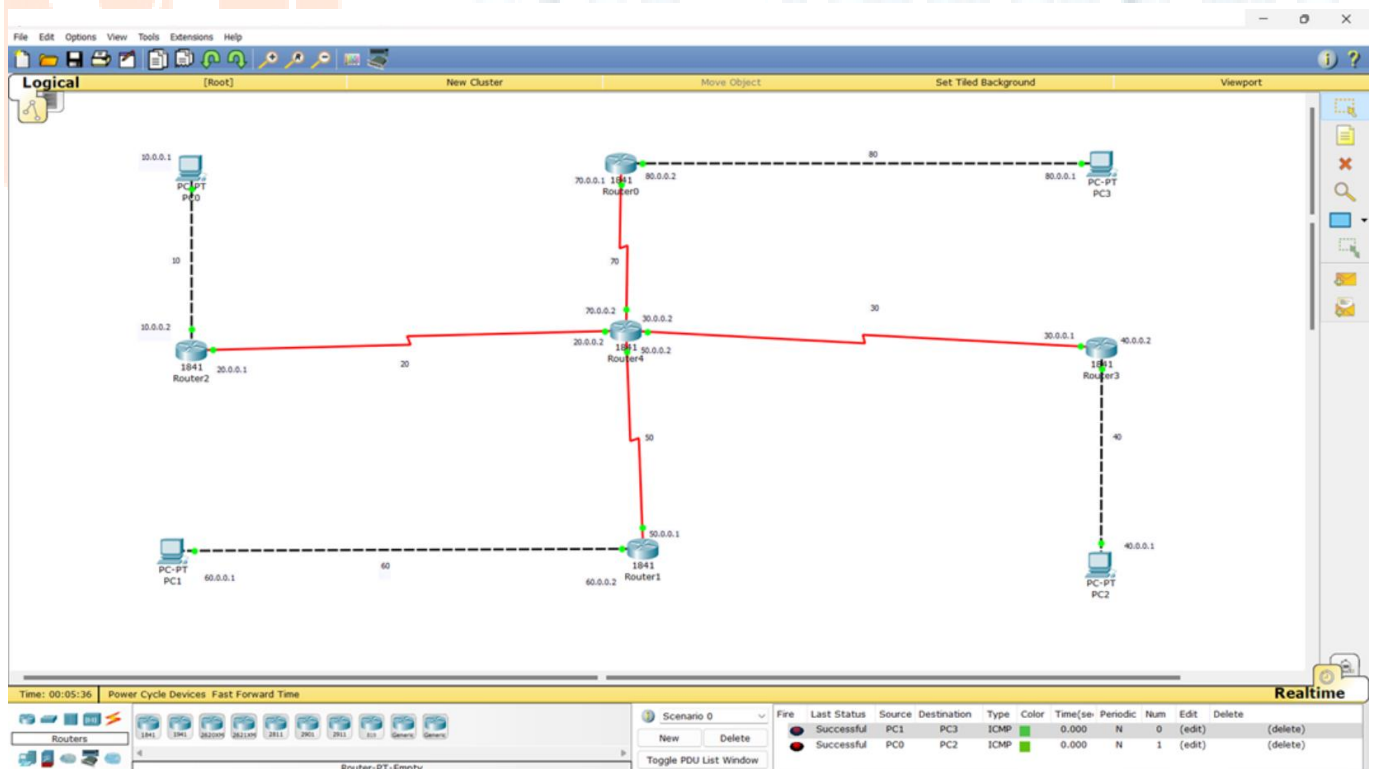
- User EXEC Mode
- Privileged EXEC Mode
- Global Configuration Mode
- Interface Configuration Mode
- Sub Interface Configuration Mode
- Setup Mode

Mode	Prompt	Command to enter	Command to exit
User EXEC	Router >	Default mode after booting. Login with password, if configured.	Use exit command
Privileged EXEC	Router #	Use enable command from user exec mode	Use exit command
Global Configuration	Router(config)#	Use configure terminal command from privileged exec mode	Use exit command
Interface Configuration	Router(config-if)#	Use interface type number command from global configuration mode	Use exit command to return in global configuration mode
Sub-Interface Configuration	Router(config-subif)#	Use interface type sub interface number command from global configuration mode or interface configure mode	Use exit to return previous mode. Use end command to return in privileged exec mode.

Some important router Command

Command	Description
Router(config)#interface serial 0/0/0	Enter into serial interface 0/0/0
Router(config-if)#description Connected to interface	Optional command. It set description on interface that is locally significant
Router(config-if)#ip address 10.0.0.1 255.0.0.0	Assigns address and subnet mask to
Router(config-if)#clock rate 64000	DCE side only command. Assigns a clock
Router(config-if)#bandwidth 64	DCE side only command. Set bandwidth for
Router(config-if)#no shutdown	Turns interface on

Configuration of static Routing



Code**Basic Router Configuration – Static Routing****Router0 Configuration**

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface Serial0/1/0
Router(config-if)#ip address 20.0.0.2 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/0, changed state to up

Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 30.0.0.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

Router(config-if)#exit
Router(config)#interface Serial0/0/1
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
ip address 50.0.0.1 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

Router(config-if)#exit
Router(config)#interface Serial0/1/1
Router(config-if)#ip address 70.0.0.1 255.0.0.0
Router(config-if)#
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface Serial0/1/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/1/1, changed state to up
Router(config)#ip route 10.0.0.0 255.0.0.0 20.0.0.1
Router(config)#ip route 80.0.0.0 255.0.0.0 70.0.0.2
Router(config)#ip route 40.0.0.0 255.0.0.0 30.0.0.2
Router(config)#ip route 60.0.0.0 255.0.0.0 50.0.0.2
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

```
S 10.0.0.0/8 [1/0] via 20.0.0.1
C 20.0.0.0/8 is directly connected, Serial0/1/0
C 30.0.0.0/8 is directly connected, Serial0/0/0
S 40.0.0.0/8 [1/0] via 30.0.0.2
C 50.0.0.0/8 is directly connected, Serial0/0/1
S 60.0.0.0/8 [1/0] via 50.0.0.2
C 70.0.0.0/8 is directly connected, Serial0/1/1
S 80.0.0.0/8 [1/0] via 70.0.0.2
Router#
```

Router1 Configuration

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 80.0.0.1 255.0.0.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 70.0.0.2 255.0.0.0
Router(config-if)#no shutdown
Router(config-if)#
Router(config)#ip route 10.0.0.0 255.0.0.0 70.0.0.1
Router(config)#ip route 20.0.0.0 255.0.0.0 70.0.0.1
Router(config)#ip route 30.0.0.0 255.0.0.0 70.0.0.1
Router(config)#ip route 40.0.0.0 255.0.0.0 70.0.0.1
Router(config)#ip route 50.0.0.0 255.0.0.0 70.0.0.1
Router(config)#ip route 60.0.0.0 255.0.0.0 70.0.0.1
```

Router2 Configuration

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 60.0.0.1 255.0.0.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#no shutdown
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 50.0.0.2 255.0.0.0
Router(config-if)#
```

```
Router(config)#ip route 10.0.0.0 255.0.0.0 50.0.0.1
Router(config)#ip route 20.0.0.0 255.0.0.0 50.0.0.1
Router(config)#ip route 30.0.0.0 255.0.0.0 50.0.0.1
Router(config)#ip route 40.0.0.0 255.0.0.0 50.0.0.1
Router(config)#ip route 70.0.0.0 255.0.0.0 50.0.0.1
Router(config)#ip route 80.0.0.0 255.0.0.0 50.0.0.1
Router(config)#
```

Router3 Configuration

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 10.0.0.1 255.0.0.0
Router(config-if)#no shutdown
```

```
Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up
```

```
Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 20.0.0.1 255.0.0.0
Router(config-if)#clock rate 64000
Router(config-if)#no shutdown
Router(config-if)#
Router(config)#ip route 30.0.0.0 255.0.0.0 20.0.0.2
Router(config)#ip route 40.0.0.0 255.0.0.0 20.0.0.2
Router(config)#ip route 50.0.0.0 255.0.0.0 20.0.0.2
Router(config)#ip route 60.0.0.0 255.0.0.0 20.0.0.2
Router(config)#ip route 70.0.0.0 255.0.0.0 20.0.0.2
Router(config)#ip route 80.0.0.0 255.0.0.0 20.0.0.2
Router(config)#
Router#
%SYS-5-CONFIG_I: Configured from console by console
```

```
Router#
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
C 20.0.0.0/8 is directly connected, Serial0/0/0
S 30.0.0.0/8 [1/0] via 20.0.0.2
S 40.0.0.0/8 [1/0] via 20.0.0.2
S 50.0.0.0/8 [1/0] via 20.0.0.2
S 60.0.0.0/8 [1/0] via 20.0.0.2
```

```
S 70.0.0.0/8 [1/0] via 20.0.0.2
S 80.0.0.0/8 [1/0] via 20.0.0.2
```

Router4 Configuration

```
Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 40.0.0.1 255.0.0.0
Router(config-if)#no shutdown

Router(config-if)#
%LINK-5-CHANGED: Interface FastEthernet0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/0, changed state to up

Router(config-if)#exit
Router(config)#interface Serial0/0/0
Router(config-if)#ip address 30.0.0.2 255.0.0.0
Router(config-if)#clock rate 64000
This command applies only to DCE interfaces
Router(config-if)#no shutdown
Router(config-if)#do write
Building configuration...
[OK]
Router(config-if)#
Router#config t
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#ip route 10.0.0.0 255.0.0.0 30.0.0.1
Router(config)#ip route 20.0.0.0 255.0.0.0 30.0.0.1
Router(config)#ip route 50.0.0.0 255.0.0.0 30.0.0.1
Router(config)#ip route 60.0.0.0 255.0.0.0 30.0.0.1
Router(config)#ip route 70.0.0.0 255.0.0.0 30.0.0.1
Router(config)#ip route 80.0.0.0 255.0.0.0 30.0.0.1
```

Conclusion : <<Write Conclusion in your own words. Write about what you learn from assignment>>