

WORKSHEET – 2.3

NAME –

UID –

BRANCH – BTECH CSE

SEC –

SUB – COMPUTER NETWORK

Aim:

Understand Routing Mechanism.

Task to be done:

Create a network to implement Distance Vector routing Protocol using Packet Tracer.

Requirements:

Packet Tracer.

Result/Output/Writing Summary:

a) **Static Routing:**

Static routing is the manual method of routing . In static routes the administrative distance is as default value. In **Static routing**, we can enter all the routes manually to the router. In other words, we can define each routing steps **one by one**. To access a network, which nodes we need to pass through, we can define such steps. This work is not an easy work, so static routing is used in small networks.

Cisco Packet Tracer Student - C:\Users\Samsung\Desktop\Static Routing.pkt

File Edit Options View Tools Extensions Help

Logical [Root] New Cluster Move Object Set Tiled Background Viewport

Router-PT Router3 Router-PT Router4 Router-PT Router6

2951D24 Switch 2951D24 Switch 2951D24 Switch

PC-PT PC3 PC-PT PC4 PC-PT PC5 PC-PT PC6 PC-PT PC7 PC-PT PC8

Simulation Panel

Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info

Reset Simulation Constant Delay Captured to: (no captures)

Play Controls

Back Auto Capture / Play Capture / Forward

Event List Filters - Visible Events

ACL Filter, ARP, BGP, CDP, DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NDP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telet, UDP, VTP

Edit Filters Show All/None

Time: 00:08:14.511 Power Cycle Devices PLAY CONTROLS: Back Auto Capture / Play Capture / Forward Event List Simulation

Scenario 0

New Delete

Toggle PDU List Window

Connections

Copper Straight-Through

COMPUTER NETWORKS LAB

The screenshot shows the Cisco Packet Tracer interface with Router3 selected. The 'Static Routes' configuration window is open, displaying the following fields:

- Network: (empty)
- Mask: (empty)
- Next Hop: (empty)
- Network Address: 20.0.0.0/8 via 40.0.0.2

The 'Equivalent IOS Commands' section shows the following configuration:

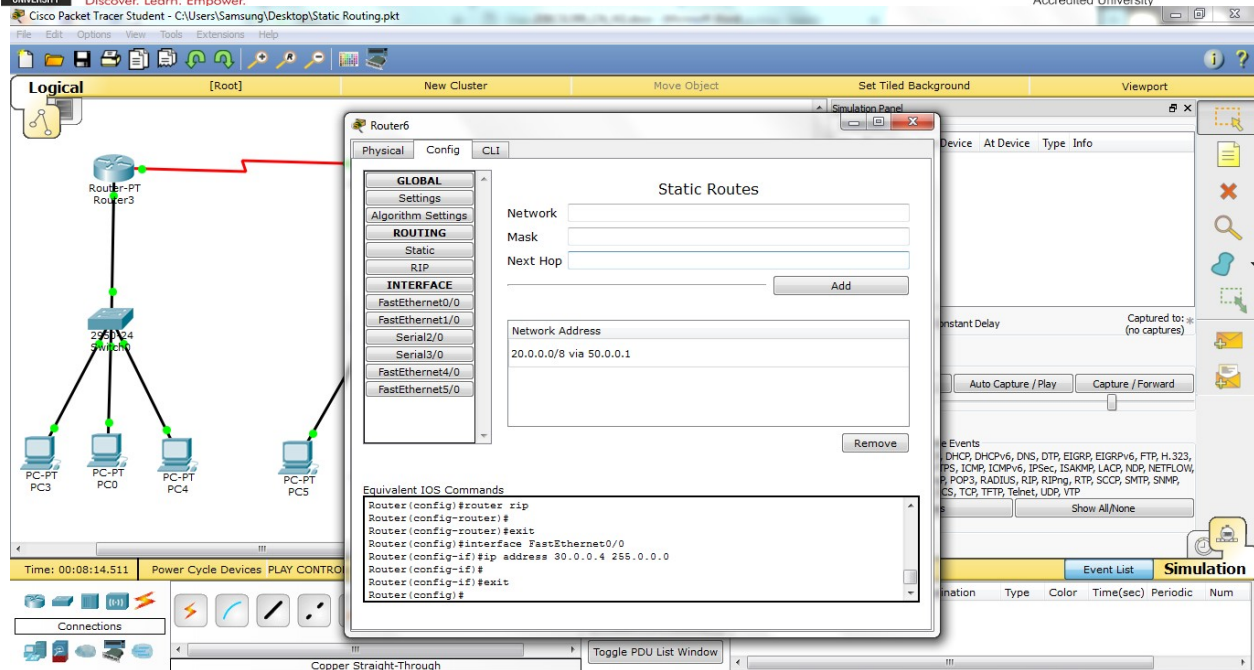
```
Router (config)#interface Serial2/0
Router (config-if)#
Router (config-if)#exit
Router (config)#interface FastEthernet0/0
Router (config-if)#ip address 10.0.0.4 255.0.0.0
Router (config-if)#exit
Router (config)#
```

The screenshot shows the Cisco Packet Tracer interface with Router4 selected. The 'Static Routes' configuration window is open, displaying the following fields:

- Network: (empty)
- Mask: (empty)
- Next Hop: (empty)
- Network Address: 10.0.0.0/8 via 40.0.0.1
30.0.0.0/8 via 50.0.0.2

The 'Equivalent IOS Commands' section shows the following configuration:

```
sourced by 0060.2F1E.0A83
Router (config-if)#exit
Router (config)#interface FastEthernet0/0
Router (config-if)#ip address 20.0.0.4 255.0.0.0
Router (config-if)#
Router (config-if)#exit
Router (config)#
```



b) Dynamic Routing:

Dynamic routing is the routing that is done with the help of Routing Protocols. Dynamic Routing is a network routing procedure that facilitates the routers to pick and choose the routing paths depending on the network structure's logical changes in real-time. This is opposite to the typical traditional static network routing. This is an automated routing technique that requires very less administration and supervision. Various protocols used in this routing method are Open Shortest Path First (OSPF), Routing Information Protocol (RIP), Border Gateway Protocol (BGP), and Enhanced Interior Gateway Routing Protocol (EIGRP).

The screenshot displays the Cisco Packet Tracer interface. On the left, a network topology is shown with a central Router3 connected to a 2951-24 switch, which is in turn connected to four PCs (PC3, PC4, PC5, and PC6). A red arrow points from the Router3 icon in the topology to the configuration window.

The configuration window for Router3 is open to the CLI tab, showing the following configuration:

```

Router3
  GLOBAL
  Settings
  Algorithm Settings
  ROUTING
  Static
  RIP
  INTERFACE
  FastEthernet0/0
  FastEthernet1/0
  Serial2/0
  Serial3/0
  FastEthernet4/0
  FastEthernet5/0

  Equivalent IOS Commands
  Router(config)#interface serial2/0
  Router(config-if)#
  Router(config-if)#exit
  Router(config)#interface FastEthernet0/0
  Router(config-if)#ip address 10.0.0.4 255.0.0.0
  Router(config-if)#
  Router(config-if)#exit
  Router(config)#
  Router(config)#router rip
  Router(config-router)#
  
```

The RIP Routing configuration window is also visible, showing the following settings:

```

RIP Routing
  Network
  Network Address
  10.0.0.0
  40.0.0.0
  
```

The bottom status bar shows the simulation time as 00:08:14.511 and the simulation is running.

The screenshot shows the configuration window for Router4 in Cisco Packet Tracer. The 'RIP Routing' tab is active, displaying the following configuration:

```

    GLOBAL
    Settings
    Algorithm Settings
    ROUTING
    Static
    RIP
    INTERFACE
    FastEthernet0/0
    Serial2/0
    Serial3/0
    FastEthernet4/0
    FastEthernet5/0
  
```

The 'RIP Routing' section shows three networks added:

Network Address
20.0.0.0
40.0.0.0
50.0.0.0

The 'Equivalent IOS Commands' section shows the following commands:

```

    Router4(config-router)#
    Router4(config-if)#exit
    Router4(config)#interface FaastEthernet0/0
    Router4(config-if)#ip address 20.0.0.4 255.0.0.0
    Router4(config-if)#
    Router4(config-if)#exit
    Router4(config)#
    Router4(config)#router rip
    Router4(config-router)#
  
```

The network diagram shows Router3 connected to Router4, which is connected to PC3, PC4, and PC5. The status bar indicates 'Time: 00:08:14.511' and 'Power Cycle Devices PLAY CONTROL'.

The screenshot shows the configuration window for Router6 in Cisco Packet Tracer. The 'RIP Routing' tab is active, displaying the following configuration:

```

    GLOBAL
    Settings
    Algorithm Settings
    ROUTING
    Static
    RIP
    INTERFACE
    FastEthernet0/0
    Serial2/0
    Serial3/0
    FastEthernet4/0
    FastEthernet5/0
  
```

The 'RIP Routing' section shows two networks added:

Network Address
30.0.0.0
50.0.0.0

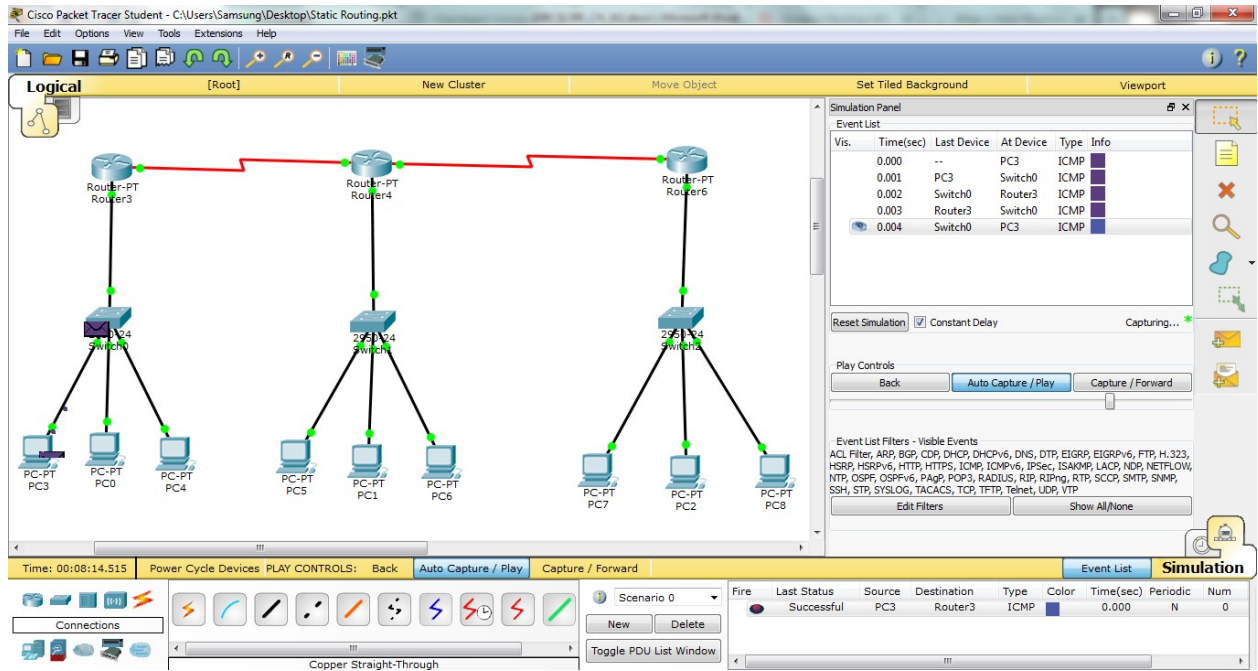
The 'Equivalent IOS Commands' section shows the following commands:

```

    Router6(config-router)#
    Router6(config-router)#exit
    Router6(config)#interface FastEthernet0/0
    Router6(config-if)#ip address 30.0.0.4 255.0.0.0
    Router6(config-if)#
    Router6(config-if)#exit
    Router6(config)#
    Router6(config)#router rip
    Router6(config-router)#
  
```

The network diagram shows Router3 connected to Router6, which is connected to PC3, PC4, and PC5. The status bar indicates 'Time: 00:08:14.511' and 'Power Cycle Devices PLAY CONTROL'.

Complete Network:



(Message Sent from Pc3 to router-3)

Simulation Panel Event List

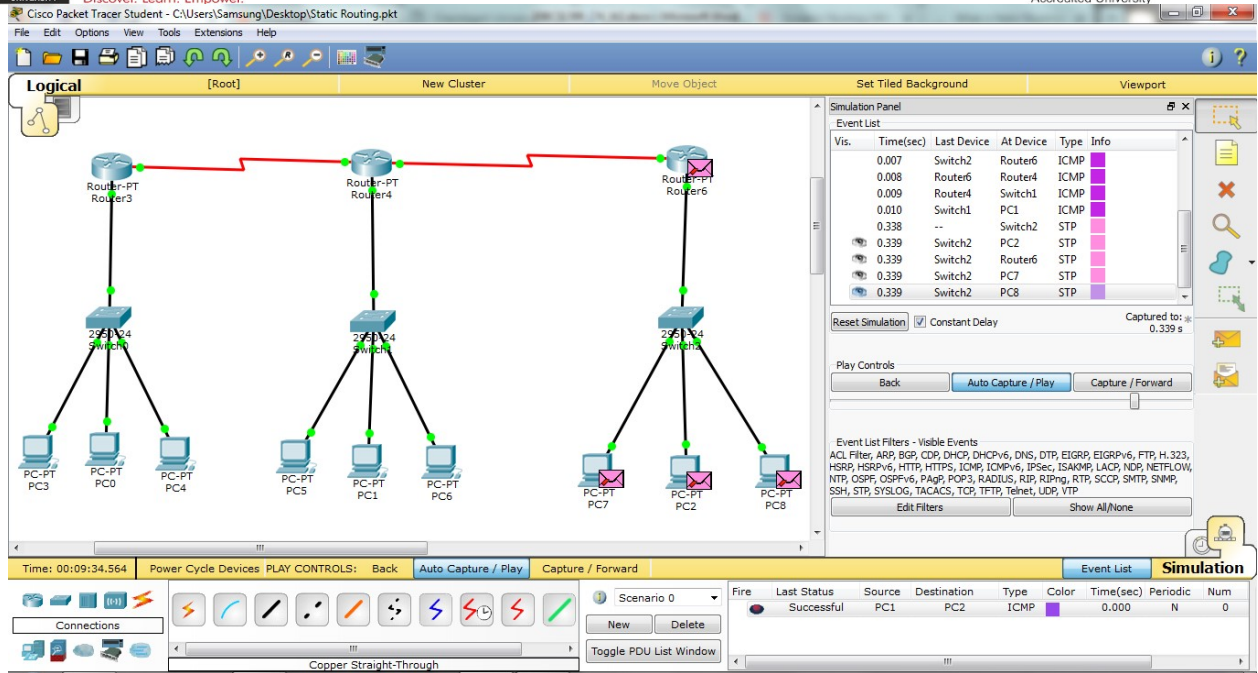
Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.002	Switch0	Router3	ICMP	
	0.003	Router3	Router4	ICMP	
	0.004	Router4	Switch1	ICMP	
	0.005	Switch1	PC1	ICMP	
	0.006	PC1	Switch1	ICMP	
	0.007	Switch1	Router4	ICMP	
	0.008	Router4	Router3	ICMP	
	0.009	Router3	Switch0	ICMP	
	0.010	Switch0	PC3	ICMP	

(Message sent from Pc-3 to Pc-1)

Simulation Panel Event List

Vis.	Time(sec)	Last Device	At Device	Type	Info
	0.007	Switch2	PC8	STP	
	0.007	Switch2	PC2	STP	
	0.007	PC2	Switch2	ICMP	
	0.008	Switch2	Router6	ICMP	
	0.009	Router6	Router4	ICMP	
	0.010	Router4	Router3	ICMP	
	0.011	Router3	Switch0	ICMP	
	0.012	Switch0	PC0	ICMP	
	0.034	--	Switch0	STP	

(Message Sent from PC-0 to Pc-2)



(Message sent from Pc-1 to Pc-2)

Learning outcomes (What I have learnt):

- Leant about Routing.
- Learnt how to configure network using static and dynamic routing.
- How to troubleshoot the network.
- Learnt to route the different networks.

Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):

Sr. No.	Parameters	Marks Obtained	Maximum Marks
1.			
2.			
3.			