

WORKSHEET – 2.3

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BRANCH – BTECH CSE

SEC – 615 B

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

2951X4 Switch 2951X4 Switch 2951X4 Switch

PC-PT PC3 PC-PT PC0 PC-PT PC4 PC-PT PC5 PC-PT PC1 PC-PT PC6 PC-PT PC7 PC-PT PC2 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, TCF, TFTP, Telet, UDP, VIP

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

Copper Straight-Through

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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

25.0.0.4/8

PC-PT PC3 PC-PT PC0 PC-PT PC4 PC-PT PC5

Time: 00:08:14.511 Power Cycle Devices PLAY CONTROL

Connections

Copper Straight-Through

Router3

Physical Config CLI

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

Static Routes

Network Mask Next Hop Add

Network Address 20.0.0.0/8 via 40.0.0.2

Remove

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)#
```

Simulation Panel

Device At Device Type Info

Instant Delay Captured to: (no captures)

Auto Capture / Play Capture / Forward

Events

DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, IPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NTP, NETFLOW, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, CS, TCP, TFTP, Telnet, UDP, VTP

Show All/None

Event List Simulation

Simulation Type Color Time(sec) Periodic Num

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

25.0.0.4/8

PC-PT PC3 PC-PT PC0 PC-PT PC4 PC-PT PC5

Time: 00:08:14.511 Power Cycle Devices PLAY CONTROL

Connections

Copper Straight-Through

Router4

Physical Config CLI

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

Static Routes

Network Mask Next Hop Add

Network Address 10.0.0.0/8 via 40.0.0.1 30.0.0.0/8 via 50.0.0.2

Remove

Equivalent IOS Commands

```
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)#
```

Simulation Panel

Device At Device Type Info

Instant Delay Captured to: (no captures)

Auto Capture / Play Capture / Forward

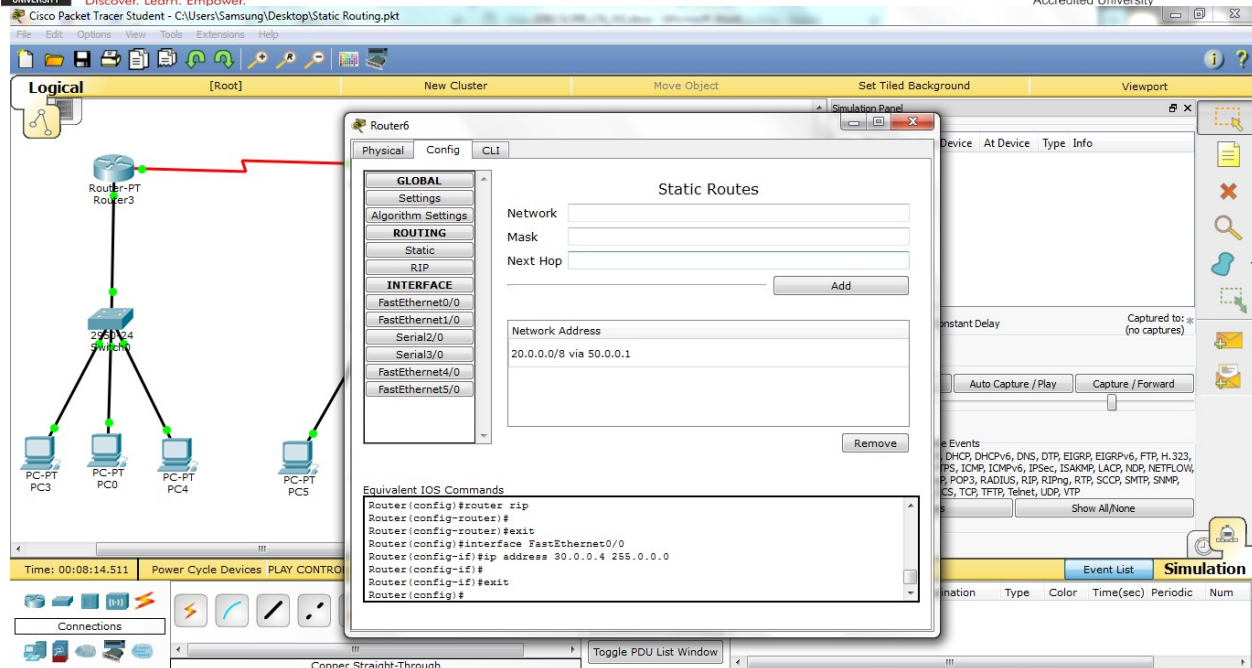
Events

DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, IPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NTP, NETFLOW, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, CS, TCP, TFTP, Telnet, UDP, VTP

Show All/None

Event List Simulation

Simulation Type Color Time(sec) Periodic Num



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).

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

Router3

Physical Config CLI

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

RIP Routing

Network Address

10.0.0.0

40.0.0.0

Add Remove

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)#exit
Router(config)#router rip
Router(config-router)#
```

Time: 00:08:14.511 Power Cycle Devices PLAY CONTROL

Connections

Copper Straight-Through

Toggle PDU List Window

Simulation

Event List

Simulation Type Color Time(sec) Periodic Num

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

255.255.255.0

PC-PT PC3 PC-PT PC0 PC-PT PC4 PC-PT PC5

Time: 00:08:14.511 Power Cycle Devices PLAY CONTROL

Connections

Copper Straight-Through

Toggle PDU List Window

Router4

Physical Config CLI

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

RIP Routing

Network Address

20.0.0.0

40.0.0.0

50.0.0.0

Remove

Equivalent IOS Commands

```

Router(config)#router rip
Router(config-router)#version 2
Router(config-router)#no auto-summary
Router(config-router)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#ip address 20.0.0.4 255.0.0.0
Router(config-if)#exit
Router(config)#exit
Router(config)#router rip
Router(config-router)#

```

Device At Device Type Info

Instant Delay Captured to: (no captures)

Auto Capture / Play Capture / Forward

Events

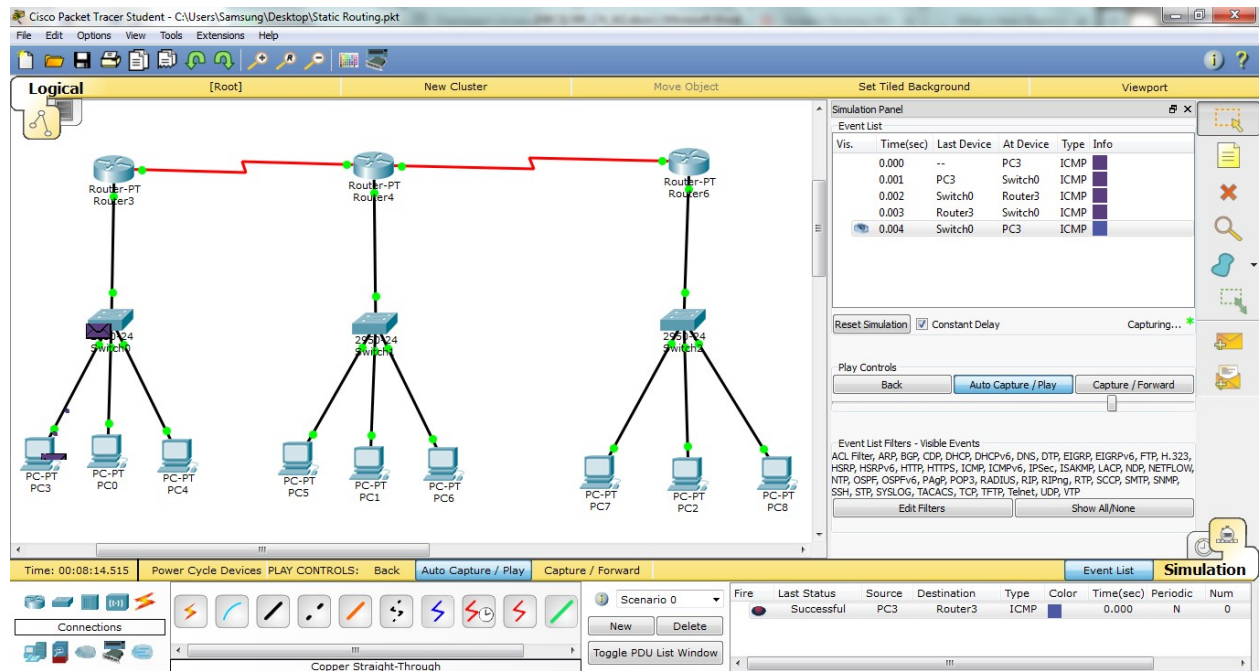
DHCP, DHCPv6, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, IPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NDP, NETFLOW, POP3, RADIUS, RIP, RIPv2, RIPv3, SCCP, SMTP, SNMP, CS, TCP, TFTP, Telnet, UDP, VTP

Show All/None

Event List Simulation

Simulation Type Color Time(sec) Periodic Num

Complete Network:



(Message Sent from Pc3 to router-3)

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

Time: 00:08:50.490

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	

Simulation Panel: Captured to: 0.010 s

Event List Filters - Visible Events: ACL Filter, ARP, BGP, CDP, DHCP, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NBP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

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

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

Time: 00:09:20.562

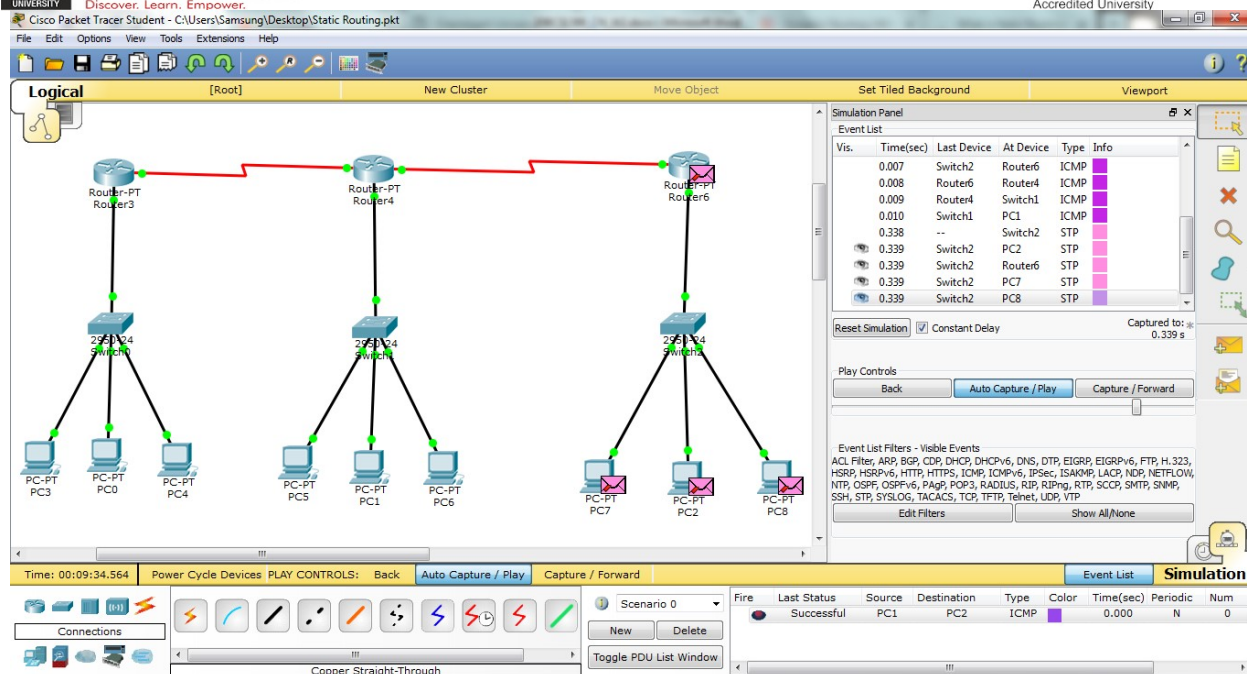
Event List:

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	

Simulation Panel: Capturing...

Event List Filters - Visible Events: ACL Filter, ARP, BGP, CDP, DHCP, DNS, DTP, EIGRP, EIGRPv6, FTP, H.323, HSRP, HSRPv6, HTTP, HTTPS, ICMP, ICMPv6, IPsec, ISAKMP, LACP, NBP, NETFLOW, NTP, OSPF, OSPFv6, PAgP, POP3, RADIUS, RIP, RIPng, RTP, SCCP, SMTP, SNMP, SSH, STP, SYSLOG, TACACS, TCP, TFTP, Telnet, UDP, VTP

(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.			