## East West University

**Department of Computer Science and Engineering**

## A/2, Jahurul Islam Avenue, Jahurul Islam City, Aftabnagar, Dhaka

**Course Code:**

CSE405 (Networking Lab)

**Course Instructor:**

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## Title: ****Static and Dynamic Routing****

## Objective(s)

* To understand the static and dynamic routing. •
* Configure static routes on each router to allow communication between all clients.
* Configure dynamic routes on each router to allow communication between all clients.

## Problem analysis

Networking devices share data among themselves with the help of a router, a router is a device that learns which paths are available and which path is best to forward traffic to. The mechanism through which the router makes such a decision is known as routing. The term routing is used for taking a packet from one device and sending it through the network to another device on a different network. Routers do not really care about hosts- they only care about networks and the best path to each network. The logical network address of the destination host is used to get packets to a network through a routed network, and then the hardware address of the host is used to deliver the packet from a router to the correct destination host. If a network is not directly connected to the router, then the router must use one of two ways to learn how to get to the remote network: static routing, and dynamic routing.

Static routes are defined manually. The route consists of a destination prefix and a next-hop forwarding address. The static route is activated in the routing table and inserted into the forwarding table when the next hop address is reachable. Traffic that matches the static route is forwarded to the specified next-hop address.

Dynamic routing is a technique in which a router learns about routing information without an administrator’s help and adds the best route to its routing table. A router running a dynamic routing protocol adds the best route to its routing table and can also determine another path if the primary route goes down.

Routing Information Protocol (RIP) is a dynamic routing protocol which uses hop count as a routing metric to find the best path between the source and the destination network.

## Procedure

## Create a network topology by setting up all the necessary devices in Cisco Packet Tracer (Add serial ports by using WIC-2T).

## Configure static IP addresses on the PC, and other devices.

## Configure the Fast Ethernet and Serial interfaces of all the Router.

## For static routing, configure router using following command and set the destination network address, subnet mask and next hop for all the network.

|  |
| --- |
| R(config)# ip route [Destination Network Address] [Subnet Mask] [Next Hop ip address] |

## For dynamic routing, configure router using following command. Then, add all the required network addresses for all of the routers

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| R(config)# router ripR(config-router)# network [Network Address] |

## Exercise:

