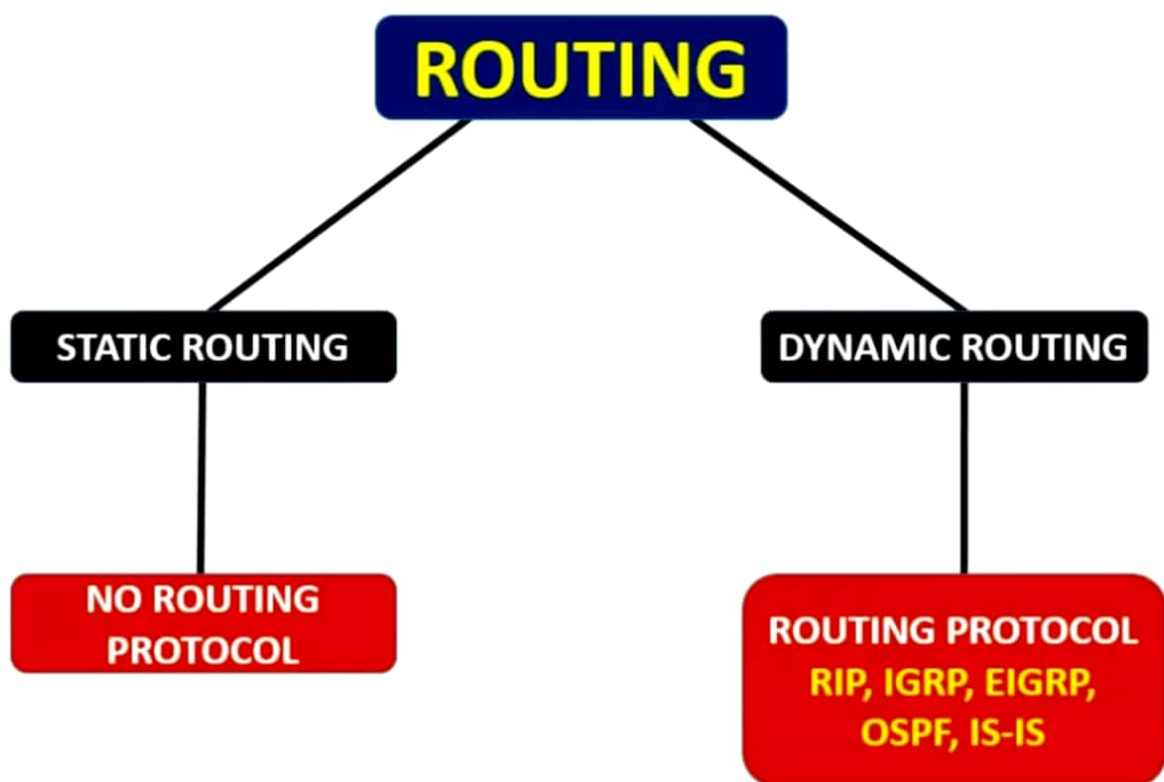# WHAT IS ROUTING?
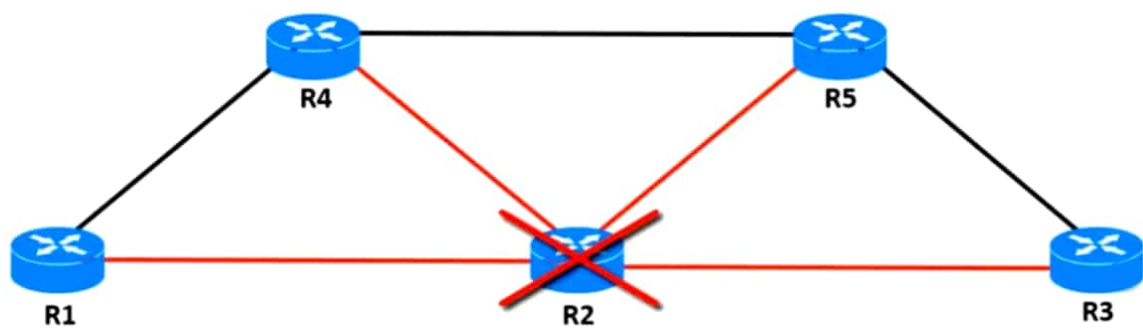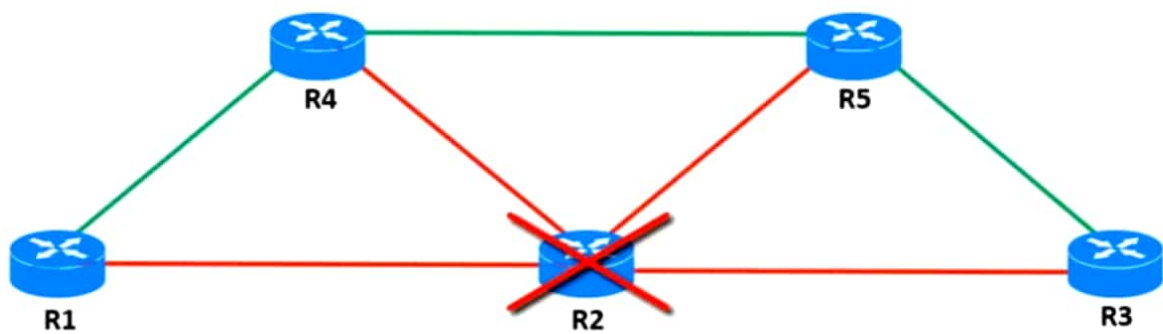
ROUTING IS THE PROCESS OF CREATING THE ROUTE FOR THE DATA PACKETS AND IT OCCURS IN THE NETWORK LAYER OF OSI MODEL.

ROUTING

STATIC ROUTING → NO ROUTING PROTOCOL

DYNAMIC ROUTING → ROUTING PROTOCOL RIP, IGRP, EIGRP, OSPF, IS-IS
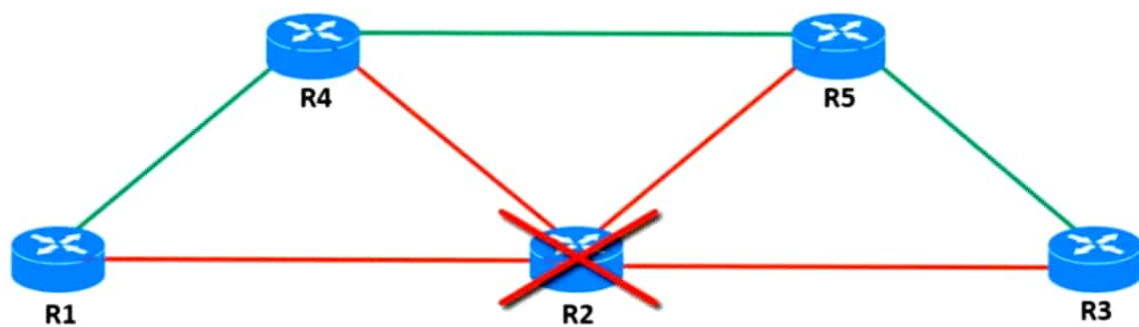
R4   R5

R1   R2   R3

The biggest drawback of static routing is that, it requires 24/7 support. Because, if the default route fail the router cannot decide the alternate route for the data packets.

It is a time consuming process. The user have to wait until the administrator configure the alternate route for the data packets.

It minimize the work pressure of the network administrator

The users need not to wait for the long time for the link to go up.

DIFFERENCE BETWEEN STATIC AND DYNAMIC ROUTING

STATIC ROUTING	DYNAMIC ROUTING
Does not use routing protocol.	Use routing protocol.
Administrator manually configure the route and makes an entry to the routing table.	Routing protocol decide the route for the data packets and makes an entry to the routing table.
Suitable for small network.	Suitable for large network.
Link failure effects the network.	Link failure does not effects the network.
Security is high.	Security is less.
Route does not change automatically.	Route changes automatically according to the changes in the network.

TCP	UDP
1. It is Connection Oriented Protocol.	1. It is Connectionless Protocol.
2. It is Stream Oriented Protocol.	2. It is Packet Oriented Protocol.
3. It is reliable protocol.	3. It is unreliable protocol.
4. It supports full duplex transmission.	4. It does not support full duplex transmission.
5. It provides error control and flow control.	5. It does not provide error control and flow control.
6. It does not support multicasting and broadcasting.	6. It supports broadcasting.
7. Slow speed as compared to UDP.	7. Fast speed as there is no error checking.
8. Header size is 20 bytes.	8. Header size is 8 bytes.
9. Low overhead, but higher than UDP.	9. Very low overhead.
10. Suitable for small to very large amounts of data (up to gigabytes)	10. Suitable for small to moderate amounts of data (up to a few hundred bytes).
11. Well known application & protocols are FTP, Telnet, SMTP, DNS, HTTP, POP, NNTP, IMAP, BGP, IRC, NFS (later versions).	11. Well known applications & protocols are Multimedia applications, DNS, BOOTP, DHCP, TFTP, SNMP, RIP, NFS (early versions).

Unit-I

Introduction to Computer Networks: Data Communication System and its components, DataFlow, Computer network and its goals, Types of computer networks: LAN, MAN, WAN, WirelessandWirednetworks,broadcastandpoint-to-pointnetworks,Networktopologies,protocols,interfacesand services, ISO-OSIreferencemodel, TCP/IP architecture.

PhysicalLayer: ConceptofAnalog&DigitalSignal,Bandwidth,TransmissionImpairments:Attenuation, Distortion,Noise,Multiplexing:FrequencyDivision,TimeDivision,WavelengthDivision, Transmission Media: Twisted pair, Coaxial cable, Fiber optics, Wireless transmission(radio, microwave, infrared), Switching: Circuit Switching, Message Switching,Packet Switching &comparisons,narrowband ISDN, broadbandISDN.

Unit-II

Datalinklayer: ErrorControl,Typesoferrors,framing(characterandbitstuffing),errordetection&correcti onmethods;Flowcontrol;Protocols:Stop& waitARQ,Go-Back- N ARQ,slidingwindowprotocols, Selective repeat ARQ, HDLC;

Medium access sub layer: Point to point protocol, FDDI, token bus, token ring; Reservation,polling, Multiple access protocols: Pure ALOHA, Slotted ALOHA, CSMA, CSMA/CD, FDMA,TDMA,CDMA,LLC,TraditionalEthernet,fastEthernet,Networkdevices-repeaters,hubs,switches,Bridges, Router, Gateway.

Unit-III

Network layer: Addressing: Internet address, sub-netting; Routing techniques, static vs. dynamicrouting, routing table, DHCP, IEEE standards 802.x, Routing algorithms: shortest path algorithm,flooding, distance vector routing, link state routing; Protocols: ARP, RARP, IP, ICMP, IGMP, IPV6;Unicastand multicast routing protocols, ATM.

Unit-IV

Transport layer: Process to process delivery; UDP; TCP, RPC, Congestion control algorithm:Leaky bucket algorithm, Token bucket algorithm, choke packets; Quality of service: techniques toimproveQoS.**Applicationlayer:**DNS;SMTP,SNMP,FTP,HTTP&WWW;Firewalls,Bluetooth,Emai l,S/MIME,IMAP**NetworkSecurity:**Cryptography,userauthentication,securityprotocolsininternet,pub lickeyencryptionalgorithm, digital signatures.

Suggested Books:

" " T t M G H ll F rth Edition.