SNS COLLEGE OF TECHNOLOGY

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COURSE CODE & NAME : 23CSB302 & COMPUTER NETWORKS

Topic: Data communication Components

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Data communication Components

- **IP address**
- **Nodes**
- **Routers**
- **Switches (TYPES: *Circuit switching, Message switching , Packet switching*)**
- **Ports**
- **Gateways**

IP address

- An IP address is the unique number assigned to every network device in an Internet Protocol (IP) network; each IP address identifies the device's host network and its location on the network.
- When one device sends data to another, the data includes a "header" that includes the IP addresses of both the sending and receiving devices.

Nodes

- A node is a network connection point that can receive, send, create or store data.
- It’s essentially any network device—computers, printers, modems, bridges or switches—that can recognize, process and transmit information to another network node.
- Each node requires some form of identification (such an IP or MAC address) to receive access to the network.

Routers

- A router is a physical or virtual device that sends data “packets” between networks.
- Routers analyze the data within packets to determine the best transmission path and use sophisticated routing algorithms to forward data packets until they reach their destination node.

Switches

- A switch is a device that connects network devices and manages node-to-node communication across a network, making sure that data packets reach their intended destination.
- Unlike routers, which send information *between* networks, switches send information between nodes *within* a network..

Switches Types

- ***Circuit switching*** establishes a dedicated data communication path between nodes in a network ,so no other traffic can traverse the same path.
- Circuit switching sees to it that full bandwidth is available during every transmission.

Switches Types

- *Message switching* sends whole messages from the source node to the destination node, with the message traveling from switch to switch until it reaches the destination..

Switches Types

- *Packet switching* involves breaking down data into independent components to make data transmission less demanding of network resources.
- With packet switching, packets instead of entire data streams travel through the network to their end destination.

Ports

- A port indicates a specific connection between network devices, with each port identified by a number.
- If an IP address is analogous to a hotel address, then ports are the suites and room numbers.
- Computers use port numbers to determine which application, service or process should receive which messages..

Gateways

- Gateways are hardware devices that facilitate communication between two different networks.
- Routers, firewalls and other gateway devices use rate converters, protocol translators and other technologies to make inter-network communication possible between otherwise incompatible devices.


THANK YOU