Routing and Data transmission- 06.01.2006

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DATA COMMUNICATION NETWORKING

Data communication takes place between two devices that are connected by some form of point-to-point transmission medium. However, it is impractical for two devices to be directly, point-to-point connected. The reasons are as follows:

1. The devices maybe very far apart.
2. There is a set of devices, each of which may require a link to many of the others at various times.

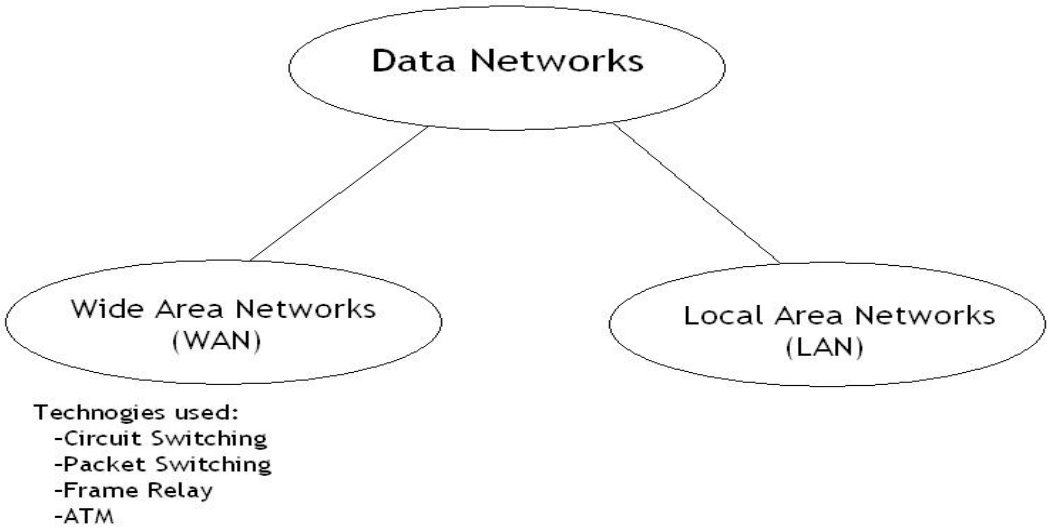
The two major categories into which communications networks are traditionally classified: Wide-area networks (WANs) and local-area networks (LANs).

Wide Area Network

- cover a large geographical area
- consists of a number of interconnected switching nodes
- rely at least in part on circuits provided by a common carrier

WANs have been implemented using following technologies:

- Circuit switching
- Packet switching
- Frame relay
- ATM networks



Circuit Switching

In a circuit-switched network, a dedicated communications path is established between two stations through the nodes of the network. That path is a connected sequence of physical links between nodes.

Packet Switching

In this approach data are sent out in a sequence of small chunks, called packets. Each packet is passed through the network from node to node along some path leading from source to destination.

Frame Relay

In case of circuit/packet switching error control had to be incorporated due to high error rates. This leads to overheads. But with modern high-speed telecommunications systems, this error rates have dropped significantly and thus overheads are unnecessary.

Thus Frame Relay was developed:

- Developed to take advantage of these high data rates and low error rates
- Designed to operate efficiently at user data rates of up to 2 Mbps.
- By stripping out most of the overhead involved with error control.