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Module -1

Switching Methods

A network is a set of connected devices. Whenever we have multiple devices, we have the problem of how to connect them to make one-to-one communication possible. One solution is to make a point-to-point connection between each pair of devices (a mesh topology) or between a central device and every other device (a star topology). These methods, however, are impractical and wasteful when applied to very large networks.

The number and length of the links require too much infrastructure to be cost-efficient, and the majority of those links would be idle most of the time.

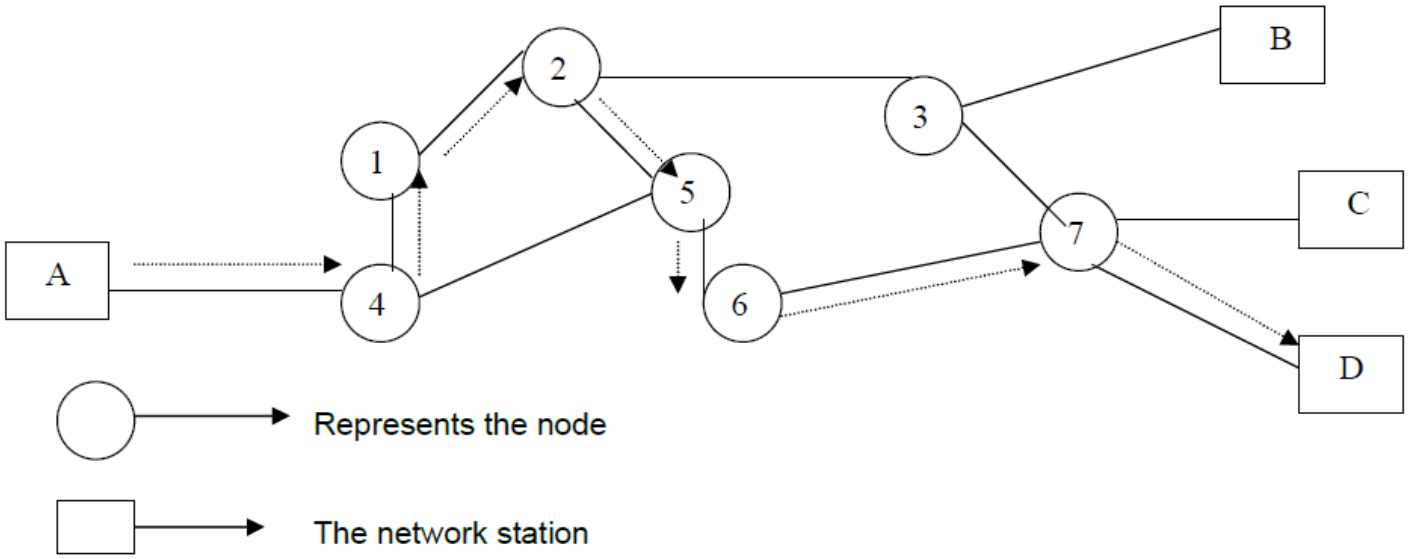
A better solution is switching. A switched network consists of a series of interlinked nodes, called switches. Switches are devices capable of creating temporary connections between two or more devices linked to the switch. In a switched network, some of these nodes are connected to the end systems (computers or telephones, for example). Others are used only for routing. Figure shows a switched network.

Two different types of switching methods are used: Circuit switching and Packet switching.

Circuit Switching

In this switching there are three phases

a. Circuit establishment b. Data transfer c. Circuit disconnection



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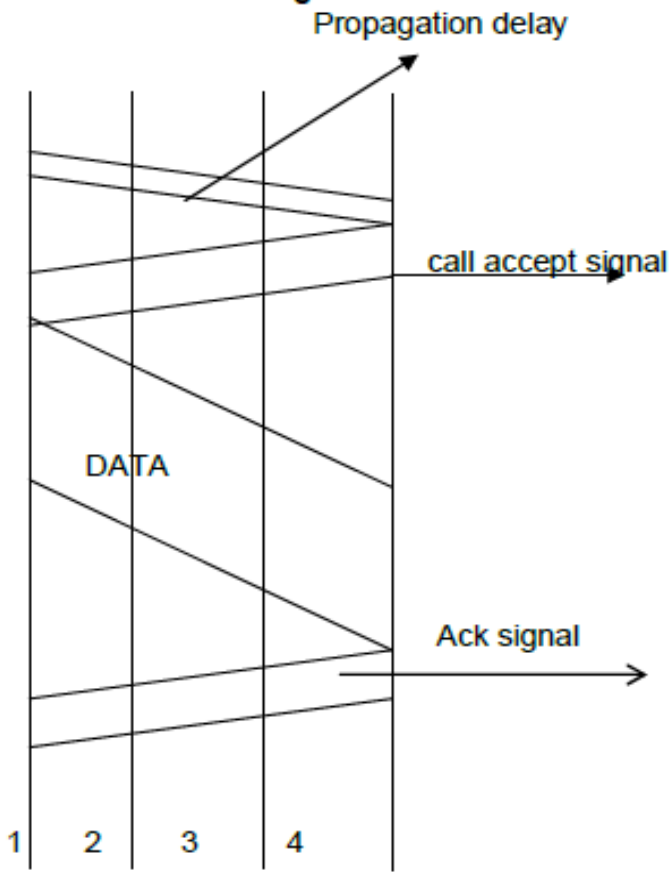
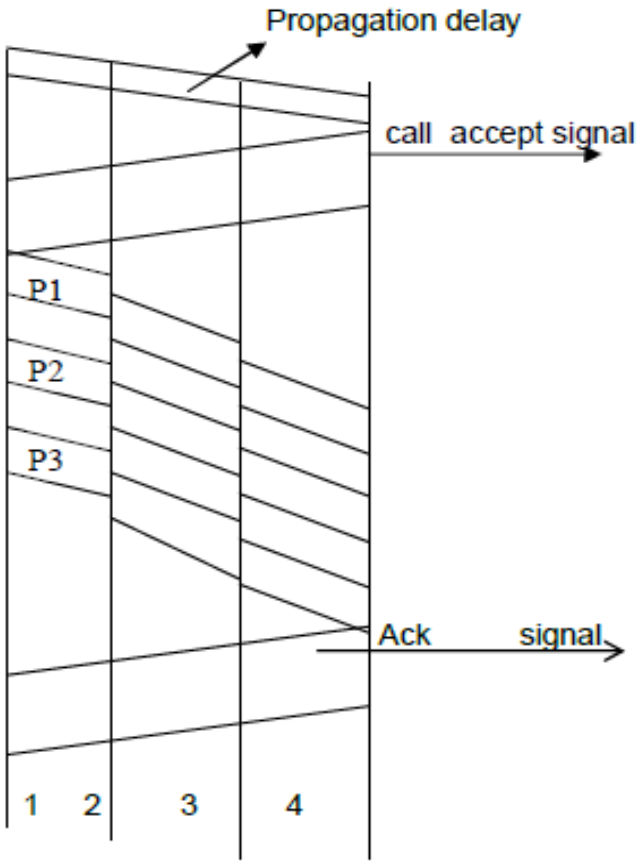
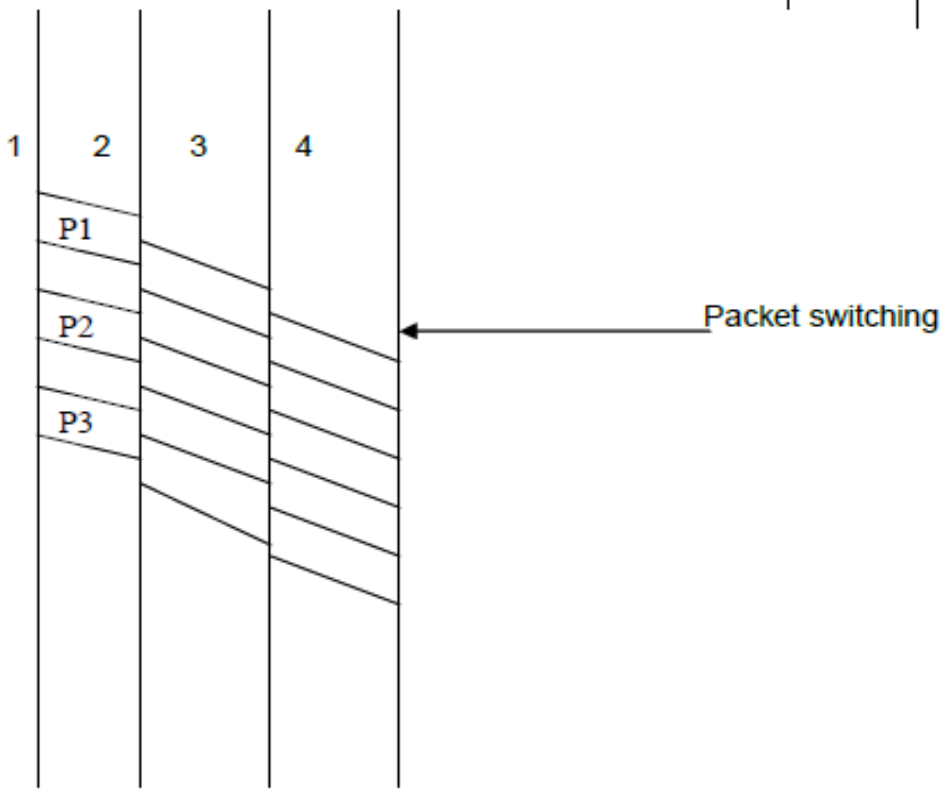
Suppose if we want to send the data, say, from A to D. before sending the data a circuit will be established between A to D as shown in fig with doted lines. All the data will follow the same path. After data is transferred the circuit will be disconnected.

Circuit switching



Virtual packet switching





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Packet switching will be done in two ways.

1. Virtual Packet switching 2. Data gram Packet switching

Circuit switching	Data gram packet	Virtual packet
Dedicated transmission	No dedicated path	No dedicated path
Continuous transmission of data	Transmission of packets	Transmission of packets
Messages are not stored	Packets are stored	Packets are stored until delivered
Path will be established for entire conversation	Route will be established for each packet.	Route will be established for entire conversation
Fixed bandwidth transmission	Dynamic use of bandwidth	Dynamic use of bandwidth