**Circuit Switching**

* Connection is established between two nodes before they begin transmitting data
* Bandwidth is dedicated to this connection and remains available until the users terminate communication between the two nodes
* While the nodes remain connected, all data follows the same path initially selected by the switch
* Traditional telephone calls use a circuit switched connection
* Can result in a waste of resources
* Some application benefit from this type of connection such as live video or audio conferencing

**Message Switching**

* Establishes a connection between two devices, transfers the information to the second device, then breaks the connection
* The information is stored and forwarded from the second device after a connection between that device and a third device on the path is established
* The store and forward routine continue until the message reaches its destination
* All information follows the same physical path, however the connection is not continuously maintained
* Message switching requires that each device in the data’s path has sufficient memory and processing power to accept and store the information before passing it to the next node
* None of the network transmission technologies discussed in this chapter use message switching

**Packet Switching**

* The most popular method for connecting nodes on a network is packet switching
* Packet switching breaks data into packets before they are transported
* Packets can travel any path on the network to their destination
* Packets can attempt to find the fastest circuit available at any instant – they need not follow each other along the same path, nor must they arrive at their destination in sequence
* When packets reach their destination, the node reassembles them in sequence based on their control information
* The greatest advantage of packet switching lies in the fact that it does not waste bandwidth by holding a connection open until a message reaches its destination as circuit switching does
* Ethernet networks and the Internet are the most common examples of packet switching networks

**MPLS (Multiprotocol Label Switching)**

* MPLS is a new type of switching that was introduced in 1999 by the IETF
* It is commonly used with protocols designed for LAN’s
* It addresses some of the limitations of packet switching (i.e. faster routing, prioritization)
* It is often called a shim because it adds additional information onto the packet being transported