

Difference between Circuit switching and Message switching

Both the Circuit switching and Message switching are the methods used to connect different devices with each other. The main difference between Circuit switching and Message switching is that Circuit Switching is done by setting a physical path between two systems while Message switching works on Store and Forward method. In message Switching, data is first stored by one node then forward to another node to transfer the data to another system.

Difference between Circuit switching and Message switching:

S.NO	CIRCUIT SWITCHING	MESSAGE SWITCHING
1.	Circuit Switching is done by setting a physical path between two systems.	In message Switching, data is first stored by one node then forward to another node to transfer the data to another system.
2.	In circuit switching, data is not stored.	In message Switching, data is first stored, then forwarded to the next node.
3.	Circuit Switching needs dedicated physical path.	Message switching does not need dedicated physical path.
4.	Circuit Switching is a Geographical addressing.	Message Switching is a Hierarchical addressing.
5.	Circuit Switching is costlier than message Switching.	The cost of message switching is less than circuit switching.

6.	Circuit switching routing is manual type routing.	Message Switching routing is not manual type routing.
7.	Circuit switching reserves the full bandwidth in advance.	Message Switching does not reserve the entire bandwidth in advance.
8.	In circuit switching, charge depend on time and distance.	In message switching, charge is based on the number of bytes and distance.
9.	Congestion occurs for per minute in circuit switching.	In message switching, no congestion or very less congestion occurs.

What is Packet Switching?

Packet switching is the transfer of small pieces of data across various networks. These data chunks or “packets” allow for faster, more efficient data transfer.

Often, when a user sends a file across a network, it gets transferred in smaller data packets, not in one piece. For example, a 3MB file will be divided into packets, each with a packet header that includes the origin IP address, the destination IP address, the number of packets in the entire data file, and the sequence number.

Types of Packet Switching

There are two major types of packet switching:

Connectionless Packet Switching. This classic type of packet switching includes multiple packets, each individually routed. This means each packet contains

complete routing information—but it also means different paths of transmission and out-of-order delivery are possible, depending on the fluctuating loads on the network's nodes (adapters, switches and routers) at the moment. This kind of packet switching is sometimes called datagram switching.

Each packet in connectionless packet switching includes the following information in its header section:

- Source address
- Destination address
- Total number of packets
- Sequence number (Seq#) for reassembly

Once the packets reach their destination via various routes, the receiving devices rearrange them to form the original message.

Connection-Oriented Packet Switching. In connection-oriented packet switching, also called virtual circuit switching or circuit switching, data packets are first assembled and then numbered. They then travel across a predefined route, sequentially. Address information is not needed in circuit switching, because all packets are sent in sequence.