

Distinguish, differentiate, compare and explain what is the difference between Switch and Router. Comparison and Differences between routing and switching.

Routers and switches are both computer networking devices. They allow one or more computers to be connected to other computers, networked devices, or to other networks. However, the functions of a hub, switch and router are quite different, even if at times they are integrated into a single device. Routers connect two or more logical subnets, which do not necessarily map one-to-one to the physical interfaces of the router. The term layer 3 switches often is used interchangeably with router, but switch is really a general term without a rigorous technical definition. In marketing usage, it is generally optimized for Ethernet LAN interfaces and may not have other physical interface types.

Switch

A network switch or switching hub is a computer networking device that connects network segments. The term commonly refers to a network bridge that processes and routes data at the data link layer (layer 2) of the OSI model. Switches that additionally process data at the network layer (layer 3 and above) are often referred to as Layer 3 switches or multilayer switches.

Router

A router is an electronic device that interconnects two or more computer networks, and selectively interchanges packets of data between them. Each data packet contains address information that a router can use to determine if the source and destination are on the same network, or if the data packet must be transferred from one network to another. Where multiple routers are used in a large collection of interconnected networks, the routers exchange information about target system addresses, so that each router can build up a table showing the preferred paths between any two systems on the interconnected networks.

Difference between Router and Switch

1. Routers operate at network layer 3 of the OSI model. Network switches operate at layer 2 Data Link layer of the OSI model.
2. Router store IP address in Routing table and maintain address at its own. Switch store MAC address in lookup table and maintain at its own. Switch can Learn MAC address.
3. Rounting devices can be used in LAN and WAN networks. Switches can be used in local area networks only.
4. Number of ports in a router may be 2, 4 or 8 ports. Switch is a multi port Bridge with 24 - 48 ports.
5. Data transmission occures in the form of packets in the router. Data transmission occures in the form of frames in case of L2 switch and in the form of frame and packet in L3 switch.
6. In router, speed can be 1-10 Mbps for wireless transmissions and up to 100 Mbps in wired transmissions. Switching devices supports speed 10 Mbps, 100 Mbps and even 1Gbps in some cases.