Difference Between
Hub, Switch and Router

The difference between hub, switch and router is based on the functions of the three devices, even though the devices are sometimes combined into a single one. Let us check the difference between hub, switch and router listed below.

Hub vs Switch vs Router		
Hub	**Switch**	**Router**
Hub is a physical layer device that falls under layer 1 of the OSI model.	Switch is a data connection layer device since it is a member of layer 2 of the OSI model.	A router is a network layer device because it is a member of layer 3 of the OSI model.
A Hub operates using broadcasting.	Switches operate based on MAC addresses.	Routers operate based on IP address.
Hubs are frequently used to connect LAN components.	A switch is used by LAN.	A router is used by both LAN and MAN.
To connect, at least one network must be present.	To connect, at least one network must be present.	At least two networks must be connected by the router.
In comparison to switches and routers, it is less expensive.	It is more expensive than a hub to use.	It is more expensive than a hub and switch.
A hub sends binary bits of data from one device to another.	A switch sends frames of data from one device to another.	A router sends packets of data from one network to another.

What is Hub?

A hub merely refers to a connector that connects wires coming from various angles. Both signal processing and regeneration are absent. It is an electronic device that only utilizes the OSI model's physical layers for operation. The characteristics of the hub are given below.

- It is comparable to a switch because it is utilized in the Local Area Network (LAN).
- It serves as a network monitoring tool.
- Additionally, they are utilized in businesses to offer connectivity.

- It is possible to utilize it to build a network-accessible gadget.

What is Switch?

A point-to-point communication device is known as a switch. It operates at the OSI model's data link layer. To determine the proper destination, it makes use of a switching table. The characteristics of a switch are given below.

- It is frequently employed in local area networks to link several nodes.
- A switch, like a bridge, uses the same forwarding or filtering logic on each port. The switch receives the frames and decodes them to read the physical (MAC) address component of the message when a host or switch on the network transmits a message to another host or switch on the same network.
- LAN bandwidth is greatly increased when a switch divides a LAN into numerous collision domains, each with its own broadband connection.

What is Router?

In comparison to repeaters and bridges, routers are more complex multiport devices. It has a routing table that gives it the ability to choose the optimum path between the source and destination out of a number of potential ones for a given transmission. The characteristics of the router are given below.

- Both local area networks and metropolitan area networks frequently employ it (MAN).
- By sending data packets to the correct IP addresses, it controls traffic. These networks' traffic may be controlled.
- It chooses the optimal route for sending packets.