Router

Return to Glossary

A **Router** helps transmit packets to their destinations by charting a path through the sea of interconnected networking devices using different network topologies. Routers are intelligent devices, and they store information about the networks they're connected to. Most routers can be configured to operate as packet-filtering firewalls and use Access Control List (ACL). Routers, in conjunction with a channel service unit/data service unit (CSU/DSU), are also used to translate from LAN framing to Wide Area Network (WAN) framing. This is needed because LANs and WANs use different network protocols. Such routers are known as border routers. They serve as the outside connection of a LAN to a WAN, and they operate at the border of your network.

Router are also used to divide internal networks into two or more subnetworks. Routers can also be connected internally to other routers, creating zones that operate independently. Routers establish communication by maintaining tables about destinations and local connections. A router contains information about the systems connected to it and where to send requests if the destination isn't known. Routers usually communicate routing and other information using one of three standard protocols: Routing Information Protocol (RIP), Border Gateway Protocol (BGP) or Open Shortest Path First (OSPF).

Routers are your first line of defense, and they must be configured to pass only traffic that is authorized by network administrators. The routes themselves can be configured as static or dynamic. If they are static, they can only be configured manually and stay that way until changed. If they are dynamic, they learn of other routers around them and use information about those routers to build their routing tables.

Routers are general-purpose devices that interconnect two or more heterogeneous networks. They are usually dedicated to special-purpose computers, with separate input and output network interfaces for each connected network. Because routers and gateways are the backbone of large computer networks like the internet, they have special features that give them the flexibility and the ability to cope with varying network addressing schemes and frame sizes through segmentation of big packets into smaller sizes that fit the new network components. Each router interface has its own Address Resolution Protocol (ARP) module, its own LAN address (network card address) and its own Internet Protocol Address (IP Address). The router, with the help of a routing table, has knowledge of routes a packet could take from its source to its destination. The routing table, like in the bridge and switch, grows dynamically. Upon receipt of a packet, the router removes the packet headers and trailers and analyzes the Internet Protocol (IP) header by determining the source and destination addresses and data type, and noting the arrival time. It also updates the router table with new addresses not already in the table. The IP header and arrival time information is entered in the routing table. Routers normally work at the Network layer of the Open Systems Interconnection (OSI) Model.

Source: https://blog.netwrix.com/2019/01/08/network-devices-explained/