

Bridge

A network bridge connects multiple network segments (network domains) at the data link layer. It is sometimes called a network switch, and it works by using bridging. Traffic from one network is forwarded through it to another network. The bridge simply does what its name entails, by connecting two sides from adjacent networks.

A repeater is a similar device that connects network segments at the physical layer. An Ethernet hub is a type of repeater.

Bridging takes place at the data link layer of the OSI model. Therefore a bridge can only read the Ethernet header which provides the MAC address of the source and destination address. When a broadcast packet is transmitted, the bridge floods all the ports with the broadcast packets. Bridges use two methods to resolve the network segment that a MAC address belongs to.

- Transparent Bridging – This method uses a forwarding database to send packets across network segments. The forwarding database is initially empty and entries in the database are built as the bridge receives packets. If an address entry is not found in the forwarding table, the packet is flooded to all ports of the bridge which sends the packet to all segments except the source address. This type of bridging is common in Ethernet networks. To avoid frame looping, a spanning tree is created from the network graph and bridges not present in it are kept inactive; they can become active again if another bridge stops working.

- Source route bridging – This method is used in Token Ring networks. See below.

In Ethernets, the term "bridge" formally means a device that behaves according to the IEEE 802.1D standard - this is most often referred to as a network switch in marketing literature.