The difference between a Bridge and a Router

A bridge is a network device that operates at the data link layer. Through a bridge, data or information is not stored and is sent as packets. A router, on the other hand, is also a network device that operates at the network layer. Through a router, data or information is stored and sent as packets.

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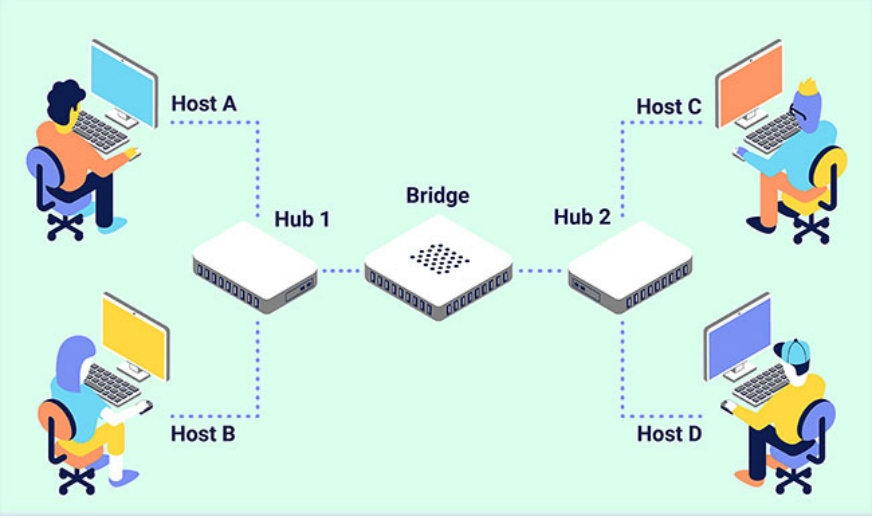
What is a bridge?

In computer networks, a bridge, also known as a Layer 2 switch, is a type of network device used to divide a network into parts. In the OSI model, a bridge operates at Layer 2, which is the data link layer. Its main function is to inspect incoming traffic and determine whether to filter or forward it.

For example, an Ethernet bridge examines each incoming Ethernet frame, including the source and destination MAC addresses; and sometimes the frame size as it processes individual forwarding decisions.

Bridges are similar to repeaters and hubs in that they transmit data to all nodes. However, bridges maintain the Media Access Control (MAC) address table as soon as they discover new segments, so subsequent transmissions are only sent to the intended recipient.



Types of bridges

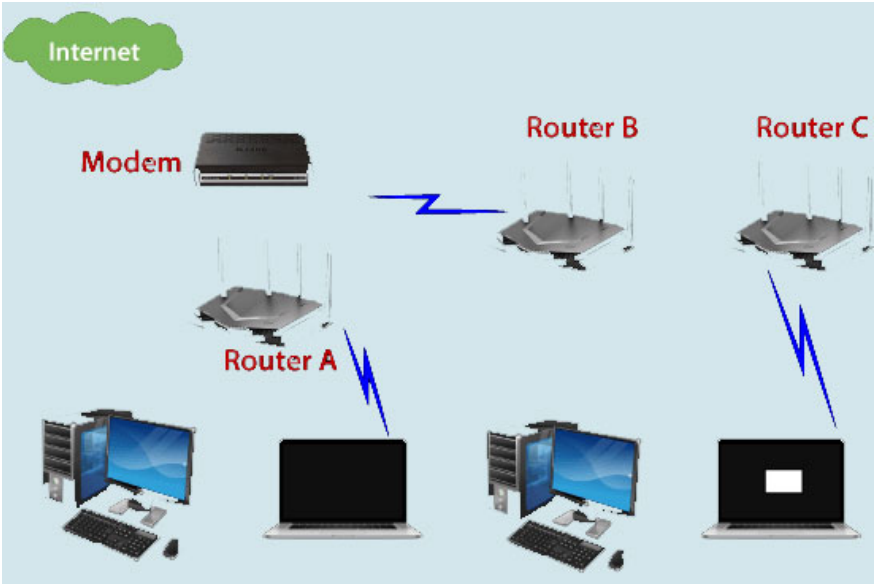
1. **Transparent Bridge** : Other devices on the network cannot see the transparent bridge.
2. **Translational Bridge** : Capable of switching between different network systems.
3. **Source-route Bridge** : The name Source-route Bridge comes from the fact that the entire route of a frame is embedded within that frame.

Things you need to know about Bridge

1. Bridge operates within the data link layer of the OSI model.
2. It is not possible to configure any routing protocols within a bridge.
3. Bridges transmit data in the form of frames.
4. A bridge is used to connect two different LAN segments.
5. The bridge operates on a broadcast domain.
6. There are only two gates in the bridge.
7. Bridge devices do not use routing tables or any other devices to transmit data to their destination.
8. With the help of MAC addresses from connected devices on the network, bridges listen to network traffic and then decide the best path to send the data.
9. The bridge determines the destination address with the help of the device's MAC address (i.e., Ethernet address).
10. The bridge doesn't create multiple paths for sending data.
11. Bridges are good for segmenting networks and extending existing networks.

What is a router?

A router is a network device that forwards data packets between computer networks. Routers perform traffic routing functions on the Internet. They then use information in routing tables or routing policies to direct packets to the next network on their path.



Types of routers

1. Wired router
2. Wireless router
3. Core router and edge router
4. Virtual Router

Things you need to know about routers

1. Routers operate within the network layer of the OSI model.
2. Protocols such as RIP, IGRP, OSPF, etc., can be configured in the router.
3. Routers transmit data in the form of packets.
4. Routers are used to connect LAN and WAN networks.
5. The router operates across multiple broadcast domains.
6. There are more than two ports in the router.
7. In a router, the routing table is used to route data to its destination.
8. Routers communicate with other routers to determine (select) the best path for data transmission.
9. Routers use network address configuration software (IP addresses) to determine addresses.
10. Routers create multiple paths for sending data.
11. Routers are great for joining remote networks.
12. Examples of routing protocols include: TCP/IP, IPX/SPX, Apple Talk.

The difference between a Bridge and a Router

The main difference between a bridge and a router is that a bridge scans the MAC address of a device. A router, on the other hand, scans the IP address of a device.

Check out the remaining differences between bridges and routers in the table below!

Basis for comparison	ROUTER	BRIDGE
Work	Routers operate within the network layer of the OSI model.	Bridge operates within the data link layer of the OSI model.
Protocol configuration	Protocols such as RIP, IGRP, OSPF, etc., can be configured in the router.	It is not possible to configure any routing protocols within a Bridge.
Data transmission	Routers transmit data in the form of packets.	Bridges transmit data in the form of frames.
Use	Routers are used to connect LAN/WAN networks.	A bridge is used to connect two different segments of a LAN network.
Scope of work	The router operates across multiple broadcast domains.	The bridge operates on a broadcast domain.
Number of ports	Router with more than 2 ports	The bridge only has two gates.
Routing table	In a router, the routing table is used to route data to its destination.	Bridge does not use routing tables or any other devices to transmit data to its destination.
Data transmission path	Routers communicate with other routers to decide (select) the best path to transmit data.	With the help of MAC addresses on connected devices on the network, the Bridge will listen to network traffic and then decide the best path to send the data.
Determine the destination address	Routers use network address configuration software (IP addresses) to determine addresses.	The bridge determines the destination address with the help of the device's MAC address (Ethernet address).
Create a path	Routers create multiple paths for sending data.	The bridge doesn't create multiple paths for sending data.
Use	Routers are great for joining remote networks. However, routers are difficult to set up and configure.	Bridges are good for segmenting networks and extending existing networks. Bridges are very easy to configure.
Types	Wired router, Wireless router, Core router and edge router, Virtual router	Bridge types include Transparent/Simple Bridge, Multiport Bridge, and Translational Bridge.
Cost	Routers are relatively expensive.	Bridge is relatively inexpensive.

See more:

1. What is the difference between a modem and a router?

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