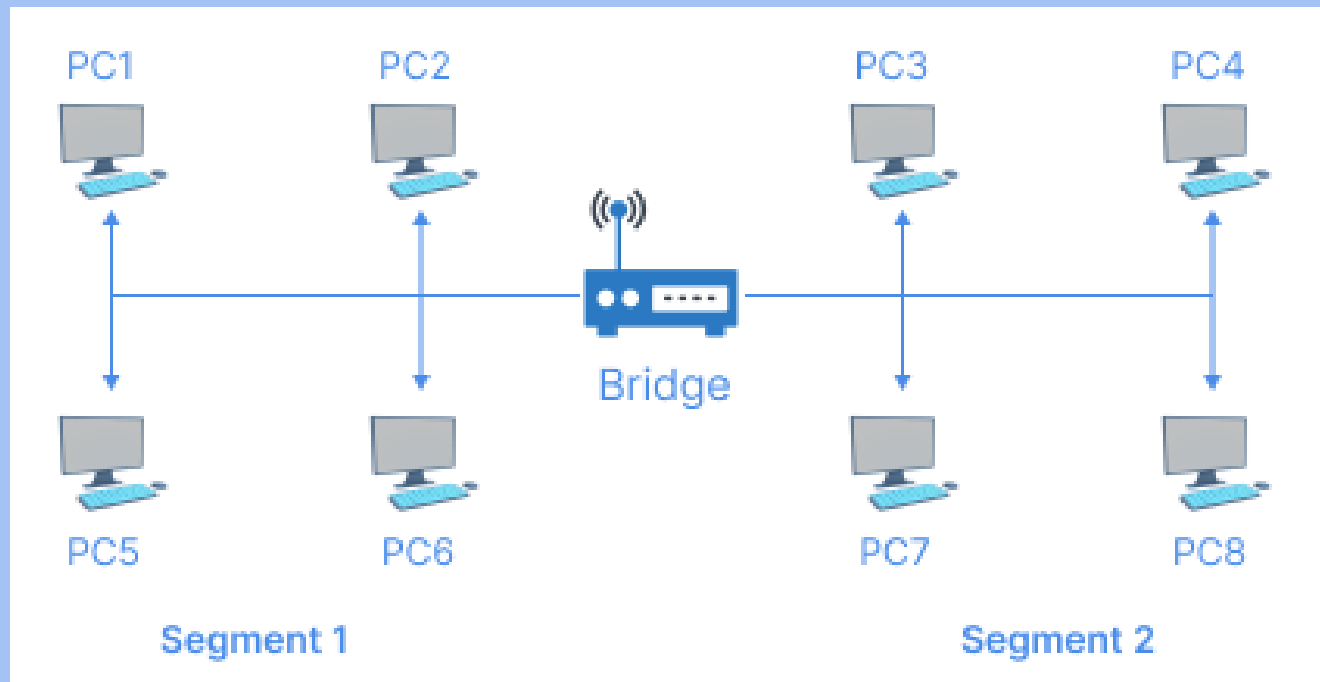


Bridge (Network Device)

Elementrix Classes

What is a Bridge?

- ❑ A bridge is a networking device that connects two separate network segments, creating a larger, extended network.
- ❑ Bridges operate at the data link layer (Layer 2) of the OSI network model.
- ❑ They intelligently analyze incoming data packets to decide whether to forward the traffic to the other segment or discard it.



How Does A Bridge Work?

- ❑ **Learning:** A bridge learns by examining the source MAC addresses of devices on each network segment. It stores this information in a table called a "bridging table."
- ❑ **Filtering:** When a data packet arrives, the bridge looks at the destination MAC address and consults its bridging table.
 - If the destination MAC is on the same segment, the bridge discards the packet.
 - If the destination MAC is on the other segment, the bridge forwards the packet.
- ❑ **Forwarding:** If the destination MAC is not found in the table, the bridge forwards the packet to all devices on the other segment (like a broadcast) until the intended device responds.

Real Life Example:

Imagine a company office with two separate departments (Sales and Development) that have their own smaller networks.

- ❑ **The Problem:** The Sales and Development teams need to share documents and other resources with each other, but their networks are initially isolated.
- ❑ **The Bridge as a Solution:** A bridge device is installed to connect the two networks. It learns which computers belong to each department by building its bridging table. Now, when someone from Sales wants to send a file to a colleague in Development, the bridge ensures the file reaches the correct computer in the other department's network without disrupting unrelated devices.

Key Benefits of Bridges:

- ❑ **Network Segmentation:** Bridges divide a large network into smaller segments, reducing congestion and improving overall network performance by isolating traffic within each segment.
- ❑ **Enhanced Security:** Bridges enforce network segmentation, isolating sensitive or critical resources from less secure areas, thereby improving security by containing potential security breaches.

पढ़िए और पढ़ाइये

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