



Assalam-u-alaikum

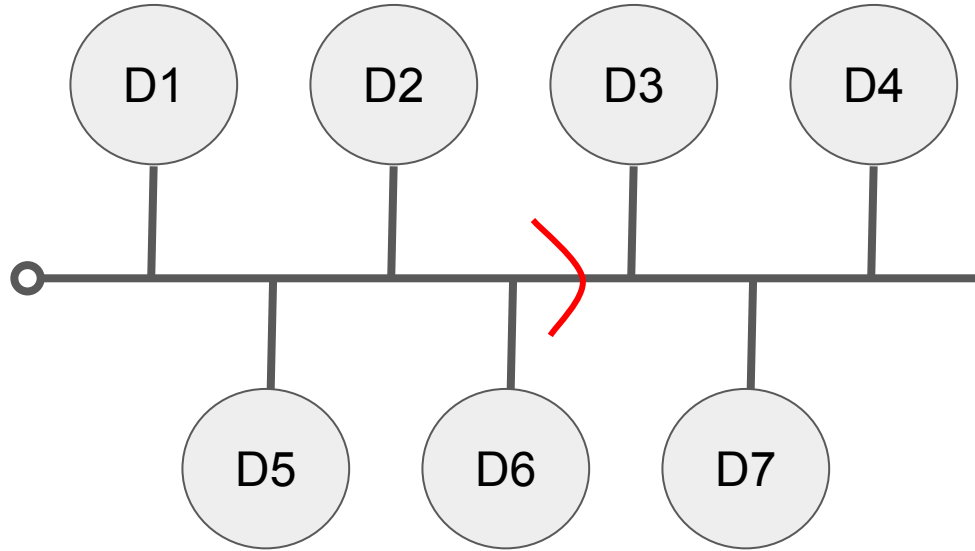
BILAL KHAN

This is my 6th video of
DevOps

How computers are connected together?

Computers are connected using different topologies.

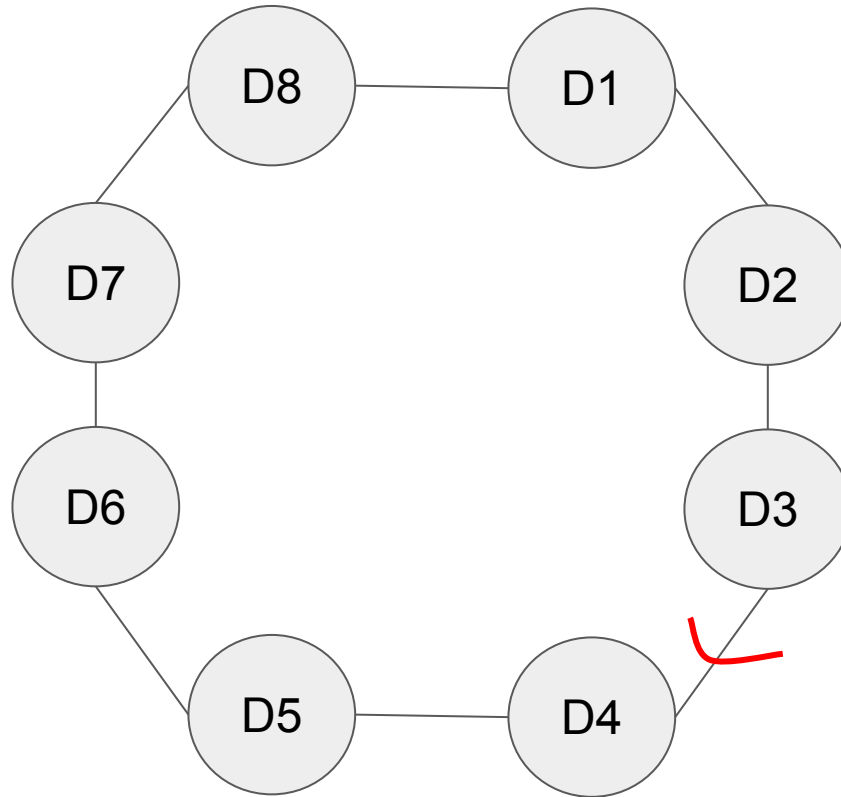
1. Bus Topology



Disadvantage

Only one person can send data at a particular time.

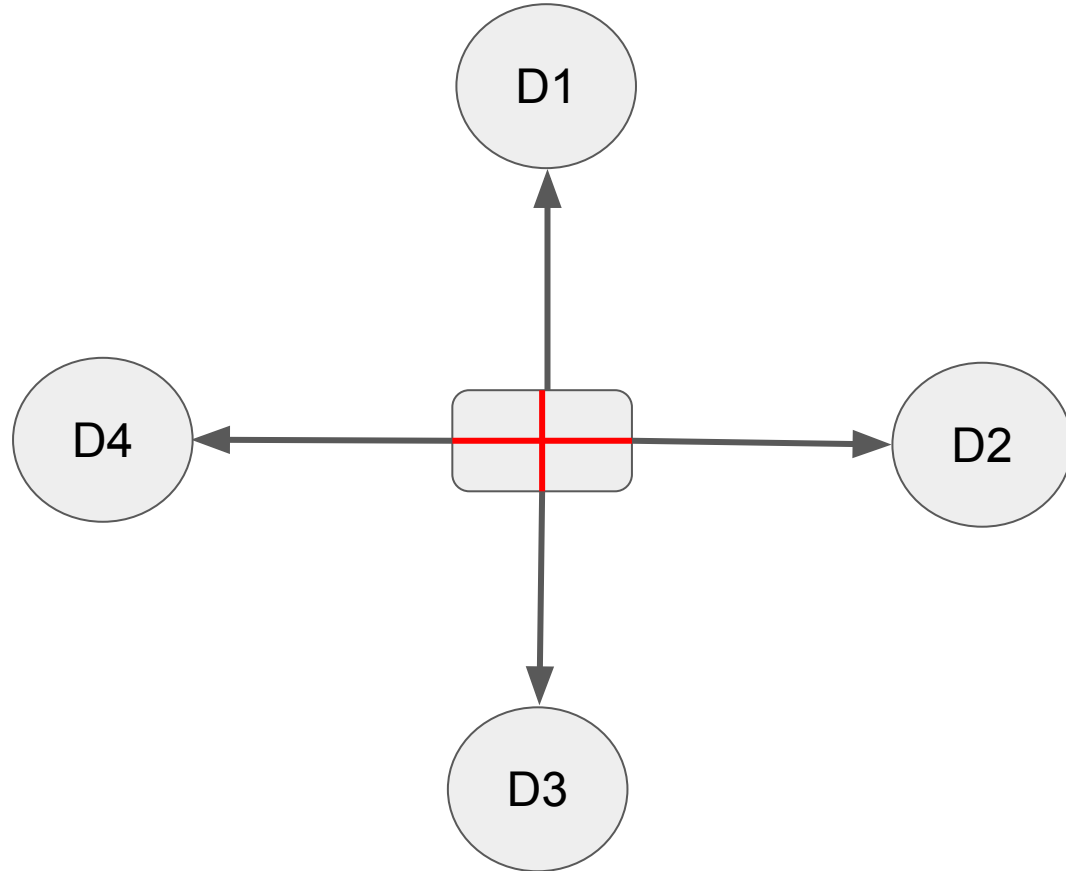
2. Ring Topology



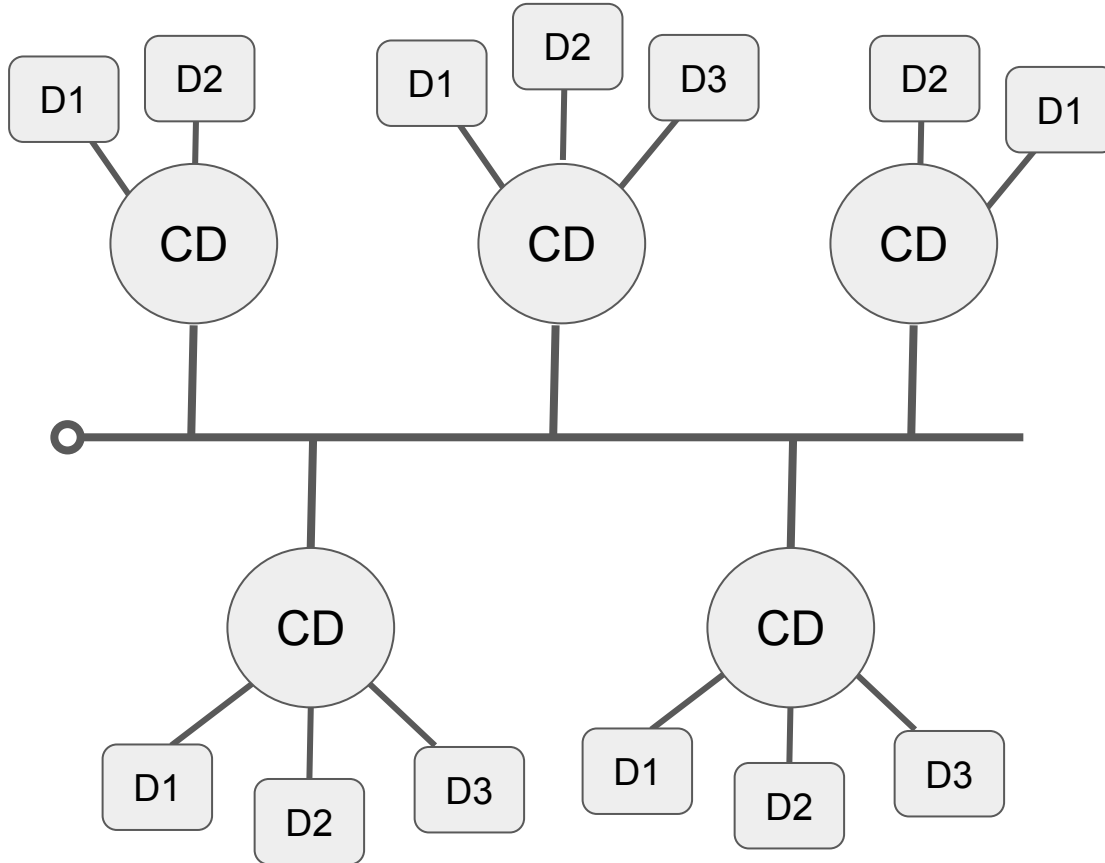
Disadvantage

Unnecessary calls

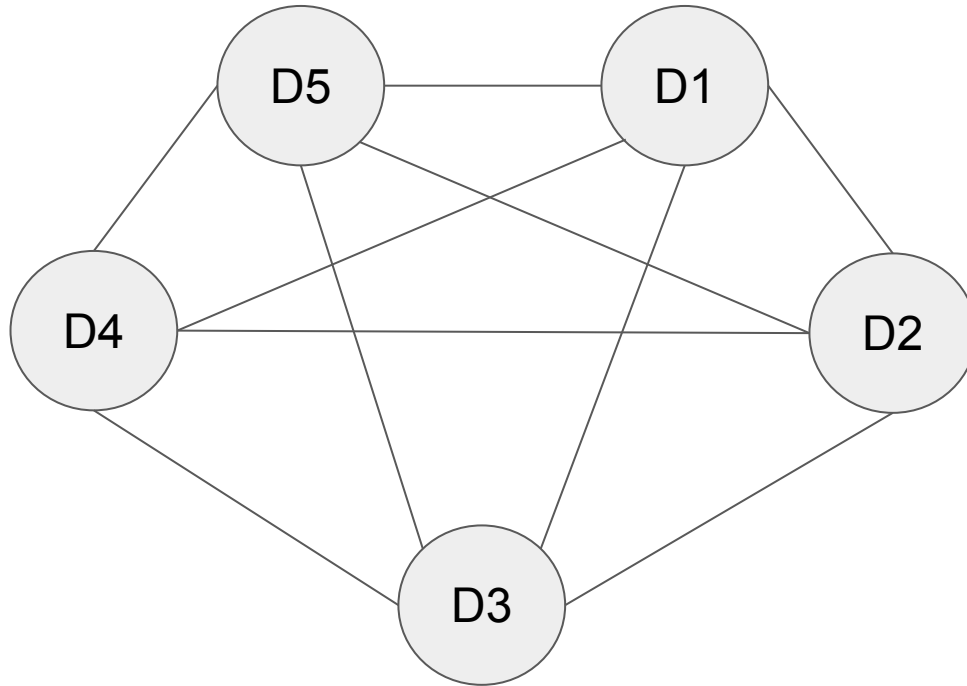
3. Star Topology



4. Tree Topology (Bus & Star)



5. Mesh Topology



Disadvantages

1. Expensive
2. Scalability issues

Move to another segment of
the networking

Structure of Networking

There are two model structures of a network.

1. OSI Model
2. TCP/IP Model

1. OSI Model

The OSI(Open System Interconnection) model describes seven layers that computer systems use to communicate over a network.

Layers of OSI Model

1. Application Layer
2. Presentation Layer
3. Session Layer
4. Transport Layer
5. Network Layer
6. Data Link Layer
7. Physical Layer

Remember: OSI model is important for interviews.

1. Application Layer

This layer is used in software. It contains the front page of an application through which user can interact like browsers, messaging application, etc.

2. Presentation Layer

This layer transform the data into the form that application accepts. This layer convert the words, characters, numbers etc to machine representable binary format.

The presentation layer is responsible for translation, encryption, and compression of data.

3. Session Layer

This is the layer responsible for opening and closing communication between the two devices. The session layer ensures that the session stays open long enough to transfer all the data being exchanged, and then promptly closes the session in order to avoid wasting resources.

The session layer also synchronizes data transfer with checkpoints. **For example**, if a 100 megabyte file is being transferred, the session layer could set a checkpoint every 5 megabytes. In the case of a disconnect or a crash after 52 megabytes have been transferred, the session could be resumed from the last checkpoint, meaning only 50 more megabytes of data need to be transferred. Without the checkpoints, the entire transfer would have to begin again from scratch.

4. Transport Layer

Transport Layer is responsible for end-to-end communication between the two devices. This includes taking data from the session layer and breaking it up into chunks called segments before sending it to network layer.

Every segment will contain the source, the destination port number and the sequence number.

Sequence number will reassemble the segments in the correct order.

Transport layer is also responsible for flow control and error control. Flow control controls the amount of data that is being transferred. Error control is ensuring that the data received is complete, and requesting a retransmission if it isn't.

There is a connection oriented transmission called TCP and a connectionless oriented transmission called UDP.

UDP is faster in terms of sending packets because it does not provide feedback, that's why some data gets lost.

5. Network Layer

The network layer is responsible for facilitating data transfer between two different networks. If the two devices communicating are on the same network, then the network layer is unnecessary.

The network layer assigns sender's and receiver's IP address to every segments and breaks up segments from the transport layer into smaller units, called packets so that each packet could reach its correct destination.

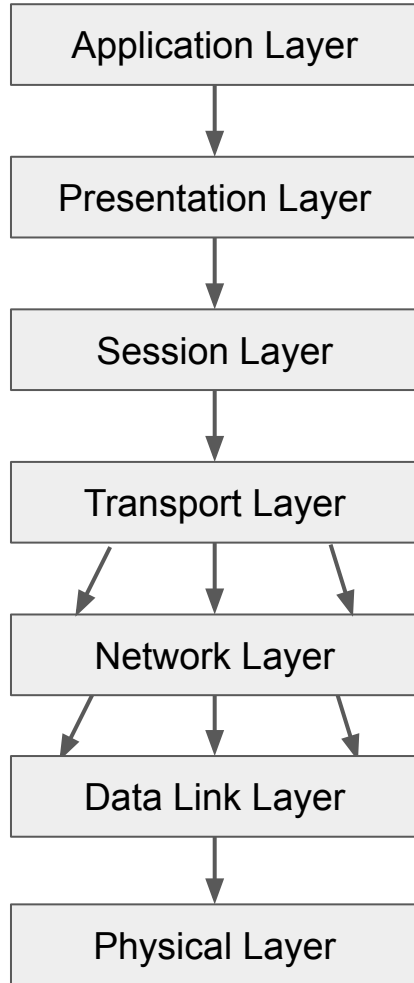
6. Data Link Layer

The data link layer is very similar to the network layer, except the data link layer facilitates data transfer between two devices on the SAME network. The data link layer takes packets from the network layer and breaks them into smaller pieces called frames. When a packet(called frame) arrives in a network, it is the responsibility of DLL to transmit it to the Host using its MAC address.

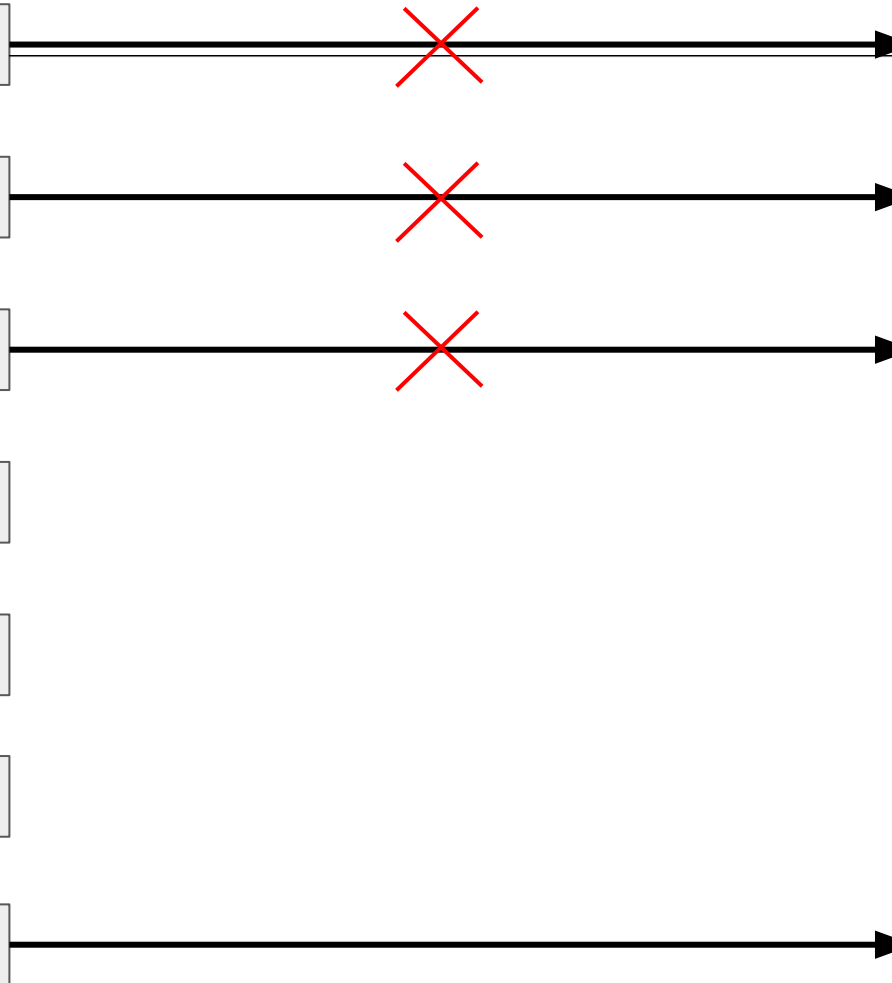
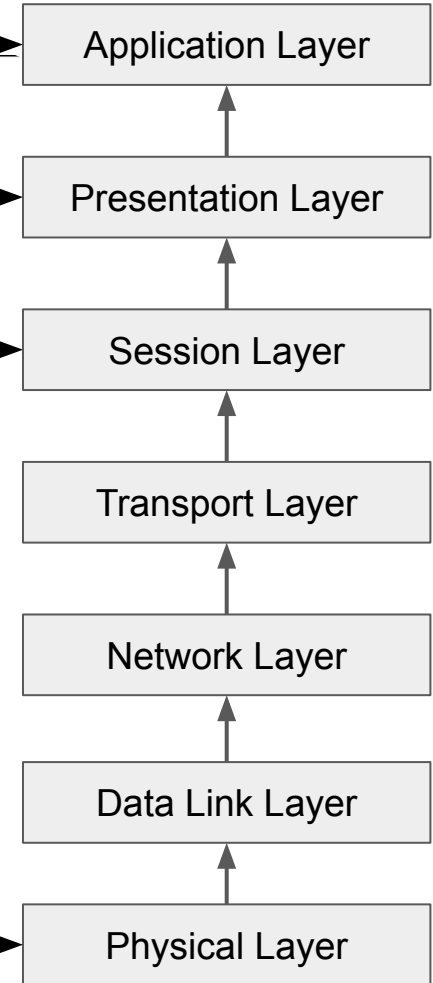
7. Physical Layer

This layer includes the physical equipment involved in the data transfer, such as the cables and switches. This is also the layer where the data gets converted into a bit stream, which is a string of 1s and 0s.

You



Your Friend



What we have learned?

How computers are connected using
Topologies?

What is the structure of networking?

Different layers of OSI Model

That's It

I hope you will like this video.

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Ask questions in the comment section