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Client Server Architecture

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- The Client-Server Architecture tells you about Servers, Connection between a client and the server and how it takes place.
- The client-server network is usually scaled large across countries and even continents.
- Client send request and server sent a response.

Servers

- Servers are the points where a client connects to have a connection for getting/providing a service, to do some task, etc.
- The servers have high upload speed because of what they need to do and their nature.
- The servers of big companies are distributed and they usually do not have only a single server.
- The collection of servers is called Data Centers.

Ping

- It measures the round trip time for messages send from originating host to destination computers and they are acord back.The entire time is known ans Ping time.

Client

- Client is us, who connects to the server for doing a task or for getting a service.
- Clients have high download speed (as compared to the upload speed).
- When `Client A` wants to connect to `Client B`, then this connection takes place only through the server, I.E.: Gaming.

Peer to Peer Communication

- The devices gets connected to one another and there is no large server in this architecture.
- This can be scaled very rapidly and is a decentralized network.
- This network lets a device to communicate with other device(s) directly.
- Peer to peer networks are commonly small scale.
- Peer to peer networking can be more effective than client server networking because every computer on the network is given equal responsibility to communicate with each other.
- In peer to peer network every single computer can termed as server or client.

Devices

- These are some networking devices that we should atleast have an idea of, when learning networking and how a connection is established between devices and what happens in between.

Repeater

- A repeater operates at the physical layer.
- This device takes the network signal and sends it again in the desired direction before the signal becomes weak over the same network.
- These don't amplify the network but they regenerate the detected network with the same strength.
- It's a 2 port device.

Hub

- This is a multiport repeater.
- This cannot filter data and so the data is sent to all connected devices.
- The collision domain of all hosts through Hub remains one.
- They do not have the intelligence to find out best path for data packets which leads to inefficenies and wastage.
- There are two types of hub: - Active Hub - Passive Hub

Active Hub

- This has its own power supply and can clean, boost and relay the signal along the given network.
- It serves both as a repeater as well as wiring center.
- Used to extend maximum distance between two nodes.

Passive Hub

- These are the hubs which collect wiring from nodes and power supply from active hub.
- These hubs relay signals onto the network without cleaning and boosting them.
- Can't be used to extend maximum distance between two nodes.

Bridge

- This operates at Data Link Layer.
- It is a repeater.
- It filters content by reading MAC Addresses of source and destination.
- It is also used for interconnecting two LANs working on the same protocol.
- It has single input and single output port.

Types of Bridge

Transparent Bridge-

- In this the stations are completely unaware of the presence of bridge.
- These bridges makes use of two processes i.e bridge forwording and bridge learning

Source Routing Bridge

- In this, routing operation is performed by source station and the frame specifies which route to follow.

Switch

- This is a multi port bridge with a buffer and a design that can boost efficiency and performence.
- Large number of ports imply less traffic.
- It is a data link layer device.
- Error checking is done before forwording data, that makes it very efficient as it does not forword packets that have errors and only good packets selectively to correct port only.

Router

- This operates at Network layer.
- Connects LANs and WANs.
- This has a dynamic routing table.

Gateway

- It is a passage to connect two networks together that may work upon different networking models.
- Messenger agents that take data from one system, interpret it and transfer it to another system.
- Gateway are also called protocol converters and can operate at any network layer.

Brouter

- Bridge and router combined.
- This can work either at Networking Layer or at Data Link layer.