



Networking and wireless connections

KT1201 Peer-to-peer networks and server networks

Peer to peer network and client-server network are the telecommunication networks where the information is transferred from the source to the destination without any loss or only minimal loss in transmission. In both these kinds of the network, a path is used for transmission of the information. In the client-server network, the path is dedicated but the peer to peer network does not have a dedicated path. Let us read about these servers and the difference between peer to peer and client-server.

1) WHAT IS CLIENT SERVER NETWORK?

A client server network includes many clients or workstations that are connected to at least one central server. Most of the data and the applications get installed on the server. When the client wants access to the resources they then access it from the server. The server mostly has a private user directory as well as many public directories. The client server network has faster speed access because these are designed to support several clients. The client functions as a workstation without sharing any of the resources.

It makes it easy to upgrade the software applications and the files because these are held on a single computer only. The server software provides system-wide services. There is enhanced security in the client server network because the server handles the security. This is a network model that is broadly used. In the client server network, the clients and the servers are differentiated and specific servers and clients are present. In a client server network, the centralized server gets used to store data because it has centralized management. In this network, the server responds to the services which are requested by the client.

A client server network is a kind of online network that comprises of a single central computer that behaves like a server and that directs various computers or clients to it. When the server is accessed clients can reach the shared information and files that are saved on the computer serving it. The World Wide Web is an example of a computer application that makes use of the client server model.

The nature of the application is what decides whether in the client server model the computer is a client, a server, or acts like both of them.

2) WHAT IS PEER-TO-PEER NETWORK?

A peer to peer network is one that involves two or more than two computers that pool individual resources like the printers, DVD players, and disk drivers. These are the shared resources that are available in every computer in the network. Each of the computers will behave as the client as well as the server and it communicates with the other computers directly. In the peer to peer network like for example the printer of one of the computers can be used by any computer present in the particular network. It is inexpensive to set up a peer to peer network.

All that is needed is a Wi-Fi router or an Ethernet cable to set it up. The model does not differentiate between the server and the client, and here every node behaves as a server and a client. In the peer to peer network, every node can request as well as respond to the services.

The peer to peer network is a computer group or a group of computer systems that are connected through the internet. It allows direct sharing of the files between the network systems without any need for a central server. The network form is common in small offices that do not need a file server that is dedicated for use. All the MAC, Windows, and Linux client versions function as a node in the peer to peer network which allows sharing of the files.

3) DIFFERENCE BETWEEN CLIENT SERVER AND PEER TO PEER NETWORK

Here is the difference between peer to peer and client server.

The servers and clients are differentiated in the client network however the client and the server do not get differentiated in the peer to peer network.

The client server networks work on sharing of information while the peer to peer networks focuses on connectivity.

Centralized servers get used to store data in the client server network while each peer gets its data in the peer to peer networks.

In the clients' server network, the servers respond to the client's request where in the peer to peer network each node can request as well as respond to the services. It is an important peer to peer vs client server difference.

The client server networks are much costly than the peer to peer networks.

The client server network is more stable as compared to the peer to peer networks.

The client server networks can be used for small and large networks but the peer to peer networks can be suited only for the small networks. This is another difference between client server and peer to peer network.

The client server network does not save the information that gets transmitted so there is no option to resend the data if in case it gets lost for some reason. If the information gets lost in the peer to peer networks then the corresponding node can resend the information as the information is stored.

The full bandwidth gets reserved in advance in the client server network because there are only two nodes and a dedicated submission path. In the peer to peer network, the entire bandwidth is not reserved in advance. It consumes the bandwidth node as per the bandwidth and they release it when it gets free.

Client server makes use of geographical addressing whereas peer to peer network makes use of hierarchical addressing

CONCLUSION

The article solves all doubts about the difference between peer to peer and client server network.

The client server and the peer to peer networks connect the computers so that the resources like applications and files are shared. The peer to peer network connects computers so that every computer shares all or some part of the resources. The client server networks operate with one or more than one central computers or servers that manage the resources and hold the data.

KT1202 Common functionality of server networks

Using a server

A server is used to store files and run centralised applications, such as your customer database.

In the past, a server was essential. However, most businesses use [cloud computing services](#) instead.

A network server can have many roles

You can use a network server to:

store and share your files;

- share a single internet connection between all your devices;
- manage incoming and outgoing email;
- allow staff to access files when out and about through a virtual private network (VPN);
- centralise printing, so the server manages print jobs and lets you share printers;
- run networked applications and software;
- host an intranet (a kind of private website holding important information about your business).

Businesses with many computers may need to spread the load across several servers

Virtualisation can help you do more with a single server (see [Types of system](#)).

Some applications may dramatically slow your network if you run them on your server

They may require a separate server, used just for them. Such applications can include:

- large shared databases;
- in-house software development environments;
- complex internal email systems.

Using the cloud as a server

You can use cloud computing services (sometimes called hosted applications or Software as a Service [SaaS]) to perform many jobs that have traditionally required a server.

Cloud computing services are well suited to small or new companies with little IT expertise in-house. They are simple to set-up, cheap to operate and most come with 24/7 support if you experience problems with the service. Some businesses use a mix of server and cloud-based services.

With cloud computing, your data is held on a server located outside your business

To access files and services, you log in through a web browser.

Individual cloud computing services can help you with specific tasks, like backing up data or accounting.

You can also purchase 'cloud servers' that perform all the functions of an in-house network server.

Cloud computing offers several key advantages over buying a server

You pay monthly, allowing you to spread the cost. Overall, the total annual cost is broadly the same.

Your cloud provider manages the administration of the server, takes backups and provides technical support.

Cloud servers are highly flexible. You can add or remove users instantly, and you aren't usually tied into a long contract.

Updates can take place without disrupting internal operations. Most major updates are performed outside of normal business hours, on weekends or during the night.

Cloud servers support remote working enabling users to login from anywhere and on virtually any device.

Consider carefully before signing up to cloud services

Make sure your cloud supplier is trustworthy, as you'll be relying on them to take good care of your data.

You need an internet connection to use cloud services, so make sure yours is fast and reliable.

Check what level of support you get. Are you confident your cloud provider will be there to help?

Learn where your data is stored. You have responsibilities under GDPR to ensure that it's safe and secure.

• KT1203 Networking devices including network interface cards, repeaters, bridges, routers, gateways, hubs, and switches

Network Devices (Hub, Repeater, Bridge, Switch, Router, Gateways and Brouter)

1. Repeater – A repeater operates at the physical layer. Its job is to regenerate the signal over the same network before the signal becomes too weak or corrupted so as to extend the length to which the signal can be transmitted over the same network. An important point to be noted about repeaters is that they do not amplify the signal. When the signal

becomes weak, they copy the signal bit by bit and regenerate it at the original strength. It is a 2 port device.

2. Hub– A hub is basically a multiport repeater. A hub connects multiple wires coming from different branches, for example, the connector in star topology which connects different stations. Hubs cannot filter data, so data packets are sent to all connected devices. In other words, the [collision domain](#) of all hosts connected through Hub remains one. Also, they do not have the intelligence to find out the best path for data packets which leads to inefficiencies and wastage.

Types of Hubs

Active Hub: - These are the hubs that have their own power supply and can clean, boost, and relay the signal along with the network. It serves both as a repeater as well as a wiring centre. These are used to extend the maximum distance between nodes.

Passive Hub:- These are the hubs that collect wiring from nodes and power supply from the active hub. These hubs relay signals onto the network without cleaning and boosting them and can't be used to extend the distance between nodes.

Intelligent Hub:- It works like active hubs and includes remote management capabilities. They also provide flexible data rates to network devices. It also enables an administrator to monitor the traffic passing through the hub and to configure each port in the hub.

3. Bridge– A bridge operates at the data link layer. A bridge is a repeater, with add on the functionality of filtering content by reading the MAC addresses of source and destination. It is also used for interconnecting two LANs working on the same protocol. It has a single input and single output port, thus making it a 2-port device.

Types of Bridges

Transparent Bridges: - These are the bridge in which the stations are completely unaware of the bridge's existence i.e., whether or not a bridge is added or deleted from the network, reconfiguration of the stations is unnecessary. These bridges make use of two processes i.e., bridge forwarding and bridge learning.

Source Routing Bridges:- In these bridges, routing operation is performed by the source station and the frame specifies which route to follow. The host can discover the frame by sending a special frame called the discovery frame, which spreads through the entire network using all possible paths to the destination.

4. Switch – A switch is a multiport bridge with a buffer and a design that can boost its efficiency (a large number of ports imply less traffic) and performance. A switch is a data link layer device. The switch can perform error checking before forwarding data, which makes it very efficient as it does not forward packets that have errors and forward good packets selectively to the correct port only. In other words, the switch divides the collision domain of hosts, but [broadcast domain](#) remains the same.

5. Routers – A router is a device like a switch that routes data packets based on their IP addresses. The router is mainly a Network Layer device. Routers normally connect LANs and WANs together and have a dynamically updating routing table based on which they make decisions on routing the data packets. Routers divide broadcast domains of hosts connected through it.

6. Gateway – A gateway, as the name suggests, is a passage to connect two networks together that may work upon different networking models. They basically work as the messenger agents that take data from one system, interpret it, and transfer it to another system. Gateways are also called protocol converters and can operate at any network layer. Gateways are generally more complex than switches or routers. Gateway is also called a protocol converter.

7. Brouter – It is also known as the bridging router is a device that combines features of both bridge and router. It can work either at the data link layer or a network layer. Working as a router, it is capable of routing packets across networks, and working as the bridge, it is capable of filtering local area network traffic.

8. NIC – NIC or network interface card is a network adapter that is used to connect the computer to the network. It is installed in the computer to establish a LAN. It has a unique id that is written on the chip, and it has a connector to connect the cable to it. The cable acts as an interface between the computer and router or modem. NIC card is a layer 2 device which means that it works on both physical and data link layer of the network model.

Internal Assessment Criteria and Weight