

Unit 11: Assignment 1: D1

In this report I will be explaining the Strengths and weakness of computer networks and also will talk about LAN and WAN advantages and disadvantages along with the network architecture.

Advantages of computer networks:

- Sharing devices such as printers saves money.
- Site (software) licences are likely to be cheaper than buying several standalone licences.
- Files can easily be shared between users.
- Network users can communicate by email and instant messenger.
- Security is good - users cannot see other users' files unlike on stand-alone machines.
- Data is easy to backup as all the data is stored on the file server.

Disadvantages of computer networks:

- Purchasing the network cabling and file servers can be expensive.
- Managing a large network is complicated, requires training and a network manager usually needs to be employed.
- If the file server breaks down the files on the file server become inaccessible. Email might still work if it is on a separate server. The computers can still be used but are isolated.
- Viruses can spread to other computers throughout a computer network.
- There is a danger of hacking, particularly with wide area networks. Security procedures are needed to prevent such abuse, e.g. a firewall.

What Is a Client-Server Network?

A client-server network is designed for end-users called clients to access resources (such as files, songs, video collections or some other service) from a central computer called a server. A server's sole purpose is to do what its name implies - serve its clients! You may have been using this configuration and not even have known it. Have you ever played Xbox Live or used the PlayStation Network? Your Xbox One is the client, and when it logs into the network, it contacts the Xbox Live servers to retrieve gaming resources like updates, video and game demos.

What is a dedicated server?

A dedicated server is a type of remote server that is entirely dedicated to an individual, organization or application. It is deployed, hosted and managed by a hosting, cloud or managed service provider (MSP). A dedicated server is exclusive and not shared with any other customer, service or application.

What is a peer to peer network?

A peer-to-peer (P2P) network is group of computers, each of which acts as a node for sharing files within the group. Instead of having a central server to act as a shared drive, each computer acts as the server for the files stored upon it. When a P2P network is established over the Internet, a central server can be used to index

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files, or a distributed network can be established where the sharing of files is split between all the users in the network that are storing a given file.

The key benefits of implementing LANs include:

- Allowing network administrators to apply additional security to network communication
- Making expansion and relocation of a network or a network device easier
- Providing flexibility because administrators are able to configure in a centralized environment while the devices might be located in different geographical locations
- Decreasing the latency and traffic load on the network and the network devices, offering increased performance

LANs also have some disadvantages and limitations as listed below:

- High risk of virus issues because one infected system may spread a virus through the whole logical network
- Equipment limitations in very large networks because additional routers might be needed to control the workload
- More effective at controlling latency than a WAN but less efficient than a LAN

Advantages of WAN:

- Messages can be sent very quickly to anyone else on the network. These messages can have pictures, sounds, or data included with them (called attachments).
- Expensive things (such as printers or phone lines to the internet) can be shared by all the computers on the network without having to buy a different peripheral for each computer.
- Everyone on the network can use the same data. This avoids problems where some users may have older information than others.
- Share information/files over a larger area

Disadvantages of WAN:

- Setting up a network can be an expensive and complicated experience. The bigger the network the more expensive it is.
- Security is a real issue when many different people have the ability to use information from other computers. Protection against hackers and viruses adds more complexity and expense.
- Once set up, maintaining a network is a full-time job which requires network supervisors and technicians to be employed.
- Information may not meet local needs or interests
- Vulnerable to hackers or other outside threats

Assignment 2: D2: Justification

- **Justify how your computer network fulfil the client requirements**

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Definition - What does *Computer Networking* mean?

Computer networking is an engineering discipline that aims to study and analyse the communication process among various computing devices or computer systems that are linked, or networked, together to exchange information and share resources.

Computer networking depends on the theoretical application and practical implementation of fields like computer engineering, computer sciences, information technology and telecommunication.

Computer Networking

A router, network card and protocols are the essential pillars upon which any network is built. Computer networks are the backbone of modern-day communication. Even public switched telephone networks are controlled by computer systems; most telephonic services are also working with IP.

The increasing scope of communication has led to much advancement in the networking field and in its relative industries like hardware, software manufacturing and integration. As a result, most households have access to one or more networks. There are three broad network types:

- **Local Area Network (LAN):** Used to serve a small number of people located in a small geographical space. Peer-to-peer or client server networking methods can be employed.
- **Wide Area Network (WAN):** Formed to connect a computer with its peripheral resources across a large geographical area.
- **Wireless Local Area Network (WLAN)/Wireless Wide Area Network (WWAN):** Formed without the use of wires or physical media to connect hosts with the server. The data is transferred over radio transceivers.

Starting point: The computer network to complete the stated determination of having a small network for a school, as the workstations accompanying to the server then to the printer meets their purpose to be connected to a laser printer.

The access rights including folders, abled to add additional users, login boundaries and remote desktop for control of other PCs all have been installed in the network.

The alternatives designs required (star & bus) to create the office network. The office network will always require a wireless device: Linksys and a WAN simulation: the cloud.

The reason for the alternative solutions (bus and star) is that they are more efficient as it is simpler and less difficult to install and run for a good connectivity. The reason I have chosen these topologies as an alternative solution because I have come to this conclusion that these are my reasonable and modest to use in helping an internet service provider-produce its clients/customers with a good and simple linking.

- Talk regarding your final design decision: (put the outline of configuration diagram here) and justify the clarification here: as a result of it meets the needs for the college network. Having a minimum of 4 individuals, which there are workstations for users and achieves this demand to be configured for access to with IP addresses and every one the computers are connected to the

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switch/hub to be connected to a printer that meets this demand for users to connect to a laser printer.

The constraints on the design

The budget required from my cost accounting list for my final style that in total is £4220.00
The time required is put here how many weeks (three or four weeks)

Setup network: the equipment of connection cable, workstations, switch, server, laser printer, account management, user accounts, virus protection, backup, remote desktop and firewall.

Hardware and Software availability

1. Easy Communication and Speed

It is very easy to communicate through a network. People can communicate efficiently using a network with a group of people. They can enjoy the benefit of emails, instant messaging, telephony, video conferencing, chat rooms, etc.

2. Ability to Share Files, Data and Information

This is one of the major advantages of networking computers. People can find and share information and data because of networking. This is beneficial for large organizations to maintain their data in an organized manner and facilitate access for desired people.

3. Sharing Hardware

Another important advantage of networking is the ability to share hardware. For an example, a printer can be shared among the users in a network so that there's no need to have individual printers for each and every computer in the company. This will significantly reduce the cost of purchasing hardware.

4. Sharing Software

Users can share software within the network easily. Networkable versions of software are available at considerable savings compared to individually licensed version of the same software. Therefore large companies can reduce the cost of buying software by networking their computers.

UNIT 11: COMPUTER NETWORKS ASSIGNMENT 3: D3

DECONTAMINATING THE NETWORK

In the computer networks, the user feedback will be thinking about how the computer network can be improved. The improvements that is necessary on the computer network is to improve the access level right to the net by setting up backup routines to maintain the protocol that has been already set up. Changing up the shared setting will improves the users of having full access rights to each other folders & stored folders on the shared network location & also setting up the printer as default printer.

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How the Network Meets User Requirements & Review of User Requirements

- All users and team associates must be able to access and use the computer networks.
- The computer network must be able to permit the users to add/remove, changing access rights and setting up the login restrictions.
- All the users must have their own personal folder and files on the network and must have full access rights.
- All the members ought to be able to access each other folders with one time they recognised the improvements made on the network, than they could meet the original requirements.

We checked the net access connections to make definite they meet the requirements made to access web and used computer network by setting up back up routines to support the protocols for the whole computer network.

They also check the access rights and login restrictions to access and meet the requirements of the users as they were allowed to access their account with their own login and password and shared folders with different access level.

The client has to each set up folders and see in the event that they can access their own folders and share it with each other to see if folders been shared and have the full access right in to the folders. I have improved the shared setting in order to have full access to each other folders in the same setting without any exertion for every users. There will be at least seven flies and after the inspection the users will be able to share folders and access them with all rights to access each other works. I have also checked out the connectivity setting by changing the setting in order to connect to the laser printer and adjusting it to default. The remote desktop requirements for the client was met, as they made definite that each computer had the same protocol & check if the computer can access on different computer.

Unit 11: Computer Networks

Assignment 4: D4

Evaluate the computer network, justifying why it meets the brief, suggest improvements and consider any constraints

Evaluation of the network:

Software obtainability:

There was no packet tracer in the original design to access the net. As they know packet tracer is obligatory to access the different locations on the laptops. But with the user feedback saying that they cannot access the net

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which is where the function of packet tracer, so made the changes. So that the users can have the access to the net with the packet tracer.

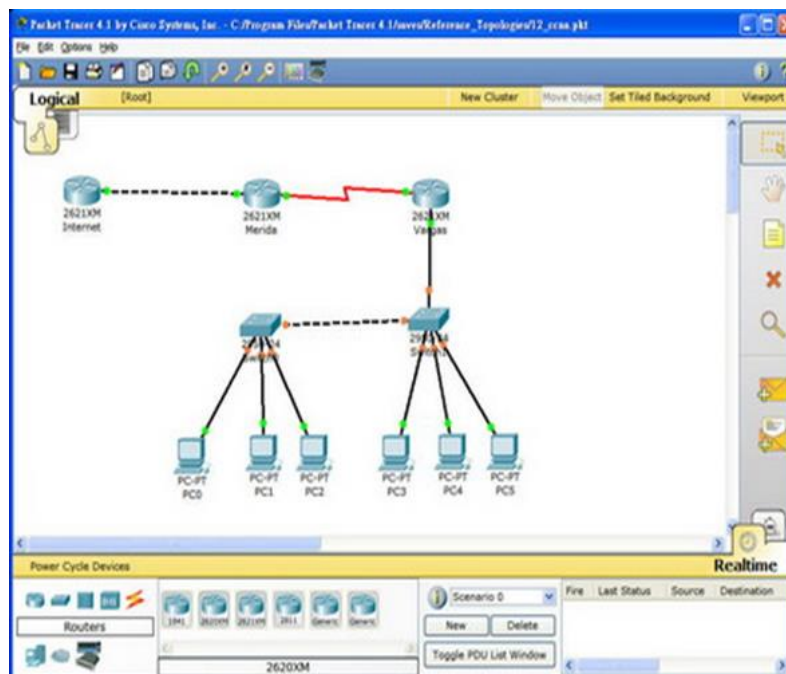
Packet switching is the process of information being broken in to tiny packets before being sent through a network & then reconvened at the other finish.

This technique is used on the net.

Direction of data

Error Control bits	Data (pay load)	Source address	Destination address	Packet identification
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Packet tracer is a dominant tool which allows you to fundamentally simulate network setup just by intermingling on your computer.



In decontaminating the network that changes suggested are to have back up routines for the protocol to have the access to the net. This will help the users to do examine, pick up the assets from the net.

They have some disparagement for further development is addition of new devices that can be a scanner and tablet.

With scanners missing from the office surroundings wouldn't meet the client requirement for handwritten and transferred onto PC. A scanner is a tool that

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imprisonments images from photographic prints, posters, journal pages, and similar sources for computer editing and display.

A tablet is a wireless, transportable personal computer with a touch screen interference. The tablet is usually smaller than a laptop computer but it is larger than a computer. With the tablet users can take their work home and anywhere else. A new upgraded printer goes with the modern expertise of tablets.

The cost difference between the original & final network is less than expected. After setting the network the account organization & remote desktop is not needed any more.

Once you have created a user account onto a computer itself without requiring a costly account management. It is not necessary to buy a remote desktop when you have already installed remote desktop on each computer. Generate protocol is necessitate to able to make use of the remote desktop.

Conclusion: To sum up I would like to give my view the application obtainability, the packet tracer & hardware accessibility, scanner & tablet are given more benefit to the staff at school to access the net & share their work more efficiently among themselves.