2018

ASSIGMENT 1

Unit 11-Computer Networks

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Contents

Introduction

In this assignment I was asked to investigate two different kinds of computer network to discuss the strengths and weaknesses of both also explain the uses and features of college network and a gaming network.

What is a computer network?

Computer networks are a group of interconnected, wired or wireless, hardware components and software that permit computer devices to share data, interact and communicate with each other.

Uses and Features

A gaming networks

A network can allow for multi-user environments through the constant exchange of data between computers through games and collaborative working. This network allows the multi users to communicate during the games which can be accessed by a Wide Area Network. A gaming network uses storage in CD's and DVD's but nowadays people can store in usb or with online storage. Games can use the game environment as collaborative work allows them to choose with who they want to play, one of a gaming network uses is communication which allows users can interact with other players

also is a way of entertainment, this also can be used in offline mode without Wi-Fi that permit users without internet connection to use it also are able to swap information over the network by using emails, group chats and headsets. VOIP

Gamming network: The gaming network uses a wired connection which is secure and the probability of getting hack is less, these connections are faster but cable will be required

WAN(Wide Area Network) : The facility to connect to the internet and game with others all over the world makes a Wide Area Network.

The college networks

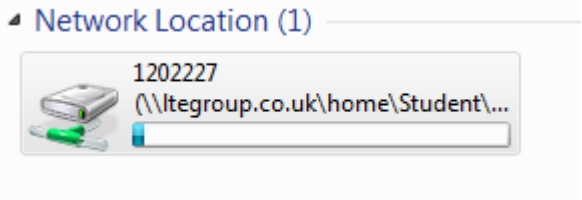
The uses of college network

At college, we use the VLE for accessing course work, download guidelines, manage private files via intranet and students are able to get in touch with tutors. Communication is the most typical way of network that is used to interconnect through email software and social networking, emails is a way of sharing documents online, emails can only be sent with internet connection and VLE where students are able to upload their assignment and send messages to the tutors.

The printer is another way of sharing files and saves college money, in the college is connected to every computer so if a student wants to print something have to access computer with our student number which means all the students that logs in to a computer from the Manchester College will be able to access the printer. Users can exchange information in this network this allows them to access the information which is stored on the network.

The Manchester College have data sharing which is used when user's saves files on the network can be accessed on different computers that are set up in servers, for example everyone that is part of The Manchester College has their own accounts which students have the

full access, all the accounts are protected with passwords that allows students and teacher to access the work on the VLE in the college desktop students have their own network drive with your personal number, the same happens with the storage in the hard disk that is located on the network when the information can be stored users are able to access files/documents from different computers in the college.



Connection methods

One of connection methods is via wireless**,** this will reduce cables but on the downside as more people connect to the internet this will which can cause slower connections and the speed is more limited.

Wired: all the desktop is connected to the server by wired connection then the connection will work a lot faster but will require cables, in that way will be challenging to a hacker to try access the network without consent this will help the college with security. The benefits of this is that there is wired infrastructure and which is cost effective. Printer are also connected by wired

Scope or scale

Local Area Network (LAN): the college computers they are all connected to the internet, with LAN the computers are connected to each other. LAN is a network that can be connecting to switches that can be used to connect to the router and modem also the network is a valuable network to share resources such as files, printers. This network is built in with network adapters and Hubs. These are normally found in schools and offices.

Wide Area Network (WAN): is it wan connection because is availabe to students and staff across the manchester college and students are able to acess from anywhere , any location

Personal area network (PAN) with this connection they move data across different platforms. PAN can have so many users at using the same at the same time but in contrast gets too slow to use.

Architecture (e.g. peer-to-peer, client-server)

The architecture of a peer to peer network contains two or more devices connected to the pcs that are able to share recourses that doesn't required a server such printer and scanner. Normally computer network is used at home or for business, Computers on a peer to peer network also prepares internet sharing that where computer gets connects to a computer that have an internet connection connected to the local area network. In the network on PCs we can arrange in a share folder so that the users can access it also can be set up as individual.

Client-server:

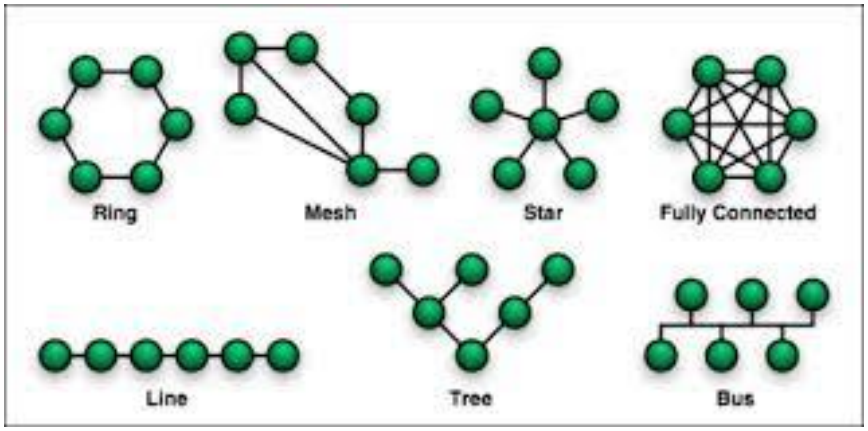
The college network is a server network, students can access coursework, files from different locations because the work/files is saved in the server.

some games are running on Peer-to-Peer architecture which uses one user as a host that others connect to, giving that person a relevant connection advantage that allows the players to be more competitive.

Topology, including:

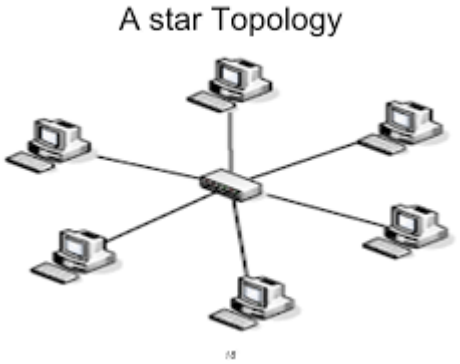
Physical (e.g. star, bus, ring, mesh, tree and point-to-point)

The image below is an example of topologies



Gaming network uses star topology:

to connect hardware to the network such as routers and servers, to share cables television signals and bandwidth. This topology improves performance, makes easy to add new nodes, failure of one node does not after the rest of the network.



In a star network, each device in the network have own cable which connects to a switch or hub. A hub sends every packet of data to every device and the switch sends a packet of data to the destination device, this star network is very reliable if a device stops working then the other will continue to work with high perform as no data collisions can happen.

Logical (e.g. Ethernet and token ring)

An Ethernet topology is able to access any physical topology at any time, makes easy to access the network and shared resources by anytime in contrast it can cause collision that could destroy the network and stop the user to access the shared resources.

A token ring topology can be used when gamer is playing over a local area network where is computers and data is transferred quickly also does not have the same problem as the Ethernet topology where can happen a collision that allows the topology to be continuously running.

Protocols and their function (e.g. Ethernet, Internet Protocol (IP), Transmission Control Protocol (TCP)

Ethernet- is a family of computer networking technologies commonly used in local area networks (LAN), metropolitan area networks (MAN) and wide area networks (WAN).

Internet Protocol (IP)- is a communication protocol of digital message formats for exchanging messages between computers

across a single network or a series of interconnected networks using the Internet Protocol Suite. Messages are exchanged using as data packets. The main functions of the IP protocol are addressing, routing.
Routing includes redirect IP packets from source to destination machines over a network, based on their IP addresses.

Transmission Control Protocol (TCP)-is the protocol that ensures reliability in a transmission which ensures that there is no loss of packets. All this is to ensure that the data received in order, complete

Security (with regard to files, folders, data, network access, resources)

Security procedures are needed to prevent such abuse such as a firewall. There is a huge possibility of hacking specially in the with wide area networks, files can easily be shared between users. Having private account for them self that is a way a secure the account because other users cannot see other user's files.

Utilities (e.g. virus protection, access control, backup, remote desktop)

Data can be easily backup with all the data stored on the file server, viruses can spread to other computers throughout a computer network such downloading attachments in the emails.

Services (e.g. login, user account management, file/folder permissions to an

Accounts Service Users in college provide their own accounts to log to the college system that allows the user to save file in their own hard drive, accounts have a few restrictions because of the level of security that the college provided.

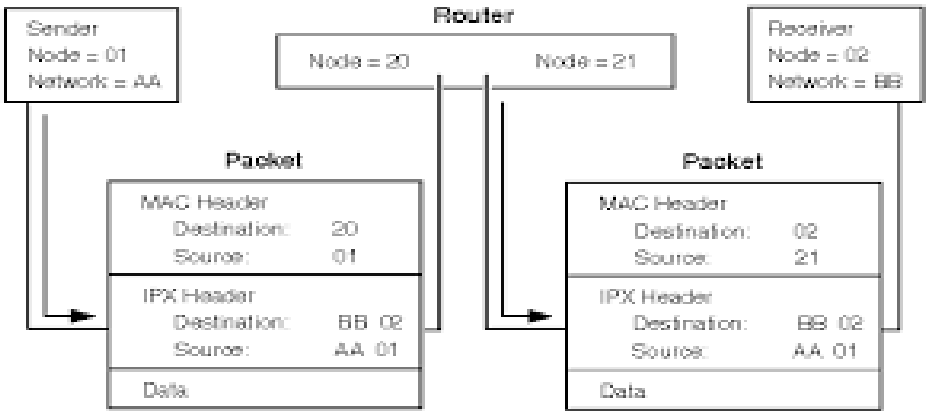
Individual user/group of users, security, software deployment)

In the college, there is group of users such for staff and for students that can only be accessed with their account number the same happen to the student account, Administrative Staff that have access to everything that in the system. In this way, this makes the account safer. In the gaming network players have their own account or either admin (administer) to manage games, scores …

Users (e.g. can be used by individuals or groups of people arranged in different ways for different uses).

Network users can communicate via email and instant messenger.

Understand how data is transferred across the computer network, e.g. packet routing,



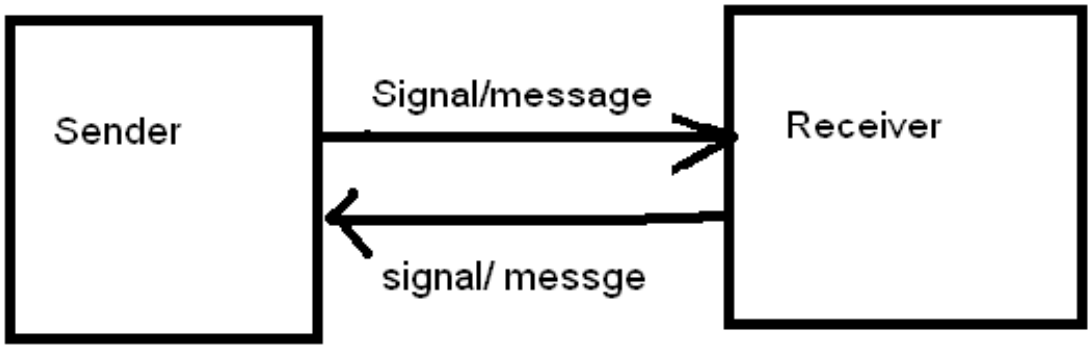
Routing is the method of moving packets across a network from one host to another host, normally it is dedicated to devices that is called routers.

Packets are the essential part of information to share in all computer networks, increases in communications networks as well, are transferred between a source interface and a destination interface that is usually on two different systems. The interface with the destination IP address is specified in the

packet headers then retrieves the packets from the local network.

Transmission modes (half duplex, duplex, serial and parallel) and transfer rates.

College network is used a half-duplex mode which is transmission is a one-way communication that can happen in both directions but not at the same time. In gamming network is used duplex transmission mode with this transmission mode, a player can be send messages and communicate to one or more players at the same time and they are able to reply. The speed with data can be communicated from one device to another device normally data rates are measured in megabits or megabytes per second.



Use of networks, e.g.:

Communication (e.g. email, instant messaging, social networking, blogs, forums, wikis, web conferencing)

This type of network is frequently used to communicate via email software by sending emails this allows users access to the internet, social networking forums, wikis, and web conferencing also allows the sharing of network resources through printers, dedicated servers, backup systems, input devices and Internet connections.

Applications (e.g. online databases, online spreadsheets, intranet, extranet).

The user experience, e.g. speed, connectivity, reliability:

The reliability (frequency of network failure)

The reliability of a gaming network is built on the frequency of the network failure that affect the users experience and reliability such in the connection method it is less secure that can contain cracked communication cables that can slow down the communication for the network. a multi-player gaming network uses a wide area network which can affect the signal that makes the reliability decrease also a weak signal because it is a long-distance network. The architecture is server based that can have a loss of service which will make users stop communicating during the game.

The performance (how quickly data is transferred across the network under different conditions).

The number of players in multi user network is very high that will have increase in data transfer as numerous users that would be using the network from all over the world. Traffic over the internet multi user is high because there are too many players playing at same time which works in real time will slow down the user's connection. As they are using a wide area network, the files will be large so transferring files can slow down the connection and that will take longer to load files.

Strengths and Weaknesses

Strengths and Weaknesses of the Gaming Network:

The ability to communicate via VOIP users can contact each other, the architecture can be strength such as being able to allow high quality games in multiple wireless users also at the same time can

turn the game slow down. The network service providers, the server based have accounts services that keeps information about the scores, games, account details such as if is required a payment it will keep the payment details as well that will be useful for the users but the server can easily get hacked. Games with high demand is a weakness that users will have to wait for long time. the ability to connect with multiple users in real time from all over the world, using a wireless connection. The weakness of using the multi-user network is slow due to high levels of traffic, the amount of cables that are required to set it up is a weakness. Size of network can cause weakness as well users in WAN don't always have wired or wireless connectivity to multi user gaming. The wireless connection technique have good portability but also have high security risks.

Conclusion

Overall, this assignment was an informative assignment which I have tried to explain all the points of the assignment.

Overview of the assignment

This assignment was one of the hardest to do because there is a lot of search to do and some of them I couldn't understand properly so it was challenging and I didn't like it.