Assessment 1 - Understanding the features and uses of a computer network

In this assessment I will be explaining the uses and features of two different computer networks; one is a small office network and the other being a multi-gaming network. After that I will be reviewing how the uses and feature of the different computer network affect the user experience, and lastly I will be discussing the strengths and weaknesses of both networks.

Small office network

A small office network has communication, to be able to have an internal e-mail and IM (instant messaging). It has storage to be able to store documents to an internal server instead of relying on an offsite server which the business does not have control over or a pc HDD. This means the users documents can also be accessed anywhere in the network and is more secure. A small office network also shares hardware like printers and fax machines, this is because all the computers in the office can not directly connect to a printer so instead it gets sent to a server which means the documents can be printed on any printer what is connected to network. Lastly a small office network allows users on the server to be able to share software like Word and PowerPoint; this way the business does not have to install all of the needed software onto each individual computers, additionally the business saves money on buying the software by only buying a business package which allows a business to be able to share the software legally.

A small office network uses an Ethernet connection to connect to the server; this is because it is quicker than using wireless and is cheaper. The size of an office network is primary a LAN based network but can be WAN. For a small office it has a star topology to be able to connect to the server, this is because it is more reliable than the other topology’s and it has very few data collision as each user have their own connection to the server. Lastly the utilities that an office network has are; a Firewall to block intruders from entering the network, an anti-virus to protect the users documents and an IPS (Intrusion Prevention System) which watches the network for any malicious activity’s.
Multi-user gaming

The uses of a multi-user gaming are; Communication like VoIP to be able to communicate with your team mate in game. It also exchanges information such your billing address so if there is a subscription then you can pay it without having to rewrite it every time. A multi-user gaming network also has a large storage (like around 24Tb) to save every single bit of data like high scores, character customisation, maps ETC, the large storage capacity helps with back-ups as well in case of a problem like an attack or a failure.

A Multi-user gaming network uses mainly a fibre optic connection (wireless) due to it being faster over a long distance, unless you are running a LAN party where the connection method would be an Ethernet connection. Primarily a multi-user gaming network would be a WAN when playing online, or though it can be a LAN when running a LAN party with your friends. The topology of a gaming network will be star due to it having the highest security and reliability. The utilities that the network has are; a firewall, an anti-virus, Ddos protection to protect the server from Ddos attack, IPS and lastly SSL (Secure Sockets Layer) which provides a secure connection to the internet.

The reliability of the multi-user gaming network would need to be really good because if the servers are not reliable the users would leave or worst sue the company if the servers keep leaking information about the users. If there is ever a server failure or maintenance, the company should have a back-up servers which starts running when one is down and to storage important data like billing address ETC. due to the network being a WAN the connection could be different for users due to where the server is and what type of connection method they have, this is why most gaming networks now have multiple servers in different countries so the users can get the best connection and experience. Another problem with WAN is that there are multiple places where the connection can be lost, for example there could be a broken receiver or a packet lost ETC.

The performance must be good too, because of the data being sent and received to the network. A performance issue that needs to be address is the number of users on one
server. Because the network being a WAN there could be over 100,000 users trying to connect to the servers, if there is too many people connecting to one server it may crash it. And cause data that was not backed up to be lost. Another problem is the type of connection to the server and where the server is, if the connection method is old or the server being in a faraway country the user will experience latency (LAG). If there is any latency in an online match the users would complain due to being able to do nothing like move or shot. The size of the data affects the performance for the user; this is because the data that is sent to the user is important for gameplay like where the character is on the map or the price of an item in a store, the main reason for performance issues when data is being received to the user is packet loss or the age of the routers. Lastly the level of traffic can affect the performance, due to the high level of movement and real time simulation the user could come across latency or ever a loss of connection to the server there is even a slight chance of data collision.

A strength of a multi-user gaming network is that it is wireless, this is because it is portable and can be accessed anywhere with an internet connection. A weakness of being wireless is that there is a security risk due to people trying to intercept the connection for either capital gain or for fun. Another strength of a multi-user gaming network is that it uses a star topology. This is good because the star network is more reliable than any other topology and very few data collisions happen on a star network. A weakness to this is that it is more expensive than a ring or a bus topology.