Wired and Wireless Networks

LAN Local Area Network

A small network used by more than one person that covers a small geographical area such as a single building. They are often owned or managed by a single person or organisation such as a business or school.

WAN Wide Area Network

A network spread over a much larger geographical area. WANs are made up of LANS that are joined together.

Factors that affect the performance of networks

Bandwidth – The amount of data that can be sent and received successfully in a given time.

Number of users – If lots of people are trying to use the network at the same time it will not be able to cope with the amount of data that it is attempting to transmit.

Transmission media – A wireless connection has a lower bandwidth than a wired connection so will also affect the performance of the network.

Latency – If a hub or switch is not working properly bottlenecks in parts of the network can cause delays the messages from getting to their destination.

HARDWARE

Network Interface Card (NIC) allows connection and generates a unique IP address for the device.

Transmission media could include cables such as copper or fibre optic and wireless signals.

Switches are used to direct messages to the correct computer along cables in a network.

Hubs send signals to all devices connected on the network.

Routers are used to join networks of different types together such as a fibre optic cable to a wireless home network.
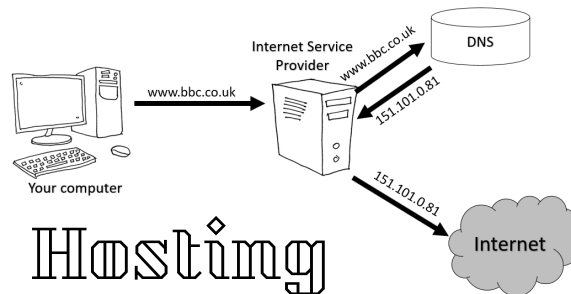
A **Wireless Access Point (WAP)** boosts the capabilities of a wireless network to solve the problem of "dead spots" where the signal is low due to location or environmental factors.
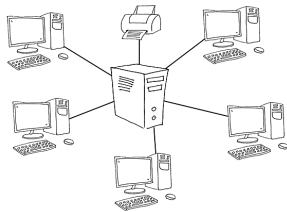
CLIENT SERVER NETWORKS

The network relies on a central server and all the clients (devices) request services from the server such as print services, file services etc. Additional hardware is needed in this type of network as, for example high end powerful servers will need to be purchased. All files can be stored and backed-up centrally on a client server which means workers can access files from any computer on the network and the computers can also be updated from a central database.
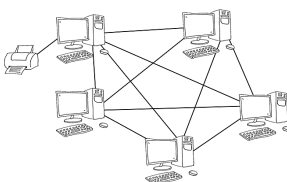
DOMAIN NAME SERVER (DNS)

The **DNS** is a large directory which allows the Internet Service Providers (ISP) to look up the correct IP address for the website address that has been entered so they can locate the computers.

Your computer — www.bbc.co.uk — Internet Service Provider — www.bbc.co.uk — DNS — 151.101.0.81 — 151.101.0.81 — Internet

Hosting

If you own a very large international business you may well purchase and maintain your own servers and can host your own website yourself. However, website host companies allow people with very little website development skills to create their own websites and they will monitor and maintain the servers and often provide software to easily create the websites.

PEER-TO-PEER NETWORKS

All computers have equal status and each computer can act as a client and a server. All computers can request and provide network services, even if only one computer is physically attached to the printer other computers on the network can still send data to the printer themselves.

THE CLOUD

Data and software is stored and backed up remotely over a computer network by an independent company.

Virtual Networks

Virtual networks allow a physical LAN to be split up as if it is separate smaller LANs. Often for security reasons.