

# 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.



Scan this QR code to watch some YouTube videos about wired and wireless networks



## 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.

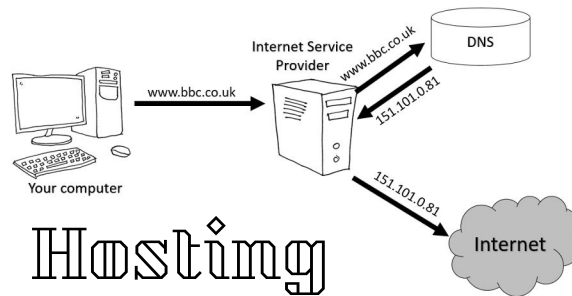
**Hubs** send signals to all devices connected on the network.

**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.

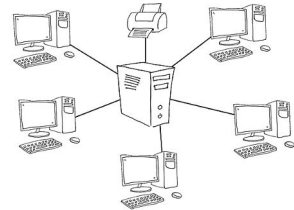


## DOMAIN NAME SERVER (DNS)



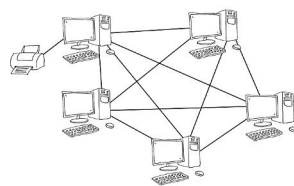
The **DNS** is a large directory which allows the Internet Service Providers (ISP) to look up the correct IP address for the website address that has been entered so they can locate the computers.

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.



## 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.



## 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.

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## Revise it

### Highlight

Highlight key words (maximum of 2 per sentence) and then cover the page and try to write down all the key words you can remember. Go back and fill in all the ones you have missed.

### Mind map

Using the handout, draw a mind map and include as many colours, images and diagrams as you can to illustrate it

Read through the handout, watch the videos and then select a revision technique from those described in this section, you can even do more than one if you want!



### Post-it notes

Write a key word and the definition on a post-it note and stick them around your study area as a reminder of the terminology.

### Record your notes

Re-write the handout in your own words and record yourself using your phone as you read your notes aloud.

### BULLET POINTS

Write the main headings (leaving space between each) and then write bullet points of the main key points you need to remember under each heading. Re-read the handout and add any missed points to your list.

## TEST YOURSELF

Cover your notes and the answer before you attempt to answer this practice exam question.

**A newspaper connects the users at their main office in London with a LAN using a client-server setup. The journalists mostly live outside of London and email their articles to the London office, which are then edited. Discuss the advantages and disadvantages to the company of changing from their current system to using the cloud. [6 marks]**

### Mark your answer

- Two or three brief points with little explanation award 1 - 2 marks
- Three or four detailed points covering both advantages and disadvantages award 3 - 4 marks
- Five or more detailed points that form a well-written, balanced discussion, covering both advantages and disadvantages award 5 - 6 marks,

#### Advantages:

- Users can work on the files from any location and can share files between head office and the journalists easily.
- Cloud storage is managed by an external company and is often cheaper than managing their own server.
- The hosting company manages the security and backing up of the data in the cloud.
- The newspaper could use cloud-based software allowing them to keep up to date and enable all users to use the same version of software.

#### Disadvantages:

- An internet connection is required which can be difficult to maintain in rural areas.
- Dependant on hosting company and have little control over security.
- Cloud software requires a monthly payment which may be more expensive than buying a licence.

