NETWORKS REVISION

Networks
Connected devices which communicate / share resources.

Protocols
A set of rules on how devices should communicate.

FTP	File transfer
TCP	Transmission control
IP	Internet
HTTP/S	Hypertext transfer / secure
IMAP	Instant Messaging
POP	Post office

Network Hardware

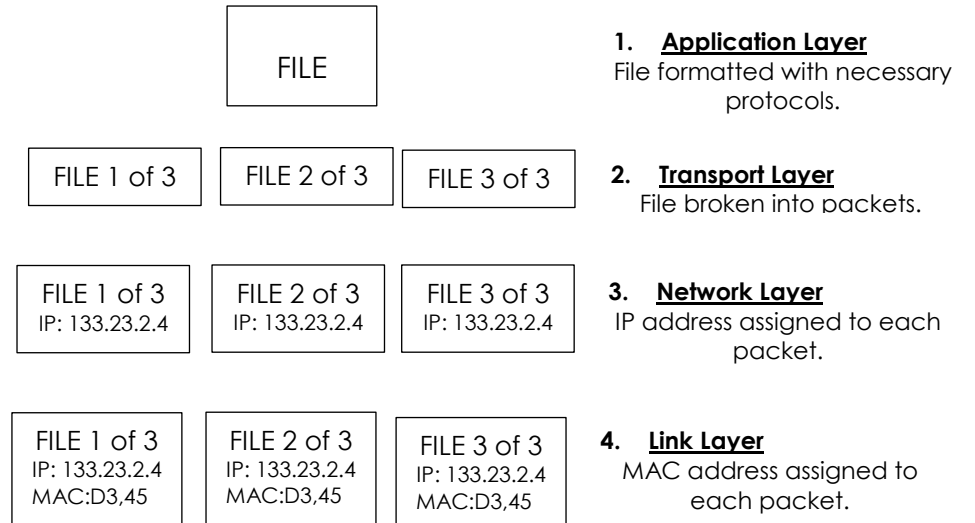| Hub/ Switch	Connects and sends packets of data to devices within a network.
Router	Sends packets of data across networks.
WAP	Wireless Access Point. Transmits / receives data wireless.
Ethernet	Uses wires to form wired connection.
NIC	Network Interface Card – gives devices the commands to connect to networks.
MAC address	Serial number of the NIC card (device). Stays permanent (never changes)
IP address	ID given when connecting to a network. Changes with different networks.

Packets

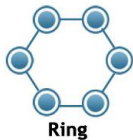Packets – Pieces of data broken down before being sent across a network. Each packet contains:
1. Packet number
2. Number of Packets
3. Error checking
4. IP address (sender / receiver)
5. The data itself

TCP – IP Stack

A protocol which sets out the rules of how data should be sent across the internet. This "stack" is broken down into 4 layers. Every layer must be assigned before it is sent.

FILE

FILE 1 of 3 | FILE 2 of 3 | FILE 3 of 3

FILE 1 of 3 IP: 133.23.2.4 | FILE 2 of 3 IP: 133.23.2.4 | FILE 3 of 3 IP: 133.23.2.4

FILE 1 of 3 IP: 133.23.2.4 MAC:D3,45 | FILE 2 of 3 IP: 133.23.2.4 MAC:D3,45 | FILE 3 of 3 IP: 133.23.2.4 MAC:D3,45

1. **Application Layer**
File formatted with necessary protocols.

2. **Transport Layer**
File broken into packets.

3. **Network Layer**
IP address assigned to each packet.

4. **Link Layer**
MAC address assigned to each packet.

Network Topologies

RING
All nodes have equal status.
Cheap to install.
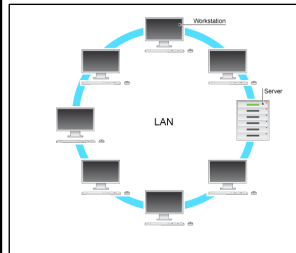Connections breaks easily.
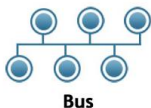
BUS
Connects nodes together using a backbone link.

START
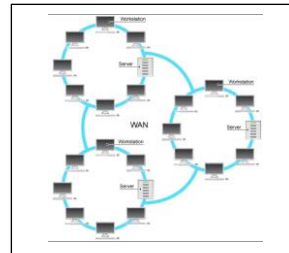Connects via a hub.
Fastest topology but most expensive.

Network Types

Local Area Network

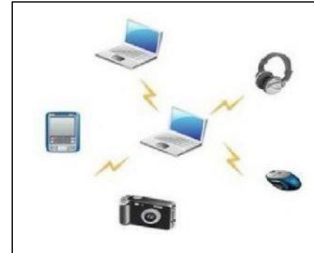Covers a small geographical area (site) e.g. home, school.

Equipment owned by organisation.

Wide Area Network

Covers a large geographical area (multiple sites) e.g. national shops.

Equipment owned /m managed by 3rd party.

Personal Area Network

Personal devices connected together e.g. a phone with a speaker.

Usually have to be within close range.

Network Security

Firewall	Blocks unauthorised access.
Authentication	Strong username and password. 2 step authentication.
MAC Address Filtering	Blocks MAC addresses from a network ("blacklist")
Encryption	Encodes data, making it unreadable.
Caesar Cipher	A type of encryption which replaces characters with different characters.