

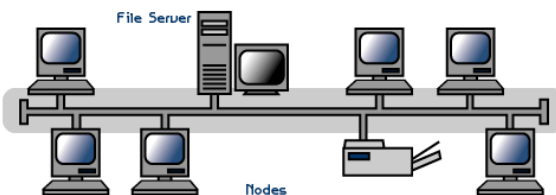
Key Vocabulary...

Name	Purpose
Network	A collection of PCs joined either by cable or wirelessly.
LAN- Local Area Network	Devices connected over a small geographical area such as a school.
WAN – Wide Area Network	Devices connected over a wider geographical area such as the internet.
WPAN – Wireless Private Area network	Used to connect devices to your PC without wires. Bluetooth is a good example of this.
Server	Stores all user data in a network in a central location. This means that you can log on any computer in the network and get your files.
Switch	Connects the individual computers (workstations) with the server.
Router	Responsible for connecting different networks together. Routers will connect LANs to the internet.
Topology	How the network has been designed to be connected.
Network interface card	A piece of hardware in your device that lets you connect to the internet.
Ethernet	A cable that connect devices together on a LAN.
Data packet	Bits of data that are split up and sent along a network.

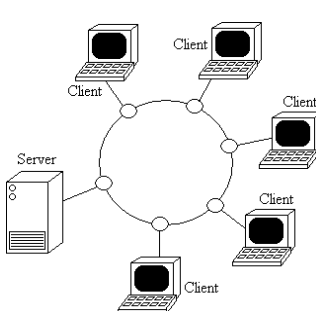


Picture This...

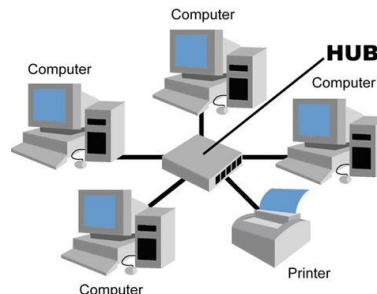
Three types of computer networks.



Bus Network - data packets are sent in both directions along a central cable.



Ring Network – data packets are sent in one direction around the circle.



Star Network
Each PC is connected to the server by a cable.



Network Attacks & Security

Networks can be attacked by the following:

Malware: Malicious software designed to harm your computer.

Virus – copies itself on your computer and can steal data and slow your computer down.

Trojan – a piece of software that pretends to be something else but has a virus in it. Usefully spread by email attachments and torrent sites.

Spyware – software that records your actions on the internet.

Network security:

The following can help to protect a network.

Anti-virus software – scans your computer and removes any viruses.

Firewall – prevents unauthorised access to your network.

Encryption software – scrambles data so hackers can't read it

Questions

1. What is the difference between a LAN and a WAN?
2. What is the difference between a RING and a BUS network?
3. Name two ways that your network might get attacked ?
4. Which hardware device is used to connect networks together?
5. Which device is responsible for connecting individual computers to a network?

Deeper Learning...

Network topologies (how networks are connected) will be revisited in more detail in Year 10. If you would like to know more about the topic now type the following weblinks into a search engine.

<https://bbc.in/383747H>



Homework – Explain threats to a network and identify security measures that would help protect from malicious software.

Key Vocabulary...

Name	Purpose
Computational Thinking	Designing and planning out a solution in an organised way.
Abstraction	Removing all of the unnecessary information from a problem to make it easier to solve.
Decomposition	Breaking a difficult problem down into easy to manage steps.
Bit	A binary unit – 0 or 1.
Binary	A 2 digit number system used by computers which uses the digits 0 and 1.
Denary	A 10 digit number system used by humans which uses the digits 0,1,2,3,4,5,6,7,8,9.
Hexadecimal	A 16 digit number system used by humans which uses the digits 0,1,2,3,4,5,6,7,8,9 and the letters A, B, C, D, E, F
Overflow error	An error when the computer tries put a bigger number in a smaller number of bits.
Character	A single letter, number or a punctuation such as !, ? .
Character set	A group of characters such as ASCII, extended ASCII and Unicode.



Picture This...

Converting a Hexadecimal number to a denary number. 0x56

Step 1: Place the hex number above the nibbles.

5				6			
8	4	2	1	8	4	2	1
0	1	0	1	0	1	1	0

Step 2: Put the nibbles together to make a byte.

128	64	32	16	8	4	2	1
0	1	0	1	0	1	1	0

Step 3: Add the placeholder values up where there is a 1.

$$64 + 16 + 4 + 2 = 86$$

$$0x56 = 86$$

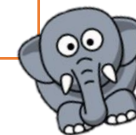
Questions

- Which number system is used by a computer. Explain why this is?
- What is it called when a computer tries to put a bigger number into a smaller space?
- What is it called when you break a problem down into smaller steps?
- Why do we use hexadecimal numbers?
- Convert the following hex numbers to binary. 0c56, 0x7e, 0x6d, 0x3e, 0xA9, 0xBB, 0xCF, 0xFF
- Convert the following hex numbers to denary. 0xe3, 0xd4, 0xe2, 0xfd, 0x2d

Always Remember...

Binary	Hex	Decimal
0000	0	0
0001	1	1
0010	2	2
0011	3	3
0100	4	4
0101	5	5
0110	6	6
0111	7	7
1000	8	8
1001	9	9
1010	A	10
1011	B	11
1100	C	12
1101	D	13
1110	E	14
1111	F	15

Use this table to help with your conversions.



Deeper Learning...

Char	Binary	Hex	Denary
B	01000010	42	66
b	01100010	62	98
3	00110011	33	51



Homework – Write out your name in using binary code, then convert that code to Hex.