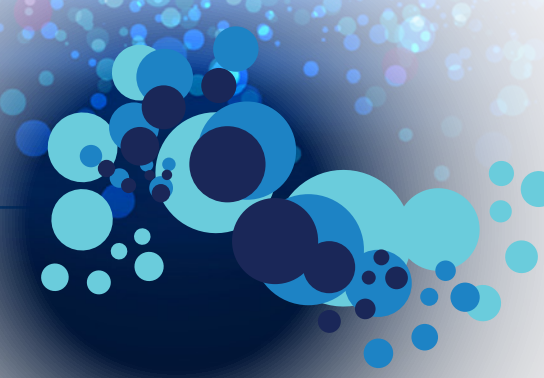


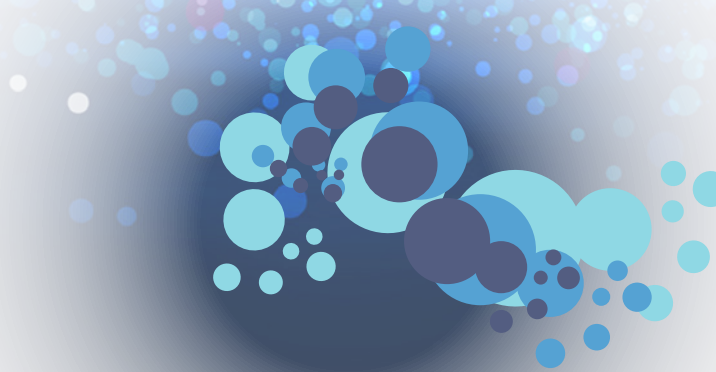
LAN and WAN

Teacher's Notes

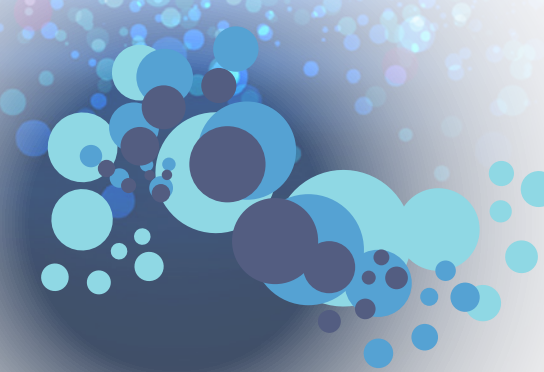


Lesson Plan

Length	60 mins	Specification Link	216/e	
Learning objective	Candidates should be able to: (a) describe the differences between a local area network and a wide area network such as the internet			
Time (min)	Activity	Further Notes		
5	<p>To assess learning from previous lessons, ask some questions such as:</p> <ul style="list-style-type: none"> • What are the advantages of using computer networks? • What is meant by a network topology? • List three topologies. 	<p>A user can log on to a computer anywhere on the network and access their work files from the file server. Sharing printers, scanners etc saves money.</p> <p>Improved security – usernames and passwords can be allocated to all users to try to prevent unauthorised access. Efficiency - it is much faster to install an application once on a network –and copy it across the network to every workstation.</p> <p>Network users can communicate bower the network.</p> <p>Data is easy to backup as all the data is stored on the file server.</p> <p>A network topology is a usually schematic description of the arrangement of a network, including its nodes and connecting lines.</p> <p>Ring, bus, star.</p>		
10	Watch the set of videos, pausing to discuss the content.			
5	<p>Discuss the videos to assess learning. Ask questions such as:</p> <ul style="list-style-type: none"> • What is meant by the acronyms, LAN and WAN? • What is the difference between a LAN and a WAN? 	<p>Local area network Wide area network</p> <p>A LAN is a smaller network located in one building or one site e.g. a school or college.</p> <p>A WAN connects computers over a larger geographical area which could extend over continents or the whole world. The Internet is a WAN.</p> <p>A WAN usually connects LANs in different areas.</p>		



Time (min)	Activity	Further Notes
20	<p>Worksheet 1</p> <p>Pupils to complete Worksheet 1 either on paper or on computer. They may need access to the Internet to research some of the questions.</p> <p>Worksheet 1 takes the opportunity to provide some revision questions.</p> <p>Ask individual students for their answers and discuss with the class so that all students have the correct answers.</p>	<p>Answers provided.</p> <p>Ask students with the correct responses to explain to the class how they arrived at their answers.</p>
10	<p>The students use the Interactive Activity 1.</p>	
	<p>Extension Challenge/Homework</p> <p>Students to complete and submit Worksheet 2 for homework</p>	
10	<p>Plenary – Peer testing</p> <p>Ask the students to work in pairs.</p> <p>They should use the 'Test a friend' interactive activity.</p> <p>Each student sets a test that the other member of the pair has to answer.</p>	



WORKSHEET 1 ANSWERS

1 What do the acronyms LAN and WAN stand for?

Local area network
Wide area network

2 Describe, using examples, the difference between a LAN and a WAN.

A LAN is a smaller network located in one building or one site e.g. a school or college.

A WAN connects computers over a larger geographical area which could extend over continents or the whole world. The Internet is a WAN.

A WAN usually connects LANs in different areas. Another example could be a WAN that connects the various LANS of a multinational company.

3 How are the LANs connected together to form a WAN?

They may use the Internet, leased lines from telecommunications providers or satellites.

4 Both LANs and WANs provide benefits for users.

(a) List the benefits of using a networked over a stand-alone computer.

A user can log on to a computer anywhere on the network and access their work files from the file server.

Sharing printers, scanners etc saves money.

Improved security - usernames and passwords can be allocated to all users to try to prevent unauthorised access.

Efficiency – it is much faster to install an application once on a network – and copy it across the network to every workstation.

Network users can communicate bowver the network.

Data is easy to backup as all the data is stored on the file server.

(b) List the disadvantages of using a networked over a stand-alone computer.

If something goes wrong with the file server the whole network is unable to operate.

Can be expensive to set up and maintain – may need specialist advice and have to employ a network manager.

Viruses can spread to other computers throughout a computer network.

There is a danger of hacking, particularly with wide area networks. Security procedures are needed to prevent such abuse, e.g. a firewall.



WORKSHEET 1 ANSWERS

5

(a) What is meant by a network topology?

A network topology is a usually schematic description of the arrangement of a network, including its nodes and connecting lines.

(b) List *three* different network topologies.

Ring, bus and star.

6

(a) Explain how a peer-to-peer network differs from a client-server network.

In a peer-to-peer network, the computers are simply connected together without any one computer having any superiority over the others – all computers are equal.

In a client-server network there are two types of computers. The computers that control access to the network and services such as printers and files and the computers on which the users work.

(b) List *two* advantages and *two* disadvantages of each type.

Peer-to-peer

- Cheaper and easier to install and does not require an expensive server.
- Easier to maintain – do not need to employ a network manager.
- Do not have to buy an expensive network operating system and learn how to use it.
- Often poor performance as another computer may be accessing your hard disk drive to run programs or load and save data.
- Your computer may be slower when someone is printing at a printer attached to your computer.
- If you have work saved on another computer's hard disk drive it may be lost if that computer crashes or a user deletes it.
- Each user has to know how to grant and maintain share rights to their computer.
- Security is often a problem. If password protection is employed, anyone who knows the password can access a shared resource. If no passwords are used, anyone who can access the workgroup can access shared resources.
- No central backup. Each hard disk drive must be backed up independently.

WORKSHEET 1 ANSWERS



Client-server

- More expensive – need a dedicated file server which is usually a more high-powered PC.
- Need to buy a network operating system and learn how to use it – cost of courses.
- May have to employ a network manager.
- If the server crashes then programs and data cannot be accessed and may be lost for all users.
- Data and programs are saved on the central file server and are more secure.
- The server manages access to the network and gives access rights to different users e.g. whether they can see, read, write to, modify, delete certain files.
- Higher performance as the server is handling all of data storage and transfer and printing and so client computers are free to carry out user related tasks.
- Security is high as it is not set by each computer user for individual machines.
- Backup is central and only the file server needs to be backed up as that is where the data is stored.



WORKSHEET 2 ANSWERS

1 (a) State what is meant by the following acronyms. (2)
Local area network (1) Wide area network (1)

(b) Describe the difference between a LAN and a WAN. (2)

A LAN consists of connected computers in one building or on one site. (1)

A WAN consists of computers connected over a wider area – could be different continents or around the whole world.(1)

(c) Give an example of a LAN and a WAN and where they would be used.(2)

LAN – school, college, library, any suitable. (1)

WAN – Internet, offices and factories of a multinational company, banks, any suitable. (1)