ICT – Computer Networking

1 of 19 – Welcome

Welcome to this session on computer networking.

By the end of the session you will:

* Know what the four main types of computer networks are
* Understand their specific uses and users
* Know some of the more general uses for these networks

2 of 19 – Introduction to computer networks

**What are computer networks?**

A network is essentially the system that allows a community of computers to ‘talk’ to each other. An important thing to know about computer networks is that they are everywhere. Or, to think about it in a different way, the network is what our own communications – like messages and data exchanges – have to travel through in order to get to their destination.

You can find them in companies, schools, homes, and many other places, and depending on the setting, the network is probably serving a different purpose for each place.

3 of 19 – What are the main types of network?

Different types of networks are more/less appropriate for different types of jobs, which is why different people will have different network systems in place depending on their needs.

Still there are four main types of networks that you’re likely to encounter:

* Local area network (LAN)
* Wide area network (WAN)
* Personal area network (PAN)
* Mobile broadband

We’ll talk about these in more detail in the sections that follow.

4 of 19 – Local area network: what and who?

A local area network – or **LAN** – works to connect a number of different computers and sometimes different devices, like printers for example, so that they are attached to each other at the same location. The area for a LAN network is typically quite a small one – hence its name!

This type of network is useful for a number of different users. Some examples of where you might find this system in action are:

* Business premises
* Inside a school
* At home

5 of 19 – Wide area network: what and who?

A wide area network – or **WAN** – is what companies often use to connect their local area networks to one chief network.

That being said, even though this system collects local networks, it typically spans a much larger geographical area than a LAN (on account of it having to reach out to so many different networks that are based in other locations).

Wide area networks are particularly useful for large-scale companies and businesses. They often use this network in order to connect computers that are sometimes cities, counties, or even whole countries away from each other.

6 of 19 – Personal area network: what and who?

A personal area network – or **PAN** – is for computer users who want to sync or share information and data across a number of devices.

This is a particularly useful style of network for people using **computers**, **laptops**, **tablets**, and **mobile** **phones**, as it allows their information to move through the network and be stored to more than one place.

For example, an email received on your computer containing the time and place for an appointment might also be the sort of thing that you would want on your phone (to remind you of the time and place when the appointment gets closer). By syncing these items through the same network, you can make sure that you don’t miss anything – appointments, or other data – by not having the right computer or tablet to hand.

7 of 19 – Mobile broadband: what and who?

**Mobile broadband** is the fourth main type of computer network available, and it has become even more popular over the last several years.

This type of network uses **3G** mobile phone technology to connect your device to the internet. Your chosen device in this case might be something like a laptop – which can connect to the network using a dongle – or the device could also be your mobile phone, or your netbook.

The rise in popularity for this type of network means that **anyone can use this now**, and its portability means that you can even connect while you’re on the move – think about how you check your social media feeds on your way home, for example.

8 of 19 – Question 1

Read the definition below and then answer the question.

‘It connects a number of computers across a small area or location.’

What network does the definition belong to?

1. Wide area network
2. Mobile broadband
3. Local area network
4. Personal area network

The correct answer is C, local area network.

9 of 19 – Question 2

Using the following choice of words; **local networks**, **large-scale companies**, **countries** and **computers**, fill in the blanks for the paragraph below:

Wide area networks can connect **blank** together in one place. They can connect **blank** that are in different cities, counties, and **blank**. Wide area networks are particularly useful for **blank**, that might have computers working in different parts of the world.

The correct paragraph should read:

Wide area networks can connect **local networks** together in one place. They can connect **computers** that are in different cities, counties, and **countries**. Wide area networks are particularly useful for **large-scale companies**, that might have computers working in different parts of the world.

10 of 19 – Question 3

Which devices are a personal area network particularly useful for?

Choose all that apply:

1. Laptop
2. iPod
3. Tablet
4. PlayStation
5. Mobile phone
6. Computer

The correct answers are A, C, E and F, laptop, tablet, mobile phone and computer.

11 of 19 – Using network systems: sharing

Networks are useful for a number of different reasons, but one of the main uses for them is to **share information** (with other people on the network).

Resources and data can be shared between computers that are hooked up to the same network – providing that the computer has the right access.

Access is something that companies might monitor or change, depending on the data that is being stored. For example, sensitive data that is stored on a company’s network is unlikely to be made available to everyone who has access to the network itself.

Different network users can share resources too, so things such as printer access and document space will become available through the controlling network.

12 of 19 – Using network systems: entertainment

Networks provide the means through which we can **connect with people** and systems all over the world. Streaming films, listening to online talk shows, even playing games are all made available through using the right network systems – and this isn’t limited to local areas but instead spans across the entire world.

**Online gaming** is another hugely popular activity for entertainment now, and this runs entirely through network systems that allow people in different parts of the world to connect to the same gaming server, and then play in the same game as each other.

People even host **local area network parties** now, where computer users will bring their laptops into the same network area to play games with and against each other.

13 of 19 – Using network systems: communication

Another good reason for using network systems is that they make communication easier for lots of computer users, and this is another use that goes beyond local areas and impacts computer users all over the world. Network systems allow us to:

* Email
* Instant message
* Video chat
* Conference call

Plus they can cut down on our need to travel, due to different conversations and exchanges happening via the network connection instead of in-person.

14 of 19 – Benefits and problems of networking computers

**Benefits**

Networking computers are especially useful for companies that have a lot of data to be stored and shared, and a lot of employees that need to have access to that data.

Firstly, communication across different people and departments within the company is made easier through the network. Resources can also be shared more easily, as can documents, which means that one employee can help or collaborate with another without the job being more time-consuming than it needs to be.

Secondly, networks provide people with flexibility. Having a network that people can log into means that any individual can actually be somewhere else in the world entirely, but still have access to a computer network (they can just access it from home, holiday, or anywhere else, by logging in).

**Problems**

While networks are generally a good thing, particularly for data sharing and entertainment purposes, there are some potential problems with them too, the main one being security.

For example, a network used within a large company must ensure that any sensitive data is properly protected – from outside hackers, and from people within the company who shouldn’t have access to something.

On a smaller scale, computer users who are relying on personal networks must also make sure that they are protected from people who might be able to hack into their network. Otherwise their personal data might become available to people who shouldn’t be able to see it.

15 of 19 – Question 4

Indicate whether the following statements are true or false.

Computer networks aren’t very good if you’re trying to communicate with people.

True

False

The correct answer is: False

Networks are particularly useful for online gaming communities.

True

False

The correct answer is: True

Large companies will benefit from a good network that allows their employees to work together and share information.

True

False

The correct answer is: True

People sometimes hold personal area network parties now to play games together.

True

False

The correct answer is: False

16 of 19 – Question 5

Using the following choice of words; **access to**, **sensitive data**, **hacker**, **personal networks**, and **security risks**, fill in the blanks for the paragraph below:

While networks are very useful things, people using them must be aware of any possible **blank**. For big companies in particular, any **blank** that is stored on their network could become vulnerable if a **blank** broke into the network, or even if the wrong employees were given **blank** the wrong parts of the network. On a smaller scale, **blank** can become vulnerable to hacking too, which could risk the exposure of an individual’s own data.

The correct paragraph should read:

While networks are very useful things, people using them must be aware of any possible **security risks**. For big companies in particular, any **sensitive data** that is stored on their network could become vulnerable if a **hacker** broke into the network, or even if the wrong employees were given **access to** the wrong parts of the network. On a smaller scale, **personal networks** can become vulnerable to hacking too, which could risk the exposure of an individual’s own data.

17 of 19 – Question 6

What are the benefits of using a computer network?

Choose all that apply:

1. It allows people to share resources
2. People don’t have to talk to each as much
3. It means people can be flexible with work
4. It is easier for people to communicate
5. It means people don’t have to share their information

The correct answers are A, C and D, it allows people to share resources, it means people can be flexible with work and it is easier for people to communicate.

18 of 19 – End

Well done. You have completed this session on computer networking.

In this session we have covered:

* The four main types of computer networks
* Their specific uses and users
* Some of the more general uses for these networks

If you have any questions about any of these topics, make a note and speak to your tutor for more help.