ICT Level 2 – Transferring Data Part 1

1 of 19 – Welcome

Welcome to this session on transferring data.

By the end of this session, you will:

* Know how to synchronise data
* Understand how data is transferred through physical methods
* Understand how data is transferred through wireless methods
* Know the weaknesses and strengths of each new method

2 of 19 – Introduction to transferring data

**What does transferring data mean?**

Transferring data simply means moving data from one place to another. This could be as simple as sharing your emails from your laptop to your mobile phone – which is a type of synchronisation – or it could mean moving documents from your home computer to a computer somewhere else.

There are many different ways that we can move data around, depending on where it’s being moved from and where it’s being moved to, and also the size of the data that’s being transferred.

Some methods are better than others, depending on the nature and size of your data.

3 of 19 – Synchronising data

Synchronising data means making your data available on more than one device, by sharing it between your technology systems. There are lots of reasons why you might do this. It could be something as simple as wanting to share your music to your mobile phone or syncing your calendars from two different devices, so all of your appointments are stored in one place.

Data that can be synced across devices like this might be:

* Messages
* Music or videos
* Podcasts
* Photographs and digital images

4 of 19 – How can you synchronise data?

There are a few different methods available for this synchronisation to take place, such as:

* Bluetooth
* Infrared
* Wi-Fi
* Via a cable

When the devices have been connected to each other, using one of the above methods, they can make a personal area network (PAN) between themselves.

This will allow a user to update their older information with the newer information stored on each device.

5 of 19 – Introduction to physical methods for transferring data

Physical methods for transferring data will always involve some kind of **cable technology** – this is the ‘physical’ part of the process.

Cables perform different purposes and work in different ways, so users need to make sure they are using the right cable for any given job. By connecting one device to another via a cable, you are creating your physical method of transfer.

Some well-known methods for this are:

* Optical fibre
* Unshielded twisted pair (UTP)
* Coaxial cables (coax.)

6 of 19 – Physical methods: optical fibre

**Optical fibre cables** are one physical method for transferring data and they have two distinct uses:

* They can provide extremely fast connections between switches that exist within a network (a switch is a box that has a number of open sockets, and these sockets are used to plug in cables)
* They can allow for a broadband connection in a large building, or business operation

Optical fibre cables are well-built to carry information across long distances and large spans, which is a big advantage of using them.

For a real-world example, you might have heard the term fibre optic broadband which refers to your internet connection. It is the cables mentioned above that allow this fast-acting internet connection to happen.

7 of 19 – Physical methods: optical fibre – continued

While these cables are especially **useful for fast network connections**, they do have one or two disadvantages that we have to consider too.

Firstly, while they are more commonly used nowadays, they are still a little more expensive than other products.

They are also **sensitive to movements**, and so cables will need to be laid where they are unlikely to be disturbed or moved.

Finally, not only does it take specialist installation to get these cables working, but if a problem arises – such as a glitch or a bug in the connection – then it is unlikely to be just one computer that is disturbed but rather a whole network of computers.

8 of 19 – Physical methods: unshielded twisted pair (UTP)

An **unshielded twisted pair (or UTP)** is a type of copper cabling, which is the first notable difference between this and optical fibre cables which are largely made up of glass.

There are **five different types of UTP** cabling available, depending on the amount of data that is being moved through them.

UTPs are often used for connecting computers and printers to switches in local area networks (LANs), and this type of connection typically relies on CAT6 or CAT5 cabling (CAT plus the relevant number is how the different types of UTP cabling can be identified).

UTP is not only a cheaper alternative to optical fibre, but it is also extremely reliable for local area networks that run through cables.

UTPs are heavily relied on as a physical method of data transfer, but there are one or two drawbacks to using them as well. The most common problems with UTPs are:

* They are poor cables for carrying data at **high speeds**
* They are **limited in terms of distance**, making long-distance networks a problem
* They are thought to be **vulnerable to interferences from other cabling** (this means that cables, or other technology equipment in a close enough range, might disrupt the UTP cable and therefore disrupt the service being provided too)

9 of 19 – Physical methods: coaxial cables (coax.)

**Coaxial cables** were once thought to be a reliable physical method for connecting homes to their broadband systems.

However, these cables **relied on a copper coating system** which made them a lot slower than alternative methods – like UTPs, for example – and, while coaxial cabling was reliable for short distances, it was known to provide a poor connection across larger stretches. Because of this, coaxial cabling for home broadband has largely been worked out of home technology systems.

While broadband networks don’t favour this cabling anymore, it is **still regularly used by television companies** in order to connect homes to their satellite facilities, and some telephone companies still use this method as well.

10 of 19 – Introduction to wireless methods for transferring data

Wireless methods for data transfer **don’t rely on any sort of cabling**, or even a physical connection between the devices that are involved in the transfer – as the name suggests.

There are a number of different methods for wireless transfer that technology users might use, but there are two in particular that we’ll consider in this session:

* **Wi-Fi** (for data transfer, this means that you are relying on your internet connection, or rather your Wi-Fi connection, in order to carry your data across)
* **Bluetooth** (Bluetooth is a wireless technology that is especially useful for carrying data from one mobile phone to another, although there are other uses too)

11 of 19 – Wireless methods: Wi-Fi

Wi-Fi has become such a popular technology in recent years that it is now built in as standard on laptops and several other technology devices – such as tablets for example – so users can connect, through Wi-Fi, to local area networks.

You may also find Wi-Fi on:

* Mobile phones
* Desktop computers
* Printers

For devices that don’t have Wi-Fi built in there are now devices available that will add Wi-Fi features, such as a card that can be installed on your device or even a dongle, which is a small device that connects to your machine through a USB port.

In terms of data transfer, Wi-Fi relies on a **wireless access point** (or a WAP) to make contact. This WAP is often part of the router, and it acts in a similar way to the switch (used in physical methods) in order to connect two devices together wirelessly.

While Wi-Fi is **vulnerable to service interruptions** – like many of the other options that we have looked at already – it is still thought to be a reliable method of transferring data.

It is also **heavily relied on** by technology users now, with many day-to-day interactions – whether you’re sending an email or watching a video – relying on Wi-Fi connections to transmit and share data.

12 of 19 – Wireless methods: Bluetooth

**Bluetooth** is slightly less popular than Wi-Fi when it comes to wireless data transfer, however this technology also caters to a growing number of uses.

It can be used to **connect a number of different devices** – phone to computer, phone to phone, laptop to headset, amongst many other examples – and it is also particularly **useful for smaller data transfers**, such as transferring a document or an MP3 between your phone and laptop.

However, Bluetooth is **entirely dependent on proximity** which means that if one device is too far away from the other – or if one device is moved out of range – then the connection will not be successful, and neither will the data transfer. Another disadvantage to this technology is that it is thought to be relatively **slow** in comparison to the alternatives.

13 of 19 – Question 1

Categorise the methods of data transfers below according to if they are **physical** or **wireless**.

Wi-Fi

Coaxial cables

Unshielded twisted pair

Bluetooth

Optical fibre

The correct answers are:

Coaxial cables, unshielded twisted pair and optical fibre are examples of **physical** data transfers.

Wi-Fi and Bluetooth are examples of **wireless** data transfers.

14 of 19 – Question 2

What are the **four** most commonly used methods for synchronising data?

Choose all that apply:

1. Via a cable
2. Disk transfer
3. Infrared
4. USB flash drive
5. Bluetooth
6. Wi-Fi
7. Coax cable

The correct answers are A, C, E and F, via a cable, infrared, Bluetooth and Wi-Fi.

15 of 19 – Question 3

Categorise the advantages and disadvantages of using optical fibre cables below according to if they are an **advantage** or a **disadvantage**.

Extremely fast connections

Allows for broadband

Sensitive to movements

Can span large areas

Requires specialist installation

The correct answers are:

Extremely fast connections, allows for broadband and can span large areas are **advantages** of using optical fibre cables.

Sensitive to movements and requires specialist installation are **disadvantages** of using optical fibre cables.

16 of 19 – Question 4

Indicate whether the following statements are true or false.

There are five different types of unshielded twisted pair cables available at the moment.

True

False

The correct answer is: True

Coaxial cables are still commonly used for broadband, television, and telephone connections.

True

False

The correct answer is: False

Unshielded twisted pair cables are particularly good for long-distance networks.

True

False

The correct answer is: False

Coaxial cables are thought to be much slower, and to provide poorer connections over long distances.

True

False

The correct answer is: True

17 of 19 – Question 5

Using the following choice of words; **service interruptions**, **popular**, **in-built**, **dongle**, **USB port** and **reliable**, fill in the blanks for the paragraph below:

Wi-Fi has become so **blank** in recent years that it is now **blank** on many technology devices. For devices that don’t have Wi-Fi, it can be added using a card or a **blank**, which connects to your device via a **blank**. Wi-Fi is vulnerable to **blank**, but it is generally considered a **blank** way of transferring data and it is something most technology users now rely on daily.

The correct paragraph should read:

Wi-Fi has become so **popular** in recent years that it is now **in-built** on many technology devices. For devices that don’t have Wi-Fi, it can be added using a card or a **dongle**, which connects to your device via a **USB port**. Wi-Fi is vulnerable to **service interruptions**, but it is generally considered a **reliable** way of transferring data and it is something most technology users now rely on daily.

18 of 19 – End

Well done. You have completed this session on transferring data.

In this session we have covered:

* How to synchronise data
* How data is transferred through physical methods
* How data is transferred through wireless methods
* The weaknesses and strengths of each new method

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