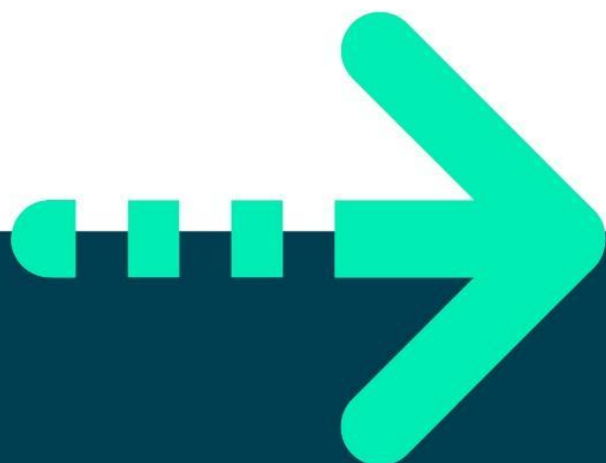


QA



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Objectives

The Discover, Practice and Apply activities for Module 1 (online and live event) will cover the following criteria:

Knowledge

- K2: Basic elements of technical documentation and its interpretation
- K3: Principles of root cause problem solving using fault diagnostics for troubleshooting
- K4: Principles of basic network addressing for example binary
- K5: Basic awareness of the principles of cloud and cloud-based services
- K6: Fundamental principles of virtual networks and components
- K7: Principles of cultural awareness and how diversity impacts on delivery of support tasks
- K8: Methods of communication including level of technical terminology to use to technical and non-technical stakeholders
- K11: Fundamentals of physical networks and components
- K13: Basic awareness of legislation in relation to disposal of waste materials for example Waste Electronic and Electrical regulations (WEEE)

Skills

- S1: Interpret and prioritise internal or external customer's requirements in line with organisation's policy
- S2: Apply the appropriate tools and techniques to undertake fault finding and rectification
- S4: Operate safely and securely across platforms and responsibilities maintaining the security of personal data of internal and external stakeholders
- S5: Communicate with all levels of stakeholders, keeping them informed of progress and managing escalation where appropriate
- S7: Manage and prioritise the allocated workload effectively making best use of time and resources
- S8: Complete documentation relevant to the task and escalate where appropriate
- S12: Maintain a safe working environment for own personal safety and others in

line with Health & Safety appropriate to the task

Behaviours

B1: Works professionally, taking initiative as appropriate and acting with an ethical approach.

B2: Communicates technical and non-technical information in a variety of situations to support effective working with internal or external stakeholders

B3: Demonstrates a productive and organised approach to their work

B4: Self-motivated, for example takes responsibility to complete the job.

Diversity and cultural awareness

Company culture code, mission statement and core values. You often hear these words, but what do they actually mean, and why do we need to understand them?

Company culture code

Think of a culture code as the employee handbook. It should include:

- Your mission statement
- Core values
- How to work and live by your values
- Any company traditions
- Any additional shared beliefs

If your culture and values don't align, your employees, customers and bottom-line performance may suffer. Therefore, organisations create values statements that will help align employees and organisational culture to drive performance.

Why does an organisation have a:

1. Vision?
2. Mission?
3. Values?

Both mission and vision both relate to an organisations purpose and are usually communicated in written form.

A company **mission** statement is a clear and concise definition of your company's single most important purpose. This is what guides you as a company.

A **vision** statement, in contrast, is a future-oriented declaration of the organisations purpose and aspirations.

Core **values** support the company's vision, shape the culture, and reflect the

company's identity.

Seven reasons for clear mission, vision and values:

1. Determine the company's direction.
2. Focus on the company's future.
3. Provide a template for decision making.
4. Form the basis for alignment.
5. Welcome helpful change.
6. Shape strategy.
7. Facilitate evaluation and improvement.

What is culture?

Culture could be summarised as the things we share, where we come from and, our family values/beliefs.

They are drawn from several influences:

- Age
- Gender
- Race
- Religion
- Language/dialect
- History
- Dress
- Festivals and celebrations

4. What are the benefits of working in a diverse organisation?

Culture cues

The 'culture cue' model will enable you to think about your organisation, and those you do business with, to support you when selecting the most appropriate approach to get the best results.

A range of different behaviours have been included. However, these are typical, but not exclusive, and you could adapt a model to fit your own organisation.

How would you score your organisation for each of the cues?

5 0 5

Fast paced	Slow paced
Task focused	People focused
Risk averse	Risk embracing
Position power	Achievement power
Time bound	Family friendly
Teams	Individual
Internal facing	External facing
Tradition	Innovation

How we communicate in the workplace (Tech vs non-tech)

An Information Communications Technician is a highly technical role. The number of acronyms and technical jargon you use without even thinking can be overwhelming for a non-technical person.

Adjusting how you communicate, is a skill and takes practice to help make your recipient feel at ease. Your written and verbal skills can be significantly challenged when trying to simplify a complex subject.

Considering how to disseminate the information so that it is well received can be a challenge.

Oversimplify and you become patronising.

Under-simplify and you could appear like you are talking another language.

As an example:

“Scintillate, scintillate, globule aurific,
Fain would I fathom thy nature specific,
Loftily poised in the ether capacious,
Strongly resembling a gem carbonaceous.”

1. What is this well-known passage?

So, what are the golden rules?

Here's one example:

The KISS principle (Keep It Short and Simple)

- Consider your audience.
- Avoid long sentences.
- Avoid using complicated or unfamiliar words.
- Avoid unnecessary repetition.
- Start your sentence with the main topic.

2. Can you research an example of your own?

Communications is a technique you will practice throughout your career and is one that you will continually adapt.

The art of good, clear dialogue can save you a considerable amount of time and frustration.

It is well worth reflecting on your written or verbal conversation to note what did/didn't work well. This will enable changes to be made for the future.

Health and safety

This section looks at the UK's Health and Safety at Work Act and contains questions for you to answer. Read the information below, before answering the questions.

The Health & Safety at Work Act 1974 (HASAWA) lays down wide ranging duties on employers. Employers must protect the 'health, safety and welfare' at work of all their employees, as well as others on their premises, including temps, casual workers, the self-employed, clients, visitors, and the public.

HASAWA allows government to issue regulations, guidance, and Approved Codes of Practice (ACOPs) for employers. These set out detailed responsibilities for your employer in every aspect of workplace health and safety, from working safely with computers, to stress and hazardous chemicals.

The Health and Safety Executive (HSE) was set up under HASAWA. The Act gives power to the HSE to enforce these employer duties and penalties for non-compliance.

Employers have a duty, so far as is reasonably practical, to include:

- A safe system of work
- A safe place to work
- Safe equipment, plant, and machinery
- Safe and competent people working alongside you
- Carry out risk assessments as set out in regulations, and take steps to eliminate or control those risks
- Inform workers about potential hazards associated with any work process, chemical substance, or activity, including providing instruction, training, and supervision
- Appoint a competent person responsible for health and safety
- Consult with workplace safety representatives
- Provide adequate facilities for staff welfare at work

1. What responsibilities do you have to ensure these laws and regulations are followed in your role?

Examples could include:

Keeping wires/cables tidy

Not overloading electrical sockets

Keeping liquids away from electrical appliances

Running a new patch cable in a loft – Have you had the appropriate working at heights training?

Working outside, or in an area requiring the correct PPE

2. Who in your organisation has overall responsibility for health and safety?

Electricity at Work Regulations in your role

This section looks at the UK's Electricity at Work Regulations and contains questions for you to answer. Read the information below, before answering the questions.

The Electricity at Work Regulations 1989 expand on the rules regarding electrical safety in the Health and Safety at Work Act 1974 and cover several areas that electricians need to know.

In workplaces, the most common use of the regulations is Portable Appliance Testing, commonly referred to as PAT Testing, where all electrical devices are tested. These tests must be completed regularly, usually annually and must be completed by trained personnel.

The three parts of the test include:

- Visual inspection
- Earth continuity test
- Insulation test

The Regulations do not specify what needs to be done, by whom or how often. The frequency of inspection and testing depends upon the type of equipment and the environment it is used in. For example, a power tool used on a construction site should be examined more frequently than a lamp in a hotel bedroom.

A small sticker is usually placed on the item once tested, stating when its next inspection is due.

3. Look around your office or classroom to establish when the equipment is next due for PAT testing.

4. If you discovered a damaged mains cable in your office, what would you do?

Manual Handling Operations Regulations

This section looks at the UK's Manual Handling Operations Regulations and contains a question for you to answer. Read the information below, before answering the question.

Your role may well involve lifting and carrying equipment in your workplace. The Manual Handling Operations Regulations 1992, as amended in 2002 ('the Regulations') apply to a wide range of manual handling activities, including lifting, lowering, pushing, pulling, or carrying.

Look at the contents of the following HSE publication:

www.hse.gov.uk/pubns/indg143.pdf

5. What were you unaware of before reading the document?

Note how **table 1** in the document provides detail of **Risks and Controls**. In ICT, you will encounter risk assessments in many different forms. However, the key objective with any risk assessment is to mitigate the risk.

Display Screen Equipment Regulations

This section looks at the UK's Display Screen Equipment Regulations and contains questions for you to answer. Read the information below, before answering the questions.

The Display Screen Equipment (DSE) Regulations 1992 only apply to employers whose workers extensively use computers and/or laptops as a normal part of their daily activities for continuous periods of more than one hour.

An employer with DSE users is responsible for analysing the risk and ensuring controls are in place to reduce them, provide training, providing eyesight tests and special spectacles if required and review the assessment when the user or DSE changes.

DSE can cause health risks such as fatigue, eye strain, upper limb, and backache problems. Causes may not always be initially obvious but can build up over time.

Look at the contents of the following HSE publication:

www.hse.gov.uk/pubns/indg36.pdf

6. List the suggestions to help control the risk

7. After reading the HSE publication, what will you do differently in the future?

Organisational compliance

An understanding of organisational compliance can help immensely when dealing with clients, both inside and outside of your organisation. This awareness can help you throughout your career and is completely transferable between organisations. You may handle personal and/or sensitive data, manage passwords that must remain secure and have access to commercially sensitive or confidential information that could compromise your business if it were to get into the wrong hands.

Not only do the heads of the organisation have the responsibility for compliance; you as an employee also have responsibilities that must be adhered to, in order for you to comply with the law and your organisations policies and procedures.

Imagine working in an organisation that had no Health and Safety, no compliance with current government legislation and no policies or procedures in place to document how their business should run – how comfortable would you feel working for it?

Computer Misuse Act

This section looks at the UK's Computer Misuse Act and contains questions for you to answer. Read the information below, then begin answering the questions.

The Computer Misuse Act 1990 makes malicious activities and hacking a criminal offence. There are 5 main offences under this act which have different maximum fines and penalties.

1. What was the initial reason for introducing the Computer Misuse Act?

Note the maximum prison sentences and fines for each section. The perpetrators may get lesser fines or sentences depending on the circumstances and the judge at the trial.

Offence (Section)	Punishment (Maximum Prison sentence and fine)
1 - Unauthorised access to a computer	Punishable by fine up to statutory maximum (unlimited in the England) and up to two years imprisonment on indictment
2 - Unauthorised access to a computer in order to commit another offence	Punishable by fine up to statutory maximum (unlimited in the England) and up to five years imprisonment on indictment
3 - Unauthorised modification to the contents of a computer, or providing the tools in order to do so	Punishable by fine up to statutory maximum (unlimited in the England) and up to ten years imprisonment on indictment
3ZA - Unauthorised acts causing, or creating risk of, serious damage	Punishable by fine up to statutory maximum (unlimited in the England) and up to life imprisonment on indictment
3A - Making, supplying or obtaining articles for use in offence under section 1, 3 or 3ZA.	Punishable by fine up to statutory maximum (unlimited in the England) and up to two years imprisonment on indictment

2. Research online and note a conviction that you find particularly interesting.

3. What are the key points you have learnt from this subject? Summarise what you have learnt in a few bullets below.

ICO (Information Commissioners Office)

This section looks at the Information Commissioners Office (ICO) and contains questions for you to answer. Read the information below, then begin answering the questions.

The ICO is the UK's independent body set up to uphold information rights.

They provide guidance about an organisations obligation and how to comply. We will focus on the following subjects in subsequent sections:

- GDPR (General Data Protection Regulation)
- DPA 2018 (Data Protection Act)

Others include:

- FOIA (Freedom of Information Act)
- NIS (Network and Information Systems Regulations)
- eIDAS (Electronic Identification and Trust Services)
- IPA (Investigatory Powers Act)

Before we look at GDPR and DPA 2018 in more detail, let's find out a bit more about who the ICO are.

Visit the <https://ico.org.uk/about-the-ico/> web site and answer the following questions.

1. Who is the current Information Commissioner?
2. Who receives the money from any monetary penalties issued by the ICO?
3. Look at the Action taken by the ICO and note one that you find particularly surprising or interesting.

4. What are the key points you have learnt from this subject? Summarise what you have learnt in a few bullets below.

Data Protection Act and GDPR

This section looks at and the UK's Data Protection Act (DPA) and the EU's General Data Protection Regulation (GDPR). It contains questions for you to answer. Read the information below, then begin answering the questions.

Data protection is about ensuring people can trust you to use their data fairly and responsibly.

If you collect information about individuals for any reason other than your own personal, family or household purposes, you need to comply.

The UK data protection regime is set out in the DPA 2018, along with the GDPR (which also forms part of UK law). It takes a flexible, risk-based approach which puts the onus on you to think about and justify how and why you use data.

The ICO regulates data protection in the UK. They offer advice and guidance, promote good practice, carry out audits, consider complaints, monitor compliance and take enforcement action where appropriate.

Before we look at GDPR and Data Protection, let's just stop to consider, what is 'personal data'?

In short, personal data means information about a particular living individual. This might be anyone, including a customer, client, employee, partner, member, supporter, business contact, public official or member of the public.

It doesn't need to be 'private' information – even information which is public knowledge or is about someone's professional life can be personal data.

It doesn't cover truly anonymous information – but if you could still identify someone from the details, or by combining it with other information, it will still count as personal data.

From

<https://ico.org.uk/for-organisations/guide-to-data-protection/introduction-to-data-protection/some-basic-concepts/>

Using the above link, answer the following questions using your own words:

1. What is 'processing'?

2. What is a 'controller'?

3. What is a 'processor'?

4. What is a 'data subject'?

5. What is the ICO's role?

On 25th May 2018, the EU updated their Data Protection Legislation. The General Data Protection Regulations (GDPR) replaced the Data Protection Act 1998. Despite the UK vote to leave the EU, we will still apply the changes to the law as they come in. Once we leave the EU, these changes will be enshrined into UK law and will continue to apply to UK organisations.

Article 5 of the GDPR requires that personal data shall be:

1. Processed lawfully, fairly and in a transparent manner.
2. Collected for specified, explicit and legitimate purposes.
3. Adequate, relevant and limited to what is necessary.
4. Accurate and, where necessary, kept up to date.
5. Kept in a form which permits identification of data subjects for no longer than is necessary.
6. Processed in a manner that ensures appropriate security.

GDPR has direct effect across **all EU member states**. However, GDPR gives member states limited opportunities to make provisions for how it applies in their country.

Part of the **Data Protection Act 2018 (DPA 2018)** provides this detail. It is therefore important that GDPR and DPA 2018 are read side by side. Examples are where it is related to immigration and domestic law enforcement.

Therefore, DPA 2018 is the UK's implementation of the General Data Protection Regulation (GDPR).

Everyone responsible for using personal data has to follow strict rules called 'data protection principles'. They must make sure the information is:

1. Used fairly, lawfully and transparently.
2. Used for specified, explicit purposes.
3. Used in a way that is adequate, relevant and limited to only what is necessary.
4. Accurate and, where necessary, kept up to date.
5. Kept for no longer than is necessary.
6. Handled in a way that ensures appropriate security, including protection against unlawful or unauthorised processing, access, loss, destruction or damage.

Your rights

The GDPR provides the following rights for individuals:

- The right to be informed
- The right of access
- The right to rectification
- The right to erasure
- The right to restrict processing
- The right to data portability
- The right to object
- Rights in relation to automated decision making and profiling.

The ICO (also known as the Supervisory Authority) has corrective powers to ensure compliance including:

- Issue warnings to controller or processor that intended processing is likely to result in infringement of the GDPR;
- Issue reprimands to a controller or processor where processing operations have infringed provisions of the GDPR;
- Order the controller or processor to bring processing operations into compliance with the GDPR (with specific direction and time period if appropriate);
- Order the controller to communicate a personal data breach to the data subject;
- Impose a temporary or definitive limitation including a ban on processing;
- Order the rectification, restriction or erasure of data or order a certification body not to issue a certificate;

- Impose administrative fines;
- Order the suspension of data flows to a recipient in a third country or to an international organisation.

Earlier in this activity we discussed personal data which can be used to uniquely identify a living individual (e.g. names; addresses; phone numbers; email addresses, medical details or banking details).

Data which is **anonymised** (i.e. personal data has been removed) is less regulated, providing the personal details cannot be retrieved or worked out from the data. This allows research data to be published if the personal details of the participants have been removed.

Sensitive data is personal data of a sensitive nature which an individual would not necessarily want to be known about them. This type of data is regulated even more strictly and the law states that this type of data must be **opt-in** (i.e. not required) and needs to be very carefully handled.

You **cannot collect sensitive personal data without explicit consent**. Having this statement on your consent form or questionnaire ensures that you are complying with the Act.

Sensitive personal data includes:

- Race
- Ethnic background
- Political opinions
- Religious beliefs
- Trade union membership
- Genetics
- Biometrics (where used for identification)
- Health
- Sex life or orientation

There are separate safeguards for personal data relating to criminal convictions and offences.

Exemptions

- Any data held for National Security reasons e.g. MI5
- Police can access personal information in order to solve crimes.
- The taxman can access personal information to ensure people pay their tax!
- Any data held for domestic purposes at home e.g. birthday lists, address books.

Accountability

The concept of accountability underpins the DPA but has become more important under GDPR.

The Regulation contains an accountability principle, which requires organisations to demonstrate compliance through a series of actions, including the implementation of “appropriate technical and organisational measures”.

6. Enter the two missing values in the statement below:

The maximum administrative fine that can be levied for GDPR non-compliance is up to ____% of total global annual turnover or €____m

7. Enter the missing number of hours in the statement below:

This all-new requirement puts pressure on organisations to reveal breaches at the earliest opportunity. Whereas the DPA doesn't require organisations to report data breaches, GDPR charges them to “notify the supervisory authority without undue delay and, where feasible, not later than ____ hours after having become aware of it”. The requirement also extends to notifying the individuals concerned if there is a high risk to their rights and freedoms.

8. What policies/procedures have you seen in your organisation to help ensure that personal data is kept secure?
9. Have you already received training at work to ensure you have the knowledge to comply with the current Data Protection legislation?

10. What are the consequences of non-compliance for you and your organisation?
11. What are the key points you have learnt from this subject? Summarise what you have learnt in a few bullets below.

Copyright, Designs and Patents Act

This section looks at the UK's Copyright, Designs and Patents Act and contains a question for you to answer. Read the information below, before answering the question.

The Copyright, Designs and Patents Act exists to ensure the content creator can protect their creation, which includes these examples:

Artistic works	Computing	Business
Photographs	Software application	Business proposals
Song lyrics	Software code	Technical specification
Sheet music	Operating System	Equipment manual
Sound recordings	Website script	Marketing plan
Logos and other original images	Source code	Database content

The content creator owns the content, which is legally protected by copyright, often denoted by the © symbol, although the symbol is not necessary.

There is no need to register copyright. Work is automatically protected unless the author chooses to give that right away.

The author has exclusive rights to publish, copy, distribute and sell their work. No one else can do the same without the copyright holders' permission.

When you purchase the creation, such as a book, video, CD or software, you are granted permission to use the creation in the form of a licence. This could be a single user or multiple users depending on the purchase.

It has never been so easy to access copyrighted material, especially with access to the internet. However, you are breaking the law if you download anything without



Imagine how you would feel if you spent weeks, months, or even years creating new material, only to find others were making a profit from copying and selling it themselves.

8. Can you research some examples of legal penalties for copyright infringement?
9. If you design something in your own time for a work-related project. Who owns the copyright?

9. If you design something in your own time for a work-related project. Who owns the copyright?

Numeracy challenge

Objective

K4: Principles of basic network addressing for example binary

Introduction

At the beginning of this programme, you played the [Binary Game](#) with the aim of improving your knowledge of binary numbers and testing your conversion speed.

You converted 8-bit binary values into decimal as well as decimal values (in the range of 0-255) back to binary.

Learning this conversion process will help you when dealing with IP addressing schemes and is essential throughout your ICT career.

If you kept a note of your high score, how many levels did you conquer?

As well as consolidating this learning, you will also learn to convert decimal to hexadecimal and vice versa.

These activities have a twist. You will work in teams to gather hidden letters that only become visible once the correct answers are entered. These letters form an **anagram** of a word, which you need to crack.

Your tutor will issue each activity and assign you to a team. Your challenge is to be the first team to solve the anagram.

Record your key learning points taken from each activity in the table:

Key learning points	Your notes
Binary to decimal	
Decimal to binary	
Binary to hexadecimal	
Hexadecimal to binary	
Additional comments:	

Technical documentation and problem solving

Objective

K2: Basic elements of technical documentation and its interpretation.

K3: Principles of root cause problem solving using fault diagnostics for troubleshooting.

K23: Basic elements of network infrastructure architectures including Wi-Fi and wired networks.

K25: Principles of cloud and network architecture (including Wi-Fi).

S2: Critically analyse the use of the tools and techniques used in the fault rectification process.

Introduction

As an Information Communication Technician, you will learn to develop strategies to diagnose and troubleshoot many different scenarios. Interpreting technical documentation and applying your knowledge to efficiently resolve a problem is an essential part of your role.

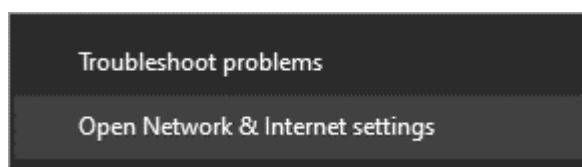
This activity will introduce you to the Microsoft support documentation as you follow the troubleshooting journey used to resolve Wi-Fi connection issues.

We will examine the suggested steps, tools and additional information given before analysing and discussing the process in more detail.

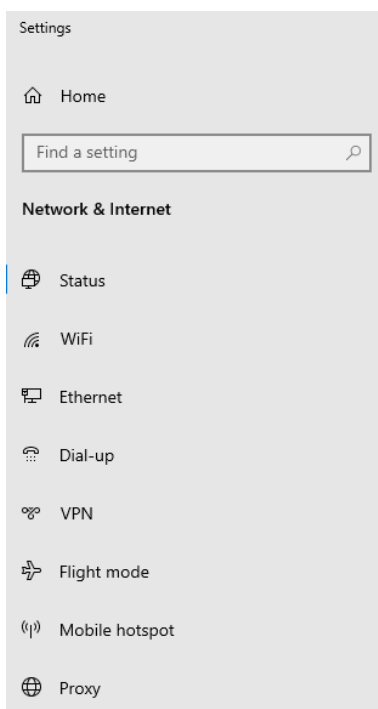
It's important to make good notes as you work through the steps as later in the activity you will be asked to explain parts of the decision-making process and provide an overview of the approach taken.

Network and Internet settings

Right clicking over the network icon in the bottom right-hand corner of the taskbar on a Windows 10 device reveals two options:



Selecting **Open Network & Internet settings** enables you to view your settings for the various types of connection available:



In the example below, the **Network status** confirms that the device is connected to the internet as well as options to look at **Properties** and **Data usage**.

Status

Network status



You're connected to the Internet

If you have a limited data plan, you can make this network a metered connection or change other properties.



Clicking on **Properties** reveals some useful information about the current connection.

Properties

SSID:	Skyfall 2_EXT
Protocol:	Wi-Fi 4 (802.11n)
Security type:	WPA2-Personal
Network band:	2.4 GHz
Network channel:	6
Link speed (Receive/Transmit):	130/65 (Mbps)
Link-local IPv6 address:	fe80::b927:42a2:97b4:e11b%17
IPv4 address:	192.168.0.61
IPv4 DNS servers:	194.168.4.100 194.168.8.100
Manufacturer:	Qualcomm Atheros Communications Inc.
Description:	Qualcomm Atheros AR928X Wireless Network Adapter
Driver version:	3.0.2.202
Physical address (MAC):	00-1F-E1-D4-F6-B8

You can exit from the window by clicking the back arrow in the top left-hand corner.

← Settings

🏠 Skyfall 2_EXT

Connect automatically when in range



Network profile

☐ Public

Your PC is hidden from other devices on the network and can't be used for printer and file sharing.

☒ Private

For a network you trust, such as at home or work. Your PC is discoverable and can be used for printer and file sharing if you set it up.

[Configure firewall and security settings](#)

Note that on return, we have arrived at the Wi-Fi settings window, one step beneath Status.

WiFi

WiFi



On



Skyfall 2_EXT

Connected, secured

[Show available networks](#)

[Hardware properties](#)

[Manage known networks](#)

Note the options that become available as we navigate to each window. These can be useful to know when troubleshooting.

At the bottom of the window, further help from the web is also available.

Connect to a wireless network

If you don't see the wireless network you want, select Show available networks, select the one you want, and select Connect.

Related settings

[Change adapter options](#)

[Change advanced sharing options](#)

[Network and Sharing Centre](#)

[Windows Firewall](#)

Help from the web

[Troubleshooting network connection issues](#)

Fix Wi-Fi connection issues in Windows 10

Clicking Troubleshooting network connection issues launches the default web browser and adds the following text into the search field:



fix network connection issues windows 10 site:microsoft.com



Note the Microsoft.com website has been specified in the search string, this tip can be really useful when researching online.

A list of options is presented in the browser, but let's choose the following:

[Fix Wi-Fi connection issues in Windows \(microsoft.com\)](#)

Fix Wi-Fi connection issues in Windows

Windows 10, Windows 8.1, Windows 7

Troubleshooting network problems in Windows

If you can't get email, browse the web, or stream music, chances are you're not connected to your network and can't get onto the internet. To fix the problem, here are some things you can try.

Windows 10	Windows 8.1	Windows 7
Things to try first		
Narrow down the source of the problem		
Network troubleshooting on your device		
Additional troubleshooting steps		

Note that the troubleshooting options change if you select **Windows 8.1** or **Windows 7**, so make sure you have selected **Windows 10**.

Now we have looked at some of the fundamental steps, we reach a point where we can look at a troubleshooting process, it's your turn to start collating information and explore the options, tools and actions suggested by Microsoft.

1 Things to try first

Microsoft summarises the scenario with the following:

"If you can't get email, browse the web, or stream music, chances are you're not connected to your network and can't get onto the internet. To fix the problem, here are some things you can try."

Using the [Microsoft online documentation](#) mentioned earlier, enter each suggested **Step or action** into the table below and consider the logical reasoning for each step. You can add those thoughts under **Explanation**.

Step or action	Explanation
1.	
2.	
3.	
4.	
5.	

6.	
7.	
8.	
Any other observations or notes?	

2 Narrow down the source of the problem

What further three steps are suggested to [narrow down the source of the problem](#)?

Step or action	Explanation
1.	
2.	
3.	
Any other observations or notes?	

3 Network troubleshooting on your device

Microsoft's suggestions for [network troubleshooting on your device](#) start to become more involved. Just as before, summarise the four steps in the table below and add your own notes to the Explanation field.

In the last field at the bottom of the table, make a note of anything that was new or that you are unsure of, this can be raised and discussed later.



Step or action	Explanation
1.	
2.	
3.	
4.	
Any other observations or notes?	

4 Additional troubleshooting steps

Microsoft have added five [additional troubleshooting steps](#) to complete the list. Just as before, complete the table below.

Step or action	Explanation
1.	
2.	
3.	
4.	
5.	
Any other observations or notes?	

Using the same documentation, what do the following Windows 10 icons mean?

Icon	Explanation
	
	

5 Related topics

You may have already noticed at the bottom of the last section in the Microsoft documentation, there are references to [related topics](#), as well as links to subject related content, just like the one you used to answer the Icon questions above.

These additional topics can be most useful when establishing the root cause of an issue. Use the online documentation to answer the questions for each topic below.



5.1 Wi-Fi problems and your home layout

The layout in your home or office can cause [Wi-Fi problems](#) and is often overlooked.

Use the Microsoft documentation to answer the following questions:

1. What is recommended before making any changes to your Wi-Fi Network?
2. Two network bands are most commonly used in consumer Wi-Fi networks. What are their frequency bands and what are the advantages and disadvantages of each?

Enter your answers below:

____ GHz

Advantages:

Disadvantages:

____ GHz

Advantages:

Disadvantages:

3. Which network band(s) is your mobile phone capable of using to connect to a Wireless Access Point (WAP)?
Note: You will need to research this separately if you don't already know the answer.

4. What is an SSID?

5. If a wireless router can broadcast using both network frequency bands, why is it beneficial to give them different network names?
6. A network using the 2.4 GHz frequency range has several channels in that band. Which three channels have no overlap with the others?
7. Your new Wireless router appears to be performing poorly and it is relatively close to several other Wi-Fi networks. For a 2.4 GHz network, how could you reduce congested channels?
8. What options could you try to increase your signal strength?
Consider things that could be moved, as well as devices that could be added.
9. What additional channel width was introduced with the IEEE 802.11N specification?
10. Wi-Fi network security is constantly evolving. If possible, which security types should be avoided, and what current security standard would you recommend?

5.2 Setting up a wireless network

The next topic covers [Setting up a wireless network](#).

Use the Microsoft documentation to answer the following questions:



11. What are the key hardware components required to set up a wireless network at home?
12. We have already considered where to position the wireless router to achieve the strongest signal, but what devices in the home can cause interference, as they use the same 2.4GHz frequency band as Wi-Fi?
13. Why should you change the default username and password to access your wireless router?
14. What other network password should be changed?
15. What is WPS?
16. What are the benefits of using a firewall?

5.3 Find your wireless network password in Windows

If you have another Windows PC already connected to your Wi-Fi network, this related topic simply explains how to [find your wireless network password in Windows](#).

Your notes
Any observations or notes?

5.4 Analyse the wireless network report

The [wireless network report](#) can be a great help when diagnosing Wi-Fi connection problems.

The generated wireless network report is saved as an HTML file, then opened in a browser. It shows all the Wi-Fi events from the last 72 hours and groups them by Wi-Fi connection sessions. It also shows the results of several network-related command line scripts and a list of all the network adapters on your PC.

It includes the following:

- Wi-Fi summary chart
- Report Info
- General System Info
- User Info
- Network adapters
- Script output
- Summary

17. The Command Prompt must run as an administrator?

18. At the command prompt, what syntax is entered to generate the report?

The command runs several scripts and specifies the location of the output file.

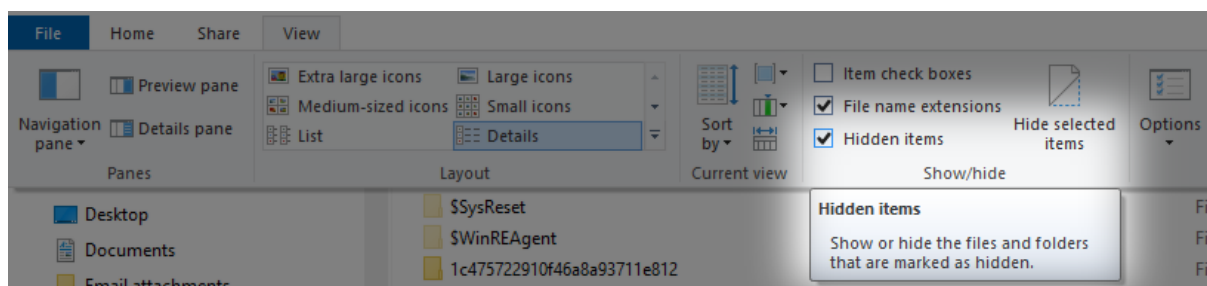
```

C:\WINDOWS\system32>netsh wlan show wlanreport
Generating report ...
Querying WLAN Events ...
Querying NCSI Events ...
Querying NDIS Events ...
Querying EAP Events ...
Querying WCM Events ...
Querying Kernel Events ...
Querying System Events ...
Running ipconfig ...
Running netsh wlan show all ...
Querying Wireless Profiles ...
Querying System and User Certificates ...
Querying User Info ...
Querying Network Devices ...

Report written to: C:\ProgramData\Microsoft\Windows\WlanReport\wlan-report-latest.html
done.

```

If you are unable to access your file, you may need to tick the hidden items check box to see the hidden folder structure.



19. Which script output shows detailed information about the adaptors on the system including the physical (MAC) address, IP address, DNS server, and if DHCP is enabled?
Note: We will be visiting this script again, later your apprenticeship journey.

20. Does the script output 'netsh wlan show all' include security keys or passwords?

The screenshot below shows an example summary with the session successes/failures with the supporting information showing the reasons for disconnecting.

Summary

Session Success/Failures

Status	Count
Successes	23
Failures	8
Warnings	2

Disconnect Reasons. Lists the different reasons you were disconnected from the Wi-Fi network.

Reason	Count
The network is disconnected by the user.	23
PSK mismatch suspected	4
The network is disconnected because the user wants to establish a new connection.	2
The specific network is not available.	2
The driver disconnected.	1
The network is disconnected by the driver.	1

Your notes

Any observations or notes?

5.5 Wi-Fi tools and apps

Various [Wi-Fi tools and apps](#) can be used to aid and support your troubleshooting. Some are built into Windows 10 like the **Wireless Network Report** and others are apps that you can download. Don't forget, the **Command Prompt** is also a tool used to assist with your diagnostics.





Tool	Description	Where to find it
Any other observations or notes?		

5.6 Make a Wi-Fi network public or private in Windows 10

The final related topic shows how to [make a Wi-Fi network public or private in Windows 10](#). This is set when you first connect to a Wi-Fi network, but you do have the option to change it to **public** or **private** at any time.

21. What is the difference between a **public** and **private** Wi-Fi network?

At the end of the topic, Microsoft include the following note:

Note: To use these steps to set a network to public or private, your PC must be running Windows 10 Version 1709 or later. To see which version of Windows 10 your device is currently running, select **Start** , then select **Settings**  > **System**  > **About** .

It's important to remember that we should always keep our Operating Systems up to date as one thing we can be sure of in IT – 'Nothing ever stays the same'.

Summary

Having worked through the technical documentation and answered the questions, how would you summarise this troubleshooting approach?

You may find it easier to present your thoughts as a graphic or flow chart, or you can use the table below.

Summary	Comments

Critical analysis

Let's look at the overall fault rectification process and analyse the tools and

techniques used. This is a key skill that can contribute to a distinction in your professional discussion with the assessor at the end of your apprenticeship, so early practice should help you to embed this mindset.

22. What would you do differently, what additions or alternatives would you suggest?

Introduction to STARRS

The STARRS method can be adapted to many situations. It is easy to follow and can help to structure your answers in a job interview and your End Point assessment.

Acronym	Key word	Explanation
S		
T		
A		
R		
R		
S		

Introduction to Cisco Packet Tracer

Cisco developed Packet Tracer to help Networking Academy students achieve the most optimal learning experience while gaining practical networking technology skills.

Packet Tracer is a powerful network simulation platform, inspiring students to experiment with network behavior and ask 'what if' questions. It supplements physical equipment in the classroom by allowing students to create a network with an almost unlimited number of devices, encouraging practice, discovery and troubleshooting.

How to download Packet Tracer

To enable you to complete your troubleshooting activity, follow these steps to create your Networking Academy registration:

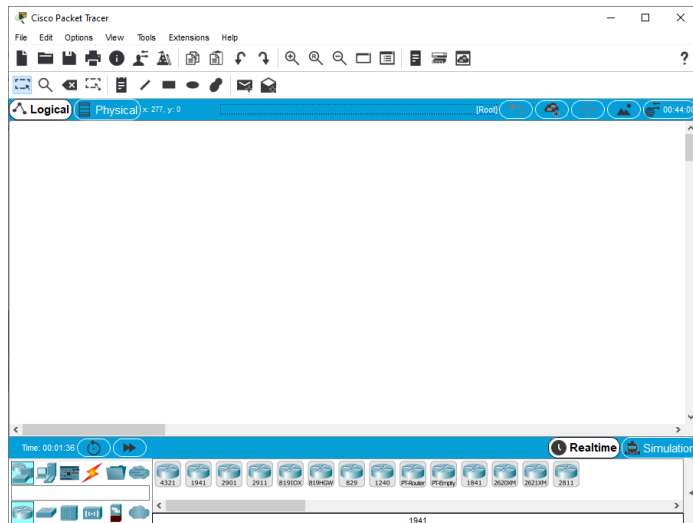
Launch the webpage: <https://www.netacad.com/courses/packet-tracer>

Enroll, download, and get started learning valuable tips and best practices for using Packet Tracer with Cisco's brief introductory course, available for desktop or mobile.

- Click the Sign up today button.
- Complete the enrollment details.
- Install the Packet Tracer app provided by your Tutor.
- Launch Cisco Packet Tracer by selecting the appropriate icon.



- When prompted, use your Netacad login information to authenticate.
- Packet Tracer will launch, and you are ready to explore its features.



Troubleshooting activity

Now you can put your learning into practice.

Your Tutor will issue you with a task where you are challenged to find a resolution.

Once fixed, you will document the process using the STARRS method.

Good luck!

My learning

Record your key learning points taken from this activity and identify any further learning opportunities (your notes can prove invaluable if you encounter a similar issue again).

Key learning points	Further study required?
Topic 1:	
Topic 2:	
Topic 3:	
Topic 4:	
Topic 5:	

Additional comments:

