

Introduction

In this unit about Know Your Networks, children will develop a deeper understanding of computer networks and be introduced to technical key words and phrases associated with computer networks. Children will study home networks, global networks, and network protocols, such as IP, HTTP and DNS. Finally, children will learn about cloud computing, broadband, communication online and malware. Accompanying this unit is a helpful [Knowledge Organiser](#), which collates the subject knowledge for the unit and is used throughout.

Hardware and Software

Hardware

- Access to PC devices, such as laptops, Chromebooks and/or tablets.

Software

- Access to web browsers and online softwares (links provided on lesson plans).

Health and Safety

Children should be encouraged to have good posture and sit up to the computer. Children should not spend extended periods of time looking at the screen. Ensure safe and responsible use of portable digital devices, discouraging children moving around the classroom with technology. Make sure that food and drink are kept away from all electronic items.

Children should be shown how to use the Internet safely and responsibly. Children should be consistently reminded of the SMART rules for online safety. Devices should be used in a public area with screens visible at all times. Ensure your firewall settings are set at the appropriate levels necessary and your antivirus software is up to date.

Activities listed within the resource (including, but not limited to, using sharp items, such as scissors or other tools) should always be supervised by an appropriate adult. By using this resource, you acknowledge that it is the responsibility of supervising adults to ensure the safety of children in their care and that we will accept no liability as a result of the activity.

[Layout Of Networks - Topology](#)

In this task, children should use a search engine to search for the topologies listed on the activity sheet. Children are to explain what each topology means and draw a diagram of the topology.

[Computer Scientists](#)

In this task, children should choose a computer scientist or inventor that they are interested in. Children are to use a search engine to find out information about their work, life and interesting facts. The children are to present their research to their friends or family. The children can choose how to present their research.

Disclaimer

External Links:

We hope you find the information on our website and resources useful. This resource contains links to external websites and/or external apps. Please be aware that the inclusion of any link in this resource should not be taken as an endorsement of any kind by Twinkl of the linked website and/or app, or any association with its operators. You should also be aware that we have no control over the availability of the linked pages and/or apps. If the link is not working, please let us know by contacting TwinklCares and we will try to fix it although we can assume no responsibility if this is the case. We are not responsible for the content of external sites and/or external apps.

Assessment Statements

By the end of this unit...

Working Towards the Expected Level:

- Children can explain what a computer network is.
- Children can identify three types of networks (LAN, MAN and WAN) and identify two network topologies.
- Children can list protocols and provide an example of an IP address.
- Children understand that the Internet and World Wide Web are two separate concepts.
- Children can identify what cloud computing is and provide one advantage of cloud computing.
- Children can identify methods that people use to communicate online.
- Children can identify different types of malware.

Working At the Expected Level:

- Children can describe what a computer network is and identify what devices connect to a network.
- Children can identify three types of networks (LAN, MAN, WAN), explain how networks are defined and list two network topologies.
- Children can list protocols and explain what they are used for and provide an example IP address.
- Children can explain the difference between the Internet and World Wide Web.
- Children can explain what cloud computing is and provide examples of what cloud computing is used for.
- Children can explain ways to communicate online and explain what streaming is.
- Children can identify different types of malware and explain how these can affect a computer network.

Working At Greater Depth:

- Children can describe what a computer network is, explain how devices connect to a network and provide advantages and disadvantages of using a computer network.
- Children can identify three types of networks (LAN, MAN, WAN), describe how networks are defined and describe two network topologies.
- Children can list protocols, describing what they are used for and explain the formation of an IP address.
- Children can begin to explain how the World Wide Web works and the part the Internet plays in this.
- Children can describe what cloud computing is and talk about the safety aspect of data and files while using cloud computing.
- Children can explain what types of media can be streamed and begin to identify the advantages and disadvantages of communicating online.
- Children can describe ways in which malware can affect a computer network and talk about methods to prevent malware destroying a computer network.

Lesson Breakdown

1. What Is a Computer Network?

Understand computer networks including the Internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.

To know what computer networking is.

To understand the advantages and disadvantages of a computer network.

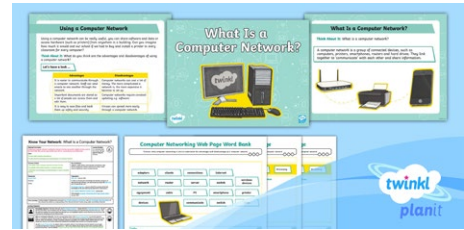
Resources

[Lesson Pack](#)

[KWL Grid](#)

[Knowledge Organiser](#)

- Scissors
- String



Additional Lesson Information and Possible Misconceptions

During this lesson, children may identify input and output devices as hardware that can connect to a computer network. This misconception can be addressed by explaining to the children that these types of hardware connect to a computer but are not part of a computer network. Children may assume that a device can only be part of a computer network if it is physically attached to it via a cable. Explain to the children that wireless devices can also be connected to a computer network. Some examples that children may state are: keyboard, mouse, speakers, webcam and microphone.

At your discretion, you can provide information to children and talk about a printer having a dual role as it can be part of a computer network and is an output device.

Scissor Disclaimer:

To ensure the safety of the children in your setting, it is your responsibility to assess whether adult supervision or other appropriate safety measures are required when using scissors.

2. Types of Computer Networks

Understand computer networks including the Internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.

To understand what LAN (local area network), MAN (metropolitan area network) and WAN (wide area network) are.

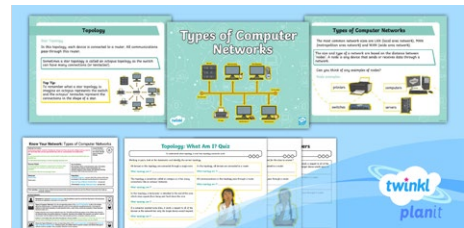
To understand what topology is and how topology networks work.

Resources

[Lesson Pack](#)

[Knowledge Organiser](#)

- Sticky Notes



Additional Lesson Information and Possible Misconceptions

During this lesson, children may identify input and output devices such as keyboard, mouse, speakers, webcam and microphone and may think that these devices classify as nodes.

When explaining to children what a star topology is, a description is provided on the presentation which describes the topology as an 'octopus'. To avoid any misconceptions, explain that the network is sometimes called a octopus as a star topology can have many connections.

3. Computer Network Connections

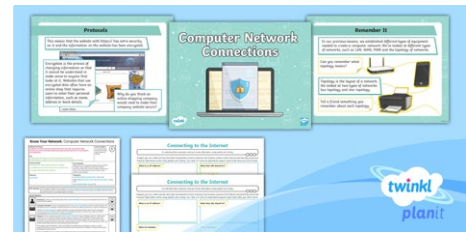
Understand computer networks including the Internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.

To understand how computers connect to the Internet using protocols.

To understand how computers send and receive information using packets and routing.

Resources

[Lesson Pack](#)



Additional Lesson Information and Possible Misconceptions

When talking about protocols to the children, the presentation states that an IP address is similar to a postal address. Misconceptions can be addressed by explaining that a postal address is made up of letters and numbers whereas an IP address is made up of numbers only.

4. Internet, World Wide Web and Cloud Storage

Understand computer networks including the Internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.

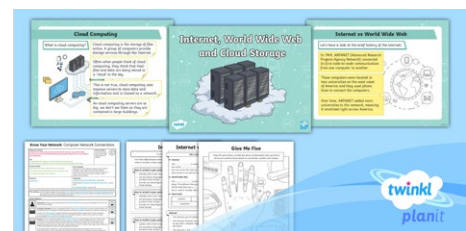
To know the differences between the Internet and World Wide Web.

To understand what cloud computing is.

Resources

[Lesson Pack](#)

- Sticky Notes



Additional Lesson Information and Possible Misconceptions

A common misconception addressed in this lesson is that the Internet and the World Wide Web are the same. Explain to the children that the Internet is a network whereas the World Wide Web is a file system that stores websites.

When cloud computing is being introduced in the lesson presentation, talk to the children about what they think cloud computing is. Often people think that files stored in the cloud are floating in the sky. Address this common misconception by explaining that cloud computing is actually massive servers stored in a data centre.

5. Broadband and Communicating Online

Understand computer networks including the Internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.

To understand how broadband and online streaming are part of a network and are used as communication methods on the Internet.

Resources

[Lesson Pack](#)

[Knowledge Organiser](#)

Hardware:

- Access to PC devices, such as laptops, Chromebooks and/or tablets.
- A website to test Internet speed, such as www.fast.com.



Additional Lesson Information and Possible Misconceptions

A common misconception that the children may have about the term 'streaming' is that they may assume that the only type of streaming service provided online is video streaming. This misconception is addressed in the lesson by providing examples of other streaming methods, such as webcasts, online radio, listening to music or watching music videos.

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6. Types of Malware and Cybersecurity

Understand computer networks including the Internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.

To understand what malware is and how this can affect a computer network.

To identify ways of minimising risks of cybersecurity threats.

Resources

[Lesson Pack](#)

[KWL Grid](#)



Additional Lesson Information and Possible Misconceptions

This lesson teaches the children about malware and cybersecurity, within this lesson there are opportunities for discussions surrounding personal information that should and shouldn't be shared online. Use these opportunities to discuss this and talk about ways that the children can stay safe while using the Internet.

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