

CHAPTER 1

ABOUT THE INTERNET

INFocus

Before you jump into the Internet and start to find yourself lost in the world of information available to you, it would be good to get an idea of how it works and the mass of parts that combine to make up the internet as we know it today.

The internet is never static. It is always in a state of change and development so be prepared for a rollercoaster ride on the information super highway.

In this session you will:

- ✓ gain an understanding of the **Internet** and the **World Wide Web**
- ✓ gain an understanding of how the internet began
- ✓ gain an understanding of the requirements for connecting to the internet
- ✓ gain an understanding of web browsers
- ✓ gain an understanding of search engines
- ✓ gain an understanding of web addresses
- ✓ gain an understanding of key terms and internet jargon
- ✓ gain an understanding of cookies and caches
- ✓ learn how to test an internet connection.

THE INTERNET AND THE WORLD WIDE WEB

These days the **internet** seems to be everywhere and even if you have somehow avoided going on-line up until now, it is hard to escape the advertisements in the media or the ones that

travel past you on the side of a bus inviting you to go to someone else's dot.com. This page explains what the **internet** and **World Wide Web** are and how you too can benefit from them.

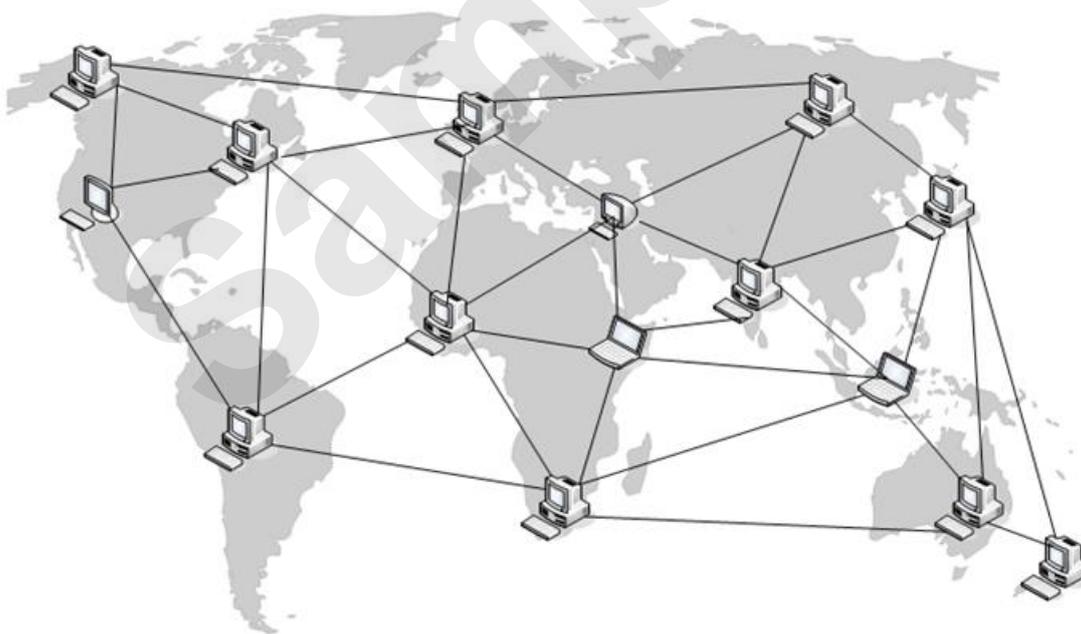
The Internet

The term **internet** refers to the millions of computers around the world connected together by telephone lines, cables, satellites and other means. The purpose of the Internet is to provide users with access to the information, email, message boards and other services that reside on the computers. You can think of it as an international network.

While there are some major players in the Internet, there is no real single company or organisation responsible for developing or co-ordinating the Internet – from many people's points of view, things just seem to happen. Therefore the Internet is in a constant state of change and evolution. Each person who creates a website is simply a contributor to a very large, very diverse collection of computers that make up the biggest network in the world.

When you search for information on the Internet, you are actually looking for information that has been placed on someone's computer elsewhere in the world.

When you access that information, you are viewing files stored on someone else's computer. The information is transferred to your computer via the Internet network. Likewise, others can access information from your computer if your computer has been correctly set up to let this happen (that is, as a 'server' to serve the pages to users).



The World Wide Web

The **World Wide Web**, or just **web** as it is more often called, is the collection of pages that are stored on servers connected via the Internet. To access the World Wide Web, you need to use a computer with an Internet connection and a browser program installed.

Many of the files contain documents, graphics, audio and/or video and these may require special plug-in software to view the media correctly. For example, Acrobat Reader is often used to read documents.

The World Wide Web is known as a **hypertext** system because you navigate by clicking on specific hypertext links. You never know where the web page you are accessing resides – it could be in the same building or on a server on the other side of the world.

HOW THE INTERNET BEGAN

The internet may seem like a fairly recent invention, but it was first used in a limited way in the 1960's. Like many great inventions, it was originally the result of research conducted by the

military, but fortunately academic institutions were able to find more constructive and altruistic uses for this technology. This page briefly describes the history of the internet.

A Brief History of the Internet

In 1969 **ARPANET** (Advanced Research Projects Agency Network – United States Department of Defence) was formed as an experimental network designed to support military research.

The four main computer systems of ARPANET were connected together over extremely long distances to see whether or not this was feasible. A popular view about the internet's original purpose was that it was to provide a way to prevent communication breakdown and loss of key information and data in the event of a nuclear attack. Other views tend to put greater emphasis on its development as a resource-sharing and communication tool for the scientific, as well as the military, community.

Other computer networks soon joined in. In the early 1970s, the first **protocols** for **TELNET** (Remote Terminal Access) and **FTP** (File Transfer Protocol) were defined and the first electronic mail program had been devised. **Protocols** are agreed formats for transmitting data between devices. The development of a common language called **TCP/IP** (Transmission Control Protocol/Internet Protocol) which allowed computers to "talk" to one another, regardless of their brand and type, was one of the most important achievements of this time.

The developers quickly realised the potential for linked computers, and ARPANET soon became an attractive proposition. However, the internet remained a largely private concern utilised mainly by researchers, scholars and the American military.

In the early 1980s the military section split from ARPANET and became **MILNET**. This enabled the growth of the ARPANET network, mainly in the education sector and the collection of computers became known as "**The Internet**".

NSFNET (The National Science Foundation Network) also added some scientific clout at this time. By the late 1980s the funding for ARPANET had expired and it disappeared, but by then most of the internet community was operating on the network run by the National Science Foundation.

In the early 1990s the **Commercial Internet Exchange** was set up to stimulate business activities on the internet. The development of the **World Wide Web** saw over 1 million hosts connected to the network. The web gave the internet a user-friendly face and it blossomed through the 1990s.

Today the use of the internet is incredibly diverse. Businesses have embraced it, and it is now almost standard for businesses to have a web presence. Individuals are finding it becoming a pervasive part of their daily life as they use it for a range of activities, from bank transactions to finding a car or property. They may use it to communicate via email, or by embracing the technology further and using video-conferencing via a small web camera. The world's information is truly at a person's fingertips.

There is still no clear owner or controller of the internet. However, the stakes are certainly high and large software houses such as Microsoft and large communication companies are vying for as much of the commercial interest on the internet as possible.

The lack of control on the internet is obviously both a good and a bad thing. The internet offers those with an independent spirit a forum for expressing their views – albeit wide-ranging. In countries with oppressive regimes, it provides a very viable way for communicating ideas and thoughts while remaining virtually anonymous.

CONNECTION REQUIREMENTS

Before you can access the internet and delve into the countless number of web pages available, you must create an internet connection. Internet connections come in many different forms, but for

most people connecting from home, it will consist of a computer, modem and appropriate software. This page discusses what you will need for a successful internet connection.

Connection Requirements

To connect to the internet, you need to have:

- hardware including a computer and modem/router
- some form of physical or wireless connection
- an Internet Service Provider (ISP)
- software (e.g. a browser, email software)

Firstly, you can't connect to the internet without a computer. Even your mobile phone can be that super-microcomputer accessing the internet in an ever-increasing number of ways.

A **modem** is a device that lets a single computer transfer data to and from the internet. In the most basic form of internet connection, the telephone network is used to transfer data. This involves converting the data you wish to send into a signal that is compatible with the telephone line, and then converting information received from the internet back into digital data.

A **router** is a device that allows multiple computers to connect to the internet simultaneously. And to make life easier, these days it is common for a router to include a modem within the one unit which means that you need only the one device to access the internet.

An **Internet Service Provider** (ISP) is a person or company whose computer you use as a **gateway** to the internet. Your modem connects to their computer which then permits you access to the internet. Your ISP usually provides you with email accounts, the software you need to connect to and explore the internet, and even space on their computers to store your own personal web pages if necessary.

To connect to the internet and explore it fruitfully you need a minimum of two types of software or computer programs. Firstly you will need **connection software** – a program that helps your computer to link to and communicate with other computers. Secondly, you will need a **web browser** – a program that translates computer code into words and pictures which make sense to you.

Connection Technologies

You can access the internet using different technologies, with each requiring a different modem. For example:

- **Cable internet** uses cable television infrastructure to provide fast broadband internet access. It requires a special **cable modem**, and a cable will need to be either wired to your house or your existing TV cable will be spliced to provide internet connectivity. Note that cable internet may not be available in rural areas.
- **ADSL** (Asynchronous Digital Subscriber Line) provides internet access via the local telephone network. This technology allows users to download data quicker than they can upload it. ADSL is not as fast as a cable internet connection but most people will find it fast enough for their daily internet and gaming needs. This technology requires a **DSL modem**.
- **Wireless** broadband provides both **fixed** and **mobile** wireless internet access. Mobile broadband uses mobile phone towers and mobile phone signals to provide internet connection. This type of connection requires a **wireless modem**, such as a **USB Wi-Fi adaptor** (commonly known as a dongle), to access the internet.



Individual homes and businesses often use **Wi-Fi networks** (this is the common name for a wireless local area network) to connect multiple desktop/laptop/tablet computers and mobile phones to the internet. Wi-Fi networks are built using a **wireless router** which is plugged into a cable or ADSL internet connection (modem). Wireless routers work by receiving data sent from a computer on the network that's been translated into radio frequency waves and decoding it. The information is then sent to the internet. When information is received from the internet, the router is responsible for translating it into a radio signal and transferring it to the appropriate computer on the network.



UNDERSTANDING WEB BROWSERS

The most important piece of software that you need to successfully work with the internet, next to the software that creates your connection, is the **web browser**. Web browsers are designed to

read the HTML and other code in the web pages and convert them into graphical pages that you can read and interact with. This page discusses the role of web browsers.

Web Browsers

A **web browser** allows you to view pages on the internet, once you have connected.

The browser serves a number of functions. The pages you want to view are stored on other **computer servers** around the world. A computer server is a dedicated computer or part of a computer that stores web pages and “serves” them to computers that request them. When you request a page, the browser has to find the **server** where that page is stored, ask permission of the server to access it, load the page onto your computer and repeat the process every time you click on a link or type in a new address. It does all this usually in a matter of seconds!

But that is not all...

It provides **navigation** aids that allow you to move backwards and forwards through the page you have viewed. It keeps a **history** of visited pages and lets you store your favourite website **addresses** for easy access in the future. It controls the display of fonts, colours, images, text, audio and video associated with each website. It even allows you to save images or text from sites and print out the information as well.

The most popular browser today is **Google Chrome**, followed closely by **Microsoft Internet Explorer**. Other popular browsers include:

- **FireFox**
- **Safari**
- **Opera**

As the internet constantly changes you will often find that browsers keep changing too. Companies keep trying to improve their browser’s performance and there are always new areas in terms of protocols and coding that will impact on your internet experience. Web sites vary greatly, from simple sites that contain textual information, to the latest whiz-bang effort full of sound, animations and video.

Although you may well find an earlier version of a browser suits your needs, there will be times when you will encounter sites on the internet where you cannot access all of the information. This is often because your browser does not cater for the latest coding developments being utilised on that site. It is a constant challenge to keep installing the **plug-ins** (small pieces of software) needed into your browser to access parts of sites or simply upgrading whenever a newer version of a browser is announced.

Your browser not only needs to do all the above but should also provide access to **email**. If you get the latest version of a browser, you will be up-to-date with developments as at the date of release and should be able to access most of what is currently available on the internet.

UNDERSTANDING SEARCH ENGINES

Once you are on the Internet, your first question will be “Where to now?” This is where **search engines** come in. You enter words, questions or descriptions of what you are looking for and the

search engines try to find as many matches as possible that relate to that search criteria.

Search Engines

Most people find that the minute they get online, they are faced with the most common question you can encounter on the Internet: how do you find what you are looking for? Everyone tells you the world’s knowledge base is out there and available to you, but how do you sift through it and efficiently find what you are after?

There are two key approaches to finding the information you want on the Internet. These are **search engines** and **directories**. Although people often use the term search engine to describe both, they are not quite the same thing, although more and more these days search engines are developing a directory section as well.

A **search engine** is a tool that you instruct to scour the Internet to find the information that you are looking for. A search engine is made up of three parts.

Firstly, search engines send out programs known as **spiders** or **crawlers** to “crawl” the web and collect information on web pages. They find this information embedded in web page titles in the **metatags** which are lists of keywords that site developers place in the HTML of the **index** or **home page** or in other elements in the pages.

When the spiders find a site, they explore the links in the site and send the information back to the search engine. The information the spiders find then goes into the second part of the search engine; the **index** or **catalogue**.

The **index** stores all the information that is collected and organises it into a huge database which is continually updated.

The third part of the **search engine** is the **software** that runs the whole thing for you. It lets you enter keywords and then it searches the **database** to find sites that contain those keywords.

Search engines carry out their task and index the information they retrieve in different ways. This is why the same search on different search engines often produces very different results. There are many different general search engines available including **Google**, **Yahoo!**, **Bing**, **Ask**, and **DuckDuckGo** to name a few. New and improved search engines are constantly being developed, so it pays to be alert to new developments in the search engine area.

Web Directories

Web **directories** list websites by category and subcategory and are often maintained by groups of editors or subject experts who make decisions on what to include in each category. You can search directories by keywords or use the listed topics to browse to relevant websites. The collection of links in web directories are usually much smaller than search engines’ databases, since the sites are looked at by human eyes instead of by spiders.

Examples of directories include:

- **Open Directory** – this is the largest (purportedly) human-edited Internet search directory. It is maintained by a vast number of volunteer editors from all over the world.
- **Yahoo! Directory** – one of the world’s best (and oldest) commercial Internet search directories. Most of its sites are suggested by other users and then evaluated by editors.

UNDERSTANDING WEB ADDRESSES

One way to display a web page is to use the address of the web page to locate it. A **web address** is a string of characters that tells your browser where to look for a page. It is a bit like a

postal address for a house in that it has several parts. This page examines the various parts of a web address in detail.

Web Addresses

Web addresses indicate the location of a website. Another name for a web address is the **URL**, which is an acronym for **Uniform Resource Locator**. As this is the only way of finding a specific web page, no two pages on the web can have exactly the same address.

A few examples of web addresses are:

www.google.com

https://www.sis.gov.uk

www.britannica.com

http://www.bom.gov.au/australia/warnings/index.shtml

www

The **www** in the address refers to the **World Wide Web**.

Website Names

The website name is the organisation name either in full or a different or shortened version of the name. A business may use a variation of their name if another business has already used the website name they wanted. Shortened names make it quicker for people to type the web address.

Organisation Codes

Organisation codes in the address tell you what sort of organisation runs the website. Examples of organisation codes include:

<i>com</i>	<i>Commercial</i>	<i>co</i>	<i>Commercial</i>
<i>org</i>	<i>Non-profit organisation</i>	<i>gov</i>	<i>Government</i>
<i>ac</i>	<i>Academic (UK)</i>	<i>edu</i>	<i>Education</i>

Country Codes

Some web addresses include a country code. For example:

<i>uk</i>	<i>United Kingdom</i>	<i>ca</i>	<i>Canada</i>
<i>au</i>	<i>Australia</i>	<i>it</i>	<i>Italy</i>
<i>nz</i>	<i>New Zealand</i>	<i>sg</i>	<i>Singapore</i>

The only country that doesn't have a country code is the United States. American websites do not include a country code, but the lack of a country code does not mean that the website is located in the United States. Some web addresses have no country code just to make it easier to use.

Folder Names

Sometimes the particular web page you require will not be the home page of a website. Websites can consist of thousands of pages, linked by hyperlinks and organised in folders. If the page you require is in a subfolder of a website, the folder name will appear in the URL. For example, in the address **www.britannica.com/EBchecked/topic/632130/volcano** we find that the **volcano** web page for the Encyclopaedia Britannica is located in a numbered subfolder, located in the subfolder **topic**, which is in the folder named **EBchecked** within the **www.britannica.com** website.

Page Names

Given the complexity of websites, it is not surprising that some web addresses can become very complex and include actual page names. The file extension of **.html** indicates a particular page. In this example **http://www.bom.gov.au/australia/warnings/index.shtml**, the reference **index.shtml** refers to a particular page within the **warnings** subfolder, which is in the **Australia** folder.

KEY TERMS AND INTERNET JARGON

The development of the Internet has seen the introduction of an entire new set of terms and jargon – one that's growing every day. **ISP**, **FTP**, **URL** and **HTML** and so on, are just some of the

acronyms. Terms like **surfing** and **chatting** have taken on entirely new meanings and **hyperlink**, **blog**, **cybercafé** and **webmaster** are new to our vocabulary. Here's a few terms explained.

A Selection of Internet Terms

ADSL	Asymmetric Digital Subscriber Line – a type of broadband – a high speed Internet connection that remains on.
Blog	Short for “web log”. This is an openly accessible web page diary that reflects an individual's, group's or organisation's opinions and ideas.
Chat	Refers to having an on-line, real-time conversation with other users of the web via messages or video displayed in a chat room .
Cybercafé	A café where you can log in to the Internet.
E-commerce	Refers to the buying and selling of products over the Internet.
FTP	File Transfer Protocol . This is the standard that enables files to be uploaded and downloaded from the web.
HTML	HyperText Markup Language . This is the language, or coding system, used to create web pages. It uses tags to apply formatting and other information – hence the term markup .
HTTP	HyperText Transfer Protocol . These letters appear by default at the start of a URL, as http:// . This is a standard that defines how web pages are transmitted across the Internet.
Hyperlink	A link to another web page, a position on the current page or another resource (e.g. video clip). Appears as either graphics or underlined text. Clicking on a hyperlink takes you to the new page, resource or location.
Intranet	A website within an organisation to provide internal information and communication for staff or members.
IP Address	A unique numerical address for a computer on the Internet. It appears in a specific format e.g. 15.147.170.41
ISP	Internet Service Provider . An organisation or individual that provides clients with access to the Internet.
Message Board	A web site that displays messages posted by users.
Plug-in	A program that enables your browser to work with special purpose files such as Acrobat Reader to read PDF documents, Shockwave and Flash to play animations, and RealPlayer and QuickTime for audio/video files.
Shopping Cart	A space reserved to hold a list of products that you have indicated you want to purchase from an on-line shop.
Surf	To browse web pages on the World Wide Web.
Thread	A thread of discussion. Refers to a chain of postings on a message board, a series of related emails, or a series of related items on a blog.
URL	Uniform Resource Locator . The address of a web page or website.
Webmaster	The person responsible for maintaining a website. Generally any problems with a website are communicated to this person.
Wiki	A collaborative user-created and maintained website (e.g. www.wikipedia.org)

COOKIES AND CACHES

Cookies and caches are files that are written to your computer by the Internet. They both have the intention of making your Internet experience more enjoyable by enabling specific web sites to

recognise you (via **cookies**) and by speeding up the display of pages that you have already visited (via **caches**). This page discusses both terms and their pros and cons.

Cookies

A **cookie** is a small text file containing information about your computer that is stored on your hard drive. It is sent to your computer by a web server when you browse a specific website. Cookies contain information such as your username or login ID, passwords, preferences, shopping cart information and so on. When you return to the web site, the web server checks your computer for the cookie, then uses that information to personalise the website for you. For example, it may fill in your username automatically, display the films currently playing at the cinemas that you chose in a previous visit, or apply a colour scheme of your choice to a website.

Cookies get a little scary when they are used to track your browsing and buying habits. Advertisers use the tracking information to target you with specific campaigns. While you get to see advertising that is relevant to your interests, most people prefer to browse anonymously and don't like the feeling that they are being "watched". Many people clean out their cookies regularly and use special scanning programs called spyware removers, such as **Spybot** and **NoAdware**, to locate and remove tracking cookies.

Cookies make shopping cart technology possible. When you place items in a shopping cart, they are recorded by the cookie so that when you go to check out, the complete list of items will appear. You can even create your own standard shopping lists, for example for groceries, which can be used for really quick shopping trips. The cookie can also store your credit card details and delivery details, so there is very little to enter when you visit the website. We recommend that you sign up for only a limited number of these types of shopping sites and protect your privacy where possible.

Cache

Cache is a term used in computing to refer to a space used for storing information temporarily to improve the speed of the computer. For example, print jobs are often created and sent to a cache on the hard disk while the printer prints because the computer can send information far more quickly to the printer than the printer can use it. Once the print job is "cached", the computer can get on with the next task you assign it.

When it comes to the Internet and browsers, cache refers to a form of high-speed memory on your hard drive, where your computer stores web pages that you have visited. HTML page code, graphics, and multimedia elements you view are stored in the cache. This makes running multimedia games and viewing video clips much quicker and, if you return to the page, the browser will load it from the cache if it is available rather than downloading it again from the server. Caching can significantly speed up web browsing.

Caches should be cleaned out regularly, but don't forget that any pages you use frequently will have to be downloaded again the first time you access them.

Cookies and temporary internet files appear like these in your **Temporary Internet Files** folder:

Name	Internet Address	Type
 j0293502.gif	http://officeimages.microsoft.com/i/000...	GIF Image
 j0297149.gif	http://officeimages.microsoft.com/i/000...	GIF Image
 cookie:karen@offic...	Cookie:karen@office.microsoft.com/	Text Document
 dglxasset.aspx?Asse...	http://office.microsoft.com/clipart/dglxa...	JPEG Image
 j0334258.gif	http://officeimages.microsoft.com/i/000...	GIF Image
 j0409929.gif	http://officeimages.microsoft.com/i/000...	GIF Image
 j0431642.gif	http://officeimages.microsoft.com/i/000...	GIF Image
 j0412592.gif	http://officeimages.microsoft.com/i/000...	GIF Image

TESTING AN INTERNET CONNECTION

One of the most exciting things about creating an internet connection is when you finally get the chance to test it – that is, try connecting to the internet. Firstly, you must ensure that your

modem and any other hardware that is required are installed correctly.

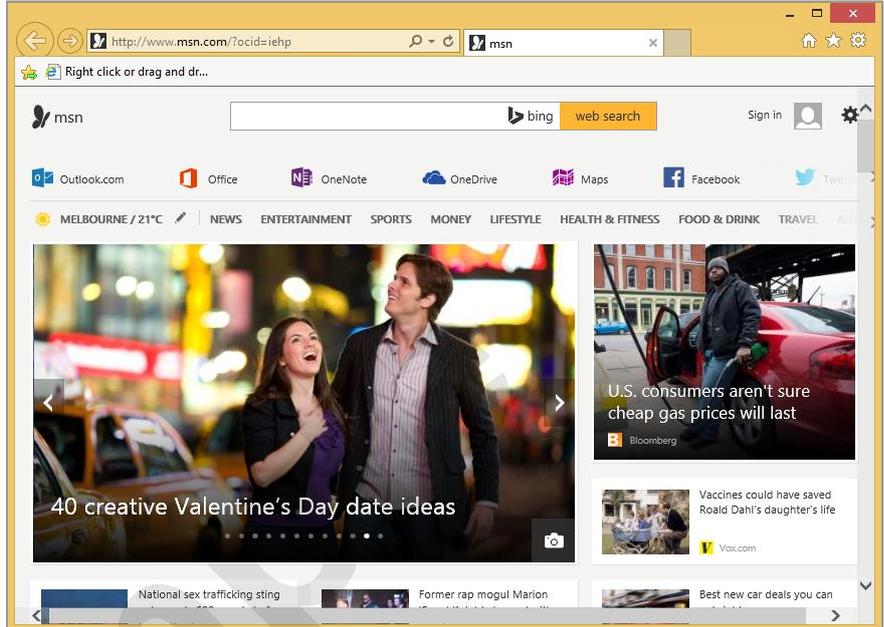
Try This Yourself:

Before starting this exercise ensure that your computer has started...

- 1 Press  to display the Windows **Start** screen, begin typing **internet explorer**, then click on **Internet Explorer** in the results pane

All being well, Internet Explorer will start and your first web page will be displayed...

- 2 Click on **Close** to close **Internet Explorer**



For Your Reference...

To **test** an **internet connection**:

- Press , type **internet explorer**, then click on **Internet Explorer**, or
- Click on the **Internet Explorer** icon in the taskbar

Handy to Know...

- If you find your connection is not working, check that your hardware appears to be operating correctly. Try rebooting your computer then call the help number for your ISP.

INTERNET EXPLORER BASICS

Internet Explorer 11 is a powerful, yet simple to use, browser. Its primary purpose is to help you search the internet, exploring the almost unlimited wealth of websites that are now available. Internet Explorer 11 provides many tools to help make your everyday tasks easier. It also includes a range of security and privacy features, which will help to protect you and your computer.

In this session you will:

- ✓ understand the differences between running **Internet Explorer** from the **Start** screen and the **Desktop**
- ✓ learn how to start **Internet Explorer**
- ✓ gain an understanding of the **Internet Explorer** screen
- ✓ learn how to show and hide screen elements
- ✓ learn how to use the **Command** bar
- ✓ learn how to go to a specific **URL**
- ✓ learn how to control the browser window size
- ✓ learn how to show and hide images on a web page
- ✓ gain an understanding of the **New Tab** page
- ✓ learn how to add new tabbed pages
- ✓ learn how to work with tabbed pages
- ✓ learn how to close pages
- ✓ learn how to zoom in and out of web pages
- ✓ learn how to use the **Back** and **Forward** tools
- ✓ learn how to use the browsing history
- ✓ learn how to stop and refresh web pages
- ✓ gain an understanding of **Netiquette**
- ✓ gain an understanding of where you could check an organisation's **Netiquette** policies
- ✓ learn how to close **Internet Explorer**.

DESKTOP VERSUS START SCREEN APP

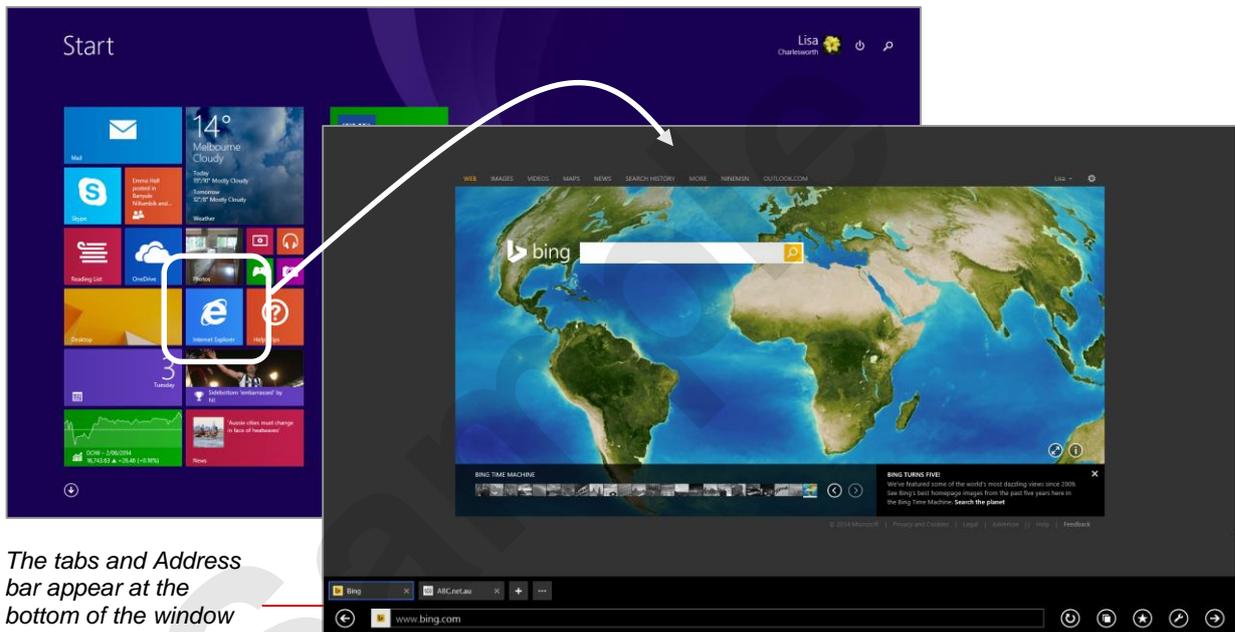
If Internet Explorer 11 is set as your default browser, you can run it either as a **desktop program** or as a **Windows Store app** depending on where you start it from. For instance, clicking

on its tile on the **Start** screen will start Internet Explorer as an app, while clicking on Internet Explorer's taskbar icon will start it in the desktop.

Running Internet Explorer From The Start Screen

By default, the **Internet Explorer** tile is pinned towards on the left side of the **Start** screen (as shown below to the left). If Internet Explorer 11 is set as your default browser, when you click on its tile on the **Start** screen, the Internet Explorer app will be launched (as shown below to the right). You can use this app on touch devices.

Note: If Internet Explorer is not set as your default browser, clicking on its tile on the **Start** screen will open Internet Explorer on the desktop instead (as shown at the bottom of the page).

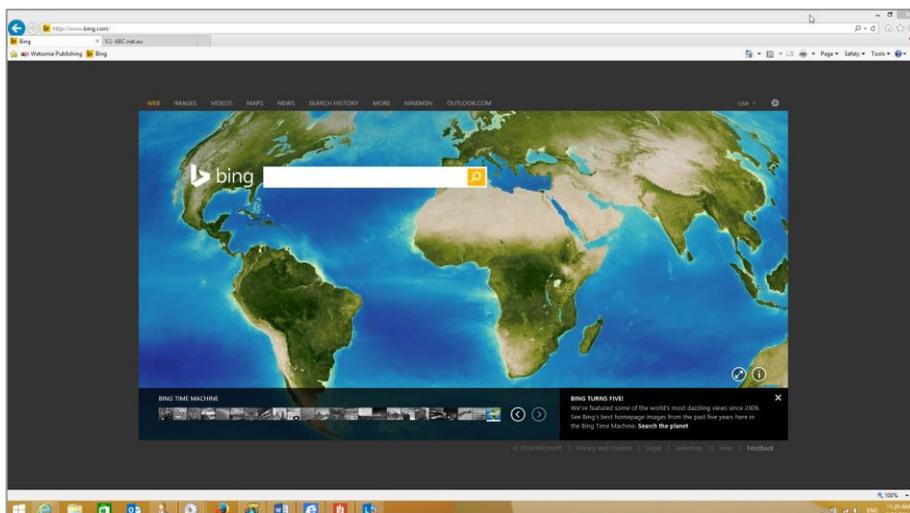


The tabs and Address bar appear at the bottom of the window

Running Internet Explorer In The Desktop

Many Windows users prefer to use the traditional mouse and keyboard techniques for navigating and using applications. These users therefore prefer to work in the more familiar **desktop** environment and we will be using this environment for the rest of this chapter.

To start Internet Explorer as a desktop program (as shown below), click on the Internet Explorer icon in the taskbar (display on the **Start** screen by dragging the mouse pointer below the bottom of the screen).



The Address bar and tabs appear at the top of the Internet Explorer window.