|  |  |
| --- | --- |
| **Name** |  |
| **Contact Address** |  |
| **Telephone (H)** |  |
| **Telephone (W)** |  |
| **Facsimile** |  |
| **Cellular** |  |

**DEMONSTRATE AN UNDERSTANDING OF THE PRINCIPLES OF THE INTERNET AND THE WORLD-WIDE-WEB**

**UNIT STANDARD ID: 115391**

**NQF LEVEL:** 4, **CREDITS: 3**

**NOTIONAL HOURS: 30**



**LEARNER GUIDE**

|  |  |  |  |
| --- | --- | --- | --- |
| **SAQA UNIT STANDARD ALIGNMENT** | | | |
| **SPECIFIC OUTCOMES (SO)** |  | **LEVEL**  **4** | **CREDITS**  **3** |
| **UNIT STANDARD** [**115391**](http://paqs.saqa.org.za/showUnitStandard.php?id=115391) **:**  Demonstrate an understanding of the principles of the internet and the world-wide-web | | | |
| |  | | --- | | **SPECIFIC OUTCOME 1** |  |  | | --- | | Explain the principles of the internet and the world-wide-web. | | |  | | --- | | **ASSESSMENT CRITERION 1** |  |  | | --- | | The explanation outlines the origins and history of the internet |  |  | | --- | | **ASSESSMENT CRITERION 2** |  |  | | --- | | The explanation identifies the major applications of the internet |  |  | | --- | | **ASSESSMENT CRITERION 3** |  |  | | --- | | The explanation demonstrates the use of major internet applications |  |  | | --- | | **ASSESSMENT CRITERION 4** |  |  | | --- | | The explanation describes the history and development of the world-wide-web | | **Level 4** | **3 Credits** |
| |  | | --- | | **SPECIFIC OUTCOME 2** |  |  | | --- | | Explain how the world-wide-web incorporates the various internet applications. | | |  | | --- | | **ASSESSMENT CRITERION 1** |  |  | | --- | | The explanation provides a comprehensive understanding of the physical context of web pages |  |  | | --- | | **ASSESSMENT CRITERION 2** |  |  | | --- | | The explanation identifies how the world-wide-web can be applied in an intranet and extranet |  |  | | --- | | **ASSESSMENT CRITERION 3** |  |  | | --- | | The explanation describes the latest internet applications, including web-based email, instant messaging and Voice-over-IP (VoIP) | |  |  |

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# Introduction to Internet Basics

Do you want to learn about the Internet and World Wide Web? Are you interested in learning about modems, web browsers, Internet Service Providers, and more? Internet Basics introduces all the important concepts you’ll need to be surfing the web in no time.

# Lesson 1 - What is the Internet?

**By the end of this lesson, learners should be able to:**

* Briefly explain a short history of the Internet
* Briefly explain a local area network (LAN) and wide area network (WAN)
* Briefly explain servers and clients
* Understand how the Internet works (on a basic level)

**A Brief History of the Internet**

Internet, also known as the “World Wide Web”, has changed our lives significantly. The origin & history of internet date back to 1960s, when developers saw great potential in computers, with regard to sharing information on scientific and military research. In 1962, J.C.R Licklider proposed a global network of computers and later that year, moved on to Defense Advanced Research Projects to actually develop it. After sometime, the theory of packet switching was developed by Leonard Kleinrock, which formed the basis of internet connections.

In the year 1965, Lawrence Roberts of MIT connected a Massachusetts computer with a California computer over dial-up telephone lines. This established the viability of wide area networking and even proved that the telephone line's circuit switching was inadequate. Thus, Kleinrock's packet switching theory was confirmed. In 1966, Roberts shifted to DARPA, to develop his plan for ARPANET. The dream was realized in 1969, when ARPANET was brought online.

This took place as per a contract renamed Advanced Research Projects Agency, which connected four major computers at universities in the south-western US. With time, more and more members joined the contract. Thus, internet was initially known as ARPANET. The present day internet was actually designed to device a communication network that would be operational even if a few sites were destroyed by nuclear attack. This would mean that if direct route was unavailable, routers would direct traffic around the network, via alternate routes.

During its early stage of inception, internet was primarily used by computer experts, engineers, scientists and librarians. As there were no personal computers in that age, the users were few, who had to learn a complex system of operation. In 1972, for the first time E-mail was adapted for ARPANET, by Ray Tomlinson of BBN. It was he who used the symbol @ on his teletype to link the username and address. In effect, the ftp protocol, enabling file transfers between Internet sites, was published as a Request for Comments (RFC) in 1973, thereby being electronically available to anyone who used the ftp protocol.

In the 1970s, internet matured further, with the invention of TCP/IP architecture first proposed by Bob Kahn at BBN and further developed by Kahn and Vint Cerf at Stanford. It was later adopted by the Defense Department in 1980 and universally, in 1983. In 1978, UNIX to UNIX Copy Protocol (UUCP) was invented at Bell Labs, which formed the basis of Usenet. This was used by newsgroups for discussion on topics, thereby providing a means of exchanging information throughout the world.

After this, BITNET (Because It's Time Network) arrived, which when connected with the internet allowed exchange of e-mail, especially e-mail discussion lists. In the year 1986, the National Science Foundation funded NSFNet, as a cross country 56 Kbps backbone for the Internet, and even laid down rules for its non-commercial government and research uses. As the commands for e-mail, FTP and telnet were standardized, internet usage became quite easier for non-technical people.

However, with more and more usage of the net, Internet index was created in 1989. The introduction of the World Wide Web took place in 1991, which was based on hypertext. The system included inserting links in text, to link to other text, which you have been using every time you selected a text link while reading these pages. In 1993, the protocol got a big boost by the graphical browser ‘Mosaic’ by Marc Andreessen and his team, at the National Center for Supercomputing Applications (NCSA).

Andreessen was also the mastermind behind Netscape Corp., which produced the most successful graphical type of browser and server until Microsoft declared war and developed its Microsoft Internet Explorer. Since Internet was initially funded by the government, its usage was limited to research, education and government application, strictly prohibiting commercial use. This continued till early 1990s, when independent commercial networks began to grow. As a result, it became easy to route traffic across the country from one commercial site to another, without passing through government funded NSFNet Internet backbone.

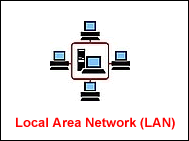
The first national commercial online service to offer Internet access to its subscribers was Delphi. In 1992, it offered an email connection and full Internet service. In 1995, the limitations on commercial use disappeared, as National Science Foundation ended its sponsorship of the Internet backbone. After this, the commercial market saw a major shift, with Bill Gates Microsoft's full scale entry into the browser, server, and Internet Service Provider. In 1998, Windows 98 was launched, with the Microsoft browser well integrated into the desktop. Since then, the company as well as internet hasn’t looked back.

### What is the Internet?

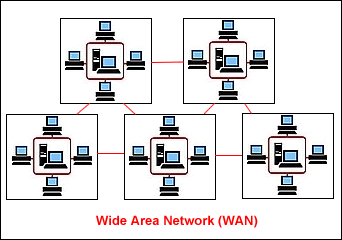
The Internet is the largest **computer network** in the world, connecting millions of computers. A **network** is a group of two or more computer systems linked together.

##### There are two types of computer networks:

* **Local Area Network (LAN)**: A LAN is two or more connected computers sharing certain resources in a relatively small geographic location (the same building, for example).



* **Wide Area Network (WAN)**: A WAN typically consists of 2 or more LANs. The computers are farther apart and are linked by telephone lines, dedicated telephone lines, or radio waves. The **Internet** is the largest Wide Area Network (WAN) in existence.



### Servers

All **computers on the Internet** (a wide area network, or WAN) can be lumped into two groups: servers and clients. In a network, **clients** and **servers** communicate with one another.

##### A server is the common source that:

* **Provides shared services** (for example, network security measures) with other machines

AND

* **Manages resources** (for example, one printer many people use) in a network.

The term server is often used to describe the **hardware** (computer), but the term also refers to the **software** (application) running on the computer. Many servers are **dedicated**, meaning they only perform specific tasks.

##### For example,

* An email server is a computer that has software running on it allowing it to "serve" email-related services.
* A web server has software running on it that allows it to "serve" web-related services.

### Clients

Remember, all **computers on the Internet** (a wide area network, or WAN) can be lumped into two groups: **servers** and **clients**, which communicate with one another.

**Independent computers connected to a server** are called **clients**. Most likely, your home or office computer does not provide services to other computers. Therefore, it is a **client**.

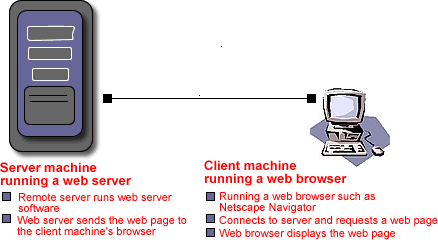
Clients run **multiple client software applications** that perform **specific functions**.

##### For example,

* An email application such as Microsoft Outlook is client software.
* Your web browser (such as Internet Explorer or Netscape) is client software.

**Servers and Clients Communicate**

* Your computer (client hardware) is running a web browser such as Internet Explorer (client software).
* When you want to surf the web, your browser connects to a remote server and requests a web page.
* The remote server (server hardware) runs web server software (server software).
* The web server sends the web page to your computer's web browser.
* Your web browser displays the page.



## Activity 1

**Part A**

Match the correct term with its definition

|  |  |
| --- | --- |
| **\_\_\_1. LAN** (Local Area Network) | **A**. Consists of 2 or more LANs. The computers are farther apart and are linked by telephone lines, dedicated telephone lines, or radio waves. |
| **\_\_\_2. WAN** (Wide Area Network) | **B.** Common source that provides shared services to other machines and manages resources in a network. |
| **\_\_\_3. Server** | **C.** A project that allowed researchers and military personnel to communicate with each other in an emergency. The foundation of the Internet. |
| **\_\_\_4. Clients** | **D.** Two or more connected computers sharing certain resources in a relatively small geographic location. |
| **\_\_\_5. ARPAnet** | **E.** Computers connected to a server and do not provide services to other computers. |

**Part B**

1. Outline the origins and history of the internet
2. Identify the major applications of the internet
3. Explain the use of major internet applications
4. Briefly describe the history and development of the world-wide-web

# Lesson 2 - The World Wide Web

**By the end of this lesson, learners should be able to:**

* Briefly explain the World Wide Web
* Understand some important web-related terms
* Understand the application of WWW to extranet and intranet

### The World Wide Web (WWW)

### The World Wide Web was developed by Tim Berners-Lee at CERN, the European Organisation for Nuclear Research, in Geneva. This menu-based system, which was originally envisioned as an internal document-management system, now organizes Internet resources throughout the world into a series of hypertext-linked menu pages.

### Graphics, file transfers, video, and audio can also be integrated to form an audio/visual presentation of information. Much of the data is stored as codes and ASCII characters (HTML), which are downloaded and interpreted by client-side browser software packages such as Netscape Navigator or Microsoft’s Internet Explorer.

### Although the Web is a collection of independently owned computers, they all work together as one Internet service. A Web portal, such as Yahoo.com, serves as an entry point to the Internet. Multimedia objects and pages use hyperlinks to seamlessly interconnect.

### The Web page of a site often provides an introduction to the rest of the site is called the site’s home page. If a Web site is thought of as a magazine, then the home page can be thought of as the magazine’s cover page. The highlighted type (sometimes underlined) of a Web page is hypertext, which links the on-screen page to other documents, or Web sites.

### Hypermedia connects the data on pages, allowing users to access topics in whatever order they want. Web plug-ins can help provide additional features to standard Web sites.

### Macromedia’s Flash and Real Player are examples of Web plug-ins. Hypertext Markup Language (HTML) is the standard page description language for Web pages and is used to create a unique, hypermedia-based menu on the user’s computer.

### Web authors work with a set of standards to create their pages so that the type of computer and software being used to access the site will not have an impact on appearance and function. These standards consist of a series of tags that tell the browser software the manner in which enclosed pages, text, or images need to be displayed. Other emerging standards include Extensible Markup Language (XML), Extensible Hypertext Markup Language (XHTML), Cascading Style Sheets (CSS), Dynamic HTML (DHTML), and Wireless Markup Language (WML).

### New software has also been developed to work with the new Web environment. In addition, a programming language called Java allows small programs called applets to be embedded within HTML documents.

### Web Browsers

### A Web browser creates a unique, hypermedia-based menu on your computer screen that provides a graphical interface to the Web. The menu consists of graphics, titles, and text with hypertext links. Through hypermedia links, you can access Internet resources, including text documents, graphics, sound files, and newsgroup servers. Microsoft Internet Explorer, Netscape Navigator, Mozilla Firefox, and Apple Computer’s Safari are some of the most popular Web browsers today.

### Small programs called applets can be embedded in Web pages to allow Web users to view more complex graphics, audio, and visual material. Web browsers also offer increased functionality through plug-ins. A Web browser plug-in is an external program that is executed by a Web browser when it is needed.

### Search Engines and Web Research In order to find specific Web sites, Web search tools called search engines have been developed. Most are free and enable users to find desired sites in a variety of ways. Popular search engines include Yahoo!, Google, Ask Jeeves, and AltaVista.

### Another tool that can be used to search for information on the Internet is a meta-search engine. A meta-search engine submits keywords to several individual search engines and returns the results from all search engines queried. Ixquick, ProFusion, and Dogpile are examples of meta-search engines.

### Some Important Web Terms:

### WWW: Also called the Web, or World Wide Web. See previous page for full definition.

### Web Browser: A piece of software used to navigate the Web. Internet Explorer and Netscape are web browsers. Learn more about web browsers in Unit 2.

### GUI (Graphical User Interface): A GUI (pronounced GOO-ee) takes advantage of your computer's graphics (picture) capabilities to increase ease of use. For example, the buttons you point and click to surf the web is part of your web browser's GUI. Most operating systems include a GUI, such as Windows and Mac OS. In the past, there was no pointing and clicking; rather, the user had to know a command language to operate the computer.

### HTML (Hypertext Markup Language): The formatting language used to create web documents.

### Hypertext: The system of electronically linking words or pictures to other words or pictures.

### URL (Uniform Resource Locator): Each web page has its own address on the Internet, which is called a URL. To recognize one another over the Internet, computers convert human-friendly addresses like www.bluebridge.co.za to numerical IP addresses. You may type in either 216.119.102.26 (strivingmind.co.za's IP address) or www.bluebridge.co.za (our human-friendly domain name) to get to our homepage.

### HTTP (Hypertext Transfer Protocol): You may have noticed the http:// preceding URLs. For example: http://www.bluebridge.co.za. The first part of the URL, usually HTTP, indicates the file type. HTTP, the system for transferring web documents, defines how messages are formatted and transmitted over the Internet.

Important PointToday, many people use the terms **Internet** and **World Wide Web** interchangeably. For example, "I need to get on the Web." Or, "I need to get on the Internet."

## Activity 2

**Match the correct term with its definition**

|  |  |
| --- | --- |
| **\_\_\_1. Web Browser** | **A**. The system of electronically linking words or pictures to other words or pictures |
| **\_\_\_2. Hypertext** | **B.** The system for transferring web documents over the Internet. |
| **\_\_\_3. HTTP** | **C.** Also called a Web address. |
| **\_\_\_4. URL** | **D.** The formatting language used to create web documents. |
| **\_\_\_5. HTML** | **E.** Software used to surf the web, such as Internet Explorer or Netscape. |

**Internet and Web Applications**

The Internet has enabled a variety of technologies and services to emerge. Some of these are discussed in the following sections.

* **Business Uses of the Web:** In 1991, the Commercial Internet Exchange (CIX) Association was established to allow businesses to connect to the Internet. Since then, firms have been using the Internet for a number of applications.
* **E-Mail, Instant Messaging, and Push Technology**: E-mail messages need not consist of simple text messages. Sound and images can be embedded in e-mail messages and various types of files can be attached to them. E-mail travels through the systems and networks that make up the Internet. Instant messaging is online, real-time communication between two or more people who are connected to the Internet. Because the typing is displayed in real-time, instant messaging is like talking to someone using the keyboard. Push technology is used to send information automatically over the Internet rather than make users search for it with their browsers.
* **Internet Cell Phones and Handheld Computers:** Increasingly, cell phones, handheld computers, and other devices are being connected to the Internet. Some cell phones, for example, can be connected to the Internet to allow people to search for information, buy products, and chat with business associates and friends. Using Short Message Service (SMS), people can send brief text messages of up to 160 characters between two or more cell phone users. This service is often called texting. Now days, people use the internet to chat with friends and people all over the globe, for example, Facebook, Twitter, Yookos, WhatUp etc.
* Handheld computers, which play an important role in many businesses, can also be connected to the Internet, using phone lines or wireless connections, such as Wi-Fi. Once connected, these devices have full access to the Internet and all its applications.
* **Career Information and Job Searching:** The Internet is an excellent source of job-related information. People can use search engines to search for information about specific companies or industries. They can also use directories, such as Yahoo!’s directories, to explore industries and careers. Most medium and large companies have Internet sites that list open positions, salaries, benefits, and people to contact for further information. In addition, several Internet sites specialize in helping you find job information and even apply for jobs online, including www.monster.com, www.hotjobs.com, and www.careerbuilder.com.
* **Telnet and FTP:** Telnet is a terminal emulation protocol that enables you to log on to other computers on the Internet to gain access to their publicly available files. Telnet is particularly useful for perusing library holdings and large databases. File Transfer Protocol (FTP) is a protocol that describes a file transfer process between a host and a remote computer. Using FTP, users can copy files from one computer to another.
* **Web Log (Blog), Video Log (Vlog), and Podcasting:** A Web log, also called a blog, is a Web site that people can create and use to write about their observations, experiences, and feelings on a wide range of topics. A blog that contains video content is often called a video log or vlog. A podcast is an audio broadcast, or audio blog, over the Internet. It is like a personal radio station on the Internet, extending blogging by adding audio messages.
* **Usenet and Newsgroups:** Usenet is an older technology that uses e-mail to provide a centralized news service. It is actually a protocol that describes how groups of messages can be stored on and sent between computers. Newsgroups make up Usenet, a worldwide discussion system classified by subject. A newsgroup is essentially an online discussion group that focuses on a particular topic. Newsgroups are organized into various hierarchies by general topic, and each topic can contain many subtopics.
* **Chat Rooms:** A chat room is a facility that enables two or more people to engage in interactive “conversations” over the Internet. Multiperson chats are usually organized around specific topics, and participants often adopt nicknames to maintain anonymity.
* **Content Streaming:** Content streaming is a method for transferring multimedia files, radio broadcasts, and other content over the Internet so that the data stream of voice and pictures plays more or less continuously, without a break, or with very few breaks. It enables users to browse large files in real time.
* **Shopping on the Web:** You can shop for almost anything over the Internet, including books, clothes, cars, computers, medications, etc. Shopping on the Web can be convenient, easy, and cost effective. Increasingly, people are using bots to help them search for information or shop on the Internet. A bot is a software tool that searches the Web for information, products, or prices.
* **Web Auctions:** A Web auction is a way to connect buyers and sellers. One of the most popular auction sites is eBay, which often has millions of auctions occurring at the same time. The eBay site is easy to use, and includes thousands of products and services in many categories.
* **Music, Radio, Video, and TV on the Internet:** Music, radio, and video are hot growth areas on the Internet. Audio and video programs can be played on the Internet, or files can be downloaded for later use. Using music players and music formats such as MP3, you can download music from the Internet and listen to it anywhere using small, portable music players. Radio broadcasts on the Internet are also popular. They offer news, sports, talkback, and various genres of music. Video and TV are increasingly becoming available on the Internet. One way to put TV programming on the Internet is to use the Internet Protocol television (IPTV) protocol. Also, a number of new, innovative devices let you record TV programs and view them at any time and place.
* **Office on the Web:** An Internet office is a Web site that contains a person’s files, phone numbers, e-mail addresses, an appointment calendar, and more. Having an Internet office with access to office files and information can be critical for people who travel frequently or work at home. Many services and software products also give you remote access to your files and programs on your home or office computer over the Internet, including Avvenu, Easy Reach, and BeInSync.
* **Internet Sites in Three Dimensions:** Some Web sites offer three-dimensional views of places and products. Examples of such Web sites include a 3-D Internet auto showroom and a 3-D real estate site.
* **Other Internet Services and Applications:** Other Internet services are constantly emerging. For example, a vast amount of information is available over the Internet from libraries. The Internet can provide critical information during times of disaster or terrorism. The Internet can also be used to translate words, sentences, or complete documents from one language into another. In addition, the Internet facilitates distance learning, which has dramatically increased in the last several years. Many colleges and universities now allow students to take courses without visiting the campus.

Generally, internet applications can be separated into the following types

* Online media
* Online information search
* Online communications
* Online communities
* Online entertainment
* E-business
* Online finance, and
* Other applications

**Application of World-Wide Web in intranet and extranet**

* An intranet is an internal corporate network built using Internet and World Wide Web standards and products. Employees of an organisation use it to gain access to corporate information. It is also an inexpensive, yet powerful alternative to other forms of internal communications, including conventional computer setups. Examples of intranet uses include networking mobile sales forces, developing online employee handbook applications, and the protection of sensitive internal information. Anything that an organization does not want the general public to see can be placed on an intranet.
* An extranet extends selected resources of an intranet out to a group of its customers, suppliers, or other business partners. Like an intranet, it is based on Web technologies; however, its security and performance concerns are different. Authentication and privacy are critical in order for information to be protected. Note that secured intranet or extranet applications usually require the use of a virtual private network (VPN).

# Lesson 3 - Modems, Browsers and ISPs

**By the end of this lesson, learners should be able to:**

* List the four requirements necessary to access the Internet
* Define a modem
* Define a web browser
* Understand the function of an Internet Service Provider (ISP)

### Connecting to the Internet

In the previous lessons, you learned a short history of the Internet, how the Internet works, what the Web is, and some important Web terms.

##### In this lesson, you will learn what you need to access the Internet:

1. Computer
2. Modem
3. Web Browser
4. Internet Service Provider

Important pointFor the purpose of this lesson, we assume you already have access to a computer. To learn more about your computer and its peripherals, please take our self-paced Computer Basics course.

### Modems and Web Browsers

To connect to the Internet, your computer requires a **modem** and a **web browser**.

##### What is a modem?

* A **modem** is a device that **converts** a computer's **outgoing data** to a format that can be transferred via telephone lines. Modems can also convert **incoming data** so the computer can read it.
* A modem can be located inside or outside your computer. Some of the different types of modems are internal, external, voice/data, and fax modems.

##### What is a web browser?

* Remember, along with a computer equipped with a modem, you need a piece of software called a web browser to navigate the Web.
* **Internet Explorer** and **Netscape** are examples of web browsers.

Important pointTo learn more about **modems**, please take our self-paced Computer Basics course.

Important pointLearn more about **Internet Explorer and Netscape** later in this course.

### Internet Service Providers

To access the Internet, you need a **computer equipped with a modem and web browser**, but you'll also need an **ISP**.

**Internet Service Providers (ISPs)** are **companies** that provide access to the Internet.

For a monthly fee (and an initial activation fee), you can purchase a **software package** from your ISP. These packages feature different levels of Internet access. Flat-rate service will buy you unlimited hours, whereas a less-expensive hourly package buys limited Internet access. In either case, the speed with which you access the Internet factors into how much you pay per month.

##### The ISP software package usually includes:

* **Username**. A unique name used to gain access to a computer system.
* **Password**. A combination of keyboard characters. Used in combination with a username, passwords allow access to restricted computer information. It is important to keep passwords secret.
* **Access phone number**. For example, (919) 555-5555.

Important pointIf you connect to the Internet at work, you may be part of a LAN (local area network) that shares network resources. To gain Internet access, your employer contracted with an ISP.

## Activity 3

Whether you are at home, work, or are using a public computer, find out:

* What type of (speed) modem you use
* Who your ISP is
* Determine what ISP offers the best range of services for the least amount of money.

# Lesson 4 – Bandwidth

**By the end of this lesson, learners should be able to:**

* Discuss the need for speed
* Discuss bandwidth

### The Need for Speed

If you surf the Web frequently, you are probably used to waiting, and waiting, and waiting some more.

Slow Internet access means some users are unable to access certain web pages, especially those loaded with graphics, sound, and video. So, to access the latest web technologies, users need more speed.

In response to the need for speed, **modems (a device used to access the Internet)** were built that were capable of faster **data transmission rates**.

##### Faster data transmission means:

* Faster web pages
* Faster email services
* Music, animation, and video plays smoothly

### Data Transmission Rates

At higher speeds, modems are measured in terms of **bits per second** (bps). A **bit** is a unit of measurement that measures the transfer of data or information for example, if you have a 56K modem, your modem may be capable of transferring 56,000 bits per second.

**Did You Know?** Eight bits of data is roughly the amount that you enter each time you tap a key on your keyboard.

##### Data Transmission Rates:

* **Early 90's**
  + 19.2K bits per second
  + 28.8K bits per second
  + 33.6K bits per second
* **1998-Present**
  + 56K bits per second
  + Almost 10 Million bits per second (Asymmetric Digital Subscriber Line, (ADSL), Cable modems)

### All about Bandwidth

A fast modem doesn't ensure fast transmission rates. Fast data transmission often depends on **bandwidth**.

Bandwidth is the **amount of data actually being sent through a network circuit**.

Important Point**Example: Think of bandwidth in terms of the road system.**

Let's say you want to estimate the time it takes for you to commute from home to work. You have to travel through a physical network of roadways to travel from home to work.

##### To estimate your commute, consider:

* What is the speed limit?
* Where are you located (big city or rural setting?)
* How big (wide) is the road? (2-lane roads, 4-lane roads, or a 6-lane interstate?)
* How much traffic will be on the road at any given time?
* Is there any construction?

**The Internet is similar to the roadway example.** Remember, the Internet is a physical network (phone lines, etc). Data has to travel through that physical network. Too much traffic on the network means you may be unable to connect at a fast rate, or at all. The more open and wider your network is, the faster you can connect and surf.

Important PointThe next time the Internet is creeping, the quality of bandwidth may be to blame.

## Activity 4

* Go to Yahoo.com.
* Using the search box, type in the words" bandwidth test."
* Several web sites matches should appear.
* Click on one of the sites that provides an online tool that can help you determine the speed of your Internet connection performance.
* Perform the test.
* How fast is your connection?

# Lesson 5 - Types of Internet Access

**By the end of this lesson, learners should be able to:**

* Discuss the different levels of Internet access available
* Research the levels of access in your living area

### What Type of Access is Available to You?

Many ISPs offer different levels of Internet access. The next few pages detail some different types of access.

lesson arrow**56K Dial-up**

##### Pros:

* Uses existing phone lines.
* Lower cost-usually around R220.00 per month.

##### Cons:

* Dial-up connection uses existing phone line, making it impossible to receive phone calls unless another line is installed. Uses existing phone lines.
* Slow -- Can be limited to speeds of 28.8K to 33.6K. Upload speeds can be limited to as low as 28.8, with download speeds approaching 56K under only perfect conditions.
* Service can be somewhat unreliable (busy signals, spontaneously terminated sessions, etc).

### ISDN (Integrated Services Digital Network)

Faster than 56K dial-up, but every ISP does not support ISDN.

##### Pros:

* Can provide 2-4 times the speed of a 56K modem.
* Uses digital rather than analog signals to transmit data.

##### Cons:

* Requires special equipment that can drive up your cost.
* Data is not compressed so transmission rates can be comparable to 56k-at more cost.
* May be replaced by other technologies.

### DSL (Digital Subscriber Line)

Newer technologies such as DSL use an ISP to connect to the Internet and allow faster connections.

##### Pros:

* Can fall back to slower speeds if the line cannot handle the modem's fastest speed.
* Uses the existing phone line in most cases.
* Does not tie up existing phone line, leading to "always on" access.
* More bandwidth results in improved streaming audio/video, online games, application programs, telephone calling, video conferencing and other high-bandwidth services.
* Can connect multiple computers on a single line.
* Faster than a 56K dial-up modem.

##### Cons:

* Availability-limited to homes/businesses with a dedicated copper wire running between it and the phone company's nearest central office.
* Cost-includes installation fees and monthly charges (around $50.00 per month).
* Need a firewall to ensure home network security. (additional cost)
* Service is not infallible.

### Cable Modem

Cable modems, another newer technology that uses an ISP to connect to the Internet, allows faster connections.

##### Pros:

* Uses coaxial and/or fiber-optic cable rather than phone lines for data transmission, so performance doesn't depend on your distance from a central cable office.
* Can fall back to slower speeds if the line cannot handle the modem's fastest speed.
* Convenient for homes already wired with cable access.
* Does not tie up existing phone line, leading to "always on" access.
* More bandwidth results in improved streaming audio/video, online games, application programs, telephone calling, video conferencing and other high-bandwidth services.
* Can connect multiple computers on a single line.
* Faster than a 56K dial-up modem.

##### Cons:

* Availability-limited to homes/businesses with cable access.
* Cost-includes installation fees and monthly charges (around $40.00 per month).
* Often requires commitment to a cable TV package.
* A firewall is necessary to ensure home network security (additional cost).
* Service is not infallible.

## Activity 5

Choose a level of Internet access that corresponds to your needs and budget. Do some research on the Internet to determine the following: What type of high-speed Internet access is available in your living area?

# Lesson 6 - Surfing Strategies

**By the end of this lesson, learners should be able to:**

* Review web browser basics
* Discuss cached web pages
* Refresh and stop web pages
* Define a search engine and provide an example
* Demonstrate effective searching techniques

### Browser Basics

If you found our web site, you're already familiar with your web browser's basic tools such as the **Back button**, **Forward button and Address bar**.

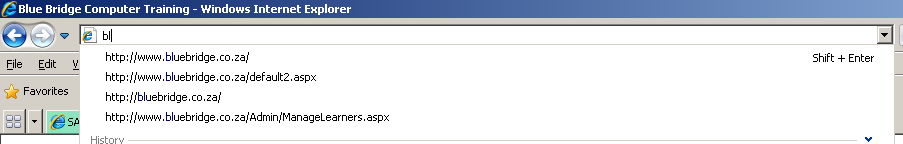
##### Here is a quick review of web browser basics:

* To return to the last page you viewed, click your **Back button**. 
* To return to the page you visited before you clicked the **Back button**, click the **Forward button**.
* Click the **drop down menu** to the **right** of the **back** and **forward** buttons to view and select from a list of recently visited sites.
* To visit a web page, type the **URL** in the address bar and click the **Go button** or simply hit the Enter (Return) key on your keyboard.



**Cache**

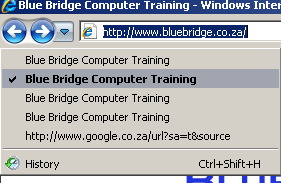
Important PointHave you ever **started typing** your Favourite website's address, and the entire address displays?



Important PointOr, have you tried clicking the **address bar's drop down menu** to display a list of sites you've recently visited?



Important PointWhat about the **Back and Forward** button's drop down lists of recently visited sites?



If you have used any of the methods listed above to surf the Web, you are using your web browser's **cache**.

Your web browser stores recently visited sites (as temporary Internet files) on your computer's hard disk. When you revisit your Favourite sites, the browser **displays the pages from the cache instead of requesting them from the web server**.

Important Point**This makes surfing the web faster and easier.**

### Refreshing and Stopping Web Pages

While using your browser's cache may increase ease of use, you may not be getting the most **up-to-date** information a site has to offer. To do so, you need to **refresh**, or **reload**, a web page. **Refreshing** requests fresh pages from the web server rather than from the cache stored on your machine's disk.

Important PointMost browsers include a **Refresh button** on the toolbar. Refresh button(F5)

##### Refresh a web page when:

* You want to view the latest version of the page. For example, when viewing a discussion forum, or a news-driven website.
* You get a message that a web page cannot be displayed. For example, “Error 404, File Not Found."

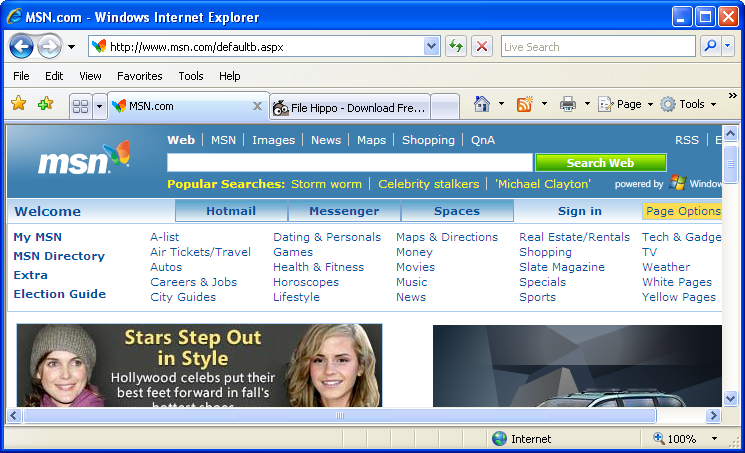
Important PointMost browsers include a **Stop button** on the toolbar. stop button(Esc)

##### Stop a web page when:

* You want to stop a web page from loading.
* A page is taking too long to load.
* You mistyped a URL.

**Search Engines**

* Instead of trying to guess where certain information may be located on the Web, **search engines** allow you to search both the Web and newsgroups.
* A **search engine** searches for **keywords** and returns a list of documents where the keywords can be found. Most search engines allow you to search using plain language relevant to the topic of interest, meaning you don't have to know any special programming tricks to effectively search the Web.
* You are probably already familiar with search engines such as **Yahoo**, **Google**, **Excite**, or **AltaVista**. You may have even used a search engine to find our site.



* There is tons of information available on the Web; you just have to know how to find it fast.

**Tips for Effective Searching**

* Beware of using slang or partial words. If you use slang or parts of words, you may have some luck, but your results may be too broad. For example, flick instead of movie, or Macs instead of Macintoshes may yield different results.
* Correct Spelling, Pluralisation and Capitalization. Be aware of pluralizing your words, and spell them correctly. For example, good will, goodwill, Goodwill, Goodwills, and Good Will may yield different results.
* AND. Use AND (all caps) to search for multiple words that must appear in a web page. Some search engines support a plus sign (+) in place of AND. For example, free AND coupon, or free + coupon.
* NOT. Use NOT (all caps) to exclude certain words or phrases for example, casserole NOT chicken NOT beef.
* OR. Use OR (all caps) to include any of the search words (rather than most.) For example, George Washington OR Bush.
* Wildcards. The percentage symbol (%) can be used to replace only one character. The asterisk (\*) can be used to replace multiple characters. For example, post\* could produce post-war, postgame, or post marital.
* Phrases. Put quotes around a phrase so each word in the phrase isn't searched for separately. For example, if you put quotes around "free online computer training," the search engine searches for that entire phrase in a web page. However, if you simply type, free online computer training, the search engine searches for each of the words individually in a web page.
* Get Help. Go to your search engine's Help page for more specific information on a particular engine.
* Important PointTry Something New. There are many different search engines on the Web. If you can't find what you are looking for using your Favourite engine, go somewhere else.
* Important PointBookmark it. Add your Favourite search engines to your Favourites to increase ease of use. If you're not sure how to do this, you'll learn how later in this unit.

## Activity 6

* Open your web browser and review the web browser basics reviewed in this lesson.
* Open your cache and select a recently visited site.
* Refresh the page.
* Visit your Favourite search engine.
* Open your search engine's Help file.
* Search for a new search engine. Sample its search capabilities.
* Using some of the searching tips, explore a topic of interest.