

Computers I

3. The Internet

An internet or interconnected network is formed when two or more networks are connected.

The most notable internet is called the Internet and is composed of millions of these networks.

3.1 Internet Origin

In the mid-1960s, mainframe computers in research organizations were stand-alone devices. Computers from different manufacturers were unable to communicate with one another.

The department of defense had a section called Advanced Research Projects Agency (ARPA) was interested in finding a way to connect computers so that researches could share their findings, and eliminate costs and duplication of effort.

Thus ARPANET was created in 1969.

In 1972, two ARPANET project members collaborated to attempt to link multiple networks to each other.

In 1973, they created TCP/IP a list of protocols to connect different networks.

By 1991, as time went on and more developments were made, IBM, Merit, and Verizon created an organization to build a high-speed Internet backbone of multiple super computers spread throughout the United States.

In the 1990s, the Internet expanded and grew exponentially bigger when Tim Berners-Lee invented the World Wide Web (WWW)

3.2 Internet Connection

Connecting to the Internet is simple and only requires a few components.

3.2.1 Requirements

An ISP (Internet Service Provider) such as Comcast

For broadband connection – such as Comcast – you need a cable modem provided by ISP.

For dial-up connection – such as AOL – you need a dial-up modem – pre-installed in computer.

If you plan to have a network with multiple computers then you need a router.



Modem – a device that modulates and demodulates.

The Modem accepts the analog signal of a telephone line and converts it into Digital data for the computer.

3.3 The Web

Not only did Tim Berners-Lee create the WWW, he also created all the tools necessary for a working we, such as the first web browser, the first web server, and the first web pages, and the first web editor that was used to write HTML.

The World Wide Web is a system of interlinked hypertext documents accessed via the Internet using a web browser. These pages can contain text, images, and videos. You navigate through these web pages through hyperlinks.

Every link you click on a webpage is a hyperlink.

Hyperlinks are created using HTML hypertext mark-up language.

3.4 Browser

Web browsers are software designed to retrieve, and present pages on the World Wide Web.

A web address is the informal name of the URL or uniform resource locator

Each page has a specific URL and the browser locates a web page based on the URL.

Major web browsers are

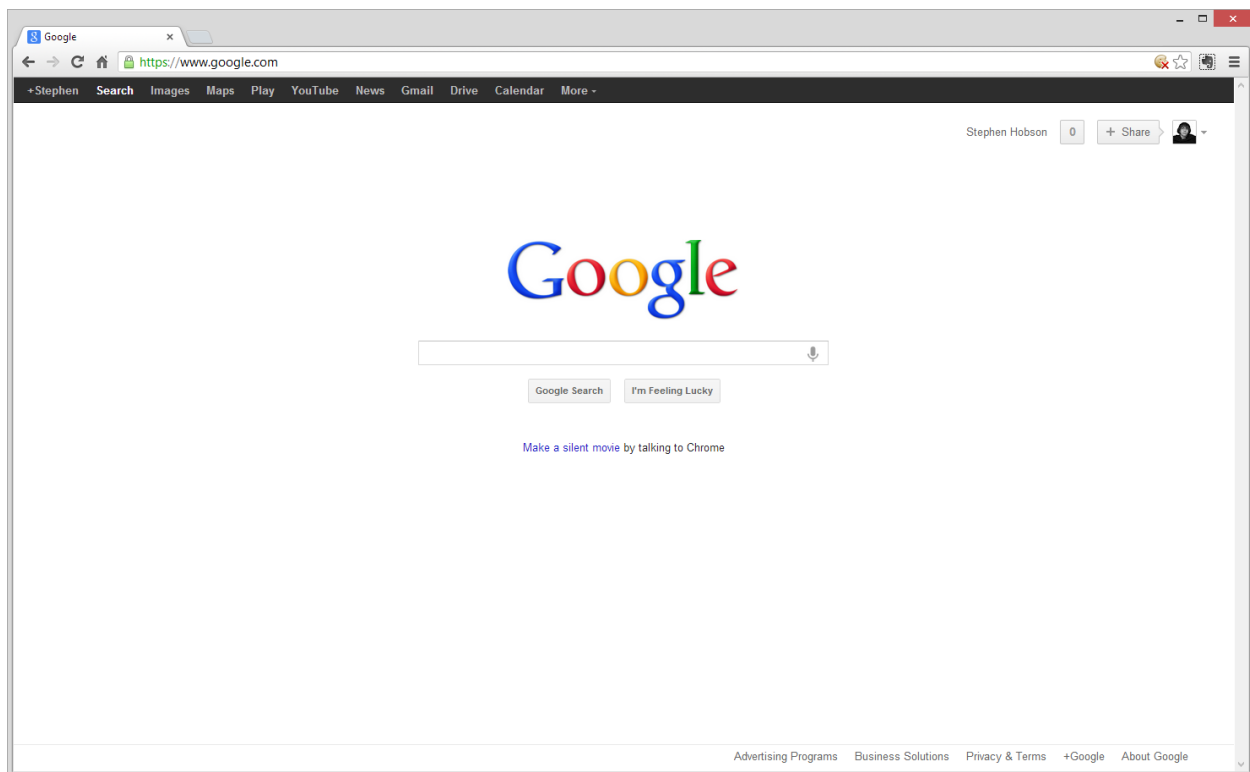
- Firefox
- Internet Explorer
- Google Chrome – by April 2014 45% usage share
- Safari

Browsers usually offer similar features such as

- Back and Forward buttons
- Refresh button and Stop button
- Address bar for the URL
- A search engine
- Status Bar
- Find options

Reasons why Chrome is a success

- Secure –“jails” each tab so what happens in one cannot affect others, or the OS memory or files.
- Fast
- Simple
- Stable.
- The Omnibox
- Search Image
- Synchronization across multiple devices
- Free safe browsing
- Quick security updates and constant attempts to break in



3.5 Multimedia

Multimedia refers to a number of different integrated media, such as text, images, audio, and video, that are generated, stored, and transmitted digitally and can be accessed interactively.

The internet allows us to transmit voice and video, such as Skype.

Images can be still or moving in frames such as GIF.

Images online are digitalized. This means they are represented by two-dimensional dots called pixels.

Color images require more depth of pixels and thus more information to be transmitted and thus must be compressed.

JPEG is a standard of compression and decompression, as is GIF.

Videos are a combination of multiple frames; each frame is one image and thus requires a really high rate of transmission.

The average frames per second in America is 25. If these frames are displayed on the screen fast enough, we get the impression of motion and we do not see fast enough with our eyes to see each individual frame.

When watching TV, we see 50 frames per second, the standard 25 but each frame is doubled to avoid Flickering.

Audio must also be digitized so that we can hear it come out of our speakers. An analog-to-digital converter samples the sound thousands of times per second and quantizes the audio as streams of bits of information.

The majority of audio and video clips are stored on a server that a user can download and listen to or view.

However, in the case of Skype, the information is transmitted live and not from a server.

The next big push in online multimedia is to add more live video streaming instead of TV signals sent through satellite.