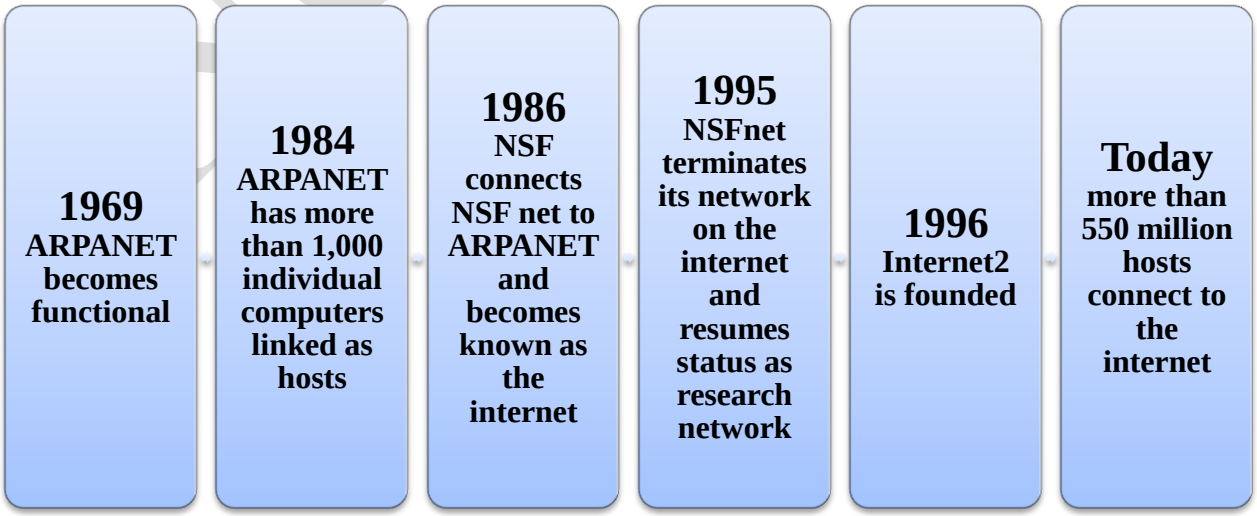
# Evolution of the Internet

The internet traces its roots to a US defense department project in the 1960s born out of the Cold War, and a desire to have armed forces communicate over a connected, distributed network. The military's research arm, the Advanced Research Projects Agency (ARPA), began work on a communication project, which led to the creation of ARPANET, one of the earliest versions of computers talking to each other on a network. ARPANET eventually connected military installations, third-party contractors, and a handful of universities in the US. By the mid-1970s, ARPANET had connected to NORSAR, a US-Norwegian system designed to monitor seismic activity from earthquakes or nuclear blasts, over satellite. The Norwegian system then connected to computers in London, and eventually, other parts of Europe.

In the beginning ARPANET benefited not just the military but also research institutes, so it had its origins in the academic community though it was a military project. The system slowly evolved so it was not immediately adopted for commercial use. Instead in the early 1980's it was adopted by universities and research institutes through an initiative by the NSF (National Science Foundation). It was called the NSFNET Project and its aim was to promote research and education. The best way to do this was to use an interconnected network of computers that can provide a way to collaborate and share information. This provided a backbone that included the Computer Science Network (CSNET) that linked computer science research among academics.

Eventually ARPANET and NSFNET would be decommissioned, thus paving the way for the commercialization of the Internet. It was also called the "Internet" as a sort of portmanteau of "interconnected" and "network" and has been called the Internet since. This would involve the development of standards maintained by the IETF (Internet Engineering Task Force) with contributions from among many organizations like the IEEE (Institute of Electrical and Electronics Engineers), IESG (Internet Engineering Steering Group) and the ISO (International Organization for Standardization).



# Key Concepts of 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. The Internet is most often used for three main purposes:

1) Communication
2) Buying and selling (ecommerce)
3) Searching for information

There are two main **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, often in the same building. Examples include home networks and office networks.
- **Wide Area Network (WAN):** A WAN typically consists of two 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 in existence.

**The World Wide Web (WWW)**

When most people think of the internet, the first thing they think about is the World Wide Web. Nowadays, the terms "internet" and "World Wide Web" are often used interchangeably - but they're actually not the same thing.

- The **internet** is the physical network of computers all over the world.
- The **World Wide Web** is a virtual network of web sites connected by hyperlinks (or "links"). Web sites are stored on servers on the internet, so the World Wide Web is a part of the internet.

**HTML**

The backbone of the World Wide Web is made of HTML files, which are specially-formatted documents that can contain links, as well as images and other media. All web browsers can read HTML files. In addition to HTML, it's also very common for websites to use technologies like CSS (Cascading Style Sheets) and JavaScript to do more advanced things.

## Internet Connection Methods

**1. Dial-up:** Dial-up is a method that uses a telephone line, which you connect to a phone jack, just as you would connect your telephone to the wall. Dial-up is the slowest connection method and it requires your computer to have a dial-up modem.

**2. Broadband:** Broadband is a high-speed connection method which can utilize cable, DSL, or satellite. Each of these methods requires different types of hardware.

**3. Fiber-optic:** Fiber-optic communication transmits data by sending pulses of light through ultra-thin optical fiber. Because light travels so quickly, this technology can transmit Internet data at super-fast speeds.

### Internet Service Provider (ISP)

Internet Service Providers are companies that connect you to the Internet –for a fee, of course. ISPs are available on a local, state, and national level. Large communication companies control access to the main lines of the Internet structure. They, in turn, supply Internet access to the smaller ISPs, who pass this along to the consumer. Not all ISPs offer all methods of connection to the Internet. Make sure the ISP you select offers service that corresponds to your connection method and hardware.

### Web Browser

You'll need to have a web browser installed on your computer. This is a software program that allows you to view web pages and navigate the Internet. Microsoft's Internet Explorer is probably the most commonly used web browser. It often comes pre-installed when you purchase a computer that has a Microsoft Windows operating system. There are other free web browsers available, including Mozilla's very popular Firefox web browser and Apple's Safari. You can have more than one browser installed on your computer.

## Surfing the Web

"Surfing the Web" or "Web Surfing" refers to browsing the World Wide Web by going from website to website in search of something that interests you. Before we talk about how to surf the web, it may be helpful to explain a few key terms. Take note of how they are spelled and used.

A **web page** is a single page of information on the World Wide Web.

A **website** refers to a group of web pages identified by a single domain. For example, all of the web pages on the Indian Hills website begin with www.indianhills.edu.

A **homepage** is the first or front page of a website. If you type "www.indianhills.edu" into your web browser, the first web page that came up would be the website's homepage.

**For example:** The Indian Hills website contains many web pages, including the homepage.

A **URL** or "**Uniform Resource Locator**" is the unique address of each web page. For example, the URL for the Indian Hills Bookstore is: **http://www.indianhills.edu/bookstore/index.html**

Each URL has several parts that appear in a specific order. Let's look at each part by using the URL for the Indian Hills Bookstore as an example:

**http://www.indianhills.edu/bookstore/index.html**

**Protocol:** A protocol is a set of rules, used to retrieve a specific document. The "http" in our URL refers to Hyper Text Transfer Protocol. The "http" is followed by a colon and two forward slashes, then "www," which refer to the World Wide Web.

**Domain Name:** The domain name consists of two parts. In our example, "indianhills.edu" is the domain name where "indianhills" is the **host** and ".edu" is the **top-level domain**. This suffix indicates the type of organization to which the host belongs. As you can probably guess, ".edu" indicates that the host, "indianhills," is an educational institution.

**Common Top-Level Domains**

**.com -** Commercial or business websites (however anyone may use this now)

**.gov -** United States Government websites

**.mil -** United States Military websites

**.org -** Organizational websites (often non-profit organizations)

**Directory/Page:** The next part of the URL tells the web browser where to find the specific web page on the website. In our example, the "/bookstore/" tell us that the web page we are looking for lives in the directory/folder entitled "bookstore." The next part, "index.html," is the name of the actual web page. The ".html" refers to the programming language used to create the page (in this case, Hyper Text Markup Language or HTML).

Knowing the URL of a web page is the fastest way to find the page you want to visit. Just type the URL into the address bar of your web browser, hit the Enter key, and you're off to that web page. However, if you don't know the URL, there are two other popular tools that can help you find the information you need.

**Search Engine**: A Search Engine is a website that searches the World Wide Web for specific keywords, which you enter into a search field. The search engine then displays a list of web pages that are somehow related to the keywords you entered. You can then click the links to any of these web pages that interest you. Search results are not perfect. You may be looking for a specific website that does not appear right away. Most search engines have advanced options that allow you to narrow your search. For example, you may want to find information about jaguars (the animal not the automobile). If so, you could use the advanced features of your chosen search engine to exclude search results that include the words "car" and "automobile." Each search engine does this differently. So, you will have to explore the website of your selected search engine for more.

Google (www.google.com) and Yahoo! (www.yahoo.com) are two popular search engines.

**Subject Directory**: A Subject Directory is a listing of websites organized by topic. As mentioned earlier, not every web page that comes up in your search results may have the most relevant or the most reliable information related to your topic. Subject directories are usually more selective in what they include than are search engines. To use a subject directory, select a main subject from the directory, which then displays sub-directories or folders. Continue to drill down, narrowing your topic, until you find a web page that interests you. Some search engines include subject directories in their list of features and some academic and professional websites include subject directories related to their specific areas of interest.

## Internet Communication

**Email:** Since its earliest days, **electronic mail**, or **email**, has been the most used application of the Internet. E-mail uses a series of protocols to enable messages containing text, images, sound, and video clips to be transferred from one Internet user to another. Because of its flexibility and speed, it is now the most popular form of business communication – more popular than the phone, fax or any postal services.

**Instant Messaging (IM):** One of the fastest growing forms of online human communication is instant messaging (IM). IM send text messages in real time, one line at a time, unlike e-mail. These tools allow you to communicate with others who are online at the same time as you. The key difference between this and email is that with email there is a delay, as you wait for the other person to receive the email, read it, and reply, whenever they are next online, while with Instant Messaging or Chat Rooms, all participants are online at the same time, interacting "live.

**Podcasts:** Podcasts are audio or video recordings available for download from the Internet. TV shows, newscasts, and instructor lectures are some examples of content that can be delivered via a podcast. While some audio and video recordings are streamed over the Internet, meaning you watches them in your web browser, podcasts are different in that they are downloaded for offline listening or viewing. Podcasts can also be subscribed to via RSS feeds. An RSS feed allows your

computer to automatically download a new podcast whenever it is created, without your having to visit its website directly.

**Blogs:** A blog (short for "web log") is a public journal posted on the Internet. The word blog can be used as both a noun and a verb. You may have a personal blog or you may blog about your career field. People blog about a wide variety of topics. If you have a hobby or topic which you enjoy, you can probably find any number of blogs related to the subject. One distinguishing characteristic of blogs is that they usually allow readers to post comments responding to the original blogger's post. In this way, large interactive communities can develop around popular blogs.

**Social Networking:** Social networking sites, such as Facebook, LinkedIn, Twitter, Flickr, and YouTube are convenient ways to meet new people, share photos and videos, connect with friends, and more. These are typically easy to use and include free services.

**Voice over Internet Protocol ("Voice over IP" or "VoIP"):** This is a voice-based Internet communication solution that uses a standard Internet connection to place phone calls. Skype is an example of a software program that allows you to place calls over the Internet. Skype users can call one another over the Internet for free, while calls from Skype to traditional landline phones may be made for a fee.