

The Internet

It's time to understand what and how to use the internet we all know and love.

History of the Internet

Learn about the how internet became what it is today.

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How the Internet Works

Learn what happens behind the scenes when you use the internet.

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How the Internet Works

Learn what happens behind the scenes when you use the internet!

BIG DATA IS
WATCHING YOU



DNS

Learn about the internet phonebook!

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HTTP and HTTPS protocols

Learn about two types of internet protocols and what they are used for.

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IP Addresses, Packets and Routing

Learn how the Internet works behind the scenes to get to the website you desire.

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Domain Name System

By George Varghese

How the Internet Works

DNS

HTTP and HTTPS protocols

IP Addresses, Packets and Routing

DNS is the phonebook of the Internet. Humans access information online through domain names, like nytimes.com or espn.com. Web browsers interact through Internet Protocol (IP) addresses. DNS translates domain names to IP addresses so browsers can load Internet resources.

The process of DNS resolution involves converting a hostname (such as www.example.com) into a computer-friendly IP address (such as 192.168.1.1). An IP address is given to each device on the Internet, and that address is necessary to find the appropriate Internet device - like a street address is used to find a particular home. When a user wants to load a webpage, a translation must occur between what a user types into their web browser (example.com) and the machine-friendly address necessary to locate the example.com webpage.

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HTTP and HTTPS protocols

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HTTP is a protocol which allows the fetching of resources, such as HTML documents. It is the foundation of any data exchange on the Web and it is a client-server protocol, which means requests are initiated by the recipient, usually the Web browser. A complete document is reconstructed from the different sub-documents fetched, for instance text, layout description, images, videos, scripts, and more.

Hypertext transfer protocol secure (HTTPS) is the secure version of HTTP, which is the primary protocol used to send data between a web browser and a website. HTTPS is encrypted in order to increase security of data transfer. This is particularly important when users transmit sensitive data, such as by logging into a bank account, email service, or health insurance provider.

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IP Addresses, Packets and Routing

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IP (Internet Protocol) Address is an address of your network hardware. It helps in connecting your computer to other devices on your network and all over the world. An IP Address is made up of numbers or characters. All devices that are connected to an internet connection have a unique IP address which means there's a need of billions of IP addresses. This requirement is fulfilled by the new IP version IPv6.

Packets are created when the network breaks an e-mail message into parts of a certain size in bytes. Each packet carries the information that will help it get to its destination – the sender's IP address, the intended receiver's IP address, something that tells the network how many packets this e-mail message has been broken into and the number of this particular packet. The packets carry the data in the protocols that the Internet uses: Transmission Control Protocol/Internet Protocol (TCP/IP). Each packet contains part of the body of your message. A typical packet contains perhaps 1,000 or 1,500 bytes.

Routing is the process of selecting a path across one or more networks. The principles of routing can apply to any type of network, from telephone networks to public transportation. In packet-switching networks, such as the Internet, routing selects the paths for IP packets to travel from their origin to their destination. These Internet routing decisions are made by specialized pieces of network hardware called routers.

History of the Internet

Learn how such a niche government tool became something used by everyone!



Browser Wars

Learn about the technological arms race between two internet browsers!

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Internet Search

Learn about the origins of search engines!

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The Dot Com Bubble

Learn about the period where investors pumped their money into internet based startups!

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Internet Search

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Before 1994, there were no search engines or any efficient ways to search the world wide web. If you needed to find something, you'd likely have to memorize the links of websites or just resign yourself to having to surf through the web through various roundabout methods such as redirect links. This all changed when a pair of Stanford students developed a search engine named Yahoo.

The students, David Filo and Jerry Yang, began their development of Yahoo when their professor went off on a year-long sabbatical, which left the two with plenty of time on their hands. However, like most startups, the pair encountered the common problem of lacking funds for the project. This is where eventually the idea came up to incorporate ads into the search engine which ended up being a huge success for Yahoo. With all this success, more and more eyes began to realize the potential that the search engine industry had.

In 1996, a new search engine by the name of Excite came onto the scene and rivalled Yahoo and its features for a time. But while these 2 went head to head, it allowed another to grow and become the tech giant we know today as Google. Google differed from the two mainly by the way they organized their search results, which would be done by most viewed sites are the top search results. At the time though, Google was a shadow of their current success, and like many others, they wrestled with financial struggles. Interestingly enough, Excite had the opportunity to purchase Google for a million dollars, which would prove to be a fatal mistake because as of 2020, Google has a worth of \$632 billion.



Browser Wars

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If it were 1995 the only browser of choice was the Netscape Navigator. It was developed by software engineer Marc Andreessen. However, Microsoft failed to recognize the importance of this new network early on, so the company fell back on their core competency: personal computing. That means, if you used the Windows operating system, you would have to go purchase a browser separately. As a result, their internet project was supported by executives from the top of their company, then a few Microsoft engineers got together to start working on a new browser.

Microsoft eventually released Internet Explorer. Then for the next few years, Netscape and Microsoft waged "war". Essentially you would see minor updates very frequently. Although, most end users did not understand the war. All they saw was a whirlwind of new features. There came esoteric plugin support, proprietary presentational HTML elements and all sorts of unique hacks. Even when one browser or the other supported web standards, they did so only at a surface level. So when features were "supported" by both browsers, they would often be interpreted and rendered in completely different ways.

Then Microsoft pulled a big move and with the release of Internet Explorer 3.0, Microsoft dropped the hammer. They included this version, for free, bundled right into the Windows '95 operating system. No longer would users have to go to their local electronics shop and choose from a few competitive options. In the summer of 1998, Microsoft went on trial for violating antitrust laws and a consent decree from a few years ago. The US Department of Justice argued that by giving away their browser for free, and bundling it into their operating system, they forced consumers to use their product and pushed competitors out of the market.

Eventually the presiding Judge issued his findings of fact, which, among other things, found that Microsoft was abusing a monopoly position, and wanted them to split into two companies. Even though they lost the court case, Internet Explorer still ended up with the largest market share.

The Dot Com Bubble

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The dotcom bubble, also known as the internet bubble, was a rapid rise in U.S. technology stock equity valuations fueled by investments in internet-based companies during the bull market in the late 1990s. It had been building up for the better part of three years, slowly began to pop. Stocks sunk. Companies folded. Fortunes were lost, and the American economy started to slip down a slow mudslide that would end up in full-on recession.

The buildup of the bubble occurred in the 1990's, as access to the internet expanded and computing took on an increasingly important part in people's daily lives. Online retailing was one of the biggest drivers of this growth, with sites such as Pets, Etoys and Priceline. With the investment in the exciting future of the internet stocks grew rapidly. The value of the NASDAQ, home to many of the biggest tech stocks, grew from around 1,000 points in 1995 to more than 5,000 in 2000.

When the bubble finally burst in the March of 2000 things started to take a turn for the worst. Initially, the combined values of stocks on the NASDAQ was at \$6.71 trillion but by March 30, the NASDAQ was valued at \$6.02 trillion. Then on April 6, 2000, it was \$5.78 trillion. This was when companies such as Pets started to fall apart and magazines started advising investors to limit exposure to online retailers. Else their respective portfolios would lose value quickly.

Many have made the case that the dot-com era was doomed to failure simply because there were too many companies chasing what at the time were too few users. When the bubble burst in 2000, there were only around 400 million people online worldwide. However in 2010, there were an estimated 200 million. In the long run the habits we acquired during the bubble era ingrained themselves into the rhythms of everyday life. The dot-coms from that time, the training wheels for the internet, taught us to live online.