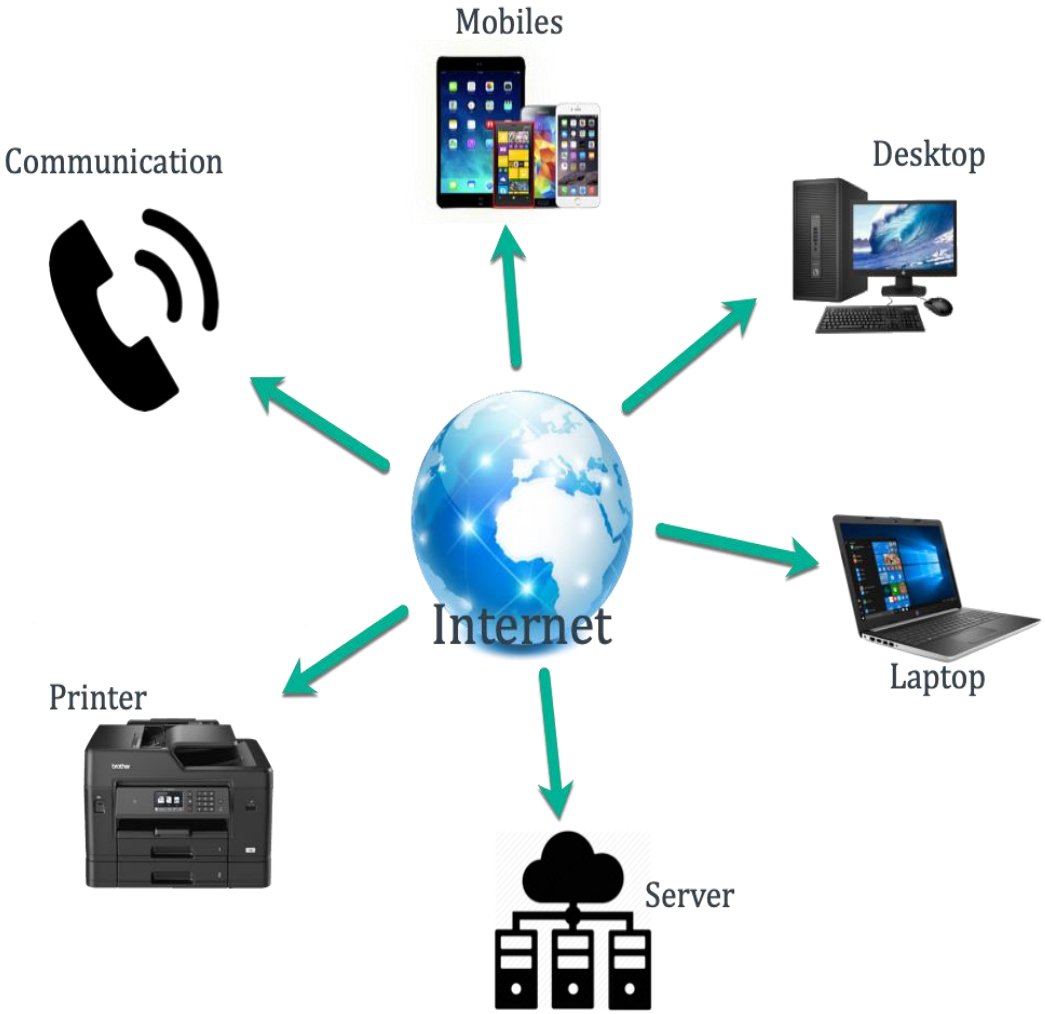
DOCUMENTATION ON HOW THE INTERNET WORKS

What is the internet: The Internet, sometimes called simply "the Net," is a worldwide system of computer networks -- a network of networks in which users at any one computer can, if they have permission, get information from any other computer.

The Internet is **a vast network that connects computers all over the world**. Through the Internet, people can share information and communicate from anywhere with an Internet connection.



How the Internet is Controlled: While the Internet is theoretically decentralized and thus controlled by no single entity, many argue that tech companies such as Amazon, Facebook, and Google represent a small concentration of organizations that have unprecedented influence over the information and money on the Internet. In some countries, certain parts of the Internet are blocked via censorship.

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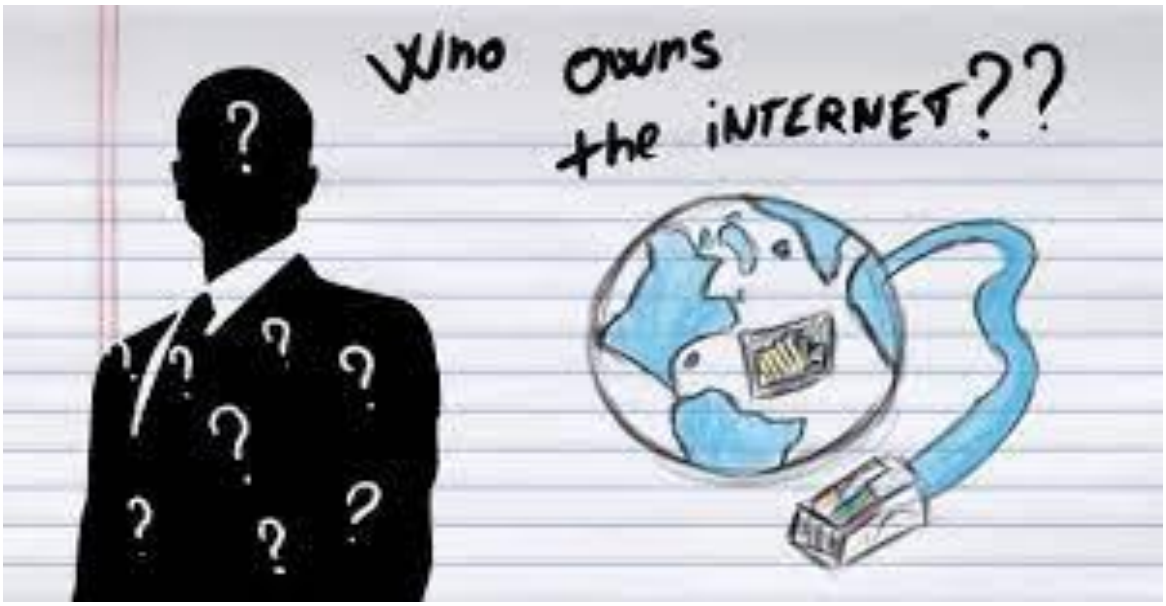
Who owns the internet:

There are organizations that determine the Internet's structure and how it works, but they don't have any ownership over the Internet itself. No government can lay claim to owning the Internet, nor can any company. The Internet is like the telephone system — **no one owns the whole thing**.



. The internet was the work of dozens of pioneering scientists, programmers and engineers who each developed new features and technologies that eventually merged to become the “information superhighway” we know today.

Long before the technology existed to actually build the internet, many scientists had already anticipated the existence of worldwide networks of information. Nikola Tesla toyed with the idea of a “world wireless system” in the early 1900s, and visionary thinkers like Paul Otlet and Vannevar Bush conceived of mechanized, searchable storage systems of books and media in the 1930s and 1940s.

Still, the first practical schematics for the internet would not arrive until the early 1960s, when MIT’s J.C.R. Licklider popularized the idea of an “Intergalactic Network” of computers. Shortly thereafter, computer scientists developed the concept of “packet switching,” a method for effectively transmitting electronic data that would later become one of the major building blocks of the internet.

The first workable prototype of the Internet came in the late 1960s with the creation of ARPANET, or the Advanced Research Projects Agency Network. Originally funded by the U.S. Department of Defense, ARPANET used packet switching to allow multiple computers to communicate on a single network.

On October 29, 1969, ARPAnet delivered its first message: a “node-to-node” communication from one computer to another. (The first computer was located in a research lab at UCLA and the second was at Stanford; each one was the size of a small house.) The message—“LOGIN”—was short and simple, but it crashed the fledgling ARPA network anyway: The Stanford computer only received the note’s first two letters.

The technology continued to grow in the 1970s after scientists Robert Kahn and Vinton Cerf developed Transmission Control Protocol and Internet Protocol, or

TCP/IP, a communications model that set standards for how data could be transmitted between multiple networks.

ARPANET adopted TCP/IP on January 1, 1983, and from there researchers began to assemble the “network of networks” that became the modern Internet. The online world then took on a more recognizable form in 1990, when computer scientist Tim Berners-Lee invented the World Wide Web. While it’s often confused with the internet itself, the web is actually just the most common means of accessing data online in the form of websites and hyperlinks.

The web helped popularize the internet among the public, and served as a crucial step in developing the vast trove of information that most of us now access on a daily basis.

How communication works with the internet:

Data sent over the internet is called a message, but before messages get sent, they're broken up into tinier parts called packets. These messages and packets travel from one source to the next using Internet Protocol (IP) and Transport Control Protocol (TCP).

When did the internet become user-friendly?

Then in 1986, the National Science Foundation took the development of the internet to the next echelon by funding NSFNET, a network of supercomputers throughout the country.

These supercomputers laid the groundwork for personal computing, bridging the gap between computers being used exclusively for academic purposes and computers used to perform daily tasks.

In 1991, The University of Minnesota developed the first user-friendly internet interface, making it easier to access campus files and information. The University of Nevada at Reno continued to develop this usable interface, introducing searchable functions and indexing.

When did consumers begin using the internet?

As the internet's development continued to evolve and shift focus, the National Science Foundation discontinued its sponsorship of the internet's backbone (NSFNET) in May of 1995.

This change lifted all commercial use limitations on the internet and ultimately, allowed the internet to diversify and grow rapidly. Shortly after, AOL, CompuServe, and Prodigy joined Delphi to offer commercial internet service to consumers.

The debut of WiFi and Windows 98 in the late nineties marked the tech industry's commitment to developing the commercial element of the internet. This next step gave companies like Microsoft access to a new audience, consumers (like yourself).

HOME

How Does the Internet Work: A Step-by-Step Pictorial

May 24, 2019

As you're reading this article, you're contributing to history. Over the last fifty years, technology and the functionality of the internet have transformed to become the convenient systems we use in our daily lives.

But as you might have guessed, the internet didn't always look this way, nor was it so popular. In fact, in the year 2000, only 52% of US adults said they used the internet; but in 2018, that number jumped to 82% [1].

From the query that got you here in the first place: "how does the internet work?" to shopping online and communicating with family and friends, the internet has completely changed the way we live, collaborate, and learn. But where did this all get started? And how did the internet evolve into the ubiquitous system we know it as today?

The internet plays a significant role in our daily lives

- In the year 2000, only 52% of US adults used the internet [1]
- In 2018, that number jumped to 89%
- In 2013, US adults who didn't use broadband internet at home but owned smartphones was just 8%
- In 2018, that number increased to 20%

To fully understand how the internet works and how we got here, we'll need to start from the beginning.

A Brief History of the Internet

On October 29, 1969, an organization called ARPANET (Advanced Research Projects Agency) launched the first iteration of the internet (also known as ARPANET)

connecting four major computers at The University of Utah, UCSB, UCLA, and Stanford Research Institute [2].

When this network of computers was connected, universities were able to access files and transmit information from one organization to the other, as well as internally.

As researchers developed the system, they continued to connect computers from other universities, including MIT, Harvard, and Carnegie Mellon. Eventually, ARPANET was renamed “internet.”

Who used the internet in this stage?

In its earliest days, the internet was only used by computer experts, scientists, engineers, and librarians who had to learn a complicated system in order to use it, but as the technology improved and consumers adapted, it became an essential tool for people around the globe.

How and when did the functionality of the internet change?

The 1970s was a serious time of transition for the internet. Email was introduced in 1972, libraries across the country were linked, and above all, information exchange became more seamless thanks to Transport Control Protocol and Internet Protocol (TCP/IP) architecture.

The invention of these protocols helped to standardize how information was sent and received over the web, making the delivery more consistent, regardless of where or how you’re accessing the internet.

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What does internet usage look like today?

Flash-forward to today. It's estimated that three billion people now use the internet, many of whom use it on a daily basis to help them get from Point A to Point B, catch up with loved ones, collaborate at work, or to learn more about important questions like how does the internet work? [3]

As technology changes and the internet weaves its way into just about every aspect of our lives, even more people are expected to use it. In 2030, researchers project there will be 7.5 billion internet users and 500 billion devices connected to the internet [4].

How do network providers provide internet

An internet service provider (ISP) provides access to the internet. This access can be **through a cable, DSL, or dial-up connection**. All internet-connected devices

run each request through an ISP to access servers where they can view web pages and download files. The servers provide these files through their ISP.

When you connect to your ISP, you become part of their network. The ISP may then connect to a larger network and become part of their network. The Internet is simply a network of networks. Most large communications companies have their own dedicated backbones connecting various regions.