

5.2: A Brief History of the Internet

Table 5.2.1 is a timeline of a few key Internet milestones to show how fast the development of the internet and communication has come in such a short-term span from 1969 to 2022, a mere 60 years! Think of the impact on our personal and work, the job market, the economic nature of countries, etc. Imagine the daily activities you do today that are possible because of these milestones. How often have you used the email or browser app in the last 24 hours? These two apps are just one of the many key Internet milestones!

Key Internet Milestones 1969-2023

Year	Internet Milestones
1969	ARPANET created by the US Department of Defense as the first packet-switched network
1982	TCP/IP becomes the standard Internet protocol allowing internet
1983	Domain name system (DNS) introduced for naming websites
1989	AOL launched commercially providing Internet access to consumers
1991	First website created at CERN by Tim Berners-Lee, notable the hyperlink
1993	Mosaic, the first web browser, released by NCSA
1994	Netscape Navigator, the web browser, helped open the Internet to commercial activity and accelerate Internet adoption Amazon founded as one of the first major online retailers
1996	Hotmail launched as one of the first web-based email services
1997	Netflix introduced DVD rentals ordered online and delivered by mail
1999	Napster pioneered peer-to-peer file sharing over the Internet
2004	Facebook launched to bring social networking to the Internet
2007	Internet of Things (IoT) emerged with internet-connected consumer devices iPhone released and sparked mass mobile Internet adoption
2011	Global Internet users surpassed 2 billion
2016	Internet of Things devices overtook the global population
2020	Next-generation networks emerged, including the 5G rollout and the launch of space-based global satellite internet
2022	SpaceX's Starlink and Amazon's Project Kuiper launch satellites for space-based global internet coverage.

Table 5.2.1 Key Internet Milestones 1996-2023 (CC-BY, by Ly-Huong Pham)

5.2.1: In the Beginning: ARPANET

The origins of the Internet trace back to the Cold War era in the late 1950s. After the Soviet Union launched Sputnik, the US created the Advanced Research Projects Agency (ARPA) to gain technological advantage. Out of ARPA, which later became DARPA, the concept of a decentralized computer network was born. In 1969, the company Bolt, Beranek, and Newman (BBN)

won the contract to develop this network for ARPA. That year, the ARPANET was created as the first prototype of the Internet. It connected four university research computers in California and Utah.

Fun Fact

Do you know who the first Internet users were?

They were University of California, Los Angeles (UCLA), Stanford Research Institute (SRI) in Menlo Park, California, University of California, Santa Barbara (UCSB), and University of Utah in Salt Lake City. In 1969, the ARPANET connected one computer at each of these four locations in the first trial of the network.

UCLA, Stanford, and UCSB were in California, while the University of Utah represented another region in the western US. The goal was to demonstrate that computers in different geographies could communicate in real time over the ARPANET, which paved the way for the Internet as we know it today.

5.2.2: The Internet and the World Wide Web

Over the 1970s, ARPANET expanded to connect more organizations. Different organizations were connected to different networks. This led to a problem: the networks could not talk to each other. Each network used its own proprietary language or protocol to send information back and forth. This problem was solved using the transmission control protocol/Internet protocol (TCP/IP). TCP/IP quickly became the standard protocol and allowed networks to communicate with each other. We first got the term Internet from this breakthrough, which means “an interconnected network of networks.”

Definition: Communication Protocol

A communication protocol is a system of rules that allows two or more devices to connect, exchange information, and communicate successfully. The protocol defines how data should be formatted, transmitted, received, and processed by the devices on a network. Some key Internet protocols are TCP/IP, HTTP, FTP, SMTP, and POP3. Protocols provide a common language that enables different hardware and software to connect.

Fun Fact: The term "Internet"

We first got the term Internet from the TCP/IP breakthrough, which means “an interconnected network of networks.”

Through the 1980s, more government and academic institutions connected to the rapidly growing Internet, mainly utilizing it for email. Using the Internet in these early days was not easy. To access information on another server, you had to know how to type in the commands necessary to access it and know the name of that device. That all changed in 1990 when [Tim Berners-Lee](#) introduced his World Wide Web project, which provided an easy way to navigate the Internet through the use of linked text (hypertext). The release of the first web browser Mosaic in 1993 popularized the graphical web. By 1994, the web browser Netscape Navigator helped open the Internet to commercial activity and accelerated Internet adoption. The web browser rapidly improved the user experience beyond the text-based Internet of the 1980s.

By late 1990s and 2000s, mobile and wireless Internet further advanced connectivity among users and devices. Everyone can get online wirelessly via WiFi hotspots. Smartphones brought Internet into the palm of billions of people. Popular mobile apps such as WhatsApp, Instagram made for an almost 24/7 connected lifestyle. Wireless broadband, 3G and then 4G LTE allowed rapid growth of video, social media, and other bandwidth-hungry applications on mobile devices. The evolution to an always-on mobile Internet has profoundly impacted how people learn, play, and work. We will discuss this in more detail wireless technologies in a later section.

Table 5.2.2 shows the growth in internet users globally. According to the International Telecommunications Union (ITU, 2023), the world population reaches 8 billion, about 66% or 5.3 billion people worldwide are using the internet, leaving 2.7 billion people still offline.

Global Internet Users 2005 to 2023							
Internet Users	2005	2010	2015	2020	2021	2022	2023
World Population (US Census, 2023)	6.55 billion	6.94 billion	7.35 billion	7.76 billion	7.84 billion	7.90 billion	7.98 billion
Internet Users Worldwide (ITU, 2023)	16%	29%	40%	59%	62%	64%	67%

Table 5.2.2 Global Internet Users 2005 to 2023 (CC-BY-NC, by Ly-Huong Pham)

? Exercise - 5.2.1

Email or the web browser, which is the “Killer” App for the Internet?

Answer

When the personal computer was created, it was a great little toy for technology hobbyists and armchair programmers. As soon as the spreadsheet was invented, businesses took notice, and the rest is history. The spreadsheet was the killer app for the personal computer: people bought PCs to run spreadsheets.

Then came the browser that gives the world wide web (www) and email that allows us to connect with each other. They both made a profound impact on the speed of Internet adoption. Email came before the www and browser were invented. Email was the killer app for the Internet and remains a critical app today for both personal and business use.

The browsers made navigating the Internet easier and posting images, articles, etc. Social networks, such as Facebook, and Instagram, usher in Web 2.0 with new business and personal collaboration forms. Web 2.0 gives much more control to consumers to voice their opinions about their experience and changes the nature of how marketers communicate with consumers. These apps and widespread internet adoption have driven explosive growth for information systems globally.

📌 Sidebar: The Internet and the World Wide Web Are Not the Same Things

Many times, the terms “Internet” and “World Wide Web,” or even just “the web,” are used interchangeably. However, they are not the same thing at all!

The Internet is an interconnected network of networks. Many services run across the Internet: electronic mail, voice and video, file transfers, and, yes, the World Wide Web. The World Wide Web is simply one piece of the Internet. It is made up of web servers with HTML pages being viewed on devices with web browsers.

5.2.3: References

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