**The evolution of Internet**

The Internet is a global network of computers providing a variety of information and communication facilities, consisting of interconnected networks using standardized communication protocols. It is the wider network that allows computer networks around the world run by companies, governments, universities and other organizations to talk to one another. The result is a mass of cables, computers, data centers, routers, servers, repeaters, satellites and wifi towers that allows digital information to travel around the world.

Approximately 15 years after the first computers became operational, researchers began to realize that an interconnected network of computers could provide services that transcended the capabilities of a single system. At this time, computers were becoming increasingly powerful, and a number of scientists were beginning to consider applications that went far beyond simple numerical calculation.

**Early steps: 1960 - 1970**

At earlier times, the credit for the initial concept that developed into the World Wide Web is typically given to Leonard Kleinrock. In 1961, he wrote about ARPANET, the predecessor of the Internet, in a paper entitled "Information Flow in Large Communication Nets." Kleinrock, along with other innovators provided the backbone for the ubiquitous stream of internet services.

The precursor to the Internet was jumpstarted in the early days of computing history:

**1965:** Two computers at MIT Lincoln Lab communicate with one another using packet-switching technology.

**1968:** Beranek and Newman, Inc. (BBN) unveils the final version of the Interface Message Processor (IMP) specifications. BBN wins ARPANET contract.

**1969**: On Oct. 29, UCLA’s Network Measurement Center, Stanford Research Institute (SRI), University of California-Santa Barbara and University of Utah install nodes. The [first message](https://www.livescience.com/5839-40-years-message-conceived-internet.html) is "LO," which was an attempt by student Charles Kline to "LOGIN" to the SRI computer from the university. However, the message was unable to be completed because the SRI system crashed.

3**Expansion of Aprent: 1970-1980**

Initially conceived as a means of sharing expensive computing resources among ARPA research contractors, the ARPANET evolved in a number of unanticipated directions during the 1970s. Although a few experiments in resource sharing were carried out, and the Telnet protocol was developed to allow a user on one machine to log onto another machine over the network, other applications became more popular.

**1971 Email**: Email was first developed in 1971 by [Ray Tomlinson](http://en.wikipedia.org/wiki/Ray_Tomlinson), who also made the decision to use the “@” symbol to separate the user name from the computer name.

**1971 Project Gutenberg and eBooks:** Project Gutenberg, is a global effort to make books and documents in the public domain available electronically–for free–in a variety of eBook and electronic formats for those unfamiliar with the site.

**1973 The first trans-Atlantic connection and the popularity of emailing:** Arpanet made its first **trans-Atlantic connection** in 1973, with the University College of London. During the same year, **email accounted for 75%** of all Arpanet network activity.

### 1974: The beginning of TCP/IP: A [proposal](http://www.ietf.org/rfc/rfc0675.txt) was published to link Arpa-like networks together into a so-called “inter-network”, which would have no central control and would work around a transmission control protocol, which eventually became [TCP/IP](http://en.wikipedia.org/wiki/Internet_Protocol_Suite).

### 1975: The email client: The first **modern emailprogram** was developed by [John Vittal](http://en.wikipedia.org/wiki/E-mail#US_Government). The biggest technological advance this program (called MSG) made was the addition of ****“**Reply**”**** and ****“**Forward**”**** functionality.

### 1977: The PC modem: The first [PC modem](http://en.wikipedia.org/wiki/Hayes_Communications), developed by [Dennis Hayes](http://en.wikipedia.org/wiki/Dennis_Hayes) and [Dale Heatherington](http://www.wa4dsy.net/robot/home/about), was introduced and initially **sold to computer hobbyists**.

### 1978: The Bulletin Board System (BBS): The first [bulletin board system](http://en.wikipedia.org/wiki/Bulletin_Board_System) (BBS) was developed during a blizzard in Chicago in 1978.

### 1978: Spam is born: 1978 is also the year that brought the first **unsolicited commercial email message** (later known as **spam**), sent out to 600 California Arpanet users by Gary Thuerk.

### 1979: MUD – The earliest form of multiplayer games: The precursor to [World of Warcraft](http://www.worldofwarcraft.com/) and [Second Life](http://secondlife.com/?u) was developed in 1979, and was called [MUD](http://en.wikipedia.org/wiki/Multi-User_Dungeon) (short for MultiUser Dungeon). MUDs were entirely **text-based virtual worlds**, combining elements of role-playing games, interactive, fiction, and **online chat**.

During this period, ARPA pursued high-risk research with the potential for high payoffs. Its work was largely ignored by AT&T, and the major computer companies, notably IBM and DEC, began to offer proprietary networking solutions that competed with, rather than applied, the ARPA-developed technologies.

By the end of the decade, the ARPANET had matured sufficiently to provide services. It remained in operation until 1989, when it was superseded by subsequent networks.

**The NSFNET Years 1980-1990**

The NSF began supporting network infrastructure with the establishmentBottom of Form of CSNET, which was intended to link university computer science departments with the ARPANET.

The CSNET was used throughout the 1980s, but as it and other regional networks began to demonstrate their usefulness, the NSF launched a much more ambitious effort, the NSFNET. From the start, the NSFNET was designed to be a network of networks—an ''internet''—with a high-speed backbone connecting NSF's five supercomputer centers and the National Center for Atmospheric Research.

Because the NSFNET was to be an internet, specialized computers called routers were needed to pass traffic between networks at the points where the networks met.

### 1980 ENQUIRE software: The European Organization for Nuclear Research launched [ENQUIRE](http://en.wikipedia.org/wiki/Enquire), a hypertext program that allowed scientists at the particle physics lab to keep track of people, software, and projects using hypertext (hyperlinks).

### 1982: The first emoticon: Kevin MacKenzie invented the [emoticon](http://en.wikipedia.org/wiki/Emoticon) “: -)” in 1979.  Scott Fahlman in 1982 proposed using**a laughing emoticon** after a joke. Then **modern emoticon was born**.

### 1983 Arpanet computers switch over to TCP/IP: January 1, 1983 was the deadline for Arpanet computers to **switch over to the TCP/IP protocols** developed by Vinton Cerf. A few hundred computers were affected by the switch.

### 1984 Domain Name System (DNS): The [domain name system](http://en.wikipedia.org/wiki/Domain_Name_System) was created in 1984 along with the first Domain Name Servers (DNS). The domain name system was important in that it made **addresses on the Internet more human-friendly** compared to its numerical IP address counterparts.

### 1986 Protocol wars: The so-called Protocol wars began in 1986 were European countries pursuing the **Open Systems Interconnection** (OSI), while the United States was using the **Internet/Arpanet protocol**.

### 1987 The Internet growth: There were nearly **30,000 hosts on the Internet**. The adoption of the TCP/IP standard made larger numbers of hosts possible.

### 1988 IRC (Internet Relay Chat): IRC was first deployed, paving the way for **real-time chat** and the instant messaging programs that are used in present times.

### 1988 First major malicious internet-based attack: The first major Internet worm referred to as “The Morris Worm” was released. It was written by Robert Tappan Morris and caused **major interruptions** across large parts of the Internet.

Emergence of the Web : 1990-present

By the early 1990s, the Internet was international in scope, and its operation had largely been transferred from the NSF to commercial providers. Public access to the Internet expanded rapidly thanks to the ubiquitous nature of the analog telephone network and the availability of modems for connecting computers to this network. Digital transmission became possible throughout the telephone network with the deployment of optical fiber, and the telephone companies leased their broadband digital facilities for connecting routers and regional networks to the developers of the computer network.