

INTERNET - AN INTRODUCTION

1.1 A Brief Intro to the Internet

- Internet History
- Internet Protocols

Internet History

1.1.1 Origins

In the 1960s the U.S Department of Defense (DoD) became interested in developing a new large-scale computer network.

The purposes of this network were communications, program sharing and remote computer access. One fundamental requirement was that the network be sufficiently Robust so that even if some network nodes were lost due to damage or some more reason the network could continue to function.

The DoD's Advanced Research Projects Agency (ARPA) funded the construction of the first such network, and the network the first such network, and the network was named as ARPAnet in 1969.

The primary use of ARPAnet was simple text-based communications through e-mail.

A number of other networks were developed during the late 1970's and early 1980's with BITNET and CSNET among them.

BITNET, which is an acronym for Because It's Time Network, developed at City University of NewYork. It was built initially to provide electronic mail and file transfers CSNET, which is an acronym for Computer Science Network, connected the university of Delaware, Purdue University, RAND corporation and many more universities with initial purpose was to provide Electronic mail.

For the variety of reasons, neither BITNET not CSNET became a dominant national network.

A new national network, NSFnet was created in 1986. It was funded by National Science Foundation (NSF). NSFnet initially connected NSF supercomputer centers.

By 1990, NSFnet had replaced ARPAnet for most nonmilitary uses. By 1992 NSFnet connected more than 1 million computers around the world.

In 1995 a small part of NSFnet returned to being a research network. The rest is known as the Internet.

As a Summary:

- ARPAnet - late 1960s and early 1970s
 - Network reliability
 - For ARPA-funded research organizations
- BITnet, CSnet - late 1970s & early 1980s
 - email and file transfer for other institutions
- NSFnet - 1986
 - Originally for non-DOD funded places
 - Initially connected five supercomputer centers
 - By 1990, it had replaced ARPAnet for non-military uses
 - Soon became the network for all (by the early 1990s)
- NSFnet eventually became known as the Internet

1.1.2 What the Internet is:

- Internet is a huge collection of computers connected in a communications network.
- It is a network of network rather than a network of computers.
- Using Internet many people can share resources and can communicate with each other.
- To have Internet service your computer must be connected to the Internet Service Providers (ISP) through cables modem, phone-line modem or DSL.
- The Internet employs a set of standardized protocols which allow for the sharing of resources. These standards are known by the Internet Protocol Suite.
- At the lowest level, since 1982, all connections use TCP/IP

1.1.3 Internet Protocols (IP) Addresses

- Internet Protocol (IP) Addresses
 - Every node has a unique numeric address
 - Form: 32-bit binary number

- IP address is divided into 2 main part:
 - Network number and
 - Host number
- IP addresses usually are written as four 8-bit numbers separated by dots

NETWORK NUMBER	HOST NUMBER
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- Organizations are assigned groups of IPs for their computers
- There are 5 classes of IP address

Sl.no.	IP address Class	Format	Purpose
1.	Class A	N.H.H.H	Few large organization use this class addressing
2.	Class B	N.N.H.H	Medium size organizations use this addressing
3.	Class C	N.N.N.H	Relatively small organizations use this class

Here N stands for Network number and H stands for Host number. For example, a small organization may be assigned 256 IP addresses, such as 191.28.121.0 to 191.28.121.255

- Problem: By the mid-1980s, several different protocols had been invented and were being used on the Internet, all with different user interfaces (Telnet, FTP, Usenet, mailto)

1.1.4 Domain names

- Form: host-name.domain-names
- First domain is the smallest; last is the largest
- Last domain specifies the type of organization
- Fully qualified domain name - the host name and all of the domain names
- DNS servers - convert fully qualified domain names to IPs
- Few domains are:
 - Edu – Extension for Educational institutions
 - Com – Specifies a Company
 - Gov – Specifies government
 - Org – Other kind of organization
- Even Domain specifies the country name
 - in – India
 - pk – Pakistan
 - au – Australia
 - us – United states