

# Chapter 1

## Historical Evolution in Internet: An Introduction

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### ABSTRACT

*The spurt in the Information Technology in the recent past has been well complemented by the innovative research in communication technology. Tremendous growth in the Internet is the result of this. This chapter highlights how the Internet has evolved, over the years, since its inception. The major contributors of Internet Technology have also been pointed out in this chapter.*

### INTRODUCTION

Recently, on September 2, 2010, Internet turned to the age of 40 years. We never have imagined in the past such a boom in the Information technology attributed to the design of the Internet. Its stunning success has changed the way we work, learn and play. It has proved its worth by its support to vast number of applications. It is possible only by the evolution in the underlying network technology. As of today, Internet has become an essential component of our daily life assisting in most of our activities.

However, Internet's increasing ubiquity has brought a number of challenges for which the current architecture is ill suited. It warrants the changes in the Future Internet Design.

Going down the line, it is just a group of small people which conceived the idea of the network, which has resulted in such a huge global network. In the year 1969 around 20 people sat together in a lab at the University of California, Los Angeles to connect two big computers with 15 ft big cables to pass the data. This event is supposed to be the inception of the Internet. Over the years, Internet has evolved drastically and may sound miracle, the way it has changed the life of human being. It is impossible to think of the modern world today

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without World Wide Web (WWW). The term WWW is often mistakenly used as a synonym for the Internet. In reality, Web is a service that operates over the Internet, e.g. e-mail.

The development of the Internet, over the years, may be listed in chronological order as below.

In the year 1969 on September 2, in first test of Arpanet, two computers at the University of California, exchange meaningless data. Arpanet was an experimental military network. On October 29 in the same year, the first connection between the two sites UCLA and the Stanford Research Institute in Menlo Park, California took place. This is to note that the network crashed just after the first two letters of the word "logon." Arpanet got its first East Coast node, at Bolt, Beranek and Newman in Cambridge, Mass in the year 1970. It was Ray Tomlinson, who brought e-mail to the network in the year 1972. He selected @ symbol to specify e-mail addresses belonging to other systems.

Famous communications technique called TCP protocol was developed by Vint Cerf and Bob Kahn in the year 1974. Before formal adoption of this protocol on January 1, 1983, it was divided into TCP/IP. The robust naming mechanism, Domain Name System (DNS) was also proposed in the year 1983, though the famous suffixes .com, .edu etc. came a year later.

America Online service for Macintosh and Apple II was introduced by Quantum Computer Services (now AOL) in the year 1989. It is supposed to connect nearly 27 million Americans online by 2002. While inventing ways to control computers remotely at European Organization for Nuclear Research CERN, Tim Berners-Lee created the World Wide Web in 1990. It is one of the biggest milestones in the development of current Internet. In fact several names were considered for WWW i.e. *The Information Mesh*, *The Information Mine* (both abbreviates to TIM) or *Mine of Information* (MOI) but ultimately was settled on *World Wide Web*.

Burner Lee along-with his one of the colleagues developed a Hypertext Technology in the year 1990. All the necessary tools e.g. HTML (Hyper Text Markup Language), HTTP (Hyper Text Transfer Protocol) for working with Internet was developed by them by the year 1990.

Mosaic was the first Web browser to combine graphics and text on a single page. It was created by Marc Andreessen and colleagues at University of Illinois create in the year 1993. First commercial Web browser, Netscape, was also developed by Andreessen and others on the Mosaic team in the year 1994. In the year 1995, Amazon.com Inc. opens its virtual doors for users. In 1998, Google Inc. was formed out of a project in Stanford. Internet Corporation for Assigned Names and Numbers (ICANN) was also formed by the US government in 1998. Eventually, in the year 1999, Napster popularizes the music and file-sharing. World Internet population also grows to 250 million by 1999. It was the year 2000 in which Amazon.com, eBay and other sites are crippled in one of the first widespread uses of the denial-of-service attack. This flooded the site with a huge bogus traffic and prevented legitimate users. Successive years only see the world Internet population to grow like anything. It was 500 million in 2002, which increased to 1.5 billion in 2008 and reaching to 2 billion now. Many web browsers; Firefox, MS Internet Explorer, chrome etc. have been developed during this development.

The concept of the Semantic Web came around the year 2003 by the Tim Berner Lee. His vision of the Semantic Web is as follows:

*I have a dream for the Web in which computers become capable of analyzing all the data on the Web—the content, links, and transactions between people and computers. A 'Semantic Web', which should make this possible, has yet to emerge, but when it does, the day-to-day mechanisms of trade, bureaucracy and our daily lives will be handled by machines talking to machines. The 'intelligent*

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