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# 1. The History of the Internet

Internet is a worldwide system of interconnected computer networks that use the TCP/IP set of network protocol. And in the early 1960s, the idea of the Internet got started. That was when J.C.R. Licklider — a computer scientist with technology company Bolt, Beranek, and Newman (BBN) — formulated a few unique ideas about global networking in a series of memos, describing an "Intergalactic Computer Network." In the time of the cold war, an agency called ARPA that begin 1958 by the US Department of Defense to sponsor research projects related to military problems and they start to fund programs at universities and corporations concerning the creation of computer network to access, share data and programs among computers in different locations.

Before the invention of Internet computer communication was only point-to-point and the topology for computer networks was highly centralized, in which all the computers connected to one central system, and this system is called ‘star shape’ topology. And this centralized system was vulnerable in case of internal or external attacks. So, Paul Baran from RAND corporation was given the grant to investigate how US military could protect its communication system from damage, Baran (1964) came up with a distributed communication system, in which no central unit, every node has the same routing capability. This communication system was the best design and highly interconnected, distributed network in which each node is connected to all the others.

## 1.1 Packet switches

Leonard Kleinrock first proposed the idea of packet switching. It breaks data into a number of parts called packets, and these packets are routed from the source to destination using network switches and routers, and then they are reassembled at the destination. Then the concept was developed more by RAND corporation researcher Paul Baran when Baran was working in the US military in order to build a communication system that would not fail if one of its nodes was destroyed. Packet switching had the virtue of being completely survivable because it had no critical central components.

The advantage of packet switching in the distributed communication system is every node can originate, pass and receive messages. If the router is not functioning well, a packet can be rerouted through other nodes.

## 1.2 The ARPAnet

In 1966 the MIT researcher Lawrence G. Roberts started for ARPA the design of ARPANET. In 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. 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.

In the1970-1971 ARPAnet grew its nodes to 23 and start to design functional network protocol called NCP (Network control protocol), NCP protocol provided the middle layers of the protocol stack running on host computers of the ARPANET and it was point-to-point protocol.

In 1972 Ray Tomlison write the basic e-mail message software, then this become the most widely use application in the network. In 1973 the first international node was set up in England and Norway.