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# INTERNET FROM DREAM TO REALITY

Internet is a worldwide system of integrated computer networks for storing and transmitting information. It is often referred to as the World Wide Web and the Global Network, as well as simply the Web. It is built on the basis of the TCP / IP protocol stack. On the basis of the Internet, the World Wide Web (WWW) and many other data transmission systems operate.

By mid-2015, the number of users reached 3.3 billion people. In many respects this was due to the widespread use of cellular networks with 3G and 4G Internet access, the development of social networks and the reduction in the cost of the Internet traffic.

The first research program in the direction of rapid messaging was introduced by Joseph Liklayder, who published his work of "Galactic Network" in 1962. It was reinforced by the work of Leonard Kleinrock in the theory of packet switching for data transmission (1961-1964). In 1962, Paul Baran of RAND Corporation produced a report “On Distributed Communication Networks”. He suggested using a decentralized system of interconnected computers (all computers on the network are equal), which, even with the destruction of its part, will work. This solved two important tasks, namely ensuring the system working capacity and the indestructibility of data that are stored on computers spaced apart from each other.

It was suggested to transmit messages in digital, rather than in analog form. The message itself was proposed to break into small portions i.e. "packages" and transmit all the packets simultaneously over a distributed network. From the discrete packets received at the destination, the message was "collected" again.

In 1967, Larry Roberts proposed to connect the computers ARPA. Work began on the creation of the first Internet network ARPANet. At the same time, Donald Davis developed the concept of the Network in England and added a significant feature - computer nodes should not only transfer data, but also become translators for various computer systems and languages. It is Davis who introduced the term "package" to refer to fragments of files that are sent separately.

Development of such a network was entrusted to the University of California in Los Angeles, the Stanford Research Center, the University of Utah and the University of California in Santa Barbara. The computer network was named ARPANET (English Advanced Research Projects Agency Network), and in 1969, the network united the four mentioned scientific institutions in the framework of the project. All works were funded by the US Department of Defense. Then the ARPANET network began to grow actively and develop and scientists from various domains began to use it.

The first ARPANET server was installed on September 2, 1969 at the University of California (Los Angeles). Computer Honeywell DP-516 had 24 KB of RAM.

A communication session held October 29, 1969 at 21:00 between the first two nodes of the ARPANET network, located at a distance of 640 km - at the University of California Los Angeles (UCLA) and at the Stanford Research Institute (SRI). Charlie

Kline tried to perform a remote connection from Los Angeles to a computer in Stanford. The successful transmission of each symbol was introduced by his colleague Bill Duvall (Bill Duvall) from Stanford confirmed by phone.

For the first time, it was possible to send only two symbols "LO" (originally intended to be transferred to "LOG") after which the network ceased to function. LOG had to mean a LOGIN (logon command). In working condition, the system was returned by 10 p.m., and the next attempt was successful. This date can be considered the birthday of the Internet.

In 1973, the first foreign organizations from Great Britain and Norway were connected to the network via a transatlantic telephone cable, the network became international.

In the 1970s, the network could not easily interact with other networks built on other technical standards. By the end of the 1970s, data transfer protocols began to develop rapidly, which were standardized in 1982-1983. John Postel played an active role in the development and standardization of network protocols. On January 1, 1983, the ARPANET network switched from the NCP (The Network Control Protocol) protocol to TCP / IP (Transmission Control Protocol / Internet Protocol), which has been successfully used so far to unify (or, as they say, "layers") networks. The term "Internet" was assigned to the ARPANET network in 1983 [1].

In 1984, the ARPANET network had a serious rival: the National Science Foundation of the United States (NSF) established an extensive inter-university network NSFNet (English National Science Foundation Network), which was made up of smaller networks (including the then known Usenet and Bitnet networks) and had much greater bandwidth than ARPANET. About 10 thousand computers were connected to this network for a year, the name "Internet" began to smoothly pass to NSFNet [5].

In 1988, the Internet Relay Chat (IRC) protocol was developed, making it possible to communicate real-time (chat) on the Internet.

In 1989, in Europe, within the walls of the European Council for Nuclear Research (CERN), the concept of the World Wide Web was born. It was suggested by the famous British scientist Tim Berners-Lee, who also developed the HTTP protocol, the HTML language and URIs within two years.

In 1990, the ARPANET network ceased to exist, completely losing the competition to NSFNet. In the same year, the first connection to the Internet was recorded over the telephone line (so called "dial-up", English dialup access).

In 1991, the World Wide Web became widely available on the Internet, and in 1993 the famous web browser NCSA Mosaic appeared. The World Wide Web gained popularity.

We can assume that there are two clearly discernible eras in the history of the Web: the era of Mark Andrissen or before Mosaic's browser era and after.

It was the combination of the Web protocol from Tim Berners-Lee, who provided communication, and the browser (Mosaic) from Mark Andrissen, who provided a functionally perfect user interface, created the conditions for the observed explosion (interest in the Web). In the first 24 months that have elapsed since the appearance of the Mosaic browser, the Web has gone through a stage of complete obscurity (beyond the limited number of people within a narrow group of scientists and specialists only

one little-known activity profile) to the complete and absolute prevalence all over the world.

In 1995, NSFNet returned to the role of a research network, the routing of all Internet traffic was then handled by network providers, rather than supercomputers of the National Science Foundation [4].

In 1995, the World Wide Web became the main provider of information on the Internet, overtaking the FTP file transfer protocol. The World Wide Web Consortium (W3C) was formed. We can say that the World Wide Web has transformed the Internet and created its modern look. Since 1996, the World Wide Web has almost completely replaced the concept of "Internet"[1].

In the 1990s, the Internet combined most of the networks that existed the, although some, like Fidonet, remained isolated. The union looked attractive due to the lack of unified guidance, and also due to the openness of the technical standards of the Internet, which made the networks independent from business and specific companies. By 1997 there had already been about 10 million computers connected to the Internet, over 1 million domain names were registered. The Internet has become a very popular medium for information exchange.

Currently, you can connect to the Internet through communication satellites, radio channels, cable television, telephone, cellular communications, special fiber-optic lines or electric wires. The global network has become an integral part of life in developed and developing countries.

Within five years, the Internet has reached an audience of over 50 million users. Other means of communication required much more time to achieve this popularity

The idea of applying electrical information communication for business purposes was mentioned in 1908 by Nikola Tesla: “As soon as completed, it will be possible for a business man in New York to dictate instructions, and have them instantly appear in type at his office in London or elsewhere. He will be able to call up, from his desk, and talk to any telephone subscriber on the globe, without any change whatever in the existing equipment. An inexpensive instrument, not bigger than a watch, will enable its bearer to hear anywhere, on sea or land, music or song, the speech of a political leader, the address of an eminent man of science, or the sermon of an eloquent clergyman, delivered in some other place, however distant” [2].

It all started with a small idea about communicating people, accessing information from different parts of the world without the hassle and growing into a mass culture and the accessibility of all information and services around the world. The connection of the four institutes grew into the World Wide Web, the telephone connection with the 1G, which could be used by people with large incomes, but limited traffic, turned into 4G that anyone can use and not be limited by the access to information and speed. The technology of Wi-Fi overgrows in ViMax with coverage in the whole city. Everything started with a small dream and grew into a social routine.

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