Ethernet: history and future

The 400 Gb / s fast Ethernet is realized in the short term. In the long term, experts expect the Ethernet providing a petabits / s technology. The 40th Ethernet History shows that this is not unrealistic.

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There is no better model for success in data communications as the Ethernet. This technology forms the basis for access to the Internet and the transport of data over networks.Most users communicate via either an RJ-45 connector or wireless (Wi-Fi) with the world. Hardly anyone knows that the Ethernet was invented and developed in the 1970s.

The actual development of the Ethernet began when Robert Metcalfe took a job as a developer at the Xerox Corporation. Xerox was working on a prototype of a communications controller that should communicate via the so-called Ethernet medium. The data rate is then propagated the unimaginable fast speed of 3 Mbit / s (in truth there were "only" 2.94 Mbit / s). The new technology was introduced in 1976 at a computer conference to the public. (See also the video: http://www.youtube.com/embed/Z6E4eCYADMw)

In February 1979, agreed Robert Metcalfe and Gordon Bell (DEC), the evolution of Ethernet to a quasi-standard LAN (10 Mbit / s). The DIX group consisting of DEC, Intel and Xerox, began officially in June 1979, the co. In September 1980, the DIX group published specifications for Ethernet LANs. The first standard is now known as Ethernet version firstThe American Standards Institute Institute of Electrical and Electronic Engineers (IEEE) took up the idea of the Ethernet, and the newly established IEEE 802.3 working group tried to develop company-specific specifications from an internationally recognized standard. In December 1982, the draft of the IEEE 802.3 group could be presented for "yellow" Ethernet (10Base5) as unapproved standard under the name "Carrier Sense Multiple Access with Collision Detection (CSMA / CD)." In the same month, the DIX group released the specification for Ethernet Version 2 The Ethernet Version 2 is an adaptation of the IEEE Ethernet Version 1 design.

The work on the so-called Cheapernet standard (10Base2) and began in June 1983 to 802.3 Unapproved standard by the IEEE Standards Board ratified. The American researchers world that is closely linked for historical reasons, the development of Ethernet, follow the signs of the times and published in Request for Comments (RFC) under the title "Standard for the transmission of IP datagrams over Ethernet networks" the adaptation of the TCP / IP world to the new transmission medium. In the same year, work on the Ethernet on broadband (10Broad36) and the StarLAN (1Base5) specifications began. In 1985, the Ethernet standard as ISO / DIS 8802/3 standard is

published worldwide. The first time the magic number of 100 manufacturing companies worldwide has been exceeded, which had received a license from Xerox to the production of Ethernet products. In June 1985, the RFC 948 allows the support of the TCP / IP protocols on the official IEEE 802.3 networks for the first time. (See also the video: http://www.youtube.com/embed/o9MbO7Fhvpg)

The years between 1980 and 1990 were in the fight with the rival of Ethernet Token Ring from IBM. Let us recall the debates: "Who needs a museum? Ethernet or Token Ring? "Today, we know how this feud went out and the Token Ring LAN was the equivalent of the Betamax video recording system. (See also the video:http://www.youtube.com/embed/cjiashsjjzU)

1986 start some smaller companies with the transmission of Ethernet data on four-wire lines. Simultaneously, a new working group will be launched, which should examine the Ethernet to fiber optic communication lines. In 1988, Ethernet offered on twisted pair products (pre-standard) and only adopted in 1991 as a standard 10BaseT (Ethernet on twisted pair) after long discussions. The following year, the 10BaseF followed standard (Ethernet on fiber optics). 1992 announced the company Hewlett-Packard, and AT & T Microsystems to develop a fast Ethernet based on 100 Mbit / s on twisted pair cables.This initiative was countered by the IEEE 802.3u group and published the Fast Ethernet standard (100BaseX). At the physical level of the Ethernet standard, supports both fiber optic (100BaseFx) and twisted pair. Even the Fast Ethernet standard laid for the first time set the full-duplex transmission mode.

Through the development of multimedia applications in networks new demands were placed on the transfer rate in subsequent years. For this reason, in late 1996 has already been turned back at the speed screw and started with the definition of a new Ethernet substandard at 1000 Mbit / s (1 Gbit / s). The standardization efforts of the IEEE 802.3z group were quickly driven by the substantial interest of the market and the manufacturer, so that already existed in mid-1997, a draft standard for Gigabit Ethernet. The final 1000-MBit/s-Standard for the media and twinax cable fiber lay before mid-1998. The definition of the 1000BaseT standard was postponed due to time constraints in the 802.3ab working group and persecuted separately. Although the PHY, PCS, PMD and management specifications already existed since the middle of 1998, it took until the end of 1999 to the 1000BaseT standard finally saw the light of the world. Beginning of 2000 was rumored in the market, which spoke of a 10 Gbit / s Fast Ethernet. Giant strides in the 10 Gigabit Ethernet 802.3ae task force aimed towards the completion of the standard. In autumn 2001 the first 10-GBit/s-Ethernet-Komponenten were published. Some years later (2010) already came the first pre-standard Ethernet products in the range of 40 and 100 Gbit / s on the market. Work on the standard 802.3ba began in late 2006. This defines another two speeds for the Ethernet for two applications: 40 Gbit / s for the server connection and 100 Gbit / s for the upgrade of the core switches. The new IEEE standard 802.3ba paved the way for higher speed Ethernet in the data center sector.