

## **ETHERNET**

Ethernet – is the most common local area network standard today. The total number of networks operating on Ethernet protocol is currently estimated at several million. When they say Ethernet, then under that is usually understood to mean any of the variants of this technology (FastEthernet, GigabitEthernet and 10GEthernet). In a narrower sense, Ethernet – a networking standard based on Ethernet technology experimental network Network, which, Xerox has developed and implemented in 1975 (before the advent of the personal computer).

Access method was tested even earlier: in the second half of the 60s in the radio network of the University of Hawaii used a variety of options for random access to the shared radio environment, collectively referred to Aloha. In 1980, the company DEC, Intel and Xerox jointly developed and published version of the Ethernet II standard for network based on coaxial cable. Therefore, Ethernet standard is sometimes called the DIX standard capital letters for names of firms.

Local area networks, as packet networks, use time division multiplexing principle that is shared by the transmission medium over time. Algorithm for Media Access Control is one of the most important characteristics of any LAN technology to a greater extent determined by its appearance than the signal encoding method and frame format. The Ethernet technology as a medium separation algorithm applied a method of random access. And although it can hardly be called perfect – with an increase in useful load bandwidth plummets – it because of its simplicity was the main reason for the success of Ethernet technology. For the transmission of binary information through a cable for all variants of Ethernet physical layer Manchester code is used.

All types of Ethernet standards use the same method for the separation of the medium data – method CSMA / CD. Method CSMA / CD defines the basic timing and logic ratio to ensure the correct operation of all stations in the network. All computers of the network have direct access to the common bus, so it can be used to transfer data between any two network nodes. Easy to connect the circuit – it is one of the factors that determine the success of Ethernet. They say that the cable to which all stations are connected, works in the public access mode (multiply-access, MA). Regardless of the implementation of the physical medium, all Ethernet networks must satisfy two constraints associated with the access method:

- the maximum distance between any two nodes must not exceed 2,500 m
- no more than 1024 units should be on the network.

By 2010, the market for Ethernet equipment will be amounted to over \$16 billion per year. Later on Ethernet will replace InfiniBand as the most popular system interconnecting TOP 500 supercomputers.

To sum it up, this network data transfer standard rate of 10 Mbit/s is now the international standard. Also Ethernet technology was the first technology that offered the use of a shared environment for access to the network

*Scientific supervisor: Denisenko N.G.,  
Senior Lecturer*

UDC 658.7 (043.2)

**Kachan T.I.**

*National Aviation University, Kyiv*

## **GAME THEORY METHOD IN LOGISTICS**

Game theory is a mathematical method of studying the optimal strategies in games. The game is referred to the process, which involves two or more parties competing for the interests. Each party has its own purpose and uses some strategy that can lead to the loss or win (depending on the behavior of other players). Game theory helps to choose the best strategy taking into account the ideas about other participants, their resources and possible actions.

Logisticians opt to use mathematical models and methods for complex problems solving. Mathematical theory of games is a powerful tool for situations analysis on logistics services market with lots of participants.

Supply chains mathematical models has considerably developed over the last decade. Supply chains represent itself a combination of producers, consumers, transport companies and warehouses. Logistics mathematical models describe complex system management, optimize supplies and solve delivery problems. Winning these games lead to the reduction of transport costs, improvement of service quality, price decrease, etc. Most of the existing logistics mathematical models involve unidirectional flow of goods from the manufacturer (seller) to the consumer (buyer).

With the rapid development of e-trading, companies are more often faced with new challenges related to goods delivery organization to the end consumer. For example, many online retailers refund returned goods without commission.

Also, modeling projects the situations when a customer returns product parts or package, e.g., drinking water or carbonated beverages for machines delivery. Providers frequently require returning product packaging. Sometimes, the consumer can choose between the refund on package return or higher price for the non-returnable package.

The purpose of the mathematical model is to offer both sides reasonable and