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НЕКОТОРЫЕ ХАРАКТЕРИСТИКИ КОМПЬЮТЕРНЫХ СЕТЕЙ

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В работе обсуждаются некоторые характеристики компьютерных сетей. Дается их сравнительный анализ.

Ключевые слова: компьютерная сеть, передача управления, организация, структура.

Nowadays computer networks are characterized by a complex topology, therefore very often the question of preliminary modeling the future network. With help simulations define the characteristics of the network, necessary network equipment, optimal topology, possible reserves for the future development. Also, network simulation avoids the costs incurred in as a result of additional network restructuring in future.

The process of designing an object – a computer network is iterative nature. Iterations can include more than one design level. That is, in the design process you have to repeat the procedure for analyzing the object.

Therefore it is obvious the desire to reduce the complexity of each analysis option without compromising the quality of the final project. In these conditions it is advisable at the initial stages of design, when high accuracy of results is not required, use the most simple and economical models [1].

A computer network (CN) is a large number of PCs that are connected to each other through communication lines (LAN), and which operate under the control of certain software.

The LAN is a system that combines a physical medium and equipment that allows a signal to be transmitted from a transmitting device to a receiving device.

The CN is designed to connect a PC to a network so that many users have the opportunity to carry out common work, as well as use a joint resource base. Through this, personnel can send messages to each other, share files and a variety of programs, and so on.

The CN enables the network manager to manage it from a single center, control the PC and the personnel who work behind them. CN is capable of using digital automatic telephone exchanges, ID-Phone telephones, systems for installing video surveillance, security and other equipment [1].

By some estimates, more than half of the operating personal computers are connected to networks.

The use of computer networks gives users enormous opportunities:

1. Ability to perform calculations in parallel. Because of this, a network containing a certain number of information processing nodes will have higher performance than one powerful PC with several processors. Distributed systems will be much stronger in performance than systems where information is processed centrally;

2. Resilience of the system to failures. Which implies the ability of the aircraft to work, even if some of its components are out of order. Because such networks have a lot of redundancy [2].

That is, if one node fails, then the system transfers the tasks that it previously performed to another node.

To accomplish this, the network uses separate software that is present in it, which makes automatic configuration changes in a static or dynamic order. In the aircraft, certain information can be recorded with external storage devices of other PCs that are connected to the network [3, 4]. And therefore, if one PC fails, the data can be provided by other PCs;

3. The use of the aircraft, which is distributed over the territory. This capability is often used in the banking industry [5, 6]. Since bank

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branches are located on some territory, they use a common banking database [3].

Also, this property is applied in the field of taxation, when selling train or plane tickets. All these areas have jobs that can operate in an autonomous mode, which use a common database, and they are distributed over a certain territory. And in order to ensure the work of users located at a distance from each other, the formation of the aircraft is carried out.

CNs are classified according to certain criteria, however, they are often divided by territory, i.e. by its size covered with a net. This is characterized by certain reasons, since the work of the LS and the HS differs greatly from each other, although they have been constantly converging lately.

When one considers these signs, one does not pay attention to what basically distinguishes LAN and WAN. LANs are networks in which nodes are limited in their number, and therefore the number of subscribers is also limited by the number of those who work [7, 8] in the company where this network is deployed. WAN has no limitation on the number of clients.

At the moment, the location of LAN networks is possible on the entire continent, and only employees of a single company can work remotely, using tunnel-type protocols [4].

Whereas WANs are a broadcast network where the number of clients is not limited [5].

Clients can be anywhere, this network can unite any of the societies with close connections. This network has restrictions on expansion not in technology, but because of the social meaning of the transmitted data (for example, because of the language).

LANs are corporate PC networks that are geographically close to each other (as a rule, with a radius of no more than two kilometers).

In general, a LAN is a communication system that belongs to a single company. Since the distance between equipment and clients in LAN is small, they can use rather expensive communication lines of high quality. And therefore, when using simple techniques for transferring information, the speed values ??in such networks will be very high and can reach thousands of megabits per second.

WANs are networks [9, 10] that connect PCs located in various cities and states on a certain territory. Since it is impossible to lay high-quality communication lines due to the high price, the HS uses those drugs that are, but serv-ing other purposes. For example, a large number of HS were created using telephone lines. But at the moment they are almost everywhere changing to fiber, which has a large capacity for data transmission.

In order to reliably transmit discrete information over different types of drugs, methods and techniques are used that are fundamentally different from those used in drugs.

Usually, a rather complex procedure is used to compact, control, and restore information.

Comparative network is a network that connects PCs located in the same state. This network is separated from the rest of the Internet through a separate gateway, in addition, there are DNS servers that provide duplication and allow this network to function even if it is disconnected from the Internet [6].

For example, if there is a war or the network is attacked by hackers. CAN works in countries where information protection is organized at the highest level.

For example, in the Republic of China, Kazakhstan and Iran. In 2014, our country also began to create a CAN network, together with other states. But this is happening with great difficulty due to opposition from the real owner of the Internet – the United States, along with its intelligence services [7].

The network that serves one city, MAN, is a WAN subnetwork, and this type of network has emerged more recently than others. Their task is to serve the territory of one big city.

Whereas LANs can best share resources with a short distance, and GEs can work over a huge distance, however, with a speed limit and a small list of possibilities. MAN, is approximately in the middle of them in terms of parameters and capabilities.

These networks use a trunk-type LAN, as a rule, fiber optic, with a data transfer rate of forty-five megabits per second, and their tasks include communication with a LAN in an urban area, as well as connecting a LAN to a WAN.

This type of networks was originally created in order to transmit information, but nowadays they are able to create video conferencing, transmit data on digital TV broadcasting, voice and text messages, and also support telemetry [11].

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SOME CHARACTERISTICS OF COMPUTER NETWORKS

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The paper discusses some characteristics of computer networks. Their comparative analysis given.

Keywords: computer network, transfer of control, organization, structure.