

USING AND MANAGING COMPUTER NETWORKS TO INTERCONNECT LOCAL NETWORKS

МАҲАЛЛИЙ ТАРМОҚЛАРНИ ЎЗARO БОҒЛАШ УЧУН КОМПЬУТЕР ТАРМОҚЛАРИДАН ФОЙДАЛАНИШ ВА УЛАРНИ БОШҚАРИШ

ИСПОЛЬЗОВАНИЕ КОМПЬЮТЕРНЫХ СЕТЕЙ И УПРАВЛЕНИЕ ИМИ ДЛЯ СОЕДИНЕНИЯ ЛОКАЛЬНЫХ СЕТЕЙ

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Annotation — In this chapter, the reader gets to know why everything is about computer networks. Computer networks vary in transmission media (wired or wireless), topology, size and scale. They can be classified as enabled or disabled. They can also be divided into local networks, metropolitan networks and global networks. This chapter lists common computer networking applications. A router is a device that connects two or more packet networks or subnets. It performs two main functions: it monitors traffic between these networks by routing data packets to the intended IP addresses, and allows multiple devices to use the same Internet connection.

Keywords: Network servers, cables, network cards, concentrators, weight distortion, routers, switches, Lan, firewall.

Аннотация — Ушбу мақолада нима учун ҳамма нарса компьютер тармоқлари ҳақида эканлигини билиб олади. олади. Компьютер тармоқлари узатиш воситаларида (симли ёки симсиз), топологияда, ўлчамда ва миқёсда фарқ қилади. Улар ёқилган ёки ўчирилган деб таснифланиши мумкин. Уларни маҳаллий тармоқлар, метрополитен тармоқлари ва глобал тармоқларга бўлиш мумкин. Ушбу бобда кенг тарқалган компьютер тармоқлари дастурлари келтирилган. Роутер-бу икки ёки ундан ортиқ пакетли тармоқларни ёки пастки тармоқларни улайдиган қурилма. У иккита асосий функцияни бажаради: маълумотлар

пакетларини мўлжалланган ИП-манзилларга йўналтириш орқали ушбу тармоқлар орасидаги трафикни назорат қилади ва бир нечта қурилмаларга бир хил Интернет алоқасидан фойдаланишга имкон беради.

Калит сўзлар: Тармоқ серверлари, кабеллар, тармоқ карталари, концентраторлар, вазн бузилиши, роутерлар, калитлар, Лан, хавфсизлик девори.

Аннотация — В этой главе читатель узнает, почему все связано с компьютерными сетями. Компьютерные сети различаются по средствам передачи (проводные или беспроводные), топологии, размеру и масштабируемости. Их можно классифицировать как включенные или отключенные. Их также можно разделить на локальные сети, городские сети и глобальные сети. В этой главе перечислены распространенные компьютерные сетевые приложения. Маршрутизатор - это устройство, соединяющее две или более пакетных сетей или подсетей. Он выполняет две основные функции: отслеживает трафик между этими сетями, направляя пакеты данных по заданным IP-адресам, и позволяет нескольким устройствам использовать одно и то же подключение к Интернету.

Ключевые слова: Сетевые серверы, кабели, сетевые карты, концентраторы, искажение веса, маршрутизаторы, коммутаторы, локальная сеть, брандмауэр.

The main components of the network are workstations, servers, transmission media (cables) and network hardware. Workstations network users are called network computers that perform program tasks.

INTRODUCTION

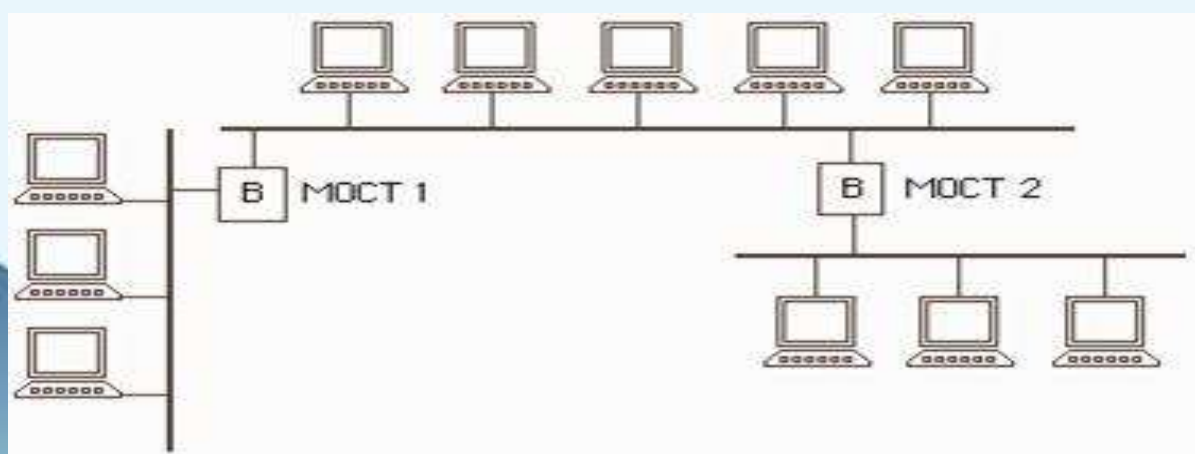
Network servers are hardware and software systems that perform the functions of managing the distribution of common network resources. A Server is any computer connected to a network that can contain resources used by other devices on the network. Very powerful computers are used as Server equipment. The following types are distinguished network equipment:

Network cables (coaxial, consisting of two concentric conductors separated from each other, of which the appearance is tube; the twisted pairs on which the cables are twisted are formed from two wires connected together; fiber optic and arc.).

Network cards (network interface adapters) are controllers that are connected to the computer's motherboard and are designed to transmit signals to the network and receive signals from the network. The network cable is connected to the adapter connectors.

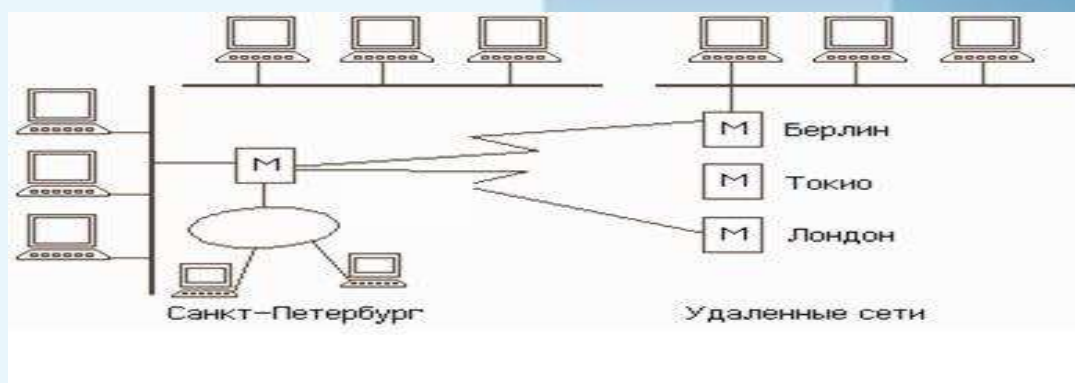
Concentrators (Hub) are the central devices of a cable system or network of "Star" physical topology that transmit a packet to others when they receive it in one of their ports. A center with a set of different ports allows you to combine network segments with different cable systems. A Hub port can be connected to a separate network node or to another hub or cable segment.

Bridges are network devices that connect two separate segments that are limited in physical length. Bridges also amplify and modify signals for other cable types. This will allow you to expand the maximum network size. Bridges change data between networks, transmitting them publicly. The figure below shows three LAN connected by two bridges. In addition, bridges can filter packets, protect the entire network from local data streams, and extract data intended only for other network segments.



Switches (switches) are the software and system that connects heterogeneous networks or network devices. Gateways allows you to solve the problem of differences in protocols or addressing systems. Unlike a bridge, a gateway is used in

cases where connected networks have different network protocols. A message from one network to the gateway is converted into another message that meets the requirements of the next network.



Routers (routers) are standard network devices that operate at the network level and allow packets to be routed and routed from one network to another. This allows, for example, large messages to be divided into smaller parts, thereby ensuring the interaction of local networks with different packet sizes. While the Router can redirect packets to a specific address (bridges can only filter out unnecessary packets), choose the best route for the packet to pass.

A firewall (firewall, firewall) is a software and / or hardware barrier between two networks that allows only authorized interaction, exercises control over the input and output data to the local network, and ensures the protection of the local network by filtering data. Most firewalls are built on classic access control models where an object (user, application, process, or network stack) is allowed or denied access to an object (file or network node) after some unique element is provided that is exclusive to that object. In most cases, this item is a password. For a network package, such an item is addresses or flags in the package header, as well as some other parameters. A communication network is a system of nodes and a connection between them. Nodes perform the functions of creating, modifying, storing and consuming a communication product. Connections (transmission channels, communication lines) are used to transfer the product between nodes. Depending on the type of product, material, Energy, Information Networks are allocated. Examples of material

networks: automobile and rail connections water and gas supply. An information network is a communication network in which the product of communication is information. Examples: telephone networks, television, broadcasting. Computing, or computer network, is an information network whose nodes are computers and other computing equipment. In addition to special network equipment, network applications are also required. Thanks to the interaction of computers on the network, a number of new opportunities appear. The first is the joint use of hardware and software resources. Thus, each individual with shared access to an expensive peripheral (printer, plotter, scanner, fax, etc. Costs for the user are reduced. Network versions of applied software are used in the same way. The second is the exchange of data sources. Keeping information centralized greatly simplifies the processes of ensuring its integrity, as well as creating backups, which ensures high reliability. Obtaining alternate copies on two machines at the same time allows you to continue working if one of them is not available. The third is to speed up data transmission and provide new forms of user interaction in one team when working on a common project. Fourth, the use of common means of communication between different practical systems (communication services, data transmission, video, voice, etc.). One of the important classifications of networks is their size. The size of the network affects the choice of equipment used and transmission technologies used. A local computing network (LAN, or LAN - local area network) connects nearby computers within a limited area, room, building. Specific features of Lan are minimal latency and low error rates. Lans can be elements of large-scale formation: a campus or corporate network (CAN - Campus Area Network) that unites local networks of nearby buildings; an urban network or citywide network (MAN - Metropolitan Area Network); a regional or large-scale network covering a significant area (WAN-Wide Area Network); a global computer network (WAN, or GAN - Global network), has the size of a country and a continent. According to the management method, networks are divided into inter-user and with a dedicated server (centralized management). In Peer - to-peer networks, all nodes are equal-each node can act as both a client and a server. Under the client is understood as a subject of hardware and software that requires certain services. And under server is a combination of hardware and software

that provides these services. A computer connected to a local network is called a workstation (workstation) or server (server), depending on the tasks solved on it. Peer-to-peer LANs are very easy to maintain, but they cannot provide sufficient data protection for a large network. The cost of establishing Peer-to-peer computer networks is relatively small. However, with an increase in the number of workstations, the efficiency of using the network decreases sharply. Therefore, peer-to-peer LANs are used only for small working groups-more than 20 computers. A special server implements the functions of network management (administration) in accordance with the established policies - a set of rules for the distribution and limitation of the rights of network participants. Allocated Server LANs have data security, are capable of supporting thousands of users, but require constant qualified maintenance by the system administrator. Depending on the data transfer technology used, a distinction is made between broadcast networks and networks with Node-to-node transfer... Broadcasting is mainly used in small networks, and in large networks when transmitting from node to node. In Heard networks, all network nodes connect one communication channel. Messages sent by one computer, called a packet, are received by all other computers. Each package contains the address of the recipient of the message. If the package is directed to another computer, then it is ignored. Thus, after checking the address, the receiver processes packages intended only for itself. Node-node networks consist of machines connected in pairs. To reach its destination on such a network, the package passes through a series of intermediate machines. However, there are often alternative routes from source to target.

CONCLUSION.

The way computers on a network connect to each other is called topology... Land has three of the most common topologies. In this word, structures in the form of tires, rings and stars. In a tire (linear) construction, all computers are connected to a chain using a single common coaxial cable. If a branch of the network with a tire structure is also broken, the entire network will fail at all. The fact is that then there is a break in the only physical channel necessary for signal movement. The ring structure is

mainly used in Token Ring Networks, and the difference from tire structure is that all computers are connected to each other in pairs to form a closed cycle.

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