Upgrading the network infrastructure for an organization

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Abstract

Today almost every enterprise is somehow connected with computers. It's because computer technology facilitates work in various fields and thereby increase the productivity of enterprises. But to get this performance, you need to properly implement its capabilities. For example, to combine computers into a local area network, which will allow combining enterprise divisions and thereby facilitating file sharing between workers, or combining branches of the same enterprise located at a great distance from each other through a VPN channel and thereby enable exchange data between local networks.

Keywords: Information technology, information system.

1 Introduction

The advantage of the local area network is the economic component, because it is possible to share peripheral devices. For example, just connect a printer to a router, configure it as a network, and all users can print documents on it.

Wi-Fi allows you to lay the network in places where it is impossible to do, and also allows you to lay the network without laying the cable, which can in turn reduce the cost of the network.

The purpose of upgrading the network infrastructure for an organization is to make a local network project for the "Information Center" using Cisco equipment and testing, and networking in the CISCO Packet Tracer program.

Using CISCO equipment allows you to get maximum network protection, and also makes the network flexible, through the use of specialized commands that can create VLANs inside the local network, prohibit or provide access to Internet resources.

2 General

A computer network is a communication system between two or more computers. In a broader sense, a computer network is a communication system through a cable or air, computers themselves for various functional purposes, and network equipment.

A computer network is a set of geographically dispersed computers, capable of exchanging messages with each other through a data transmission medium.

The main purpose of a computer network is to provide simple, convenient and reliable user access to shared distributed network resources and organize their collective use with reliable protection against unauthorized access, as well as providing convenient and reliable means of data transfer between network users.

To connect computers to a network, special network equipment and software are required. Beginning with the equipment to the network components, except the actual computers (workstations and servers) there are also cables. A computer network is a communication system between two or more computers. In a broader sense, a computer network is a communication system through a cable or air, the computers themselves for various functional purposes, and network equipment.

To connect computers to a network, special network equipment and software are required. The equipment, network components other than computers themselves (workstations and servers) include cables with structures for their installation and corresponding cable connectors, switches, network cards.

When choosing network equipment, many factors must be taken into account, in particular:

- the level of standardization of equipment and its compatibility with the most common software tools;
- information transfer rate and the possibility of further increase;
- possible network topologies and their combinations (bus, star, ring)
- permitted types of network cable, its maximum length, immunity to interference;
- analysis of the compatibility of the equipment used;
- the cost and technical characteristics of specific hardware.

In the process of upgrading the network infrastructure for the organization, programs such as Microsoft VISIO, EDraw, and CISCO Packet Tracer were used to design the local area network.

The Visio drawing engine is based on a vector editor. That is, in the simple case, without using any more advanced tools, the administrator receiving several graphic primitives (line, curve, rectangle and ellipse), with which he can draw the desired image, paint over its fragments.

EDraw is a great tool for creating and publishing a wide variety of diagrams. EDraw allows users to create UML workflow diagrams, structures, network diagrams, database diagrams and more. The utility can execute the whole range of necessary decisions in only one program.

CISCO Packet Tracer is a data network simulator manufactured by Cisco Systems. Allows you to make workable network models, configure (using Cisco IOS commands) routers and switches, and interact between multiple users (via the cloud). It includes a series of Cisco 1800, 2600, 2800 routers and 2950, 2960, 3560 switches. In addition, there are DHCP, HTTP, TFTP, FTP servers, workstations, various modules for computers and routers, Wi-Fi devices, various cables.

The utility successfully allows you to create even complex network layouts, check for topology operability. Available for free to Cisco Networking Academy Program members.

3 Conclusions

Network design in CISCO packet tracer allowed to design the network in more detail by adjusting the characteristics of workstations, switches, routers, creating virtual networks, and getting detailed information while testing the network using various protocols in the program.