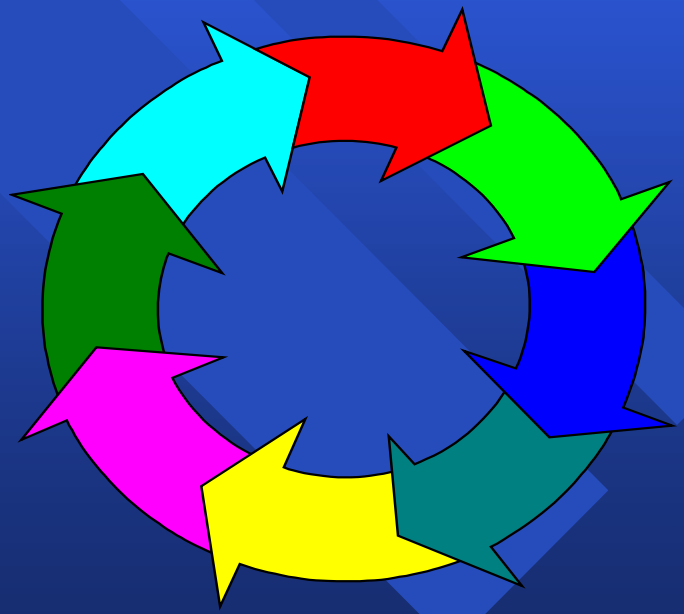
Computer networks



Computer networks

- A **computer network** is a group of interconnected computers.
- A computer or device on a network that manages network resources- **server**.
- They can share different equipments (for example printers, disk drives and so on).
- Internet connection can be permanent (cables) or temporary (modem and phone link).

Advantages of computer networks

- zefektívňujú prácu v pracovných tímoch,
- umožňujú získavať a udržiavať spoľahlivé a aktuálne informácie,
- data sharing,
- networks connect computers and the users of those computers,
- zefektívňujú obchodné služby svojim klientom.

Network classification

Computer networks are divided according order of scale, function and according to the technology that is used to interconnect the individual devices in the network.

- **according order of scale**
- **according function**

Type of networks – according order of scale

- **LAN** (Local Area Network) - is a computer network covering a small physical area, it is generally limited to a building or a geographical area expanding not more than a 100 meters,
- **MAN** (Metropolitan Area Network) -
  - covers larger geographic areas such as cities,
- **WAN** (Wide Area Network) - is a computer network that covers a broad area,
  - typical WAN network is internet.

Type of networks – according function

- workstation
- server

Workstation

- At its most basic, a workstation is any personal computer used for business, professional, home, or recreational purposes.

Server

- A computer or device on a network that manages network resources.

Classification of servers:

- file server,
- print server,
- communication server,
- database server.

Classification of LAN

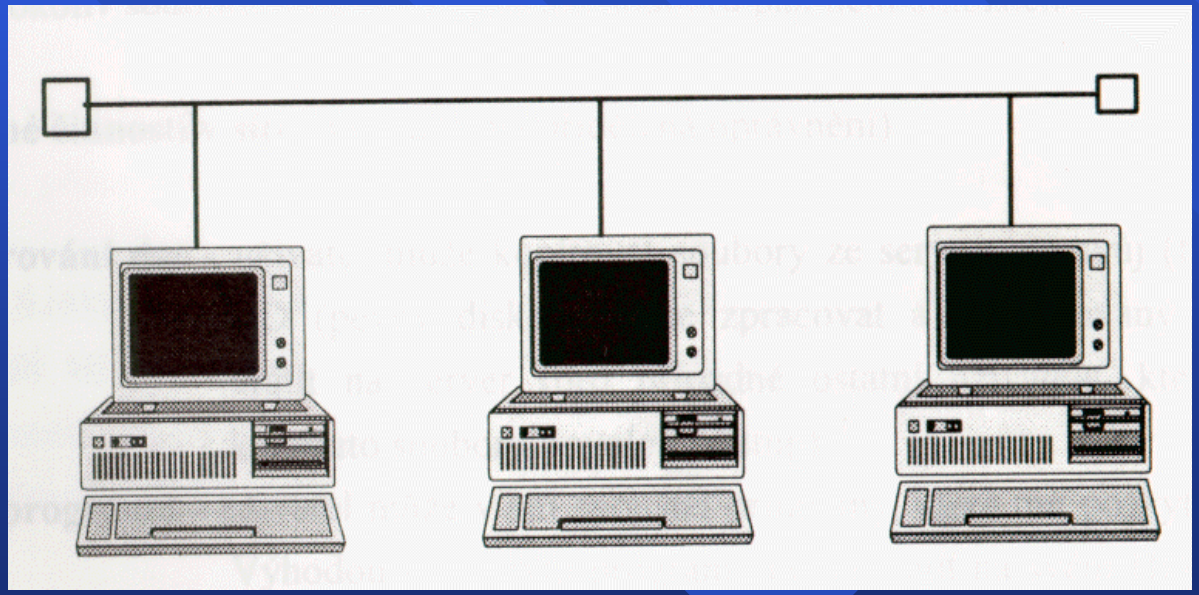
- according topology
- according operation system which is used
- according transfer medium
- according server
- according relationships between computers

1. According topology

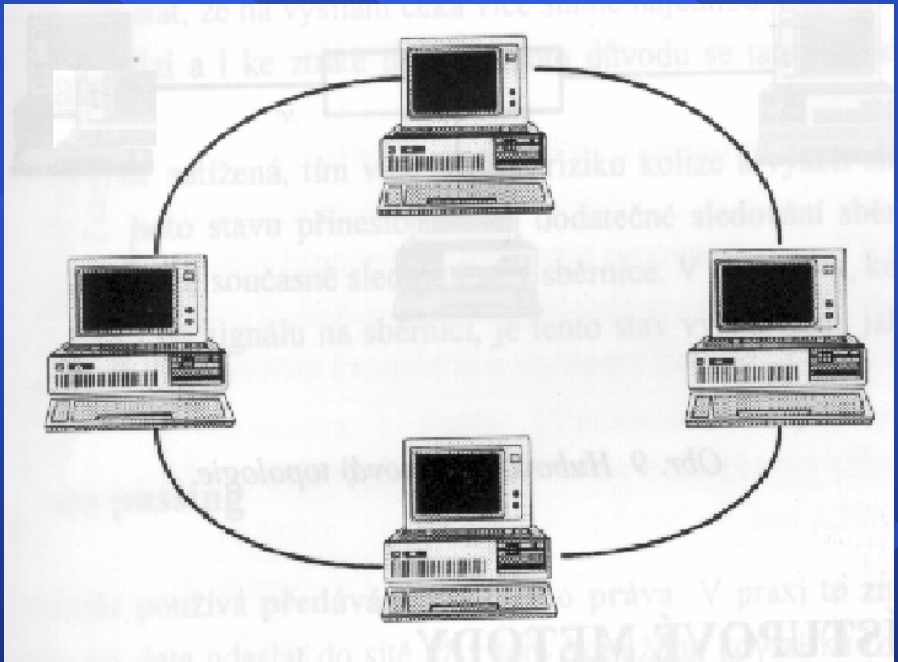
Topology of network ***(fysical array of connections between network nodes – map of network)***

- **bus topology (ETHERNET - 10 Mb/s)**
- **ring topology (TOKEN RING - 4 Mb/s)**
- **star topology (ARCNET - 2,5 Mb/s, Ethernet - 100 Mb/s, 1 Gb/s)**

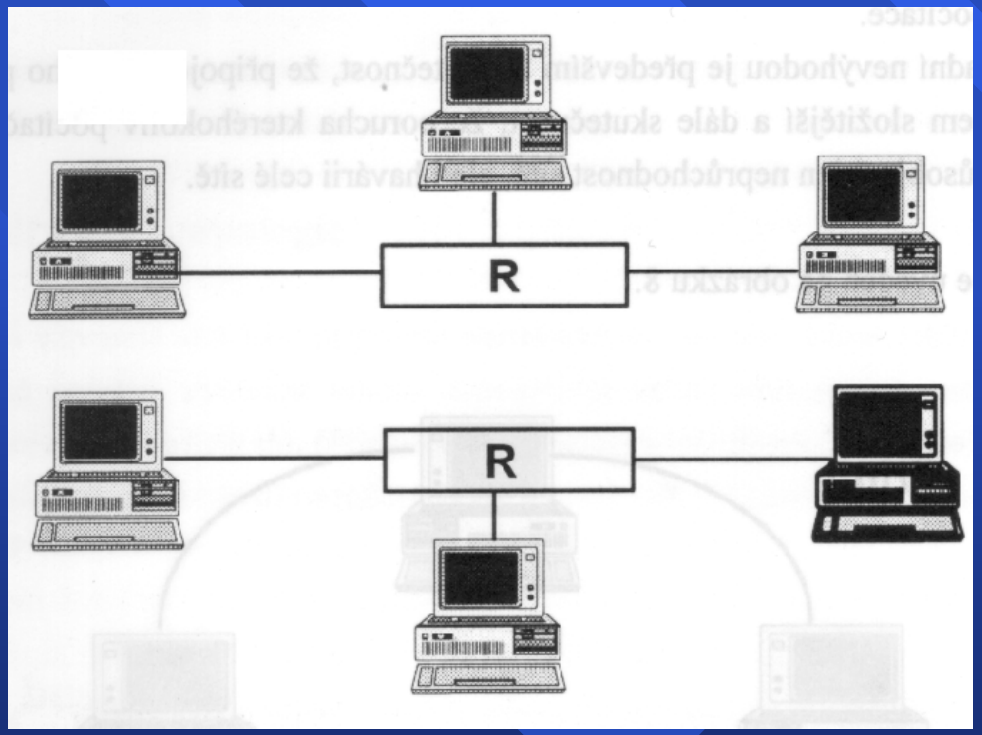
Bus topology



Ring topology



Star topology



2. According OS which is used

- MS DOS - for example LANtastic
- any OS - for example OS/2, UNIX
- own OS - OS is only for NOVELL NetWare

3. According transfer medium

- Cooper cable (transfer medium is coaxial cable, twisted-pair wire)
- Fiber cable
- Wireless transfer

4. According server

- Private server - server is only for network needs.
- Nondescript server – works like workstation.

5. According relationships between computers

- client-server
- peer-to-peer

Client - server

- **client-server - computing or networking is a distributed application architecture that partitions tasks or work loads between service providers (servers) and service requesters, called clients.**
- ***Advantage - all data is stored on the servers, which generally have far greater security controls than most clients.***
- ***Disadvantage - As the number of simultaneous client requests to a given server increases, the server can become overloaded.***

What is client program?

Programs accesing network services of the internet are build on the architecture client/server.

According to this architecture is work of the program divided on two programs:

- **Server**
- **Client which use this resources and equipments**

In this architecture server works nonstop.

Client part is activated randomly, when user needs some data's.

Peer-to-peer

- distributed network architecture is composed of participants that make a portion of their resources (such as processing power, disk storage or network bandwidth) directly available to other network participants, without the need for central coordination instances (such as servers or stable hosts)

INTERNET

- is the connection of two or more distinct computer networks or network segments via a common routing technology,
- is a global network connecting millions of computers.
- Any interconnection among or between public, private, commercial, industrial, or governmental networks may also be defined as an internet.

Basic services of the internet

- ***e-mail*** **(the transmission of messages over communications networks. The messages can be notes entered from the keyboard or electronic files stored on disk)**
- ***World Wide Web*** **(WWW) (A system of Internet servers that support specially formatted documents. The documents are formatted in a markup language called HTML (HyperText Markup Language) that supports links to other documents.)**

WWW - World Wide Web

- is the best known internet service,
- is a system of interlinked hypertext documents accessed via the internet,
- With a web browser, one can view web pages that may contain text, images, videos, and other multimedia and navigate between them using hyperlinks.

Web browsers

- software application used to locate and display Web pages,
- The most popular browsers are Microsoft Internet Explorer, Opera and Firefox.
- All of these are graphical browsers, which means that they can display graphics as well as text.

Basic definitions

- ***Internet*** **- global network connecting millions of computers.**
- ***Intranet*** **- set of networks, using the Internet Protocol and IP-based tools such as web browsers and file transfer applications, that is under the control of a single administrative entity. That administrative entity closes the intranet to all but specific, authorized users.**
- ***Extranet*** **- can be viewed as part of a company's intranet that is extended to users outside the company, usually via the Internet.**

- ***http* - *HyperText Transfer Protocol***
  - **is used by web servers to transfer web pages to your computer**
  - **http appear at the beginning of the web address**
  - **http://www.fem.uniag.sk**
- ***URL* - *Uniform Resource Locator* (resource identifier)**
  - **URL is composed with protocol identifier (http), by a colon (:), by two slashes (//), by the address of the computer and by the file path**
  - **http://www.zoznam.sk/Pocitace/index.html**

Thank you for your attention!