

MVŠO

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Computer Networks

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Review

- Computer architecture – the logical structure that a computer is made up of
- Hardware – all physical components of a computer
- Software – all computer programs and applications
- Peopleware – the human factor in technology
- Orgware – rules and regulations related to the use of technology

Review

- Computer components – computer case, motherboard, CPU, RAM, drive, graphics card, power supply
- Input devices – devices used to give the computer instructions
- Output devices – devices used by the computer to provide feedback

Today's lecture

- Computer networks
- Classification of computer networks
- Network devices

Computer Network

- A “system” created by interconnecting computers
- It consists of:
 - Stations (computers)
 - Network hardware (network cards, cables, ...)
 - Network software (programs for working on a network)

Computer Network

- Depending on the role a computer performs in the network, computers are divided into:
 - Servers
 - Workstations (Workstation)

Servers

- A computer that provides certain services to others (file, application, mail, ...)
- Acts as a control station
- There can be an “unlimited” number of servers on the network



Workstation

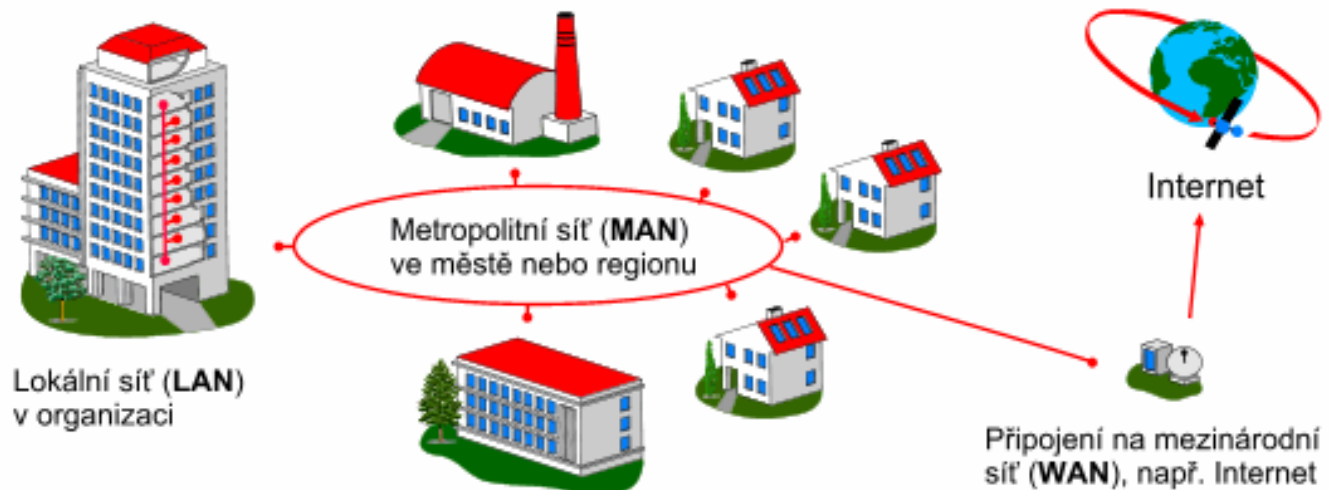
- A computer used by a user
- Uses services provided by a server
- Generally a more powerful device than a standard PC

Classification of Computer Networks

- Based on scope
- Based on the relationship between nodes
- Based on topology

Classification by Scope

- PAN - Personal Area Network, personal network (bluetooth)
- LAN - Local Area Network, local network (Wi-Fi)
- MAN - Metropolitan Area Network, metropolitan networks
- WAN - Wide Area Network, wide area network



Classification by Node Relationship

- Peer-to-Peer
 - “equal to equal”
 - A PC connects to a printer and shares it locally with others
- Client – Server
 - One computer offers its services to others
- SAN – Storage Area Network
 - Storage network
 - Specialized for transferring large amounts of data

Classification by Topology

- Physical
 - Based on the actual interconnection of devices in the network
 - Ring, star, ...
- Logical
 - Based on the communication of individual elements
 - Bus, ring, ...

Network Devices

- Enable connections
- Extend the network
- Modify its properties

Network Card

- Facilitates communication between the computer and the cable
- Converts data from a form understood by the computer so that it can be transmitted over the medium
- Each network card has its own unique MAC address

Repeater

- Used for better signal coverage
- Receives the signal, amplifies it, and sends it on
- It helps extend the signal into previously inaccessible areas

HUB (network hub)

- Used to branch the signal
- It can both amplify and modify the signal

Bridge

- A device that connects networks using different standards
- It can be found, for example, in smart-home devices

Router

- A device used to distribute the connection
- From home use, we know Wi-Fi routers – “boxes” that create a Wi-Fi network and allow individual devices to connect to the internet

Any questions?

Final assignment

- **We have been talking about networks all this time today. Networks allow us to do many positive things, but there are also negatives associated with them.**
- **Write down at least 10 different types of threats that can attack us over the network.**

Thank you for your attention