

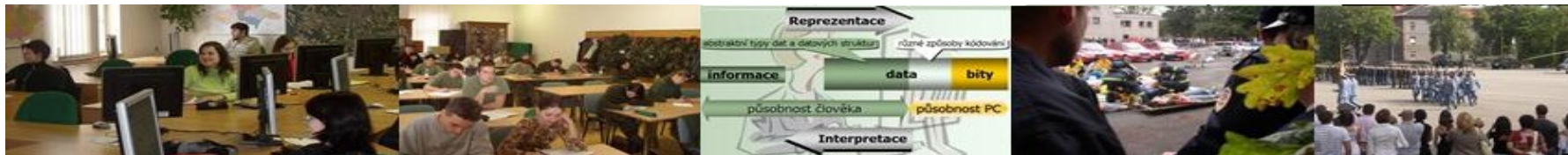
Applied informatics

Secure storage of information, encoding of data

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Secure storage of information, encoding of data

1. Secure storage of information - Security Programs
2. Secure data storage
3. Methods for secure and economical data protection of files and archives
4. Assignments



Aims of the exercise

1. Provide students with basic information on the secure storage of information.
2. Clarify the protection of data in files and archives.
3. Insert sample of data protection into the case study.

Information security

Secure access to data and information is a very general term.

We can distinguish several levels of security, we will find of interest:

- ☐ Secure storage of information on your own PC.
- ☐ Protection of data in files and archives.

Secure information storage

- ☐ Secure storage of information in the organization is part of an information security policy.
- ☐ The information shall be treated as the assets – must a part of the risk analysis.
- ☐ Approach to an individual copies the level of access available to the organization.

Data corruption

Type	Corruption	Notes
Software	Deleted data	<p>Caused by the user or the software bug</p> <ul style="list-style-type: none"> -Can not find your data -The files have zero size -Folders are empty -Programs reports corrupted files
	Disk format	<p>Caused by the user or the software bug</p> <ul style="list-style-type: none"> -Medium disguised as empty -Partitions is to look empty -The system forces me to make formatting -After installing the OS disk or partition is empty [1]

Data corruption

Type	Corruption	Notes
Software	Malware	Penetration from outside
	Metadata overwritten	Human factor, HW/SW error

Data corruption

Type	Corruption	Notes
Hardware	Bad motor	Fall, manufacturing faults
	Bad sectors	Wear and tear
	Record layer corruption	Fall, dirt

Data corruption

Type	Corruption	Příčina a symptom
Hardwarové	Heads	Falls, manufacturing faults
	Seized bearings	Manufacturing faults

Other problems

- ☐ Redirecting connection
- ☐ Spontaneous opening of undesirable sites
- ☐ Deterioration of some (freeware) products - burning, Office ...
- ☐ Sending logs of the user activities – e.g. the controversial genuine ...
- ☐ Scanning and sending screen or keyboard

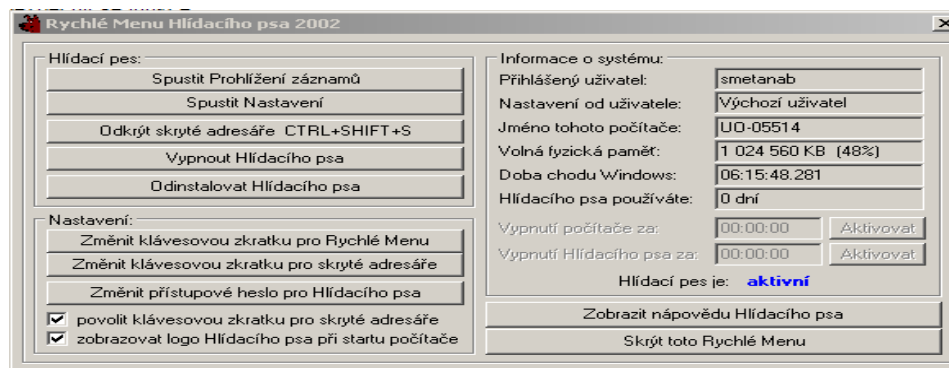
Protection

- ☐ The detection of the infection over a network
- ☐ Detection of local PC Security
- ☐ Protection of sensitive data
- ☐ Removing traces
- ☐ Detection of malicious activities

Removing traces

- ❑ An important activity of information security is removing the traces of activity on the PC.
- ❑ Removing traces prevents an attacker from the reconstruction of deleted data - Similar as shredding for paper media.
- ❑ This applies to all activities on the network as well as deleting registers, total deletion of files, folders and drives.

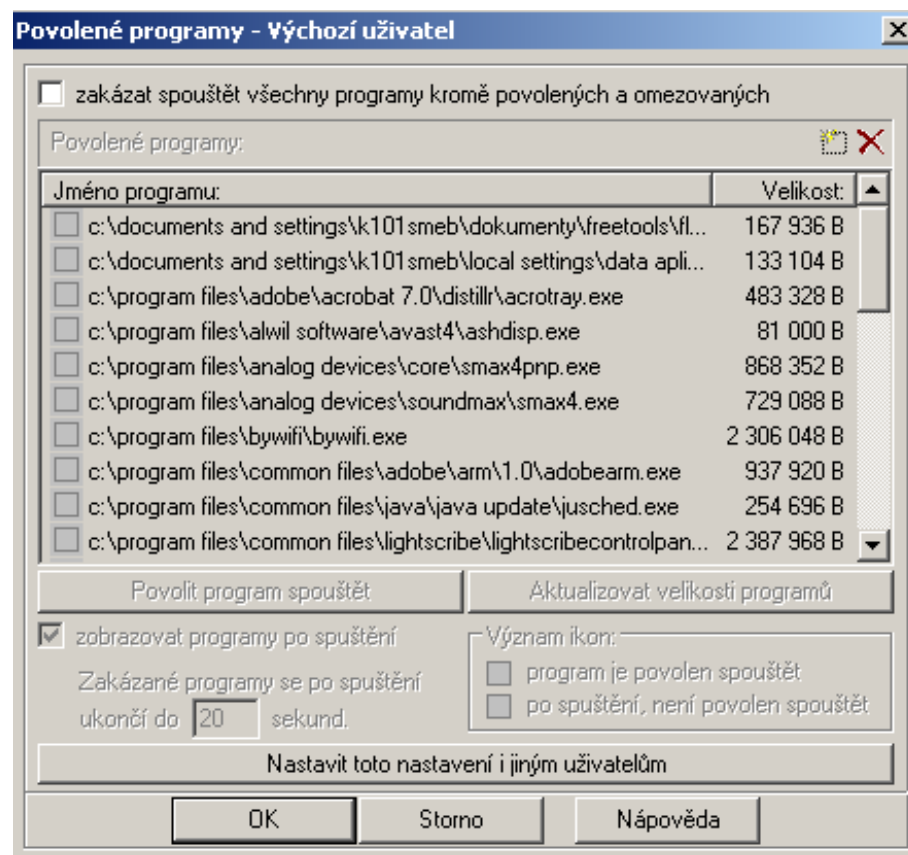
Watchdog for PC



- ❑ One of the freeware programs in this series is the Watchdog (Hlidaci Pes).
- ❑ Watchdog 2002 security and surveillance program helps to protect your computer.
- ❑ It is completely hidden, does not produce visible installation directory, or an entry in the Start menu - automatically starts when the computer starts.
- ❑ Entry to the program administration Watchdog is only using shortcuts and program is password protected, of course.
- ❑ For Windows Vista and Windows 7 need a PC with a processor with 1 GHz or higher, RAM memory of 1 GB or larger. [2]

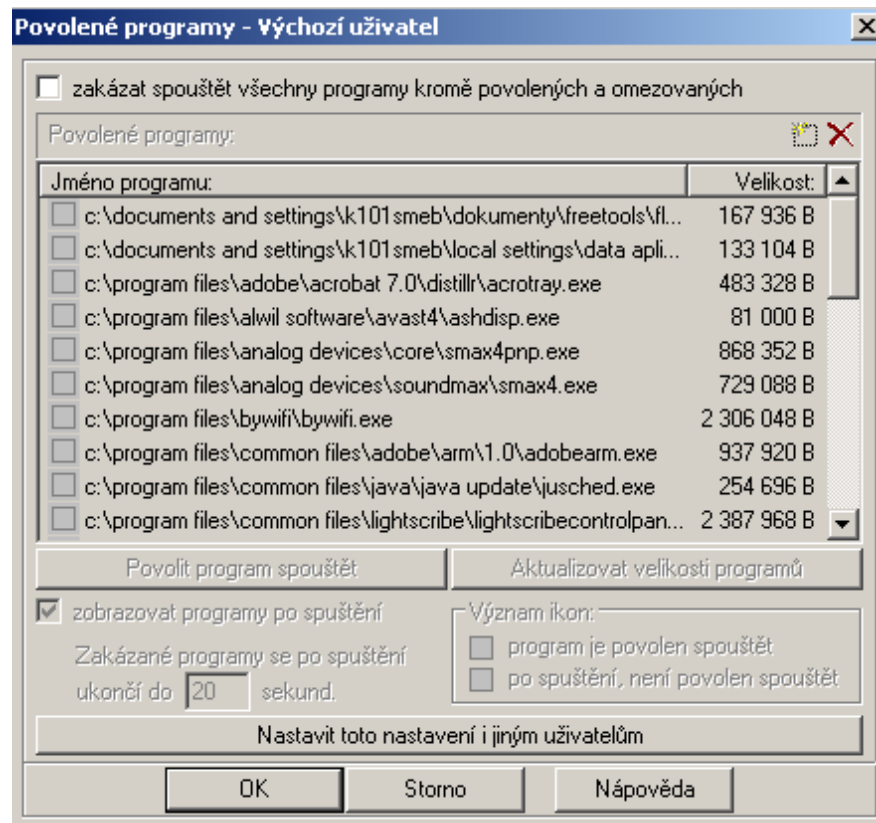
PC watch dog

- ☐ ban to start programs except permitted
- ☐ do not install new programs
- ☐ ban access to certain Internet addresses
- ☐ ban of hiding directories
- ☐ no access to control panels [2]



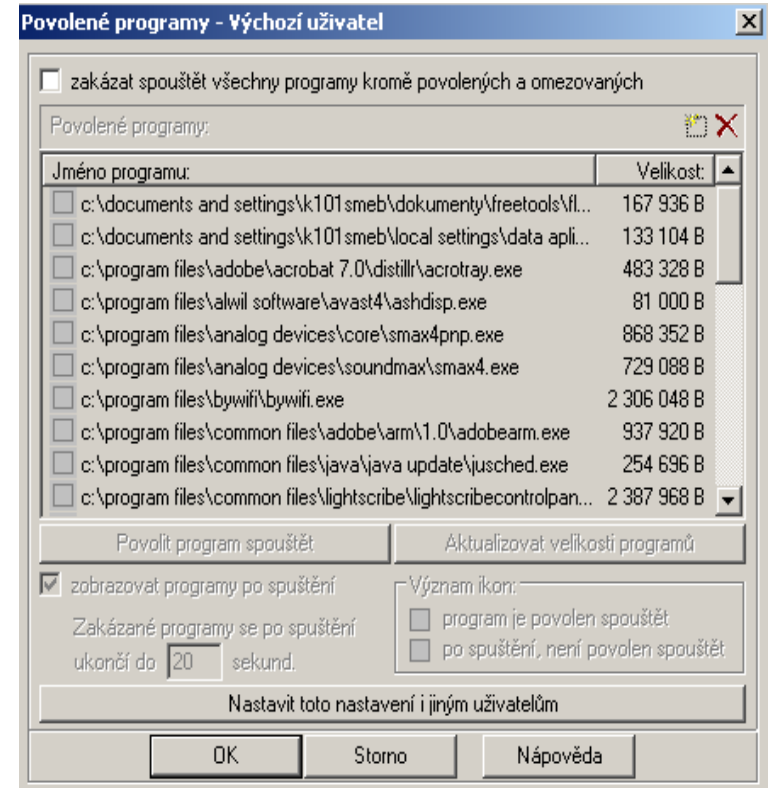
PC Watchdog

- ☐ ban the printing functions
- ☐ protection of desktop icons
- ☐ file protection of a given extension against change and deletion
- ☐ Automatic computer shutdown and Watchdog shutdown
- ☐ manage system policies [2]



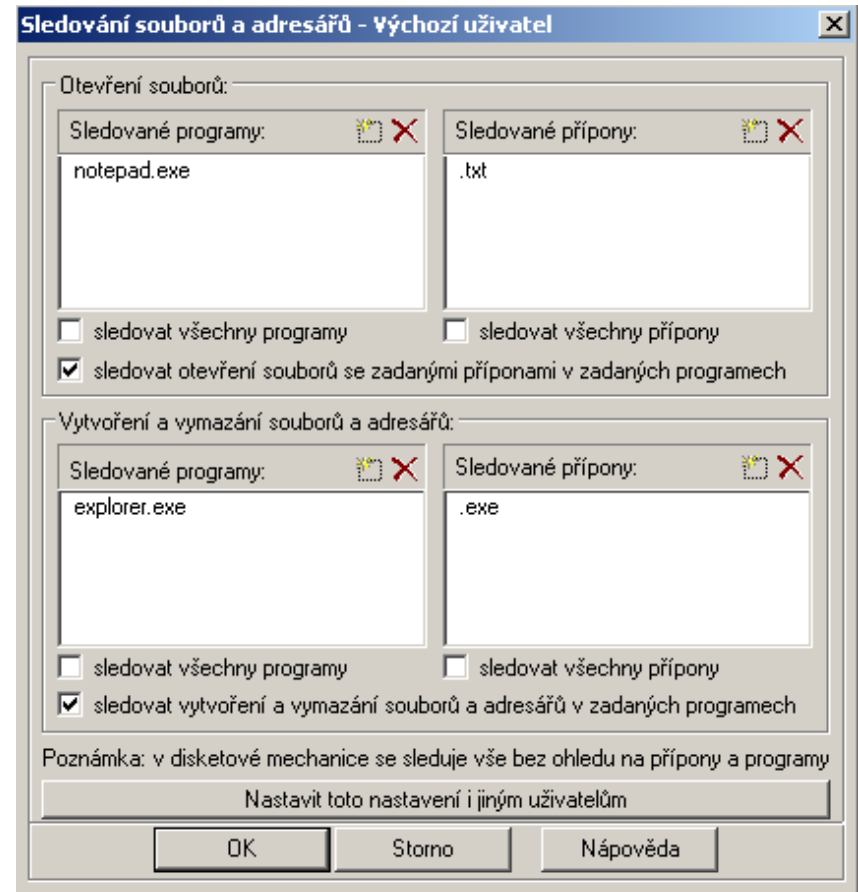
PC watch dog

- ☐ restrict user access to the computer
- ☐ execution of programs
- ☐ restrict access to files
- ☐ restrict access to floppy drive
- ☐ limitations of the connection using (Dial-Up) modem
- ☐ limitations of CD drive [2]



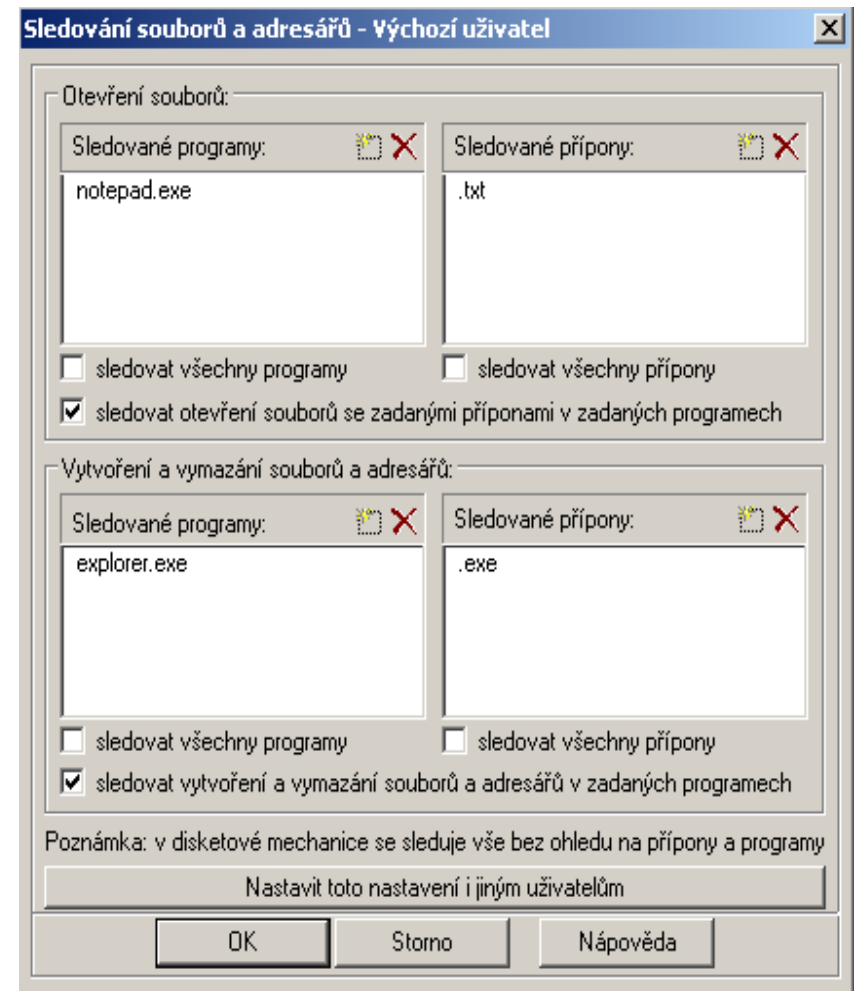
Monitoring

- ❑ open, create, delete files and directories
- ❑ running programs
- ❑ written text in programs
- ❑ visited Internet addresses and their captions
- ❑ modem connection
- ❑ Used CDs [2]



Monitoring

- ❑ inserting text to clipboard
- ❑ Accessing this computer from the network
- ❑ access from nearby PCs over the network on this computer
- ❑ free space on hard drives
- ❑ Printing to a printer
- ❑ CPU usage [2]



PC Watchdog

- ❑ Network version is intended for use of Watchdog program on multiple computers in a local network based on TCP / IP. Greatly facilitates installation on individual computers and remote administration settings and file records. Its use is therefore appropriate to have more than two or three computers.
- ❑ This version is suitable:
 - ❑ If you need to provide more computers
 - ❑ the need for greater confidentiality, the client installation is less obvious and obtaining records does not require access to the monitored computer
 - ❑ if your computer does not have a floppy drive, because the floppy is only required when you install a program Watchdog [2]

Data protection

Data protection:

- ☐ External - by means of external software in which the file was created or archived. You can use tools to limit access or data protection system or special software.
- ☐ Internal - using the software, in which the file was created or archive. Password protection and encryption tools are available for recovery of archives, for control functions and the possibility of the division of large files.

Password protection

- Alongside the classic option of password protection which can be removed using special software, there are a number of freeware products to protect your files with a password.
- One of the interesting options including protection of USB drives is a simple program FlashCrypt with very strong encryption.
- Program FlashCrypt can be downloaded from the web. The installation file is just 1 MB, the download will therefore be very fast even if you have a slow internet connection.
- Given that the program is actually a simple extension of Windows Explorer, you find after installing a desktop shortcut to run the program or environment for further editing. [3]

Password protection

Using FlashCrypt is simple:

- ☐ Select the folder whose contents you want to protect against unauthorized access and right click.
- ☐ From the context menu, select Protect with FlashCrypt.
- ☐ In the window that opens, type in the Enter Password Safe password and repeat it in the Confirm password field.
- ☐ Confirm by clicking Protect.
- ☐ Password protection is saved and the window for entering the password will be closed automatically. Folder icon pictogram complement CF to let you know that protection is active.

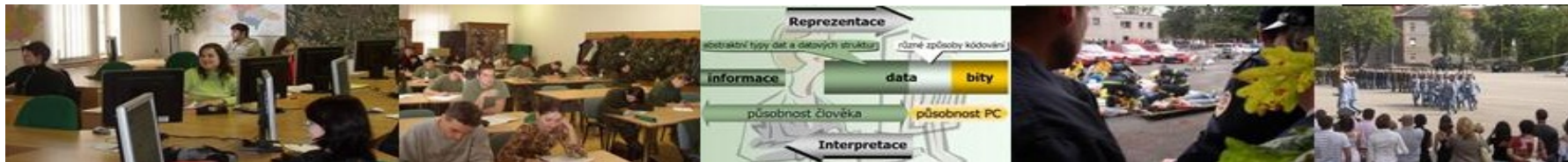
Password protection

Using FlashCrypt is simple.

- ☐ Opening the folder is now conditional with entering the correct password. Double-click the locked folder to get a window to enter the password.
- ☐ In the event that you enter the correct password, the contents of the folder will be accessible.
- ☐ Otherwise, you will be denied access.
- ☐ Decryption is one-time - after unlocking once, the password must be repeated. [3]

Forgotten passwords?

- ☐ Program Safetica can protect a specific folder in addition to the security of portable USB drives can in the entire partition. It offers a complete password management.
- ☐ Perfect ciphers can quickly turn against you if you do not remember the correct password.
- ☐ It therefore offers a special opportunity - to generate security decryption key. With its help you get your data even if you forget the password.
- ☐ The key must be stored in a secure place.[3]



Assignments

1. The test the watchdog program and insert the selected statistics into your case study.
2. Test the file password protection and insert the dialog box into the case study.

Resources:

1. Typy poškození dat. *<i>Http://www.datahelp.cz</i>* [online]. 2010 [cit. 2013-12-13]. Dostupné z: <http://www.datahelp.cz/zachrana-dat/typy-poskozeni-dat/>
2. Hlídací pes 2002 2.04. *Http://www.slunecnice.cz* [online]. 2013 [cit. 2013-12-16]. Dostupné z: <http://www.slunecnice.cz/sw/hlidaci-pes/>
3. Ochrana souborů heslem prakticky. *Http://jnp.zive.cz* [online]. 2013 [cit. 2013-12-26]. Dostupné z: <http://jnp.zive.cz/ochrana-souboru-heslem-prakticky>