# Stenographic Protection of Information

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Abstract: The problem of reliable protection of information from unauthorized access has existed for a long time and has not been solved so far. Methods of concealing secret messages have long been known, and this field of human activity is called stenography. The word is derived from the Greek words Steganos (secret, secret) and Graphy (writing) and means "mysterious writing". Shorthand techniques may have appeared before the text appeared (initially using symbols and designations).

Keywords: shorthand, coding, cryptography, message-file, container-file, container-original, container-result, key.

# INTRODUCTION

1. Modern computer shorthand

2. Prospects of computer shorthand

3. The main tasks of computer shorthand

4. Protection of confidential information from unauthorized access

Modern computer shorthand

The problem of reliable protection of information from unauthorized access has existed since time immemorial and has not yet been resolved. Methods of concealing secret messages have long been known, and this field of human activity is called stenography. The word is derived from the Greek words Steganos (secret, secret) and Graphy (writing) and means "mysterious writing". Shorthand techniques may have appeared before the text appeared (initially using symbols and designations).

#### METHODS

Encoding and cryptography are used to protect information.

Coding is the process of transferring information from one system to another in a specific order using certain symbols.

Cryptography is the method of encrypting the content of a secret message, that is, blocking unauthorized access to information by modifying the data according to a special algorithm and creating encrypted text.

There are other differences between shorthand and cryptography. That is, its purpose is to conceal the existence of a secret message. Both methods can be combined to increase the effectiveness of information security (for example, for the transmission of cryptographic keys).

Computer technology has given a new impetus to the development and improvement of shorthand. As a result, a new direction in information security has emerged - computer shorthand. Modern advances in global computer networks and multimedia have led to the development of new methods designed to ensure the security of data transmission in telecommunications channels. These methods allow messages to be hidden in computer files (containers) using the natural uncertainty of encryption devices and the abundance of analog video or audio signals. At the same time, unlike cryptography, these methods hide the fact of data transmission.

K. Shannon created a general theory of mystical writing, which is the basis of shorthand as a science. There are two main types of file in modern computer steganography: a message file to hide, and a container file that can be used to hide a message. There are

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two types of containers: container-original (or "empty" container) - this container does not store confidential information; a container-result (or "filled" container) is a container

stores confidential information. The key is a secret element that determines the order in which the message is placed in the container.

Prospects for computer shorthand

An analysis of the development trends of computer shorthand shows that in recent years there has been a growing interest in the development of computer shorthand techniques. In particular, it is known that the urgency of the problem of information security is constantly growing, and the search for new ways to protect information is encouraged. On the other hand, the rapid development of information and communication technologies provides opportunities for the introduction of new ways of protecting this information, and, of course, a very strong catalyst of this process is the very strong development of the public computer network.

The most widely used area of information security today is cryptographic methods. However, there are many unresolved issues along the way, such as the impact of information weapons such as computer viruses and logic bombs on cryptocurrencies. On the other hand, the problem of key distribution in the use of cryptographic methods also remains unresolved to this day. A combination of computer steganography and cryptography would be a good way to get rid of the situation, as it would eliminate the vulnerabilities of information security methods.

Thus, computer shorthand is one of the key technologies in information security today.

Computer shorthand your main functions

The main features of modern computer shorthand are:

- Hide methods must ensure file authentication and integrity;
- It is assumed that the steganographic methods used against malicious individuals are well known;

• The security of the methods is based on the preservation of the basic properties of the open file with shorthand changes and any information that is unknown to others - the key;

• If the timing of the message is known to malicious individuals, the process of extracting the secret message itself should be considered a complex calculation.

An analysis of the information sources of the Internet computer network has led to the following conclusion: stenographic systems are currently actively used to solve the following main problems:

- himoyaProtection of confidential information from unauthorized access;
- Overcoming monitoring and network resource management systems;
- Software masking;
- Copyright protection in certain types of intellectual property.

Protecting Confidential Information from Unauthorized Access

The field of use of this computer shorthand is the most effective in solving the problem of protection of confidential information. For example, the least significant small bits of sound are replaced by a hidden message. This change is not noticeable to most people when they hear a voice message.

Overcoming monitoring and network resource management systems

Stenographic techniques aimed at monitoring the activities of industrial espionage systems and managing network resources allow to counteract the attempts to control the flow of information from servers of local and global computer networks.

Software masking

Another area of computer steganography currently in use is software masking. When the software is inappropriate for use by unregistered users, it can be masked under standard universal software products (such as text editors) or hidden in multimedia files (such as a music application for computer games).

### Copyright protection

Another area where shorthand is used is copyright protection. Computer graphics are labeled and become invisible. However, it is determined by special software. Such software is already used in computer versions of some magazines. This type of shorthand is designed to process not only images but also audio and video information. It also has a duty to protect its intellectual property. Computer shorthand techniques are currently being developed in two main areas:

- Methods based on the use of special properties of computer formats;
- Methods based on the abundance of audio and visual information.

Brief information about shorthand programs

Programs running in the Windows operating environment:

• 
Steganos for Win95 is very easy to use, but also very powerful in encrypting files and hiding them in VMR, DIV, VOS, WAV, ASCII, NTML-enabled files;

• Sontraband software is able to hide any file inside graphic files in 24-bit VMR format.

## Programs running in DOS environment:

- steJsteg is designed to hide data into JRG files;
- □FFEncode has the ability to hide data in text files;
- StegoDOS software package has the ability to hide information in the image;
- UWinstorm software package encrypts the message into RSX format files.

Applications running in the OS / 2 operating environment:

- □Texto software translates data into English text;
- □Hide4PGP v1.1 has the ability to hide data into files in VMR, WAV, VOS formats.

Software for Macintosh:

- □Raranoid encrypts data and hides it in an audio file;
- Stego has the ability to hide data into a file with the RIST extension.

#### RESULTS

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#### DISCUSSION

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