<<YourApp>> Hilfeindex

<< Write a topic here that discusses your application's main dialog.>>

Introduction

Steganos [Greek]: protected, protecting; covered, covering.

Thank you for trying Steganos for Windows95 and NT4.0. Steganos is an easy to use, yet powerful wizard style program to hide and/or encrypt files.

Steganos encrypts files and hides them within BMP, DIB, VOC, WAV, ASCII, and HTML files. (Click here for a complete listing of features.)

When using only cryptographic methods data may be unreadable but it is obvious that there *is* sensitive data - that there is a *secret*. If data is only hidden and not encrypted one could search all suspicious carrier files for hidden data and perhaps find sensitive information.

Steganos combines two powerful methods: Cryptography - to make data unreadable to anyone who does not know the password - and steganography - to hide the existence of data. Files being hidden and encrypted by Steganos can be neither read nor detected easily.

It might become necessary to hide the existence of information. The government may someday force you to hand out your passwords or even forbid strong cryptography, so stand-alone cryptography wouldn't make much sense any more.

Be prepared - with Steganos for Windows95 and NT4.0.

Product information (Features)

Steganos for Windows95 and NT4.0
by Deus Ex Machina Communications

Hides all types of files in image files (BMP, DIB), sound files (WAV, VOC), and all types of ASCII text files or HTML documents.

Easy to use Wizard style interface which will guide even absolute beginners through the program while allowing effective usage by advanced users

Allows encrypting files (without hiding) as SEF files (Steganos Encrypted File); which can be decrypted simply by double clicking on a SEF files' icon

Strong encryption: The HWY1 encryption algorithm which is used in Steganos generates an output stream which is compatible to the "Alleged RC4" ("RC4" is a trademark of RSA Data Securities Inc.) output stream as it has been posted by the Cypherpunks on the Usenet. Steganos for Windows95 and NT4.0's implementation of this algorithm has been developed with the description of Bruce Schneier (see "Applied Cryptography", published by Wiley, ISBN 0-471-11709-9).

Compresses files to hide to increase efficiency (using zlib by Jean-loup Gailly and Mark Adler. They are members of the Info-ZIP group and provided code for the popular WinZip program)

Converts pictures with too few colors to 16.7M color images (24 bit format)

Features hiding of files without encryption (if the data has already been encrypted)

Hides in carrier files of unsupported formats if the user enters some information about the carrier file

Features backing up carrier files before hiding data inside them

Optionally wipes the file to be hidden after being hidden and/or encrypted

Encrypted and files in which data has been hidden can be sent via e-mail by one mouse click

Steganos does not change the carrier's file date and time in order not to cast suspicion on the file

The *Steganos SDK* (Software Development Kit) is offered to developers to make it possible to use the functionality of hiding/unhiding data (see STE_SDK.zip)

Includes the *Steganos Shredder*, a program which wipes files from your hard disk irrevocably (you simply click the right omouse button on a file and select Send to... Shredder)

UpdateNOW! is a technology developed by Deus Ex Machina Communications that makes it easy to update Steganos using the Internet.

Both Steganos for Windows95 and NT4.0 and Steganos Shredder are native 32-bit Windows 95 and NT4.0 (or higher) applications

See what the press has to say about Steganos.

Deus Ex Machina Communications is a German software company and member of the Association of Shareware Professionals (ASP). Deus Ex Machina Communications has released UFO - Universal File Operator in May 1995, a file manager for DOS and Windows 95 which has been highly praised by the press. For further information see Deus Ex Machina's web server *http://www.demcom.com* or send an e-

mail to *info@demcom.com*.

Disclaimer

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THE U.S. GOVERNMENT CLASSIFIES ENCRYPTION SOFTWARE AS MUNITIONS. ENCRYPTION SOFTWARE HAS RESTRICTIONS FOR EXPORT. BECAUSE OF THE CRYPTOGRAPHY ALGORITHM IMPLEMENTED IN STEGANOS FOR WINDOWS95 AND NT4.0 IS REGARDED AS "STRONG CRYPTOGRAPHY" (see features section) THIS PROGRAM MAY NOT BE EXPORTED FROM THE USA AND PROBABLY SOME OTHER COUNTRIES.

(III) ACKNOWLEDGMENT

BY USING THE SHAREWARE VERSION OF STEGANOS FOR WINDOWS95 AND NT4.0 AND STEGANOS SHREDDER OR THE STEGANOS SDK YOU ACKNOWLEDGE THAT YOU HAVE READ THIS LIMITED WARRANTY, UNDERSTAND IT, AND AGREE TO BE BOUND BY ITS' TERMS AND CONDITIONS. YOU ALSO AGREE THAT THE LIMITED WARRANTY IS THE COMPLETE AND EXCLUSIVE STATEMENT OF AGREEMENT BETWEEN THE PARTIES AND SUPERSEDE ALL PROPOSALS OR PRIOR AGREEMENTS, ORAL OR WRITTEN, AND ANY OTHER COMMUNICATIONS BETWEEN THE PARTIES RELATING TO THE SUBJECT MATTER OF THE LIMITED WARRANTY.

Copyright

What is Shareware

You may use the shareware version of Steganos for Windows95 and NT4.0 for 30 days. If you want to continue using Steganos after your 30 day evaluation period you must purchase the registered version. Otherwise, you must remove the shareware version from your system. Click the Order Steganos button on the Steganos start screen for further information. All shareware screens are left out in the registered version. You may - you even should - share the unregistered test version with your friends. The program itself, the documentation and all other files must be passed in their original, unchanged form. Use of this software is permitted only to the extent reasonably required to determine whether to purchase the software or not.

Ordering

Please choose whether you are inside the US or Canada, inside the UK or outside the US, Canada and the UK.

It is important *where* you are because there are three different distributors handling registrations.

Ordering inside US/Canada

```
-------------------------------------------------------------------------
|       Deus Ex Machina Communications / Pik A Program Order Form       |
-------------------------------------------------------------------------
                  THANK YOU FOR REGISTERING YOUR SHAREWARE!

NOTE: Pik A Program CAN ONLY HANDLE ORDERS FOR STEGANOS WITHIN THE USA AND
CANADA. IF YOU ARE OUTSIDE THESE COUNTRIES PLEASE CLICK ON "Ordering
Steganos (UK)" or "Ordering Steganos (all other countries) IN THE STEGANOS
PROGRAM GROUP.

Important: If you are ordering by mail, e-mail, or fax, please completely
fill out this form and send it in.  If you are sending a check or money
order, please make sure that payment is made in US funds drawn on a US
bank.

Technical support is not available from Pik A Program.  For any technical
help, please contact Deus Ex Machina Communications directly online:

Internet:    steganos-support@demcom.com
WWW:         http://www.steganography.com
CompuServe:  100735,12

For registered users of any program which Pik A Program distributes, who
do not already have access to Compuserve, we can supply a FREE Compuserve
membership with a $15.00 usage credit and access software. This is much
more than enough online time to have your technical support questions
answered, and still have some fun!

For the fastest service, you may register with your credit card online on
the internet, and immediately be able to download the registered version
of our software.  Plus, you save the postage!  Visit us at www.pik.com
for more information on this.

You may mail, fax, e-mail, or phone in your order.  Please send the
completed registration form, along with payment to Pik A Program, Inc.
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Pik A Program, Inc. (tm)        TOLL FREE (ORDERS ONLY) 1-800-TOREGISTER
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NY, NY  10003                   Telephone (212) 598-4939
USA                             Fax       (212) 228-5879
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Shipping $4.00 for your entire order, whether you order 1 or 100 items.

QUANTITY	ITEM	PRICE EACH		TOTAL
	Steganos for Windows 95 License for individual usage (*)	US $39.95	US$	
	Steganos for Windows 95 License for business usage (*)	US $59.95	US$	
	Shipping	US $ 4.00	US$	4.00
	TAX (NYS residents only)	___ %	US$	
		TOTAL:	US$	

(*) One license of Steganos for Windows 95 is limited to use on only a single personal computer or workstation which is not used as a server.

Orders are sent on 3.5" diskettes unless otherwise requested. Prices good through 12/97, subject to change thereafter.
I am paying by:
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We would appreciate it if you would tell us where did you first heard about this program. Thanks for your cooperation.
[] BBS/Online service - which one?_____
[] Internet - which site?_____
[] Friend [] retail store package [] CD-ROM _____
[] magazine - which one?_____
[] other - _____

Do you have a cd-rom? [] yes [] no

The shareware version of all the programs Pik A Program distributes may be downloaded from the following locations:

Internet: www.pik.com
Compuserve: GO PIKAPRO (PCVENH, section 18)

Ordering outside US/Canada and the UK

Name : _____ Phone : _____

Address : _____ Fax : _____

_____ Cust. #: _____

Date : _____

JDS-Software
Jens Driese
Steganos Service
P.O. Box 1269
D-26302 Varel
Germany

Fax.: +49-4451-959196
CIS : 100273,2252
CIS : GO "JDSONLINE"
http://www.jds-software.com

Order:

Qty	Product	Qty.-Price	Total
____	Steganos 95/NT4.0 (1 lic. private user)	49,00 DM* =	_____ DM
____	Steganos 95/NT4.0 (1 lic. commercial user)	79,00 DM* =	_____ DM
____	Steganos 95/NT4.0 (2 lic. commercial users)	110,00 DM* =	_____ DM
____	Steganos 95/NT4.0 (5 lic. commercial users)	235,00 DM* =	_____ DM
____	Steganos 95/NT4.0 (10 lic. commercial users)	430,00 DM* =	_____ DM
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* Note: The currency of the invoice is going to be Deutschmarks (DM).
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Signature

Ordering inside the UK

The Thompson Partnership - United Kingdom

You can order Steganos for Windows 95 from The Thompson Partnership by payment with cheque or the following credit cards: MasterCard, VISA, American Express and Switch.

Telephone Orders: 01889-564601
Fax Orders: 01889-563219
Internet Orders: sales@ttp.co.uk
Internet Support: support@ttp.co.uk
Mail Order Address The Thompson Partnership,
Lion Buildings, Market Place,
UTTOXETER, ST14 8HZ, ENGLAND / UK

Please use the following form when ordering by fax or mail.

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Steganos for Windows 95 License for Individual user @ £24.95
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£_____[ ]Copies of Steganos
£__3.00_____ Shipping
£_____ VAT @ 17.5%
£_____ TOTAL

Cheques payable to "The Thompson Partnership"; ensure your cheque card number is written on the reverse of the cheque.

Getting support

If you have questions concerning Steganos for Windows95 and NT4.0 contact us!

Internet: steganos-support@demcom.com
WWW: http://www.steganography.com/english/steganos
CompuServe: 100735,12 or DeusExMachina
BBS: +49-5 11-9 50 88 97 (ISDN and analog)
Mail: Deus Ex Machina Communications
Sophienstr. 28
60487 Frankfurt
Germany

Steganos in the press

"Steganos is setting the new standard when it comes to security"
Rating: Super TIP
com! (Germany), 10/97, p. 38

"Clever, but easy to use, recommended"
Rating: 5 of 5 stars
PC Professionell (Germany), 9/97, p. 34

"In a collection of security tools Steganos must not be left out"
PC ONLINE (Germany), 9/97, p. 65

"The best shareware of September"
win (Germany), 9/97, p. 172

"Steganos may be the software for the new millenium. [...] Get your steganography software before it is prohibited."
Rating: 5 of 5 points
Shareware Light (Germany), 5/97, Editorial and p. 40

"If you need to protect important data Steganos is the right choice."
Click - the computer magazine (German TV station Vox), 8-23-97

"Simple to use and fast. [...] Steganos can be recommended without doubt."
Rating: 6 of 6 points
CD-ROM-MAGAZIN (Germany), 9/97, page 89

"Hidden data can't be heard or seen."
Rating: Very good, buy it
PC INTERN (Germany), 9/97, page 85

"Great! Maximum security for minimum money.
Rating: Very Good"
PC Praxis (Germany), 8/97, page 66

"The security double package: Steganos gives no chance to sleuths"
PC Magazin (Germany), 8/97, page 46

"Hiding a document within another can be done quickly with Steganos."
PC ONLINE (Germany), 8/97, starting page 104

"Amazing"
"This is a really cool [...] product"
"Steganos is an affordable way to show everyone you have no skeletons in your closet."
Miami Herald, 07-01-97

"A cutting-edge steganography application"
Windows95.com , 06-16-97 (complete review)

"...undetectably hides all types of files"
www.mysharewarepage.com (R) , 06-16-97 (complete review)

"Easy to use [...] fast algorithm"
c't magazin für computertechnik (Germany), 6/97, starting page 330 (c't Crypto Campaign)

"A powerful file-encryption program [...] simple to set up and easy to use"
ZDNet Software Library , 04-18-97 (complete review)

(sorted by publishing date)

How can I choose a good carrier file?

Don't use files that can be accessed by everyone (like pictures or sounds from CD-ROMs or websites) since if someone found the carrier file and its original, e.g. on a CD-ROM, the person could prove that the file has been modified by comparing the two files. Of course, if you select the *Encrypt file* option the hidden data is useless for someone who is does not know the password

Even though Steganos is able to hide data in text files this method is *not recommended* since it can be easily detected and is quite slow.

See also

Carrier files
How does Steganos hide data

How can I choose a secure password?

The security of your data is only as good as your password. The most important note is: Use every password **only once**.

Bad password are:
- Your name, your online name, initials, phone numbers - any kind of personal data someone can easily find out
- Words being listed in databases or dictionaries, especially names of famous people, music stars, locations, and even (family) names in general. This refers to foreign words, too
- Passwords which were used as passwords in movies or TV series (as seen in *War Games, Sneakers,* and *The X-Files*)
- Vulgar phrases
- Keyboard patterns (such as *QWERTY*)
- Strings of letters and simple numbers (such as *AAAAA* or *123123*)

Good passwords are:
- Two or more words separated by a punctuation character. The words should not make any sense. These kind of passwords are for example required by CompuServe.
- Complete sentences (which can't be found in written material such as quotations, and - of course - are difficult to guess)

Examples for good passwords:
- *BLOATED:BEAR*
- *2R4e1D1l7u7#M* (if you use an alphanumeric password like this 10 digits should be enough)

NOTE: The passwords mentioned above, of course, aren't good passwords any more. Do not use them.

How can I hide data inside a file which Steganos does not support?

What is an unsupported carrier file?

Steganos is able to hide data in files which are not directly supported by Steganos (supported carrier files). This method is not recommended because the carrier file may be destroyed. Since Steganos does neither know the size of the file header nor the bit depth of an unsupported file you need to enter these parameters manually (in step 3c of hiding data).

Which files can be used as unsupported carrier files?

To find these files you need to understand how Steganos hides data. Do not use compressed or encrypted files.

How can I uninstall Steganos for Windows95 and NT4.0?

To uninstall Steganos click on *Settings... Control panel* in the start menu. Select *Software* and choose *Steganos for Windows95 and NT4.0*. Then click the *Add.../Remove...* button. Steganos for Windows95 and NT4.0 will then be uninstalled.

Encryption used in Steganos (HWY1)

How does Steganos encrypt files?

Steganos uses the HWY1 encryption algorithm which generates an output stream compatible to the "Alleged RC4" ("RC4" is a trademark of RSA Data Securities Inc.) output stream as posted by the Cypherpunks on the Usenet. Steganos' implementation of this algorithm was developed entirely from the description of Bruce Schneier ("Applied Cryptography", see Resources).

What can I do if I forgot my password?

Nothing. Some security mechanisms can be overridden by using so-called *backdoors* or *master-passwords*. To give you an example: Most versions of the popular *Award* BIOS allow password-protecting the computer. You can cheat this mechanism simply by using the master-passwords *lkwpeter* and *AWARD_SW* (case-sensitive). So it is absolutely irrelevant which password the user chooses to "protect" his PC.

Steganos has no backdoors or master-passwords. Even Deus Ex Machina Communications will not be able to restore data without the correct password.

We cannot help you if you loose your password!

How Steganos hides data

Steganos uses two completely different methods for hiding data:

Hiding data within sound or image files

Steganos uses the least significant bit of every element to hide data inside. An element would be 8 bit (1 byte) in an 8-bit file and 16 bit (2 bytes) in a 16-bit file. For example Steganos uses the lowest bit of every byte in an 8-bit .wav sound file to hide data within. Since this change of information cannot be perceived by human ears (because of background noise etc.) data is virtually *hidden*. When using picture files Steganos slightly changes the colors which can't be recognized by the user.
Steganos does not hide data within the header of a carrier file.

Hiding data in text files

To hide data in an ASCII text file Steganos appends spaces and tabs to the lines. Steganos hides one byte per text line (8 bits represented by combination of eight spaces or tabs). In comparison to hiding data in sound or image files this method can be easily detected, therefore this is the inferior method and you shouldn't use it if you have the choice.

See also

carrier files

Why combine steganography and cryptography

When using cryptographic methods only, data may be unreadable but it is obviously sensitive data, a *secret*.

When using steganographic methods only your data will be hidden but by simply trying to unhide data from all suspicious carrier files the attacker could successfully restore sensitive data.

Steganos combines these two powerful methods. Data hidden and encrypted by Steganos can be neither read nor detected easily.

See also
Steganography
Cryptography

Wiping

Why wipe files?

Deleting a file on most computers does not really remove or overwrite the file. Often only the first character of the filename is being replaced by a E5h character - doing this the computer knows it can overwrite this file when the space is needed - not before.
That's how MS-DOS and Windows 3.1 handle "deleting". Under Windows 95 data security is even worse: When you delete a file using the Explorer the file is simply moved to a hidden directory named "Recycled", better known as the "Recycle Bin". Even if you empty the bin the files don't truely get deleted. They can be recovered using certain file recovery programs.

How does Steganos wipe files?

Steganos (and the Steganos Shredder) overwrite the file you want to wipe three times using random data (if you can't generate true random data by software one can call the data *pseudo-random*). By using pseudo-random data Steganos prevents disk compression programs (such as *DriveSpace* and *Stacker*) from compressing this sequence and simply not writing it to the disk completely.
Since there always remains some unused space on a disk after the end of a file ("slack") which can contain sensitive data, both Steganos' wipe this area, too.

NOTE: Since modern operating systems (such as Windows 95) swap data to the hard disk the risk that sensitive data remains somewhere on the system cannot be completely eliminated. Don't forget that it is impossible to completely erase data off magnetic media. Electron-tunneling-microscopes even restore data being overwritten several times. So if you **really** have to keep a secret it could be cheaper to physically destroy the magnetic medium (after wiping a file) than loosing the secret.

Steganos and the *Steganos Shredder* use the same function to wipe files. Click *Steganos Shredder* in the *Steganos for Windows95 and NT4.0* program group in your start menu to get further information on how to use the Steganos Shredder.

Resources

If you want to learn more about steganography and cryptography or security issues in general check out the following Resources:

sci.crypt
A Usenet newsgroup dedicated to cryptography; contains a lot of rubbish

National Computer Security Association forum
CompuServe forum; accessible by *GO NCSA*

Steganography Info & Archive
Software, information, and links on steganography (*http://www.iquest.net/~mrmil/stego.html*)

The Infinite Void
a lot of hacking stuff; collected by *Silicon Toad* (*http://www.vcalpha.com/silicon/episteme.html*)

Snake Oil Warning Signs: Encryption Software to Avoid
how to determine if a crypto software is weak
(*http://www.research.megasoft.com/people/cmcurtin/snake-oil-faq.html*)

Applied Cryptography
the very best book on the cryptography, not steganography; Bruce Schneier, published by Wiley, ISBN 0-471-11709-9

Electronic Frontier Foundation (EFF)
wants to protect civil rights on the net - against crypto restrictions (*http://www.eff.org*)

Using the Steganos Shredder

The Steganos Shredder wipes files. That is, the file shredded by the Steganos Shredder cannot be recovered using programs like *undelete*, *unerase*, etc. You cannot run the Steganos Shredder directly from a program group. To shred a document just click right on it, then select *Send to... Shredder*.

Introduction to the SDK

Welcome to the Steganos Software Development Kit (Steganos SDK). The Steganos SDK provides several functions for implementing steganographic functionality into your applications.

The Steganos SDK can be found in the STE_SDK.ZIP archive (which comes with every Steganos archive) and contains the following files:

STE_DLL.h	Header file
STE_SDK.txt	Text file
Steganos.lib	Library file

The Dynamic Link Library, steganos.dll, is located in your Steganos directory.

Before using the Steganos SDK make sure to read the legal information.

Legal information / Licensing

The Steganos SDK may be used without charge in freeware or public domain applications. If you want to use the Steganos SDK in an application which must be purchased (or registered if it is shareware) contact Deus Ex Machina Communications.

You must mention in your application that it uses the steganography functions of the Steganos SDK and that the Steganos SDK is copyright (c) 1997 by Deus Ex Machina Communications.

Note that section I and III of the disclaimer also apply to the Steganos SDK.

How to implement steganography functions

Hiding data

First call **IdentifyCarrierFile** to gain information needed to hide data within the carrier file. Override the header of the carrier file.

You will need to hide the size of the hidden data and probably some other information (original filename of the data file etc.) within the carrier file before hiding the data file itself. Use **HideInBuffer** to hide these header information within the carrier file.

Then create a loop that reads a block of data from the data file as well as from the carrier file (the loop ends when the end of the data file has been reached). Hide the data file buffer within the carrier file buffer using **HideInBuffer**. You should compress and encrypt data before hiding it. Write the manipulated carrier buffer back to the carrier file.

Unhiding data

First call **IdentifyCarrierFile** to gain information on how to unhide data from the carrier file. Override the header of the carrier file. Then read the header information you hid in the carrier file (e.g. complete size of hidden data, original filename of the data file) using **HnhideFromBuffer**.

Then create a loop that reads a block of data from the carrier file, unhide it using **HnhideFromBuffer**, and write the restored data to a file. The loop ends when the original file size of the data file has been reached.

IdentifyCarrierFile

int IdentifyCarrierFile(char* fname, tCarrierType* CT);

Return Values

IDENTIFY_OK if carrier file has been clearly identified; IDENTIFY_UNIDENTIFIED if the file could not be identified as a valid WAV, VOC, BMP, DIB or ASCII text file (nevertheless it could be possible to hide data within this file; see unsupported carrier file); any of the following if an error occured:

IDENTIFY_VOC_NOT_VALID if the file extension is .voc but the file header is not valid.

IDENTIFY_WAV_NOT_VALID if the file extension is .wav but the file header is not valid.

IDENTIFY_BMP_OR_DIB_NOT_VALID if the file extension is .bmp or .dib but the file header is not valid.

IDENTIFY_BMP_OR_DIB_TOO_FEW_COLORS if the file extension is .bmp or .dib but the file has 4 bit (16 colors) color depth. These files are not supported by the Steganos SDK. The developer should convert these kind of pictures to a higher color depth.

IDENTIFY_BMP_OR_DIB_NOT_RGB_ENCODED if the file extension is .bmp or .dib but the file is in RLE (run-length-encoded) format. The Steganos SDK currently does not support RLE pictures.

IDENTIFY_CARRIER_FILE_OPEN_ERR if the file could not be opened.

IDENTIFY_BMP_OR_DIB_ONLY_256_COLORS if the file extension is .bmp or .dib but the file is in 8 bit format (256 colors). This is no real error, the developer should treat this as a warning (the user should be warned because hiding data in this kind of files can be detected quite easily).

IDENTIFY_TXT_LINE_TOO_LONG if the file was identified as an ASCII text file but contains at least one line which is too long to be handled by the Steganos SDK (a line should not be longer than 230 characters).

IDENTIFY_BMP_OR_DIB_NOT_SUPPORTED if the file extension is .bmp or .dib but the file has less than 4 bit (16 colors) color depth. These files are not supported by the Steganos SDK. The developer should convert these kind of pictures to a higher color depth.

Parameters

fname
Points to a char that contains the path and filename of the carrier file to analyze
CT
Points to a tCarrierType structure that, when IdentifyCarrierFile returns, contains information about the carrier file

Remarks

Opens *fname* and tries to Identify it. If *fname* is an ASCII text file identification may last a while since the IdentifyCarrierFile counts its lines.

See also

tCarrierType

HideInBuffer

int HideInBuffer(char* bufCarrier, long sizeBufCarrier, int CarrierType, char* bufDataToHide, long sizeBufDataToHide);

Return Values

HIDE_OK if data has been successfully hidden; any of the following if an error occured:

HIDE_ASCII_BUFSIZE_NOT_1 if CarrierType specifies an ASCII text file and sizeBufDataToHide is not 1. sizeBufDataToHide needs to be 1 when hiding within in ASCII text files because the Steganos SDK always hides only one byte with one HideInBuffer call when hiding in ASCII text files.

HIDE_BUFCARRIER_TOO_SMALL if sizeBufCarrier < (sizeBufDataToHide * CarrierType).

Parameters

bufCarrier
When using a non-ASCII-text carrier file bufCarrier points to a buffer containing the carrier data to hide data within (should be CarrierType*sizeBufDataToHide). Otherwise it points to the ASCIIZ string to append hidden data to.

sizeBufCarrier
Specifies the size of bufCarrier (in bytes). When hiding data within ASCII text files it specifies the length of the string pointed to by bufCarrier.

CarrierType
Specifies the bit depth of the carrier file. When hiding data within ASCII text files it must be set to CARRIERTYPE_ASCII. The developer might simply want to use the FileType member of the tCarrierType structure when using a non-ASCII-text carrier file.

bufDataToHide
Points to a buffer containing data to be hidden. This buffer can contain compressed or encrypted data.

sizeBufDataToHide
Specifies the size of bufDataToHide. If sizeBufCarrier < (sizeBufDataToHide * CarrierType) HideInBuffer will return an error.

Remarks

Hides data in carrier data by manipulating the least significant bits of the carrier data. When using ASCII files HideInBuffer appends spaces or tabs to a text line.

See also

How to implement steganography functions, tCarrierType, HnhideFromBuffer

UnhideFromBuffer

int UnhideFromBuffer(char* bufCarrier, long sizeBufCarrier, int CarrierType, char* bufUnhiddenData, long sizeBufUnhiddenData);

Return Values

UNHIDE_OK if data has been successfully restored; any of the following if an error occured:

UNHIDE_ASCII_BUFSIZE_NOT_1 if CarrierType specifies an ASCII text file and sizeBufUnhiddenData is not 1. sizeBufUnhiddenData needs to be 1 when unhiding data from ASCII text files because the Steganos SDK always unhides only one byte on one call of UnhideFromBuffer when unhiding from ASCII text files.

UNHIDE_BUFUNHIDDENDATA_TOO_SMALL if (sizeBufUnhiddenData * CarrierType) > sizeBufCarrier.

Parameters

bufCarrier
When using a non-ASCII-text carrier file bufCarrier points to a buffer containing the carrier data to unhide data from. Otherwise it points to the ASCIIZ carrier string to restore data from.

sizeBufCarrier
Specifies the size of bufCarrier (in bytes). When unhiding data from within ASCII text files it specifies the length of the string pointed to by bufCarrier.

CarrierType
Specifies the bit depth of the carrier file. When unhiding data from within ASCII text files it must be set to CARRIERTYPE_ASCII. The developer might simply want to use the FileType member of the tCarrierType structure when using a non-ASCII-text carrier file.

bufUnhiddenData
Points to a buffer to which data is to be restored.

sizeBufUnhiddenData
Specifies the size of bufUnhiddenData. If (sizeBufUnhiddenData * CarrierType) > sizeBufCarrier HideInBuffer will return an error.

Remarks

Restores data from a buffer containg hidden information.

See also

How to implement steganography functions, tCarrierType, HideInBuffer

IsCRLFFile

BOOL IsCRLFFile(const char* clpstrFilename);

Return Values

TRUE if the file is an ASCII text file; otherwise FALSE.

Parameters

clpstrFilename
Pointer to an ASCIIZ string specifying the path and filename of the file to check.

Remarks

Checks if the specified file is an ASCII text file or not. This function is being used by IdentifyCarrierFile and can be used by you to determine if an **IdentifyCarrierFile** call could take some time.

See also

IdentifyCarrierFile

tCarrierType structure

The tCarrierType structure is used by IdentifyCarrierFile and contains information on a carrier file.

```
struct tCarrierType { // CT
        char FileType;
        char FileFormatName;
        long FileSize;
        long LongestLine;
        int HeaderSize;
};
```

Members

FileType
Specifies the bit depth of the carrier file; not used for ASCII text files.
FileFormatName
CARRIERTYPE_VOC if the carrier file is a VOC file.
CARRIERTYPE_WAV if the carrier file is a WAV file.
CARRIERTYPE_BMP_OR_DIB if the carrier file is a BMP or DIB file.
CARRIERTYPE_TXT if the carrier file is an ASCII text file.
CARRIERTYPE_UNIDENTIFIED if the carrier files could not be identified.
FileSize
Specifies the file's size (in bytes) of the carrier file. If the carrier file is an ASCII text file this specifies the number of lines.
LongestLine
If the carrier file is an ASCII file this member specifies the numer of characters of the longest line; if the file is a non-ASCII file this member is not set.
HeaderSize
Specifies the size of the file header (in bytes); if the file is an ASCII file this member is 0.

See also
IdentifyCarrierFile

SEF document

What is a SEF document?

SEF is the short term for *Steganos Encrypted File*. If you select *Encrypt file* and deselect *Hide file* in Step 1 of the hiding/encryption process Steganos will create a Steganos Encrypted File (SEF) that contains the encrypted data file.

About the SEF format

Steganos Encrypted Files are not only encrypted but also compressed. Here is how Steganos' encryption works.

How to decrypt an SEF

You can either start Steganos and select *Unhide/decrypt data* on the start page and follow the instructions on the screen or you can simply double-click on an SEF file's icon.

Carrier file

What is a carrier file?

The *carrier file* is the file in which a data file is being hidden.

Which carrier files does Steganos support?

The current version of Steganos for Windows95 and NT4.0 supports the following carrier files:

- Picture files (BMP, DIB), uncompressed (that is RGB encoded, not RLE encoded). The picture can have between 16 colors (4 bit format) and 16,7 Million (24 bit format) colors, though we recommend you use 16,7 Million color images. If you provide a 16 color or 256 color picture file Steganos will ask if you want to convert it to 16,7 Million colors. This is preferable since it is less suspicious to hide data in 16,7 Million color pictures.

- Sound files (WAV, VOC), any sub-format. Sound files are ideal for hiding data in them since you can easily create large files.

- Text files. Even though Steganos can to hide data in text files (which do not have to be simple "texts", but can be HTML documents and batch files as well) we do *not recommend* this method since it can be easily detected and is quite slow. Text files in Unix or Amiga format are not supported (no carriage-return/line-feed characters at end of lines).

- User defined carrier files (see Unsupported carrier files)

See also

What is a good carrier file?
How does Steganos hide data?
Converting picture files containing hidden data

Data file

What is a data file?

The *data file* is the file to be hidden in a carrier file or encrypted as a SEF document. Every file can be a data file. If you want to hide or encrypt more than one data file in one carrier file/SEF document we recommend you use a compression software to store several files in one.

Unsupported carrier file

What is an unsupported carrier file?

Steganos is able to hide data within files which are not directly supported by Steganos (unsupported carrier files). This method is not recommended because the carrier file may be destroyed. Since Steganos does neither know about the size of the file header nor the bit depth of an unsupported file you need to enter these parameters manually (in step 3c of hiding data).

Which files can be used as unsupported carrier files?

To find these files you need to understand how Steganos hides data?. Do not use compressed or encrypted files.

File header

Most files begin with a so-called *file header*. This header usually consists of data necessary to handle the complete file. For example the file header of a picture file contains data about its color depth, resolution, etc. Since the file header is the most "fragile" part of a file Steganos will not hide data within the header. Simple ASCII text files normally do not have a file header.

See also

How does Steganos hide data?

Steganography

Steganography is the art and science of hiding a message within another. So using invisible ink to communicate secrets is steganography, too.

See also

How does Steganos hide data?
Why steganography and cryptography should be combined
Resources

Cryptography

Cryptography is used to make a message (or a file) unreadable for anyone who does not know the key (the password). Cryptography is the art or science of keeping messages secret. - but not their existence.

See also

Resources

Compression software / archives

Compression software is used to compress and store several files in just one file, the so-called *archive*. To save online time most programs from the Internet or online services are compressed. They must be uncompressed before they can be installed or used. *WinZip*, *PkZip for Windows*, and *WinRAR* are examples for compression programs for Windows. Archives created by WinZip or PkZip (for Windows) are called *zipped files*.

Start page: hide/encrypt or unhide/decrypt data

On the first page of the Steganos wizard you decide what you want to do:

Choose *Hide and/or encrypt data* to do the following:
- Encrypt a file and hide it within another file
- Hide a file without encryption
- Encrypt a file (using the Steganos Encrypted File format)

Choose *Unhide and/or decrypt data* to do the following:
- Unhide data
- Decrypt a Steganos Encrypted File document

The following steps will depend on your decision. Press *Next* to proceed.

Click on *About & UpdateNOW!* to display program and copyright information. You will also be aske if you want to use UpdateNOW! by which you can update Steganos for Windows95 and NT4.0 to the latest version online via the Internet.

Step 1: choosing a data file

Data file

Choose the data file you want to hide and/or encrypt. Click *Browse* to browse your system for a specific file.

Hide file

Check *Hide file* if you want to hide the data file within another file, e. g. within a sound file (.wav). Later on you will need to choose a carrier file to hide the data file within.

Encrypt file

Check *Encrypt file* to encrypt the data file. If this option is checked Steganos will ask you for a password later on. You will need this password to restore the data file after it has been encrypted. Find out more about Steganos' encryption.

NOTE: You can check both options or just one of them. If you check *Encrypt file* and uncheck *Hide file* Steganos will create a Steganos Encrypted File (SEF). Even if you want to hide the data file we strongly recommend you to use *Encrypt file*, too. Why you should combine steganography and cryptography.

Wipe data file after hiding/encrypting

Check *Wipe data file after hiding/encrypting* if you want Steganos to wipe the data file from your disk after it has been successfully hidden or encrypted (depending on the options you chose before).

Step 2: entering a password

Enter and re-enter password
Since you chose *Encrypt file* on the previous page you have to enter a password. Since the password is not displayed on the screen you will need to re-enter it to make sure you have not mistyped it. Passwords used in Steganos are case-sensitive.

NOTE: You will need this password to restore encrypted data. Since Steganos' encryption is very secure there is virtually no chance to get your data back without the password. Don't choose a password which one can guess easily. If you're not sure find out how to choose a secure password.

Step 3a: choosing a carrier file

Carrier file

Choose the carrier file you want to hide the data file in. Click *Browse* to browse your system for a specific file.

Don't change carrier file date and time

Select this option if Steganos should not change the carriers' file date and time. This is important since a modification of the carrier file date or time could cast suspicion on it.

NOTE: If you use a backup system which uses file's date and time stamps to determine if a file should be backed up (again) this option could cause this modified carrier file not to be backed up.

Backup carrier file

If this option is selected Steganos will make a copy of the carrier file before hiding data within. The backup of the file "image.bmp" would be created as "Copy of image.bmp" in the same directory.

NOTE: This option is especially useful when trying to hide data in an unsupported carrier files. Be careful with this option: If someone found the carrier file and its backup the person could prove that the file has been modified by comparing the two files. Of course, if you selected the *Encrypt file* option the hidden data will be useless for someone not knowing the password.

NOTE: If you get a "Carrier file too small" message after selecting an ASCII text file which appears to be long enough (enough lines) check if lines aren't too long. Steganos won't work with text files containing lines longer than 230 characters.

Step 3b: naming the SEF document

Steganos Encrypted File
Choose the name of the Steganos Encrypted File. This is the file containg the encrypted data file. Click on *Browse* to browse your system for a specific file.

Step 3c: entering information about unsupported carrier file

The data carrier you provided is not directly supported by Steganos. However Steganos can try to hide data in a file of an unsupported format. This method is not recommended because the carrier file may be destroyed. See Unsupported carrier files. Do not use compressed or encrypted files.

What's the Bit depth of the carrier file?
You may choose 8, 16, 24, or 32 bit, depending on the format of the carrier file you chose. This information cannot be determined by Steganos.

How long is the header of the carrier file?
Since the carrier file could be easily destroyed by overwriting data in the file header you must enter the size of the header (in bytes). Steganos won't hide information in these bytes. Some files do not have any header, then you should just enter *0*.

NOTE: If you do not know the exact size of the header, be generous; if you choose a value too low you will probably make the file unusable. If you choose a value too big it this is just not very effective, but won't destroy anything.

NOTE: Steganos detects ASCII text files automatically so you wont' have to do this step if you chose an ASCII file. If you are sure you provided an ASCII text file as the carrier file and this screen appears the file is probably in Unix or Amiga format (no carriage-return/line-feed characters at end of lines). Steganos can't hide data in these files.

Step 4: summary for hiding/encrypting data

This page summarizes the process that will start after you clicked *Next*. You should read the information carefully. You get at least the following information:

- Name of the data file to be hidden
- Name of the carrier file and information on its type (when hiding data) / filename of SEF document (when encrypting only)
- Compression ratio (that's because Steganos compresses the data file before hiding/encrypting)

When you click *Next* Steganos will start hiding/encrypting, compressing, backupping, and wiping - depending on which options you chose. This is the last chance to cancel the process. If you want to change any of the options feel free to click *Back.*

Final page: explore, review, mail

This is the final page of the Steganos wizard. You can either choose one of the following options or exit Steganos by clicking *Close*.

Explore target directory
Explores the directory of the carrier file. You are allowed to copy, move etc. the carrier file using the Windows Explorer.

Review carrier file (for validation)
By clicking on this button Steganos will try to start the application associated with the file type of the carrier file (e.g. the Audio Recorder for .wav files). So you can check if the modified carrier file really shows no significant difference in comparison to the carrier file before the modification took place. (This button is disabled if encryption only is used since it makes no sense to review an SEF Document.)

Mail carrier file/encrypted file
Click this button to mail the carrier file or encrypted file directly to someone (the file will be attached to a mail which you only have to write).

Step 1a: choosing a carrier file or SEF document

Carrier File or Steganos Encrypted File

You can either choose a carrier file to unhide data from or an SEF Document to decrypt. Click *Browse* to browse your system for a specific file.

Wipe carrier file/SEF document after successful restoration

Check this option if you want Steganos to wipe the carrier file/Steganos Encrypted File from your disk after data has been successfully unhidden or decrypted (depending on the options you chose before).

Step 1b: entering information about unsupported carrier file

The data carrier you provided is not directly supported by Steganos. In order to make it possible for Steganos to unhide data out of this carrier file you need to enter some information on the carrier file. Fore more information see Unsupported carrier files.

What's the Bit depth of the carrier file?
You may choose 8, 16, 24, or 32 bit, depending on the format of the carrier file you chose. This information cannot be determined by Steganos.

How long is the header of the carrier file?
Since the carrier file could be easily destroyed by overwriting data in the file header you must enter the size of the header (in bytes).

NOTE: It is very important to enter the same values that were entered to hide data in this unsupported carrier file.

Step 2: entering the password

Password

Enter the password which has been used to encrypt the file. Passwords used in Steganos are case-sensitive. If the file has not been encrypted you cannot enter a password. Simply click *Next* to advance to the next page.

Step 3: entering a filename for the file to be restored

Save file to restore as

Steganos suggests the original filename of the encrypted file for the file in which restored data will be saved. The current directory is used to restore the file. If you want to you can modify the path as well as the filename. Click on *Browse* to browse your system for a folder and/or filename of your choice.

Step 4: summary for unhiding/decrypting data

This page summarizes the process that will start after you clicked on *Next*. You should read the information carefully. You get at least the following information:

- The name of the carrier file (when unhiding data) / filename of SEF document (when decrypting only)
- The name of the file in which restored data will be saved

When you click on *Next* Steganos will start unhiding/decrypting, decompressing, and wiping - depending on which options you chose. This is the last chance to cancel the process. If you want to change any of the options feel free to click *Back*.

Final page: explore, view

This is the final page of the Steganos wizard. You can either choose one of the following options or close Steganos by clicking *Close*.

Explore target directory
Explores the directory of the restored file. You are allowed to copy, move etc. the restored file using the Windows Explorer.

View unhided/decrypted file
By clicking on this button Steganos will try to start the application associated with the file type of the restored file (e.g. the Audio Recorder for .wav files). So you can immediately use the restored file.

Processing (Hiding/encrypting data)

While this page is being shown Steganos is busy hiding/encrypting, compressing, backupping, or wiping - depending on which options you have chosen.

Wait until Steganos is finished, then click on *Next* to advance to the last page of the Steganos wizard.

Processing (unhiding/decrypting data)

While this page is being shown Steganos is busy unhiding/decrypting, decompressing, or wiping - depending on which options you chose.

Wait until Steganos is finished, then click on *Next* to advance to the last page of the Steganos wizard.

How can I update Steganos using UpdateNOW!?

UpdateNOW! is a technology developed by Deus Ex Machina Communications that enables you to update Steganos to the current version quickly and easily.

How does UpdateNOW! work?

UpdateNOW! connects to Deus Ex Machina's server on the Internet and finds out if there is a newer version of Steganos available. If there is a newer shareware version available a window will appear and inform you about new features or bugfixes. You will be asked if you want to download the updated shareware version; if you click *Yes* a zip-compressed file will be downloaded to your desktop.

NOTE: You need a configured Dial-Up Networking connection to use this feature. To gain help on the Dial-Up Network look in the Windows help. To decompress a zip-compressed file you will need PkZip for Windows, WinZIP or any other application that can *unzip* files.

What does UpdateNOW! cost?

UpdateNOW! is absolutely free. However fees can be charged by your Internet provider and/or your local telecommunications company for the time you are online.

Converting picture files containg hidden data

It is possible to convert a picture file containig hidden information to another format (e.g. the *gif* format) and back to .bmp or .dib. Even then Steganos will be able to recover the hidden data. It is important that you do not use compression algorithms which destroy information. For example *JPEG* uses the *DCT (Discrete Cosinus Transformation*) algorithm which destroys parts of the image by not saving data which can rarely be seen. Information hidden by Steganos would be lost.

NOTE: You should test this method with your conversion software since different conversion algorithms can cause problems.

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Credits

Steganos for Windows95 and NT4.0 has been developed by
Fabian Hansmann, Sascha Wildgrube, and Gabriel Yoran
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Music that helped us getting the work done
Apollo Four Fourty: Electro Glide In Blue, Dead Can Dance: Within The Realms Of A Dying Sun, George Michael: Older, Hackers OST, Mark Snow: The Truth And The Light - Music From The X-Files, Dune & The London Session Orchestra: Forever, Stephane Grappelli: Jazz Masters 11, Gustav Holst: The Planets, Rachmaninov: Piano Concert No. 2 in C Minor, Op. 18, Ravel: La Valse, George Gershwin: Rhapsody in Blue, Judas Priest: Killing Machine, Christopher Franke: Babylon 5 OST, Prodigy: Music For The Jilted Generation/Fire Starter/Breathe, Faithless: Reverence, Underworld: dubnobasswithmyheadman, Trainspotting OST, and techno mixed by various local DJs from Frankfurt/Germany.