ISM LAB-11

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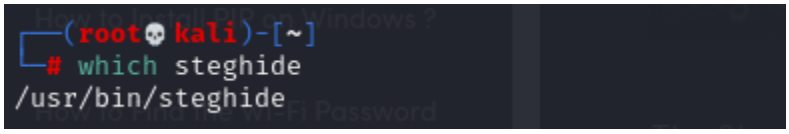
STEGANOGRAPHY

Steghide is a steganography tool that allows you to cover confidential records inside a picture or sound record with a passphrase. Bolsters BMP and JPEG picture group, AU and WAV sound group. This device has its advantages and disadvantages. One upside is that it is much better at covering and can extend a lot without any type of document. It does this by using a propelled calculation to shroud it inside a picture (or sound) record without changing the form (or sound) of the document. This is additionally without using Steghide (or if there is not the same scientific method as Steghide) then it is difficult to remove the hidden documents from the picture.

Steghide Installation

Verifying installation



Steghide help: command will show us all the options that Steghide offers us.

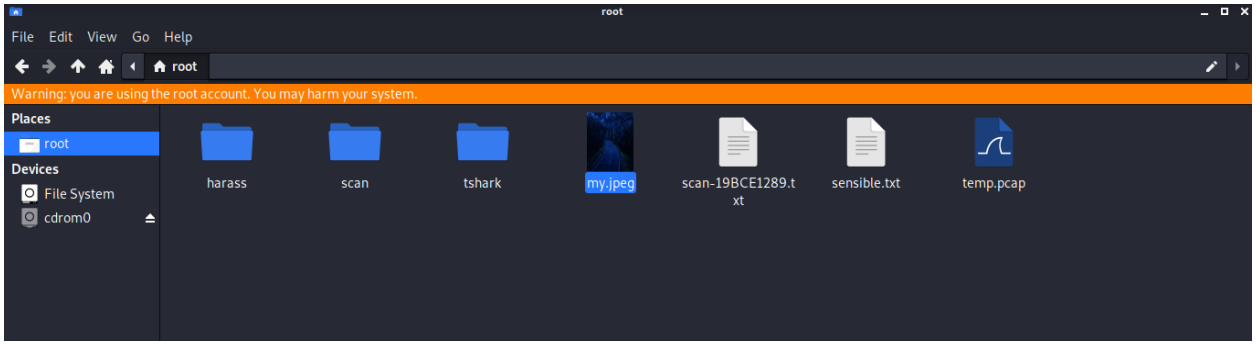
```
┌──(root💀kali)-[~]
└─# steghide --help
steghide version 0.5.1

the first argument must be one of the following:
 embed, --embed            embed data
 extract, --extract        extract data
 info, --info              display information about a cover- or stego-file
   info <filename>         display information about <filename>
 encinfo, --encinfo        display a list of supported encryption algorithms
 version, --version        display version information
 license, --license        display steghide's license
 help, --help              display this usage information

embedding options:
 -ef, --embedfile          select file to be embedded
   -ef <filename>          embed the file <filename>
 -cf, --coverfile          select cover-file
   -cf <filename>          embed into the file <filename>
 -p, --passphrase          specify passphrase
   -p <passphrase>         use <passphrase> to embed data
 -sf, --stegofile          select stego file
   -sf <filename>          write result to <filename> instead of cover-file
 -e, --encryption          select encryption parameters
   -e <a>[<m>]|<m>[<a>]    specify an encryption algorithm and/or mode
   -e none                 do not encrypt data before embedding
 -z, --compress            compress data before embedding (default)
   -z <l>                   using level <l> (1 best speed ... 9 best compression)
 -Z, --dontcompress        do not compress data before embedding
 -K, --nochecksum          do not embed crc32 checksum of embedded data
 -N, --dontembedname       do not embed the name of the original file
 -f, --force               overwrite existing files
 -q, --quiet               suppress information messages
 -v, --verbose             display detailed information
```

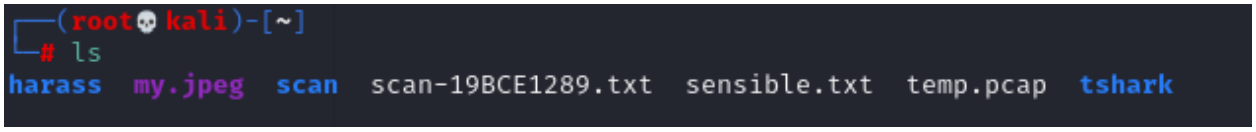
Create a txt file in root folder

```
┌──(root💀kali)-[~]
└─# nano sensible.txt
```

```
File  Actions  Edit  View  Help
  GNU nano 5.4                                          sensible.txt
My accno is 32456782
```

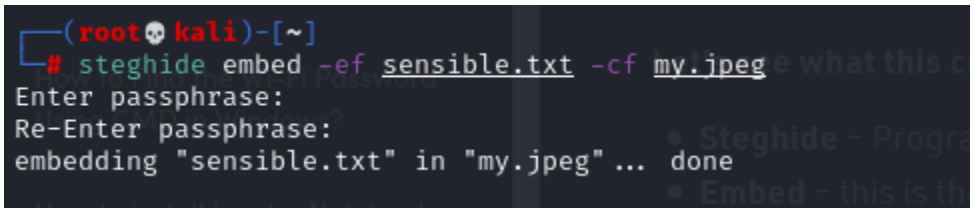
Save a jpeg image in root folder





Embedding data in the image:

We hide the data in the image using the Steghide so that only the person who accepts it can read it. Therefore, we created a text file named “sensible.txt”, in which we wrote our confidential data and images. JPEG is the file in which we are embedding our data.



Here, ef and cf are termed as embedded files and cover files, respectively.

Let’s see what this command is doing:

Steghide – Program Name
Embed – this is the command
-cf – This flag is for the cover file (the file used to embed the data)
filename – this is the name of the cover file
-ef – This flag is for the embed file (the file that will be embedded)
Filename – This is the name of the embedded file

Extraction of Data From Image Via Steghide:

Using Steghide adds an extra layer of security by allowing us to use a password for it. As long as you know the passphrase, it is quite easy to extract data from the image.

```
┌──(root💀kali)-[~]
└─# steghide extract -sf my.jpeg
Enter passphrase:
the file "sensible.txt" does already exist. overwrite ? (y/n) y
wrote extracted data to "sensible.txt".
```

Password Protect Files:

Now, we can also extract files using the following command. This command is different in that it specifies a password in the command itself, therefore, we do not need to specify it separately.

```
┌──(root💀kali)-[~]
└─# steghide embed -ef sensible.txt -cf my.jpeg -p 1289
embedding "sensible.txt" in "my.jpeg"... done
```

```
┌──(root💀kali)-[~]
└─# sudo steghide extract -sf my.jpeg -p 1289
the file "sensible.txt" does already exist. overwrite ? (y/n) y
wrote extracted data to "sensible.txt".
```

Retrieve Information of Embedded File:

If we have an image in which the data is suspected to be hidden and if so, what algorithm is used to encrypt the data in the file?

```
┌──(root💀kali)-[~]
└─# steghide info my.jpeg
"my.jpeg":
  format: jpeg
  capacity: 19.6 KB
Try to get information about embedded data ? (y/n) y
Enter passphrase:
  embedded file "sensible.txt":
    size: 21.0 Byte
    encrypted: rijndael-128, cbc
    compressed: yes
```

Verbose Mode

To obtain every information of a file during extraction, we can use verbose mode. The verbose mode gives you detailed information.

```
┌──(root💀kali)-[~]
└─# steghide embed  -v -ef sensible.txt -cf my.jpeg
Enter passphrase:
Re-Enter passphrase:
reading secret file "sensible.txt" ... done
reading cover file "my.jpeg" ... done
creating the graph ... 113 sample values, 344 vertices, 54287 edges
executing Static Minimum Degree Construction Heuristic ... 100.0% (1.0) done
```

Encrypting Algorithms:

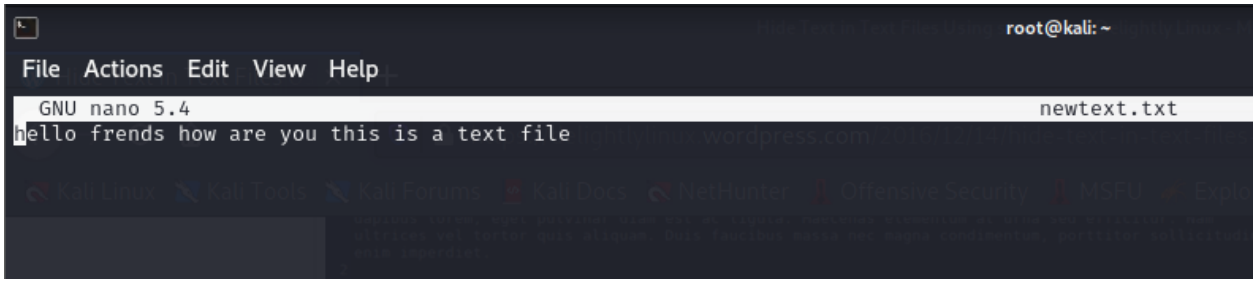
We can encrypt the data we are hiding using encryption techniques.

```
┌──(root💀kali)-[~]
└─# steghide embed -ef sensible.txt -cf my.jpeg -e des
Enter passphrase:
Re-Enter passphrase:
embedding "sensible.txt" in "my.jpeg" ... done
```

Hiding text file under text file

Creating a new text file

```
┌──(root💀kali)-[~]
└─# nano newtext.txt
```



This command encodes the message inside newtext.txt and saves the resulting file that contains the message in newtext1.txt.

```
┌──(root💀kali)-[~]
└─# stegsnow -C -m 'secreat message' newtext.txt newtext1.txt
Compressed by 45.00%
Message exceeded available space by approximately 450.00%.
An extra 2 lines were added.
```

Checking newtext1 file

```
┌──(root💀kali)-[~]
└─# nano newtext1.txt
```

```
File  Actions  Edit  View  Help
  GNU nano 5.4                                                newtext1.txt
hello frends how are you this is a text file
```

Checking using stegsnow

```
┌──(root💀kali)-[~]
└─# stegsnow -C newtext1.txt
secreat message
```

Creating sensitive1 file

```
┌──(root💀kali)-[~]
└─# nano sensitive1.txt
```

```
                                                          root@kali: ~
File  Actions  Edit  View  Help
  GNU nano 5.4                                              sensitive1.txt *
this is a hidden message
```

Hiding text file under a layer text file

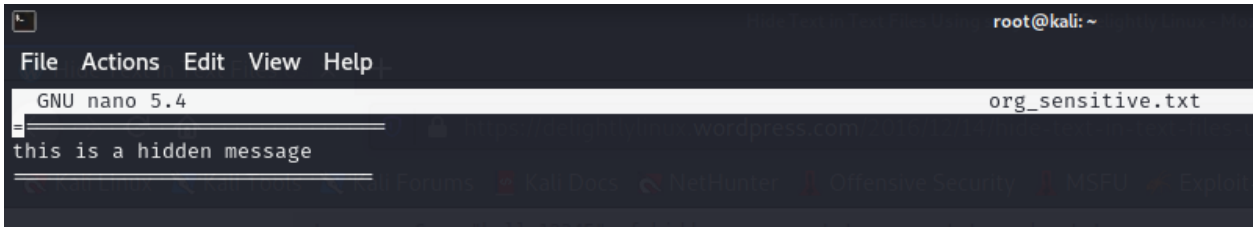
```
┌──(root💀kali)-[~]
└─# stegsnow -C -f sensitive1.txt newtext.txt newtext2.txt
Compressed by 2681212801411272192.00%
Message exceeded available space by approximately 6291.67%.
An extra 26 lines were added.
```

Encode newtext2 file inside org_sensitive file

```
┌──(root💀kali)-[~]
└─# stegsnow -C newtext2.txt org_sensitive.txt
```

Checking org_sensitive file

```
┌──(root💀kali)-[~]
└─# nano org_sensitive.txt
```



Encoding using password for keeping file secure

```
┌──(root💀kali)-[~]
└─# stegsnow -C -p "1234" newtext1.txt org_sensitive.txt
```

Checking org_sensitive file

```
┌──(root💀kali)-[~]
└─# nano org_sensitive.txt
```