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Applied Computing

Wales Institute of Science and Art (WISA)

Networks and Cybersecurity Essentials (ACCA4024)

Lab 9: Let's play Hide and Seek
(Steganography)



Objectives

Using open-source steganography program to hide a document within an image file.

Using open-source password cracking tool to recover the password.

Use of Digital Signatures.

Tasks

1. Use Steghide to hide a data file within an image file
2. Use John the ripper tool to recover the passwords of Alice, Bob, Eve and Eric
3. Create digital Signatures to validate the document

Required Resources

- PC with Ubuntu 16.0.4 LTS installed in a VirtualBox or VMware virtual machine. (*Alternatively, Any Linux Platform*)
- Internet Connection to refer the outcomes
- References:
 - <http://steghide.sourceforge.net/>
 - John the Ripper: <http://www.openwall.com/john/>
 - Digital Signatures: <http://nmichaels.org/rsa.py>

Task 1

- ➔ Login as User Cisco.
- ➔ Go to Terminal and Type the following commands and examine
- ➔ Run Steghide program
 - `cisco@ubuntu:~$ cd Downloads/`
 - Enter libreoffice secret.odt & at the prompt to view the document.
 - `cisco@ubuntu:~/Downloads$ libreoffice secret.odt &`

Here, & is used to append the operation to run in background

What is the message in the secret.odt?

- Enter gimp keyboard.jpg & at the prompt to view the image.
 - `cisco@ubuntu:~/Downloads$ gimp keyboard.jpg &`
- Enter the command to embed using steghide. The jpg file keyboard.jpg is used to embed the document secret.odt.
 - `cisco@ubuntu:~/Downloads$ steghide embed -cf keyboard.jpg -ef secret.odt`
 - It will ask for a passphrase, use Cisco.
 - Re-enter the passphrase when prompted.

You have embedded the document, secret.odt, into the image file, keyboard.jpg.

- Open the files, secret.odt and keyboard.jpg. Did these files change?

➔ Verify the hidden file.

- To verify the hidden file.
 - `cisco@ubuntu:~/Downloads$ steghide info keyboard.jpg`
 - Type y at the prompt. (Do not press Enter).
 - Enter the passphrase Cisco and press Enter.
 - The results below shows that the file, secret.odt, is encrypted and compressed.

```
Enter passphrase:
embedded file "secret.odt":
  size: 8.1 KB
  encrypted: rijndael-128, cbc
  compressed: yes
cisco@ubuntu:~/Downloads$
```

➔ Extract the hidden file.

- To extract the hidden file.
 - `cisco@ubuntu:~/Downloads$ steghide extract -sf keyboard.jpg`
 - Enter the passphrase, Cisco, and press Enter.
 - Enter y when prompted to overwrite the existing secret.odt file with the new extracted secret.odt file.

```
cisco@ubuntu:~/Downloads$ steghide extract -sf keyboard.jpg
Enter passphrase:
the file "secret.odt" does already exist. overwrite ? (y/n) y
wrote extracted data to "secret.odt".
```

You have extracted the file. Open the extracted secret.odt file with LibreOffice.

Could you open the file? Is the secret message the same as before?

END !!!

