

Task 5: Digital Forensics - The Case of the Suspicious File

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DOMAIN:- Cyber Security

Aim :-

To perform static forensic analysis on a suspicious file and identify potential indicators of compromise (IOCs).

OBJECTIVE :-

- Generate SHA-256 hash for file integrity
- Identify file type
- Extract readable strings
- Detect suspicious URLs or IP addresses
- Analyze potential malicious behavior

Tools Used :-

- Kali Linux
- Metasploitable 2
- sha256sum, file, strings, grep

THEORY:-

Digital forensics involves examining files and systems to determine:

- What happened?
- Was the file malicious?
- Did it attempt communication with attacker infrastructure?

Static analysis means:

- Examining a file **without executing it**
- Extracting embedded information
- Searching for suspicious patterns

Common Indicators of Compromise (IOCs):

- Hardcoded URLs
- IP addresses
- Upload endpoints
- Suspicious domains

Procedure :-

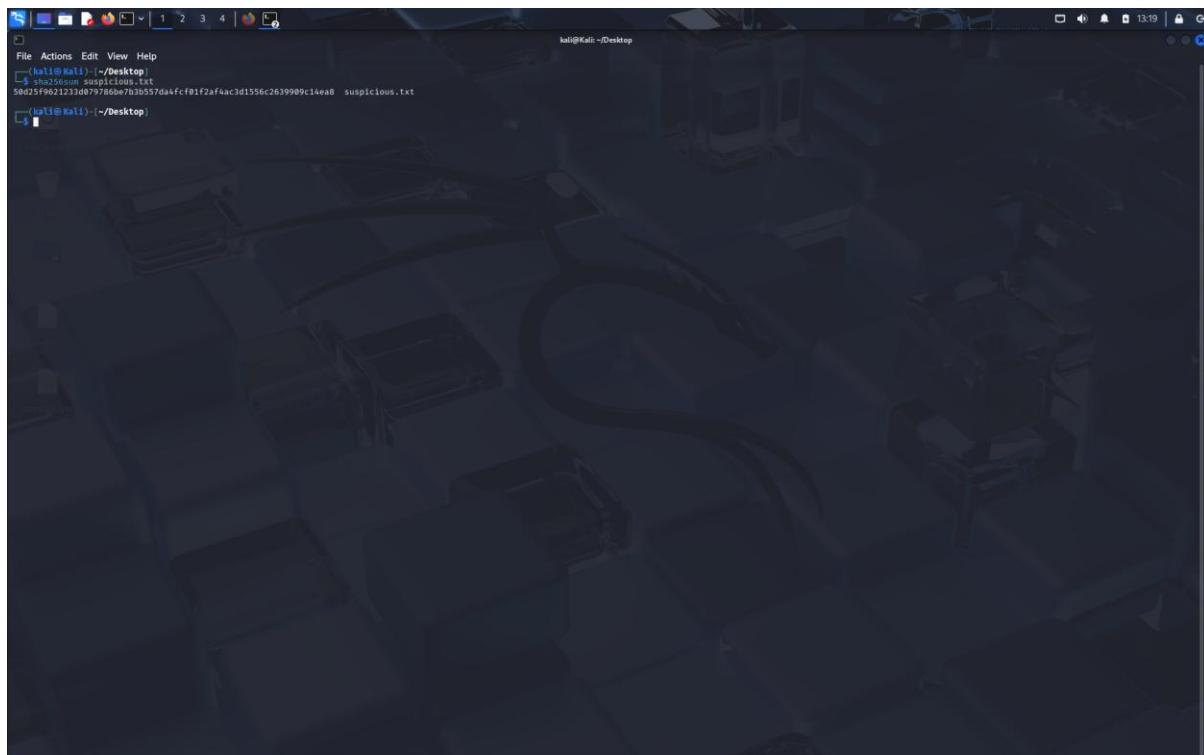
Step 1: Generate SHA-256 Hash

Command used:

→ sha256sum suspicious.txt

Output:

→ 50d25f9621233d079786be7b3b557da4fcf01f2af4ac3d1556c26
39909c14ea8



The screenshot shows a terminal window on a Kali Linux desktop environment. The terminal window has a dark background with a light-colored font. At the top, it says "kali@Kali: ~/Desktop". Below that, there is a file list with one item: "50d25f9621233d079786be7b3b557da4fcf01f2af4ac3d1556c2639909c14ea8 suspicious.txt". The terminal prompt "(kali㉿kali)" is visible at the bottom left, followed by the command line "(~)~\$".

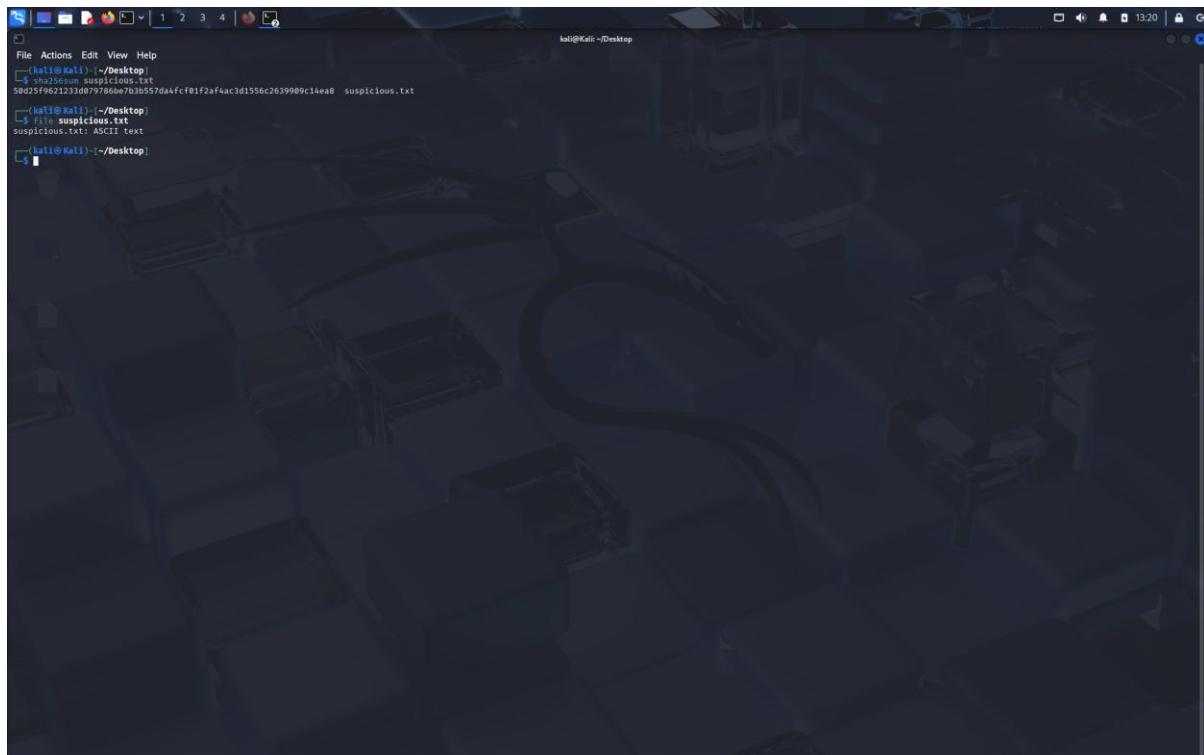
Step 2: Identify File Type

Command:

→ file suspicious.txt

Output:

→ ASCII text



A screenshot of a Kali Linux desktop environment showing a terminal window. The terminal window has a dark background and displays the following command and its output:

```
File Actions Edit View Help
(kali㉿kali)-[~/Desktop]
└── suspicious.txt
50d25f9621233d079786de7b3b57da4fcf01f2af4ac3d1558c2639909c14ea0 suspicious.txt
(kali㉿kali)-[~/Desktop]
$ file suspicious.txt
suspicious.txt: ASCII text
(kali㉿kali)-[~/Desktop]
```

Step 3: Extract Readable Strings

Command:

→ strings suspicious.txt | grep -i http

Output:

→ Connecting to <http://malicious-domain.com/upload.php>

```
File Actions Edit View Help
(kali㉿kali): ~/Desktop
└─$ strings suspicious.txt
50d25f9621233d079786be7b3057da4fc#01f2af4ac3d1558c2639909c14ea0 suspicious.txt
(kali㉿kali): ~/Desktop
└─$ file suspicious.txt
suspicious.txt: ASCII text
(kali㉿kali): ~/Desktop
└─$ strings suspicious.txt | grep -E "[0-9]+\.[0-9]+\.[0-9]+\.[0-9]+"
Connecting to http://malicious-domain.com/upload.php
(kali㉿kali): ~/Desktop
```

Red Flag Detected:

- The file contains a hardcoded malicious upload endpoint.

This suggests:

- Possible data exfiltration
- Communication with attacker server

Step 4: Extract IP Address

Command:

→ `strings suspicious.txt | grep -E "[0-9]+\.[0-9]+\.[0-9]+\.[0-9]+"`

Output:

→ 192.168.1.10

The screenshot shows a terminal window titled 'kali@Kali:~/Desktop'. The terminal displays the following command-line session:

```
File Actions Edit View Help
(kali㉿kali)-~/Desktop
$ sha256sum suspicious.txt
50d25f9621233d0797686e7b3057da4fc#01f2af4ac3d1558c2639909c14ea0 suspicious.txt

(kali㉿kali)-~/Desktop
$ file suspicious.txt
suspicious.txt: ASCII text

(kali㉿kali)-~/Desktop
$ strings suspicious.txt | grep -i http
Connecting to http://malicious-domain.com/upload.php

(kali㉿kali)-~/Desktop
$ strings suspicious.txt | grep -E "[0-9]+\.[0-9]+\.[0-9]+\.[0-9]+"
192.168.1.10

(kali㉿kali)-~/Desktop
```

Interpretation:

→ The file may attempt to connect to an internal network system.

ANALYSIS FINDINGS:-

Indicator	Value	Risk Level
SHA256 Hash	Generated Successfully	Integrity Verified
File Type	ASCII Text	Non-binary
Suspicious URL	http://malicious-domain.com/upload.php	High
Suspicious IP	192.168.1.10	Medium

RESULT :-

The suspicious file contains:

- A malicious upload endpoint
- A hardcoded IP address

- Network communication indicators

This suggests potential malicious behavior involving:

- Data exfiltration
- Remote communication
- Unauthorized network access

CONCLUSION :-

The file is suspicious due to:

- Embedded malicious URL
- Presence of network communication strings
- Indicators of possible data transfer

Static analysis successfully identified potential threats without executing the file.