# RedRoom CTF Workshop – Forensics

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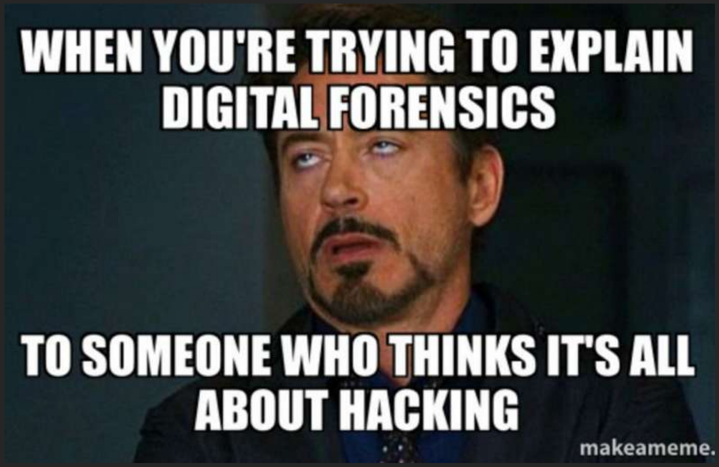
# What is Digital Forensics

- Process of investigating and analysing data stored in electronic devices to find evidence of a crime
- Skills:

*Critical Thinking*

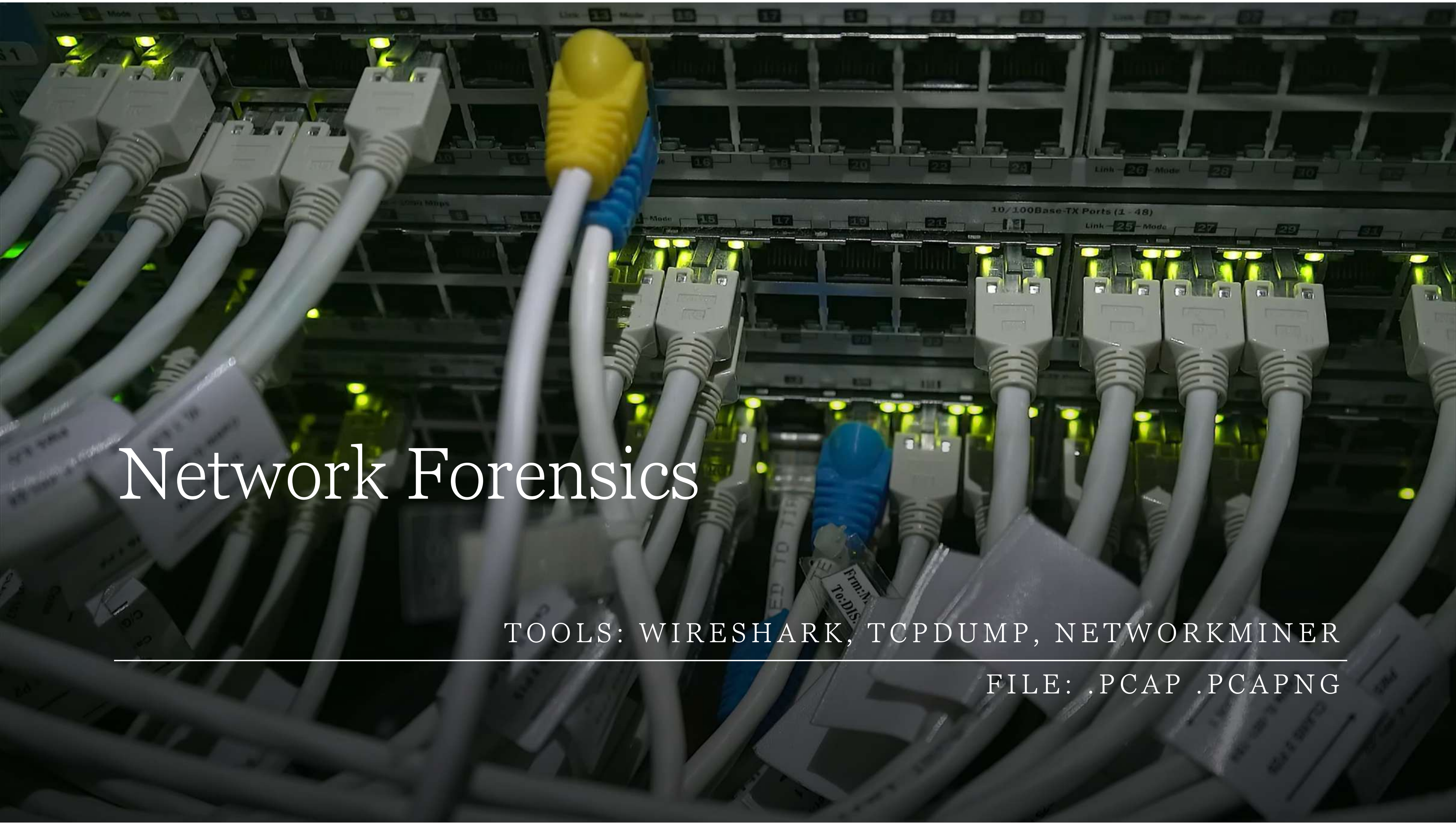
*Analysis*

*Curiosity*


WHEN YOU'RE TRYING TO EXPLAIN DIGITAL FORENSICS
TO SOMEONE WHO THINKS IT'S ALL ABOUT HACKING
makeameme.

# Types of Forensics found in CTFs

- Network traffic analysis
- Picture analysis (steganography)
- Filesystem analysis
- Audio analysis
- Data & Broken files
- Memory analysis



# Network Forensics

TOOLS: WIRESHARK, TCPDUMP, NETWORKMINER

FILE: .PCAP .PCAPNG

# Network Forensics - Approach

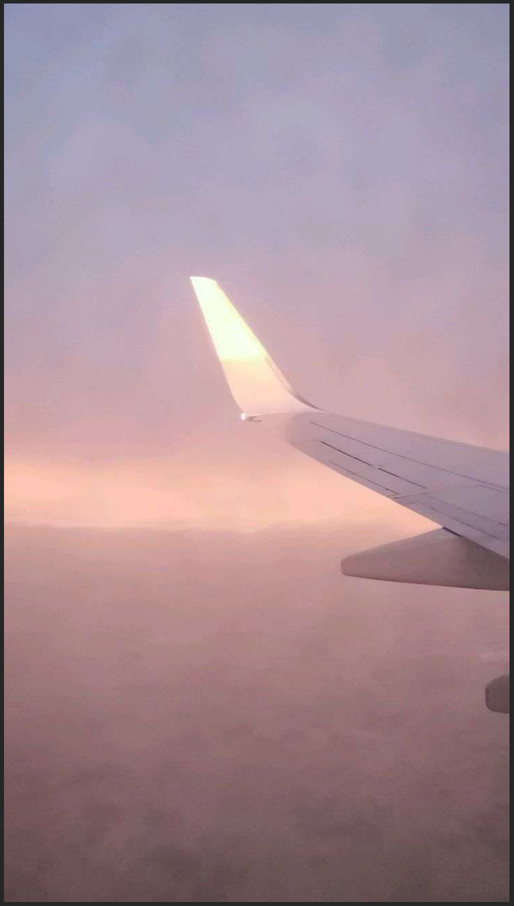
- Look at strings
- Follow streams

  *Right click a packet → Follow → Stream decided*
- Export objects

  *File → Exports Object → HTTP*

# Network Forensics - Challenges

- Packets Primer
- wireshark doo doo…
- DoS’ed out



# Picture Analysis

- Metadata

  *Additional information about the image, that gets stored with the image file*

  *(Comments, Author, Date and Time, camera type, date modified)*

  *Tools: exiftool and metadata2go*

- Steganography

  *Practise of hiding information within other information/content*

  *Files, messages, images*

  *Tools: steghide, zsteg, cat/strings*

# Picture Analysis - Steganography

| | | |
|---|---|---|
| 🟪 | 🟪 | 🟪 |
| 170, 88, 250 | 170, 90, 250 | 170, 92, 250 |
| X | Z | \ |

# Picture Analysis - Approach

- Look at the metadata – Any additional information that could be a clue?

  *File type is also a good indicator to understand what you are dealing with*

- Analyse the image on a base level

  *Does the image itself leave any clues?*

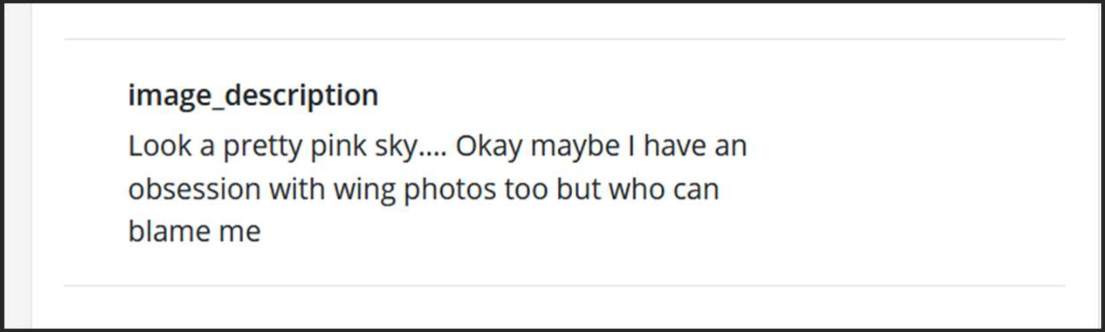
- Look into the image raw code

  *cat, strings, hex editor, etc*

- Are there any hidden files in the image?

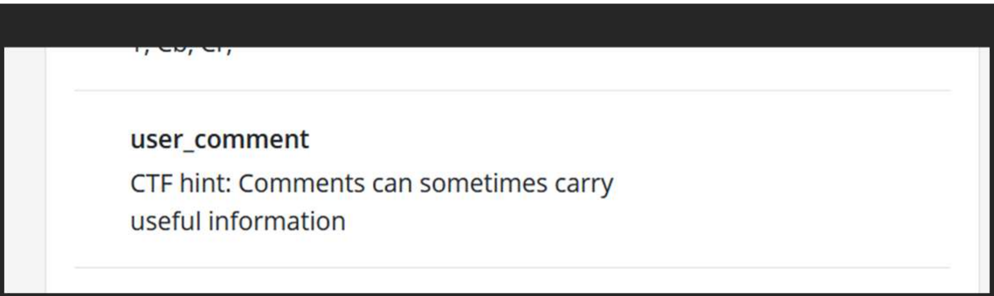
  *Certain image types act as folders*

# Metadata Finds useful in CTFS



**image_description**

Look a pretty pink sky…. Okay maybe I have an obsession with wing photos too but who can blame me



Y, Cb, Cr,

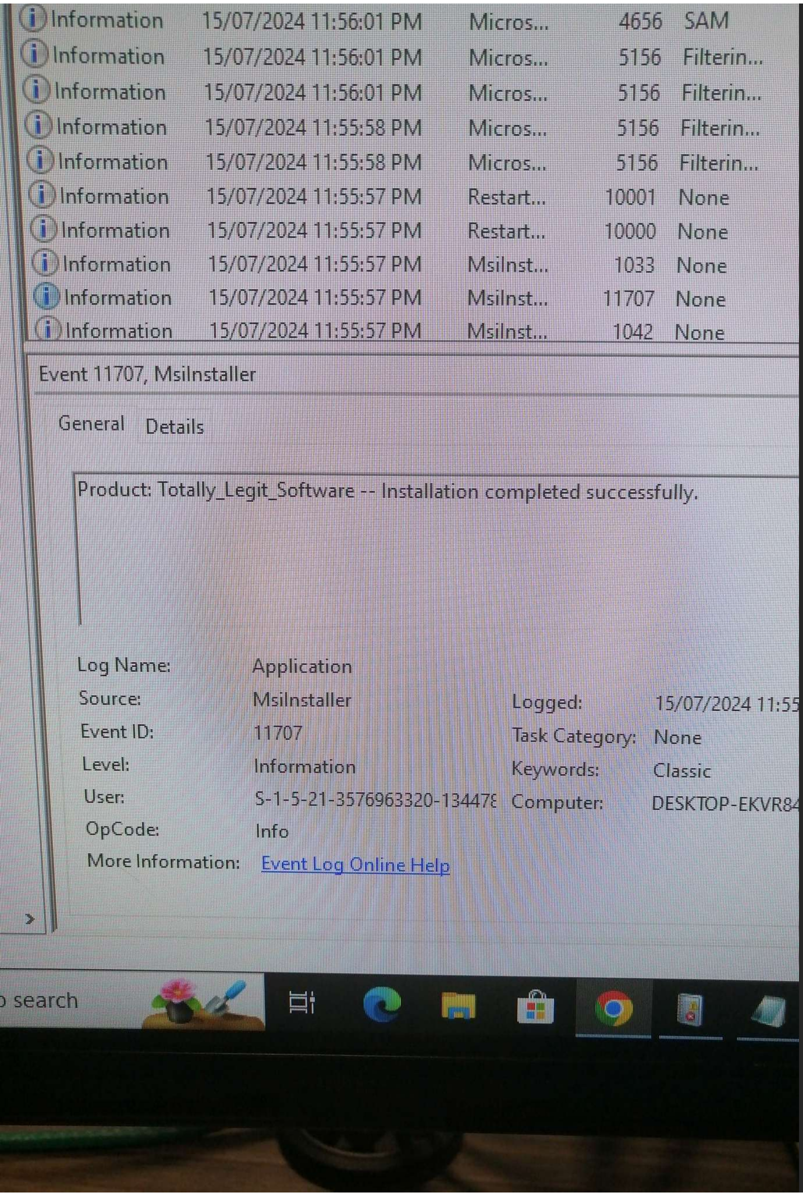
**user_comment**

CTF hint: Comments can sometimes carry useful information

Using that comment – we are going to go back and visit the metadata of the photo of the wing from earlier and see if we can find something else

# OS Forensics

TOOLS: AUTOPSY, EVENT LOGS, REGISTRY,



```
Information   15/07/2024 11:56:01 PM   Micros...   4656   SAM
Information   15/07/2024 11:56:01 PM   Micros...   5156   Filterin...
Information   15/07/2024 11:56:01 PM   Micros...   5156   Filterin...
Information   15/07/2024 11:55:58 PM   Micros...   5156   Filterin...
Information   15/07/2024 11:55:58 PM   Micros...   5156   Filterin...
Information   15/07/2024 11:55:57 PM   Restart...  10001  None
Information   15/07/2024 11:55:57 PM   Restart...  10000  None
Information   15/07/2024 11:55:57 PM   MsiInst...   1033  None
Information   15/07/2024 11:55:57 PM   MsiInst...  11707  None
Information   15/07/2024 11:55:57 PM   MsiInst...   1042  None
```

Event 11707, MsiInstaller

General Details

Product: Totally_Legit_Software -- Installation completed successfully.

Log Name: Application

Source: MsiInstaller Logged: 15/07/2024 11:55

Event ID: 11707 Task Category: None

Level: Information Keywords: Classic

User: S-1-5-21-3576963320-13447 Computer: DESKTOP-EKVR84

OpCode: Info

More Information: Event Log Online Help

# What Can Security Logs tell us

- Tracks Activities – User logins/logouts file access and system changes
- Identify anomalies –login fails or suspicious program execution
- It allows for the investigator to build an event timeline

# Consolidation

- Variety of types of forensics
- Network forensics: wireshark, understanding protocols
- Picture analysis: steganography, metadata
  *Exiftool, strings, grep, zsteg*
- Broken files: file signatures & hex editor

- Extra Challenges: WebNet1, c0rrupt
- TryHackMe: Intro to Digital Forensics, Windows Forensics, Memory Forensics, etc.

# Happy Hunting!