



WANNACRY RANSOMWARE REPORT

REPORT BY:

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EXECUTIVE SUMMARY

SHA-256

24d004a104d4d54034dbcffc2a4b19a11f39008
a575aa614ea04703480b1022c

Wannacry is ransomware that utilized the EternalBlue exploit to propagate through the targets network and attacked outdated Windows computers globally in May of 2017. WannaCry was a multistage attack starting with a dropper that unpacked a payload onto the targets system under the right conditions. Once the files were encrypted, the threat actors demanded a ransom of \$300 worth of Bitcoin. If the ransom is not paid in a specified amount of time, the ransom is increased to \$600. This attack infected around 230,000 computers across 150 countries. Marcus Hutchins later discovered a kill switch that stalled the spread of the attack. Click [here](https://app.any.run/tasks/04098f9a-244d-453f-8d75-891e5631a135/) to view the full analysis report or visit the link below.

<https://app.any.run/tasks/04098f9a-244d-453f-8d75-891e5631a135/>

HIGH-LEVEL TECHNICAL SUMMARY

For the 12 months to December 1, 2025

WannaCry consist of 2 stages, the first stage being a dropper that tries to make contact with a suspicious URL that can be found in the strings `hxxp[:]//]iuqerfsodp9ifjaposdfjhgosu rijfaewrwergrwea[.]com` if a connection is established the program exits, if a connection is not established the program proceeds with the rest of the execution. Once the program proceeds with execution a service is created by the program `mssecsvc2.0` and has the display name Microsoft Security Center (2.0) Service. The service also contains a path to the executable `<PATH_TO_WANNACRY>\wannacr y.exe -m security`. During this stage the program will attempt to propagate by reaching out to a large range of IPv4 addresses.

Stage two the payload is unpacked from the dropper and proceeds to create persistence mechanisms such as creating a folder in the `C:\ProgramData\<GENERATED_STRING>\` directory and creating a file named `tasksche.exe` in the `C:\Windows\` path and copying itself to the newly created directory. Once the file has been copied to the directory, a service is created and is named after the same generated string as the newly created folder and contains a path leading to the payload `C:\ProgramData\<GENERATED_STRING>\tasksche.exe`. After the service is created and the payload is executed the encryption process starts which changes the background image, drops instructions on how to decrypt the files and more in the generated directory.

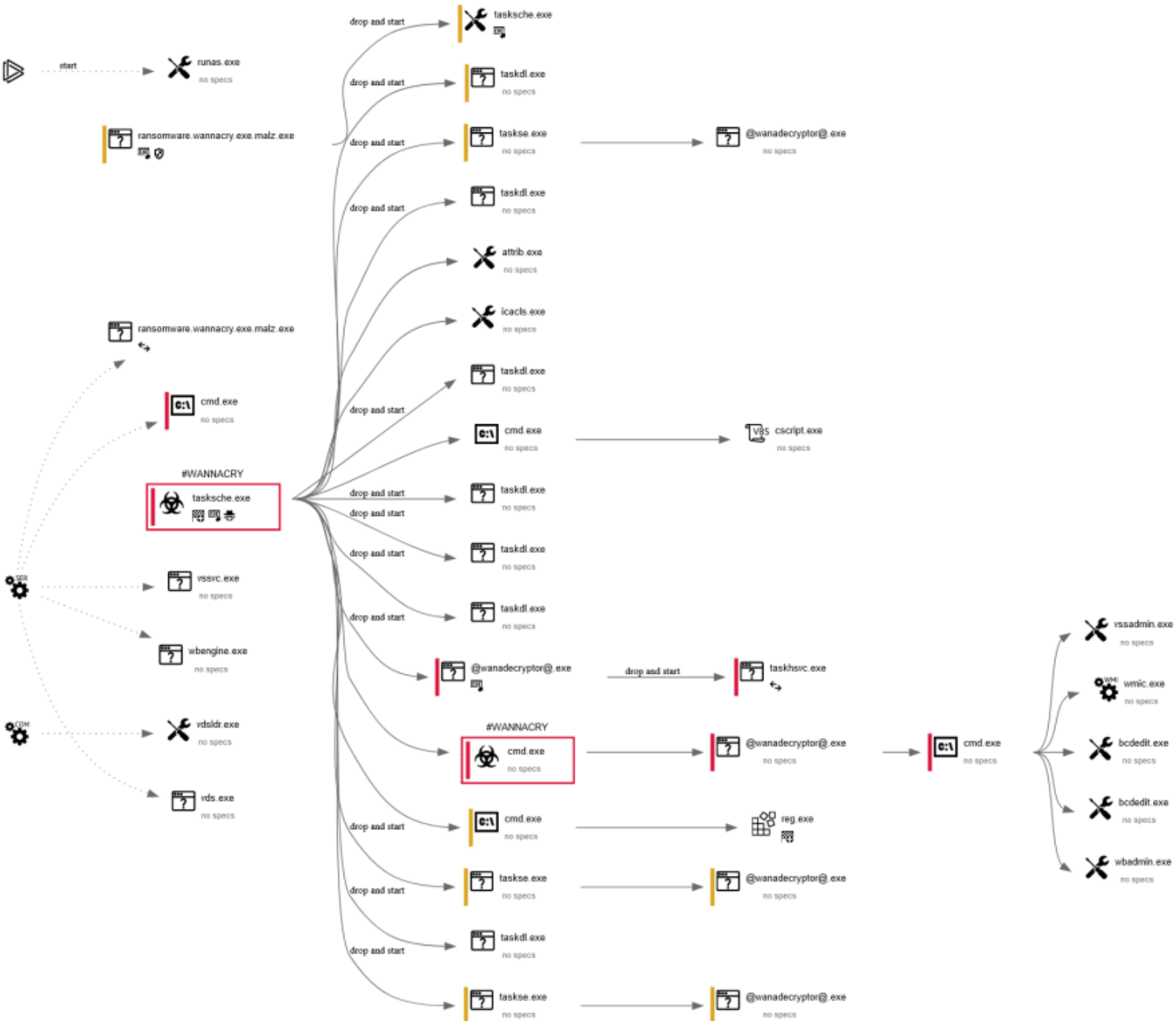


Fig.1 Execution flow graph

MALWARE COMPOSITION

| ITEM | Description | SHA-256 |
|-------------------------|---|--|
| Ransomware.wannacry.exe | Initial file detonated | 24d004a104d4d54034dbcffc2a4b 19a11f39008a575aa614ea047034 80b1022c |
| tasksche.exe | The payload unpacked from the dropper | ed01ebfbc9eb5bbea545af4d01bf5 f1071661840480439c6e5babe8e0 80e41aa |
| @WanaDecryptor@[.].exe | The GUI application that is executed by tasksche after all files have been encrypted and handles ransom payment | b9c5d4339809e0ad9a00d4d3dd2 6fdf44a32819a54abf846bb9b560 d81391c25 |
| taskdl.exe | SQL Client Configuration Utility EXE | 4a468603fdcb7a2eb5770705898cf9ef37a ade532a7964642ecd705a74794b79 |
| taskhsvc.exe | Handles communication to TOR URL and other TOR activites | e48673680746fbe027e8982f62a8 3c298d6fb46ad9243de8e79b7e5a 24dcd4eb |
| taskse.exe | Waitfor - Wait/send a signal over a network | 2ca2d550e603d74dedda03156023 135b38da3630cb014e3d00b12633 58c5f00d |

STATIC ANALYSIS

Summary

Analyzing the strings reveals a suspicious URL, later on during the advanced static analysis phase, we can see that the URL is moved to the ESI register and later pushed to the stack as it is used as a parameter in the InternetOpenUrlA function. After the InternetOpenUrlA function has been called, the dropper checks to see if the connection to the URL was successful or not. If the connection succeeds the program exits, otherwise the program continues with execution as seen in (Fig.2). The original filename (*lhdfrgui.exe*) of the dropper can be found in the "Version" tab of PE Studio (Fig.3). Upon further inspection of the dropper, the date the executable was compiled was also spotted (Fig.4). Heading over to the "Imports" tab of PE Studio, we can see that the dropper utilizes a few network, cryptography, and services functions such as

- InternetOpenA
- InternetOpenUrlA
- CryptGenRandom
- CreateServiceA
- StartServiceCtrlDispatcherA
- connect
- socket

The full list of imports can be found in (Fig.7). While inspecting the droppers' headers, an executable was spotted in the .rsrc header as shown in (Fig.5).

While analyzing the dropper in Cutter, a reference to the payload (*tasksche.exe*) is seen being pushed to the stack along with the location the payload will be dropped which is the *C:\Windows* location (Fig.6). There is a reference to a file named "*qeriuwjhrf*" in the same location the payload will be dropped, upon further investigation there was no such file created (Fig.6). Bitcoin addresses were also found in the payload (Fig.8).

STATIC ANALYSIS

Images



FIG.2 REFERENCE TO DNS QUERY URL STRING.

STATIC ANALYSIS

Images

| | |
|------------------|---|
| FileDescription | Microsoft® Disk Defragmenter |
| FileVersion | 6.1.7601.17514 (win7sp1_rtm.101119-1850) |
| InternalName | lhdfrgui.exe |
| LegalCopyright | © Microsoft Corporation. All rights reserved. |
| OriginalFilename | lhdfrgui.exe |
| ProductName | Microsoft® Windows® Operating System |
| ProductVersion | 6.1.7601.17514 |

FIG.3 ORIGINAL NAME OF DROPPER.

| | | |
|----------------|------------|--------------------------------|
| compiler-stamp | 0x4CE78ECC | Sat Nov 20 09:03:08 2010 UTC |
|----------------|------------|--------------------------------|

FIG.4 TIMESTAMP THE DROPPER WAS COMPILED.

| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F | | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | A | B | C | D | E | F | |
|-------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 32090 | A4 | A0 | 66 | 00 | B0 | 03 | 00 | 00 | E4 | 04 | 00 | 00 | 00 | 00 | 00 | 00 | | н | . | ф | . | * | . | . | . | . | ä | . | . | . | . | . | . | |
| 320A0 | 01 | 00 | 52 | 00 | 4D | 5A | 90 | 00 | 03 | 00 | 00 | 00 | 00 | 04 | 00 | 00 | | . | . | Р | . | М | З | . | . | . | . | . | . | . | . | . | . | |
| 320B0 | FF | FF | 00 | 00 | B8 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 40 | 00 | 00 | | ÿ | ÿ | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |
| 320C0 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |
| 320D0 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |
| 320E0 | F8 | 00 | 00 | 00 | 0E | 1F | BA | 0E | 00 | B4 | 05 | CD | 21 | B8 | 01 | 4C | | е | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |
| 320F0 | CD | 21 | 54 | 68 | 69 | 73 | 20 | 70 | 72 | 6F | 67 | 72 | 61 | 6D | 20 | 63 | | í | ! | T | h | i | s | . | p | r | o | g | r | a | m | . | c | |
| 32100 | 61 | 6E | 6E | 6F | 74 | 20 | 62 | 65 | 20 | 72 | 75 | 6E | 20 | 69 | 6E | 20 | | a | n | n | o | t | . | b | e | . | r | u | n | . | i | n | . | |
| 32110 | 44 | 4F | 53 | 20 | 6D | 6F | 64 | 65 | 2E | 0D | 0D | 0A | 24 | 00 | 00 | 00 | | D | O | S | . | m | o | d | e | . | . | . | . | . | . | . | . | |
| 32120 | 00 | 00 | 00 | 00 | E0 | C5 | 3A | D1 | A4 | A4 | 54 | 82 | A4 | A4 | 54 | 82 | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |
| 32130 | A4 | A4 | 54 | 82 | DF | B8 | 58 | 82 | A6 | A4 | 54 | 82 | CB | BB | 5F | 82 | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |
| 32140 | A5 | A4 | 54 | 82 | 27 | B8 | 5A | 82 | A0 | A4 | 54 | 82 | CB | BB | 5E | 82 | | н | м | т | . | ä | . | Ä | . | Ñ | н | м | т | . | н | м | т | . |
| 32150 | AF | A4 | 54 | 82 | CB | BB | 50 | 82 | A0 | A4 | 54 | 82 | 67 | AB | 09 | 82 | | н | м | т | . | ä | . | Ä | . | Ñ | н | м | т | . | н | м | т | . |
| 32160 | A9 | A4 | 54 | 82 | A4 | A4 | 55 | 82 | 07 | A4 | 54 | 82 | 92 | 92 | 5F | 82 | | н | м | т | . | ä | . | Ä | . | Ñ | н | м | т | . | н | м | т | . |
| 32170 | A3 | A4 | 54 | 82 | 63 | A2 | 52 | 82 | A5 | A4 | 54 | 82 | 52 | 69 | 63 | 68 | | н | м | т | . | ä | . | Ä | . | Ñ | н | м | т | . | н | м | т | . |
| 32180 | A4 | A4 | 54 | 82 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | | н | м | т | . | ä | . | Ä | . | Ñ | н | м | т | . | н | м | т | . |
| 32190 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 50 | 45 | 00 | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |
| 321A0 | 4C | 01 | 04 | 00 | 41 | 8F | E7 | 4C | 00 | 00 | 00 | 00 | 00 | 00 | 00 | 00 | | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |
| 321B0 | E0 | 00 | 0F | 01 | 0B | 01 | 06 | 00 | 70 | 00 | 00 | 00 | 00 | 20 | 35 | 00 | | ä | . | . | . | . | . | . | . | . | . | . | . | . | . | . | . | |

FIG.5 IMAGE OF EXECUTABLE IN THE .RSRC HEADER OF THE DROPPER.

STATIC ANALYSIS

Images

```

push    str.WINDOWS          ; 0x431364
lea     eax, [lpExistingFileName]
push    str.C:___s___s      ; 0x431358 ; tasksche.exe payload
push    eax
call    esi
add     esp, 0x10
lea     ecx, [lpNewFileName]
push    str.WINDOWS          ; 0x431364
push    str.C:___s___qeriuwjhrf ; 0x431344
push    ecx
call    esi
add     esp, 0xc
lea     edx, [lpNewFileName]
lea     eax, [lpExistingFileName]
push    1                    ; 1 ; DWORD dwFlags
push    edx                  ; LPCSTR lpNewFileName
push    eax                  ; LPCSTR lpExistingFileName
call    dword [MoveFileExA]   ; 0x40a04c ; BOOL MoveFileExA(LPCSTR lpExistingFileName, LPCST...
push    ebx
push    4                    ; 4
push    2                    ; 2
push    ebx
push    ebx
lea     ecx, [var_7ch]
push    0x40000000
push    ecx
call    dword [0x431458]      ; CreateFileA
mov     esi, eax
cmp     esi, 0xffffffff
je      0x407f08

```

[0x00407e54]

```

mov     eax, dword [var_10h_2]
lea     edx, [var_10h_2]
push    ebx
push    edx
push    ebp
push    eax
push    esi
call    dword [0x431460]      ; WriteFile
push    esi
call    dword [0x43144c]      ; CloseHandle

```

FIG.6 REFERENCE TO PACKED PAYLOAD IN CUTTER.

STATIC ANALYSIS

Images

| functions (91) | blacklist (29) | anonymous (13) | library (7) |
|---|----------------|----------------|--------------|
| GetCurrentThreadId | x | - | kernel32.dll |
| GetCurrentThread | x | - | kernel32.dll |
| MoveFileExA | x | - | kernel32.dll |
| TerminateThread | x | - | kernel32.dll |
| QueryPerformanceFrequency | x | - | kernel32.dll |
| StartServiceCtrlDispatcherA | x | - | advapi32.dll |
| ChangeServiceConfig2A | x | - | advapi32.dll |
| CreateServiceA | x | - | advapi32.dll |
| CryptGenRandom | x | - | advapi32.dll |
| CryptAcquireContextA | x | - | advapi32.dll |
| 3 (closesocket) | x | x | ws2_32.dll |
| 16 (recv) | x | x | ws2_32.dll |
| 19 (send) | x | x | ws2_32.dll |
| 8 (htonl) | x | x | ws2_32.dll |
| 14 (ntohl) | x | x | ws2_32.dll |
| 115 (WSAStartup) | x | x | ws2_32.dll |
| 12 (inet_ntoa) | x | x | ws2_32.dll |
| 10 (ioctlsocket) | x | x | ws2_32.dll |
| 18 (select) | x | x | ws2_32.dll |
| 9 (htons) | x | x | ws2_32.dll |
| 23 (socket) | x | x | ws2_32.dll |
| 4 (connect) | x | x | ws2_32.dll |
| 11 (inet_addr) | x | x | ws2_32.dll |
| GetAdaptersInfo | x | - | iphlpapi.dll |
| InternetOpenA | x | - | wininet.dll |
| InternetOpenUrlA | x | - | wininet.dll |
| InternetCloseHandle | x | - | wininet.dll |
| rand | x | - | msvcrt.dll |
| srand | x | - | msvcrt.dll |

FIG.7 IMPORTS OF INTEREST IN THE DROPPER.

```

mov dword ptr ss:[ebp-c],tasksche.40F48 40F488:"13AM4VW2dhxYgXeQepoHkHSQuy6NgaEb94"
mov dword ptr ss:[ebp-8],tasksche.40F46 40F464:"12t9YDPgwueZ9NyMgw519p7AA8isjr6SMw"
mov dword ptr ss:[ebp-4],tasksche.40F44 40F440:"115p7UMMngo1pMvvpHijcRdfJNXj6LrLn"

```

FIG.8 BITCOIN ADDRESSES FOUND IN THE PAYLOAD

DYNAMIC ANALYSIS

Summary

Once the dropper is executed as administrator, a DNS query is made to the suspicious (*hxxp[://]iuqerfsodp9ifjaposdfjhgosurijfaewrwergweal[.com]*) URL mentioned in (Fig. 2). As stated in the static analysis section, if the dropper receives an HTTP 200 response, the program exits. If the program does not receive a response from the DNS query the program proceeds with the rest of the execution. We can see the dropper making the DNS query in Wireshark shown in (Fig. 9). After the DNS query the dropper proceeds and pushes two arguments to the stack *<PATH_TO_WANNACRY>* and *-m security* which are then passed as parameters to the *CreateServiceA* function. The strings *mssecsvc2.0* and *Microsoft Security Center (2.0) Service* are also pushed to the stack in preparation for the creation of the service. The program proceeds to create a service named *mssecsvc2.0* with the display name of *Microsoft Security Center (2.0) Service* as seen in (Fig. 10). After the service is created and executed, the dropper attempts to connect to a range of IPv4 addresses on port 445 (SMB) using the EternalBlue exploit (Fig. 11). As the dropper attempts to connect to the range of IPv4 addresses, the payload is being unpacked from the dropper and is executed (Fig. 12). The payload generates a string based on the hostname of the system and creates a folder named after the generated string in the *C:\ProgramData* directory.

After the creation of the directory, a copy of the payload is moved to the directory and executed along with *attrib +h .* to hide the current directory the payload was copied to along with *icacls . /grant Everyone:F /T /C /Q* to grant full permissions to the directory (Fig. 13). Along with the creation of the new directory, a service is also created with the same generated name as the directory which uses *cmd* to execute *tasksche* as a persistence mechanism (Fig. 14). Once the service is created, a registry key named *WanaCrypt0r* and registry key value named *wd* is created with the key-value set to the newly created directory in *C:\ProgramData\<RANDOMLY_GENERATED_STRING>* (Fig. 15). After the payload has been executed by *cmd*, the encryption process begins. An executable named *WanaDecryptor@.exe* is dropped along with various other files in the same directory as the payloads' execution and creates a shortcut to the *@WanaDecryptor* executable on the Desktop (Fig. 16). Lastly, the system background is changed and a GUI of the *@WanaDecryptor@.exe* executable is displayed (Fig. 17).

DYNAMIC ANALYSIS

Images

| | | | | | |
|---|-----------|--------------|--------------|------|--|
| 3 | 3.765142 | 11.14.56.128 | 11.14.56.128 | ICMP | 260 Destination unreachable (Host unreachable) |
| 4 | 7.764941 | 11.14.56.128 | 11.14.56.128 | ICMP | 260 Destination unreachable (Host unreachable) |
| 5 | 11.765132 | 11.14.56.128 | 11.14.56.128 | ICMP | 260 Destination unreachable (Host unreachable) |


```

> Frame 4: 260 bytes on wire (2080 bits), 137 bytes captured (1096 bits) on interface \Device\NPF_{B5D36D2C-DDB0-45E8-A0E0-0AF805857B22}, id 0
> Ethernet II, Src: 00:00:00_00:00:00 (00:00:00:00:00:00), Dst: 00:00:00_00:00:00 (00:00:00:00:00:00)
> Internet Protocol Version 4, Src: 11.14.56.128, Dst: 11.14.56.128
> Internet Control Message Protocol
  > Domain Name System (query)
    Transaction ID: 0x49d0
    > Flags: 0x0100 Standard query
    Questions: 1
    Answer RRs: 0
    Authority RRs: 0
    Additional RRs: 0
  > Queries
    > www.iuqerfsodp9ifjaposdfjhgosurijfaewrwergwea.com: type A, class IN
  
```


| | | | |
|------|-------------------------|-------------------------|-------------------|
| 0000 | 00 00 00 00 00 00 00 00 | 00 00 00 00 08 00 45 00 |E.. |
| 0010 | 00 7b de 9e 00 00 00 01 | 00 00 0b 0e 38 80 0b 0e | ..{.....8... |
| 0020 | 38 80 03 01 4a 75 00 00 | 00 00 45 00 00 5f 2f 8e | 8...Ju...E.../_ |
| 0030 | 00 00 80 11 00 00 0b 0e | 38 80 0b 0e 38 81 e4 2b |8...8...+ |
| 0040 | 00 35 00 4b 87 79 49 d0 | 01 00 00 01 00 00 00 00 | ..5.K.yI..... |
| 0050 | 00 00 03 77 77 77 29 69 | 75 71 65 72 66 73 6f 64 | ...www)i uqerfsod |
| 0060 | 70 39 69 66 6a 61 70 6f | 73 64 66 6a 68 67 6f 73 | p9ifjapo sdfjhgos |
| 0070 | 75 72 69 6a 66 61 65 77 | 72 77 65 72 67 77 65 61 | urijfaew rwergwea |
| 0080 | 03 63 6f 6d 00 00 01 00 | 01 | .com..... |

FIG.9 DROPPER MAKING DNS QUERY TO SUSPICIOUS URL.

DYNAMIC ANALYSIS

Images

| | | | |
|----------|---------------|---|---|
| 00407C4B | 68 60F77000 | push ransomware.wannacry.70F760 | 70F760: "C:\\Users\\Lab\\Desktop\\Ransomware.wannacry.exe" |
| 00407C50 | 68 30134300 | push ransomware.wannacry.431330 | 431330: "%s -m security" |
| 00407C55 | 50 | push eax | |
| 00407C56 | FF15 0CA14000 | call dword ptr ds:[<&sprintf>] | |
| 00407C5C | 83C4 0C | add esp,C | |
| 00407C5F | 68 3F000F00 | push F003F | |
| 00407C64 | 6A 00 | push 0 | |
| 00407C66 | 6A 00 | push 0 | |
| 00407C68 | FF15 10A04000 | call dword ptr ds:[<&OpenSCManager>] | |
| 00407C6E | 8BF8 | mov edi,eax | |
| 00407C70 | 85FF | test edi,edi | |
| 00407C72 | 74 56 | je ransomware.wannacry.407CCA | |
| 00407C74 | 53 | push ebx | |
| 00407C75 | 56 | push esi | |
| 00407C76 | 6A 00 | push 0 | |
| 00407C78 | 6A 00 | push 0 | |
| 00407C7A | 6A 00 | push 0 | |
| 00407C7C | 6A 00 | push 0 | |
| 00407C7E | 8D4C24 1C | lea ecx,dword ptr ss:[esp+1C] | |
| 00407C82 | 6A 00 | push 0 | |
| 00407C84 | 51 | push ecx | ecx: "C:\\Users\\Lab\\Desktop\\Ransomware.wannacry.exe -m security" |
| 00407C85 | 6A 01 | push 1 | |
| 00407C87 | 6A 02 | push 2 | |
| 00407C89 | 6A 10 | push 10 | |
| 00407C8B | 68 FF010F00 | push F01FF | |
| 00407C90 | 68 08134300 | push ransomware.wannacry.431308 | 431308: "Microsoft Security Center (2.0) Service" |
| 00407C95 | 68 FC124300 | push ransomware.wannacry.4312FC | 4312FC: "mssecsvc2.0" |
| 00407C9A | 57 | push edi | |
| 00407C9B | FF15 14A04000 | call dword ptr ds:[<&CreateServiceA>] | |
| 00407CA1 | 8B1D 18A04000 | mov ebx,dword ptr ds:[<&CloseServiceHan | |
| 00407CA7 | 8BF0 | mov esi,eax | |
| 00407CA9 | 85F6 | test esi,esi | |
| 00407CAB | 74 0E | je ransomware.wannacry.407CBB | |
| 00407CAD | 6A 00 | push 0 | |
| 00407CAF | 6A 00 | push 0 | |
| 00407CB1 | 56 | push esi | |
| 00407CB2 | FF15 1CA04000 | call dword ptr ds:[<&StartServiceA>] | |

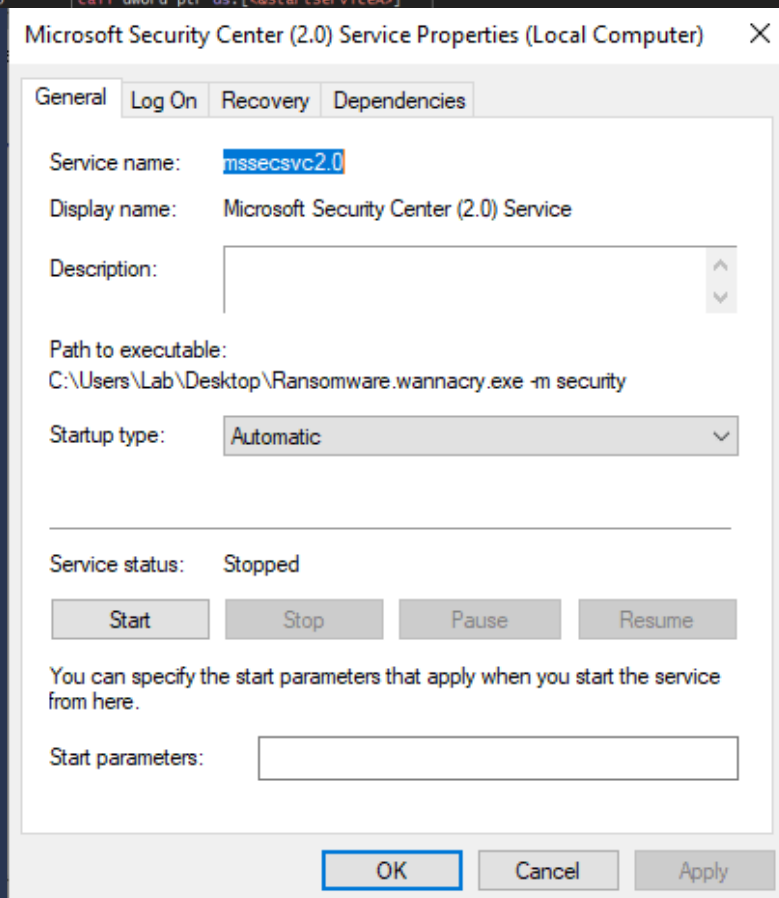


FIG.10 DROPPER CREATES SERVICE AS A PERSISTENCE MECHANISM

DYNAMIC ANALYSIS

Images

| | | | | | | | | | |
|-----------------------|------|-----|----------|-----------------|-------|---------------|-----|---------------------|-------------|
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49892 | 169.254.140.1 | 445 | 4/9/2022 1:13:41 AM | mssecsvc2.0 |
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49893 | 169.254.141.1 | 445 | 4/9/2022 1:13:41 AM | mssecsvc2.0 |
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49894 | 169.254.142.1 | 445 | 4/9/2022 1:13:41 AM | mssecsvc2.0 |
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49896 | 169.254.143.1 | 445 | 4/9/2022 1:13:41 AM | mssecsvc2.0 |
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49897 | 169.254.144.1 | 445 | 4/9/2022 1:13:41 AM | mssecsvc2.0 |
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49898 | 169.254.145.1 | 445 | 4/9/2022 1:13:41 AM | mssecsvc2.0 |
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49900 | 169.254.146.1 | 445 | 4/9/2022 1:13:41 AM | mssecsvc2.0 |
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49901 | 169.254.147.1 | 445 | 4/9/2022 1:13:41 AM | mssecsvc2.0 |
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49904 | 169.254.148.1 | 445 | 4/9/2022 1:13:41 AM | mssecsvc2.0 |
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49906 | 169.254.149.1 | 445 | 4/9/2022 1:13:42 AM | mssecsvc2.0 |
| Ransomware.wannacr... | 3932 | TCP | Syn Sent | 169.254.185.116 | 49908 | 169.254.150.1 | 445 | 4/9/2022 1:13:42 AM | mssecsvc2.0 |

FIG.11 SERVICE ATTEMPTS TO REACH OUT TO A RANGE OF IPV4.

| | | | |
|----------|--------------------|---------------------------------------|-------------------------------------|
| 00407ED1 | 52 | push edx | edx: "C:\\WINDOWS\\tasksche.exe /i" |
| 00407ED2 | 53 | push ebx | |
| 00407ED3 | C74424 4C 44000000 | mov dword ptr ss:[esp+4C],44 | 44: 'D' |
| 00407ED8 | 66:895C24 7C | mov word ptr ss:[esp+7C],bx | |
| 00407EE0 | C74424 78 81000000 | mov dword ptr ss:[esp+78],81 | |
| 00407EE8 | FF15 78144300 | call dword ptr ds:[<&CreateProcessA>] | |

| | | | | | | | |
|--------------|------|---------|--------|----|----------|-----|-------------|
| tasksche.exe | 5308 | Running | SYSTEM | 23 | 15,656 K | Yes | Not allowed |
|--------------|------|---------|--------|----|----------|-----|-------------|

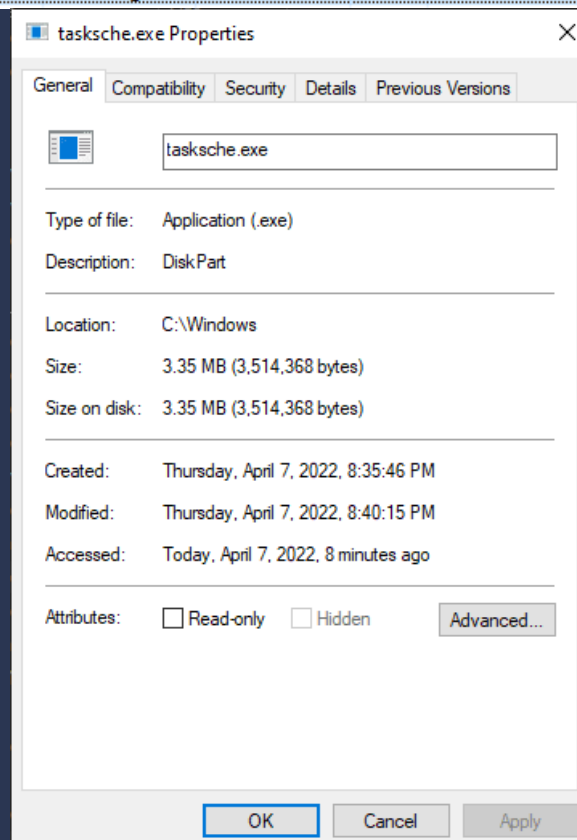


FIG.12 PAYLOAD IS UNPACKED
FROM DROPPER.

DYNAMIC ANALYSIS

Images

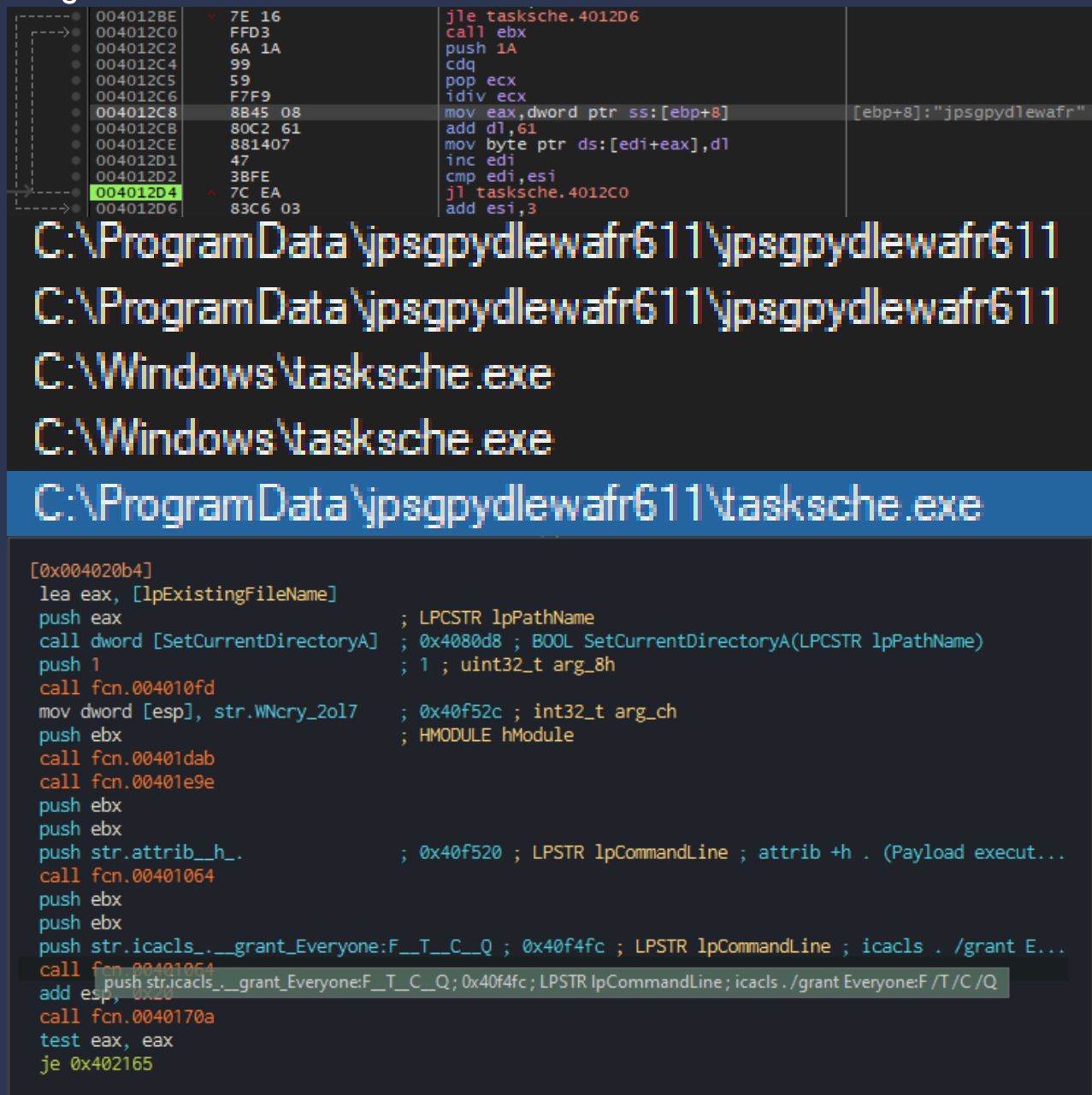


FIG.13 PAYLOAD CREATES DIRECTORY BASED ON SYSTEM NAME AND ADDS HIDDEN ATTRIBUTE TO FOLDER AND GRANTS PERMISSIONS TO SAID DIRECTORY

DYNAMIC ANALYSIS

Images

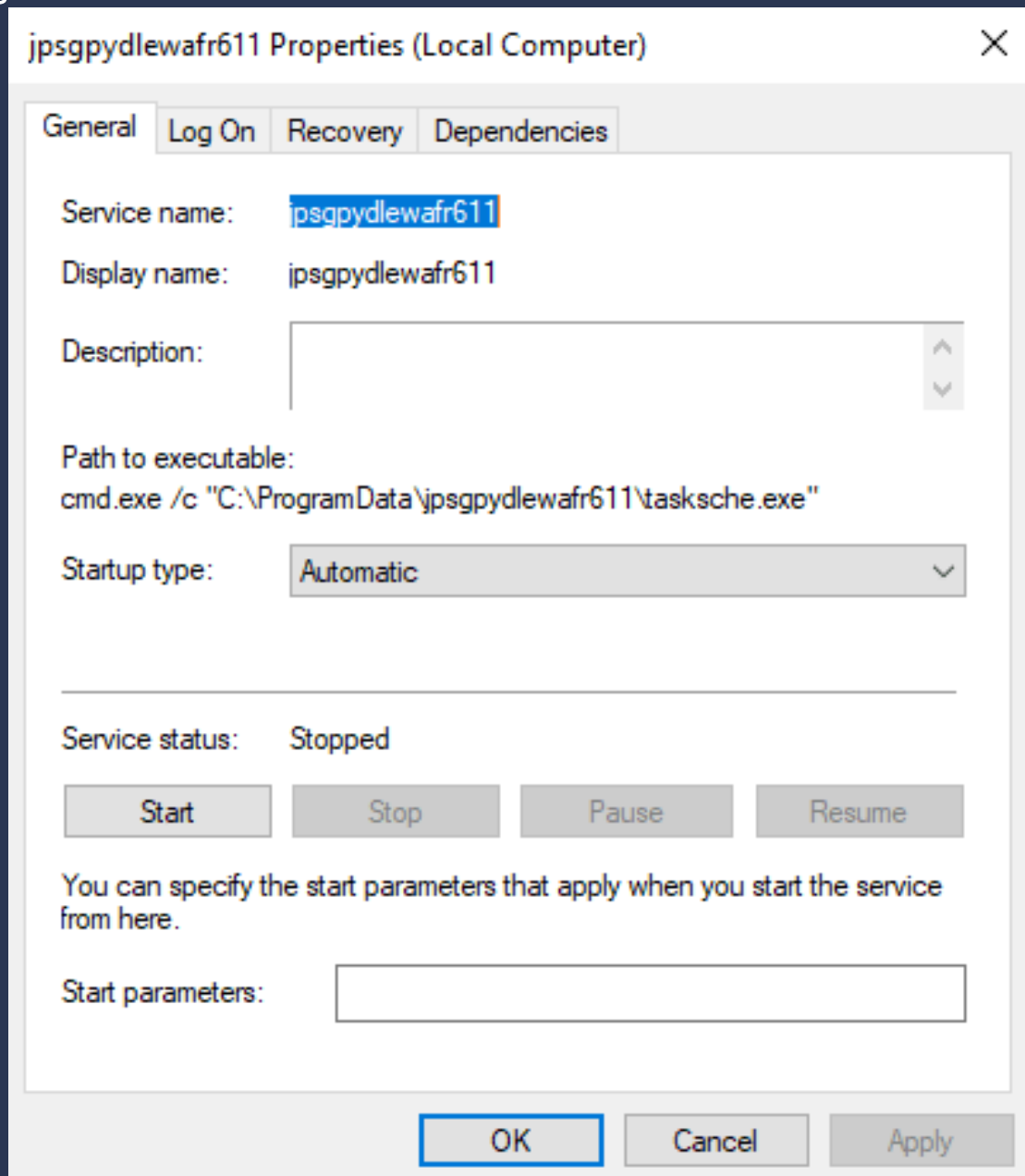


FIG.14 SERVICE IS CREATED WITH THE SAME NAME AS THE GENERATED STRING.

DYNAMIC ANALYSIS

Images

| | | | | |
|-----------|--------------|------|---------------|------------------------------|
| 12:46:... | tasksche.exe | 3256 | RegCreateKey | HKCU\Software\WanaCrypt0r |
| 12:46:... | tasksche.exe | 3256 | RegSetInfoKey | HKCU\SOFTWARE\WanaCrypt0r |
| 12:46:... | tasksche.exe | 3256 | RegQueryKey | HKCU\SOFTWARE\WanaCrypt0r |
| 12:46:... | tasksche.exe | 3256 | RegSetValue | HKCU\SOFTWARE\WanaCrypt0r\wd |
| 12:46:... | tasksche.exe | 3256 | RegCloseKey | HKCU\SOFTWARE\WanaCrypt0r |

| Computer\HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\WanaCrypt0r | | | |
|--|-----------|--------|---------------------------------|
| | Name | Type | Data |
| | (Default) | REG_SZ | (value not set) |
| | wd | REG_SZ | C:\ProgramData\jpsgpydlewafr611 |

FIG.15 REGISTRY KEY CREATED BY PAYLOAD SERVICE.

DYNAMIC ANALYSIS

Images


















| | | | |
|--|-------------------|---------------|----------|
|  msg | 4/9/2022 6:31 PM | File folder | |
|  @Please_Read_Me@.txt | 4/9/2022 6:30 PM | Text Document | 1 KB |
|  @WanaDecryptor@.exe | 5/12/2017 2:22 AM | Application | 240 KB |
|  @WanaDecryptor@.exe | 4/9/2022 6:30 PM | Shortcut | 1 KB |
|  00000000.eky | 4/9/2022 6:30 PM | EKY File | 0 KB |
|  00000000.pky | 4/9/2022 6:30 PM | PKY File | 1 KB |
|  00000000.res | 4/9/2022 6:38 PM | RES File | 1 KB |
|  b.wnry | 5/11/2017 8:13 PM | WNRy File | 1,407 KB |
|  c.wnry | 4/9/2022 6:30 PM | WNRy File | 1 KB |
|  f.wnry | 4/9/2022 6:31 PM | WNRy File | 1 KB |
|  r.wnry | 5/11/2017 3:59 PM | WNRy File | 1 KB |
|  s.wnry | 5/9/2017 4:58 PM | WNRy File | 2,968 KB |
|  t.wnry | 5/12/2017 2:22 AM | WNRy File | 65 KB |
|  taskdl.exe | 5/12/2017 2:22 AM | Application | 20 KB |
|  tasksche.exe | 4/9/2022 6:30 PM | Application | 3,432 KB |
|  taskse.exe | 5/12/2017 2:22 AM | Application | 20 KB |
|  u.wnry | 5/12/2017 2:22 AM | WNRy File | 240 KB |

FIG.16 FILES DROPPED FROM PAYLOAD AFTER ENCRYPTION PROCESS HAS
BEGUN.

DYNAMIC ANALYSIS

Images

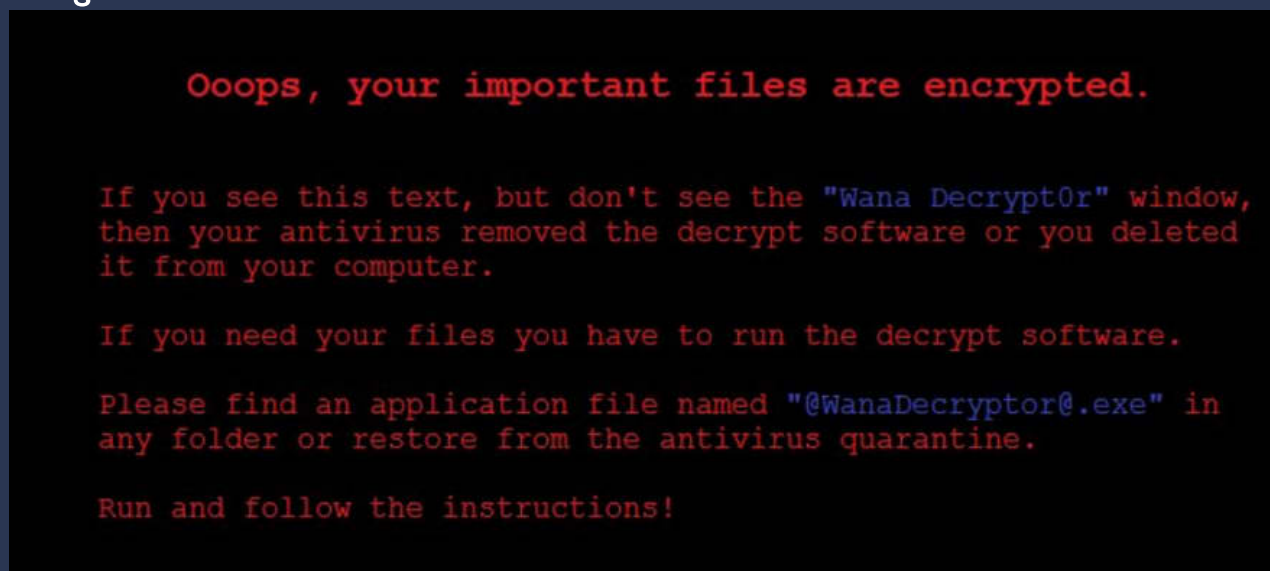


FIG.17 BACKGROUND CHANGED AND GUI APPLICATION DISPLAYED

INDICATORS OF COMPROMISE

Network Indicators

- Dropper observed making DNS Query to a suspicious domain (Fig. 9).
(*hxxp[:]//]iuqerfsodp9ifjaposdfjhgosurijfaewr
wergwea[.]com*)
- Payload attempts to establish contact with a range of IPv4 addresses (Fig. 11).

INDICATORS OF COMPROMISE

Host-Based Indicators

- Payload is unpacked onto the system in C:\Windows. (Note) During the debugging process, there was a mention of a file in the directory C:\Windows named qeriuwjhrf but the file was never created (Fig. 12).
- Creation of services *mssecsvc2.0* (Fig. 10) and a service with a name randomly generated based on the system name (Fig. 14).
- Creation of registry key
HKCU\SOFTWARE\WanaCrypt0r\wd (Fig. 15).
- Creation of files following the execution of the payload in the same directory as the execution. Along with files ending in the .WNCRY extension (Fig. 16).
- Background change and appearance of GUI application. (Fig. 17).

YARA RULES

```
rule wannacry_ruleset {
  meta:
    last_updated = "04-09-2022"
    author = "IAANSEC"
    description = "Yara rule to detect wannacry ransomware."
    hash256 = "24d004a104d4d54034dbcffc2a4b19a11f39008a575aa614ea04703480b1022c"

  strings:
    $MZ_byte = "MZ"
    $querydomain_killswitch = "iuqerfsodp9ifjaposdfjhgosurijfaewrwergwea" ascii
    $weird_windows_dir_str = "qeriuwjhrf" ascii
    $reg_name = "WanaCrypt0r" ascii
    $service = "Microsoft Security Center (2.0) Service" ascii
    $payload = "tasksche" ascii
    $exe1 = "taskdl" ascii
    $exe2 = "taskse" ascii
    $import = "Crypt" ascii
    $str = "WNcry@2017" ascii
    $decrypt_exe = "@WanaDecryptor@.exe" ascii
    $wnry = "wnry" ascii
    $decrypt = "decrypt" ascii
    $bitcoin = "bitcoin" ascii
    $btc_wallet1 = "115p7UMMngoj1pMvkpHijcRdfJNXj6LrLn" fullword ascii
    $btc_wallet2 = "13AM4VW2dhxYgXeQepoHkHSQuy6NgaEb94" fullword ascii
    $btc_wallet3 = "12t9YDPgwueZ9NyMgw519p7AA8isjr6SMw" fullword ascii

  condition:
    $MZ_byte at 0 and
    5 of them
}
```

CONTACT.



IAANSEC

<https://iaansec.com>