



Cyber Security > Research Blog

# Turla PNG Dropper is back

22 November 2018

By Matt Lewis



















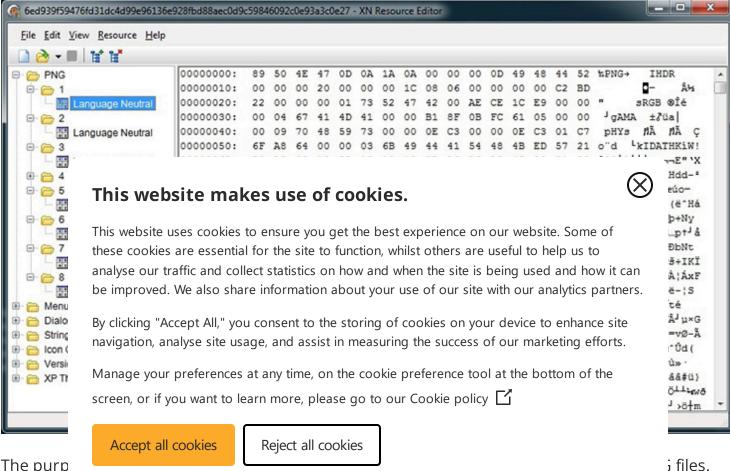
This is a short blog post on the PNG Dropper malware that has been developed and used by the Turla Group [1]. The PNG Dropper was first discovered back in August 2017 by Carbon Black researchers. Back in 2017 it was being used to distribute Snake, but recently NCC Group researchers have uncovered samples with a new payload that we have internally named RegRunnerSvc.

It's worth noting at this point that there are other components to this infection that we have not managed to obtain. There will be a first stage dropper that will drop and install the PNG Dropper/RegRunnerSvc. Nevertheless, we think that this it is worth documenting this new use of the PNG Dropper.

# **PNG Dropper**

The PNG Dropper component has already been well documented by the research team at Carbon Black [1], but for the purpose of clarity we will now give a quick summary of what it is and how it works.





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```
text:000000013F700D26
                                                                                              ; dwSize
                                                                    mov
text:000000013F700D28 49 89 17
                                                                    mov
                                                                             [r15], rdx
text:000000013F700D2B 33 C9
                                                                                              ; lpAddress
                                                                    xor
                                                                            r9d, [rcx+40h] ; flProtect
text:000000013F700D2D 44 8D 49 40
                                                                    lea
text:000000013F700D31 41 B8 00 10 00 00 text:000000013F700D37 FF 15 C8 06 FF FF
                                                                                              ; flAllocationType
                                                                   mov
                                                                            cs:VirtualAlloc
                                                                    call
text:000000013F700D3D 4C 8B 6D 6F
                                                                            r13, [rbp+57h+arg_8]
[r13+0], rax
                                                                    mov
text:000000013F700D41 49 89 45 00
                                                                    mov
text:000000013F700D45 48 85 C0
                                                                    test
text:000000013F700D48 0F 84 EC 00 00 00
                                                                             loc 13F700E3A
                                                                    jz
text:000000013F700D4E 48 89 45 FI
                                                                    mov
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Figure 5 shows the entry point for RegRunnerSvc. Here we can see the call to StartServiceCtrlDispatcher. In this case the name of the service is WerFaultSvc, obviously chosen in an attempt to seem like a legitimate part of the Windows Error Reporting service. The service also serves as a persistence mechanism for the malware.

```
EntryPoint
push rbx
sub rsp,40
mov rbx,rcx
                                                                     rcx:&"WerFaultSvc"
ecx:&"WerFaultSvc"
     ecx,
call qword ptr ds:[<&SetErrorMode>]
cmp byte ptr ds:[1400040FF],0
mov qword ptr ds:[140004138],rbx
lea r8, qword ptr ds: [140004080]
je 6e.140001BA2
mov rcx,r8
mov edx,
movzx eax, byte ptr ds:[rcx-80]
add rcx,
                                                                     rcx:&"WerFaultSvc"
xor byte ptr ds:[rcx-4],al
movzx eax
xor byte
movzx eax
xor byte
movzx eax
```

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After the Generally string wit are enun starts at either the detail (sh the size c as the de its setup importar

xor byte sub

lea rcx

call awou xor eax, add rsp,

pop rbx

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1ea

mov qwo mov qwor

xor mov qwoi mov aword

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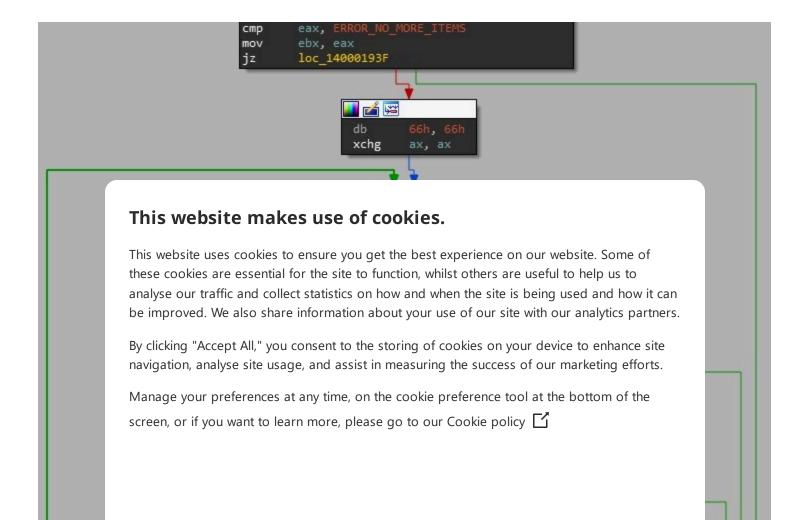
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Offset	Description
0x00	Offset to secret data – used in call to the BCryptGenerateSymmetricKey() function
0x08	Size of secret data

0x10	Offset to IV
0x18	IV size
0x20	Offset to AES encrypted data
0x28	Encrypted data size

Now the payload i the BCryl created. payload i (it checks header). point is c

memcpy(

memcpy(v v12 = ae

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### free(Src Src = 0i if ( !v1: && !(u) { v18 = v19 = v20 = v21 = v6 = 10 free(p. p\_decr) if ( !v6

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Figure 7

# Summary

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In this blog post we have had a quick look at a new use of the PNG Dropper by the Turla Group. The group is now using it with a new component: RegRunnerSvc, which extracts and encrypted

PE file from the registry, decrypts it and runs it. It seems that the group is taking ideas from fileless malware, such as Poweliks or Kovter. The group is ensuring that it is leaving as little information as possible in the binary files, i.e. not hardcoding the name of the registry key containing the encrypted data. This means that that it is not possible to extract useful IOCs for threat hunting.

Thankfully all is not lost and we can at least detect the usage of the PNG dropper using the Yara rules below

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```
rule turla_png_dropper {
    meta:
        author = "Ben Humphrey"
        description = "Detects the PNG Dropper used by the Turla group"
        sha256 =
"6ed935"
```

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```
      48 63 43 3C
      // movsxd rax, dword ptr [rbx+3Ch]

      B9 0B 01 00 00
      // mov ecx, 10Bh

      BA AF BE AD DE
      // mov edx, 0DEADBEAFh

      66 39 4C 18 18
      // cmp [rax+rbx+18h], cx

      8B 44 18 28
      // mov eax, [rax+rbx+28h]

      45 33 C9
      // xor r9d, r9d

      44 8B C2
      // mov r8d, edx
```

```
48 8B CB // mov rcx, rbx
48 03 C3 // add rax, rbx
FF D0 // call rax
}

condition:

(wint16/0) == 0vEAAD and wint16/wint22(0v26)) == 0vAEE0) and

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```
rule turla_png_reg_enum_payload {
      meta:
                  author = "Ben Humphrey"
                  description = "Payload that has most recently been dropped by the
Turla PNG Dropper"
"fea27
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}
```

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### Sample Analysed

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- 6ed939f59476fd31dc4d99e96136e928fbd88aec0d9c59846092c0e93a3c0e27 (PNG Dropper)
- fea27eb2e939e930c8617dcf64366d1649988f30555f6ee9cd09fe54e4bc22b3 (Payload contained in the PNG dropper)

#### Services

WerFaultSvc

### References

[1] https://www.carbonblack.com/2017/08/18/threat-analysis-carbon-black-threat-research-dissects-png-dropper/

Published date: 22 November 2018

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