Goblin Panda changes the dropper and reuses the old infrastructure

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Sebdraven December 28, 2018

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I found a new dropper

c580d77722d85238ed76689a17b0205b4d980c010bef9616b8611ffba21b142e with the same signature of others. But it changes the exploitation. Before, it uses the ole package to drop a 8.t file in %appdata% and decode two files, a legit file and an backdoor (PlugX, newcore rat, sysfader…).

Now it's a big object ole mapped in memory and one PE is used to drop the files.

RTF exploit

Now we have four object oles in the RTF.

```
slarinier@Chise:~/Documents/projet/Invest/20181227$ rtfobj c580d77722d85238ed76689a17b0205b4d980c010bef9616b8611ffba21b142e
rtfobj 0.53.1 on Python 2.7.15 - http://decalage.info/python/oletools
THIS IS WORK IN PROGRESS - Check updates regularly!
Please report any issue at https://github.com/decalage2/oletools/issues

===============================================================================
File: 'c580d77722d85238ed76689a17b0205b4d980c010bef9616b8611ffba21b142e' - size: 1042891 bytes
---+----------+--------------------------------------------------------------
id |index     |OLE Object
---+----------+--------------------------------------------------------------
0  |00007BA4h |Not a well-formed OLE object
---+----------+--------------------------------------------------------------
1  |00007850h |Not a well-formed OLE object
---+----------+--------------------------------------------------------------
2  |000F99E4h |Not a well-formed OLE object
---+----------+--------------------------------------------------------------
3  |000F99D2h |Not a well-formed OLE object
---+----------+--------------------------------------------------------------
```

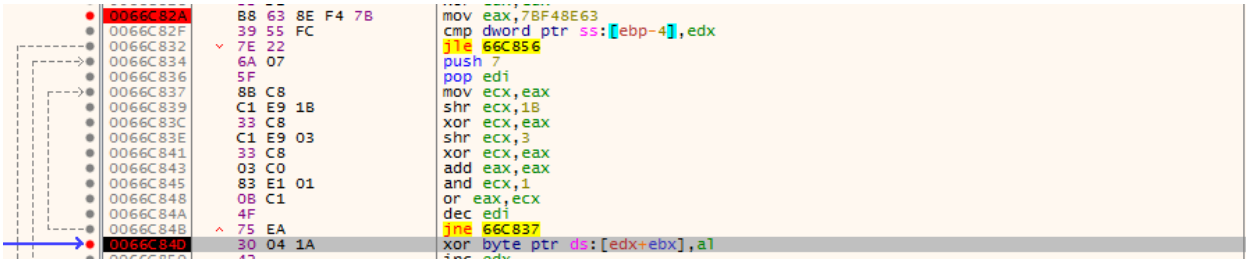
```
slarinier@Chise:~/Documents/projet/Invest/20181227$ ls -llh c580d77722d85238ed76689a17b0205b4d980c010bef9616b8611ffba21b142e_object_000*
-rw-r--r-- 1 slarinier slarinier 484K déc.  27 10:56 c580d77722d85238ed76689a17b0205b4d980c010bef9616b8611ffba21b142e_object_00007850.raw
-rw-r--r-- 1 slarinier slarinier    1 déc.  27 10:56 c580d77722d85238ed76689a17b0205b4d980c010bef9616b8611ffba21b142e_object_00007BA4.raw
-rw-r--r-- 1 slarinier slarinier 9,6K déc.  27 10:56 c580d77722d85238ed76689a17b0205b4d980c010bef9616b8611ffba21b142e_object_000F99D2.raw
-rw-r--r-- 1 slarinier slarinier   35 déc.  27 10:56 c580d77722d85238ed76689a17b0205b4d980c010bef9616b8611ffba21b142e_object_000F99E4.raw
```

this RTF exploits again the CVE-2017_1882 on eqnedt32.exe.

The biggest object is a new exe to overwritten the first eqnedt32.exe . This PE is decoded by the shellcode of the exploit and executes this PE.

```
001EE955    33D2          xor edx,edx
001EE957    BB 3E4A8F50   mov ebx,508F4A3E
001EE95C    3955 FC       cmp dword ptr ss:[ebp-4],edx
001EE95F    7E 2E         jle 1EE98F
001EE961    6A 07         push 7
001EE963    5F            pop edi
001EE964    8BCB          mov ecx,ebx
001EE966    8BC3          mov eax,ebx
001EE968    C1E9 1B       shr ecx,1B
001EE96B    83E0 07       and eax,7
001EE96E    33CB          xor ecx,ebx
001EE970    03DB          add ebx,ebx
001EE972    C1E9 03       shr ecx,3
001EE975    83E1 01       and ecx,1
001EE978    33C8          xor ecx,eax
001EE97A    0BD9          or ebx,ecx
001EE97C    4F            dec edi
001EE97D    75 E5         jne 1EE964
001EE97F    8B45 F0       mov eax,dword ptr ss:[ebp-10]
001EE982    8B4D FC       mov ecx,dword ptr ss:[ebp-4]
001EE985    301C02        xor byte ptr ds:[edx+eax],bl
001EE988    42            inc edx
001EE989    3BD1          cmp edx,ecx
001EE98B    7C D4         jl 1EE961
```

It's the same algorithm of the exploit targeting Vietnam.



```
0066C82A   B8 63 8E F4 7B    mov eax,7BF48E63
0066C82F   39 55 FC          cmp dword ptr ss:[ebp-4],edx
0066C832   7E 22             jle 66C856
0066C834   6A 07             push 7
0066C836   5F                pop edi
0066C837   8B C8             mov ecx,eax
0066C839   C1 E9 1B          shr ecx,1B
0066C83C   33 C8             xor ecx,eax
0066C83E   C1 E9 03          shr ecx,3
0066C841   33 C8             xor ecx,eax
0066C843   03 C0             add eax,eax
0066C845   83 E1 01          and ecx,1
0066C848   0B C1             or eax,ecx
0066C84A   4F                dec edi
0066C84B   75 EA             jne 66C837
0066C84D   30 04 1A          xor byte ptr ds:[edx+ebx],al
```

Just the init key has changed.

Dropper

the PE creates a directory in %appdata% named IISWebClient

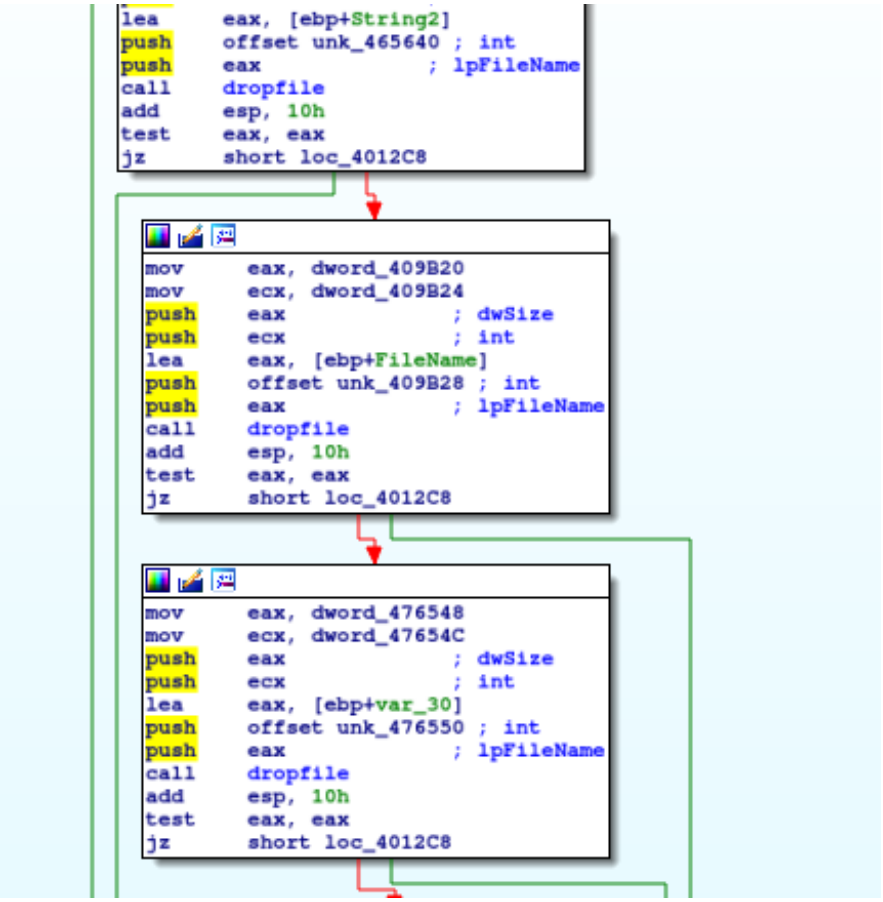
```
.text:004011B5   push   esi              ; nSize
.text:004011B6   lea    eax, [ebp+Dst]
.text:004011BC   push   eax              ; lpDst
.text:004011BD   push   offset Src       ; "%appdata%"
.text:004011C2   call   ds:ExpandEnvironmentStringsA
.text:004011C8   mov    edi, ds:lstrcatA
.text:004011CE   lea    eax, [ebp+Dst]
.text:004011D4   push   eax              ; lpString2
.text:004011D5   lea    eax, [ebp+String1]
.text:004011DB   push   eax              ; lpString1
.text:004011DC   call   edi ; lstrcatA
.text:004011DE   push   offset String2   ; "\\IISWebClient"
.text:004011E3   lea    eax, [ebp+String1]
.text:004011E9   push   eax              ; lpString1
.text:004011EA   call   edi ; lstrcatA
.text:004011EC   push   ebx              ; lpSecurityAttributes
.text:004011ED   lea    eax, [ebp+String1]
.text:004011F3   push   eax              ; lpPathName
.text:004011F4   call   ds:CreateDirectoryA
```

After, it decrypt a buffer in the address space of the executable with a xor.

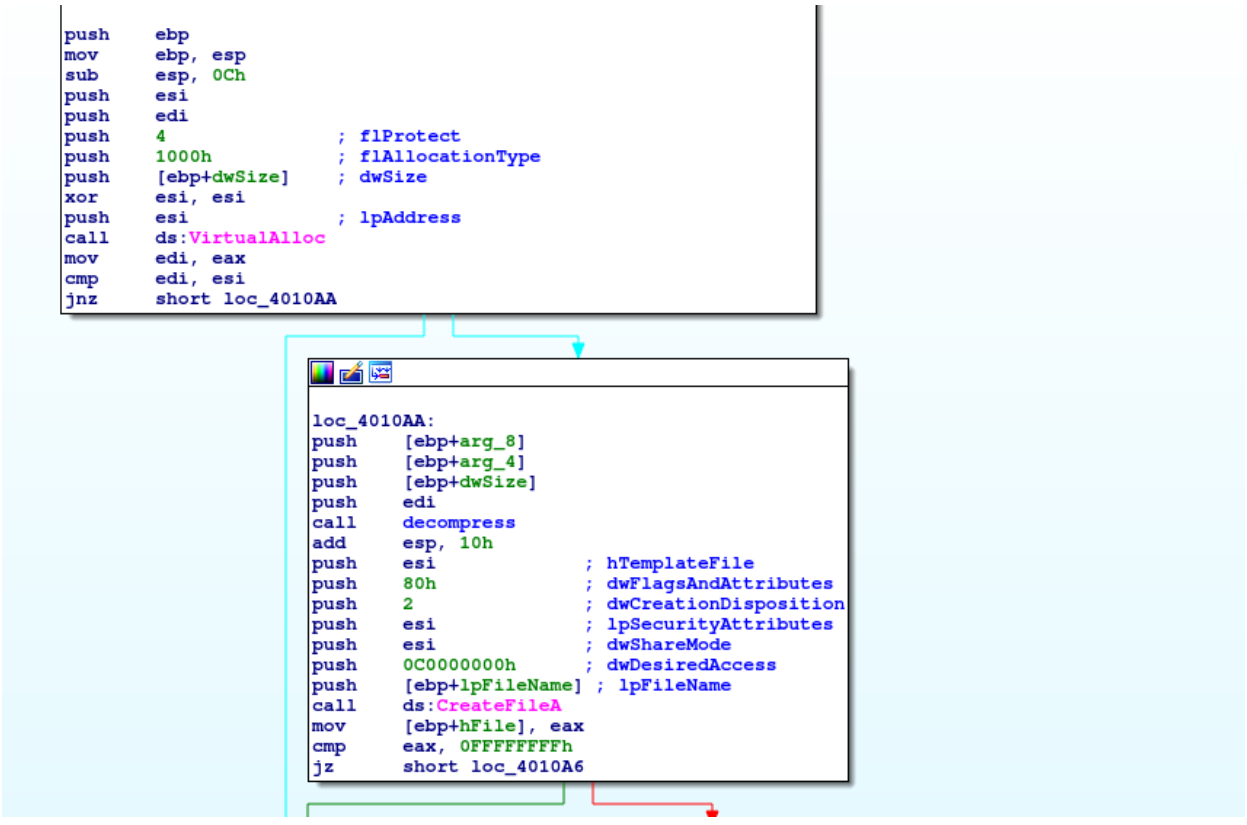
```
.text:00401223   push   eax              ; lpPathName
.text:00401224   call   ds:SetCurrentDirectoryA
.text:0040122A   call   decrypt_loop
```

After the decoding, the PE decompresses and drops three files on the disk: iassvcs.exe developed and signed by Symantec, sqlite3.dll signed by the av 360 and RasTls.dll the backdoor.

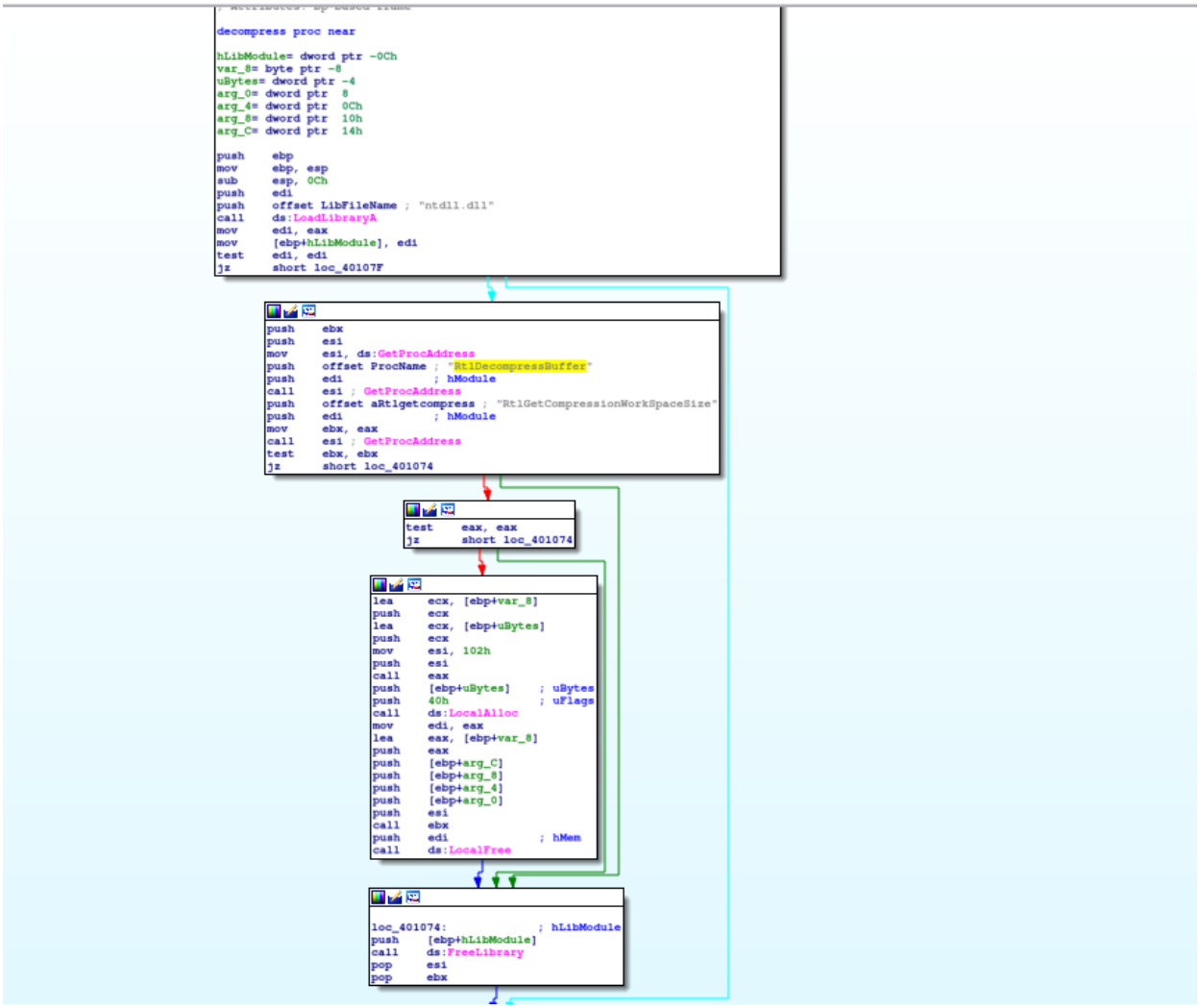
The first step is to call dropfile



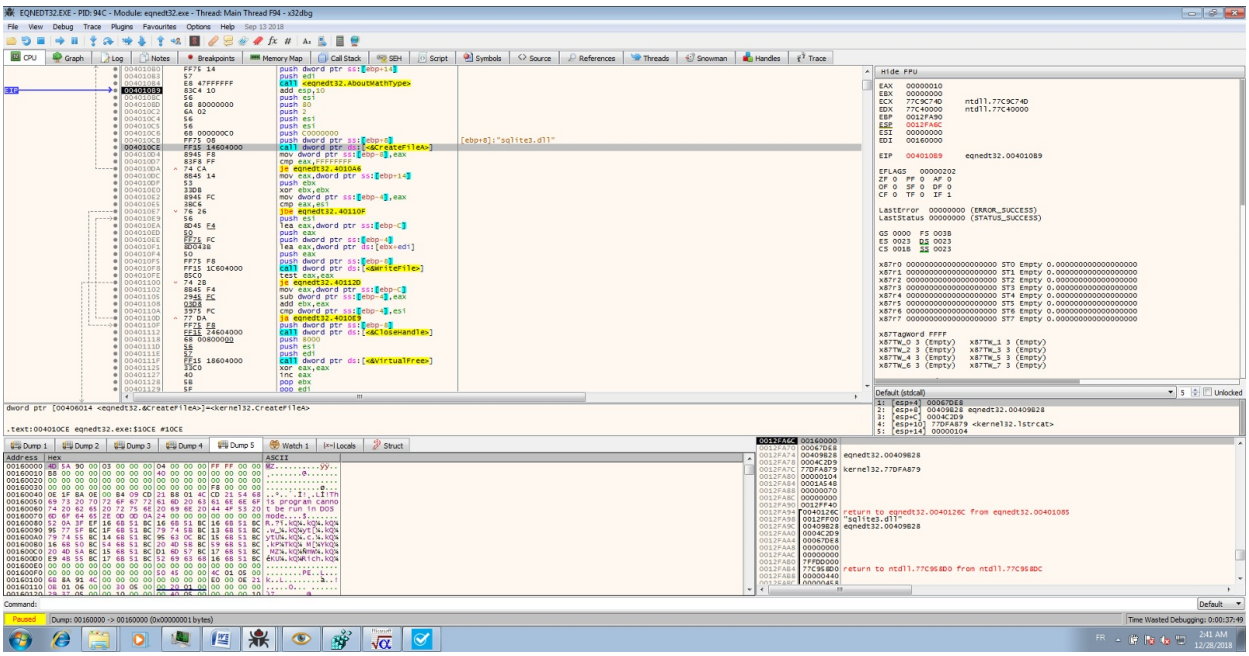
In this function the first step is to allocate at 0016000 a memory page and to decompress the file before writing on the disk.



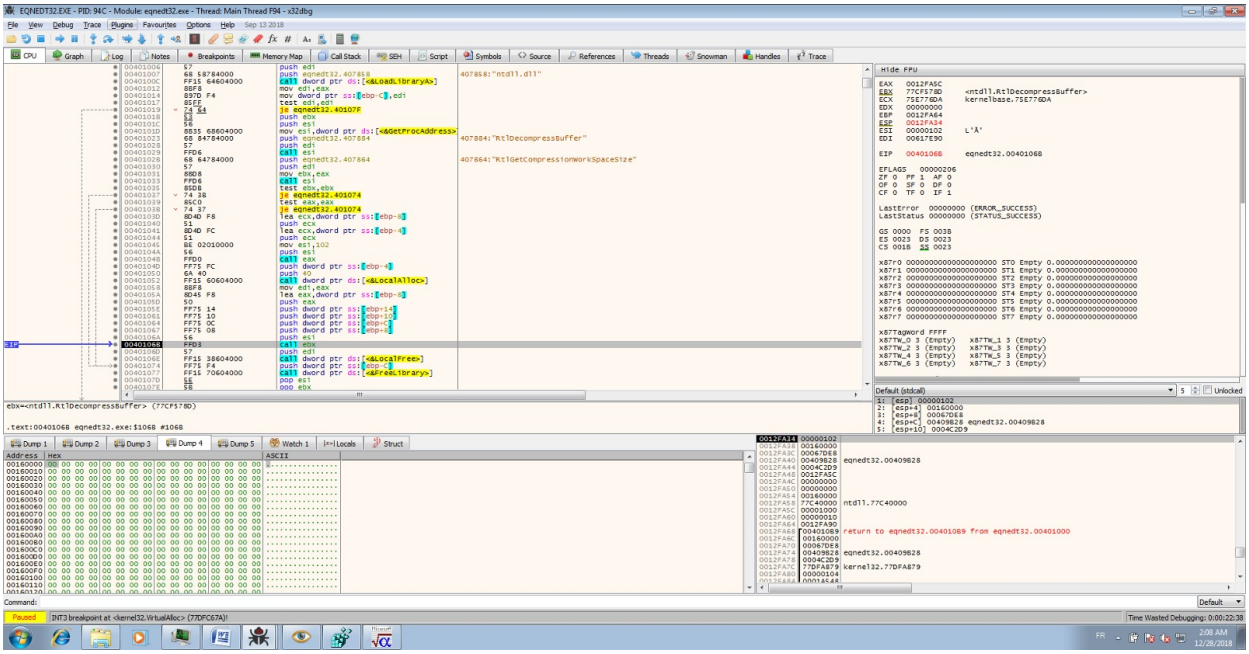
the function decompress loads dynamically the function RtlDecompressBuffer and use it.



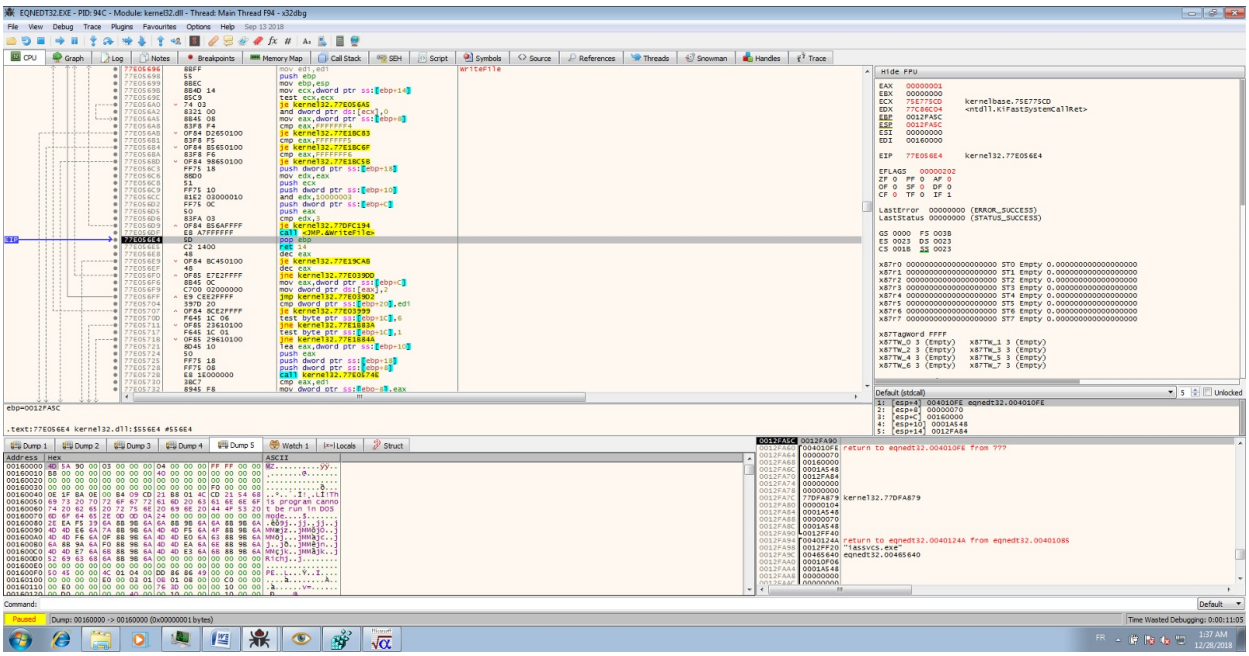
In the debugger, theses steps are:



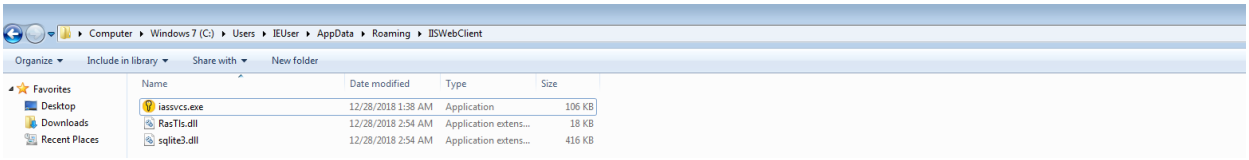
CreateFile



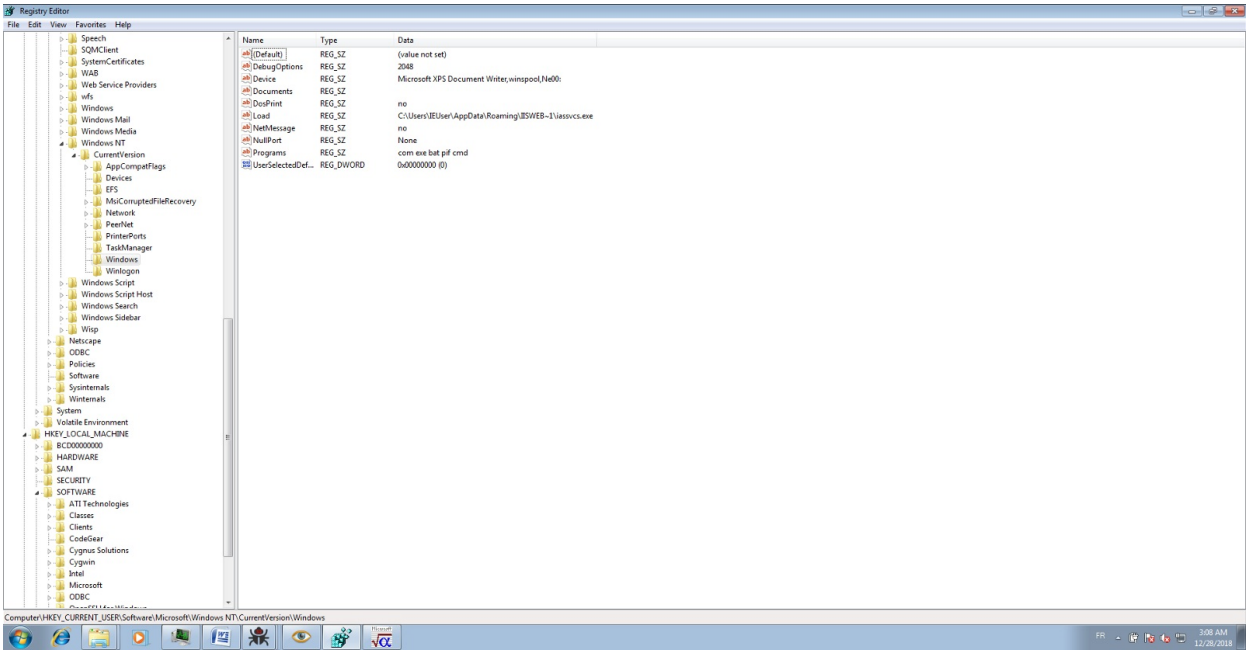
Decompress



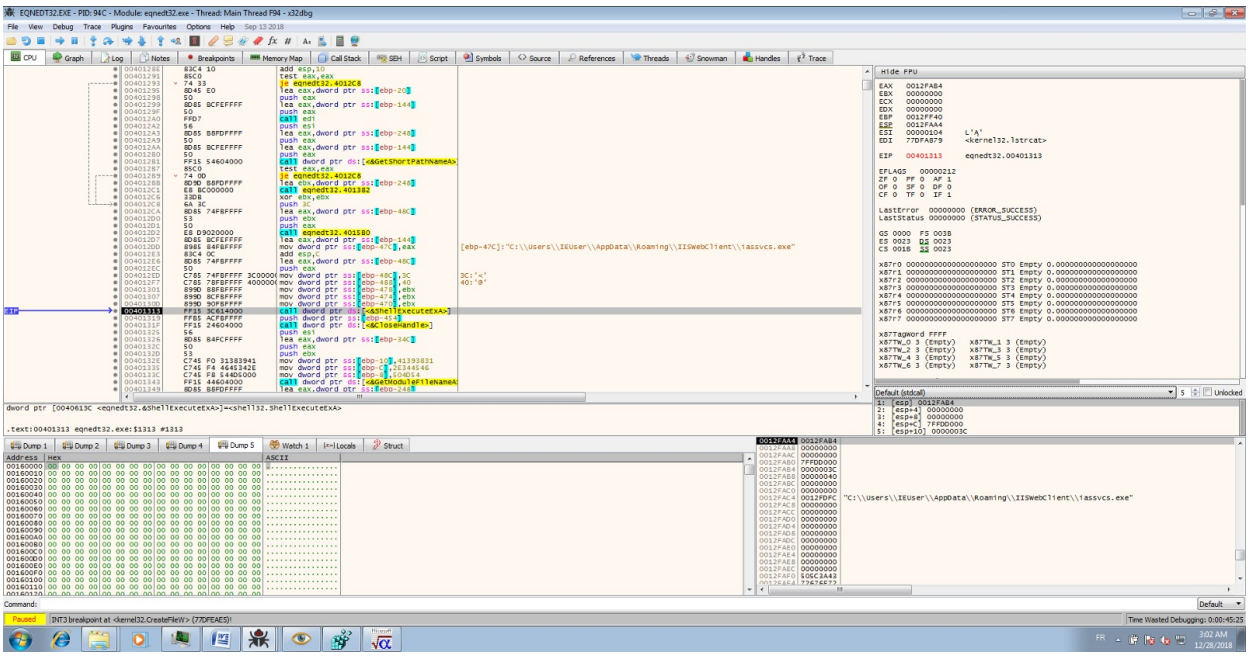
Write the buffer on the disk after decompressing



And the dropper execute the iassvcs.exe to make a side loading and make the persistence.



at each executable or cmd line, the executable is reloaded.



In a second part, I'll analysed the backdoor.

Threat Intelligence

the backdoor contacts hxxps://skylineqaz.crabdance.com/

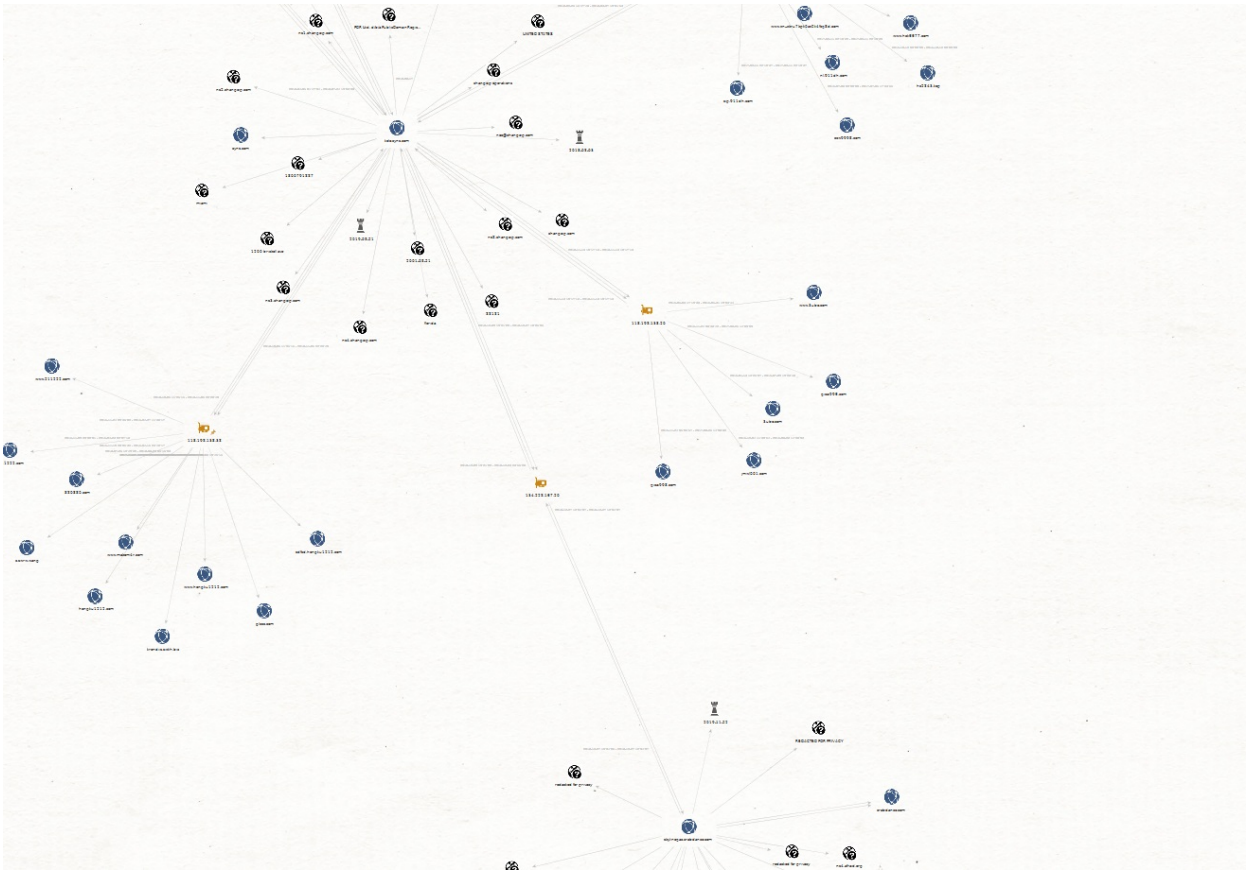
the domain resolves 154.223.167.20. This IP is very interesting because it connects with tele.zyns.com and old infrastructures used by chinese APT or DDOS Chinese team against the ancient soviet republics.

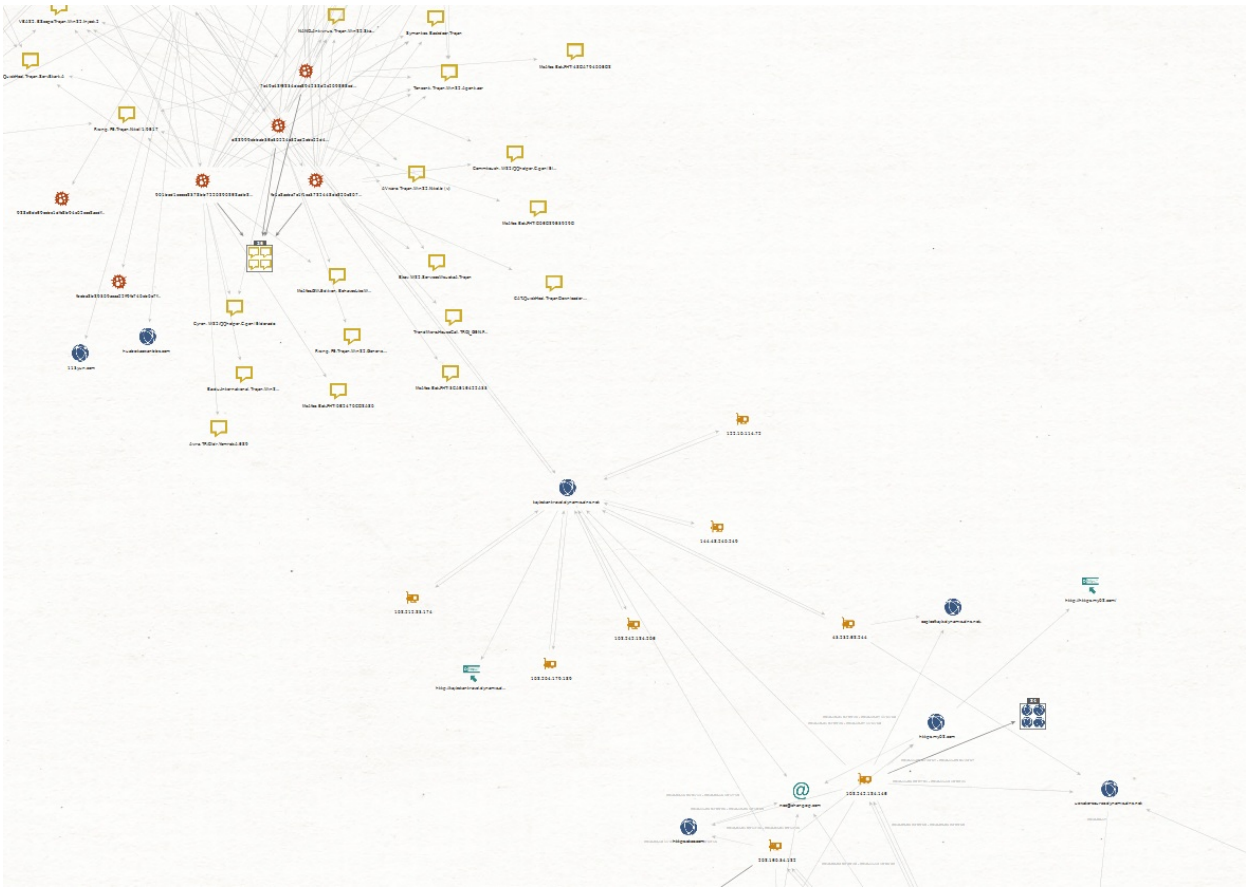
Also, the name of domains show the targets is energy and telecom sectors.

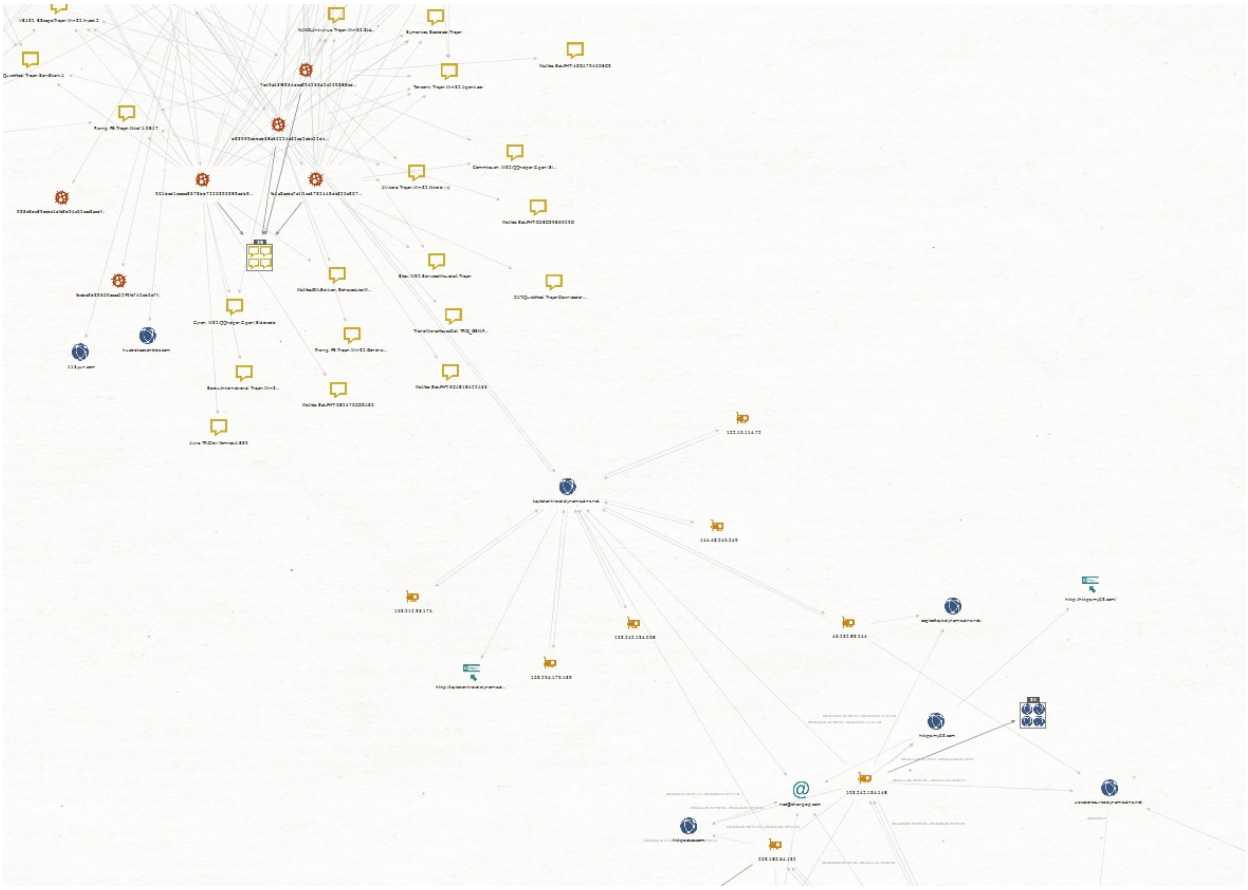
they find uzwatersource.dynamic-dns.net used by Icefog connected by the 150.129.80.184 to tele.zyns.com

uzwatersource.dynamic-dns.net connects to tajikstantravel.dynamic-dns.net by 45.252.63.244.

The domain tajikstantravel.dynamic-dns.net connected to ddos infrastructure chinese.







Another thing is the dropper what has submitted by an ID coming of the Kazakhstan. So Goblin Panda targets it ?

IOCs

the dropper:

dropper “c580d77722d85238ed76689a17b0205b4d980c010bef9616b8611ffba21b142e”
 sha256 c580d77722d85238ed76689a17b0205b4d980c010bef9616b8611ffba21b142e
 sha1 398fb04ce9b2e30bce932590e0b86b594c8a97ea
 md5 30528dc0c1e123dff51f40301cc03204
Dropped executable file
 sha256 C:\Users\admin\AppData\Roaming\IISWebClient\RasTls.dll
eb0b848f18d8002aaf59faca18b28941df67dc46891868b96fa4daf03018d148
 sha256 C:\Users\admin\AppData\Roaming\IISWebClient\iassvcs.exe
f9ebf6aeb3f0fb0c29bd8f3d652476cd1fe8bd9a0c11cb15c43de33bbce0bf68
 sha256 C:\Users\admin\AppData\Roaming\IISWebClient\sqlite3.dll
e342eefb43249a3a1b62b8622f7c94fc391c0488bdae7e1909e37cb125029f1c
DNS requests
 domain skylineqaz.crabdance.com
 domain xn—ylineqaz-y25ja.crabdance.com
Connections
 ip 154.223.167.20
HTTP/HTTPS requests
 url https://skylineqaz.crabdance.com/

tele.zyns.com 103.242.134.146 150.129.80.184 (Goblin Panda, Icefog)

uzwatersource.dynamic-dns.net 150.129.80.184 (Icefog)