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### Guess who's back

Nov 15, 2021 • Luca Ebach • Emotet, malware, trickbot

tl;dr: Emotet

The (slighty) longer story:

On Sunday, November 14, at around 9:26pm UTC we observed on several of our Trickbot trackers that the bot tried to download a DLL to the system. According to internal processing, these DLLs have been identified as Emotet. However, since the botnet was taken down earlier this year, we were suspicious about the findings and conducted an initial manual verification. Please find first results and IOCs below. Currently, we have high confidence that the samples indeed seem to be a re-incarnation of the infamous Emotet.

We are still conducting more in-depth analyses to raise the confidence even further. New information will be provided as they become available.

## **Initial Analysis**

Sunday, November 14, 9:26pm: first occurence of the URLs being dropped; the URL we received was hxxp://141.94.176.124/Loader\_90563\_1.dll (SHA256 of the drop: c7574aac7583a5bdc446f813b8e347a768a9f4af858404371eae82ad2d136a01). Internal processing detected Emotet when executing the sample in our sandbox systems. Notably, the sample seems to have been compiled just before the deployment via several Trickbot botnets was observed: Timestamp: 6191769A (Sun Nov 14 20:50:34 2021)

The network traffic originating from the sample closely resembles what has been observed previously (e.g. as described by Kaspersky): the URL contains a random resource path and the bot transfers the request payload in a cookie (see image below). However, the encryption used to hide the data seems different from what has been observed in the past. Additionally, the sample now uses HTTPS with a self-signed server certificate to secure the network traffic.

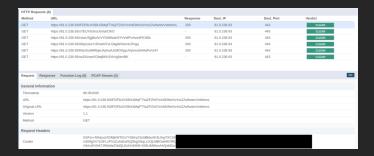


Figure 1: Network Traffic originating from the DLL

A notable characteristic of the last Emotet samples was the heavy use of control-flow flattening to obfuscate the code. The current sample also contains flattened control flows. To illustrate the similarity in the style of the obfuscation, find two arbitrary code snippets below. Figure 2 is a sample from 2020, Figure 3 is a snippet from the current sample:

```
v2 > 123027472 )
   if ( v2 == 126545749 )
       if ( !(v0 | v1) )
           v2 = v81;
          goto LABEL_45;
       sub_4051A0();
v3 = sub_405160();
if ( v3 > v4 )
          v5 = sub_403530((void *)0x821D6A16);
v6 = (void (*)(void))GetProc(v5, GetTickCount);
...
          v6();
sub_4051A0();
sub_405160();
       v7 = sub_4051A0();
if ( sub_408700((void *)(v8 + v7)) )
      IT ( Sub_Teo.Sc((css / y.c.))
return;
v9 = sub_403530((void *)0x821D6A16);
v10 = (int (*)(void))GetProc(v9, GetTickCount64);
LODWORD(v11) = v10();
if ( v11 >= _PAIR64_(v0, v1) )
{
          goto LABEL_45;
   else
       if ( v2 != 130131542 )
       goto LABEL_45;
sub_4037D0(v88);
    v2 = 126545749;
}
else
   switch ( v2 )
       case 123027472:
          sub_407590();
v2 = 497468109;
      V2 = 49/468/09;
break;
case 92035135:
if ( !sub_466800((int)v83, v90) )
goto LABEL_108;
sub_409120();
v2 = 590770343;
          break;
       case 101103022:
if (!sub_407980())
return;
           v2 = 74515586;
          break;
      oreak;
case 110879456:
v87[5] = sub_405420();
v2 = 393400050;
          break;
       default:
          goto LABEL_45;
```

Figure 2: Emotet sample from 2020

```
switch ( v3 )
         case 210046076:
           sub_10017AF5(1018226, dword_100017D8);
            v9 = v12;
if ( sub_10015267(535608, 0, 696291, v12, v13, 632992, 918128, v12) )
               v3 = 260369916;
            élse
              sub_1000E018(64, 86887, dword_100261E8 + 44, v14, 918981); v3 = 188130702;
            sub 100063E1(652695, 707639);
39:
           if ( v3 == 119464516 ) return v2;
           break:
        case 236814734:
v3 = 239363722;
         break;
case 239363722:
           ase 299007/22;

v4 = sub_10017AF5(453922, dword_10001888);

v5 = sub_10017AF5(31957, dword_100017A8);
           V3 = 119464516;

if (!sub_10001C20(240181, 1031442, (int)&v8, 0, v4, 563461, 617628, v5))

V3 = 86401311;
           v3 = 80401311;
sub_100063E1(58229, 321294);
sub_100063E1(256229, 366009);
v1 = v11:
            v1 = v11;
goto LABEL_39;
         case 244146945:
           v3 = 14413102;
if (!sub_100187EC())
v3 = 28268324;
           break:
         default:
           sub_100080EC(146223, 400581);
v3 = 31912885;
           break;
 3
```

Figure 3: Current Emotet sample

# Conclusion (so far)

As per the famous duck-typing, we conclude so far: smells like Emotet, looks like Emotet, behaves like Emotet - seems to be Emotet.

We are currently updating our internal tooling for the new sample to provide more indicators to strengthen the claim that Emotet seems to be back.

### **IOCs**

```
URLs:
hxxp://141.94.176.124/Loader_90563_1.dll

Hashes:
c7574aac7583a5bdc446f813b8e347a768a9f4af858404371eae82ad2d136a01 - Loader
_90563_1.dll

Server List:
81.0.236.93:443
94.177.248.64:443
66.42.55.5:7080
103.8.26.103:8080
```

```
Control RunDLL
%s\%s
SOFTWARE\Microsoft\Windows\CurrentVersion\Run
%s\rundl132.exe "%s\%s",%s
ECCPUBLICBLOB
```

```
%u.%u.%u.%u
%s\%s
%s\*
%s\%s
WinStaO\Default
%s\rundll32.exe "%s",Control_RunDLL %s
%s%s.dll
ECCPUBLICBLOB
ECDSA_P256
Microsoft Primitive Provider
%s\%s
SHA256
Microsoft Primitive Provider
ObjectLength
```

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