NEWS | THREATS

New AgentTesla variant steals WiFi credentials

Posted: April 16, 2020 by Hossein Jazi

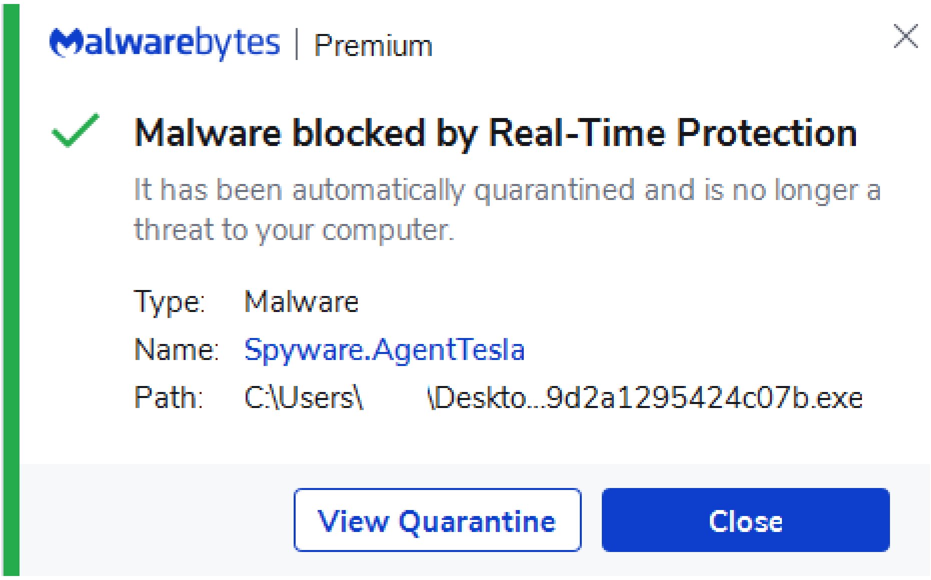
AgentTesla is a .Net-based infostealer that has the capability to steal data from different applications on victim machines, such as browsers, FTP clients, and file downloaders. The actor behind this malware is constantly maintaining it by adding new modules. One of the new modules that has been added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

Malwarebytes LABS

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).



Malware blocked by Real-Time Protection

It has been automatically quarantined and is no longer a threat to your computer.

Type: Malware
Name: Spyware.AgentTesla
Path: C:\Users\   \Deskto...9d2a1295424c07b.exe

Indicators of compromise

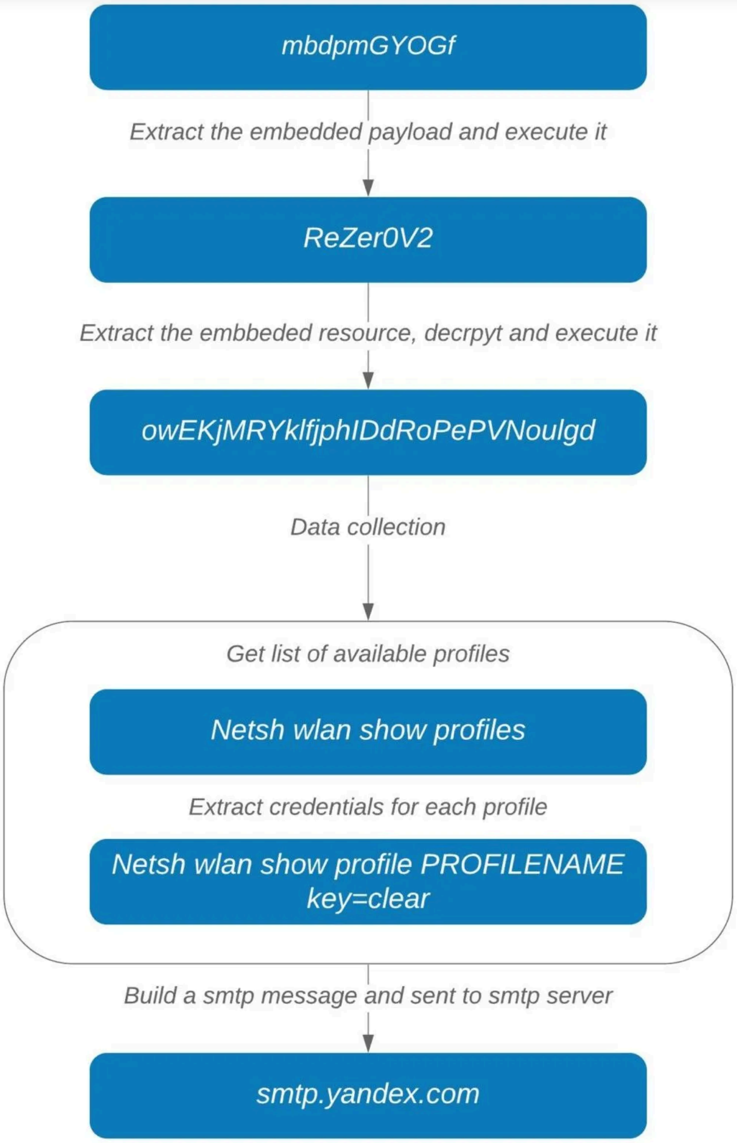
AgentTesla samples:

```
91b711812867b39537a2cd81bb1ab10315ac321a1c68e316bf4fa84badbc09b
dd4a43b0b8a68db65b00fad99519539e2a05a3892f03b869d58ee15fdf5aa044
27939b70928b285655c863fa26efded96bface9db46f35ba39d2a1295424c07b
```

First payload:

```
249a503263717051d62a6d65a5040cf408517dd22f9021e5f8978a819b18063b
```

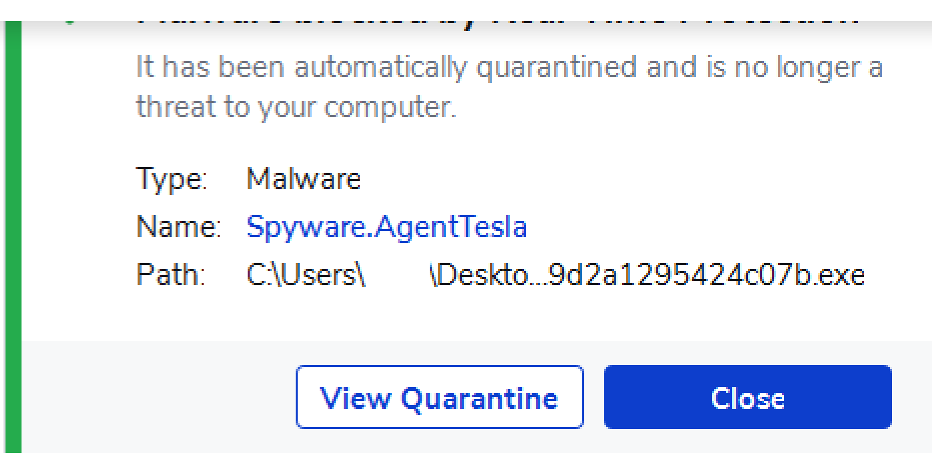
Second payload:


mbdpmGYOGf
Extract the embedded payload and execute it
ReZer0V2
Extract the embbeded resource, decrpyt and execute it
owEKjMRYklfjphIDdRoPePVNoulgd
Data collection
Get list of available profiles
Netsh wlan show profiles
Extract credentials for each profile
Netsh wlan show profile PROFILENAME key=clear
Build a smtp message and sent to smtp server
smtp.yandex.com

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.



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```

First payload:

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249a503263717051d62a6d65a5040cf408517dd22f9021e5f8978a819b18063b
```
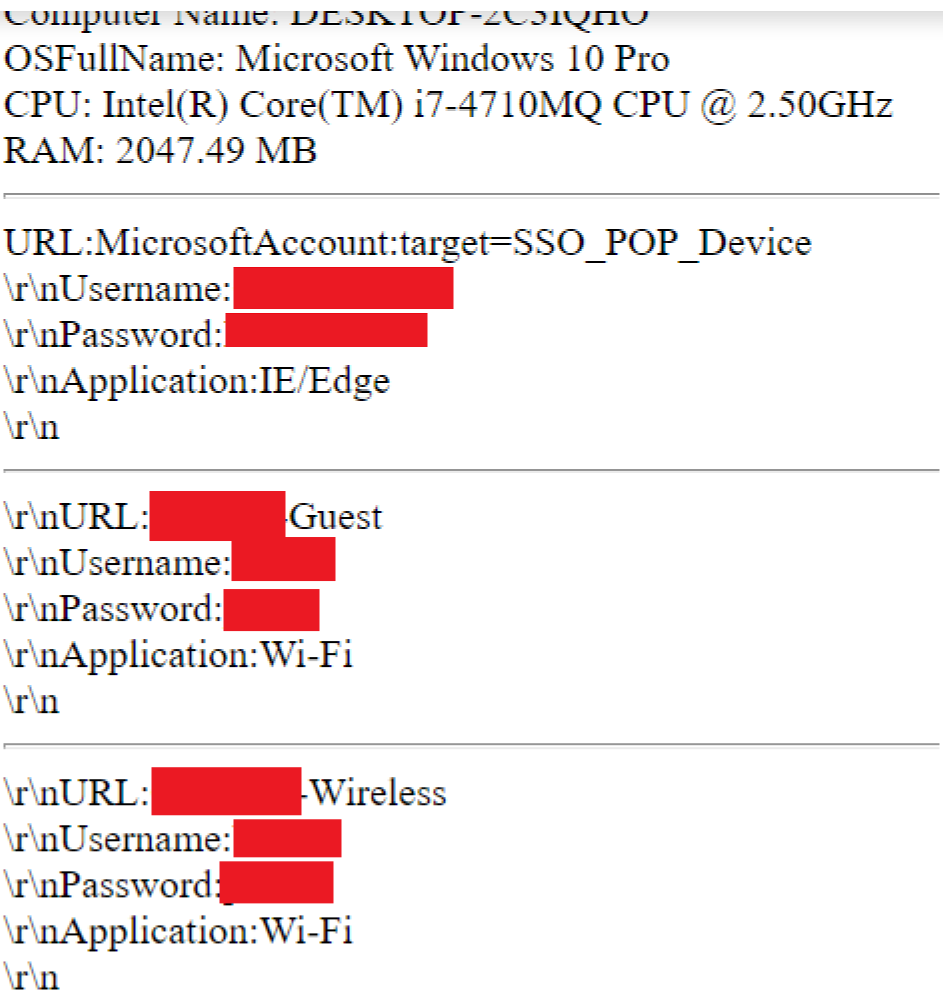

Second payload:

```
63393b114ebe2e18d888d982c5ee11563a193d9da3083d84a611384bc748b1b0
```



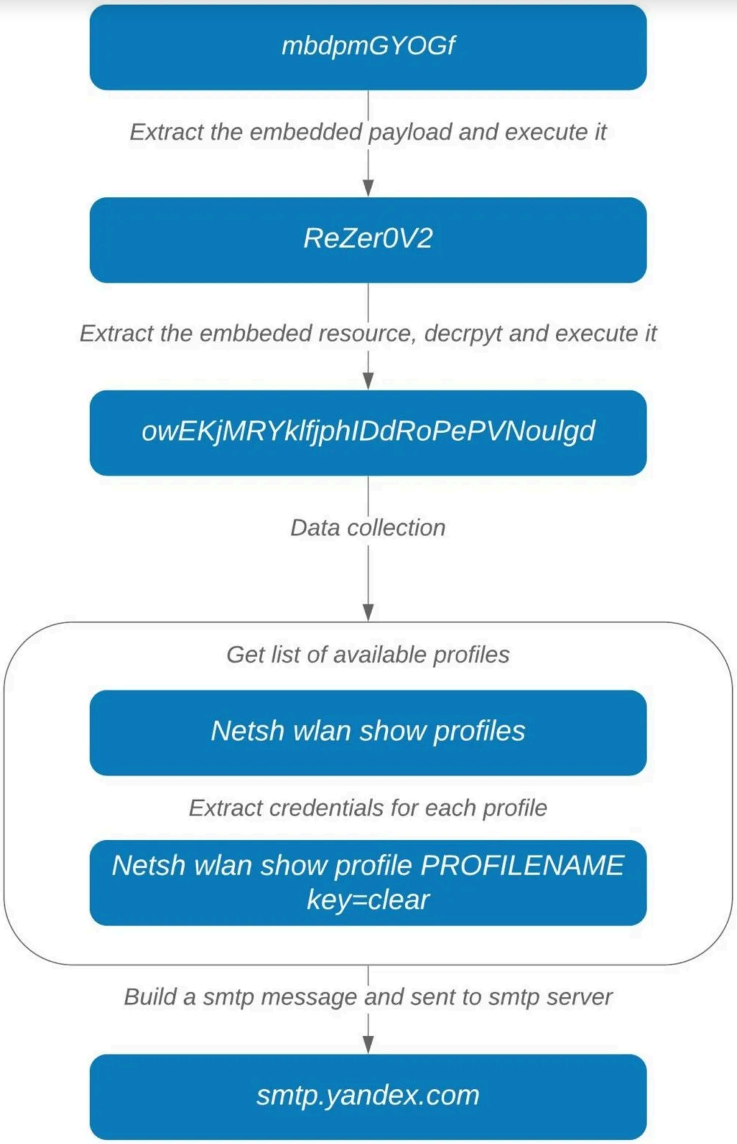
```
Computer Name: DESKTOP-2C3IQHO
OSFullName: Microsoft Windows 10 Pro
CPU: Intel(R) Core(TM) i7-4710MQ CPU @ 2.50GHz
RAM: 2047.49 MB
```

```
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
```

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):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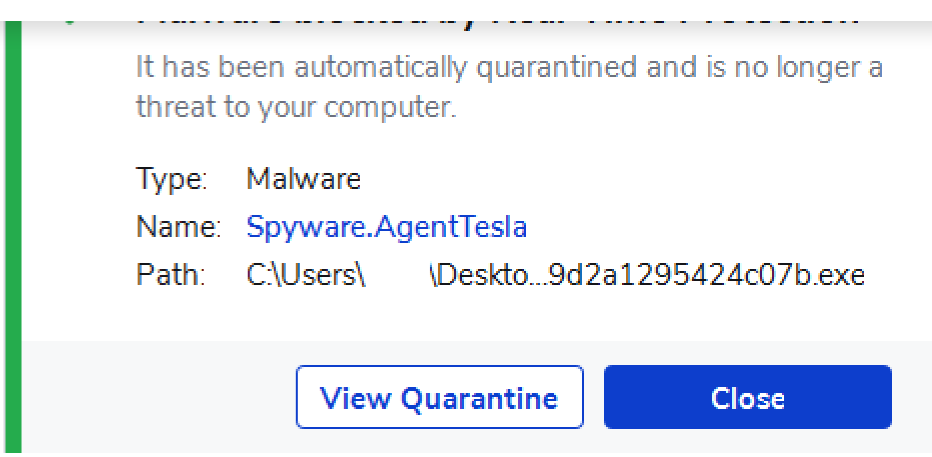

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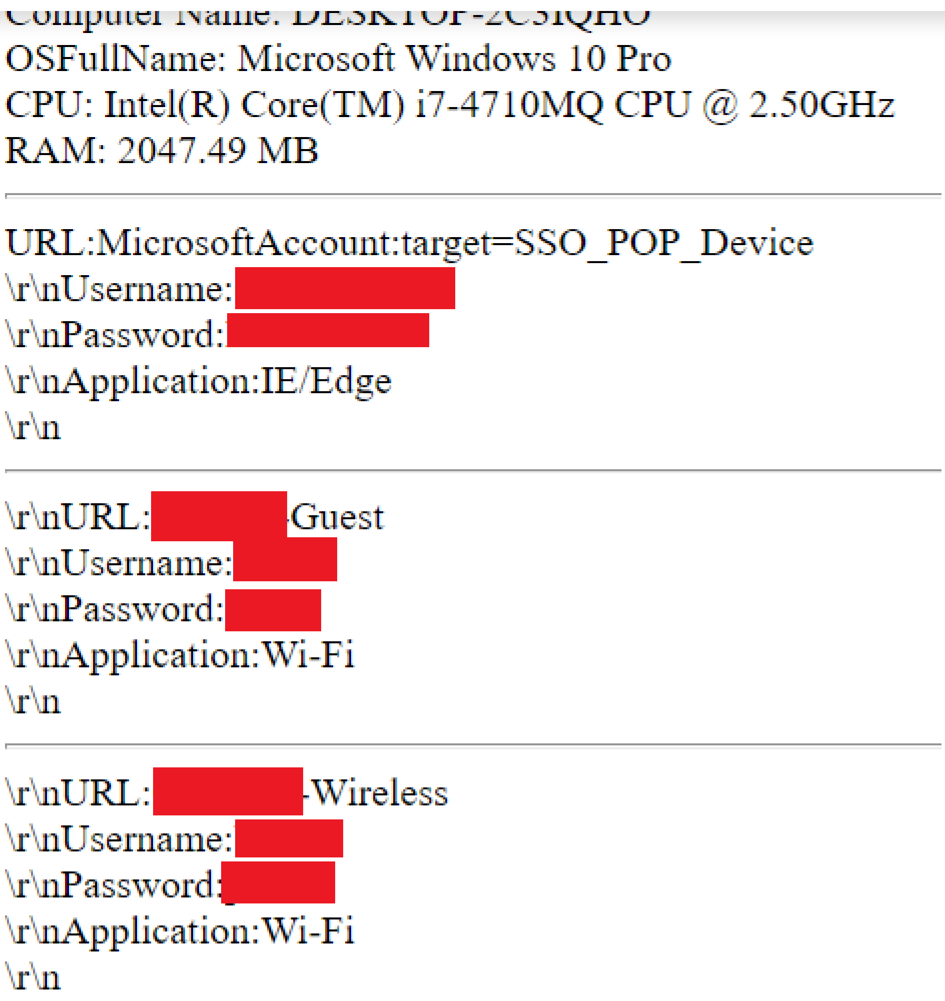
First payload:

```
249a503263717051d62a6d65a5040cf408517dd22f9021e5f8978a819b18063b
```

Second payload:

```
63393b114ebe2e18d888d982c5ee11563a193d9da3083d84a611384bc748b1b0
```

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



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CPU: Intel(R) Core(TM) i7-4710MQ CPU @ 2.50GHz
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________________________________________
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________________________________________
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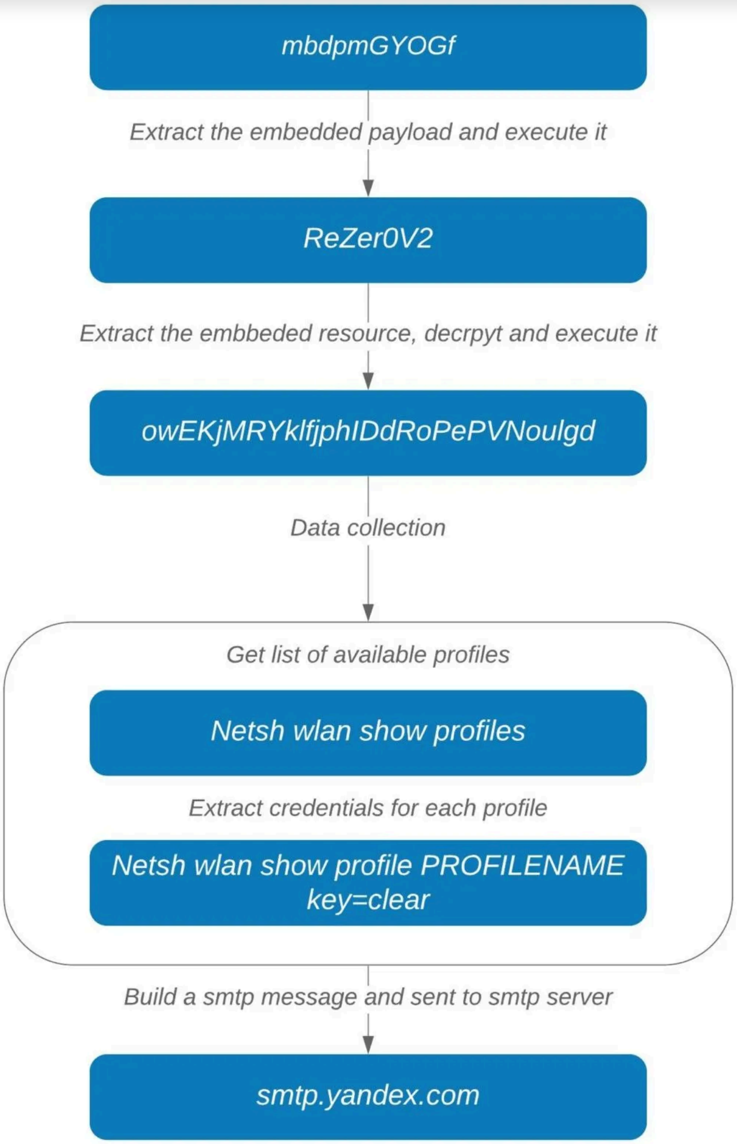
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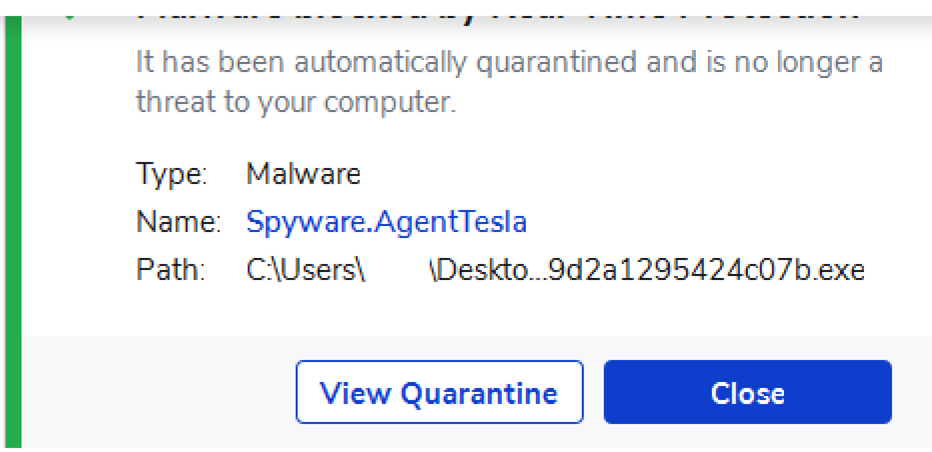

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```
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```

Second payload:

```
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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).

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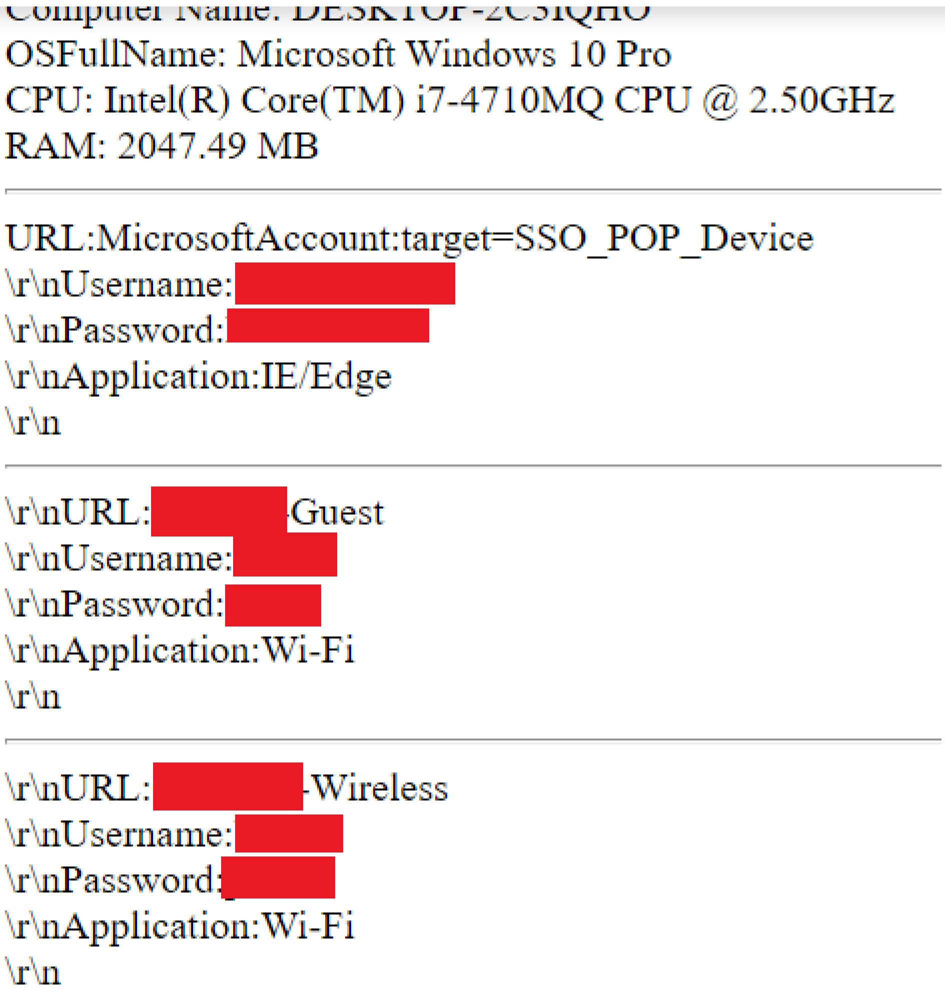

```
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RAM: 2047.49 MB

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

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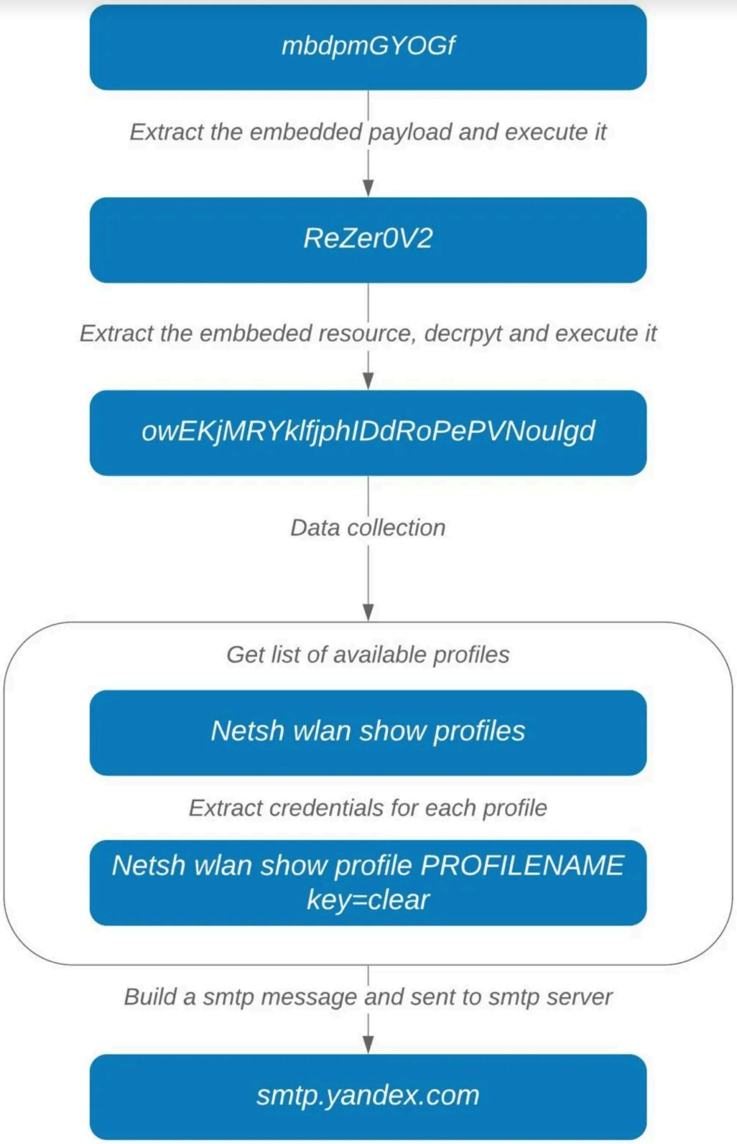
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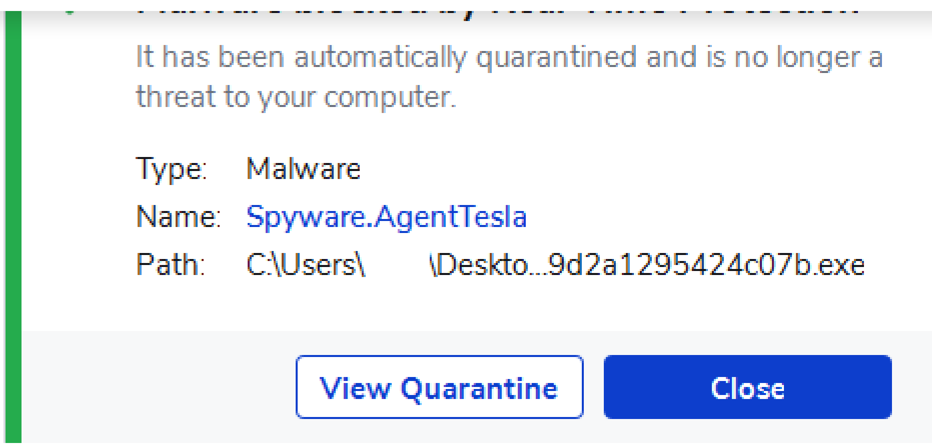

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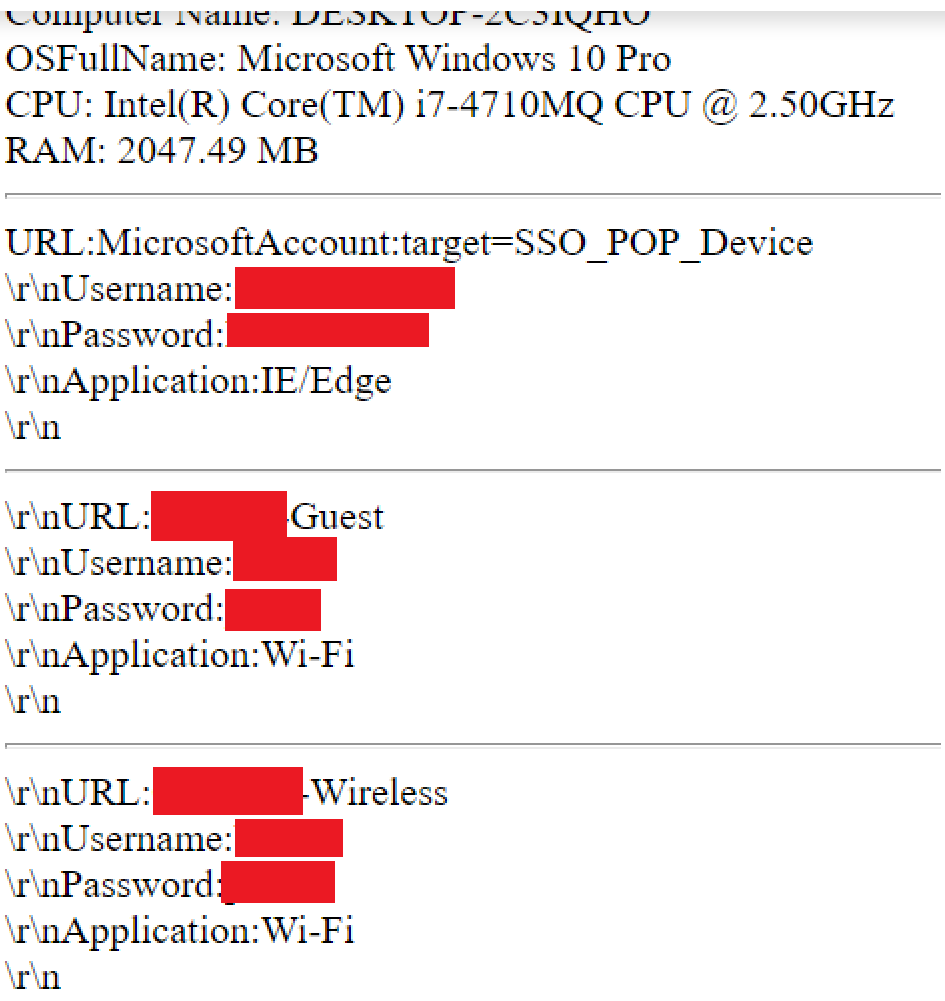

```
Computer Name: DESKTOP-2C3IQHO
OSFullName: Microsoft Windows 10 Pro
CPU: Intel(R) Core(TM) i7-4710MQ CPU @ 2.50GHz
RAM: 2047.49 MB
```

```
URL:MicrosoftAccount:target=SSO_POP_Device
\r\nUsername:[redacted]
\r\nPassword:[redacted]
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\r\n
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\r\nApplication:Wi-Fi
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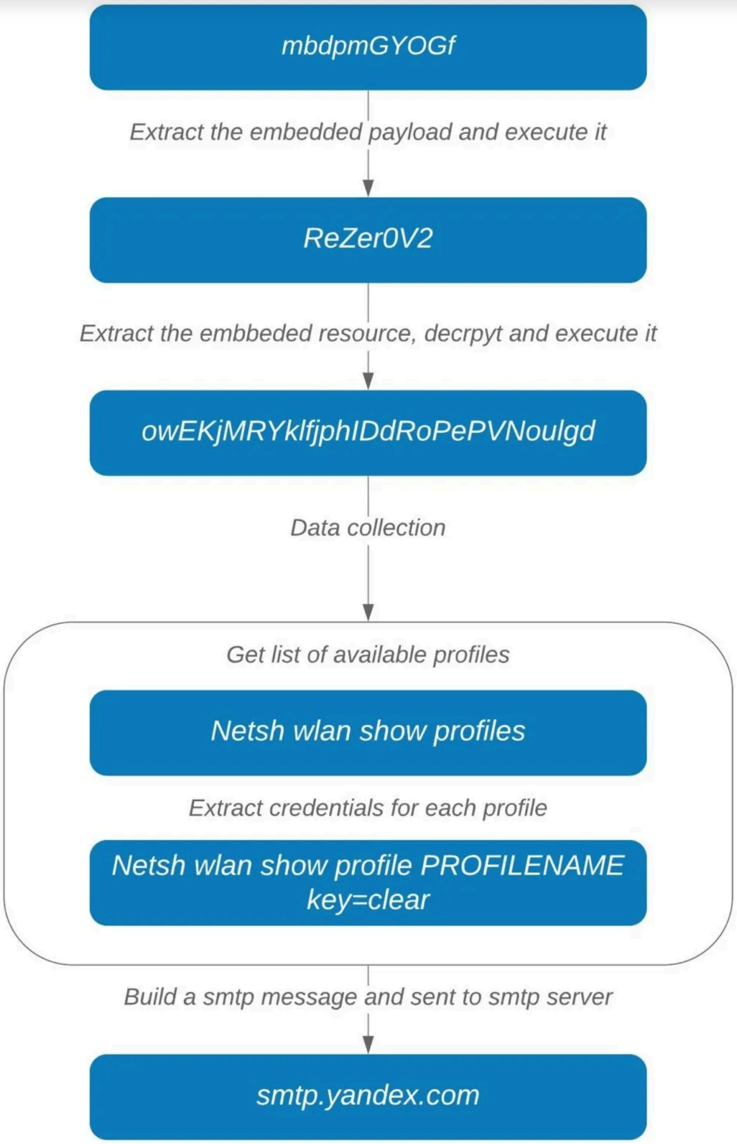
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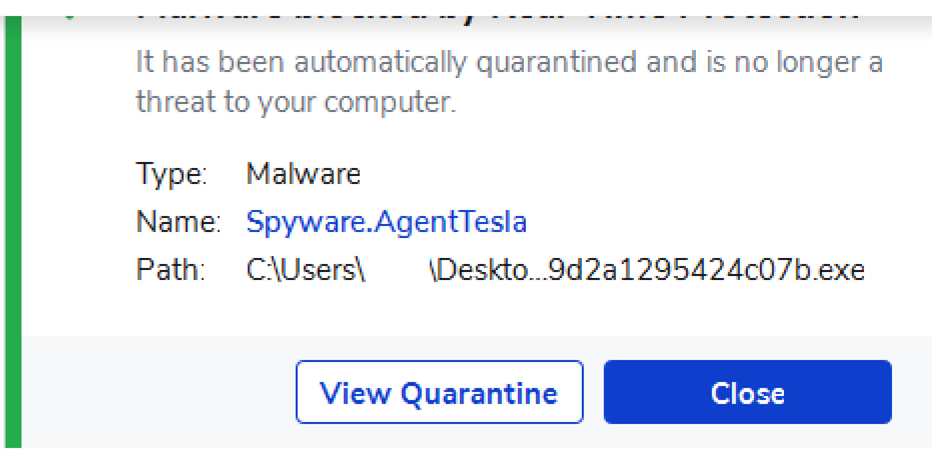

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27939b70928b285655c863fa26efded96bface9db46f35ba39d2a1295424c07b
```

First payload:

```
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```

Second payload:

```
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```

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).

String encryption

All the strings used by the malware are encrypted and are decrypted by Rijndael symmetric encryption algorithm in the ".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).

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).

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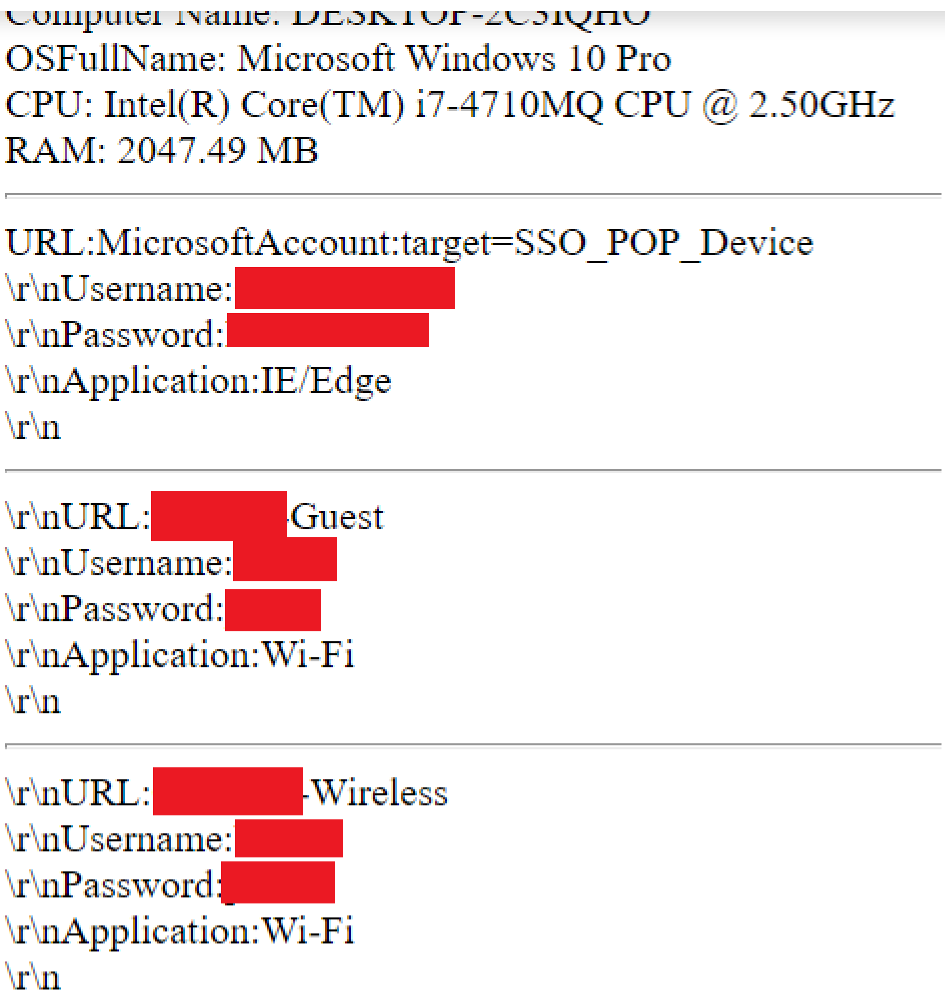

```
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OSFullName: Microsoft Windows 10 Pro
CPU: Intel(R) Core(TM) i7-4710MQ CPU @ 2.50GHz
RAM: 2047.49 MB
________________________________________
URL:MicrosoftAccount:target=SSO_POP_Device
\r\nUsername:[redacted]
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\r\nApplication:Wi-Fi
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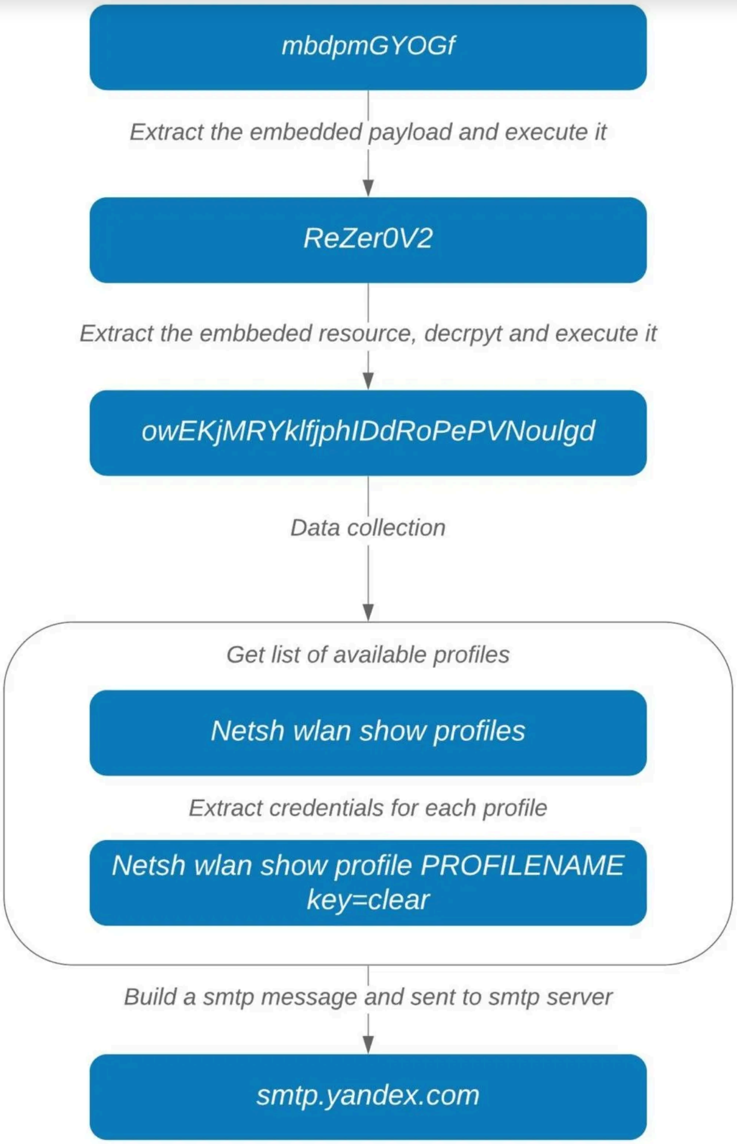
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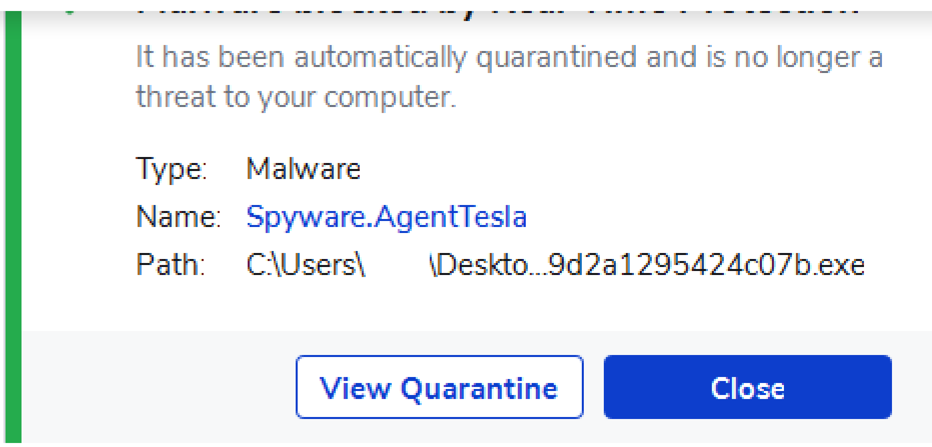

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27939b70928b285655c863fa26efded96bface9db46f35ba39d2a1295424c07b
```

First payload:

```
249a503263717051d62a6d65a5040cf408517dd22f9021e5f8978a819b18063b
```

Second payload:

```
63393b114ebe2e18d888d982c5ee11563a193d9da3083d84a611384bc748b1b0
```

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 * : (?.*)”, on the stdout output of the 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).

String encryption

All the strings used by the malware are encrypted and are decrypted by Rijndael symmetric encryption algorithm in the ".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).

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

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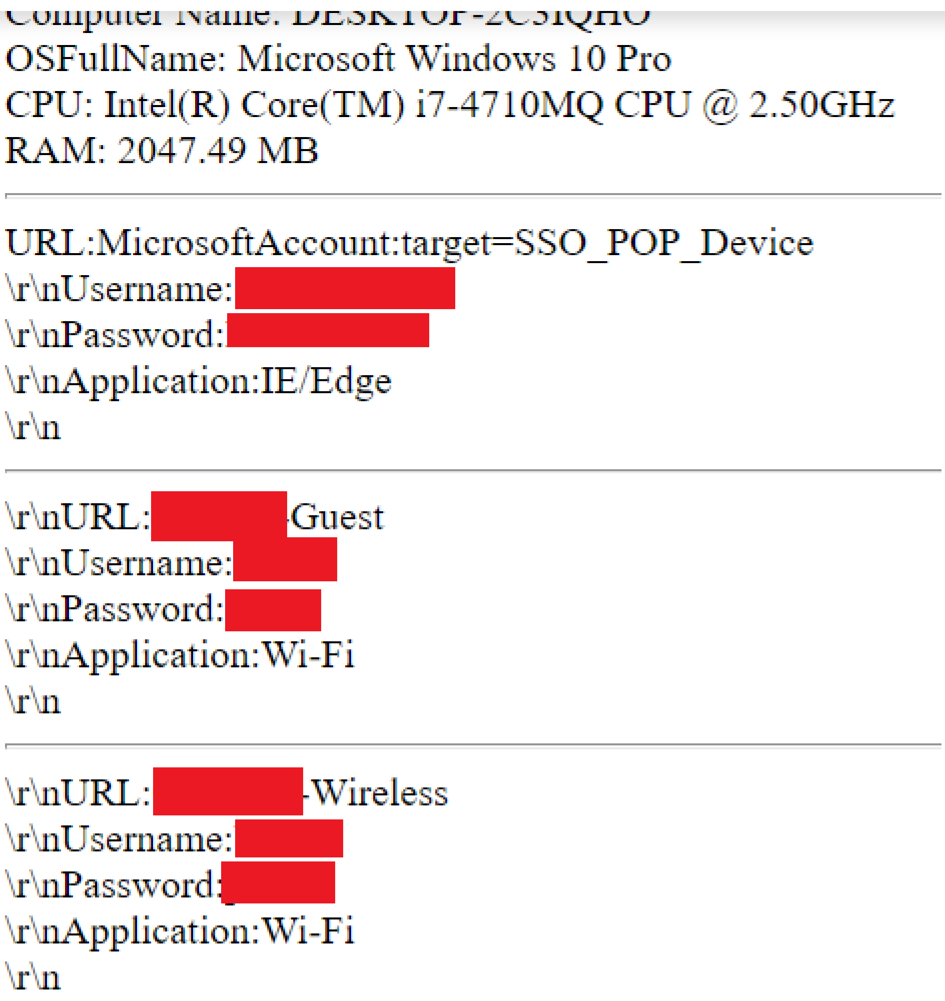

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OSFullName: Microsoft Windows 10 Pro
CPU: Intel(R) Core(TM) i7-4710MQ CPU @ 2.50GHz
RAM: 2047.49 MB

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

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\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
```

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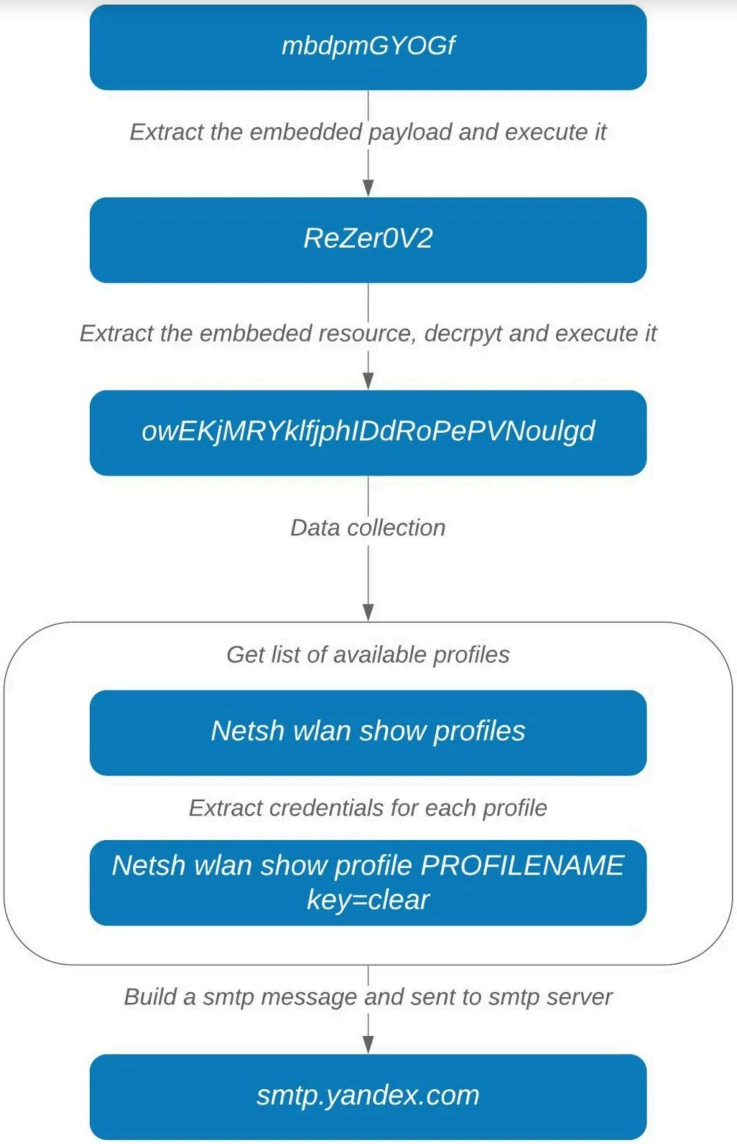
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Extract the embbeded resource, decrpyt and execute it
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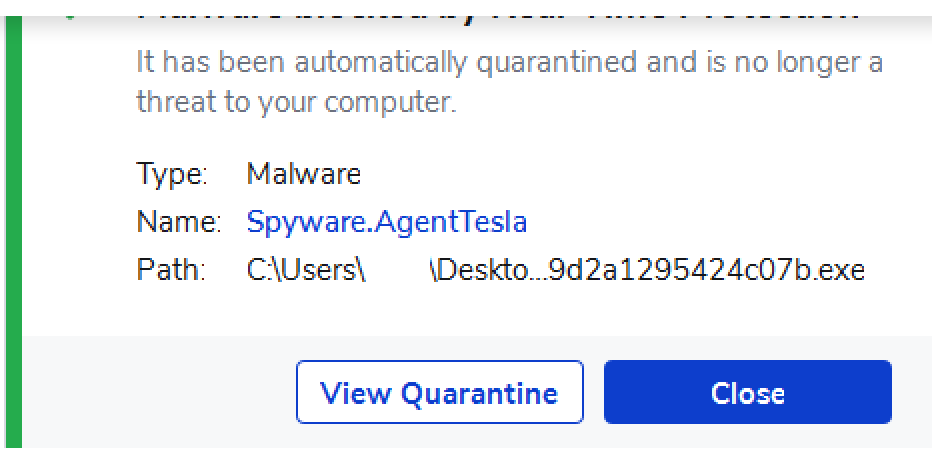
Extract credentials for each profile
Netsh wlan show profile PROFILENAME key=clear
Build a smtp message and sent to smtp server
smtp.yandex.com

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.



It has been automatically quarantined and is no longer a threat to your computer.

Type: Malware
Name: Spyware.AgentTesla
Path: C:\Users\ \Deskto...9d2a1295424c07b.exe

Indicators of compromise

AgentTesla samples:

```
91b711812867b39537a2cd81bb1ab10315ac321a1c68e316bf4fa84badbc09b
dd4a43b0b8a68db65b00fad99519539e2a05a3892f03b869d58ee15fdf5aa044
27939b70928b285655c863fa26efded96bface9db46f35ba39d2a1295424c07b
```

First payload:

```
249a503263717051d62a6d65a5040cf408517dd22f9021e5f8978a819b18063b
```

Second payload:

```
63393b114ebe2e18d888d982c5ee11563a193d9da3083d84a611384bc748b1b0
```

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

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 * : (?.*)”, on the stdout output of the 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).

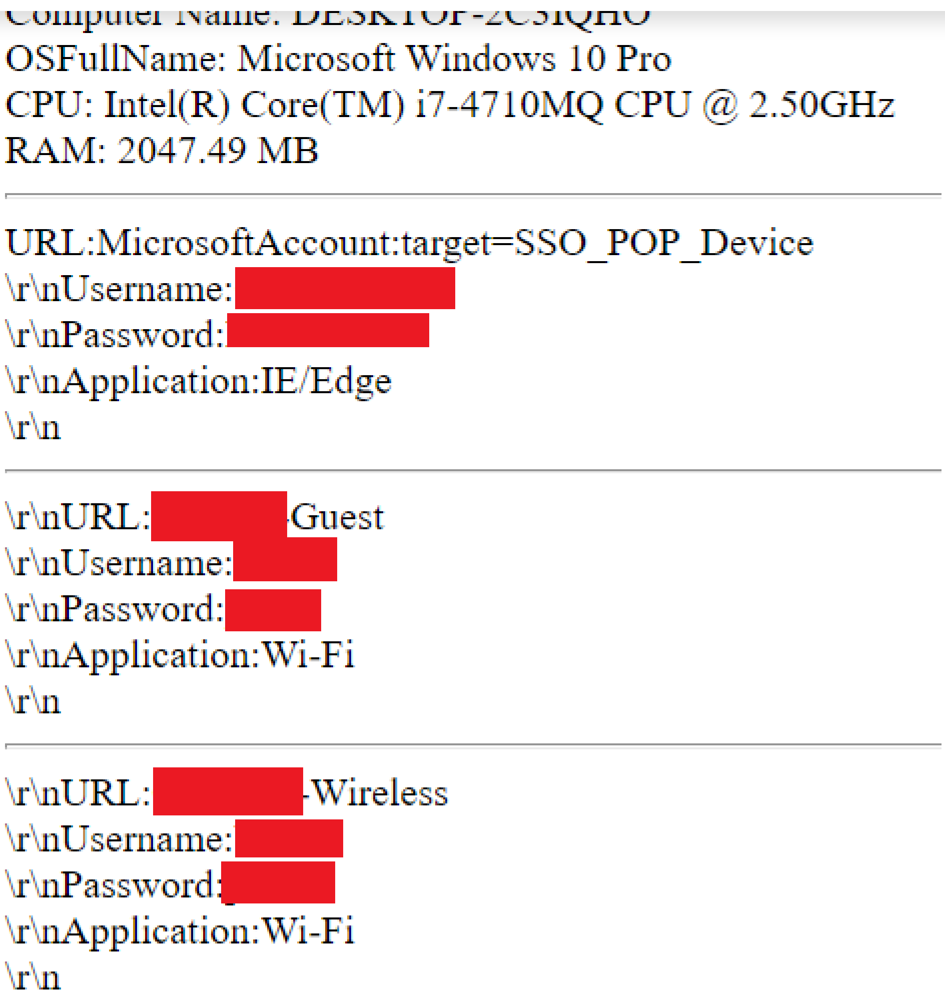
String encryption

All the strings used by the malware are encrypted and are decrypted by Rijndael symmetric encryption algorithm in the ".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).

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

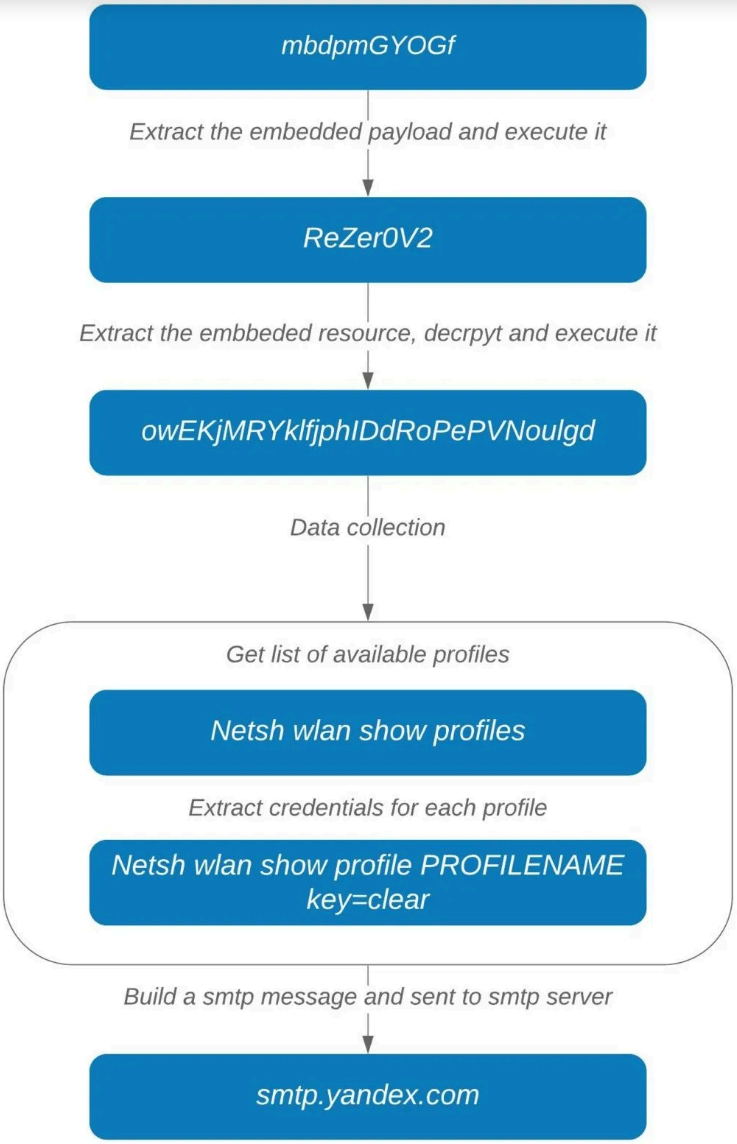
In addition to WiFi profiles, the executable collects extensive information about the system, including FTP clients, browsers, file downloaders, and machine info (username, computer name, OS name, CPU architecture, RAM) and adds them to a list (Figure 7).

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



```
Computer Name: DESKTOP-2C5IQHO
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
```

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):


mbdpmGYOGf
Extract the embedded payload and execute it
ReZer0V2
Extract the embbeded resource, decrpyt and execute it
owEKjMRYklfjphIDdRoPePVNoulgd
Data collection
Get list of available profiles
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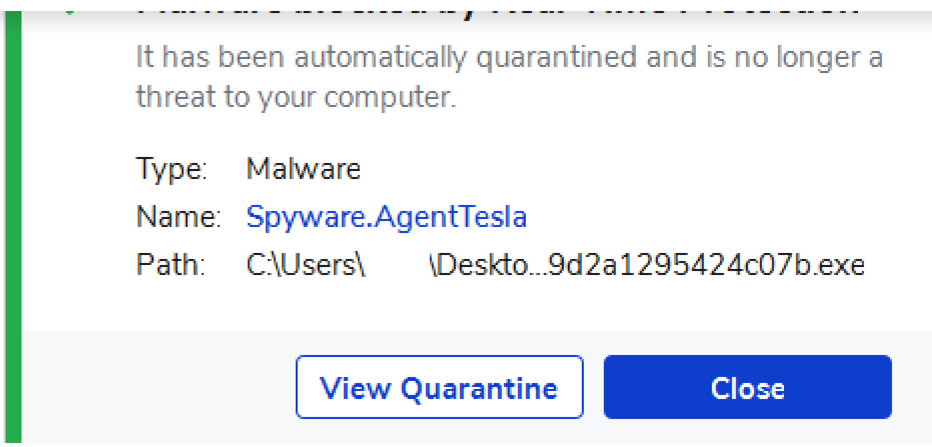

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```

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```
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```

Second payload:

```
63393b114ebe2e18d888d982c5ee11563a193d9da3083d84a611384bc748b1b0
```

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).

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.

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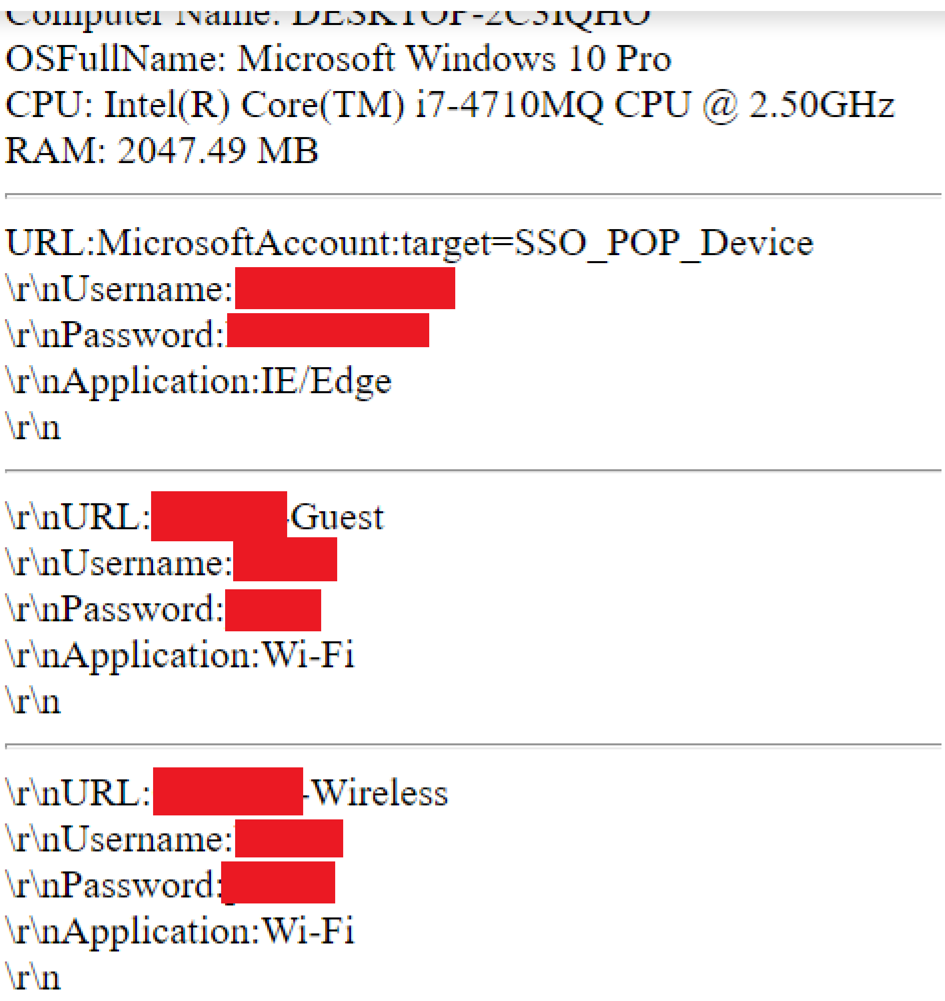

```
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CPU: Intel(R) Core(TM) i7-4710MQ CPU @ 2.50GHz
RAM: 2047.49 MB
________________________________________
URL:MicrosoftAccount:target=SSO_POP_Device
\r\nUsername:[redacted]
\r\nPassword:[redacted]
\r\nApplication:IE/Edge
\r\n
________________________________________
\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
```

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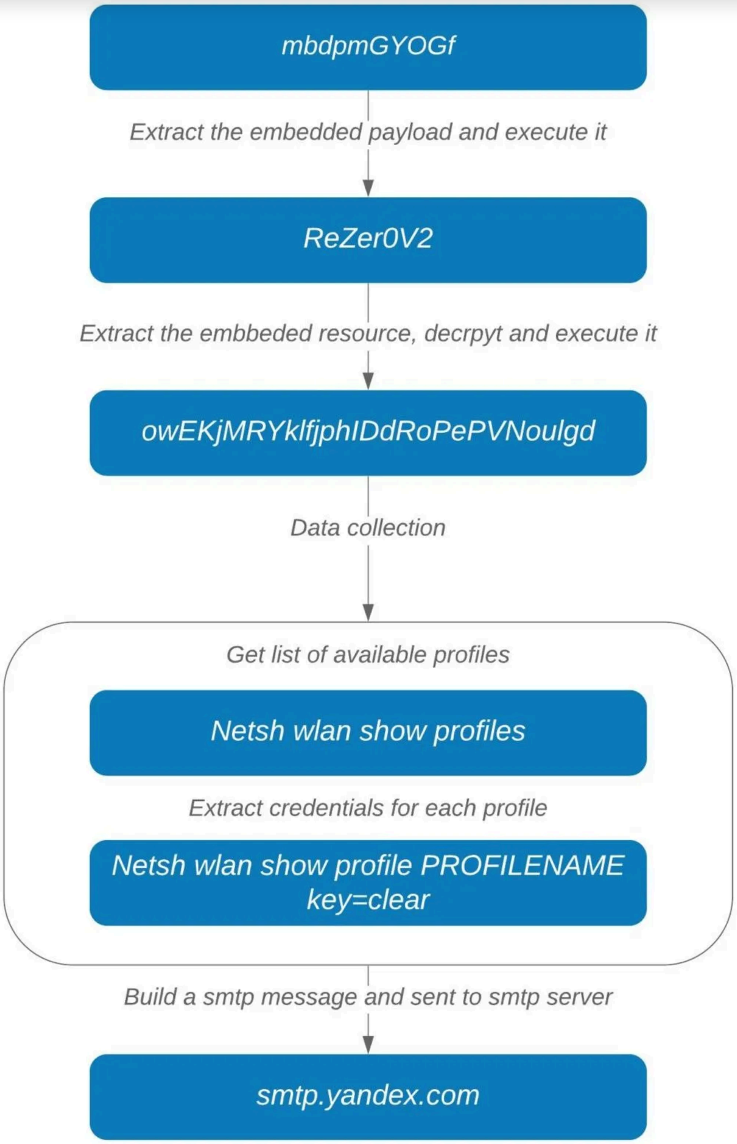
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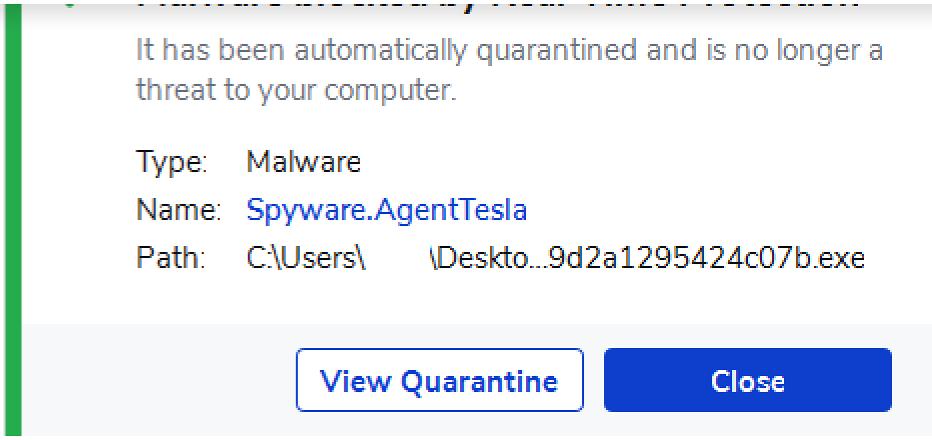

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Hossein Jazi

Special interest in tracking APTs

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