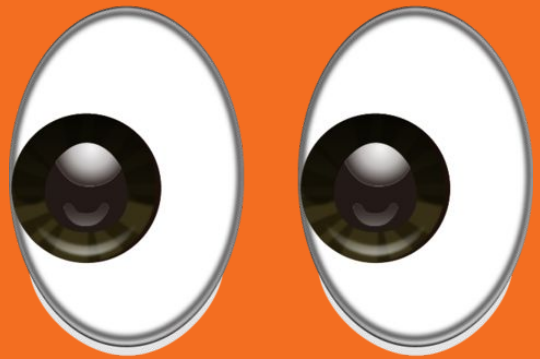
Welcome to RC3

RIT Competitive Cybersecurity Club

“Security Through Community”

Today’s meeting brought to you in part by…



Platinum

Gold

Educational Supporter

http://signin.rc3.club

RC3 Sign-in

Important dates & times

- The Incident Response Security Competition is **April 21st**
  - **White Team Signups:** https://tinyurl.com/irsec2018-whiteteam
  - Come volunteer and help us <3
- BSides Roc is **April 13-14th**
  - Buy tickets here: https://www.eventbrite.com/e/bsides-rochester-2018-tickets-43047674754
  - It's a great first conference.
    - 13th is Training day, 14th is the conference
  - If you cannot afford tickets to go, come talk to an RC3 E-board member
    - No one should be excluded from going to security events

HackerOne x RC3 Bug Bounty Competition

- Get money
- Get RC3 points
- Get exclusive HackerOne swag
- When you submit a bug bounty report to HackerOne, once the report has been resolved, you can submit it to @joel for even more points for even more prizes! Woo!

Oh, the places you'll go

- Mailing List: Go to the website, scroll down!
  - Weekly announcements, hints for the Hard challenge, past week's challenge guide
- Facebook: RITC3
  - Announcements, random postings,
- Twitter: @RC3_Official
  - Just a lot of memes and retweets
- Youtube: RC3club RIT
  - SMASH THAT SUBSCRIBE BUTTON
- Instagram: @rc3.club
  - Please, we have 0 followers
- Slack: https://ritc3.slack.com
  - It's where work doesn't happen
- ANSR: listen.rc3.club

Disclaimer

The information contained in this presentation is for educational purposes **ONLY**! RC3 nor its members hold any responsibility for any misuse of the information provided in any slides, discussions, activities, or exercises.

…You have been warned.

Without further ado...

9. Intro to Windows Blue Teaming

Professor Russell pt 2

echo %username%

- 3rd year Comp Sec
- Windows Clients on CCDC
- Co-Captain of CPTC
- I know how to configure an A record
- Outside of Security:
  - Outdoors
  - Baseball
  - Football
  - Movies

Write-Host $env:UserName
Aka Scuzz3y

- 3rd year CSEC - In BS/MS
- 3rd year on CCDC Team
  - Co-Captain
  - DNS is EZ
- 2nd year on ISTS Black Team
  - Team Lead
- “The Windows Guy”
- “The VMware Guy”

Windows Firewall

- Meet your new best friend
- Can be managed from a GUI or command prompt
- Two Different types:
  - “Basic Firewall” - Windows XP SP2 - Windows 2003
  - “Advanced Firewall” - Windows Vista onwards
- Features:
  - Logging
  - Ability to create rules around programs
  - Fine grained control
- When blue teaming, create your firewall settings in a script!

Basic Firewall

- Still powerful but lacks a few of the fine grained controls
  - cannot specify if port is local or remote
  - cannot specify direction
  - logging settings are limited
- Basic Example:

```
netsh firewall set opmode mode=ENABLE exceptions=ENABLE profile=ALL
netsh firewall add portopening protocol=ALL port=389 "LDAP" mode=ENABLE profile=ALL
netsh firewall add portopening protocol=TCP port=686 "LDAP SSL" mode=ENABLE profile=ALL
```

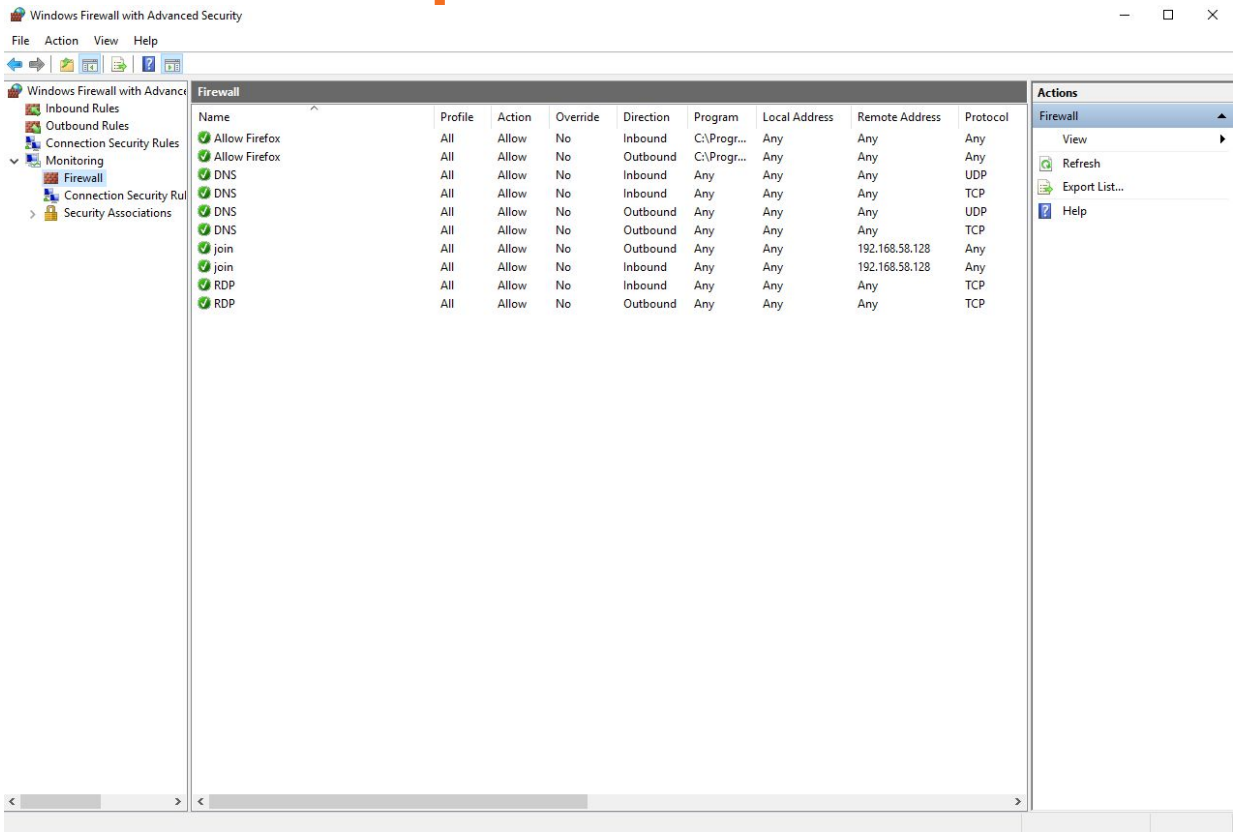
Advanced Firewall

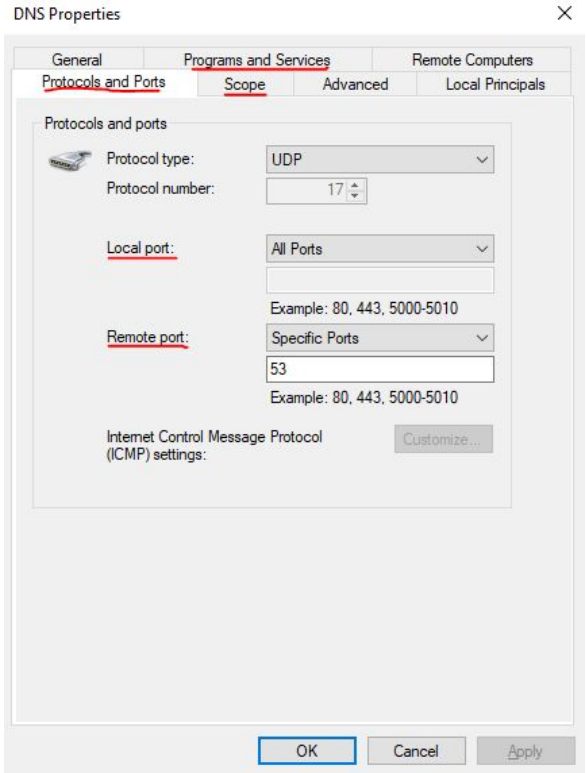
- Allows for more fine grained control of rules
- Basic Example:

```
netsh advfirewall set allprofiles firewallpolicy blockinbound,blockoutbound

netsh advfirewall firewall add rule name="Allow Firefox" dir=in action=allow program="C:\Program Files\Mozilla Firefox\firefox.exe"
enable=yes profile=any
netsh advfirewall firewall add rule name="Allow Firefox" dir=out action=allow program="C:\Program Files\Mozilla Firefox\firefox.exe"
enable=yes profile=any
netsh advfirewall firewall add rule name=AdClient dir=out protocol=tcp remoteport=53 action=allow
netsh advfirewall firewall add rule name=AdClinet dir=in protocol=tcp remoteport=53 action=allow
```

GUI Example


Windows Firewall with Advanced Security
File Action View Help
Windows Firewall with Advanc
Inbound Rules
Outbound Rules
Connection Security Rules
Monitoring
Firewall
Connection Security Rul
Security Associations
Firewall
Name Profile Action Override Direction Program Local Address Remote Address Protocol
Allow Firefox All Allow No Inbound C:\Progr... Any Any Any
Allow Firefox All Allow No Outbound C:\Progr... Any Any Any
DNS All Allow No Inbound Any Any Any UDP
DNS All Allow No Inbound Any Any Any TCP
DNS All Allow No Outbound Any Any Any UDP
DNS All Allow No Outbound Any Any Any TCP
join All Allow No Outbound Any Any 192.168.58.128 Any
join All Allow No Inbound Any Any 192.168.58.128 Any
RDP All Allow No Inbound Any Any Any TCP
RDP All Allow No Outbound Any Any Any TCP
Actions
Firewall
View
Refresh
Export List...
Help


DNS Properties
General
Programs and Services
Remote Computers
Protocols and Ports
Scope
Advanced
Local Principals
Protocols and ports
Protocol type:
UDP
Protocol number:
17
Local port:
All Ports
Example: 80, 443, 5000-5010
Remote port:
Specific Ports
53
Example: 80, 443, 5000-5010
Internet Control Message Protocol (ICMP) settings:
Customize...
OK
Cancel
Apply

CMD

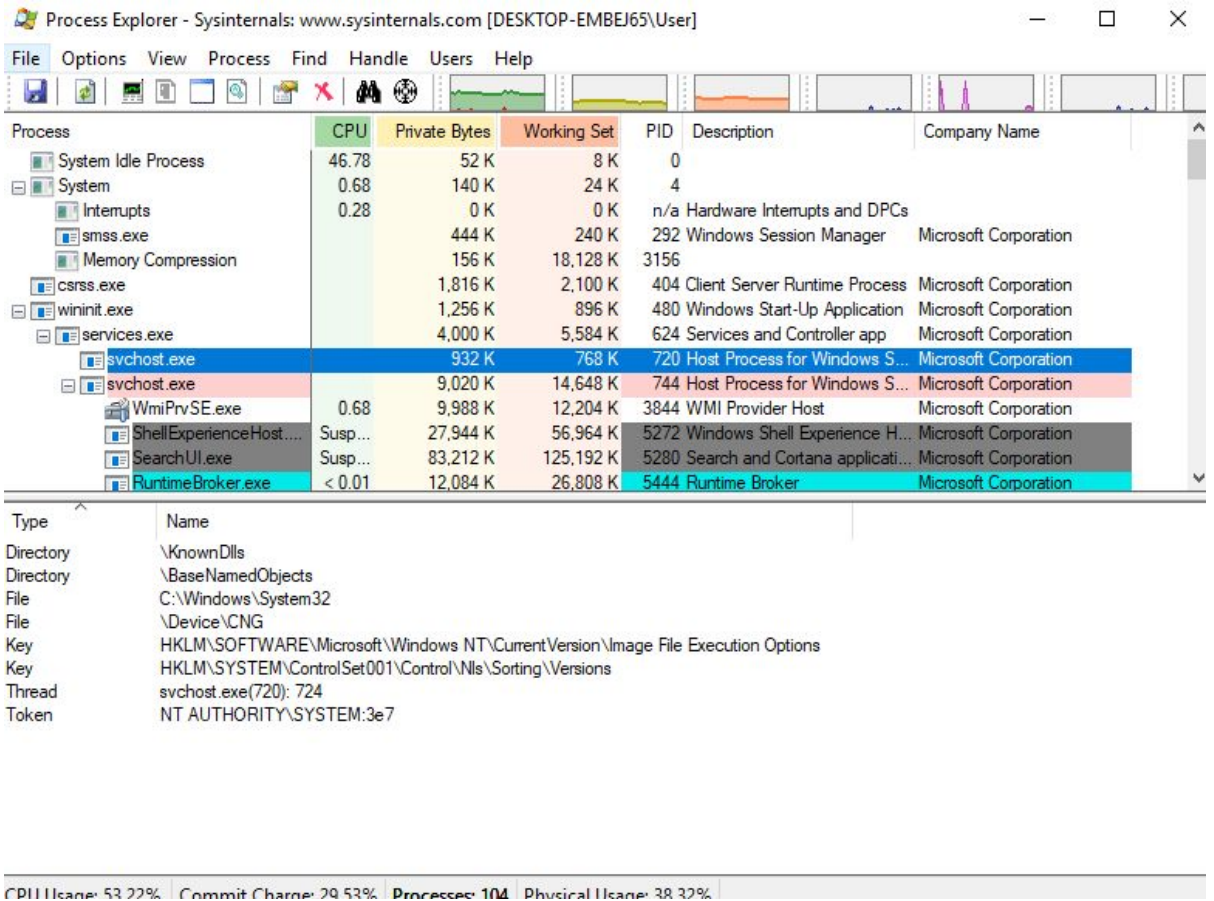
- netstat - similar to unix command: displays connections
- tasklist - display processes on a host
- taskkill - kill a specified task
- net user - audit local users
- net localgroup - audit local computer groups
- net group - audit domain groups
- schtasks - interface with scheduled tasks
- systeminfo - provides high level overview of the system

Sysinternals Suite

- A set of powerful tools to help system administrators
- Also useful for incident response
- Four essential tools:
  - Process Explorer
  - Autoruns
  - Process Monitor
  - TCP View

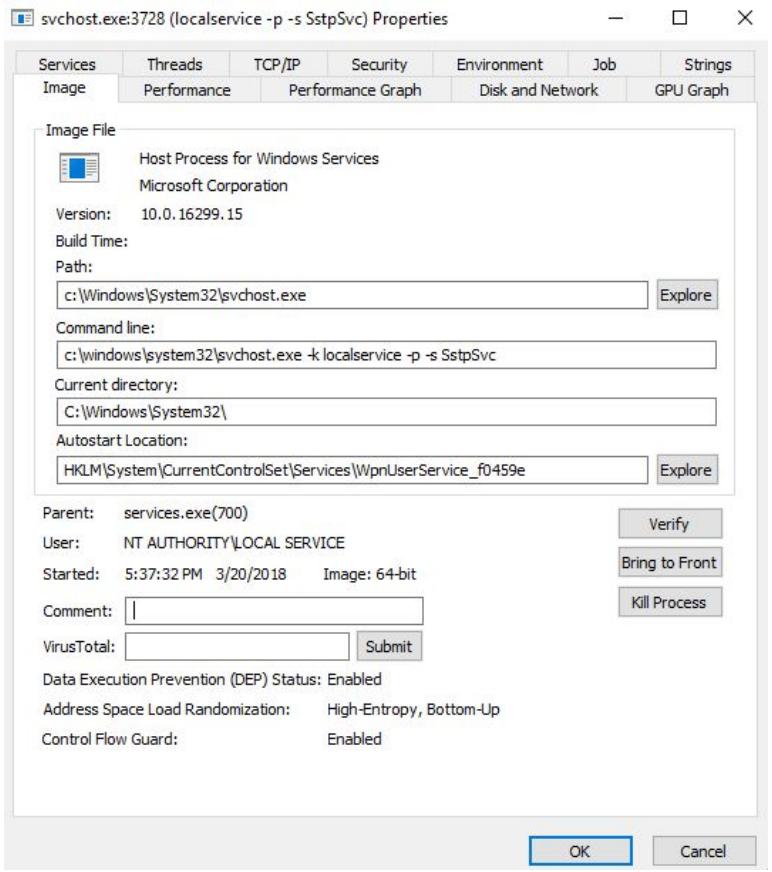
Process Explorer

- Task manager on steroids
- Gives detailed information on every process running on the system
  - Threads
  - TCP connections
  - Environment
  - Privileges
  - Strings
- You can also grab important information such as handles and loaded DLLs



Process Explorer

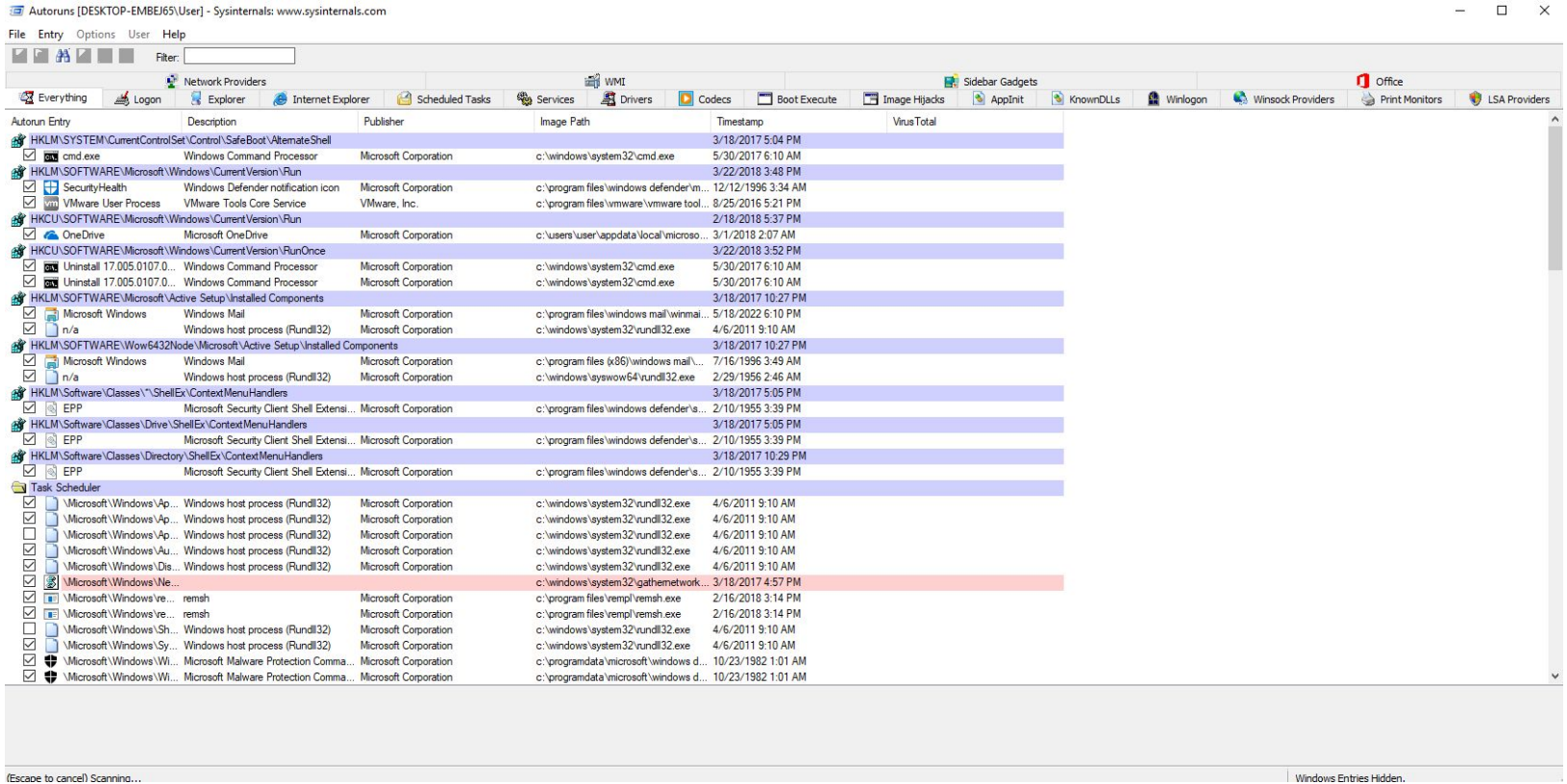
- First enable sig verification
  - options->verify signature
- Check for sigs that are invalid or processes that have none
- Suspend processes in case of **bad watchdogs**
- Keep an eye on that network graph
  - Beacons will be “constant”



Autoruns

- Detects most well-known registry attacks
- Monitor:
    - WMI
    - Scheduled Tasks
    - Services
    - etc etc…
- Does miss quite a few important registry keys

Autoruns


Autoruns [DESKTOP-EMBEJ65\User] - Sysinternals: www.sysinternals.com
File Entry Options User Help
Filter:
Network Providers
WMI
Sidebar Gadgets
Office
Everything
Logon
Explorer
Internet Explorer
Scheduled Tasks
Services
Drivers
Codecs
Boot Execute
Image Hijacks
AppInit
KnownDLLs
Winlogon
Winsock Providers
Print Monitors
LSA Providers
Autorun Entry
Description
Publisher
Image Path
Timestamp
VirusTotal
HKLM\SYSTEM\CurrentControlSet\Control\SafeBoot\AlternateShell
cmd.exe
Windows Command Processor
Microsoft Corporation
c:\windows\system32\cmd.exe
5/30/2017 6:10 AM
HKLM\SOFTWARE\Microsoft\Windows\CurrentVersion\Run
3/22/2018 3:48 PM
SecurityHealth
Windows Defender notification icon
Microsoft Corporation
c:\program files\windows defender\m...
12/12/1996 3:34 AM
VMware User Process
VMware Tools Core Service
VMware, Inc.
c:\program files\vmware\vmware tool...
8/25/2016 5:21 PM
HKCU\SOFTWARE\Microsoft\Windows\CurrentVersion\Run
2/18/2018 5:37 PM
OneDrive
Microsoft OneDrive
Microsoft Corporation
c:\users\user\appdata\local\microso...
3/1/2018 2:07 AM
HKCU\SOFTWARE\Microsoft\Windows\CurrentVersion\RunOnce
3/22/2018 3:52 PM
Uninstall 17.005.0107.0...
Windows Command Processor
Microsoft Corporation
c:\windows\system32\cmd.exe
5/30/2017 6:10 AM
Uninstall 17.005.0107.0...
Windows Command Processor
Microsoft Corporation
c:\windows\system32\cmd.exe
5/30/2017 6:10 AM
HKLM\SOFTWARE\Microsoft\Active Setup\Installed Components
3/18/2017 10:27 PM
Microsoft Windows
Windows Mail
Microsoft Corporation
c:\program files\windows mail\winmai...
5/18/2022 6:10 PM
n/a
Windows host process (Rundll32)
Microsoft Corporation
c:\windows\system32\vundll32.exe
4/6/2011 9:10 AM
HKLM\SOFTWARE\Wow6432Node\Microsoft\Active Setup\Installed Components
3/18/2017 10:27 PM
Microsoft Windows
Windows Mail
Microsoft Corporation
c:\program files (x86)\windows mail\...
7/16/1996 3:49 AM
n/a
Windows host process (Rundll32)
Microsoft Corporation
c:\windows\syswow64\vundll32.exe
2/29/1956 2:46 AM
HKLM\Software\Classes*\ShellEx\ContextMenuHandlers
3/18/2017 5:05 PM
EPP
Microsoft Security Client Shell Extensi...
Microsoft Corporation
c:\program files\windows defender\s...
2/10/1955 3:39 PM
HKLM\Software\Classes\Drive\ShellEx\ContextMenuHandlers
3/18/2017 5:05 PM
EPP
Microsoft Security Client Shell Extensi...
Microsoft Corporation
c:\program files\windows defender\s...
2/10/1955 3:39 PM
HKLM\Software\Classes\Directory\ShellEx\ContextMenuHandlers
3/18/2017 10:29 PM
EPP
Microsoft Security Client Shell Extensi...
Microsoft Corporation
c:\program files\windows defender\s...
2/10/1955 3:39 PM
Task Scheduler
\Microsoft\Windows\Ap...
Windows host process (Rundll32)
Microsoft Corporation
c:\windows\system32\vundll32.exe
4/6/2011 9:10 AM
\Microsoft\Windows\Ap...
Windows host process (Rundll32)
Microsoft Corporation
c:\windows\system32\vundll32.exe
4/6/2011 9:10 AM
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Windows host process (Rundll32)
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4/6/2011 9:10 AM
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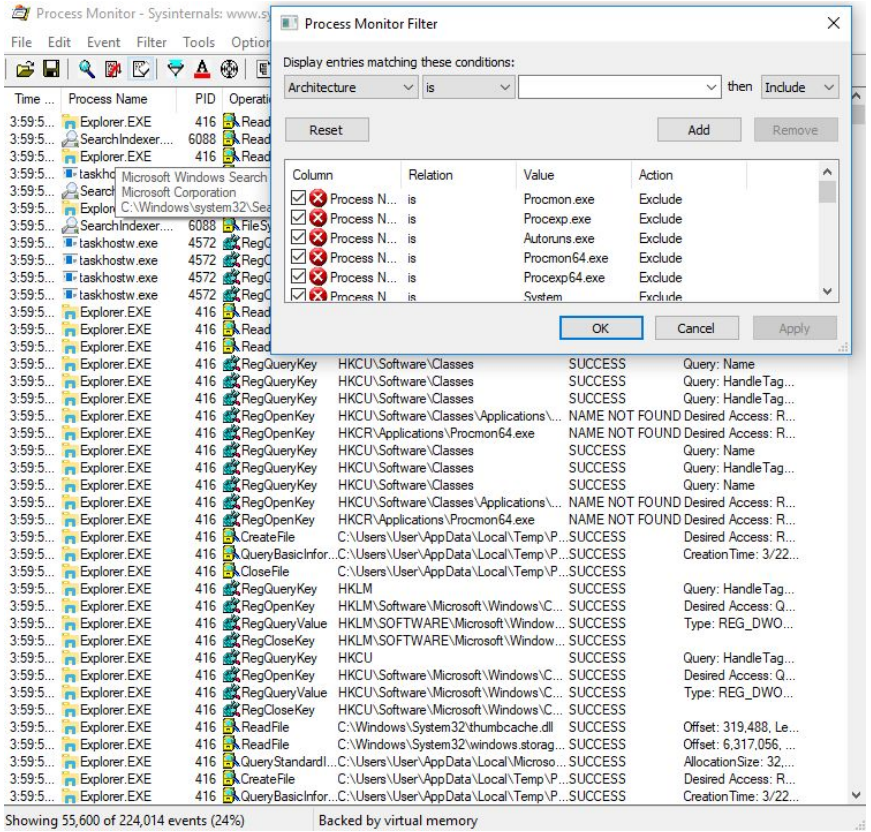
Windows host process (Rundll32)
Microsoft Corporation
c:\windows\system32\vundll32.exe
4/6/2011 9:10 AM
\Microsoft\Windows\Dis...
Windows host process (Rundll32)
Microsoft Corporation
c:\windows\system32\vundll32.exe
4/6/2011 9:10 AM
\Microsoft\Windows\Ne...
c:\windows\system32\gathernetwork...
3/18/2017 4:57 PM
\Microsoft\Windows\re...
remsh
Microsoft Corporation
c:\program files\rempl\remsh.exe
2/16/2018 3:14 PM
\Microsoft\Windows\re...
remsh
Microsoft Corporation
c:\program files\rempl\remsh.exe
2/16/2018 3:14 PM
\Microsoft\Windows\Sh...
Windows host process (Rundll32)
Microsoft Corporation
c:\windows\system32\vundll32.exe
4/6/2011 9:10 AM
\Microsoft\Windows\Sy...
Windows host process (Rundll32)
Microsoft Corporation
c:\windows\system32\vundll32.exe
4/6/2011 9:10 AM
\Microsoft\Windows\Wi...
Microsoft Malware Protection Comma...
Microsoft Corporation
c:\programdata\microsoft\windows d...
10/23/1982 1:01 AM
\Microsoft\Windows\Wi...
Microsoft Malware Protection Comma...
Microsoft Corporation
c:\programdata\microsoft\windows d...
10/23/1982 1:01 AM
(Escape to cancel) Scanning...
Windows Entries Hidden.

Process Monitor

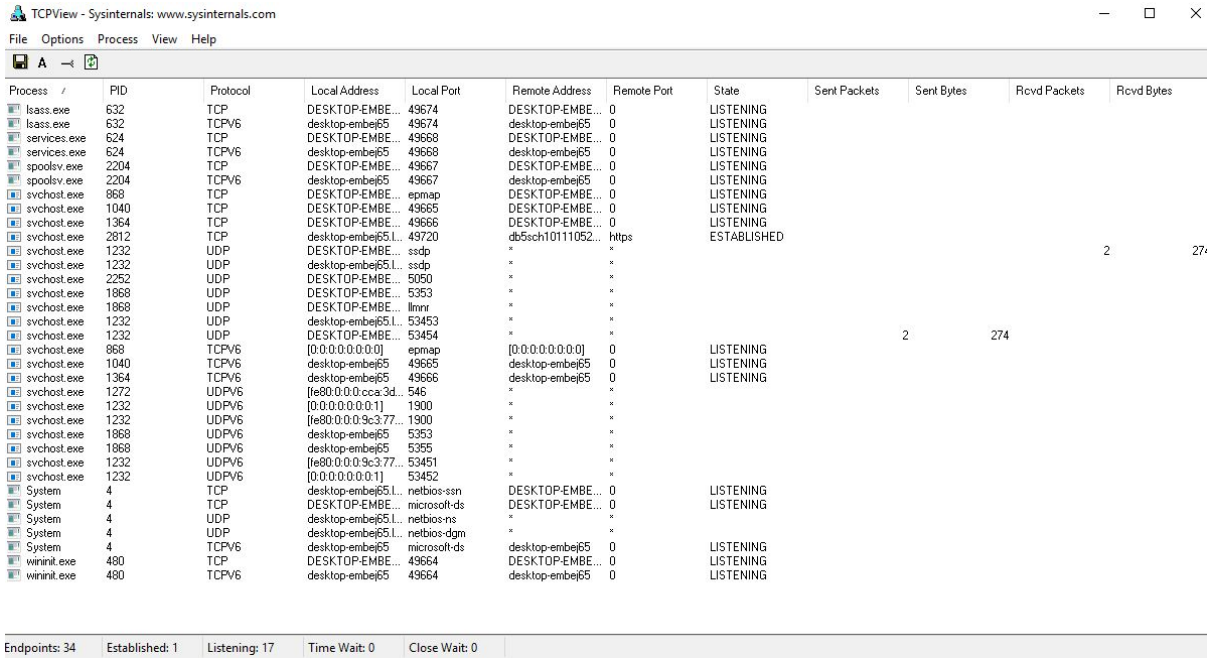
- Monitors registry, file system, and process activity
- Fine grained filtering control
- Example use case:

Registry key or file is constantly being added. You can use procmon to find what process is performing this action

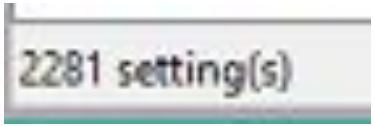


Tcp View

- Very similar to netstat
  - provides a bit more info
  - runs in a loop
- Useful for finding beacons or injected processes calling out



Group Policy



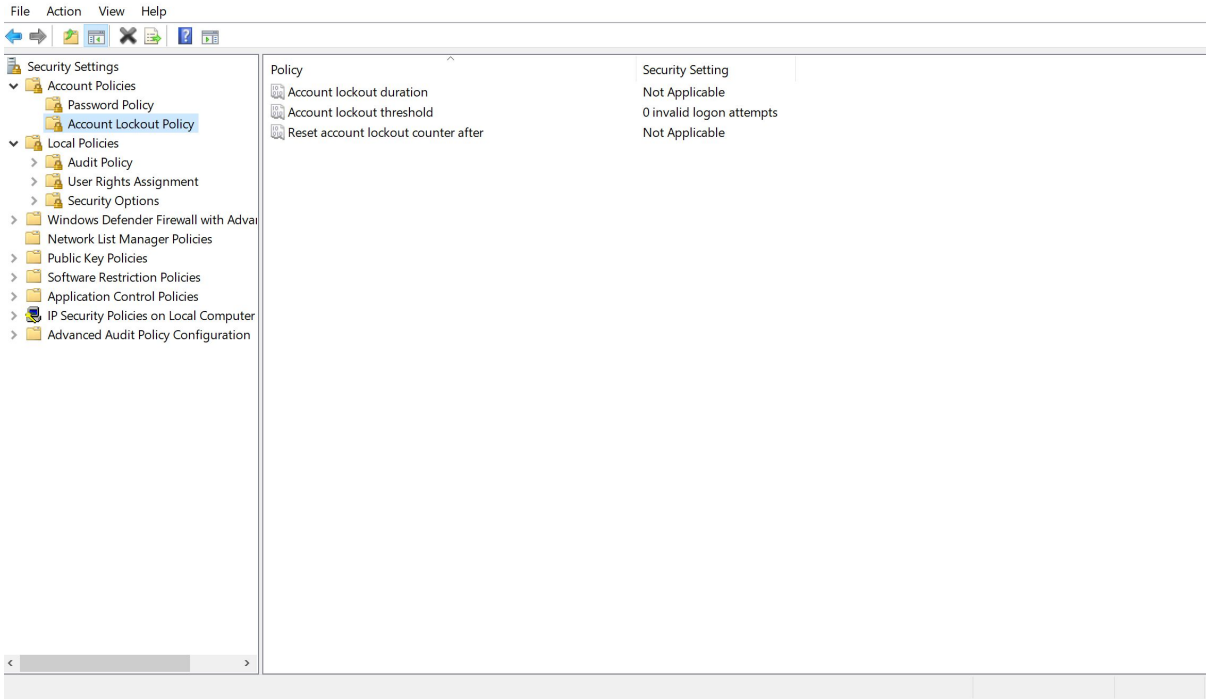
Yes, that's 2281 different settings

- This can be your best friend if you know what settings to change
  - Deny users right to logon to your computer
- Can create policies that deploy to every computer on the domain
- Main settings you want to look at
  - Computer Config -> Windows Settings -> Security Settings
    - Account Policies
      - Password requirements (length, complexity, age)
      - Account Lockout Policy
    - Local Policies
      - Deny user/group logon rights
      - Enable logging of important events
      - Most security based things

Group Policy cont.

- Be careful with some settings ---------->
  you might lock yourself out if threshold and stuff is set to high numbers

- Group Policy is important to implement since it overrides the Local Security Policy



Process Injection

- Attackers will often times attempt to hollow out space in other processes
- Almost impossible to see unless looking at individual threads
- Ways to defeat & detect Process Injection:
  - Restart your computer!
    - Injected processes aren’t persistent (a persistent process must inject them)
  - Find bad threads and suspend them
    - Can be done using netstat and looking for callbacks
    - Use Process Explorer to look at running threads

Questions?

Demo info:

<info here>

Thank you

Feedback: https://rc3club.typeform.com/to/JdS2lV