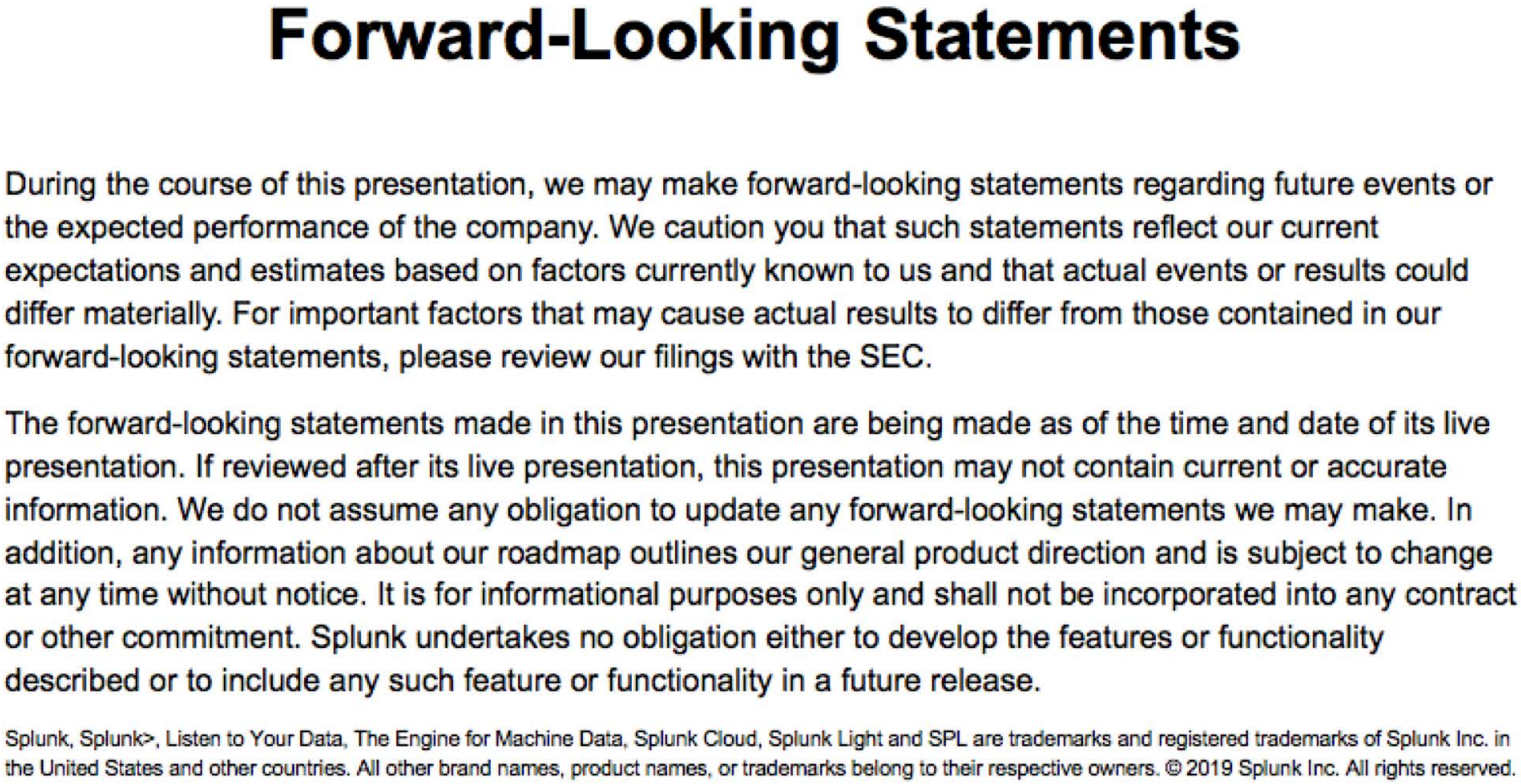
# MITRE ATT&CK: The Play at Home Edition

- Katie Nickels @ MITRE
- Ryan Kovar @ Splunk



# Forward-Looking Statements

During the course of this presentation, we may make forward-looking statements regarding future events or the expected performance of the company. We caution you that such statements reflect our current expectations and estimates based on factors currently known to us and that actual events or results could differ materially. For important factors that may cause actual results to differ from those contained in our forward-looking statements, please review our filings with the SEC.

The forward-looking statements made in this presentation are being made as of the time and date of its live presentation. If reviewed after its live presentation, this presentation may not contain current or accurate information. We do not assume any obligation to update any forward-looking statements we may make. In addition, any information about our roadmap outlines our general product direction and is subject to change at any time without notice. It is for informational purposes only and shall not be incorporated into any contract or other commitment. Splunk undertakes no obligation either to develop the features or functionality described or to include any such feature or functionality in a future release.

# System Owner/User Discovery (T1033)

**Katie Nickels** (@LiketheCoins)

- ATT&CK Threat Intelligence **Lead** at MITRE (@MITREattack)
- SANS **Instructor** for FOR578: Cyber Threat Intelligence
- 10+ years of experience in threat intel and network defense
- Program Manager for **Cyberjutsu Girls Academy**
- Baker of chocolate things
- CrossFitter
- Oxford comma believer

# System Owner/User Discovery (T1033)

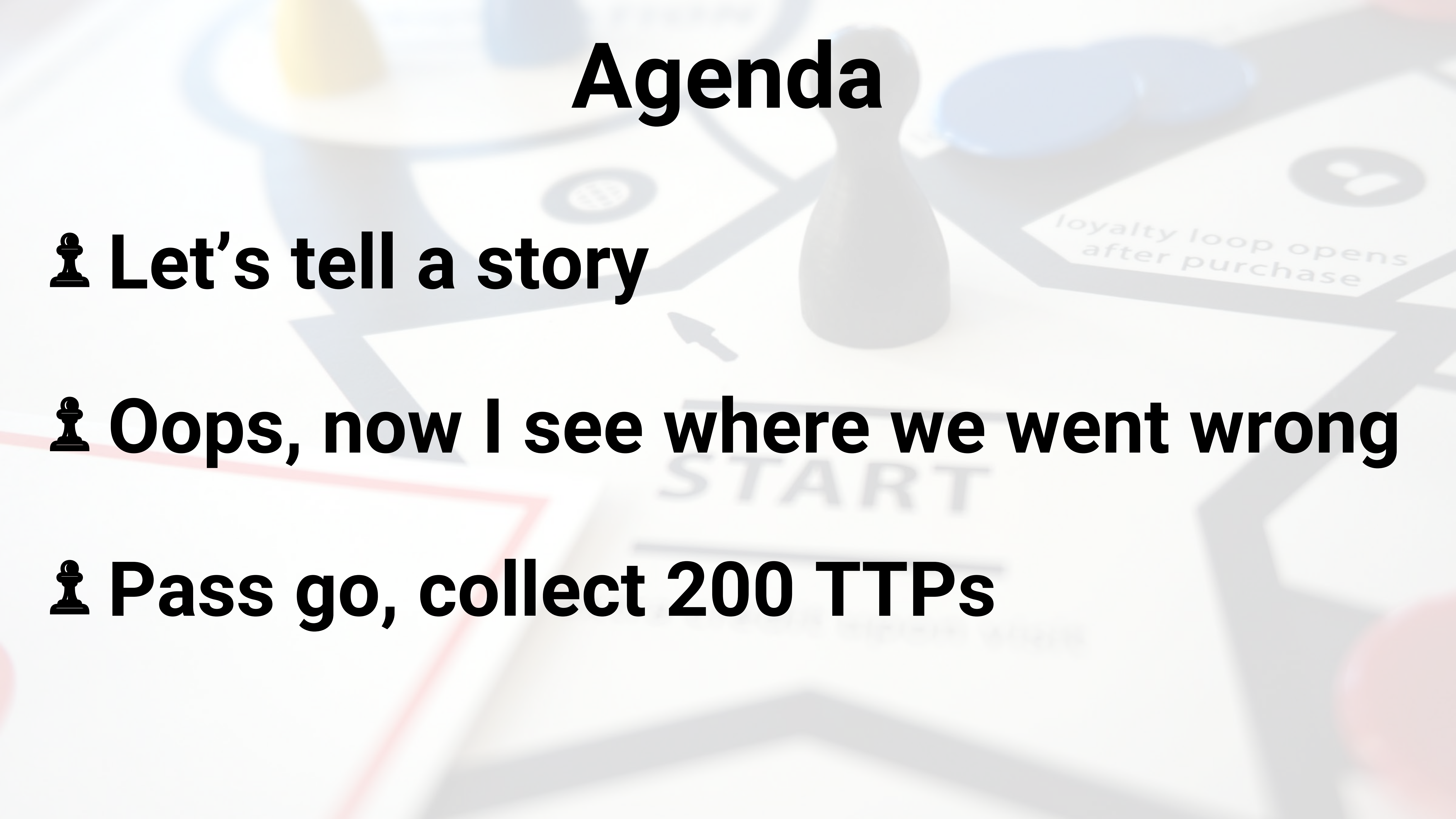
**Ryan Kovar** (@meansec)

- Principal Security Strategist at **Splunk**
- MSc(Dist) Information Security
- Minister of OODAlooping at Splunk
- US/UK  DoD/PubSec **Nation State Hunting** Roles
- Enough white in beard to speak authoritatively
- Co-Creator of Boss of the SOC CTF
- Hates printers and trilobites

# We use Splunk

But you don’t have to!

# Agenda



♟ Let’s tell a story

♟ Oops, now I see where we went wrong

♟ Pass go, collect 200 TTPs

# So you’ve heard of this ATT&CK thing…

## but how do you actually ~~play~~ *use* it?

We want to tell you a story...

Premium
FROTHLY
Quality

“I don’t really know how we are **defended** and it makes me **uncomfortable.**”

- Grace Hoppy

**CEO**

“If it’s not an **IP**,
how do I **use** it?
- Mallory Kraeusen
**Threat Intel**

“I’m **drowning** in meaningless **alerts** and my data isn’t **helping** me!”

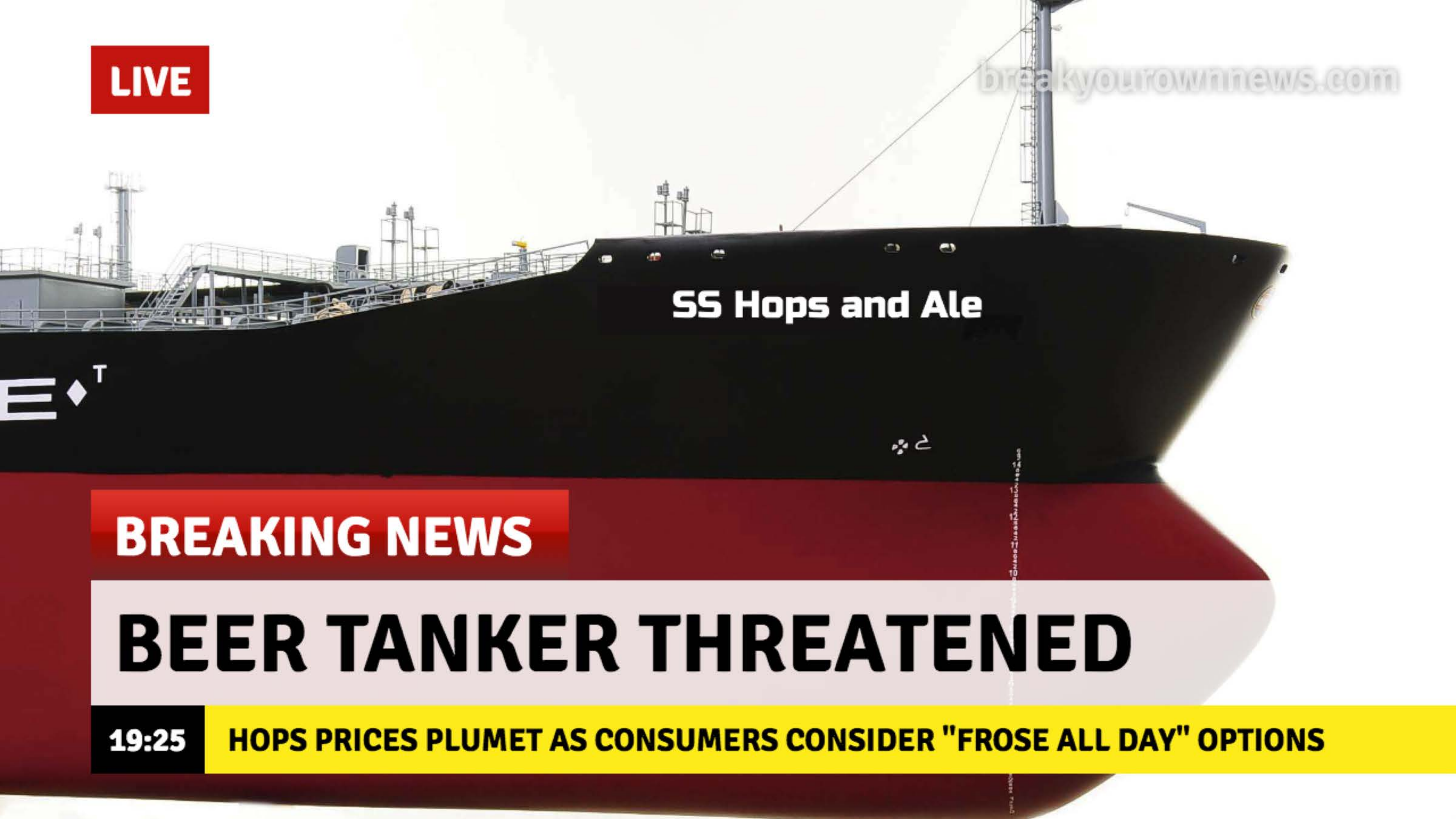
- Alice Bluebird

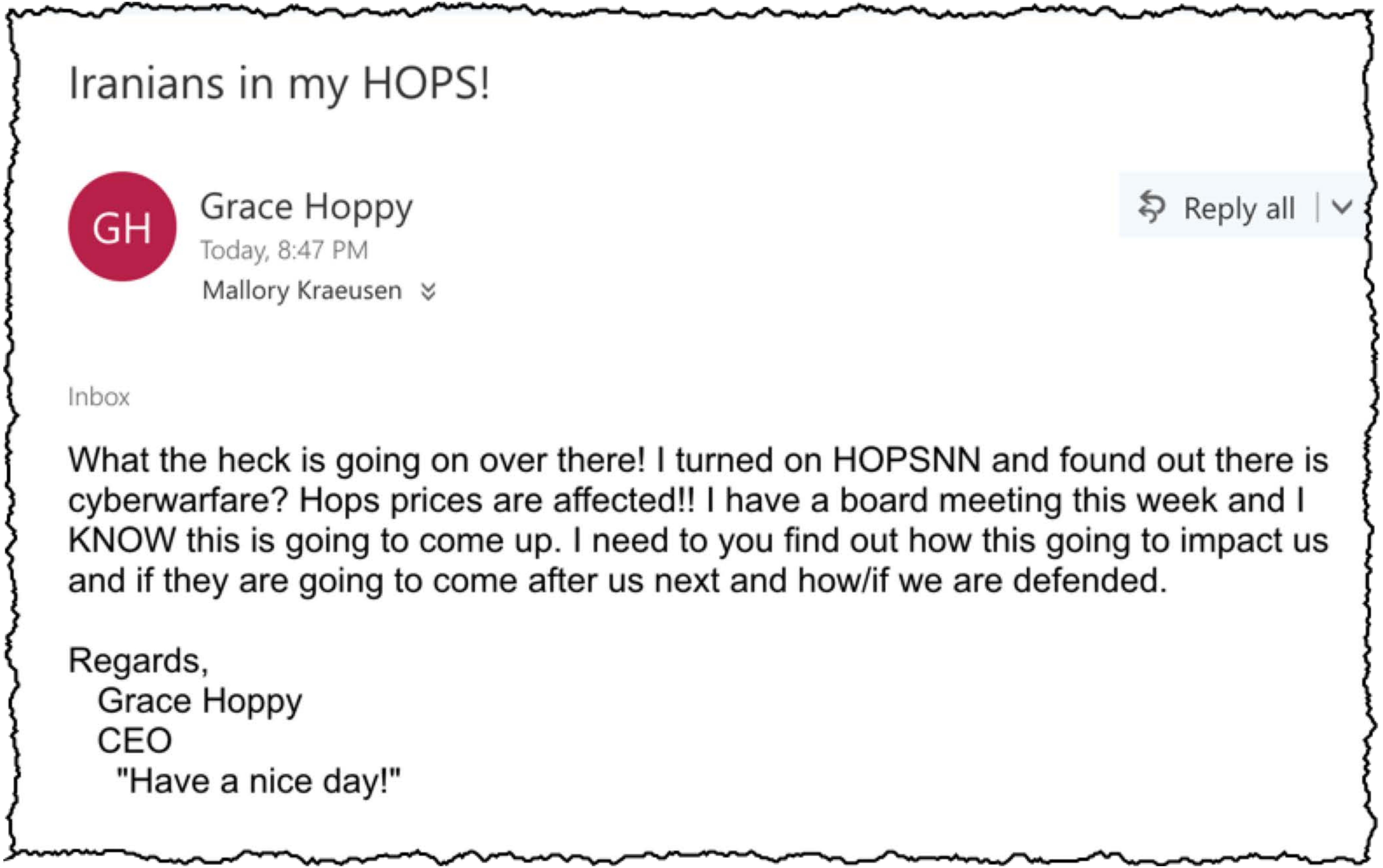
**Network Defender**

“I’m **not sure** how I can **help**.”

- Kevin Lagerfield

**Red Team**


LIVE
breakyourownnews.com
SS Hops and Ale
BREAKING NEWS
BEER TANKER THREATENED
19:25
HOPS PRICES PLUMET AS CONSUMERS CONSIDER "FROSE ALL DAY" OPTIONS



Iranians in my HOPS!

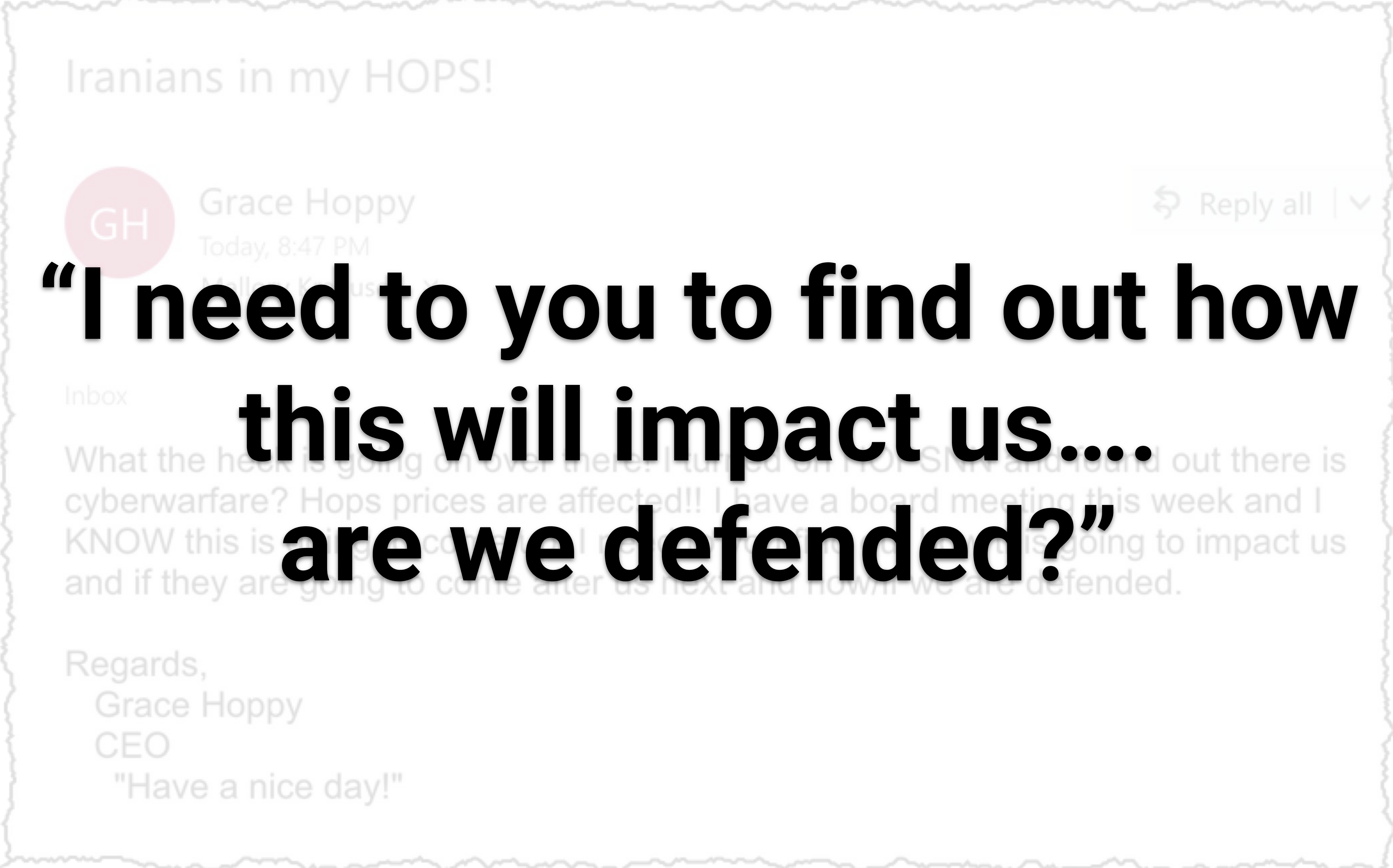
Grace Hoppy
Today, 8:47 PM
Mallory Kraeusen

Inbox

What the heck is going on over there! I turned on HOPSNN and found out there is cyberwarfare? Hops prices are affected!! I have a board meeting this week and I KNOW this is going to come up. I need to you find out how this going to impact us and if they are going to come after us next and how/if we are defended.

Regards,
Grace Hoppy
CEO
"Have a nice day!"

# “I need to you to find out how this will impact us.... are we defended?”



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Mallory K[illegible]

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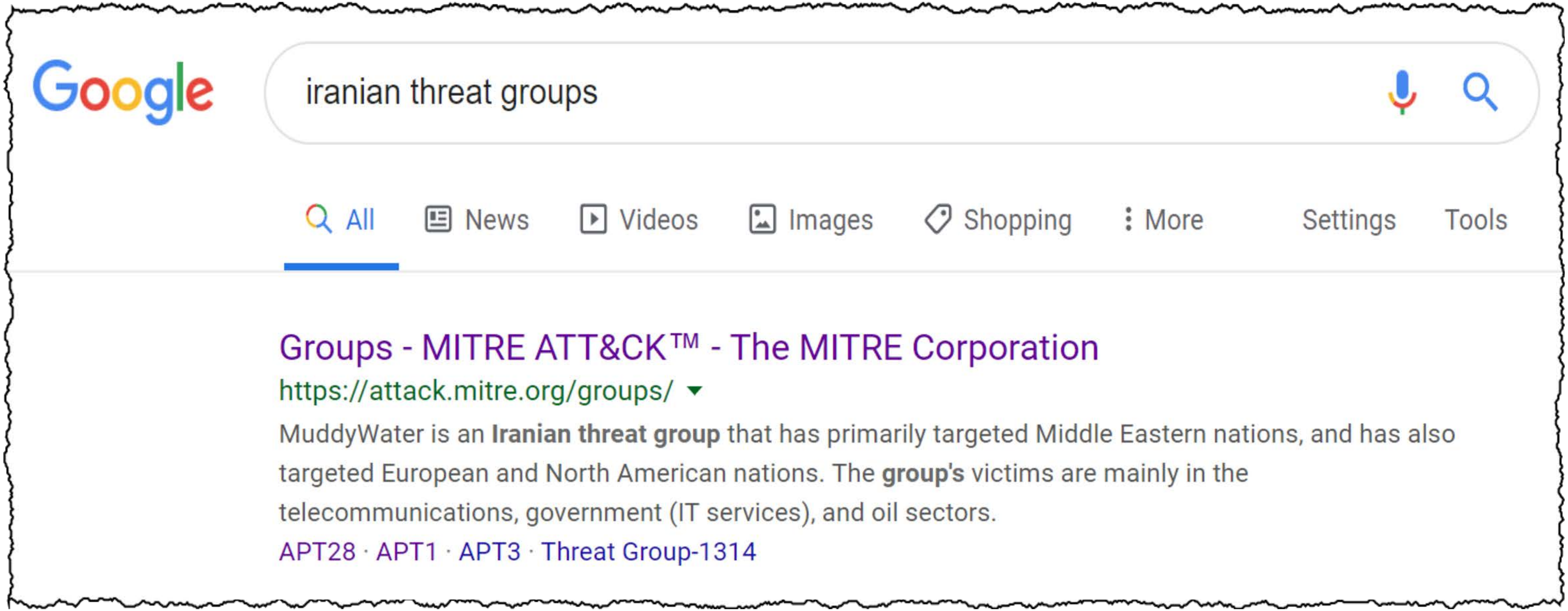
# How does Mallory find info on Iranian groups…

# …and can ATT&CK help?



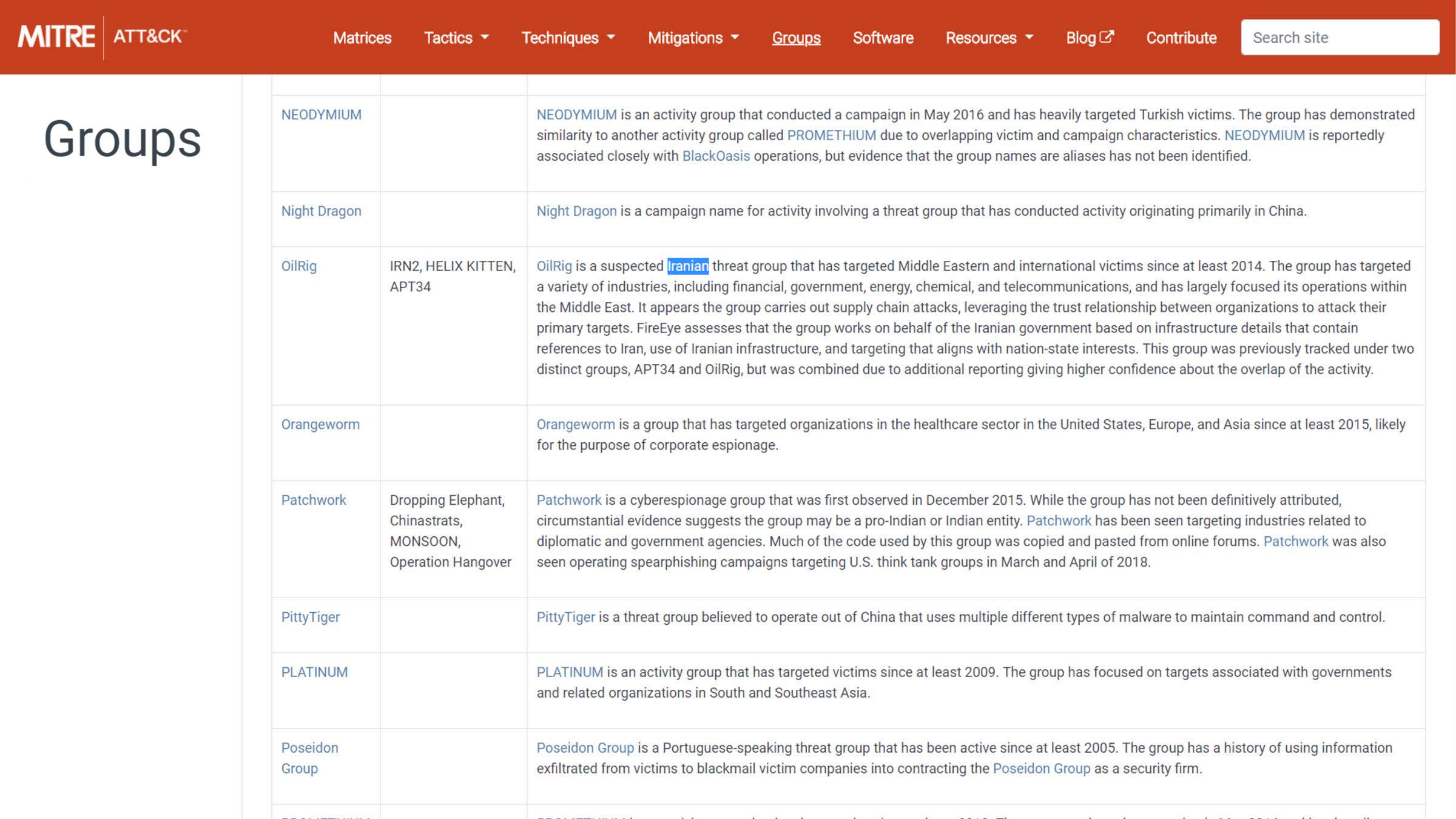
iranian threat groups

Groups - MITRE ATT&CK™ - The MITRE Corporation

https://attack.mitre.org/groups/ ▾

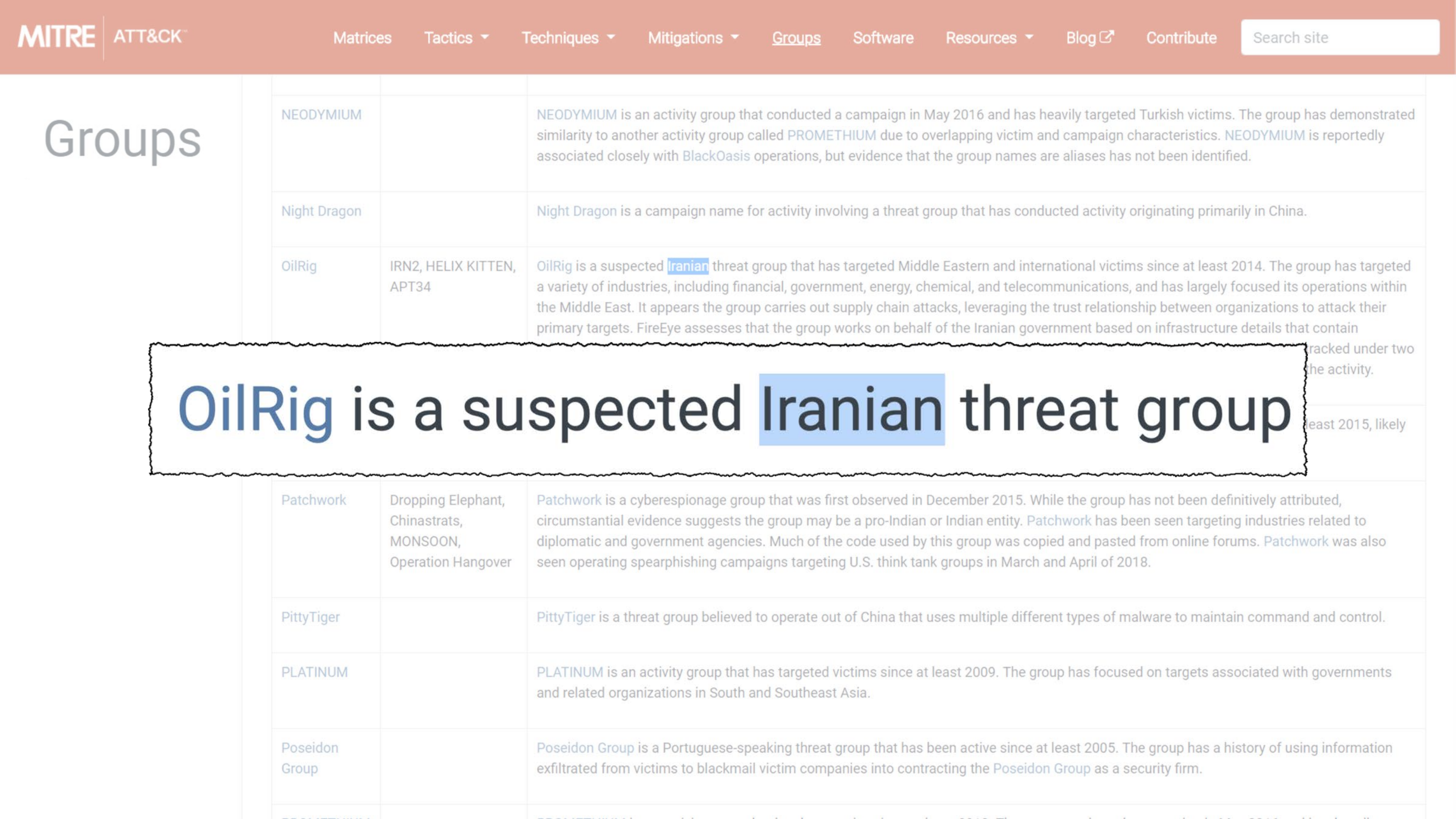
MuddyWater is an **Iranian threat group** that has primarily targeted Middle Eastern nations, and has also targeted European and North American nations. The **group's** victims are mainly in the telecommunications, government (IT services), and oil sectors.

APT28 · APT1 · APT3 · Threat Group-1314



# Groups

| | | |
|---|---|---|
| NEODYMIUM | | NEODYMIUM is an activity group that conducted a campaign in May 2016 and has heavily targeted Turkish victims. The group has demonstrated similarity to another activity group called PROMETHIUM due to overlapping victim and campaign characteristics. NEODYMIUM is reportedly associated closely with BlackOasis operations, but evidence that the group names are aliases has not been identified. |
| Night Dragon | | Night Dragon is a campaign name for activity involving a threat group that has conducted activity originating primarily in China. |
| OilRig | IRN2, HELIX KITTEN, APT34 | OilRig is a suspected Iranian threat group that has targeted Middle Eastern and international victims since at least 2014. The group has targeted a variety of industries, including financial, government, energy, chemical, and telecommunications, and has largely focused its operations within the Middle East. It appears the group carries out supply chain attacks, leveraging the trust relationship between organizations to attack their primary targets. FireEye assesses that the group works on behalf of the Iranian government based on infrastructure details that contain references to Iran, use of Iranian infrastructure, and targeting that aligns with nation-state interests. This group was previously tracked under two distinct groups, APT34 and OilRig, but was combined due to additional reporting giving higher confidence about the overlap of the activity. |
| Orangeworm | | Orangeworm is a group that has targeted organizations in the healthcare sector in the United States, Europe, and Asia since at least 2015, likely for the purpose of corporate espionage. |
| Patchwork | Dropping Elephant, Chinastrats, MONSOON, Operation Hangover | Patchwork is a cyberespionage group that was first observed in December 2015. While the group has not been definitively attributed, circumstantial evidence suggests the group may be a pro-Indian or Indian entity. Patchwork has been seen targeting industries related to diplomatic and government agencies. Much of the code used by this group was copied and pasted from online forums. Patchwork was also seen operating spearphishing campaigns targeting U.S. think tank groups in March and April of 2018. |
| PittyTiger | | PittyTiger is a threat group believed to operate out of China that uses multiple different types of malware to maintain command and control. |
| PLATINUM | | PLATINUM is an activity group that has targeted victims since at least 2009. The group has focused on targets associated with governments and related organizations in South and Southeast Asia. |
| Poseidon Group | | Poseidon Group is a Portuguese-speaking threat group that has been active since at least 2005. The group has a history of using information exfiltrated from victims to blackmail victim companies into contracting the Poseidon Group as a security firm. |



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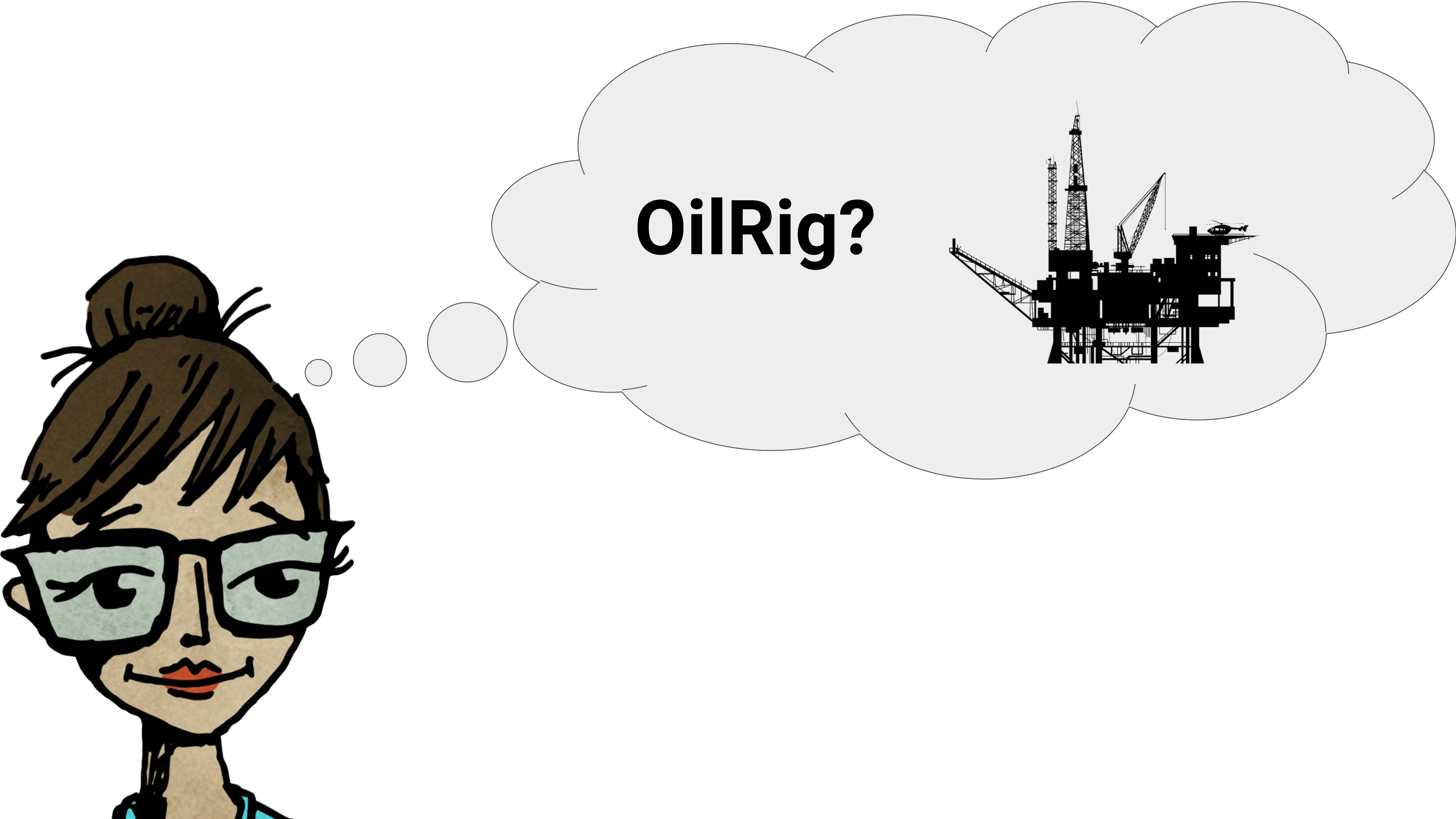
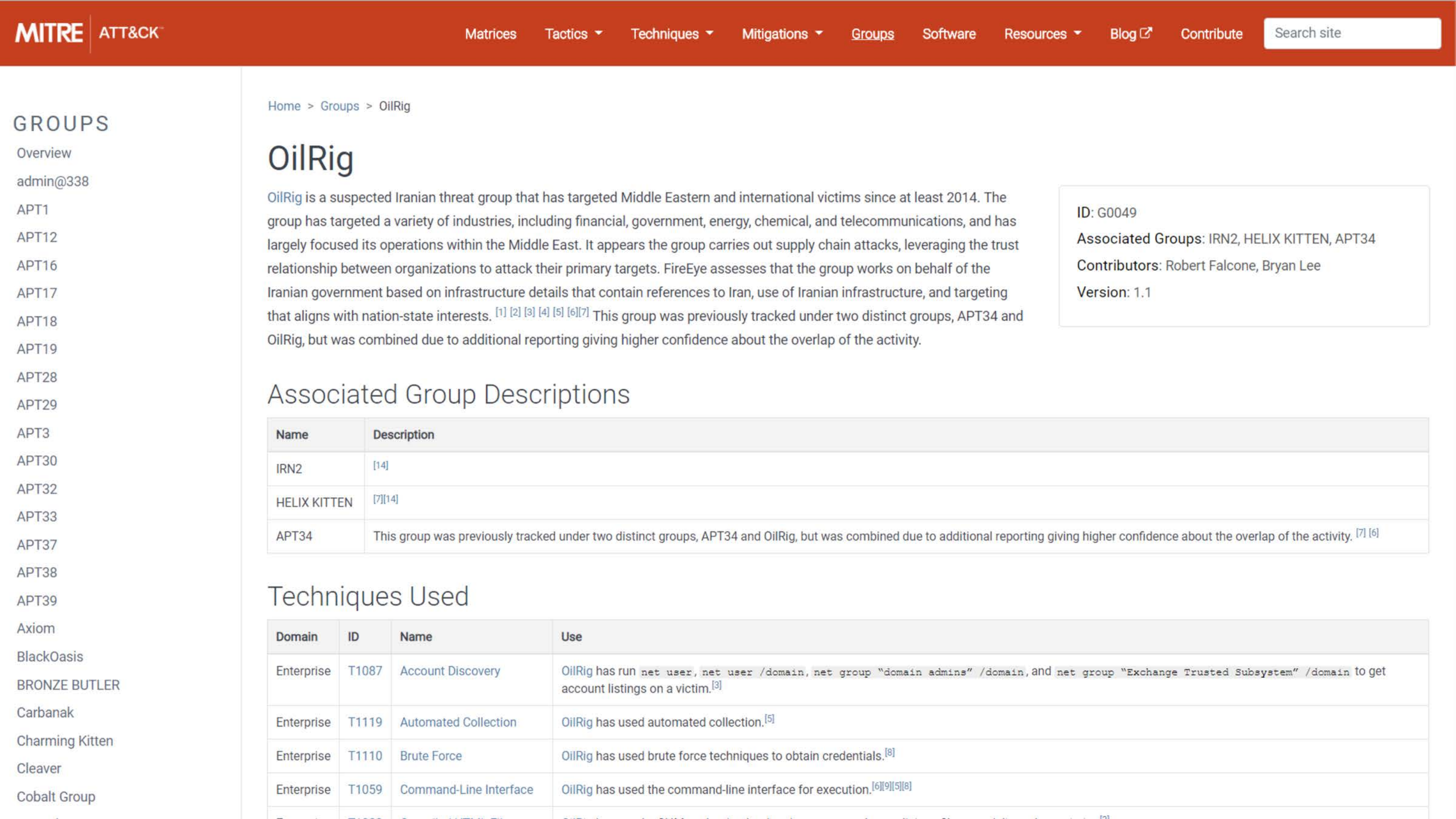
OilRig is a suspected Iranian threat group



OilRig?



Home > Groups > OilRig

# OilRig

OilRig is a suspected Iranian threat group that has targeted Middle Eastern and international victims since at least 2014. The group has targeted a variety of industries, including financial, government, energy, chemical, and telecommunications, and has largely focused its operations within the Middle East. It appears the group carries out supply chain attacks, leveraging the trust relationship between organizations to attack their primary targets. FireEye assesses that the group works on behalf of the Iranian government based on infrastructure details that contain references to Iran, use of Iranian infrastructure, and targeting that aligns with nation-state interests. [1] [2] [3] [4] [5] [6][7] This group was previously tracked under two distinct groups, APT34 and OilRig, but was combined due to additional reporting giving higher confidence about the overlap of the activity.

ID: G0049

Associated Groups: IRN2, HELIX KITTEN, APT34

Contributors: Robert Falcone, Bryan Lee

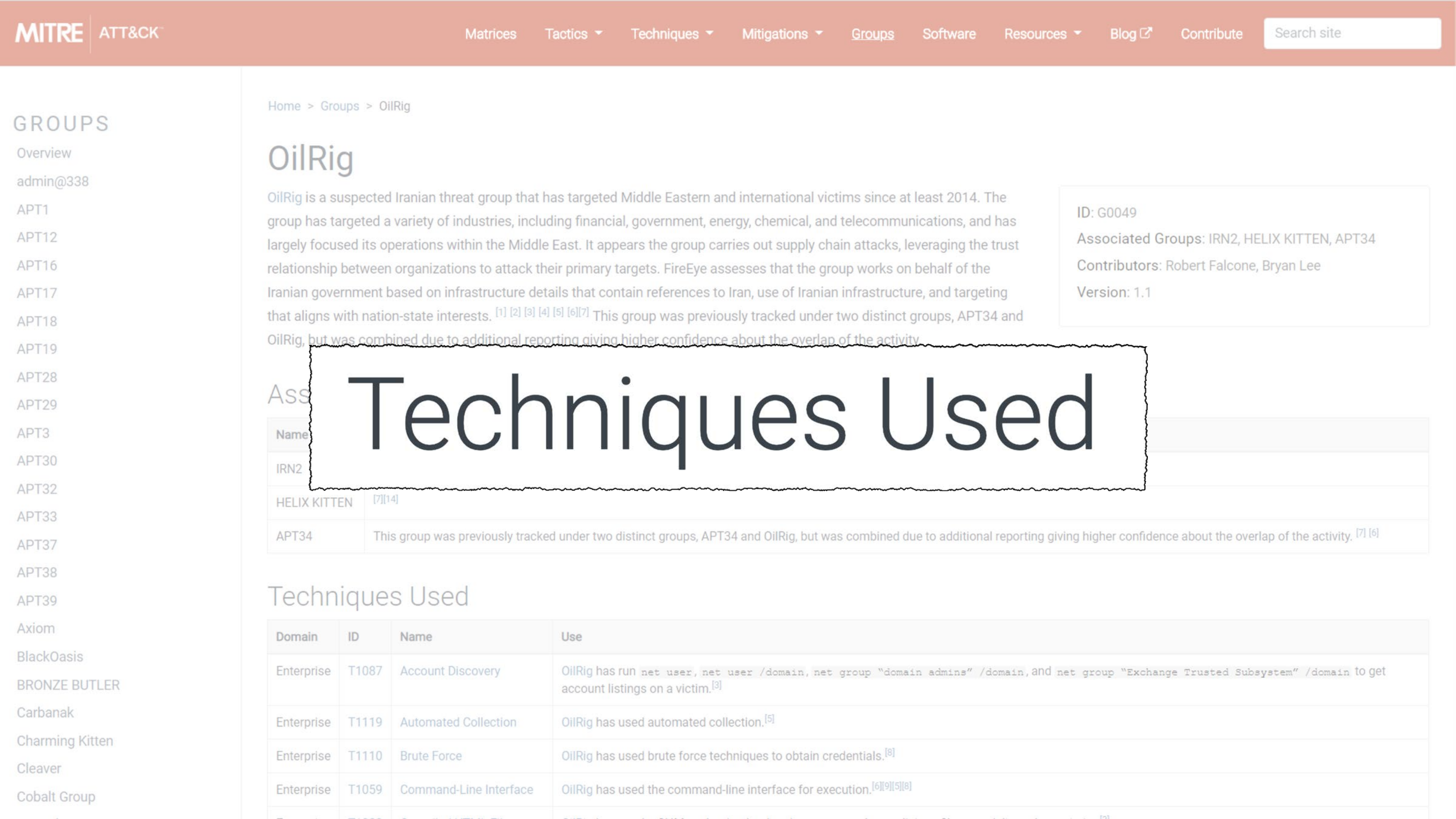
Version: 1.1

## Associated Group Descriptions

| Name | Description |
|---|---|
| IRN2 | [14] |
| HELIX KITTEN | [7][14] |
| APT34 | This group was previously tracked under two distinct groups, APT34 and OilRig, but was combined due to additional reporting giving higher confidence about the overlap of the activity. [7] [6] |

## Techniques Used

| Domain | ID | Name | Use |
|---|---|---|---|
| Enterprise | T1087 | Account Discovery | OilRig has run `net user`, `net user /domain`, `net group “domain admins” /domain`, and `net group “Exchange Trusted Subsystem” /domain` to get account listings on a victim.[3] |
| Enterprise | T1119 | Automated Collection | OilRig has used automated collection.[5] |
| Enterprise | T1110 | Brute Force | OilRig has used brute force techniques to obtain credentials.[8] |
| Enterprise | T1059 | Command-Line Interface | OilRig has used the command-line interface for execution.[6][9][5][8] |



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Home > Groups > OilRig

# OilRig

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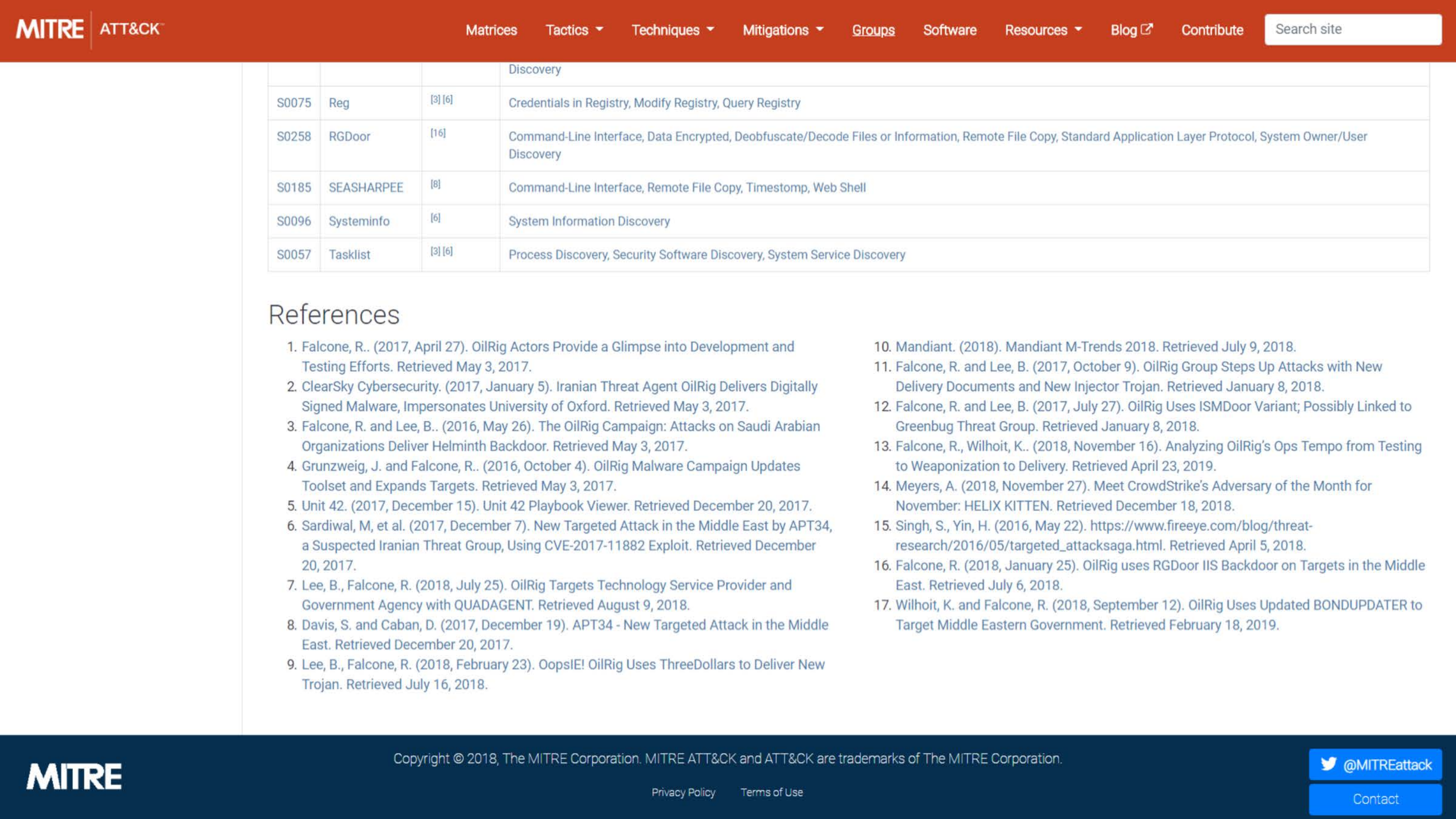
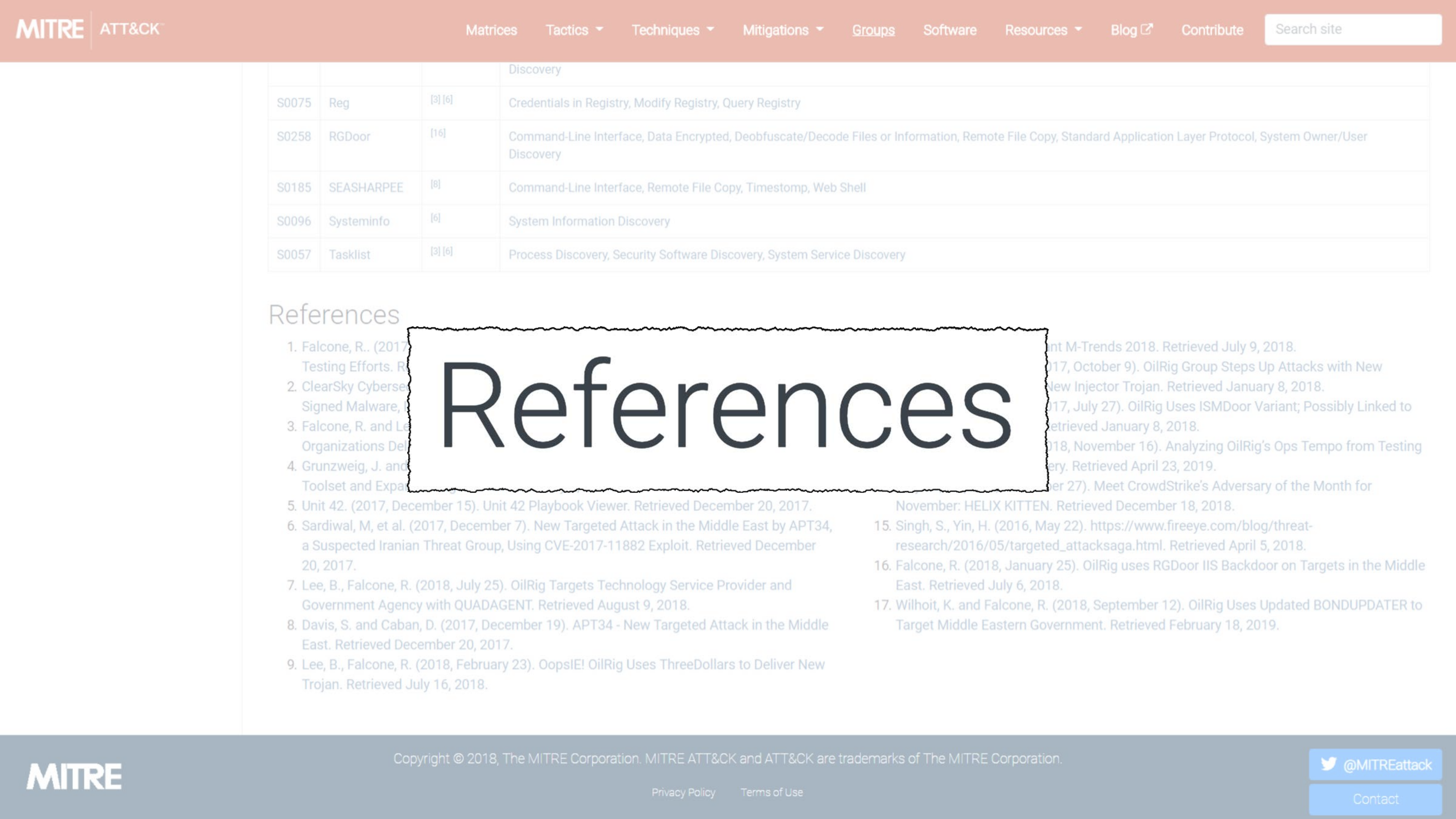


| | | | |
|---|---|---|---|
| | | | Discovery |
| S0075 | Reg | [3] [6] | Credentials in Registry, Modify Registry, Query Registry |
| S0258 | RGDoor | [16] | Command-Line Interface, Data Encrypted, Deobfuscate/Decode Files or Information, Remote File Copy, Standard Application Layer Protocol, System Owner/User Discovery |
| S0185 | SEASHARPEE | [8] | Command-Line Interface, Remote File Copy, Timestomp, Web Shell |
| S0096 | Systeminfo | [6] | System Information Discovery |
| S0057 | Tasklist | [3] [6] | Process Discovery, Security Software Discovery, System Service Discovery |

## References

1. Falcone, R.. (2017, April 27). OilRig Actors Provide a Glimpse into Development and Testing Efforts. Retrieved May 3, 2017.
2. ClearSky Cybersecurity. (2017, January 5). Iranian Threat Agent OilRig Delivers Digitally Signed Malware, Impersonates University of Oxford. Retrieved May 3, 2017.
3. Falcone, R. and Lee, B.. (2016, May 26). The OilRig Campaign: Attacks on Saudi Arabian Organizations Deliver Helminth Backdoor. Retrieved May 3, 2017.
4. Grunzweig, J. and Falcone, R.. (2016, October 4). OilRig Malware Campaign Updates Toolset and Expands Targets. Retrieved May 3, 2017.
5. Unit 42. (2017, December 15). Unit 42 Playbook Viewer. Retrieved December 20, 2017.
6. Sardiwal, M, et al. (2017, December 7). New Targeted Attack in the Middle East by APT34, a Suspected Iranian Threat Group, Using CVE-2017-11882 Exploit. Retrieved December 20, 2017.
7. Lee, B., Falcone, R. (2018, July 25). OilRig Targets Technology Service Provider and Government Agency with QUADAGENT. Retrieved August 9, 2018.
8. Davis, S. and Caban, D. (2017, December 19). APT34 - New Targeted Attack in the Middle East. Retrieved December 20, 2017.
9. Lee, B., Falcone, R. (2018, February 23). OopsIE! OilRig Uses ThreeDollars to Deliver New Trojan. Retrieved July 16, 2018.
10. Mandiant. (2018). Mandiant M-Trends 2018. Retrieved July 9, 2018.
11. Falcone, R. and Lee, B. (2017, October 9). OilRig Group Steps Up Attacks with New Delivery Documents and New Injector Trojan. Retrieved January 8, 2018.
12. Falcone, R. and Lee, B. (2017, July 27). OilRig Uses ISMDoor Variant; Possibly Linked to Greenbug Threat Group. Retrieved January 8, 2018.
13. Falcone, R., Wilhoit, K.. (2018, November 16). Analyzing OilRig's Ops Tempo from Testing to Weaponization to Delivery. Retrieved April 23, 2019.
14. Meyers, A. (2018, November 27). Meet CrowdStrike's Adversary of the Month for November: HELIX KITTEN. Retrieved December 18, 2018.
15. Singh, S., Yin, H. (2016, May 22). https://www.fireeye.com/blog/threat-research/2016/05/targeted_attacksaga.html. Retrieved April 5, 2018.
16. Falcone, R. (2018, January 25). OilRig uses RGDoor IIS Backdoor on Targets in the Middle East. Retrieved July 6, 2018.
17. Wilhoit, K. and Falcone, R. (2018, September 12). OilRig Uses Updated BONDUPDATER to Target Middle Eastern Government. Retrieved February 18, 2019.



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| S0057 | Tasklist | [3] [6] | Process Discovery, Security Software Discovery, System Service Discovery |

## References

# References

1. Falcone, R.. (2017
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2. ClearSky Cyberse
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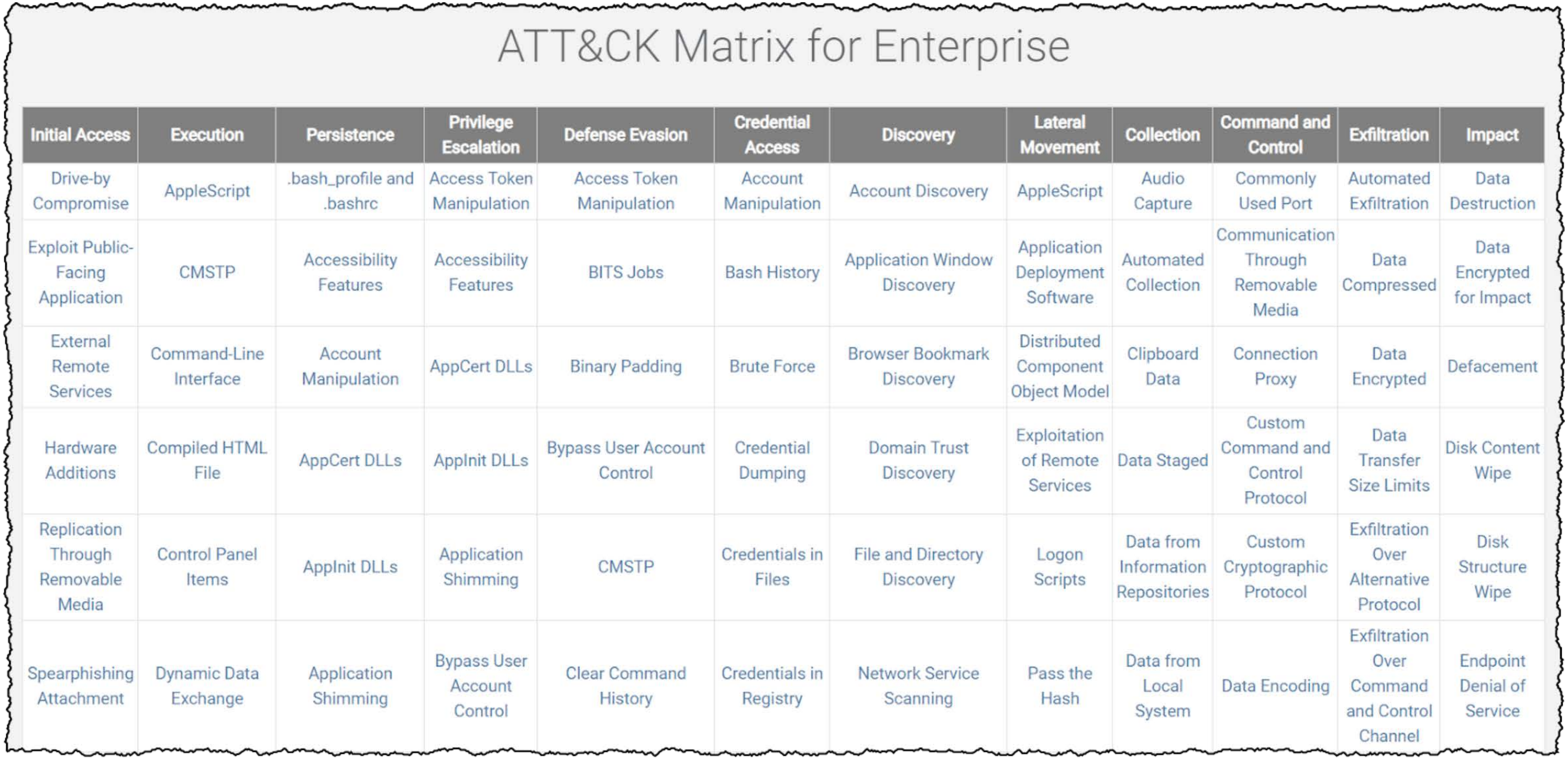
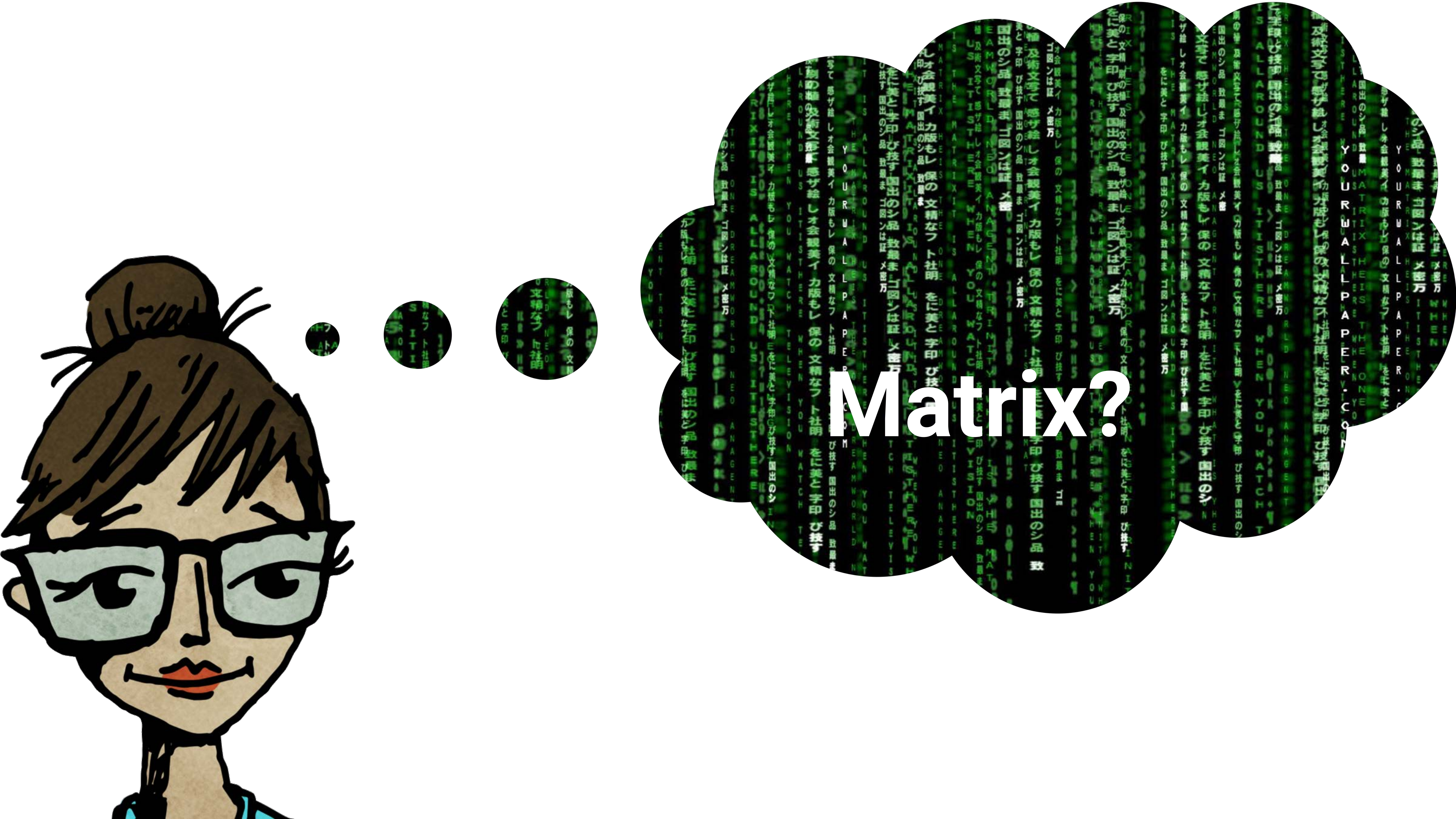
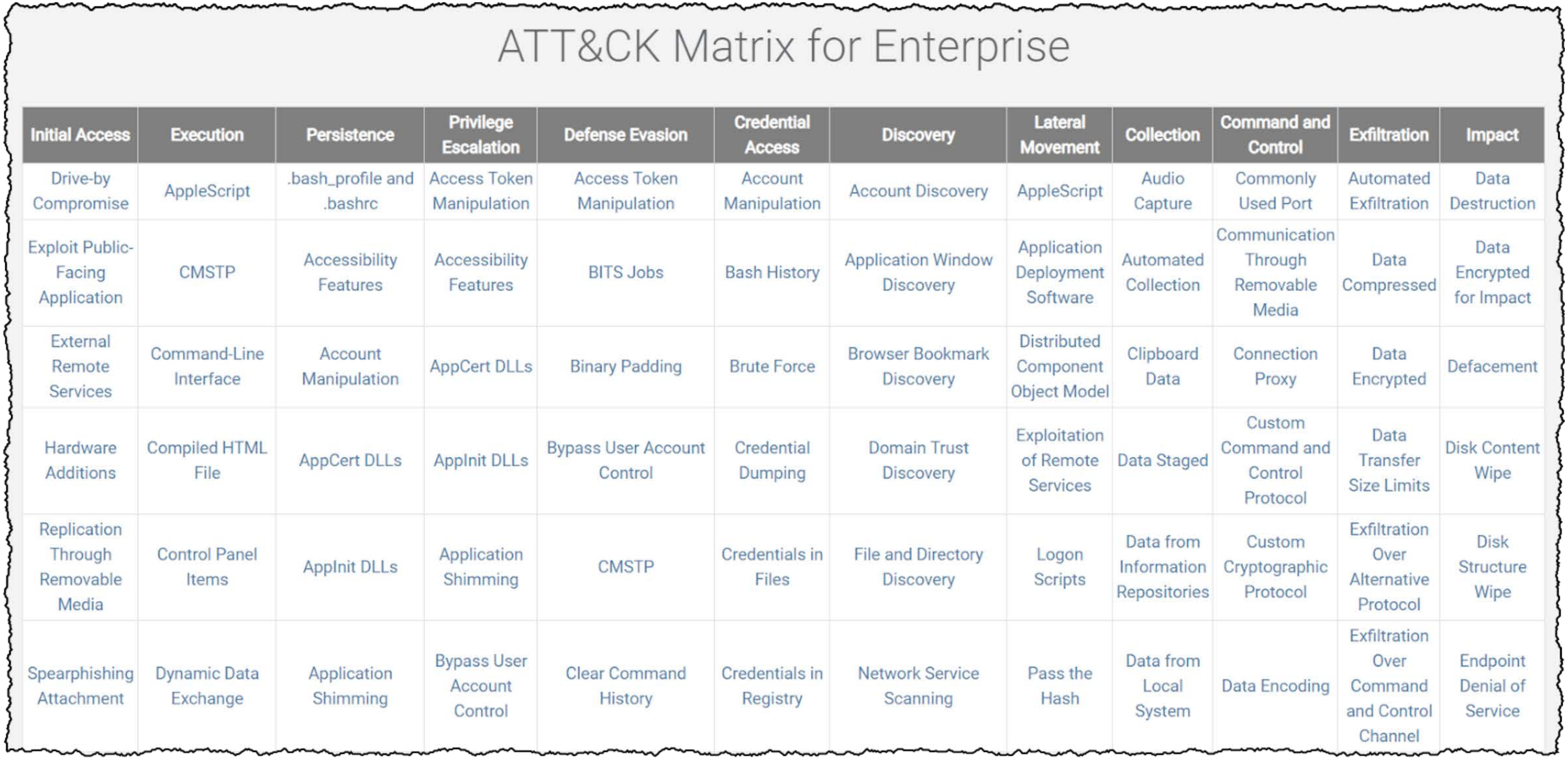


# ATT&CK Matrix for Enterprise

| Initial Access | Execution | Persistence | Privilege Escalation | Defense Evasion | Credential Access | Discovery | Lateral Movement | Collection | Command and Control | Exfiltration | Impact |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Drive-by Compromise | AppleScript | .bash_profile and .bashrc | Access Token Manipulation | Access Token Manipulation | Account Manipulation | Account Discovery | AppleScript | Audio Capture | Commonly Used Port | Automated Exfiltration | Data Destruction |
| Exploit Public-Facing Application | CMSTP | Accessibility Features | Accessibility Features | BITS Jobs | Bash History | Application Window Discovery | Application Deployment Software | Automated Collection | Communication Through Removable Media | Data Compressed | Data Encrypted for Impact |
| External Remote Services | Command-Line Interface | Account Manipulation | AppCert DLLs | Binary Padding | Brute Force | Browser Bookmark Discovery | Distributed Component Object Model | Clipboard Data | Connection Proxy | Data Encrypted | Defacement |
| Hardware Additions | Compiled HTML File | AppCert DLLs | AppInit DLLs | Bypass User Account Control | Credential Dumping | Domain Trust Discovery | Exploitation of Remote Services | Data Staged | Custom Command and Control Protocol | Data Transfer Size Limits | Disk Content Wipe |
| Replication Through Removable Media | Control Panel Items | AppInit DLLs | Application Shimming | CMSTP | Credentials in Files | File and Directory Discovery | Logon Scripts | Data from Information Repositories | Custom Cryptographic Protocol | Exfiltration Over Alternative Protocol | Disk Structure Wipe |
| Spearphishing Attachment | Dynamic Data Exchange | Application Shimming | Bypass User Account Control | Clear Command History | Credentials in Registry | Network Service Scanning | Pass the Hash | Data from Local System | Data Encoding | Exfiltration Over Command and Control Channel | Endpoint Denial of Service |



Matrix?



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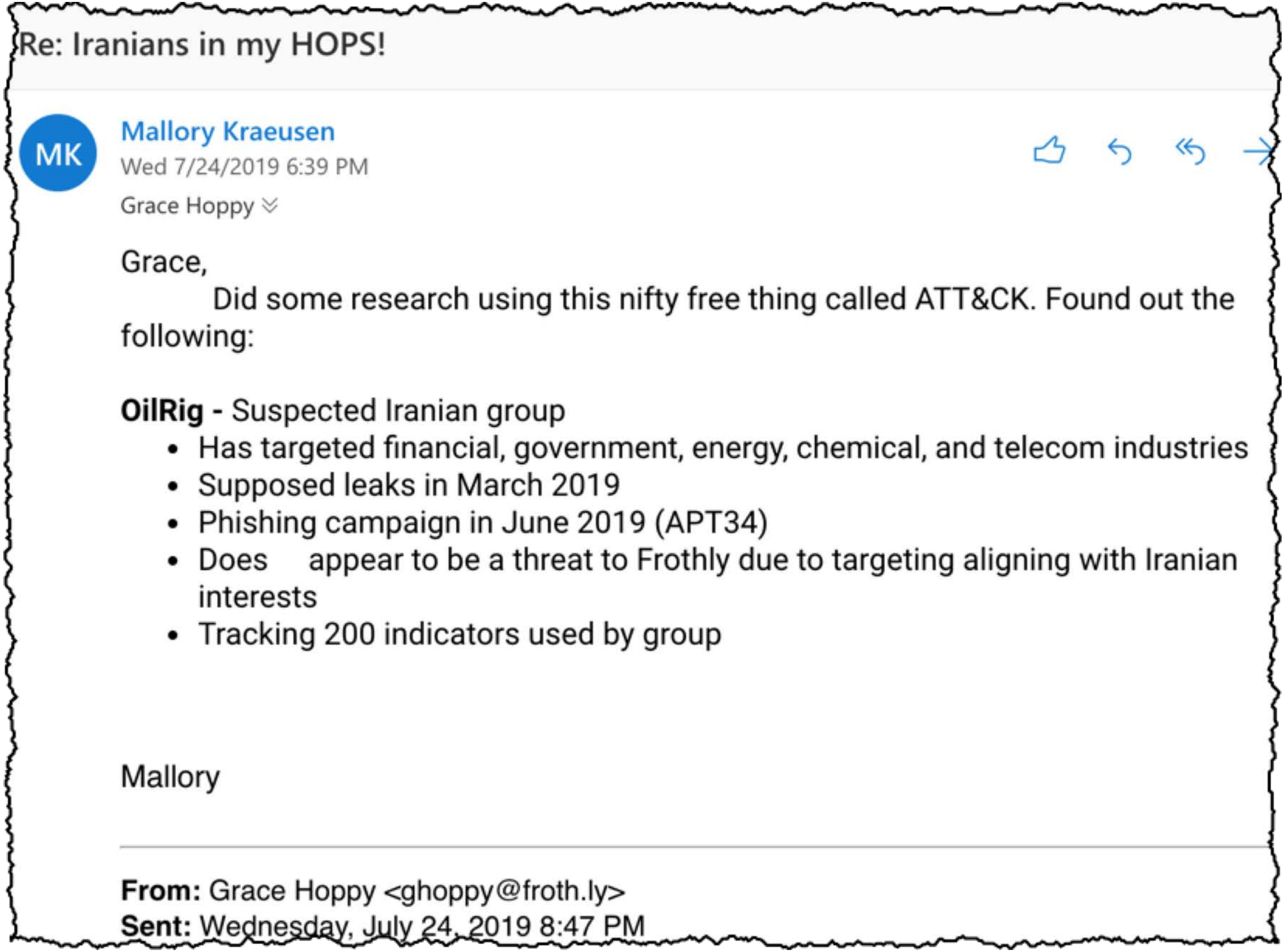


Re: Iranians in my HOPS!

Mallory Kraeusen
Wed 7/24/2019 6:39 PM
Grace Hoppy

Grace,

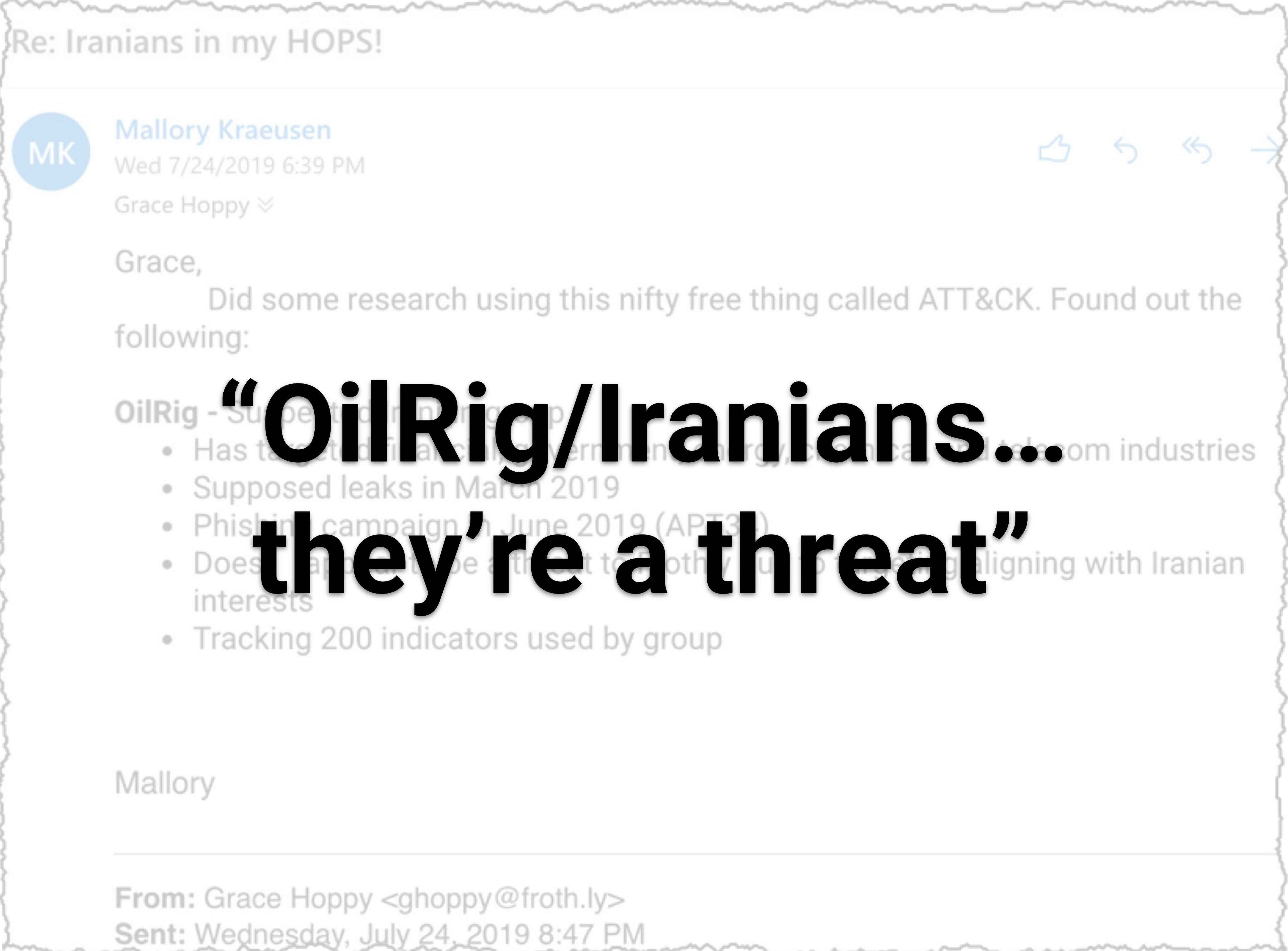
Did some research using this nifty free thing called ATT&CK. Found out the following:

**OilRig -** Suspected Iranian group

- Has targeted financial, government, energy, chemical, and telecom industries
- Supposed leaks in March 2019
- Phishing campaign in June 2019 (APT34)
- Does appear to be a threat to Frothly due to targeting aligning with Iranian interests
- Tracking 200 indicators used by group

Mallory

**From:** Grace Hoppy <ghoppy@froth.ly>
**Sent:** Wednesday, July 24, 2019 8:47 PM



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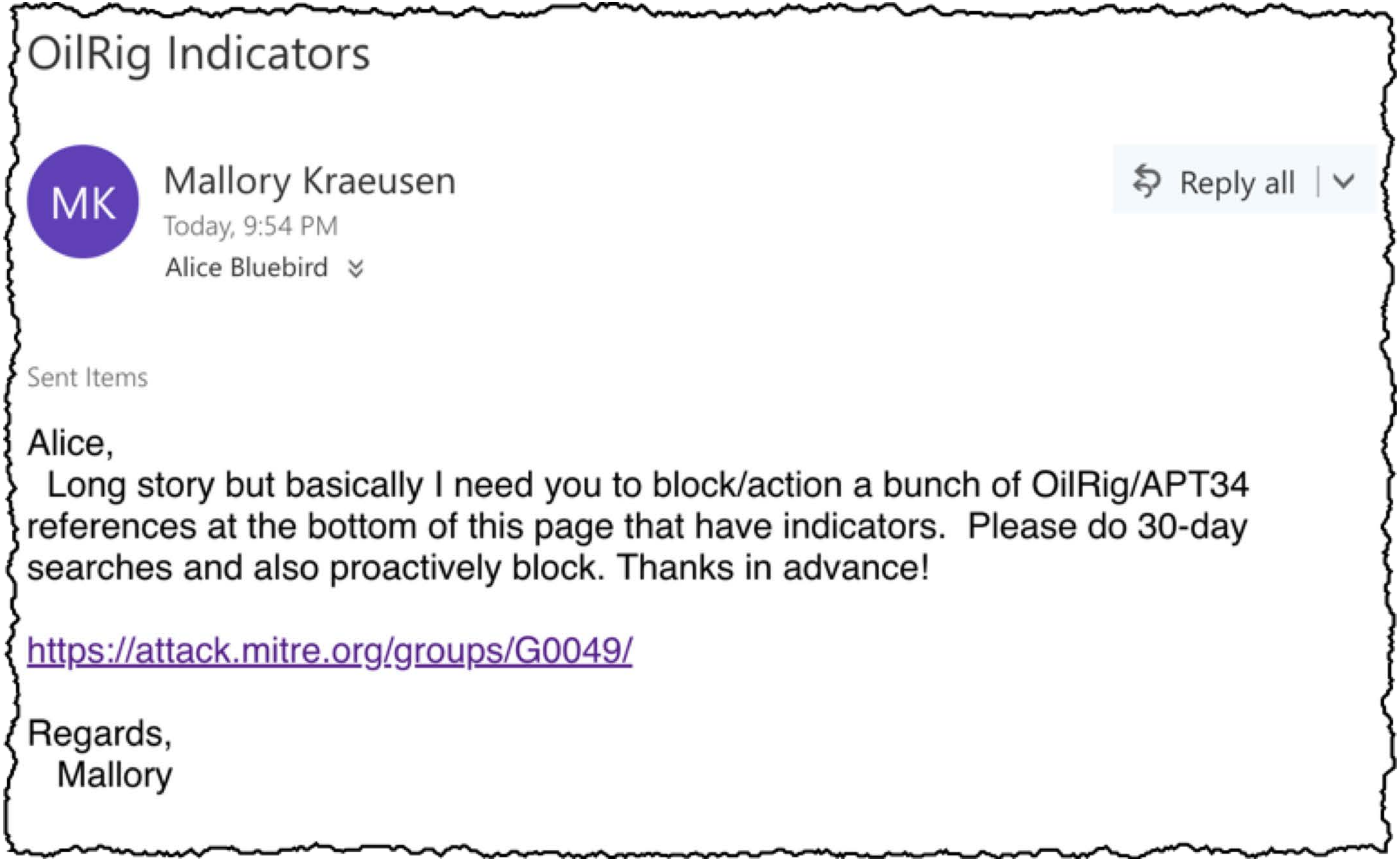
- Supposed leaks in March 2019
- Phishing campaign in June 2019 (APT34)
- Does appear to be a threat to Frothly [illegible] aligning with Iranian interests
- Tracking 200 indicators used by group

Mallory

**From:** Grace Hoppy <ghoppy@froth.ly>
**Sent:** Wednesday, July 24, 2019 8:47 PM

# "OilRig/Iranians… they're a threat"



OilRig Indicators

Mallory Kraeusen

Today, 9:54 PM

Alice Bluebird

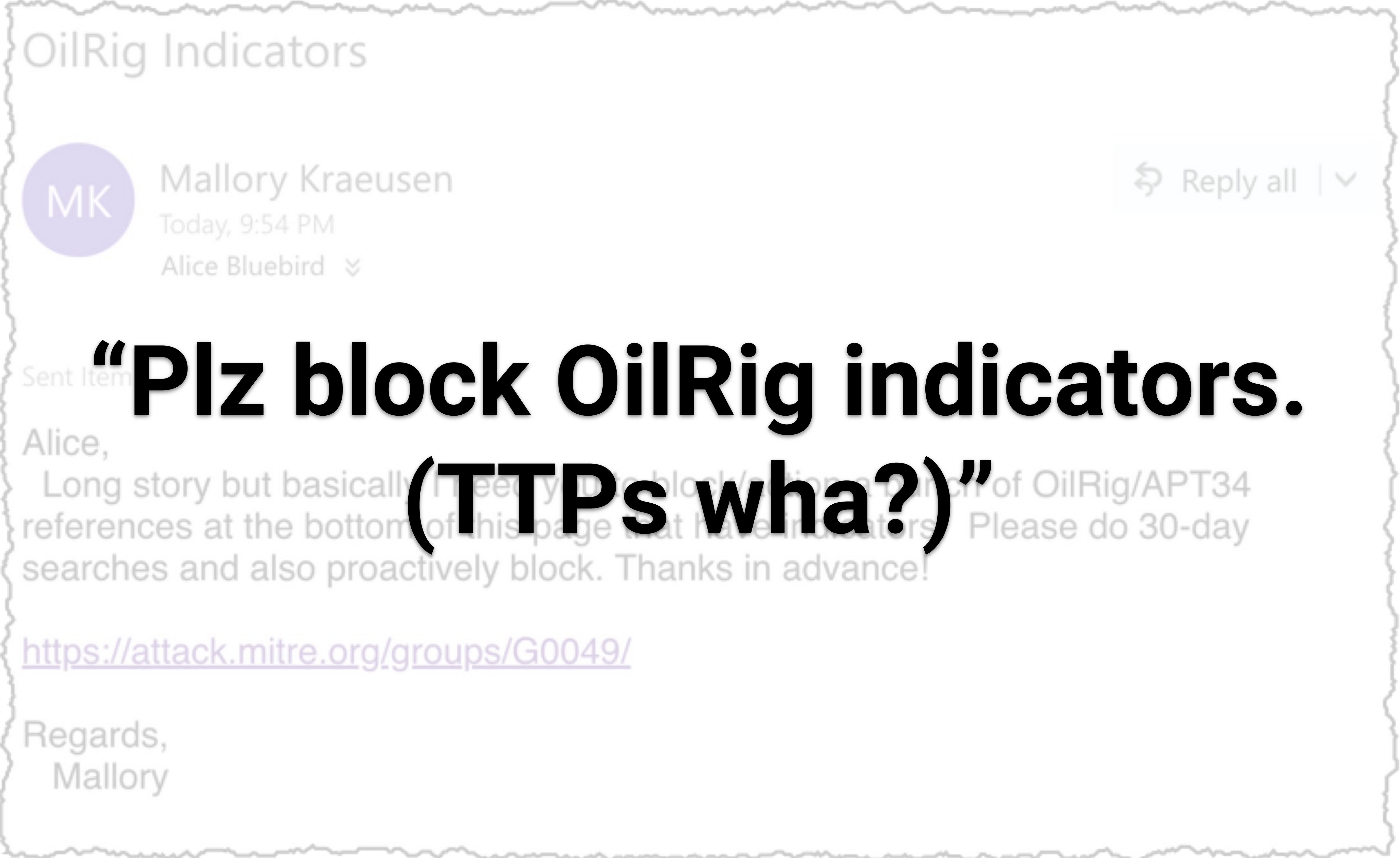
Sent Items

Alice,
  Long story but basically I need you to block/action a bunch of OilRig/APT34 references at the bottom of this page that have indicators.  Please do 30-day searches and also proactively block. Thanks in advance!

https://attack.mitre.org/groups/G0049/

Regards,
   Mallory

# “Plz block OilRig indicators. (TTPs wha?)”



OilRig Indicators

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Alice Bluebird

Sent Items

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Long story but basically I need you to block/action a bunch of OilRig/APT34 references at the bottom of this page that have indicators. Please do 30-day searches and also proactively block. Thanks in advance!

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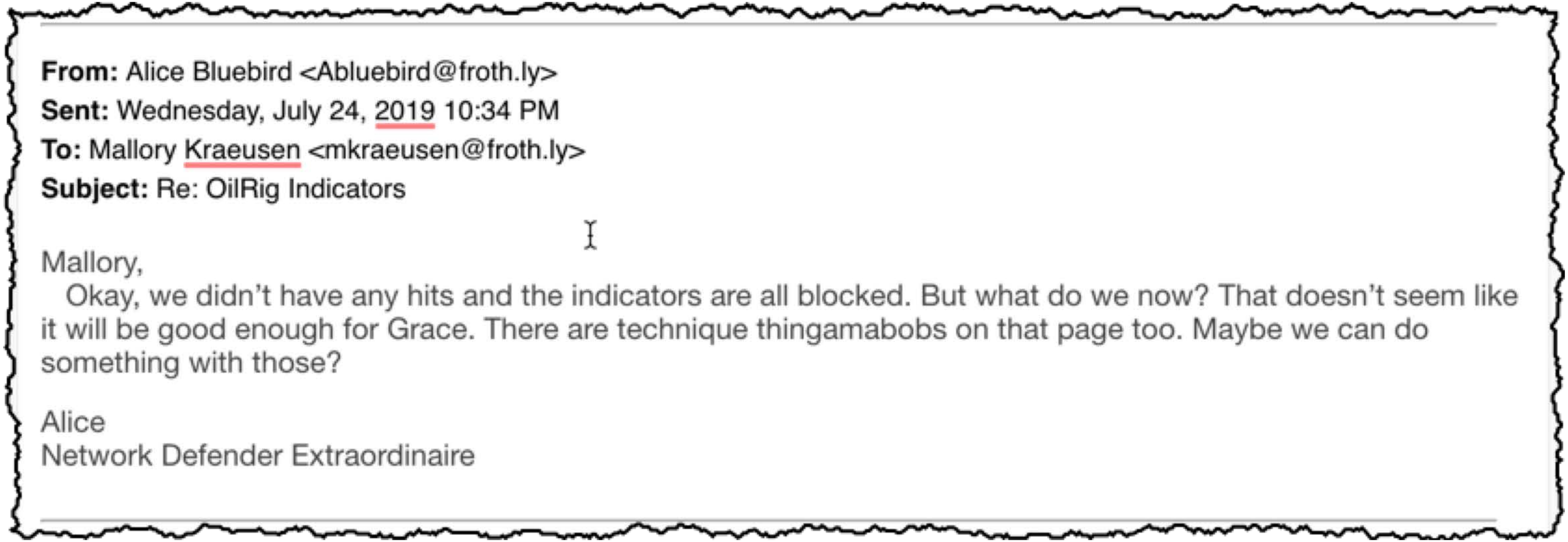


**From:** Alice Bluebird <Abluebird@froth.ly>
**Sent:** Wednesday, July 24, 2019 10:34 PM
**To:** Mallory Kraeusen <mkraeusen@froth.ly>
**Subject:** Re: OilRig Indicators

Mallory,
Okay, we didn’t have any hits and the indicators are all blocked. But what do we now? That doesn’t seem like it will be good enough for Grace. There are technique thingamabobs on that page too. Maybe we can do something with those?

Alice
Network Defender Extraordinaire

# “No hits…but what do we do now? What are these techniques?”

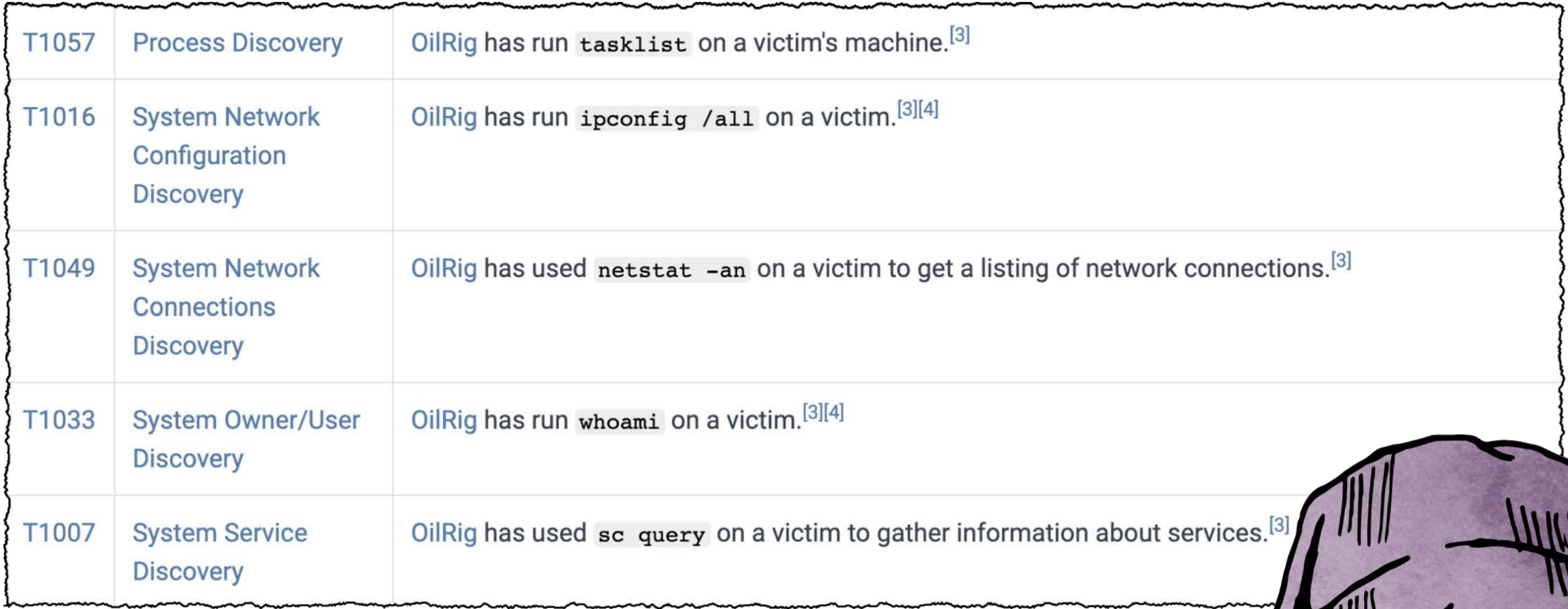
**From:** Alice Bluebird <Abluebird@froth.ly>
**Sent:** Wednesday, July 24, 2019 10:34 PM
**To:** Mallory Kraeusen <mkraeusen@froth.ly>
**[illegible]:** Re: O[illegible]Big [illegible]cators

Mallory,

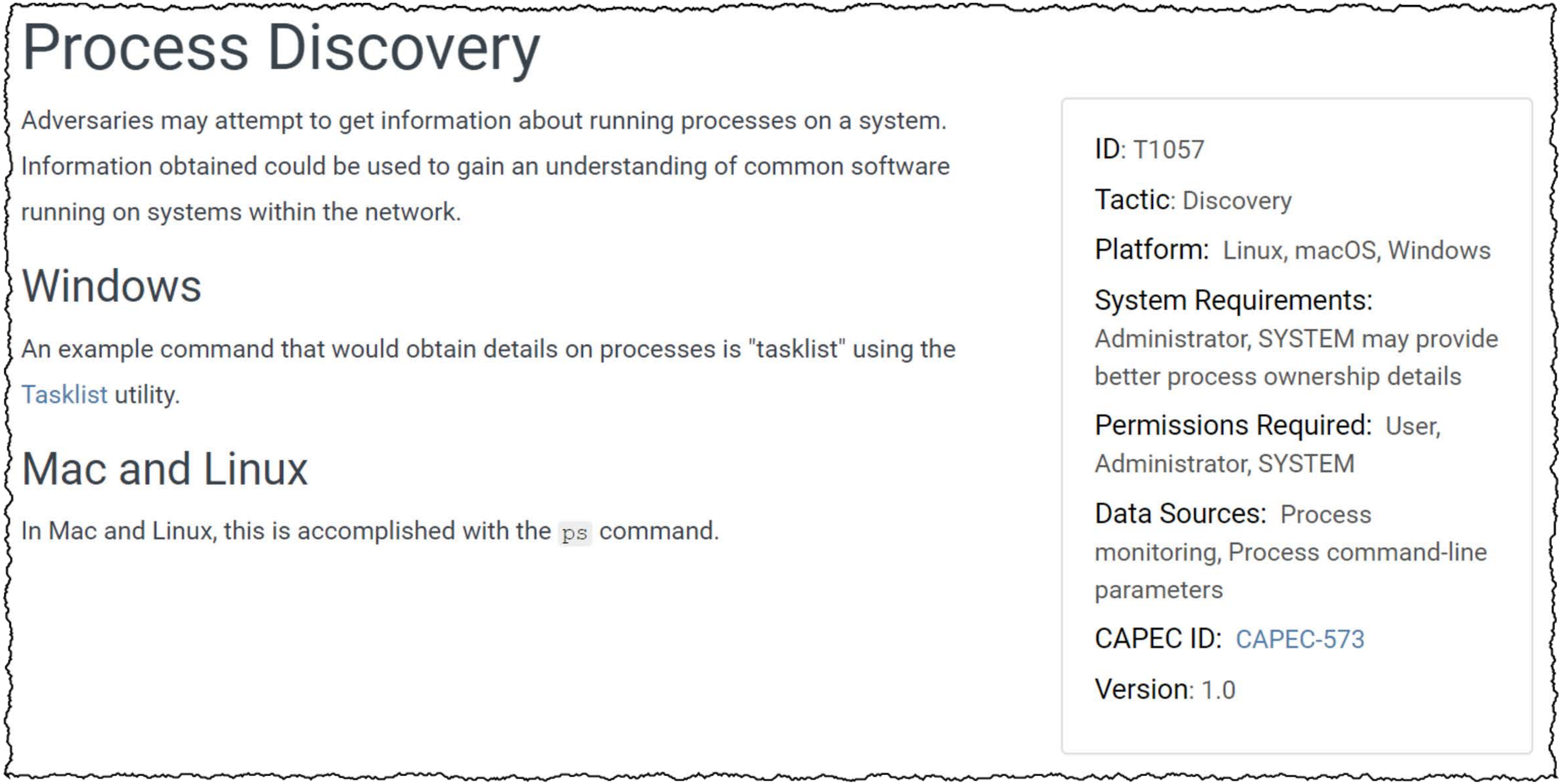
Okay, [illegible]t have any hits and the in[illegible]cators are all bloc[illegible]ked. But [illegible]hat do [illegible]e now? That doe[illegible]em like it will be[illegible] G[illegible]e [illegible] ga[illegible] do something [illegible]

Alice
Network Defender Extraordinaire

# How does Alice stop hoarding indicators and start detecting techniques?



| | | |
|---|---|---|
| T1057 | Process Discovery | OilRig has run `tasklist` on a victim's machine.[3] |
| T1016 | System Network Configuration Discovery | OilRig has run `ipconfig /all` on a victim.[3][4] |
| T1049 | System Network Connections Discovery | OilRig has used `netstat -an` on a victim to get a listing of network connections.[3] |
| T1033 | System Owner/User Discovery | OilRig has run `whoami` on a victim.[3][4] |
| T1007 | System Service Discovery | OilRig has used `sc query` on a victim to gather information about services.[3] |



# Process Discovery

Adversaries may attempt to get information about running processes on a system. Information obtained could be used to gain an understanding of common software running on systems within the network.

## Windows

An example command that would obtain details on processes is "tasklist" using the Tasklist utility.

## Mac and Linux

In Mac and Linux, this is accomplished with the `ps` command.

ID: T1057

Tactic: Discovery

Platform: Linux, macOS, Windows

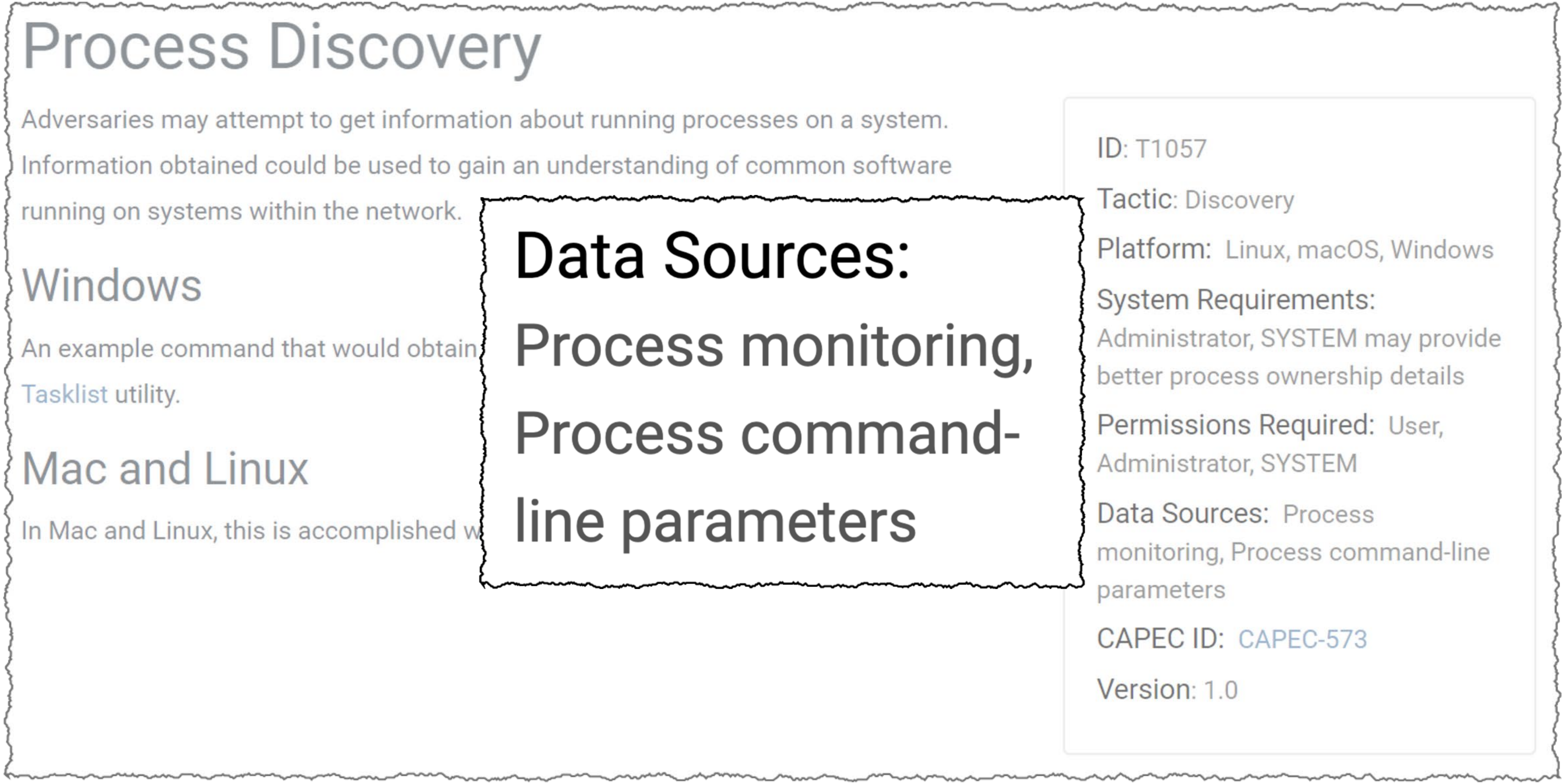
System Requirements: Administrator, SYSTEM may provide better process ownership details

Permissions Required: User, Administrator, SYSTEM

Data Sources: Process monitoring, Process command-line parameters

CAPEC ID: CAPEC-573

Version: 1.0



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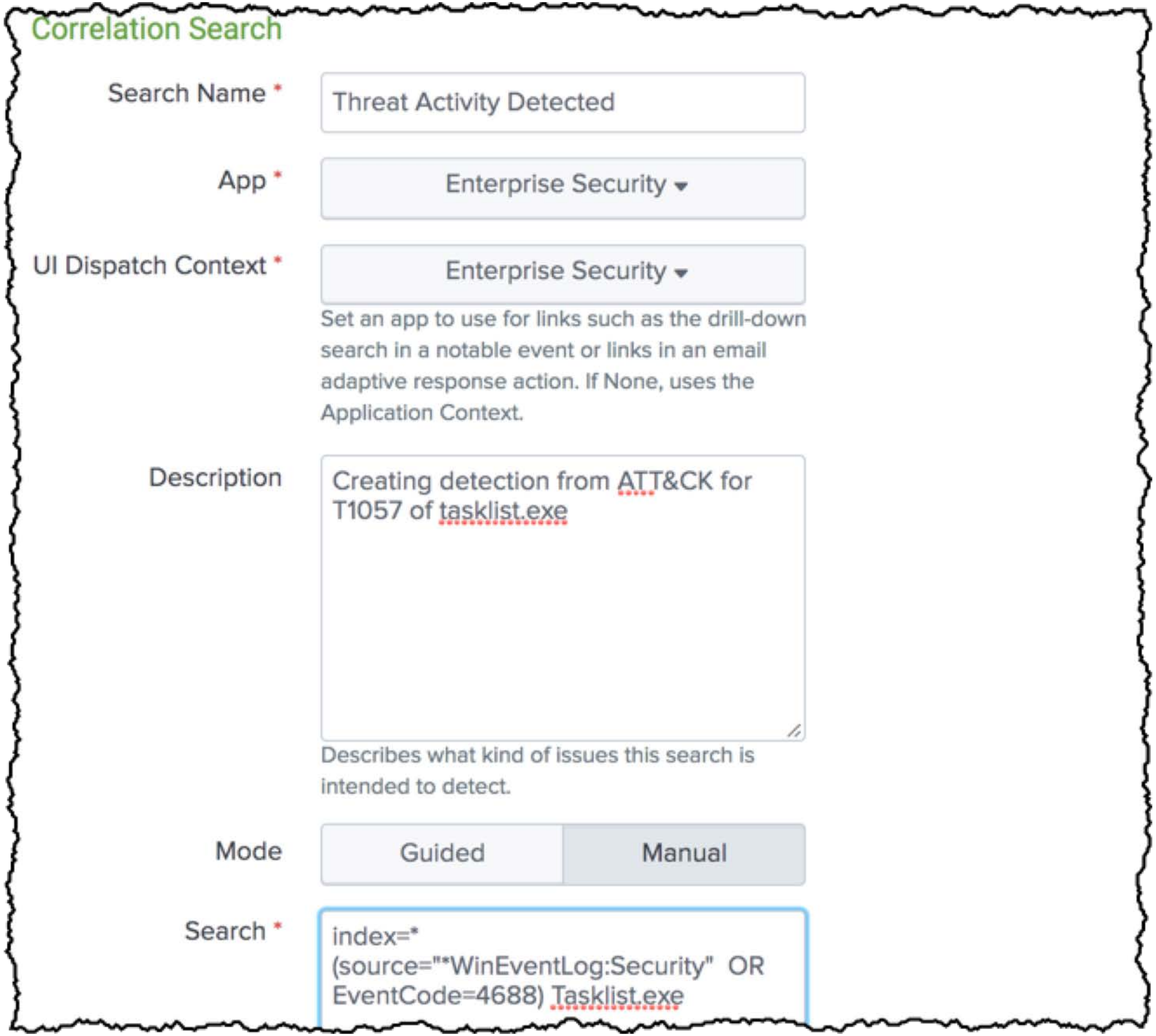


Correlation Search

Search Name * Threat Activity Detected

App * Enterprise Security

UI Dispatch Context * Enterprise Security

Set an app to use for links such as the drill-down search in a notable event or links in an email adaptive response action. If None, uses the Application Context.

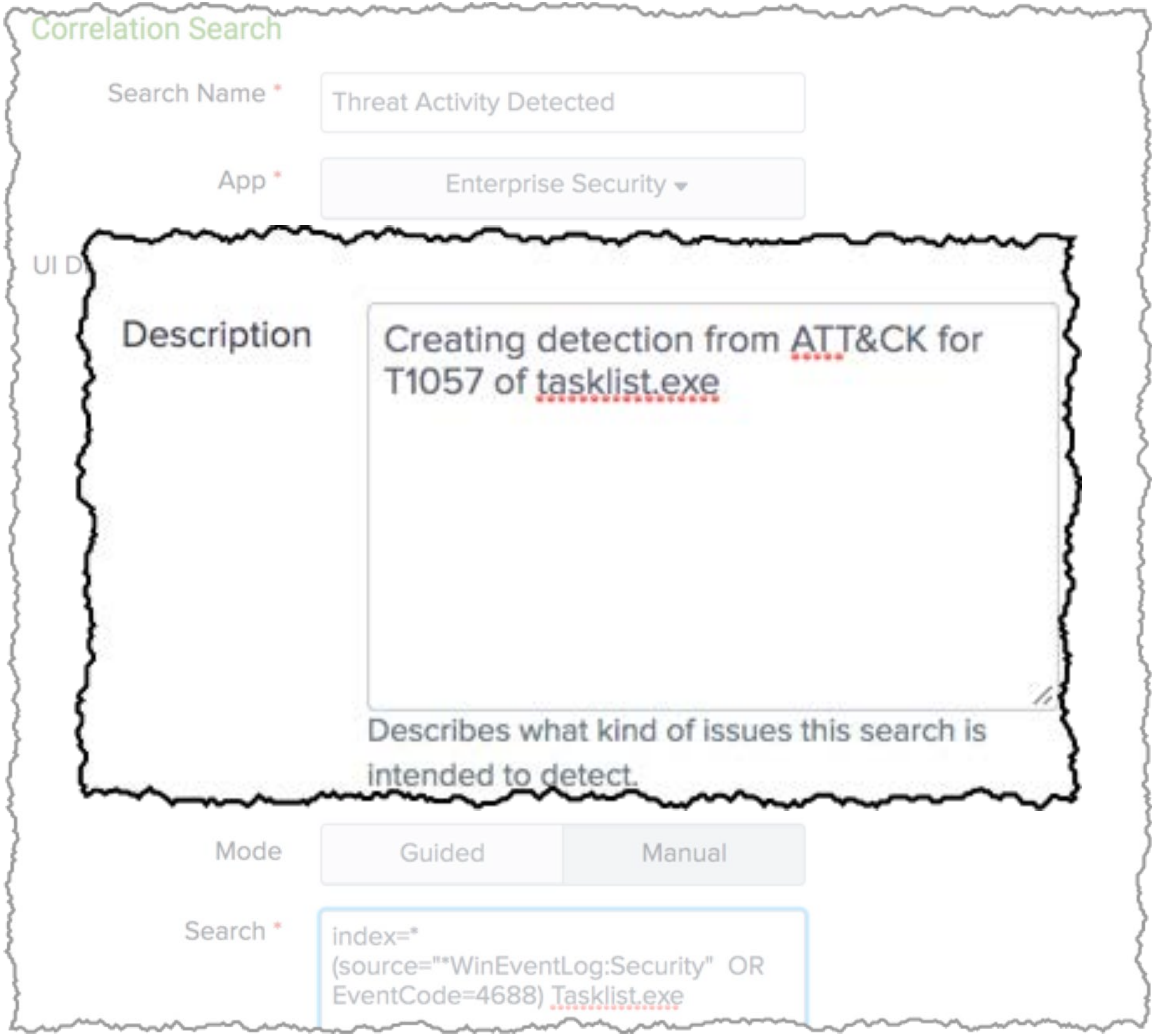
Description: Creating detection from ATT&CK for T1057 of tasklist.exe

Describes what kind of issues this search is intended to detect.

Mode: Guided | Manual

Search *

```
index=*
(source="*WinEventLog:Security"  OR
EventCode=4688) Tasklist.exe
```



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Describes what kind of issues this search is intended to detect.

Mode Guided Manual

Search *

```
index=*
(source="*WinEventLog:Security"  OR
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```
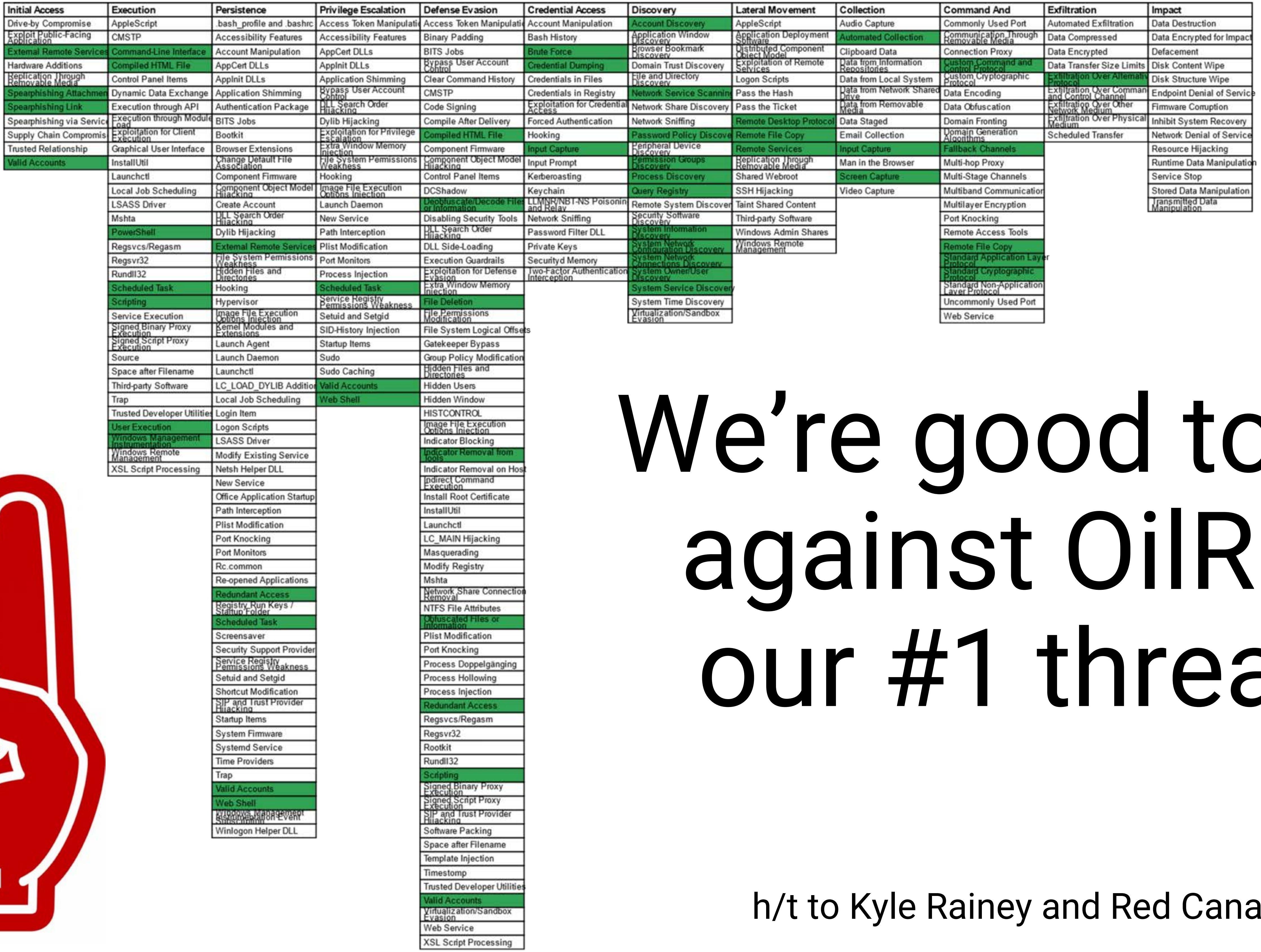

```
>>> Signature = 0
>>> OilRigTechniques = 41
>>> while Signature < OilRigTechniques:
...     print("Write or find more signatures")
...     Signature += 1
... 
```



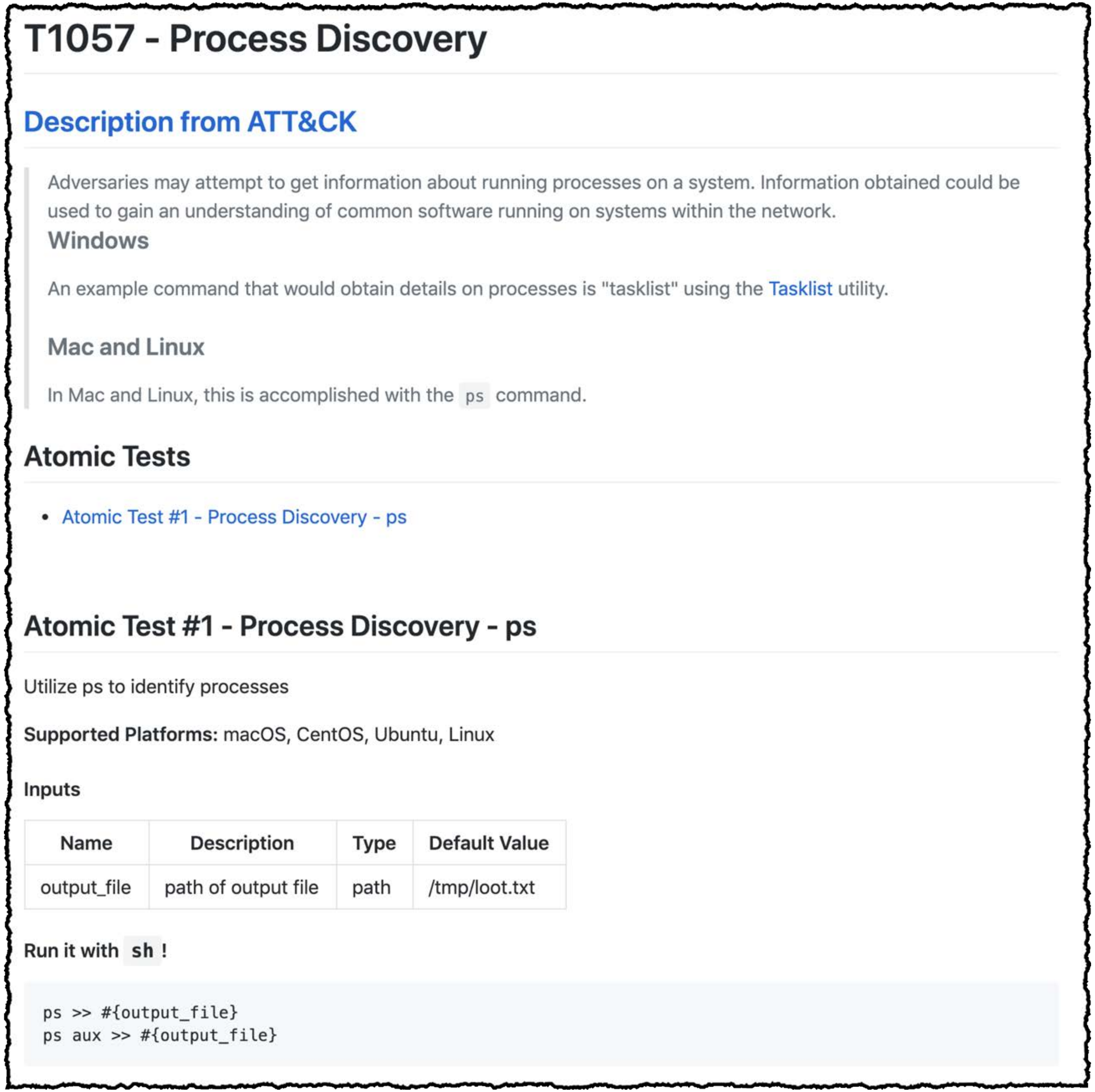
| Initial Access | Execution | Persistence | Privilege Escalation | Defense Evasion | Credential Access | Discovery | Lateral Movement | Collection | Command And | Exfiltration | Impact |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Drive-by Compromise | AppleScript | .bash_profile and .bashrc | Access Token Manipulati | Access Token Manipulati | Account Manipulation | Account Discovery | AppleScript | Audio Capture | Commonly Used Port | Automated Exfiltration | Data Destruction |
| Exploit Public-Facing Application | CMSTP | Accessibility Features | Accessibility Features | Binary Padding | Bash History | Application Window Discovery | Application Deployment Software | Automated Collection | Communication Through Removable Media | Data Compressed | Data Encrypted for Impact |
| External Remote Services | Command-Line Interface | Account Manipulation | AppCert DLLs | BITS Jobs | Brute Force | Browser Bookmark Discovery | Distributed Component Object Model | Clipboard Data | Connection Proxy | Data Encrypted | Defacement |
| Hardware Additions | Compiled HTML File | AppCert DLLs | AppInit DLLs | Bypass User Account Control | Credential Dumping | Domain Trust Discovery | Exploitation of Remote Services | Data from Information Repositories | Custom Command and Control Protocol | Data Transfer Size Limits | Disk Content Wipe |
| Replication Through Removable Media | Control Panel Items | AppInit DLLs | Application Shimming | Clear Command History | Credentials in Files | File and Directory Discovery | Logon Scripts | Data from Local System | Custom Cryptographic Protocol | Exfiltration Over Alternativ Protocol | Disk Structure Wipe |
| Spearphishing Attachmen | Dynamic Data Exchange | Application Shimming | Bypass User Account Control | CMSTP | Credentials in Registry | Network Service Scannin | Pass the Hash | Data from Network Shared Drive | Data Encoding | Exfiltration Over Comman and Control Channel | Endpoint Denial of Service |
| Spearphishing Link | Execution through API | Authentication Package | DLL Search Order Hijacking | Code Signing | Exploitation for Credential Access | Network Share Discovery | Pass the Ticket | Data from Removable Media | Data Obfuscation | Exfiltration Over Other Network Medium | Firmware Corruption |
| Spearphishing via Servic | Execution through Module Load | BITS Jobs | Dylib Hijacking | Compile After Delivery | Forced Authentication | Network Sniffing | Remote Desktop Protocol | Data Staged | Domain Fronting | Exfiltration Over Physical Medium | Inhibit System Recovery |
| Supply Chain Compromis | Exploitation for Client Execution | Bootkit | Exploitation for Privilege Escalation | Compiled HTML File | Hooking | Password Policy Discove | Remote File Copy | Email Collection | Domain Generation Algorithms | Scheduled Transfer | Network Denial of Service |
| Trusted Relationship | Graphical User Interface | Browser Extensions | Extra Window Memory Injection | Component Firmware | Input Capture | Peripheral Device Discovery | Remote Services | Input Capture | Fallback Channels |  | Resource Hijacking |
| Valid Accounts | InstallUtil | Change Default File Association | File System Permissions Weakness | Component Object Model Hijacking | Input Prompt | Permission Groups Discovery | Replication Through Removable Media | Man in the Browser | Multi-hop Proxy |  | Runtime Data Manipulation |
|  | Launchctl | Component Firmware | Hooking | Control Panel Items | Kerberoasting | Process Discovery | Shared Webroot | Screen Capture | Multi-Stage Channels |  | Service Stop |
|  | Local Job Scheduling | Component Object Model Hijacking | Image File Execution Options Injection | DCShadow | Keychain | Query Registry | SSH Hijacking | Video Capture | Multiband Communicatio |  | Stored Data Manipulation |
|  | LSASS Driver | Create Account | Launch Daemon | Deobfuscate/Decode Files or Information | LLMNR/NBT-NS Poisonin and Relay | Remote System Discover | Taint Shared Content |  | Multilayer Encryption |  | Transmitted Data Manipulation |
|  | Mshta | DLL Search Order Hijacking | New Service | Disabling Security Tools | Network Sniffing | Security Software Discovery | Third-party Software |  | Port Knocking |  |  |
|  | PowerShell | Dylib Hijacking | Path Interception | DLL Search Order Hijacking | Password Filter DLL | System Information Discovery | Windows Admin Shares |  | Remote Access Tools |  |  |
|  | Regsvcs/Regasm | External Remote Services | Plist Modification | DLL Side-Loading | Private Keys | System Network Configuration Discovery | Windows Remote Management |  | Remote File Copy |  |  |
|  | Regsvr32 | File System Permissions Weakness | Port Monitors | Execution Guardrails | Securityd Memory | System Network Connections Discovery |  |  | Standard Application Layer Protocol |  |  |
|  | Rundll32 | Hidden Files and Directories | Process Injection | Exploitation for Defense Evasion | Two-Factor Authentication Interception | System Owner/User Discovery |  |  | Standard Cryptographic Protocol |  |  |
|  | Scheduled Task | Hooking | Scheduled Task | Extra Window Memory Injection |  | System Service Discovery |  |  | Standard Non-Application Layer Protocol |  |  |
|  | Scripting | Hypervisor | Service Registry Permissions Weakness | File Deletion |  | System Time Discovery |  |  | Uncommonly Used Port |  |  |
|  | Service Execution | Image File Execution Options Injection | Setuid and Setgid | File Permissions Modification |  | Virtualization/Sandbox Evasion |  |  | Web Service |  |  |
|  | Signed Binary Proxy Execution | Kernel Modules and Extensions | SID-History Injection | File System Logical Offsets |  |  |  |  |  |  |  |
|  | Signed Script Proxy Execution | Launch Agent | Startup Items | Gatekeeper Bypass |  |  |  |  |  |  |  |
|  | Source | Launch Daemon | Sudo | Group Policy Modification |  |  |  |  |  |  |  |
|  | Space after Filename | Launchctl | Sudo Caching | Hidden Files and Directories |  |  |  |  |  |  |  |
|  | Third-party Software | LC_LOAD_DYLIB Additio | Valid Accounts | Hidden Users |  |  |  |  |  |  |  |
|  | Trap | Local Job Scheduling | Web Shell | Hidden Window |  |  |  |  |  |  |  |
|  | Trusted Developer Utilities | Login Item |  | HISTCONTROL |  |  |  |  |  |  |  |
|  | User Execution | Logon Scripts |  | Image File Execution Options Injection |  |  |  |  |  |  |  |
|  | Windows Management Instrumentation | LSASS Driver |  | Indicator Blocking |  |  |  |  |  |  |  |
|  | Windows Remote Management | Modify Existing Service |  | Indicator Removal from Tools |  |  |  |  |  |  |  |
|  | XSL Script Processing | Netsh Helper DLL |  | Indicator Removal on Host |  |  |  |  |  |  |  |
|  |  | New Service |  | Indirect Command Execution |  |  |  |  |  |  |  |
|  |  | Office Application Startup |  | Install Root Certificate |  |  |  |  |  |  |  |
|  |  | Path Interception |  | InstallUtil |  |  |  |  |  |  |  |
|  |  | Plist Modification |  | Launchctl |  |  |  |  |  |  |  |
|  |  | Port Knocking |  | LC_MAIN Hijacking |  |  |  |  |  |  |  |
|  |  | Port Monitors |  | Masquerading |  |  |  |  |  |  |  |
|  |  | Rc.common |  | Modify Registry |  |  |  |  |  |  |  |
|  |  | Re-opened Applications |  | Mshta |  |  |  |  |  |  |  |
|  |  | Redundant Access |  | Network Share Connection Removal |  |  |  |  |  |  |  |
|  |  | Registry Run Keys / Startup Folder |  | NTFS File Attributes |  |  |  |  |  |  |  |
|  |  | Scheduled Task |  | Obfuscated Files or Information |  |  |  |  |  |  |  |
|  |  | Screensaver |  | Plist Modification |  |  |  |  |  |  |  |
|  |  | Security Support Provider |  | Port Knocking |  |  |  |  |  |  |  |
|  |  | Service Registry Permissions Weakness |  | Process Doppelgänging |  |  |  |  |  |  |  |
|  |  | Setuid and Setgid |  | Process Hollowing |  |  |  |  |  |  |  |
|  |  | Shortcut Modification |  | Process Injection |  |  |  |  |  |  |  |
|  |  | SIP and Trust Provider Hijacking |  | Redundant Access |  |  |  |  |  |  |  |
|  |  | Startup Items |  | Regsvcs/Regasm |  |  |  |  |  |  |  |
|  |  | System Firmware |  | Regsvr32 |  |  |  |  |  |  |  |
|  |  | Systemd Service |  | Rootkit |  |  |  |  |  |  |  |
|  |  | Time Providers |  | Rundll32 |  |  |  |  |  |  |  |
|  |  | Trap |  | Scripting |  |  |  |  |  |  |  |
|  |  | Valid Accounts |  | Signed Binary Proxy Execution |  |  |  |  |  |  |  |
|  |  | Web Shell |  | Signed Script Proxy Execution |  |  |  |  |  |  |  |
|  |  | Windows Management Instrumentation Event Subscription |  | SIP and Trust Provider Hijacking |  |  |  |  |  |  |  |
|  |  | Winlogon Helper DLL |  | Software Packing |  |  |  |  |  |  |  |
|  |  |  |  | Space after Filename |  |  |  |  |  |  |  |
|  |  |  |  | Template Injection |  |  |  |  |  |  |  |
|  |  |  |  | Timestomp |  |  |  |  |  |  |  |
|  |  |  |  | Trusted Developer Utilities |  |  |  |  |  |  |  |
|  |  |  |  | Valid Accounts |  |  |  |  |  |  |  |
|  |  |  |  | Virtualization/Sandbox Evasion |  |  |  |  |  |  |  |
|  |  |  |  | Web Service |  |  |  |  |  |  |  |
|  |  |  |  | XSL Script Processing |  |  |  |  |  |  |  |

# We’re good to go against OilRig, our #1 threat!

h/t to Kyle Rainey and Red Canary

# How does Kevin test existing detections?

ATOMIC
RED TEAM



# T1057 - Process Discovery

## Description from ATT&CK

> Adversaries may attempt to get information about running processes on a system. Information obtained could be used to gain an understanding of common software running on systems within the network.
>
> ### Windows
>
> An example command that would obtain details on processes is "tasklist" using the Tasklist utility.
>
> ### Mac and Linux
>
> In Mac and Linux, this is accomplished with the `ps` command.

## Atomic Tests

- Atomic Test #1 - Process Discovery - ps

## Atomic Test #1 - Process Discovery - ps

Utilize ps to identify processes

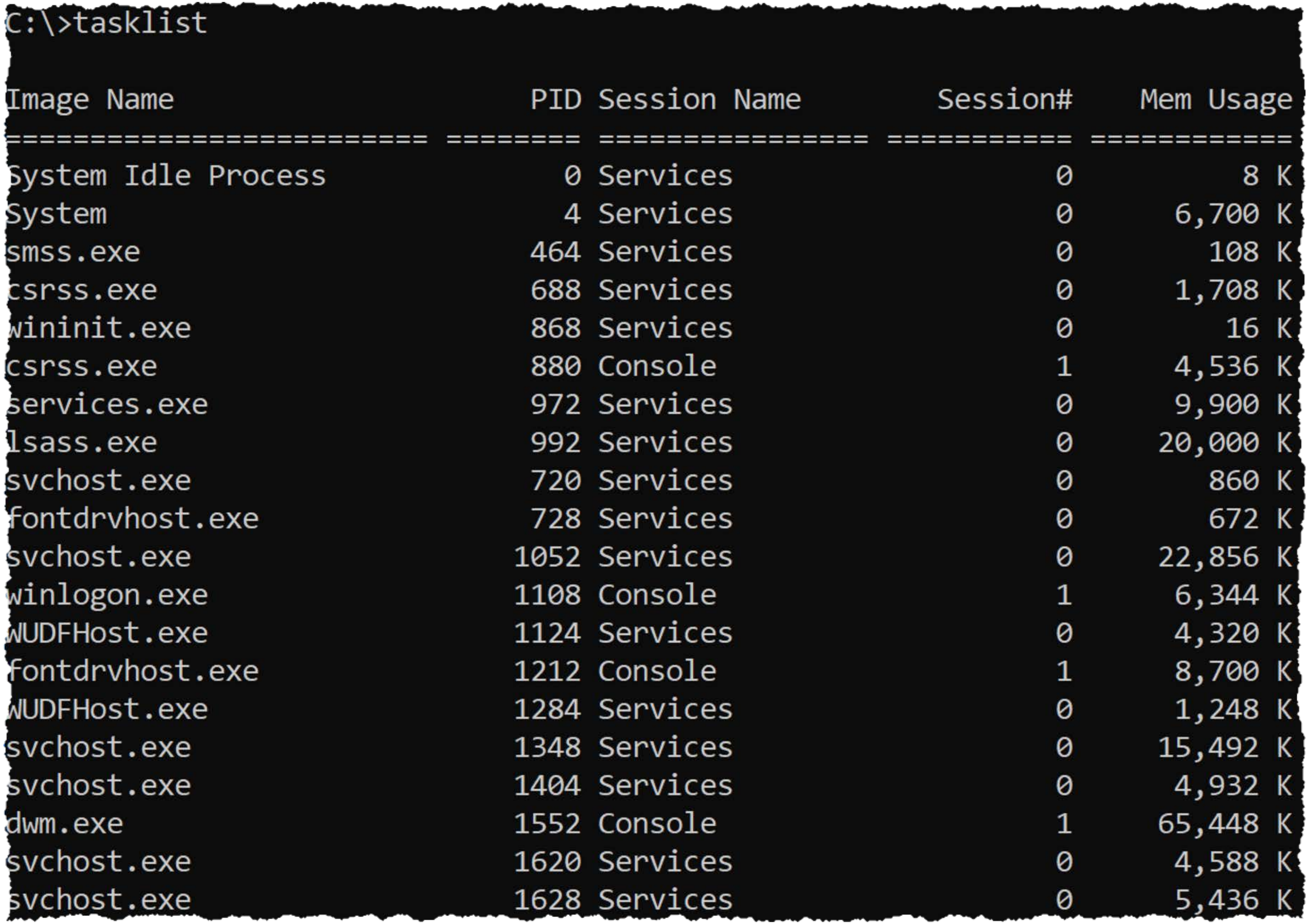
**Supported Platforms:** macOS, CentOS, Ubuntu, Linux

#### Inputs

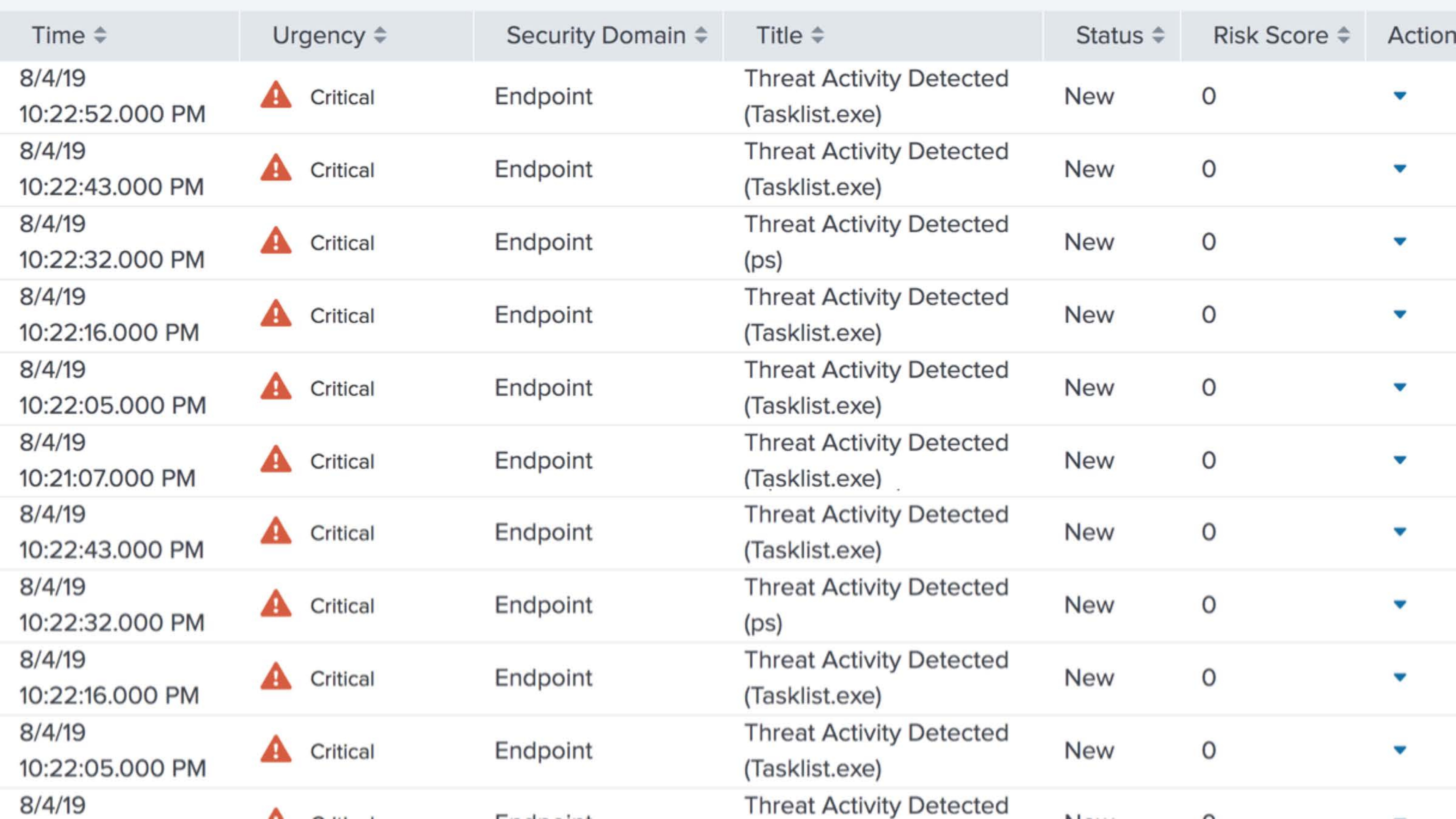
| Name | Description | Type | Default Value |
|---|---|---|---|
| output_file | path of output file | path | /tmp/loot.txt |

#### Run it with `sh` !

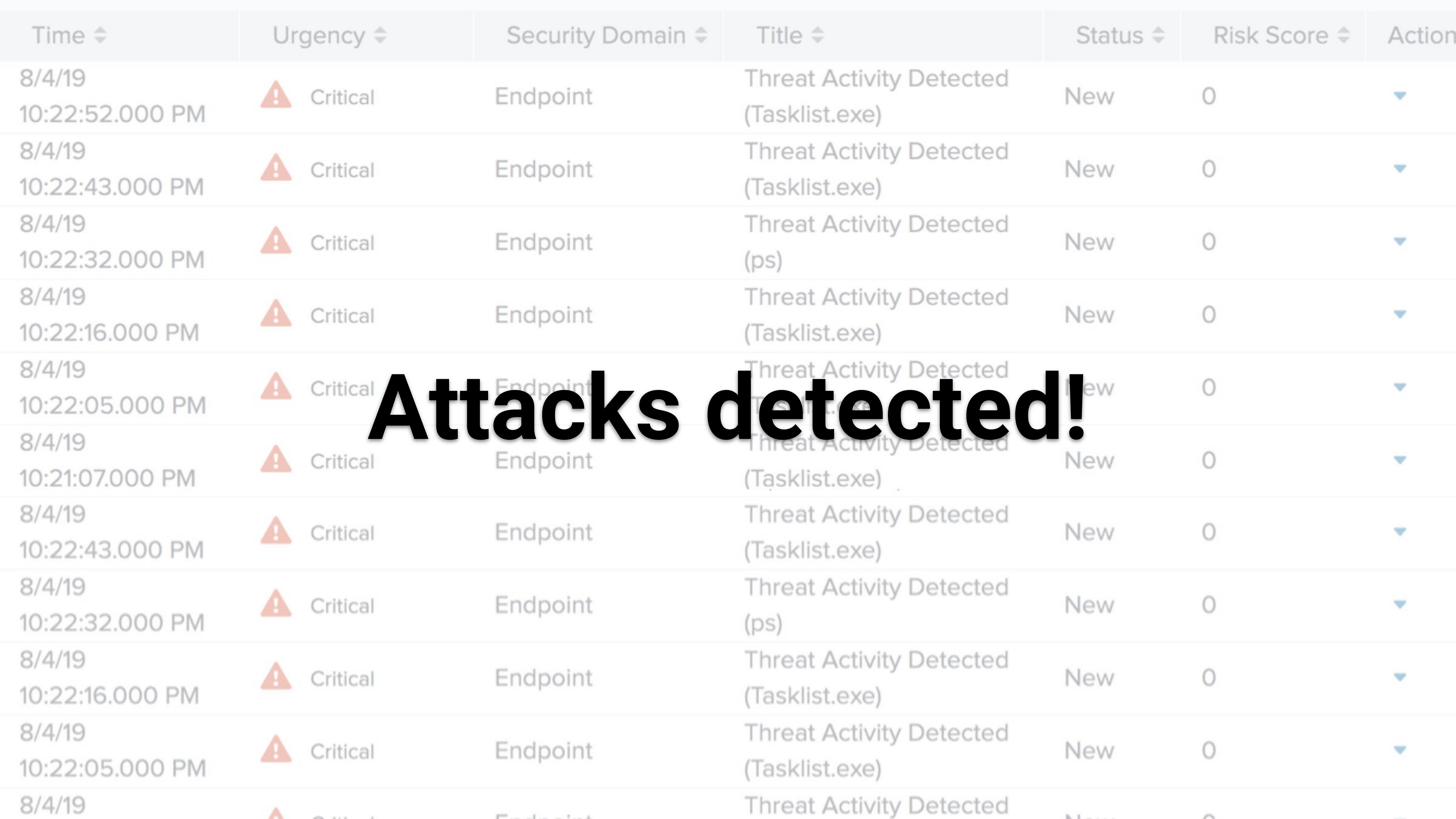
```
ps >> #{output_file}
ps aux >> #{output_file}
```



```
C:\>tasklist

Image Name                     PID Session Name        Session#    Mem Usage
========================= ======== ================ =========== ============
System Idle Process              0 Services                   0          8 K
System                           4 Services                   0      6,700 K
smss.exe                       464 Services                   0        108 K
csrss.exe                      688 Services                   0      1,708 K
wininit.exe                    868 Services                   0         16 K
csrss.exe                      880 Console                    1      4,536 K
services.exe                   972 Services                   0      9,900 K
lsass.exe                      992 Services                   0     20,000 K
svchost.exe                    720 Services                   0        860 K
fontdrvhost.exe                728 Services                   0        672 K
svchost.exe                   1052 Services                   0     22,856 K
winlogon.exe                  1108 Console                    1      6,344 K
WUDFHost.exe                  1124 Services                   0      4,320 K
fontdrvhost.exe               1212 Console                    1      8,700 K
WUDFHost.exe                  1284 Services                   0      1,248 K
svchost.exe                   1348 Services                   0     15,492 K
svchost.exe                   1404 Services                   0      4,932 K
dwm.exe                       1552 Console                    1     65,448 K
svchost.exe                   1620 Services                   0      4,588 K
svchost.exe                   1628 Services                   0      5,436 K
```



| Time | Urgency | Security Domain | Title | Status | Risk Score | Action |
|---|---|---|---|---|---|---|
| 8/4/19 10:22:52.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
| 8/4/19 10:22:43.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
| 8/4/19 10:22:32.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (ps) | New | 0 | ▾ |
| 8/4/19 10:22:16.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
| 8/4/19 10:22:05.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
| 8/4/19 10:21:07.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
| 8/4/19 10:22:43.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
| 8/4/19 10:22:32.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (ps) | New | 0 | ▾ |
| 8/4/19 10:22:16.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
| 8/4/19 10:22:05.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
| 8/4/19 | | | Threat Activity Detected | | | |



# Attacks detected!

| Time | Urgency | Security Domain | Title | Status | Risk Score | Action |
|---|---|---|---|---|---|---|
| 8/4/19 10:22:52.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
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| 8/4/19 10:22:32.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (ps) | New | 0 | ▾ |
| 8/4/19 10:22:16.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
| 8/4/19 10:22:05.000 PM | ⚠ Critical | Endpoint | Threat Activity Detected (Tasklist.exe) | New | 0 | ▾ |
| 8/4/19 | | | Threat Activity Detected | | | |

We did all the things. This is fine. Everything is fine.

And then...

“Sorry, you’re pwned.”

LIVE

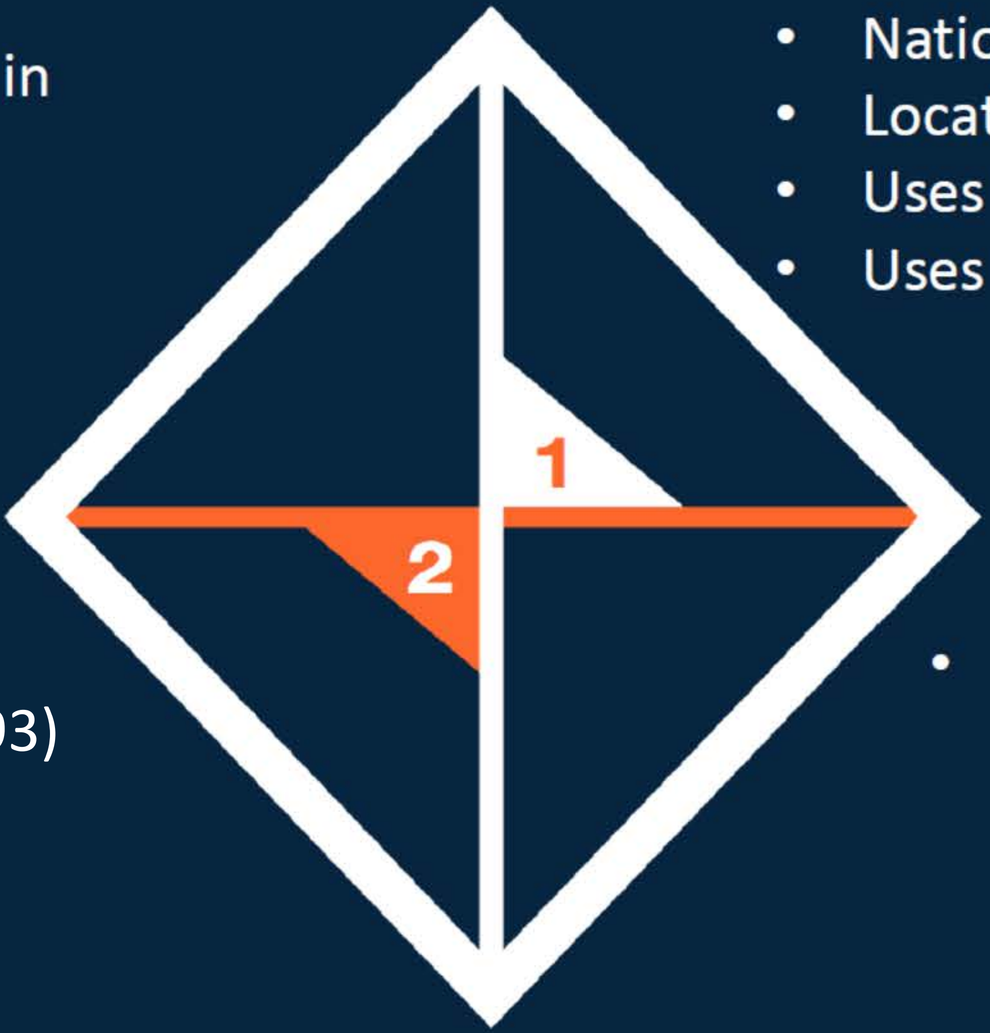
BREAKING NEWS

# FROTHLY HACKED BY TAEDONGGANG

1:12 DATA STOLEN! INSIDER THREAT? WILL THIS AFFECT THEIR IPO? WAS BOTS FOR NAUGH

1 **SOCIO-POLITICAL AXIS**

- Seeking to obtain high end Western Beers for production in their breweries



## ADVERSARY

- Nation state sponsored adversary
- Located (+8.0 time zone)
- Uses Korean encoded language
- Uses Hancom Thinkfree Office

## CAPABILITIES

- PowerShell (T1086)
- Spearphishing Attachment (T1193)
- Service Execution (T1035)

## INFRASTRUCTURE

- European VPS servers

## VICTIMS

- Western innovative Brewers and Home Brewing companies

2 **TECHNICAL AXIS**

- Documents with .hwp suffix
- PS exec lateral movement
- YMLP
- Self signed SSL/TLS certificates
- +8.0 hour time zone
- Korean fonts for English
- Korean text google translated to English
- Naenara user agent string

*A special thanks to* THREATCONNECT

# WHY DID WE EVER USE ATT&CK?

# So you’ve “implemented” ATT&CK and you’re unhappy…now what?

# What went wrong?

**CxO**

Had a false sense of security

Couldn’t follow up and action new threats

**CTI**

**Defender**

Had gaps in defenses but drowning in alerts

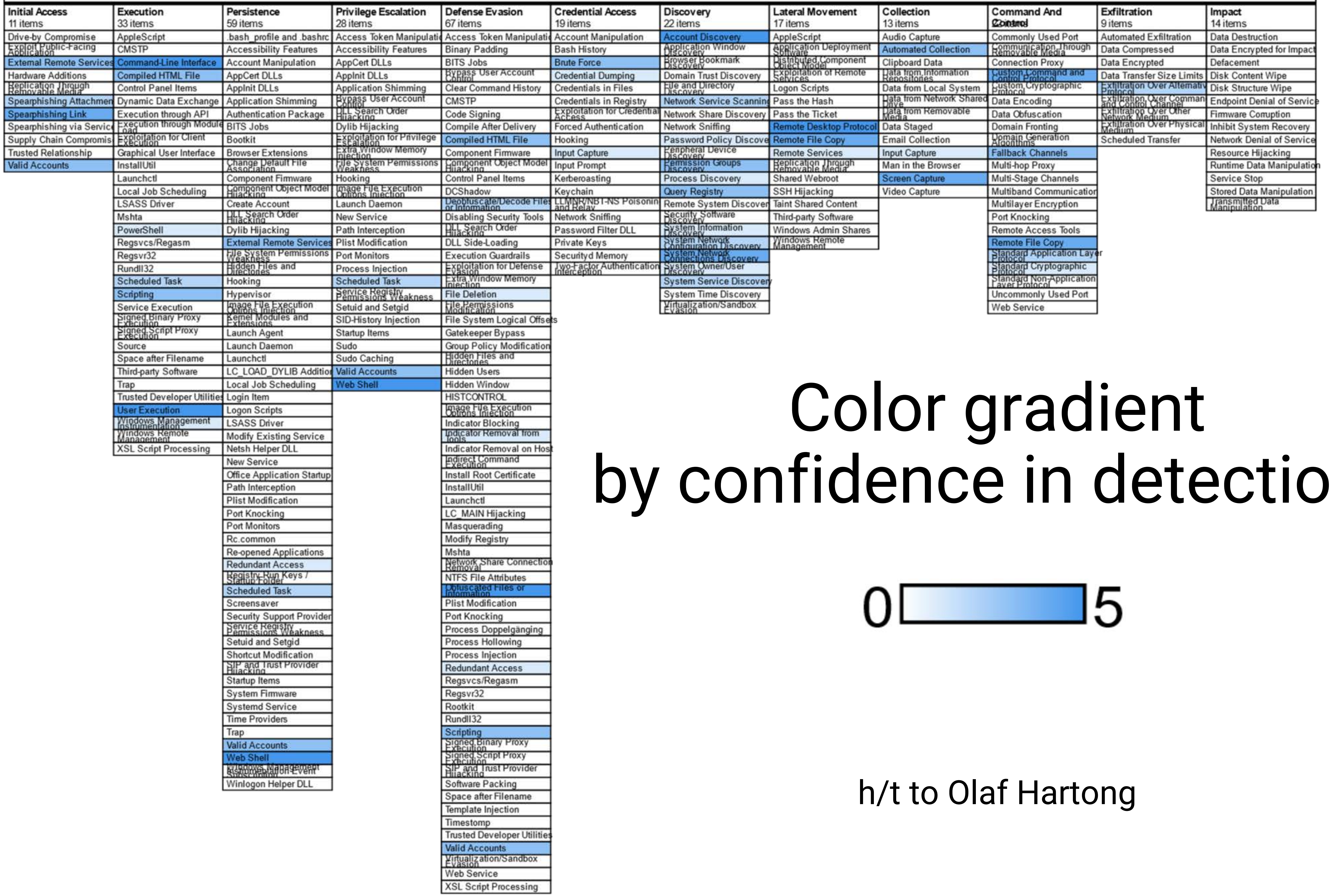
Didn’t test in depth or work with Blue Team

**Red Team**

# Let’s get Frothly back on track

# How can a CxO have a better understanding of their risk by using ATT&CK?

# Communicate confidence level



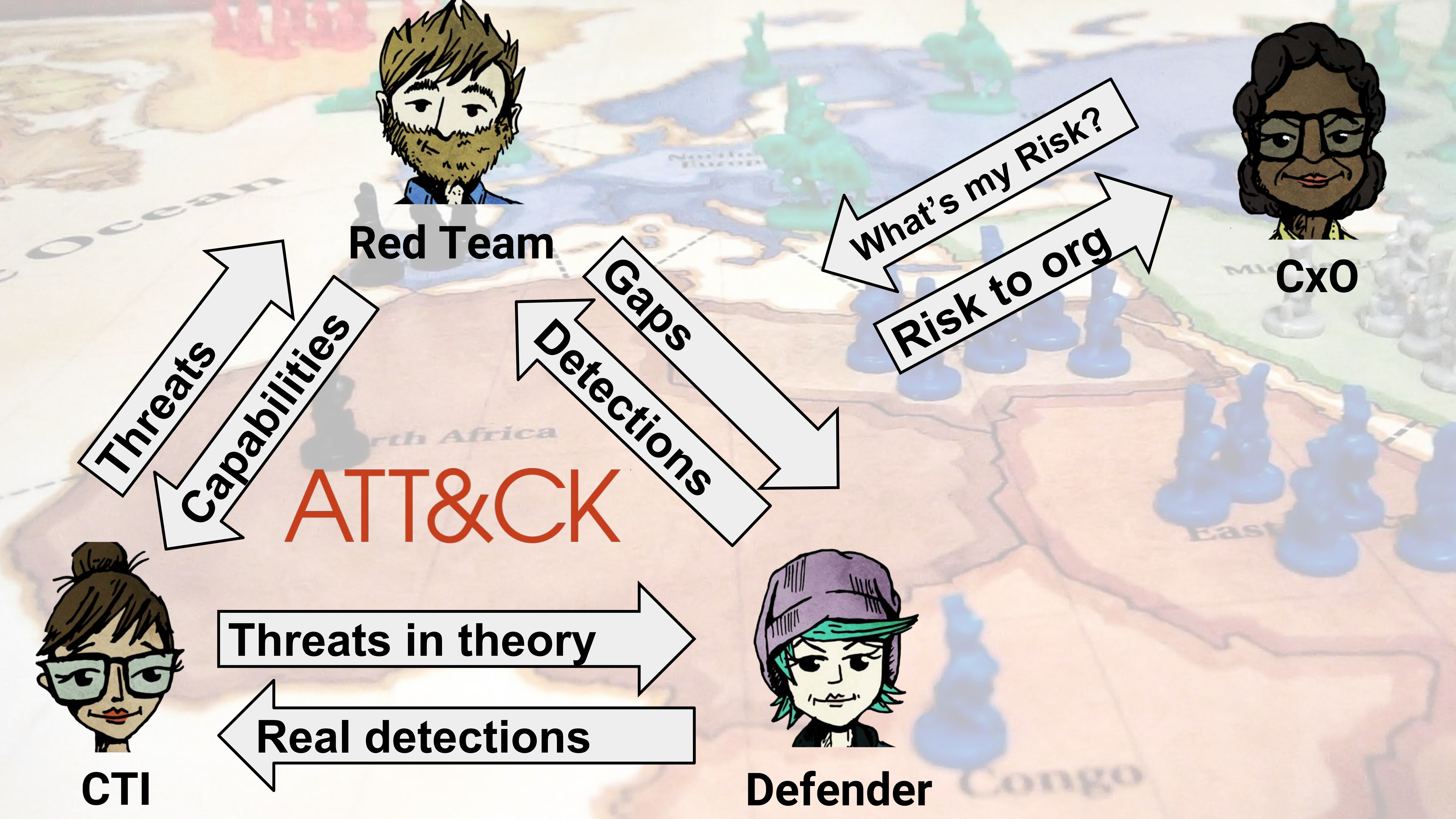
| Initial Access<br>11 items | Execution<br>33 items | Persistence<br>59 items | Privilege Escalation<br>28 items | Defense Evasion<br>67 items | Credential Access<br>19 items | Discovery<br>22 items | Lateral Movement<br>17 items | Collection<br>13 items | Command And Control<br>22 items | Exfiltration<br>9 items | Impact<br>14 items |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Drive-by Compromise | AppleScript | .bash_profile and .bashrc | Access Token Manipulati | Access Token Manipulati | Account Manipulation | Account Discovery | AppleScript | Audio Capture | Commonly Used Port | Automated Exfiltration | Data Destruction |
| Exploit Public-Facing Application | CMSTP | Accessibility Features | Accessibility Features | Binary Padding | Bash History | Application Window Discovery | Application Deployment Software | Automated Collection | Communication Through Removable Media | Data Compressed | Data Encrypted for Impact |
| External Remote Services | Command-Line Interface | Account Manipulation | AppCert DLLs | BITS Jobs | Brute Force | Browser Bookmark Discovery | Distributed Component Object Model | Clipboard Data | Connection Proxy | Data Encrypted | Defacement |
| Hardware Additions | Compiled HTML File | AppCert DLLs | AppInit DLLs | Bypass User Account Control | Credential Dumping | Domain Trust Discovery | Exploitation of Remote Services | Data from Information Repositories | Custom Command and Control Protocol | Data Transfer Size Limits | Disk Content Wipe |
| Replication Through Removable Media | Control Panel Items | AppInit DLLs | Application Shimming | Clear Command History | Credentials in Files | File and Directory Discovery | Logon Scripts | Data from Local System | Custom Cryptographic Protocol | Exfiltration Over Alternativ Protocol | Disk Structure Wipe |
| Spearphishing Attachmen | Dynamic Data Exchange | Application Shimming | Bypass User Account Control | CMSTP | Credentials in Registry | Network Service Scannin | Pass the Hash | Data from Network Shared Drive | Data Encoding | Exfiltration Over Comman and Control Channel | Endpoint Denial of Service |
| Spearphishing Link | Execution through API | Authentication Package | DLL Search Order Hijacking | Code Signing | Exploitation for Credential Access | Network Share Discovery | Pass the Ticket | Data from Removable Media | Data Obfuscation | Exfiltration Over Other Network Medium | Firmware Corruption |
| Spearphishing via Servic | Execution through Module Load | BITS Jobs | Dylib Hijacking | Compile After Delivery | Forced Authentication | Network Sniffing | Remote Desktop Protocol | Data Staged | Domain Fronting | Exfiltration Over Physical Medium | Inhibit System Recovery |
| Supply Chain Compromis | Exploitation for Client Execution | Bootkit | Exploitation for Privilege Escalation | Compiled HTML File | Hooking | Password Policy Discove | Remote File Copy | Email Collection | Domain Generation Algorithms | Scheduled Transfer | Network Denial of Service |
| Trusted Relationship | Graphical User Interface | Browser Extensions | Extra Window Memory Injection | Component Firmware | Input Capture | Peripheral Device Discovery | Remote Services | Input Capture | Fallback Channels |  | Resource Hijacking |
| Valid Accounts | InstallUtil | Change Default File Association | File System Permissions Weakness | Component Object Model Hijacking | Input Prompt | Permission Groups Discovery | Replication Through Removable Media | Man in the Browser | Multi-hop Proxy |  | Runtime Data Manipulation |
|  | Launchctl | Component Firmware | Hooking | Control Panel Items | Kerberoasting | Process Discovery | Shared Webroot | Screen Capture | Multi-Stage Channels |  | Service Stop |
|  | Local Job Scheduling | Component Object Model Hijacking | Image File Execution Options Injection | DCShadow | Keychain | Query Registry | SSH Hijacking | Video Capture | Multiband Communicatio |  | Stored Data Manipulation |
|  | LSASS Driver | Create Account | Launch Daemon | Deobfuscate/Decode Files or Information | LLMNR/NBT-NS Poisonin and Relay | Remote System Discover | Taint Shared Content |  | Multilayer Encryption |  | Transmitted Data Manipulation |
|  | Mshta | DLL Search Order Hijacking | New Service | Disabling Security Tools | Network Sniffing | Security Software Discovery | Third-party Software |  | Port Knocking |  |  |
|  | PowerShell | Dylib Hijacking | Path Interception | DLL Search Order Hijacking | Password Filter DLL | System Information Discovery | Windows Admin Shares |  | Remote Access Tools |  |  |
|  | Regsvcs/Regasm | External Remote Services | Plist Modification | DLL Side-Loading | Private Keys | System Network Configuration Discovery | Windows Remote Management |  | Remote File Copy |  |  |
|  | Regsvr32 | File System Permissions Weakness | Port Monitors | Execution Guardrails | Securityd Memory | System Network Connections Discovery |  |  | Standard Application Layer Protocol |  |  |
|  | Rundll32 | Hidden Files and Directories | Process Injection | Exploitation for Defense Evasion | Two-Factor Authentication Interception | System Owner/User Discovery |  |  | Standard Cryptographic Protocol |  |  |
|  | Scheduled Task | Hooking | Scheduled Task | Extra Window Memory Injection |  | System Service Discovery |  |  | Standard Non-Application Layer Protocol |  |  |
|  | Scripting | Hypervisor | Service Registry Permissions Weakness | File Deletion |  | System Time Discovery |  |  | Uncommonly Used Port |  |  |
|  | Service Execution | Image File Execution Options Injection | Setuid and Setgid | File Permissions Modification |  | Virtualization/Sandbox Evasion |  |  | Web Service |  |  |
|  | Signed Binary Proxy Execution | Kernel Modules and Extensions | SID-History Injection | File System Logical Offsets |  |  |  |  |  |  |  |
|  | Signed Script Proxy Execution | Launch Agent | Startup Items | Gatekeeper Bypass |  |  |  |  |  |  |  |
|  | Source | Launch Daemon | Sudo | Group Policy Modification |  |  |  |  |  |  |  |
|  | Space after Filename | Launchctl | Sudo Caching | Hidden Files and Directories |  |  |  |  |  |  |  |
|  | Third-party Software | LC_LOAD_DYLIB Additio | Valid Accounts | Hidden Users |  |  |  |  |  |  |  |
|  | Trap | Local Job Scheduling | Web Shell | Hidden Window |  |  |  |  |  |  |  |
|  | Trusted Developer Utilities | Login Item |  | HISTCONTROL |  |  |  |  |  |  |  |
|  | User Execution | Logon Scripts |  | Image File Execution Options Injection |  |  |  |  |  |  |  |
|  | Windows Management Instrumentation | LSASS Driver |  | Indicator Blocking |  |  |  |  |  |  |  |
|  | Windows Remote Management | Modify Existing Service |  | Indicator Removal from Tools |  |  |  |  |  |  |  |
|  | XSL Script Processing | Netsh Helper DLL |  | Indicator Removal on Host |  |  |  |  |  |  |  |
|  |  | New Service |  | Indirect Command Execution |  |  |  |  |  |  |  |
|  |  | Office Application Startup |  | Install Root Certificate |  |  |  |  |  |  |  |
|  |  | Path Interception |  | InstallUtil |  |  |  |  |  |  |  |
|  |  | Plist Modification |  | Launchctl |  |  |  |  |  |  |  |
|  |  | Port Knocking |  | LC_MAIN Hijacking |  |  |  |  |  |  |  |
|  |  | Port Monitors |  | Masquerading |  |  |  |  |  |  |  |
|  |  | Rc.common |  | Modify Registry |  |  |  |  |  |  |  |
|  |  | Re-opened Applications |  | Mshta |  |  |  |  |  |  |  |
|  |  | Redundant Access |  | Network Share Connection Removal |  |  |  |  |  |  |  |
|  |  | Registry Run Keys / Startup Folder |  | NTFS File Attributes |  |  |  |  |  |  |  |
|  |  | Scheduled Task |  | Obfuscated Files or Information |  |  |  |  |  |  |  |
|  |  | Screensaver |  | Plist Modification |  |  |  |  |  |  |  |
|  |  | Security Support Provider |  | Port Knocking |  |  |  |  |  |  |  |
|  |  | Service Registry Permissions Weakness |  | Process Doppelgänging |  |  |  |  |  |  |  |
|  |  | Setuid and Setgid |  | Process Hollowing |  |  |  |  |  |  |  |
|  |  | Shortcut Modification |  | Process Injection |  |  |  |  |  |  |  |
|  |  | SIP and Trust Provider Hijacking |  | Redundant Access |  |  |  |  |  |  |  |
|  |  | Startup Items |  | Regsvcs/Regasm |  |  |  |  |  |  |  |
|  |  | System Firmware |  | Regsvr32 |  |  |  |  |  |  |  |
|  |  | Systemd Service |  | Rootkit |  |  |  |  |  |  |  |
|  |  | Time Providers |  | Rundll32 |  |  |  |  |  |  |  |
|  |  | Trap |  | Scripting |  |  |  |  |  |  |  |
|  |  | Valid Accounts |  | Signed Binary Proxy Execution |  |  |  |  |  |  |  |
|  |  | Web Shell |  | Signed Script Proxy Execution |  |  |  |  |  |  |  |
|  |  | Windows Management Instrumentation Event Subscription |  | SIP and Trust Provider Hijacking |  |  |  |  |  |  |  |
|  |  | Winlogon Helper DLL |  | Software Packing |  |  |  |  |  |  |  |
|  |  |  |  | Space after Filename |  |  |  |  |  |  |  |
|  |  |  |  | Template Injection |  |  |  |  |  |  |  |
|  |  |  |  | Timestomp |  |  |  |  |  |  |  |
|  |  |  |  | Trusted Developer Utilities |  |  |  |  |  |  |  |
|  |  |  |  | Valid Accounts |  |  |  |  |  |  |  |
|  |  |  |  | Virtualization/Sandbox Evasion |  |  |  |  |  |  |  |
|  |  |  |  | Web Service |  |  |  |  |  |  |  |
|  |  |  |  | XSL Script Processing |  |  |  |  |  |  |  |

# Color gradient by confidence in detections

0 5

h/t to Olaf Hartong

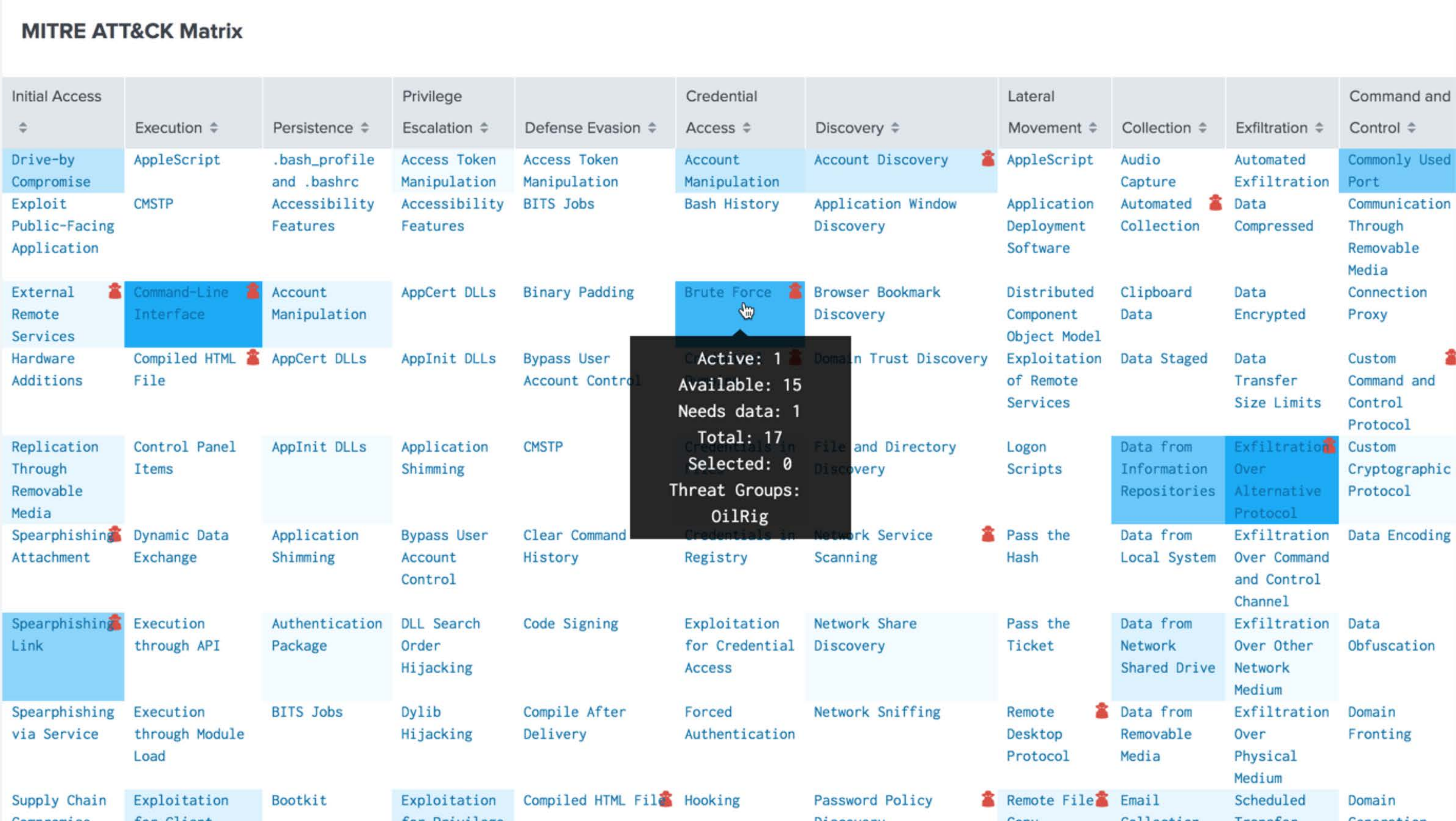
# Integrate your teams


Red Team
CxO
What's my Risk?
Risk to org
Threats
Capabilities
Gaps
Detections
ATT&CK
Threats in theory
Real detections
CTI
Defender

Crawl

**Walk**

***Run***



## MITRE ATT&CK Matrix

| Initial Access | Execution | Persistence | Privilege Escalation | Defense Evasion | Credential Access | Discovery | Lateral Movement | Collection | Exfiltration | Command and Control |
|---|---|---|---|---|---|---|---|---|---|---|
| Drive-by Compromise | AppleScript | .bash_profile and .bashrc | Access Token Manipulation | Access Token Manipulation | Account Manipulation | Account Discovery | AppleScript | Audio Capture | Automated Exfiltration | Commonly Used Port |
| Exploit Public-Facing Application | CMSTP | Accessibility Features | Accessibility Features | BITS Jobs | Bash History | Application Window Discovery | Application Deployment Software | Automated Collection | Data Compressed | Communication Through Removable Media |
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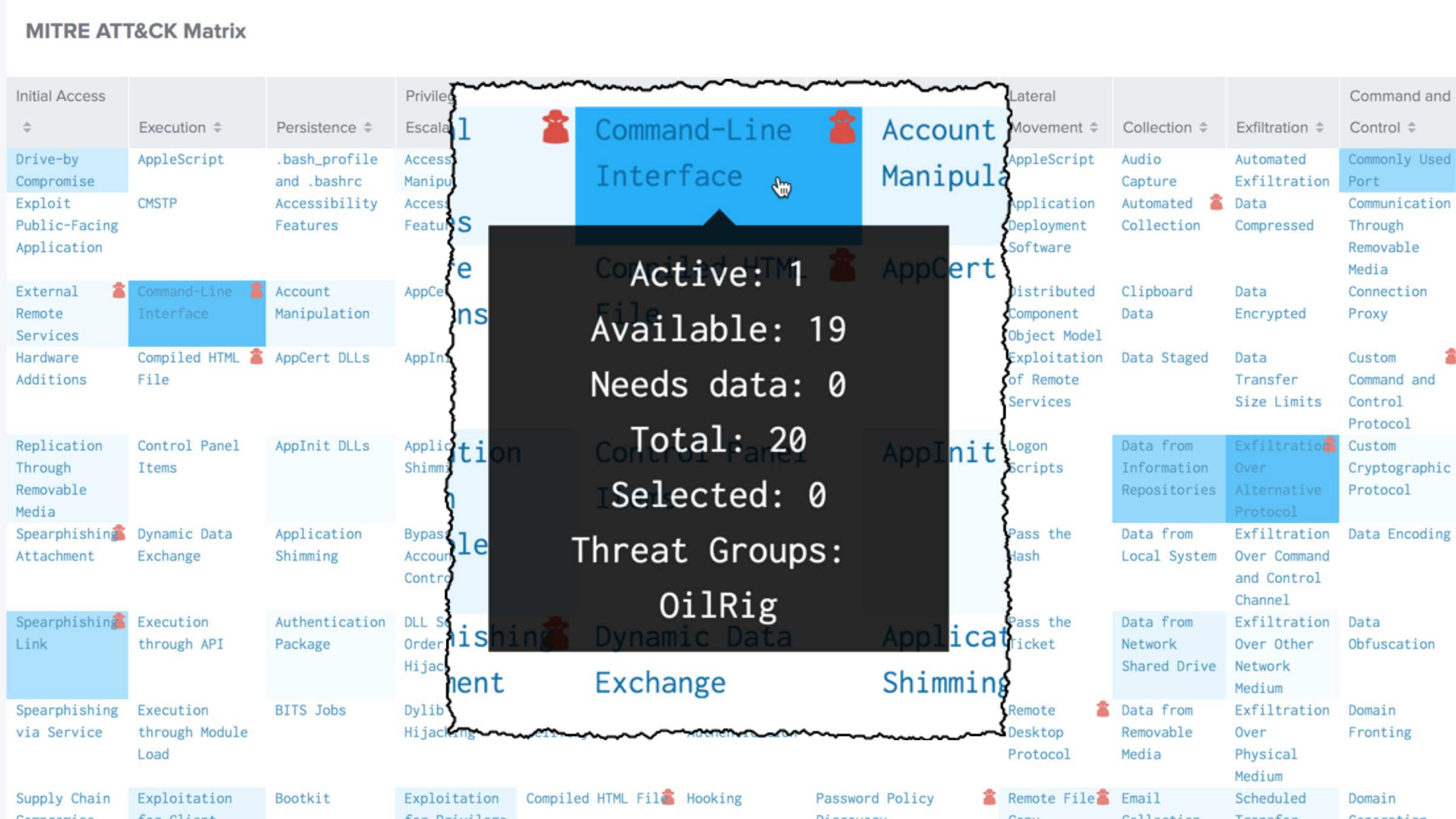
| Spearphishing Link | Execution through API | Authentication Package | DLL Search Order Hijacking | Code Signing | Exploitation for Credential Access | Network Share Discovery | Pass the Ticket | Data from Network Shared Drive | Exfiltration Over Other Network Medium | Data Obfuscation |
| Spearphishing via Service | Execution through Module Load | BITS Jobs | Dylib Hijacking | Compile After Delivery | Forced Authentication | Network Sniffing | Remote Desktop Protocol | Data from Removable Media | Exfiltration Over Physical Medium | Domain Fronting |
| Supply Chain Compromise | Exploitation for Client | Bootkit | Exploitation for Privilege | Compiled HTML File | Hooking | Password Policy Discovery | Remote File Copy | Email Collection | Scheduled Transfer | Domain Generation |

```
Active: 1
Available: 15
Needs data: 1
Total: 17
Selected: 0
Threat Groups:
OilRig
```



MITRE ATT&CK Matrix

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| Spearphishing via Service | Execution through Module Load | BITS Jobs | Dylib Hijacking |  |  |  | Remote Desktop Protocol | Data from Removable Media | Exfiltration Over Physical Medium | Domain Fronting |
| Supply Chain | Exploitation | Bootkit | Exploitation | Compiled HTML File | Hooking | Password Policy | Remote File | Email | Scheduled | Domain |

Command-Line Interface

Active: 1

Available: 19

Needs data: 0

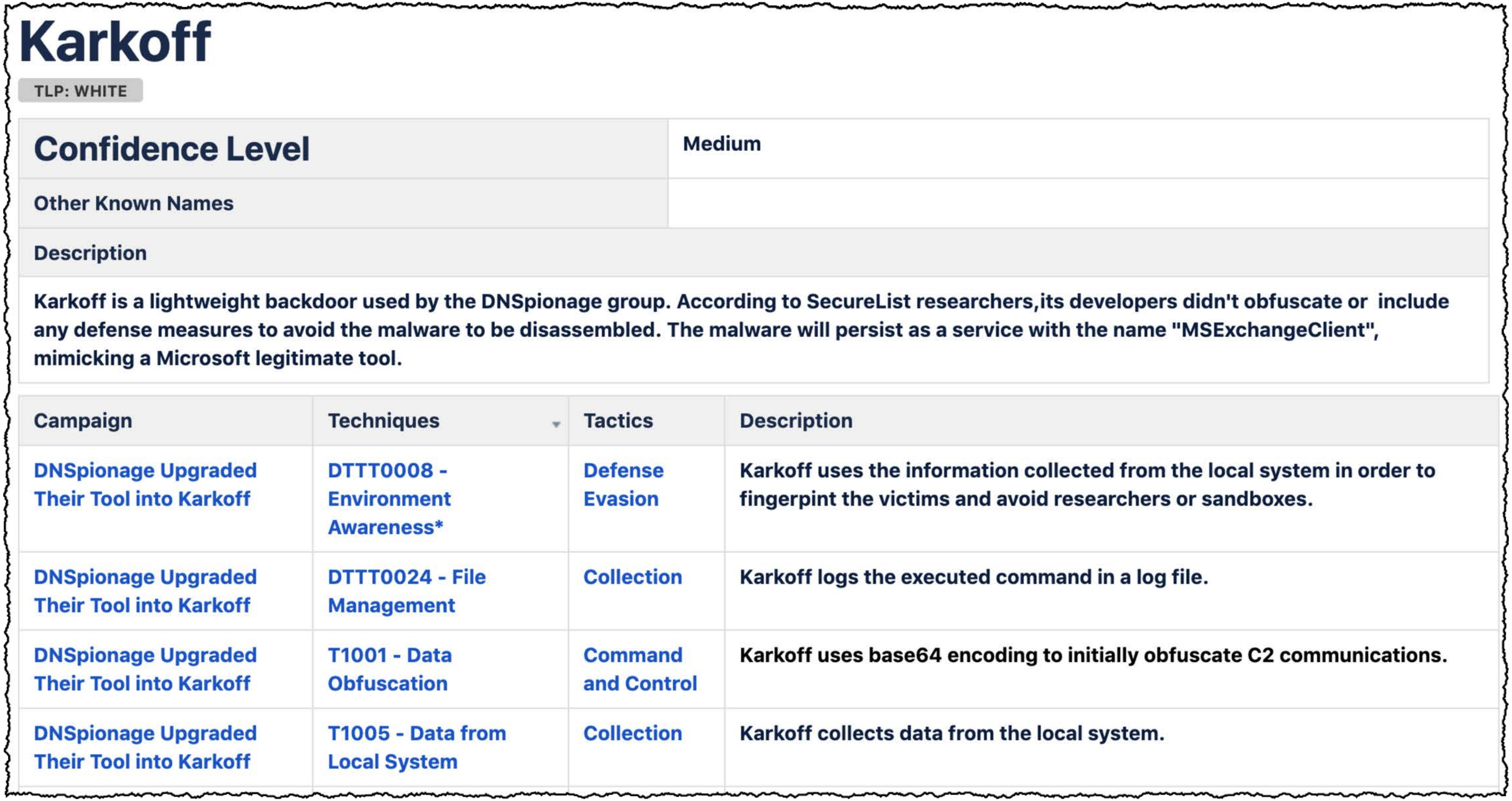
Total: 20

Selected: 0

Threat Groups: OilRig

# How can a threat intel analyst action new threats?

# Build your own threat library



# Karkoff

TLP: WHITE

| | |
|---|---|
| **Confidence Level** | Medium |
| Other Known Names | |
| Description | |
| Karkoff is a lightweight backdoor used by the DNSpionage group. According to SecureList researchers,its developers didn't obfuscate or include any defense measures to avoid the malware to be disassembled. The malware will persist as a service with the name "MSExchangeClient", mimicking a Microsoft legitimate tool. | |

| Campaign | Techniques | Tactics | Description |
|---|---|---|---|
| DNSpionage Upgraded Their Tool into Karkoff | DTTT0008 - Environment Awareness* | Defense Evasion | Karkoff uses the information collected from the local system in order to fingerpint the victims and avoid researchers or sandboxes. |
| DNSpionage Upgraded Their Tool into Karkoff | DTTT0024 - File Management | Collection | Karkoff logs the executed command in a log file. |
| DNSpionage Upgraded Their Tool into Karkoff | T1001 - Data Obfuscation | Command and Control | Karkoff uses base64 encoding to initially obfuscate C2 communications. |
| DNSpionage Upgraded Their Tool into Karkoff | T1005 - Data from Local System | Collection | Karkoff collects data from the local system. |

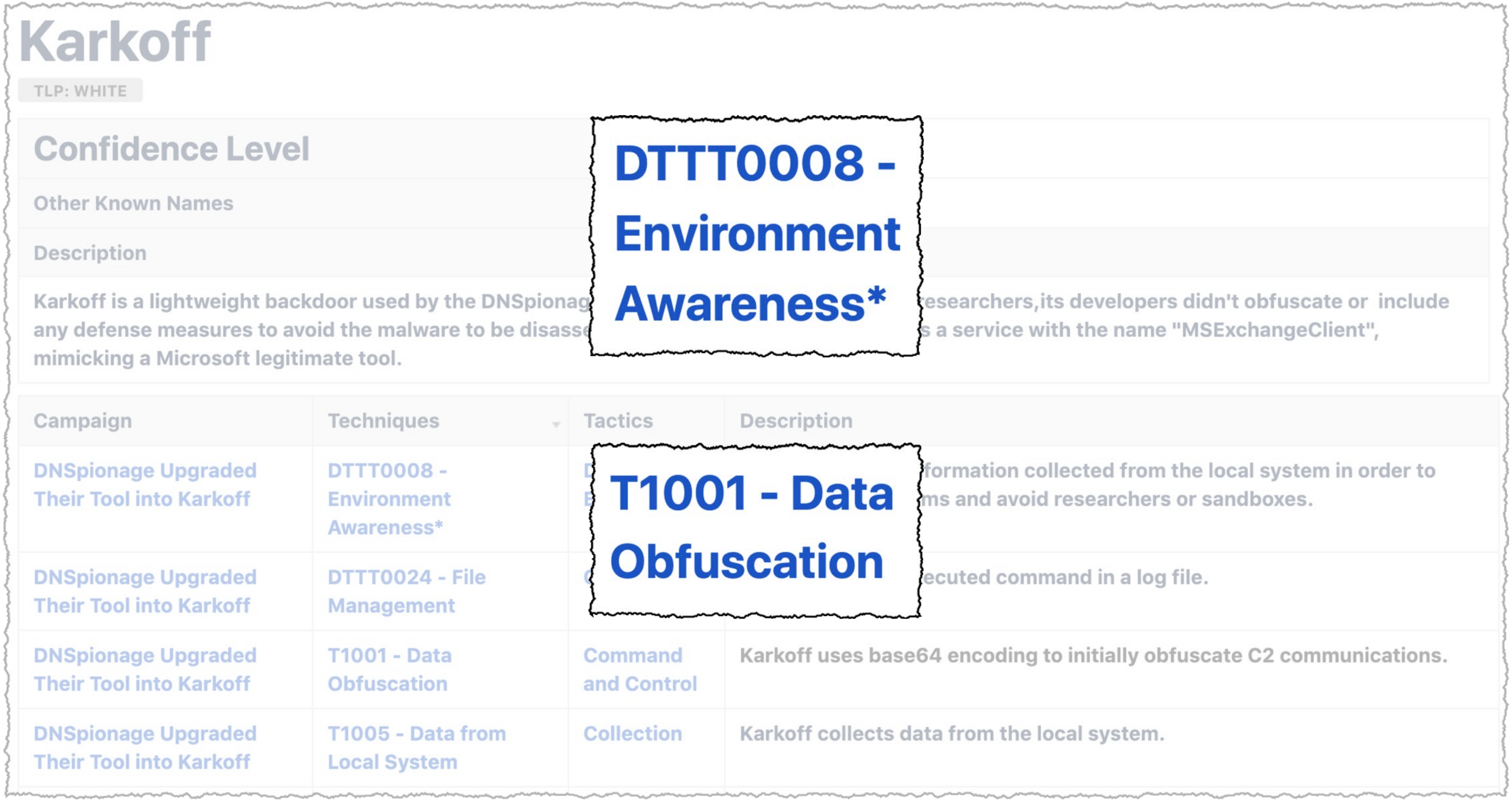
**Courtesy of the Threat Library Team – Deloitte**

# Most Used Techniques (2019 sample)

| # | Technique Name |
|---|---|
| 1 | T1071 - Standard App Layer Protocol |
| 2 | T1082 - System Information Discovery |
| 3 | T1059 - Command-Line Interface |
| 4 | T1105 - Remote File Copy |
| 5 | T1083 - File and Directory Discovery |
| 6 | T1060 - Registry Run Keys / Start Folder |
| 7 | T1057 - Process Discovery |
| 8 | T1056 - Input Capture |
| 9 | T1113 - Screen Capture |
| 10 | T1107 - File Deletion |
| 11 | T1041 - Exfiltration Over C2 Channel |
| 12 | T1086 - PowerShell |
| 13 | T1193 - Spearphishing Attachment |
| 14 | T1016 - System Network Config Discovery |

**Courtesy of the Threat Library Team – Deloitte**

# Build on the framework



# Karkoff

TLP: WHITE

**Confidence Level**

**Other Known Names**

**Description**

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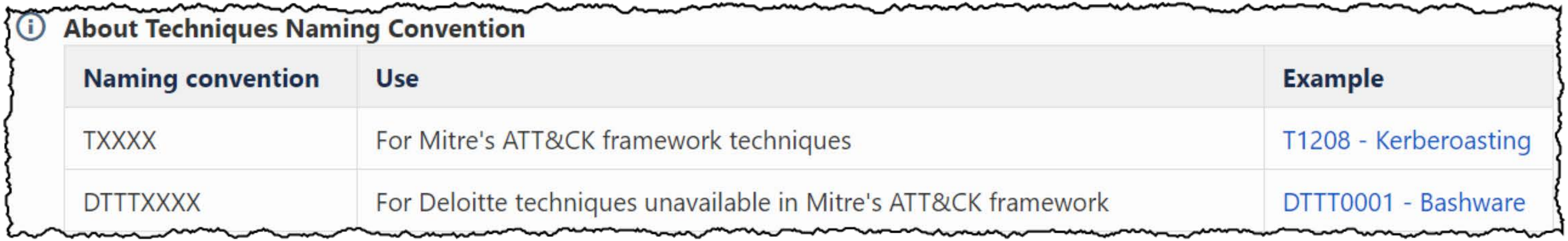
**DTTT0008 - Environment Awareness***

| Campaign | Techniques | Tactics | Description |
|---|---|---|---|
| DNSpionage Upgraded Their Tool into Karkoff | DTTT0008 - Environment Awareness* | D<br>E | formation collected from the local system in order to ms and avoid researchers or sandboxes. |
| DNSpionage Upgraded Their Tool into Karkoff | DTTT0024 - File Management | C | ecuted command in a log file. |
| DNSpionage Upgraded Their Tool into Karkoff | T1001 - Data Obfuscation | Command and Control | Karkoff uses base64 encoding to initially obfuscate C2 communications. |
| DNSpionage Upgraded Their Tool into Karkoff | T1005 - Data from Local System | Collection | Karkoff collects data from the local system. |

**T1001 - Data Obfuscation**

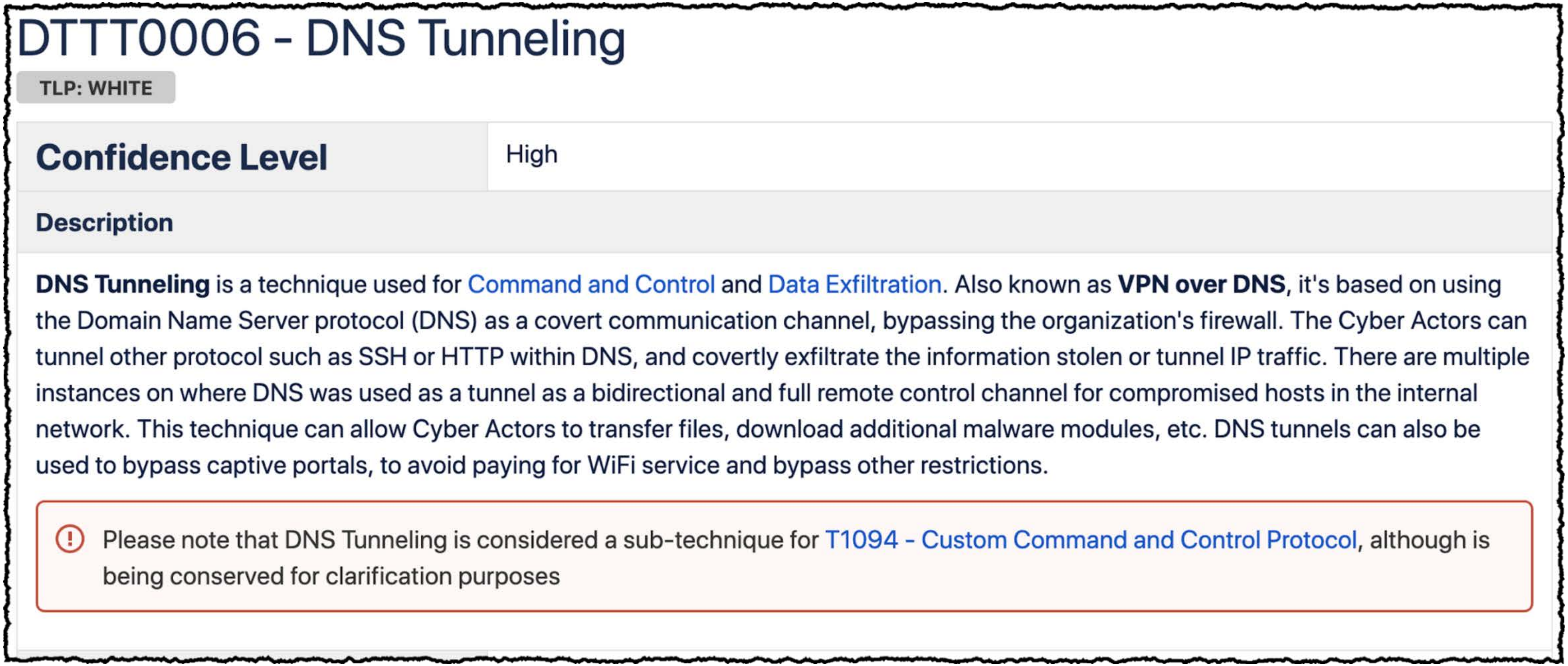
Courtesy of the Threat Library Team – Deloitte



**About Techniques Naming Convention**

| Naming convention | Use | Example |
|---|---|---|
| TXXXX | For Mitre's ATT&CK framework techniques | T1208 - Kerberoasting |
| DTTTXXXX | For Deloitte techniques unavailable in Mitre's ATT&CK framework | DTTT0001 - Bashware |

**Courtesy of the Threat Library Team – Deloitte**



# DTTT0006 - DNS Tunneling

TLP: WHITE

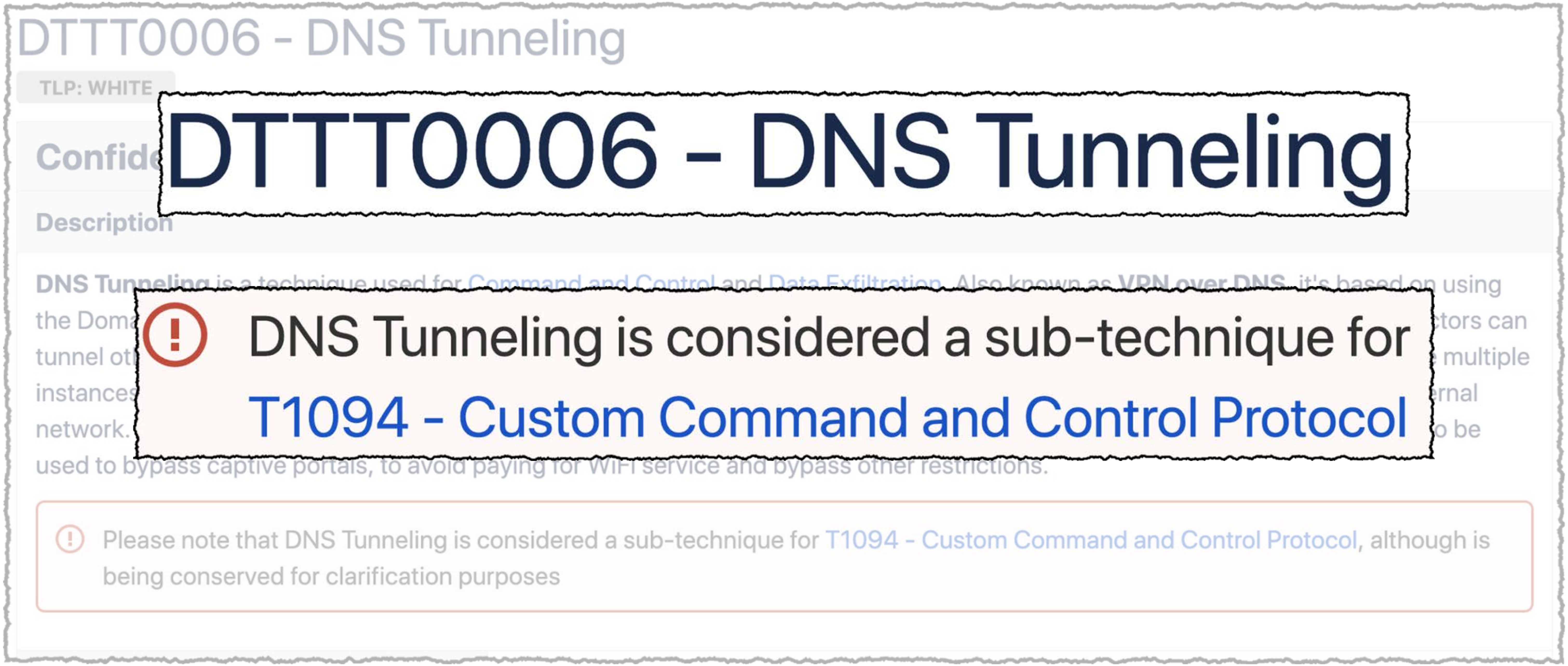
| | |
|---|---|
| **Confidence Level** | High |

**Description**

**DNS Tunneling** is a technique used for Command and Control and Data Exfiltration. Also known as **VPN over DNS**, it's based on using the Domain Name Server protocol (DNS) as a covert communication channel, bypassing the organization's firewall. The Cyber Actors can tunnel other protocol such as SSH or HTTP within DNS, and covertly exfiltrate the information stolen or tunnel IP traffic. There are multiple instances on where DNS was used as a tunnel as a bidirectional and full remote control channel for compromised hosts in the internal network. This technique can allow Cyber Actors to transfer files, download additional malware modules, etc. DNS tunnels can also be used to bypass captive portals, to avoid paying for WiFi service and bypass other restrictions.

Please note that DNS Tunneling is considered a sub-technique for T1094 - Custom Command and Control Protocol, although is being conserved for clarification purposes

**Courtesy of the Threat Library Team – Deloitte**



DTTT0006 - DNS Tunneling

TLP: WHITE

Confide

Description

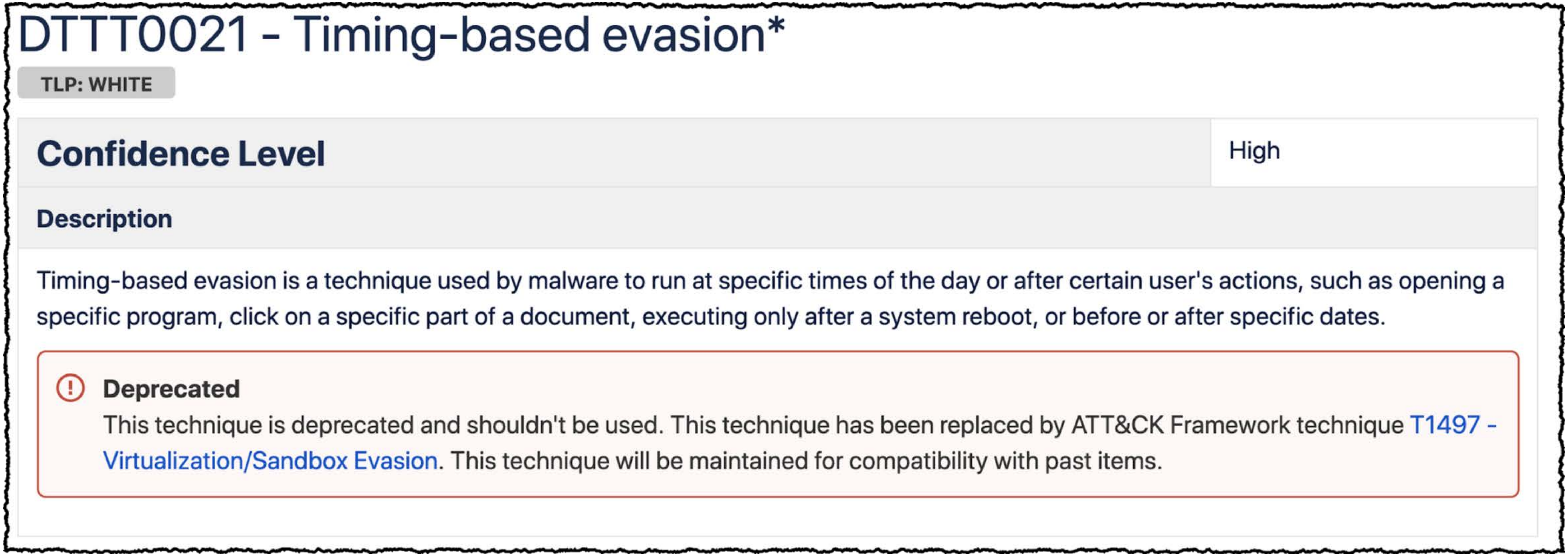
**DNS Tunneling** is a technique used for Command and Control and Data Exfiltration. Also known as **VPN over DNS**, it's based on using the Doma … tors can tunnel ot … multiple instances … rnal network. … o be used to bypass captive portals, to avoid paying for WiFi service and bypass other restrictions.

Please note that DNS Tunneling is considered a sub-technique for T1094 - Custom Command and Control Protocol, although is being conserved for clarification purposes

# DTTT0006 - DNS Tunneling

DNS Tunneling is considered a sub-technique for T1094 - Custom Command and Control Protocol

Courtesy of the Threat Library Team – Deloitte



# DTTT0021 - Timing-based evasion*

TLP: WHITE

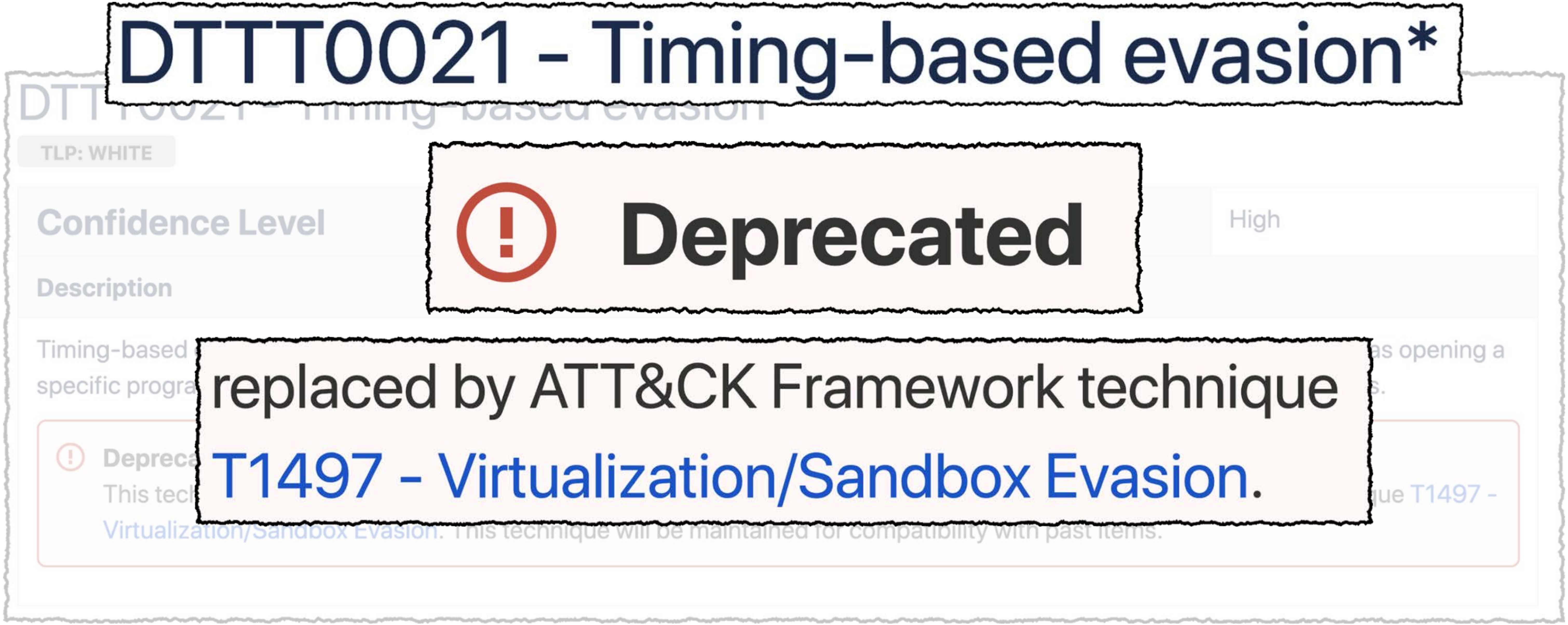
| | |
|---|---|
| **Confidence Level** | High |

**Description**

Timing-based evasion is a technique used by malware to run at specific times of the day or after certain user's actions, such as opening a specific program, click on a specific part of a document, executing only after a system reboot, or before or after specific dates.

**Deprecated**
This technique is deprecated and shouldn't be used. This technique has been replaced by ATT&CK Framework technique T1497 - Virtualization/Sandbox Evasion. This technique will be maintained for compatibility with past items.

**Courtesy of the Threat Library Team – Deloitte**



# DTTT0021 - Timing-based evasion*

**Deprecated**

replaced by ATT&CK Framework technique T1497 - Virtualization/Sandbox Evasion.

DTTT0021 - Timing-based evasion

TLP: WHITE

| Confidence Level | High |
|---|---|

**Description**

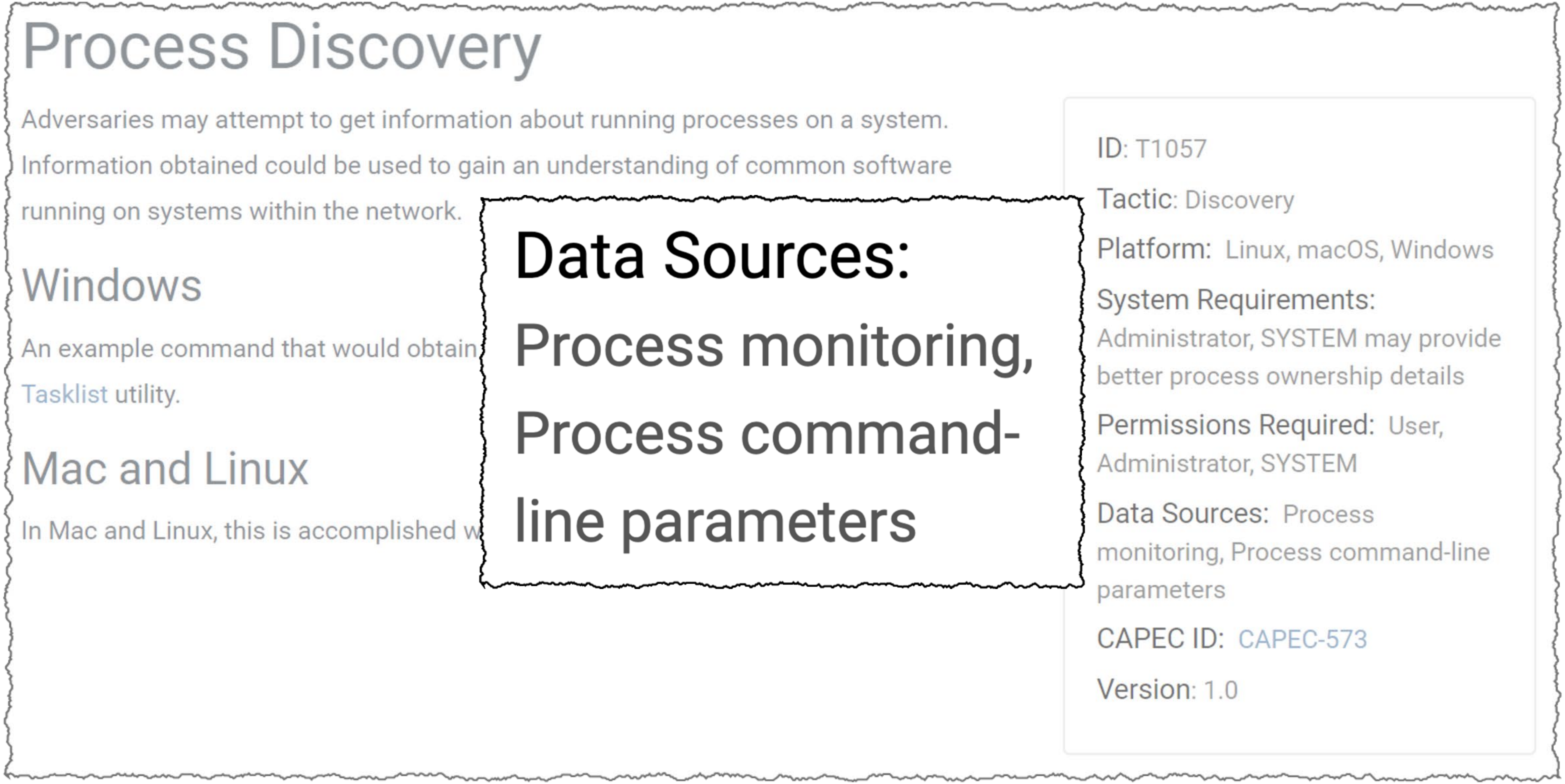
Timing-based … as opening a specific progra… s.

ⓘ **Depreca…**
This tech… ique T1497 - Virtualization/Sandbox Evasion. This technique will be maintained for compatibility with past items.

**Courtesy of the Threat Library Team – Deloitte**

How can a blue teamer know
what to detect and
if she has the right data?

# Map data to TTPs



# Process Discovery

Adversaries may attempt to get information about running processes on a system. Information obtained could be used to gain an understanding of common software running on systems within the network.

## Windows

An example command that would obtain

Tasklist utility.

## Mac and Linux

In Mac and Linux, this is accomplished w

ID: T1057

Tactic: Discovery

Platform: Linux, macOS, Windows

System Requirements: Administrator, SYSTEM may provide better process ownership details

Permissions Required: User, Administrator, SYSTEM

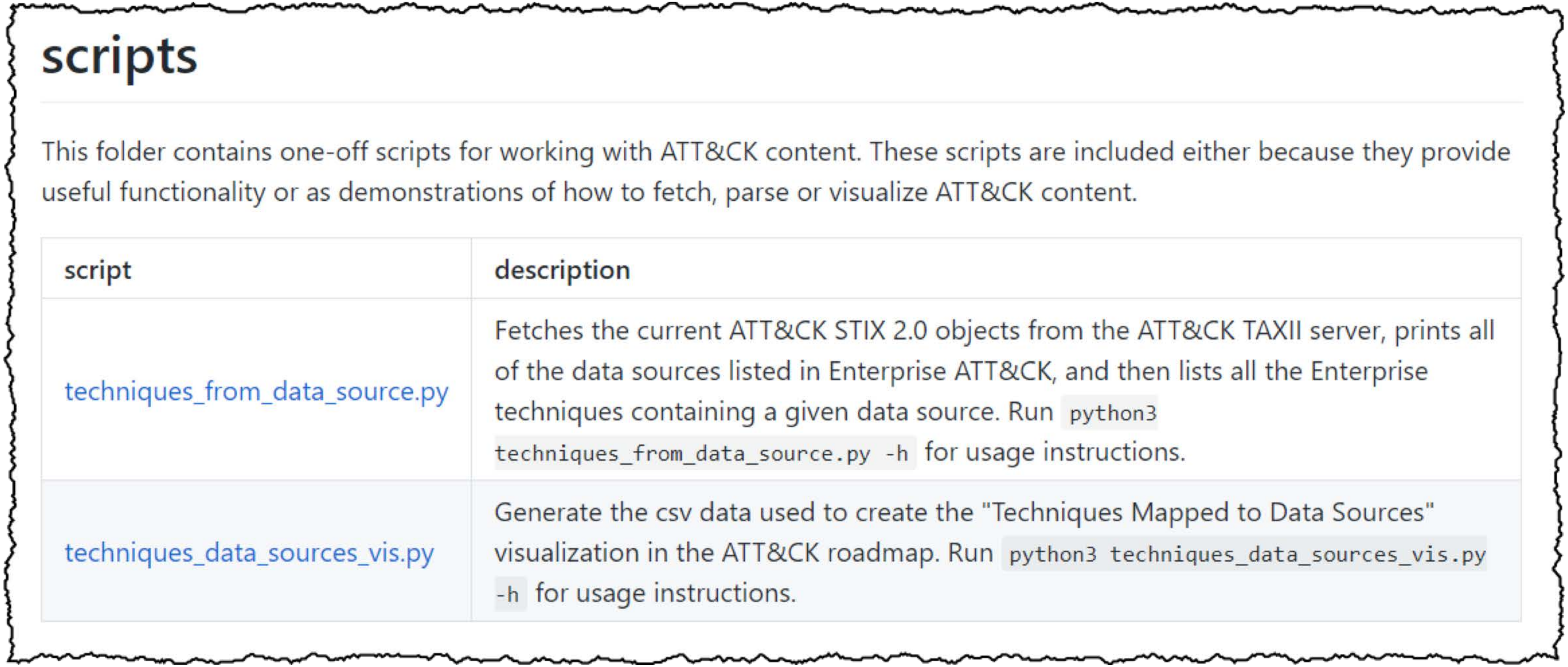
Data Sources: Process monitoring, Process command-line parameters

CAPEC ID: CAPEC-573

Version: 1.0

**Data Sources:**

Process monitoring, Process command-line parameters



# scripts

This folder contains one-off scripts for working with ATT&CK content. These scripts are included either because they provide useful functionality or as demonstrations of how to fetch, parse or visualize ATT&CK content.

| script | description |
|---|---|
| techniques_from_data_source.py | Fetches the current ATT&CK STIX 2.0 objects from the ATT&CK TAXII server, prints all of the data sources listed in Enterprise ATT&CK, and then lists all the Enterprise techniques containing a given data source. Run `python3 techniques_from_data_source.py -h` for usage instructions. |
| techniques_data_sources_vis.py | Generate the csv data used to create the "Techniques Mapped to Data Sources" visualization in the ATT&CK roadmap. Run `python3 techniques_data_sources_vis.py -h` for usage instructions. |

https://github.com/mitre-attack/attack-scripts/tree/master/scripts

# Assess your data potential with ATTACK Datamap

Olaf Hartong Follow

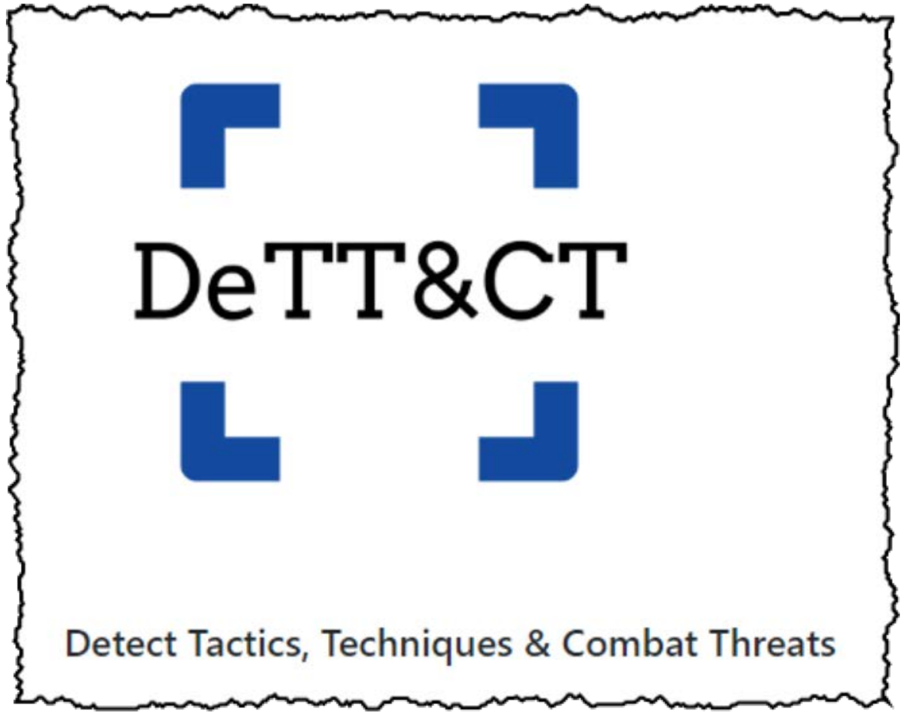
Apr 7 · 4 min read

https://medium.com/@olafhartong/assess-your-data-potential-with-att-ck-datamap-f44884cfed11

# The Unfetter Project

Discover and analyze gaps in your security posture.

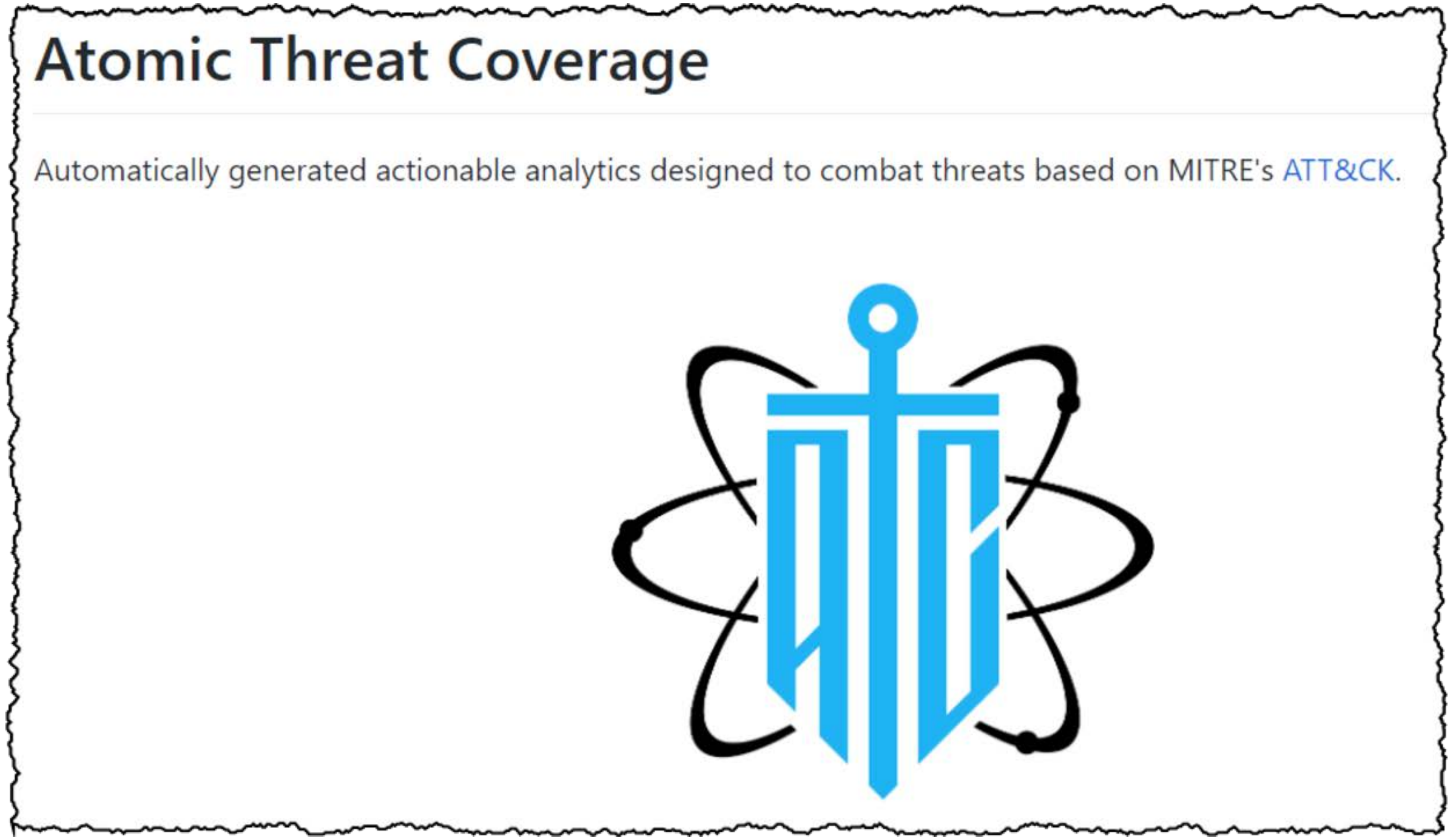
https://nsacyber.github.io/unfetter/



DeTT&CT

Detect Tactics, Techniques & Combat Threats

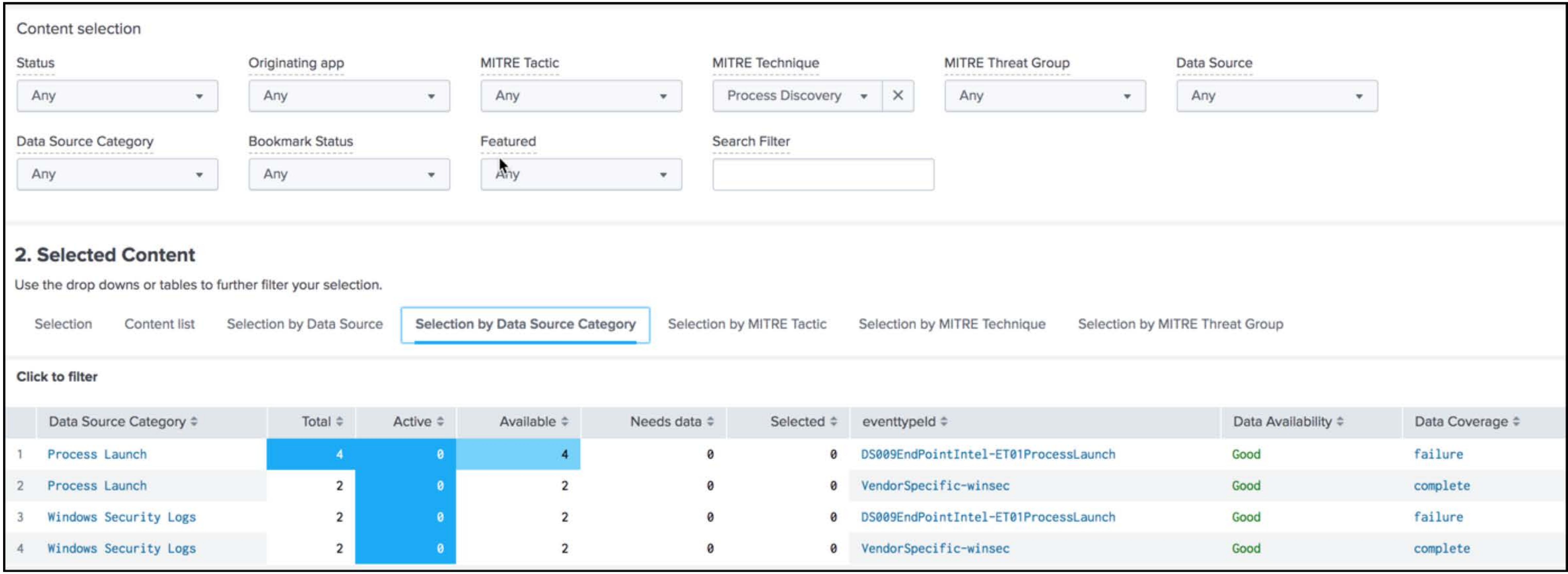
https://github.com/rabobank-cdc/DeTTECT



## Atomic Threat Coverage

Automatically generated actionable analytics designed to combat threats based on MITRE's ATT&CK.

https://github.com/krakow2600/atomic-threat-coverage



Content selection

Status: Any

Originating app: Any

MITRE Tactic: Any

MITRE Technique: Process Discovery ✕

MITRE Threat Group: Any

Data Source: Any

Data Source Category: Any

Bookmark Status: Any

Featured: Any

Search Filter:

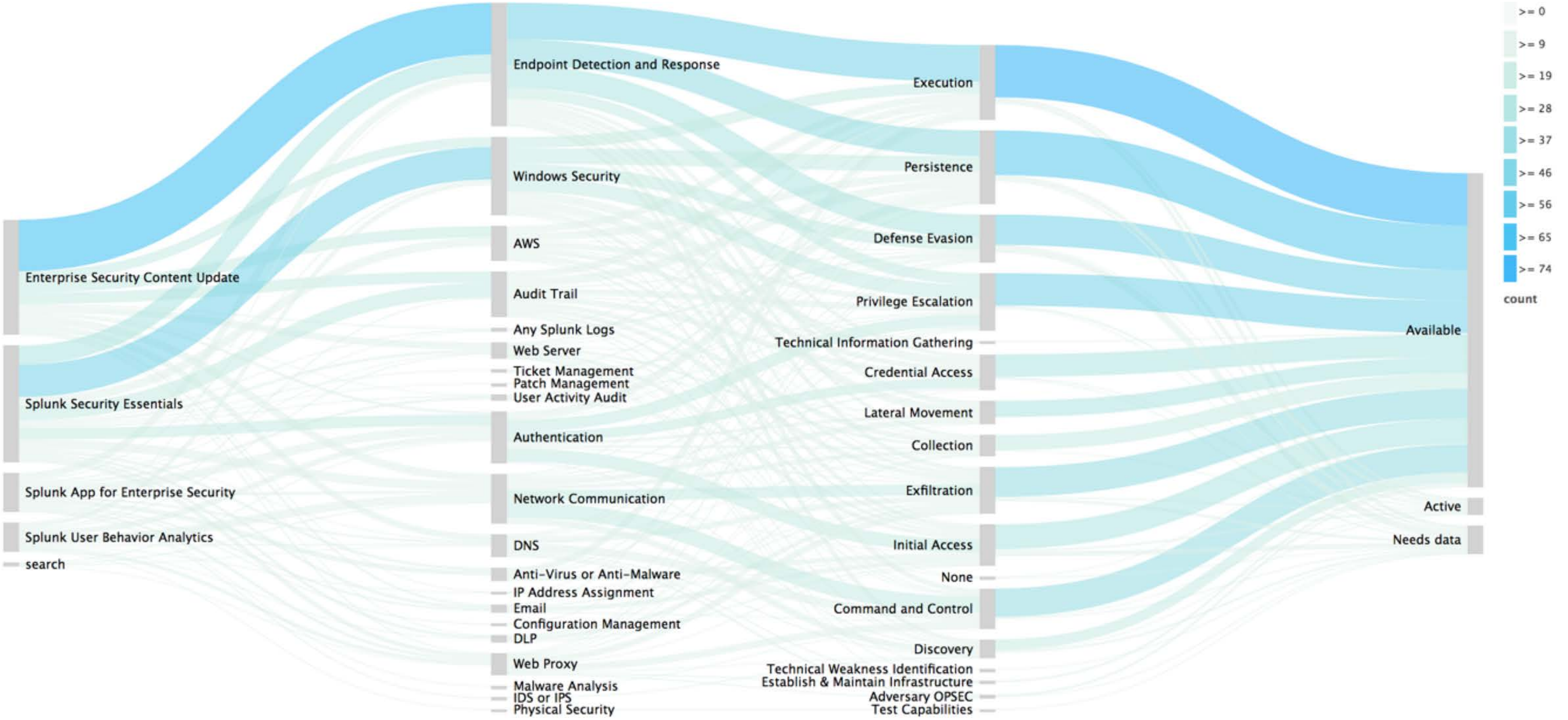
## 2. Selected Content

Use the drop downs or tables to further filter your selection.

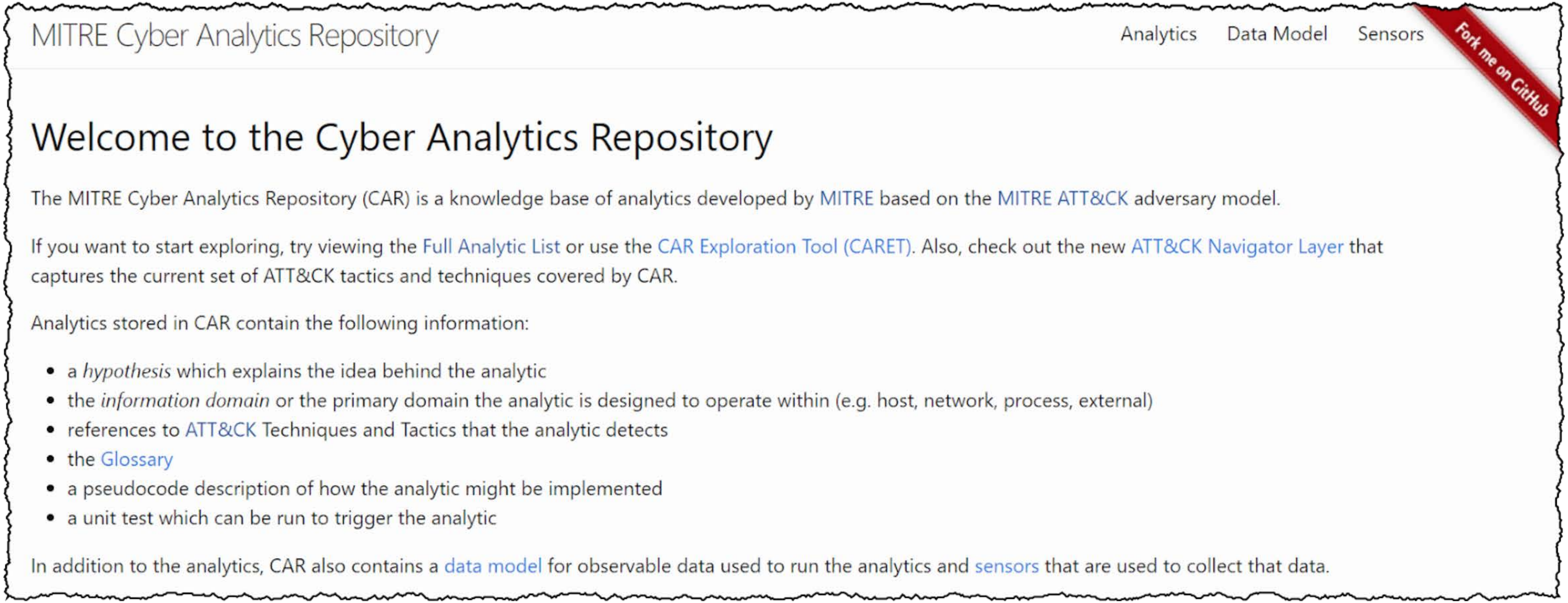
Selection
Content list
Selection by Data Source
Selection by Data Source Category
Selection by MITRE Tactic
Selection by MITRE Technique
Selection by MITRE Threat Group

**Click to filter**

|  | Data Source Category | Total | Active | Available | Needs data | Selected | eventtypeId | Data Availability | Data Coverage |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Process Launch | 4 | 0 | 4 | 0 | 0 | DS009EndPointIntel-ET01ProcessLaunch | Good | failure |
| 2 | Process Launch | 2 | 0 | 2 | 0 | 0 | VendorSpecific-winsec | Good | complete |
| 3 | Windows Security Logs | 2 | 0 | 2 | 0 | 0 | DS009EndPointIntel-ET01ProcessLaunch | Good | failure |
| 4 | Windows Security Logs | 2 | 0 | 2 | 0 | 0 | VendorSpecific-winsec | Good | complete |


Enterprise Security Content Update
Splunk Security Essentials
Splunk App for Enterprise Security
Splunk User Behavior Analytics
search
Endpoint Detection and Response
Windows Security
AWS
Audit Trail
Any Splunk Logs
Web Server
Ticket Management
Patch Management
User Activity Audit
Authentication
Network Communication
DNS
Anti-Virus or Anti-Malware
IP Address Assignment
Email
Configuration Management
DLP
Web Proxy
Malware Analysis
IDS or IPS
Physical Security
Execution
Persistence
Defense Evasion
Privilege Escalation
Technical Information Gathering
Credential Access
Lateral Movement
Collection
Exfiltration
Initial Access
None
Command and Control
Discovery
Technical Weakness Identification
Establish & Maintain Infrastructure
Adversary OPSEC
Test Capabilities
Available
Active
Needs data
>= 0
>= 9
>= 19
>= 28
>= 37
>= 46
>= 56
>= 65
>= 74
count

# One Sig!=Complete TTP Coverage



# Welcome to the Cyber Analytics Repository

The MITRE Cyber Analytics Repository (CAR) is a knowledge base of analytics developed by MITRE based on the MITRE ATT&CK adversary model.

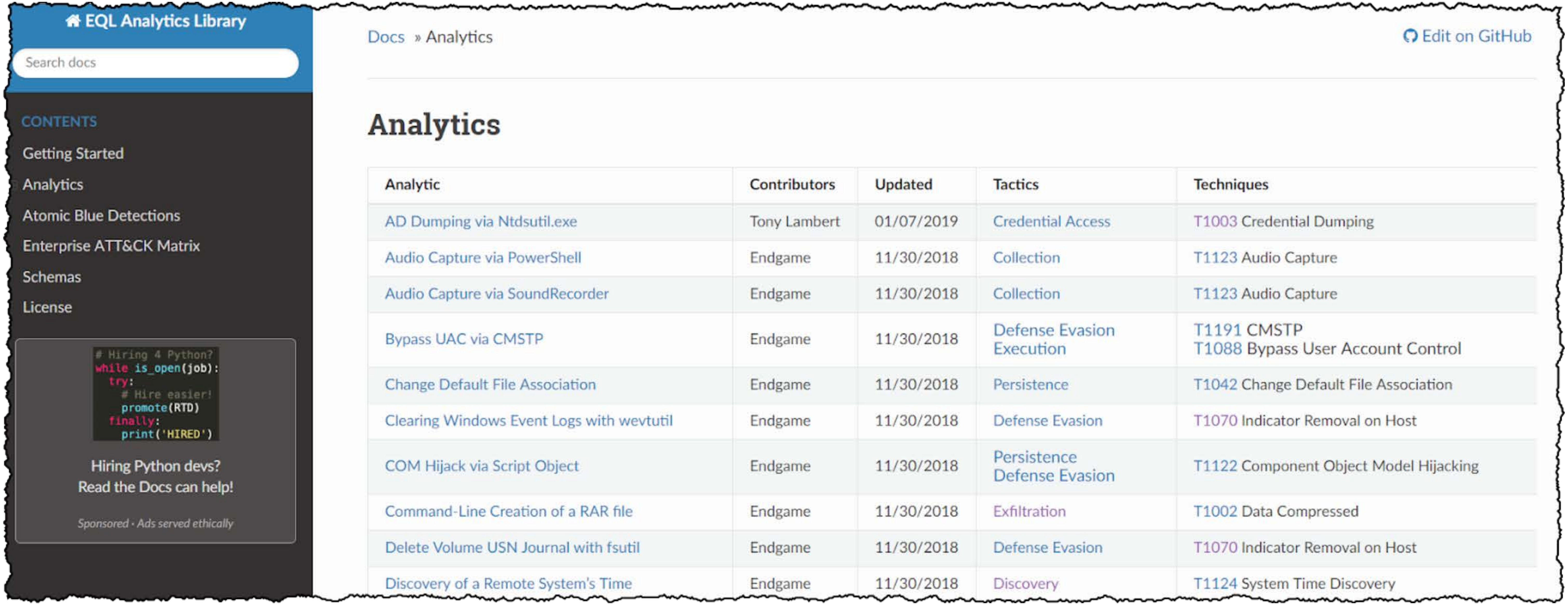
If you want to start exploring, try viewing the Full Analytic List or use the CAR Exploration Tool (CARET). Also, check out the new ATT&CK Navigator Layer that captures the current set of ATT&CK tactics and techniques covered by CAR.

Analytics stored in CAR contain the following information:

- a *hypothesis* which explains the idea behind the analytic
- the *information domain* or the primary domain the analytic is designed to operate within (e.g. host, network, process, external)
- references to ATT&CK Techniques and Tactics that the analytic detects
- the Glossary
- a pseudocode description of how the analytic might be implemented
- a unit test which can be run to trigger the analytic

In addition to the analytics, CAR also contains a data model for observable data used to run the analytics and sensors that are used to collect that data.

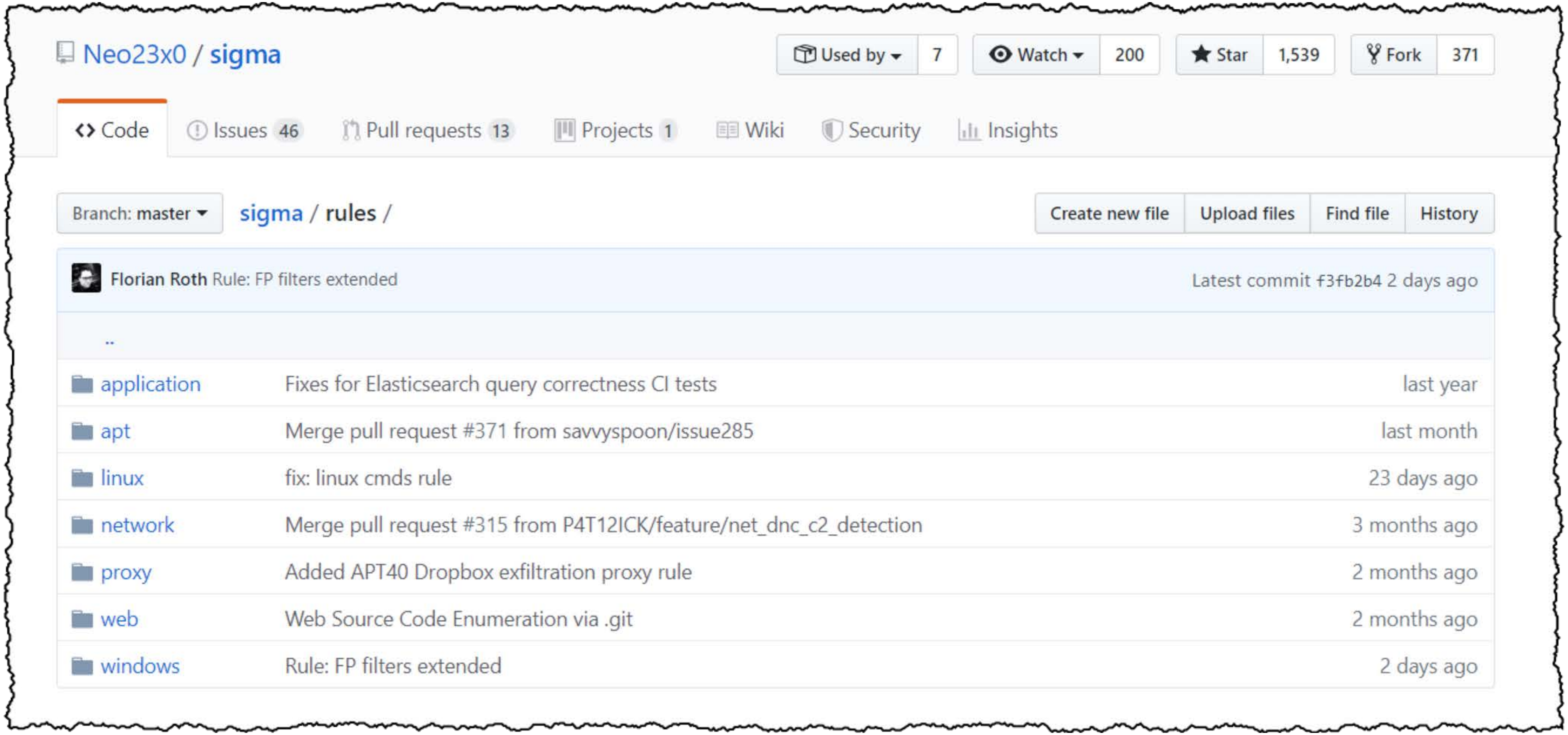
https://car.mitre.org/



# Analytics

| Analytic | Contributors | Updated | Tactics | Techniques |
|---|---|---|---|---|
| AD Dumping via Ntdsutil.exe | Tony Lambert | 01/07/2019 | Credential Access | T1003 Credential Dumping |
| Audio Capture via PowerShell | Endgame | 11/30/2018 | Collection | T1123 Audio Capture |
| Audio Capture via SoundRecorder | Endgame | 11/30/2018 | Collection | T1123 Audio Capture |
| Bypass UAC via CMSTP | Endgame | 11/30/2018 | Defense Evasion<br>Execution | T1191 CMSTP<br>T1088 Bypass User Account Control |
| Change Default File Association | Endgame | 11/30/2018 | Persistence | T1042 Change Default File Association |
| Clearing Windows Event Logs with wevtutil | Endgame | 11/30/2018 | Defense Evasion | T1070 Indicator Removal on Host |
| COM Hijack via Script Object | Endgame | 11/30/2018 | Persistence<br>Defense Evasion | T1122 Component Object Model Hijacking |
| Command-Line Creation of a RAR file | Endgame | 11/30/2018 | Exfiltration | T1002 Data Compressed |
| Delete Volume USN Journal with fsutil | Endgame | 11/30/2018 | Defense Evasion | T1070 Indicator Removal on Host |
| Discovery of a Remote System's Time | Endgame | 11/30/2018 | Discovery | T1124 System Time Discovery |

https://eqllib.readthedocs.io/en/latest/analytics.html



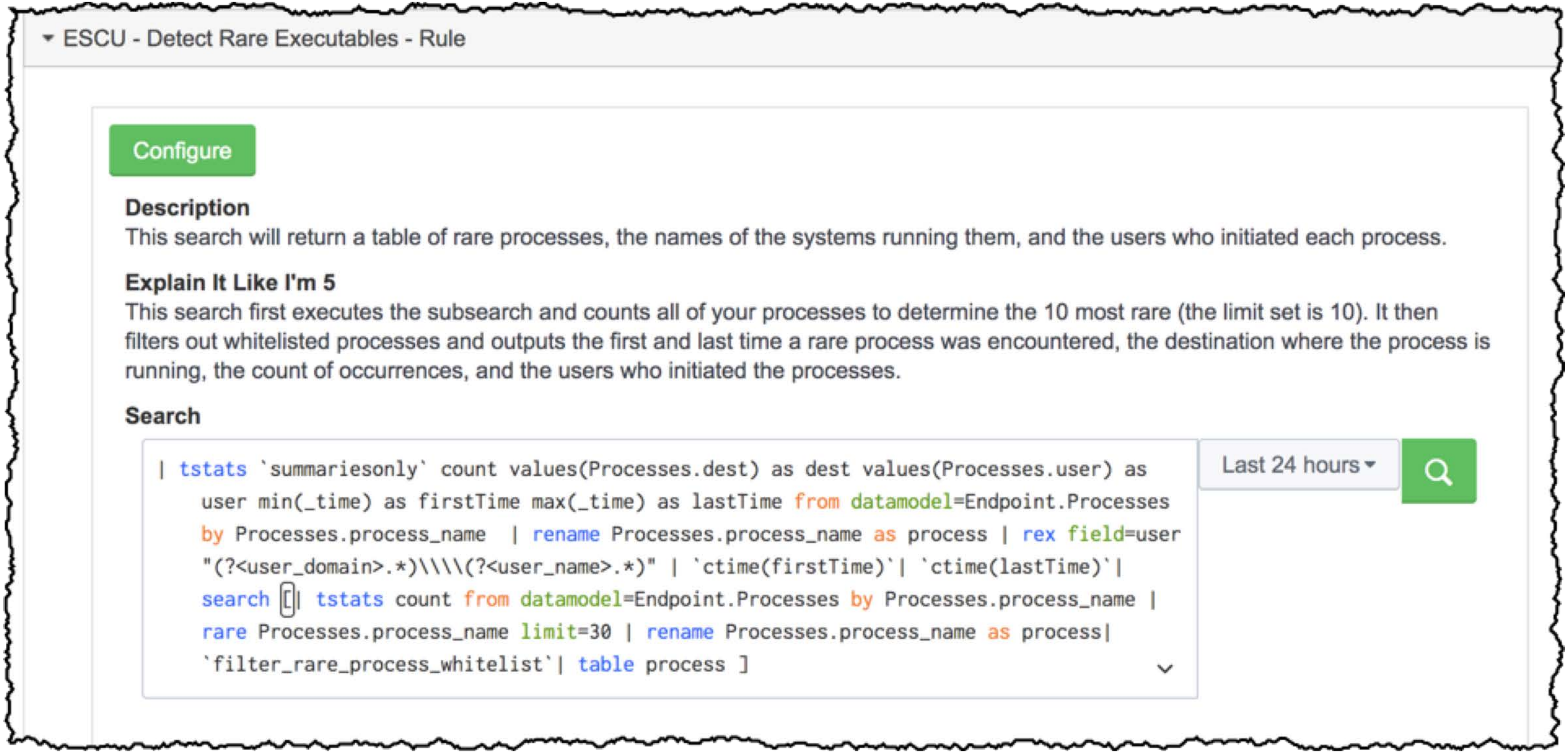
sigma / rules /

Florian Roth Rule: FP filters extended — Latest commit f3fb2b4 2 days ago

..

| | | |
|---|---|---|
| application | Fixes for Elasticsearch query correctness CI tests | last year |
| apt | Merge pull request #371 from savvyspoon/issue285 | last month |
| linux | fix: linux cmds rule | 23 days ago |
| network | Merge pull request #315 from P4T12ICK/feature/net_dnc_c2_detection | 3 months ago |
| proxy | Added APT40 Dropbox exfiltration proxy rule | 2 months ago |
| web | Web Source Code Enumeration via .git | 2 months ago |
| windows | Rule: FP filters extended | 2 days ago |

https://github.com/Neo23x0/sigma/tree/master/rules



ESCU - Detect Rare Executables - Rule

**Description**

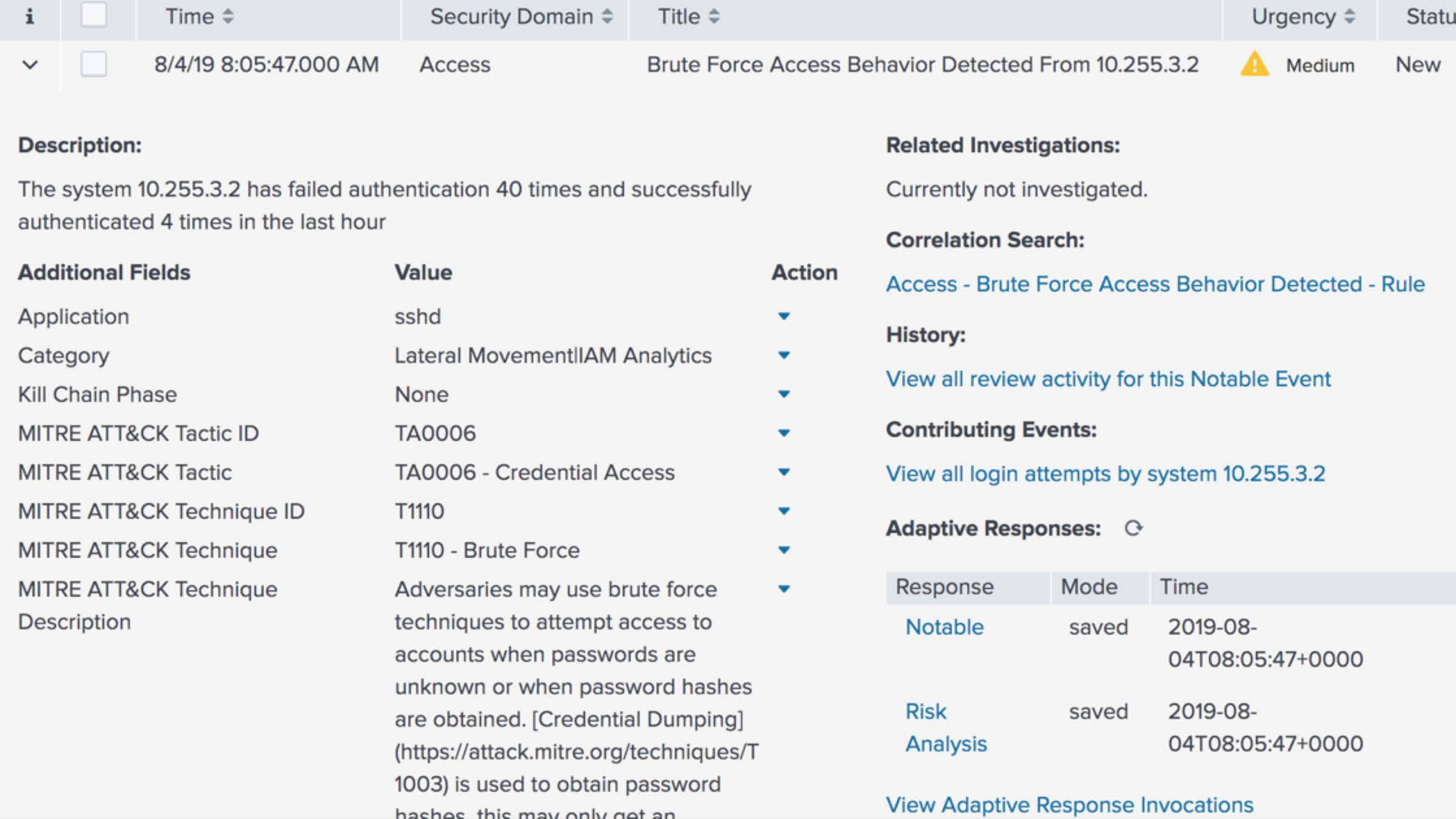
This search will return a table of rare processes, the names of the systems running them, and the users who initiated each process.

**Explain It Like I'm 5**

This search first executes the subsearch and counts all of your processes to determine the 10 most rare (the limit set is 10). It then filters out whitelisted processes and outputs the first and last time a rare process was encountered, the destination where the process is running, the count of occurrences, and the users who initiated the processes.

**Search**

```
| tstats `summariesonly` count values(Processes.dest) as dest values(Processes.user) as
    user min(_time) as firstTime max(_time) as lastTime from datamodel=Endpoint.Processes
    by Processes.process_name  | rename Processes.process_name as process | rex field=user
    "(?<user_domain>.*)\\\\(?<user_name>.*)" | `ctime(firstTime)`| `ctime(lastTime)`|
    search [| tstats count from datamodel=Endpoint.Processes by Processes.process_name |
    rare Processes.process_name limit=30 | rename Processes.process_name as process|
    `filter_rare_process_whitelist`| table process ]
```



| i | □ | Time ⇕ | Security Domain ⇕ | Title ⇕ | Urgency ⇕ | Statu |
|---|---|---|---|---|---|---|
| ⌄ | □ | 8/4/19 8:05:47.000 AM | Access | Brute Force Access Behavior Detected From 10.255.3.2 | ⚠ Medium | New |

**Description:**

The system 10.255.3.2 has failed authentication 40 times and successfully authenticated 4 times in the last hour

| Additional Fields | Value | Action |
|---|---|---|
| Application | sshd | ▾ |
| Category | Lateral Movement\|IAM Analytics | ▾ |
| Kill Chain Phase | None | ▾ |
| MITRE ATT&CK Tactic ID | TA0006 | ▾ |
| MITRE ATT&CK Tactic | TA0006 - Credential Access | ▾ |
| MITRE ATT&CK Technique ID | T1110 | ▾ |
| MITRE ATT&CK Technique | T1110 - Brute Force | ▾ |
| MITRE ATT&CK Technique Description | Adversaries may use brute force techniques to attempt access to accounts when passwords are unknown or when password hashes are obtained. [Credential Dumping](https://attack.mitre.org/techniques/T1003) is used to obtain password hashes, this may only get an | ▾ |

**Related Investigations:**

Currently not investigated.

**Correlation Search:**

Access - Brute Force Access Behavior Detected - Rule

**History:**

View all review activity for this Notable Event

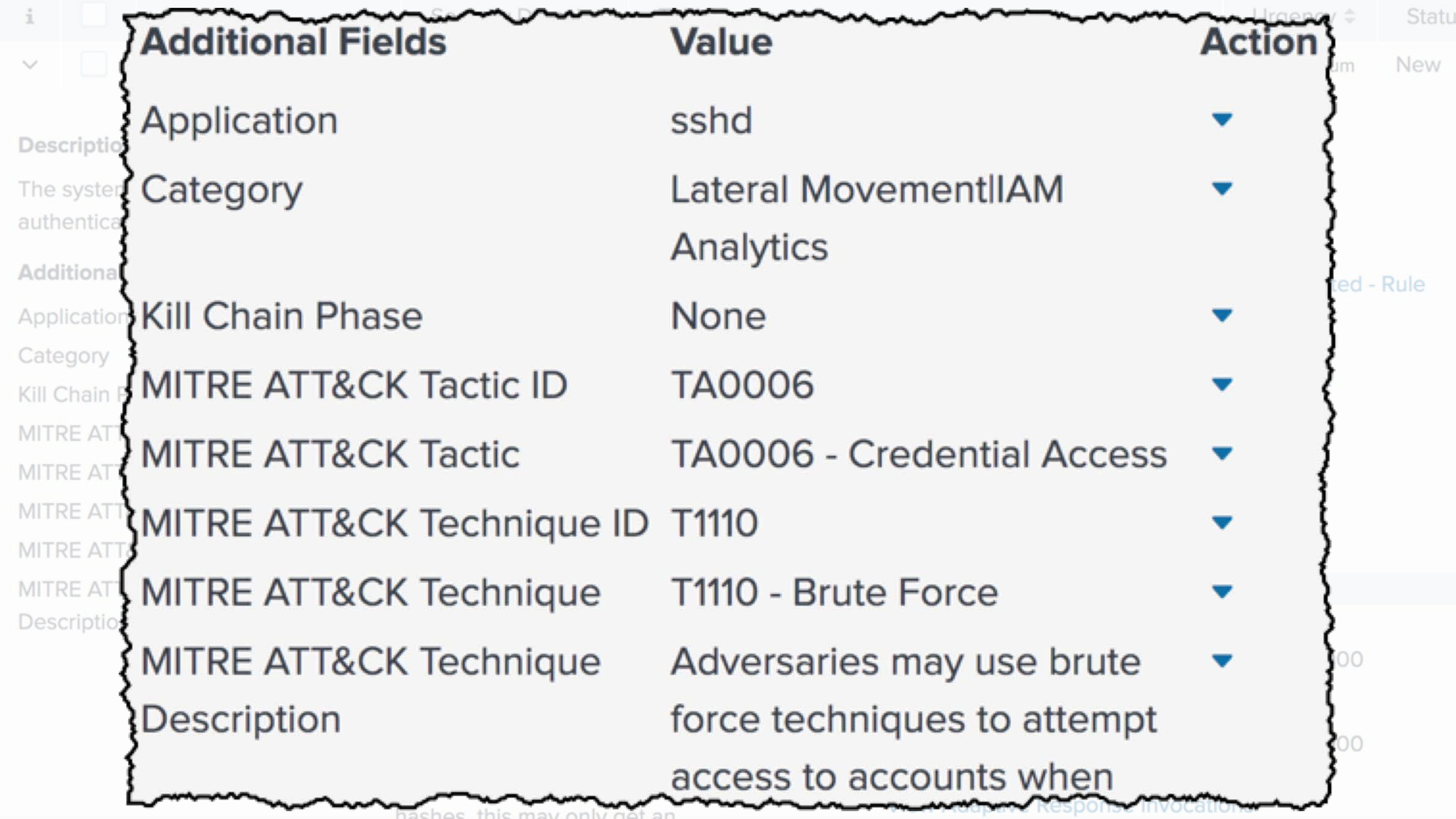
**Contributing Events:**

View all login attempts by system 10.255.3.2

**Adaptive Responses:** ⟳

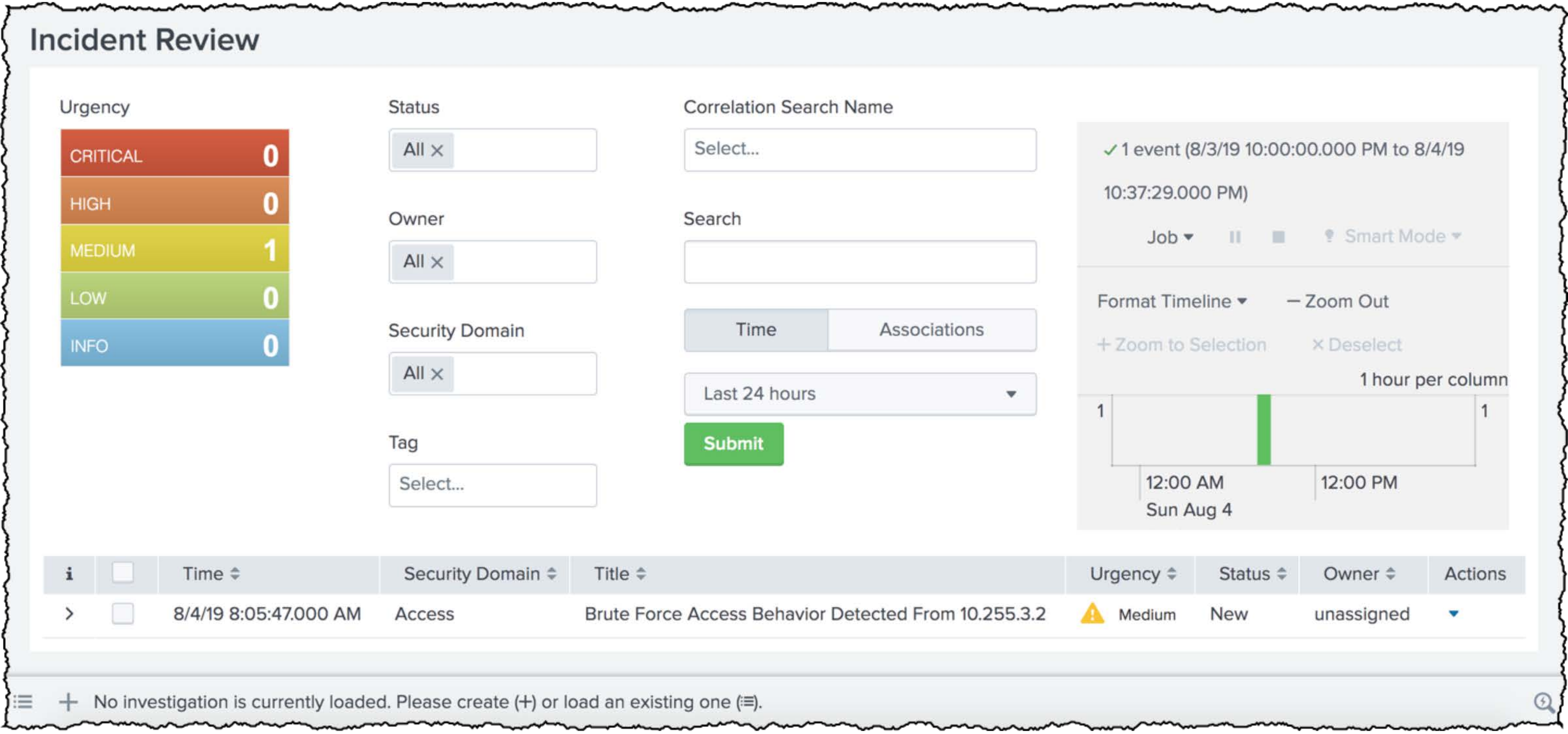
| Response | Mode | Time |
|---|---|---|
| Notable | saved | 2019-08-04T08:05:47+0000 |
| Risk Analysis | saved | 2019-08-04T08:05:47+0000 |

View Adaptive Response Invocations



| Additional Fields | Value | Action |
|---|---|---|
| Application | sshd | ▼ |
| Category | Lateral Movement\|IAM Analytics | ▼ |
| Kill Chain Phase | None | ▼ |
| MITRE ATT&CK Tactic ID | TA0006 | ▼ |
| MITRE ATT&CK Tactic | TA0006 - Credential Access | ▼ |
| MITRE ATT&CK Technique ID | T1110 | ▼ |
| MITRE ATT&CK Technique | T1110 - Brute Force | ▼ |
| MITRE ATT&CK Technique Description | Adversaries may use brute force techniques to attempt access to accounts when | ▼ |

# Reduced Alerts



Incident Review

Urgency

| | |
|---|---|
| CRITICAL | 0 |
| HIGH | 0 |
| MEDIUM | 1 |
| LOW | 0 |
| INFO | 0 |

Status: All ×

Owner: All ×

Security Domain: All ×

Tag: Select...

Correlation Search Name: Select...

Search:

Time | Associations

Last 24 hours

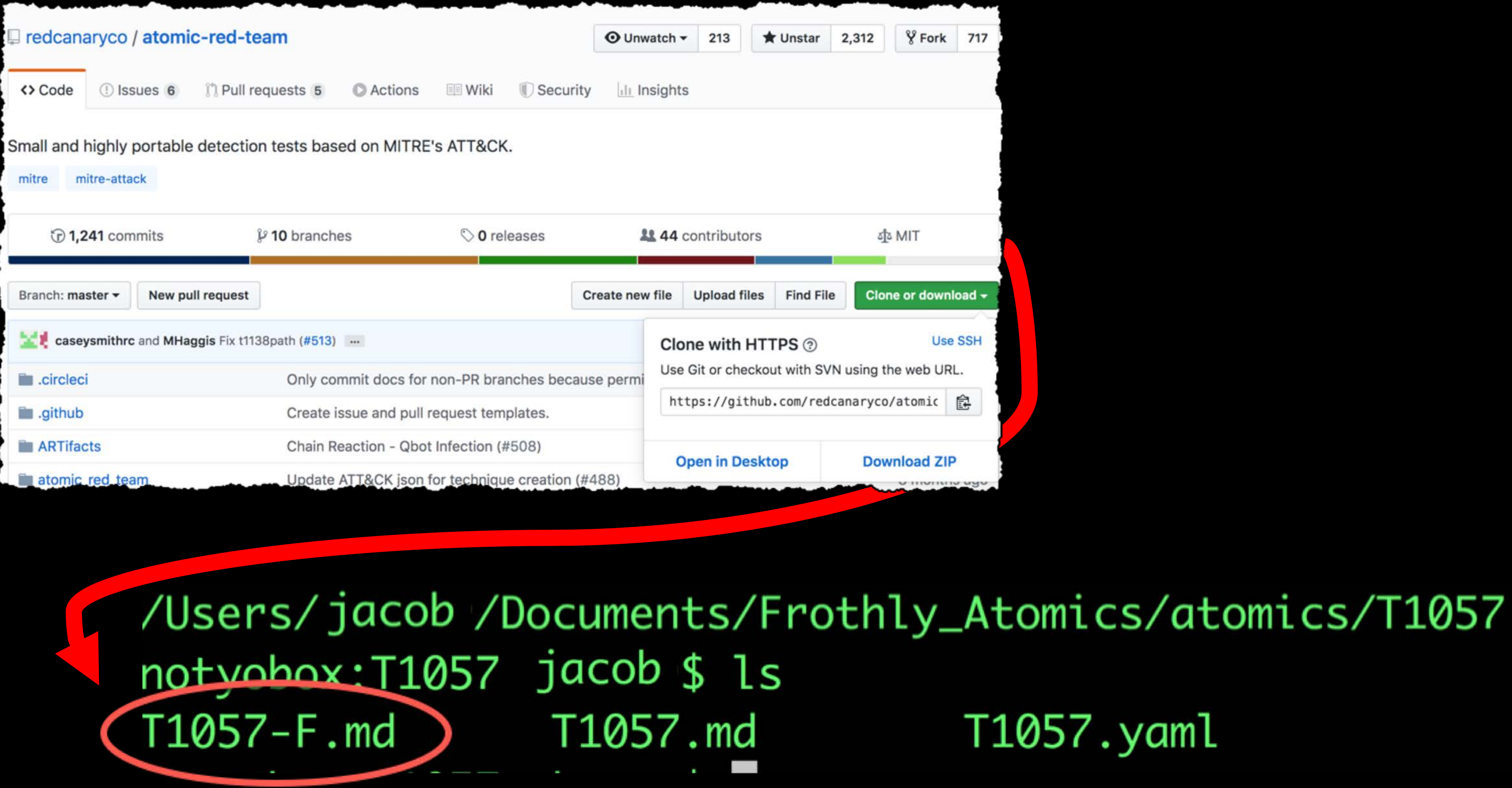
Submit

✓ 1 event (8/3/19 10:00:00.000 PM to 8/4/19 10:37:29.000 PM)

| i | ☐ | Time | Security Domain | Title | Urgency | Status | Owner | Actions |
|---|---|---|---|---|---|---|---|---|
| › | ☐ | 8/4/19 8:05:47.000 AM | Access | Brute Force Access Behavior Detected From 10.255.3.2 | ⚠ Medium | New | unassigned | ▾ |

☰ + No investigation is currently loaded. Please create (+) or load an existing one (☰).

# How can a red teamer help improve defenses?



redcanaryco / atomic-red-team

Small and highly portable detection tests based on MITRE's ATT&CK.

caseysmithrc and MHaggis Fix t1138path (#513)

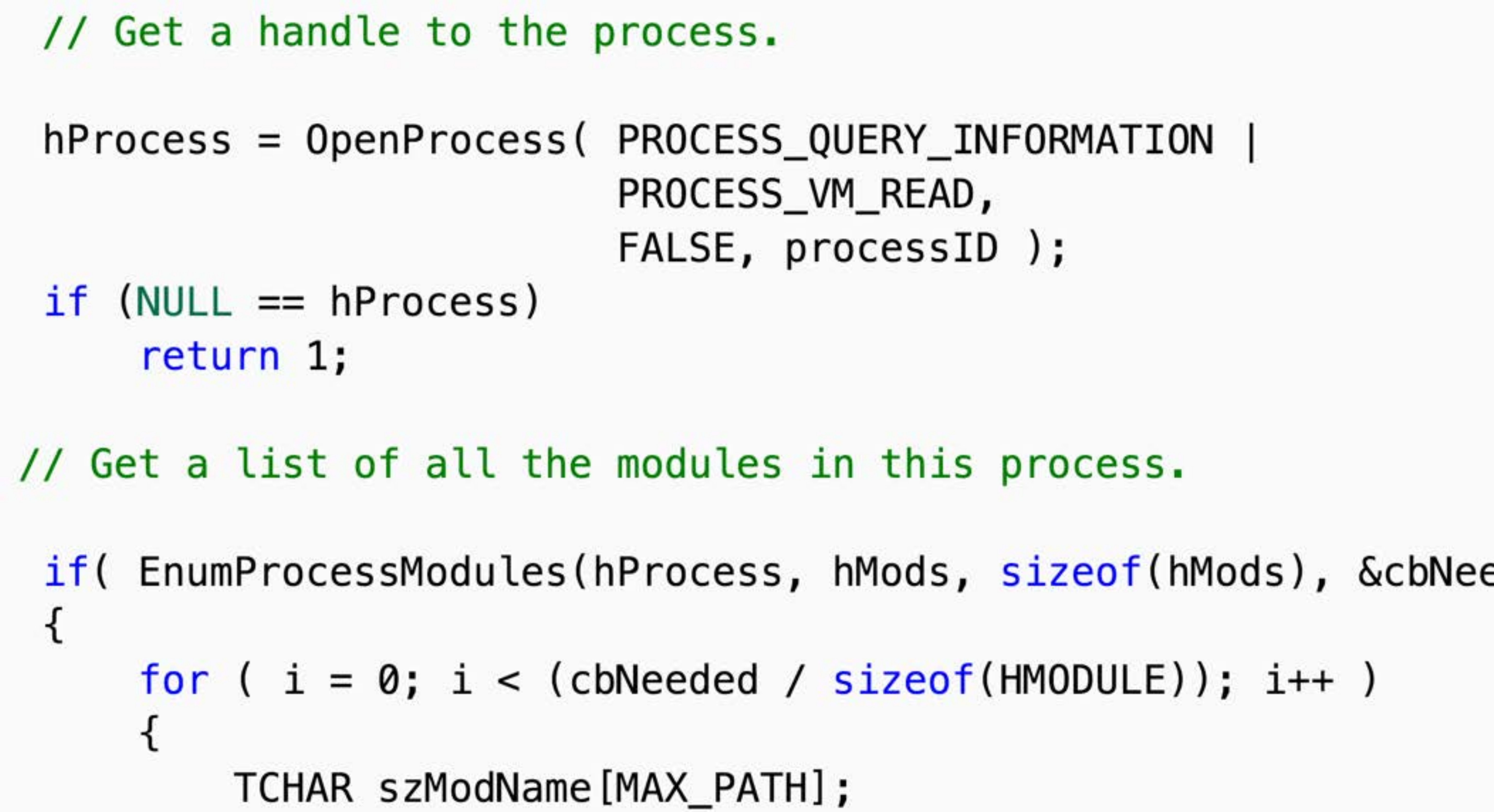
| | |
|---|---|
| .circleci | Only commit docs for non-PR branches because permi |
| .github | Create issue and pull request templates. |
| ARTifacts | Chain Reaction - Qbot Infection (#508) |
| atomic_red_team | Update ATT&CK json for technique creation (#488) |

Clone with HTTPS

Use Git or checkout with SVN using the web URL.

https://github.com/redcanaryco/atomic

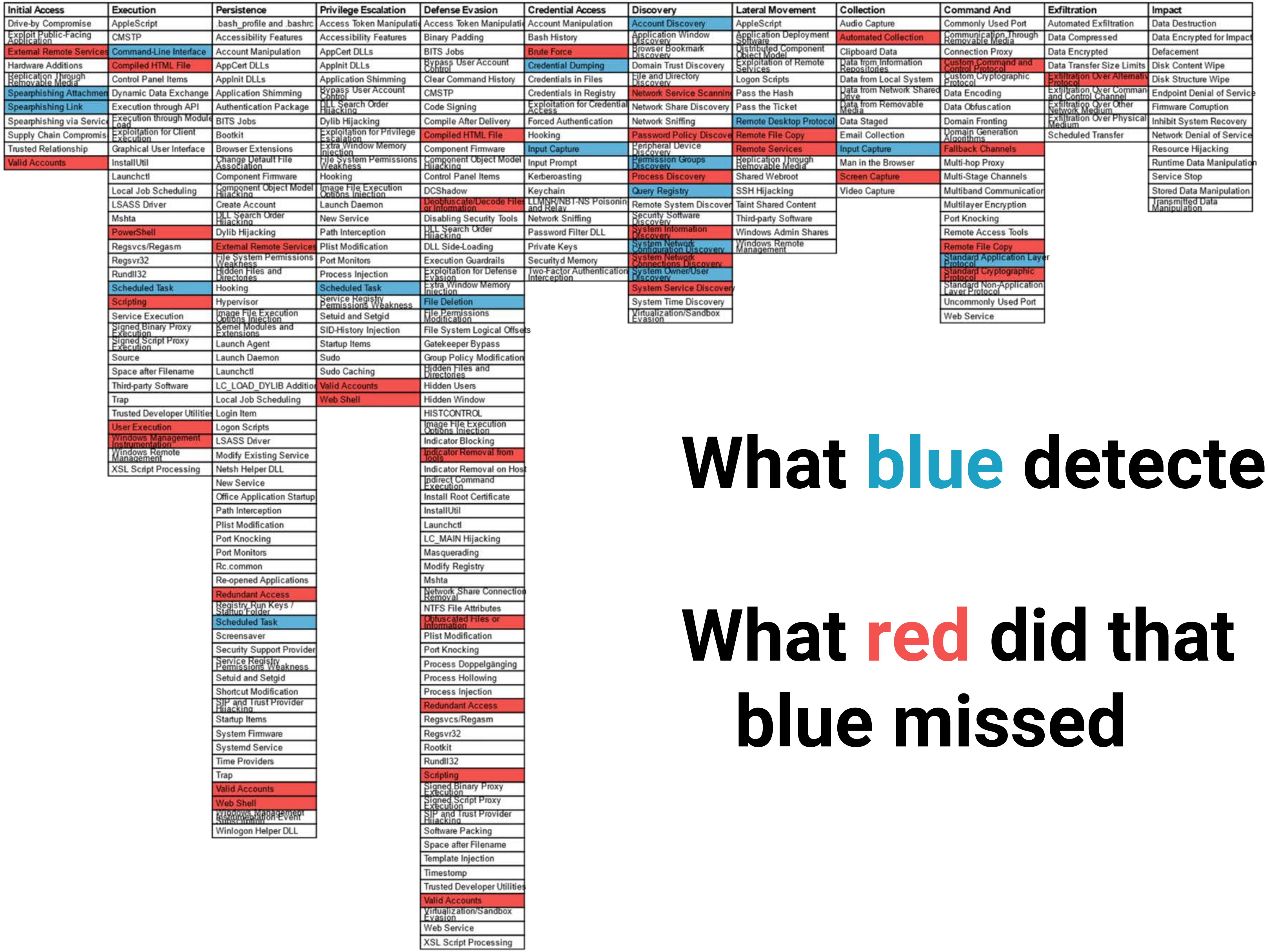
```
/Users/jacob /Documents/Frothly_Atomics/atomics/T1057
notyobox:T1057 jacob $ ls
T1057-F.md        T1057.md         T1057.yaml
```



```
 // Get a handle to the process.

 hProcess = OpenProcess( PROCESS_QUERY_INFORMATION |
                         PROCESS_VM_READ,
                         FALSE, processID );
 if (NULL == hProcess)
     return 1;

// Get a list of all the modules in this process.

 if( EnumProcessModules(hProcess, hMods, sizeof(hMods), &cbNee
 {
     for ( i = 0; i < (cbNeeded / sizeof(HMODULE)); i++ )
     {
         TCHAR szModName[MAX_PATH];
```

https://docs.microsoft.com/en-us/windows/win32/psapi/enumerating-all-modules-for-a-process

# Go Purple



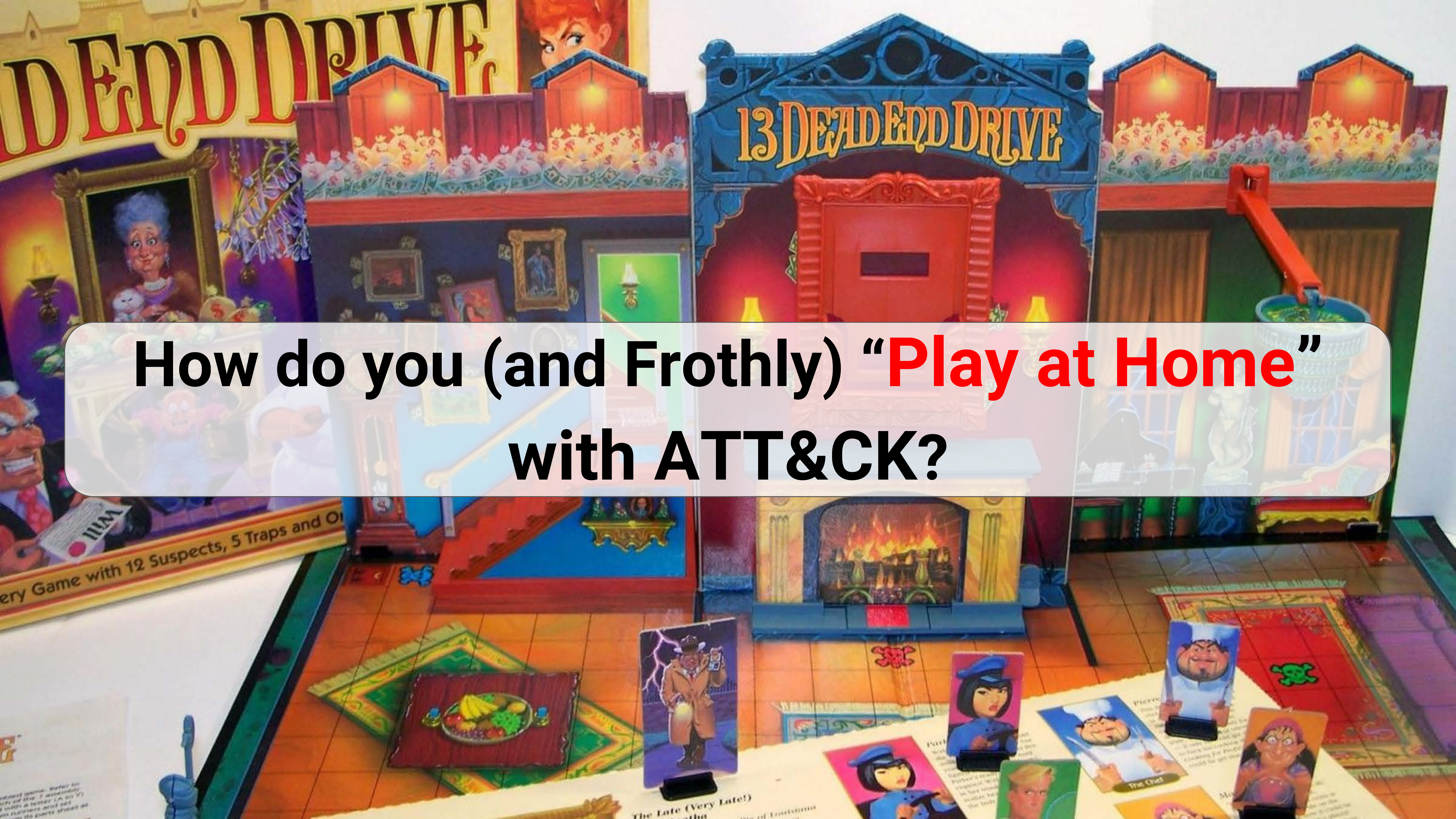
| Initial Access | Execution | Persistence | Privilege Escalation | Defense Evasion | Credential Access | Discovery | Lateral Movement | Collection | Command And | Exfiltration | Impact |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Drive-by Compromise | AppleScript | .bash_profile and .bashrc | Access Token Manipulation | Access Token Manipulation | Account Manipulation | 🟦 Account Discovery | AppleScript | Audio Capture | Commonly Used Port | Automated Exfiltration | Data Destruction |
| Exploit Public-Facing Application | CMSTP | Accessibility Features | Accessibility Features | Binary Padding | Bash History | Application Window Discovery | Application Deployment Software | 🟥 Automated Collection | Communication Through Removable Media | Data Compressed | Data Encrypted for Impact |
| 🟥 External Remote Services | 🟦 Command-Line Interface | Account Manipulation | AppCert DLLs | BITS Jobs | 🟥 Brute Force | Browser Bookmark Discovery | Distributed Component Object Model | Clipboard Data | Connection Proxy | Data Encrypted | Defacement |
| Hardware Additions | 🟥 Compiled HTML File | AppCert DLLs | AppInit DLLs | Bypass User Account Control | 🟦 Credential Dumping | Domain Trust Discovery | Exploitation of Remote Services | Data from Information Repositories | 🟥 Custom Command and Control Protocol | Data Transfer Size Limits | Disk Content Wipe |
| Replication Through Removable Media | Control Panel Items | AppInit DLLs | Application Shimming | Clear Command History | Credentials in Files | File and Directory Discovery | Logon Scripts | Data from Local System | Custom Cryptographic Protocol | 🟥 Exfiltration Over Alternative Protocol | Disk Structure Wipe |
| 🟦 Spearphishing Attachment | Dynamic Data Exchange | Application Shimming | Bypass User Account Control | CMSTP | Credentials in Registry | 🟥 Network Service Scanning | Pass the Hash | Data from Network Shared Drive | Data Encoding | Exfiltration Over Command and Control Channel | Endpoint Denial of Service |
| 🟦 Spearphishing Link | Execution through API | Authentication Package | DLL Search Order Hijacking | Code Signing | Exploitation for Credential Access | Network Share Discovery | Pass the Ticket | Data from Removable Media | Data Obfuscation | Exfiltration Over Other Network Medium | Firmware Corruption |
| Spearphishing via Service | Execution through Module Load | BITS Jobs | Dylib Hijacking | Compile After Delivery | Forced Authentication | Network Sniffing | 🟦 Remote Desktop Protocol | Data Staged | Domain Fronting | Exfiltration Over Physical Medium | Inhibit System Recovery |
| Supply Chain Compromise | Exploitation for Client Execution | Bootkit | Exploitation for Privilege Escalation | 🟥 Compiled HTML File | Hooking | 🟥 Password Policy Discovery | 🟥 Remote File Copy | Email Collection | Domain Generation Algorithms | Scheduled Transfer | Network Denial of Service |
| Trusted Relationship | Graphical User Interface | Browser Extensions | Extra Window Memory Injection | Component Firmware | 🟦 Input Capture | Peripheral Device Discovery | 🟥 Remote Services | 🟦 Input Capture | 🟥 Fallback Channels | | Resource Hijacking |
| 🟥 Valid Accounts | InstallUtil | Change Default File Association | File System Permissions Weakness | Component Object Model Hijacking | Input Prompt | 🟦 Permission Groups Discovery | Replication Through Removable Media | Man in the Browser | Multi-hop Proxy | | Runtime Data Manipulation |
| | Launchctl | Component Firmware | Hooking | Control Panel Items | Kerberoasting | 🟥 Process Discovery | Shared Webroot | 🟥 Screen Capture | Multi-Stage Channels | | Service Stop |
| | Local Job Scheduling | Component Object Model Hijacking | Image File Execution Options Injection | DCShadow | Keychain | 🟦 Query Registry | SSH Hijacking | Video Capture | Multiband Communication | | Stored Data Manipulation |
| | LSASS Driver | Create Account | Launch Daemon | 🟥 Deobfuscate/Decode Files or Information | LLMNR/NBT-NS Poisoning and Relay | Remote System Discovery | Taint Shared Content | | Multilayer Encryption | | Transmitted Data Manipulation |
| | Mshta | DLL Search Order Hijacking | New Service | Disabling Security Tools | Network Sniffing | Security Software Discovery | Third-party Software | | Port Knocking | | |
| | 🟥 PowerShell | Dylib Hijacking | Path Interception | DLL Search Order Hijacking | Password Filter DLL | 🟥 System Information Discovery | Windows Admin Shares | | Remote Access Tools | | |
| | Regsvcs/Regasm | 🟥 External Remote Services | Plist Modification | DLL Side-Loading | Private Keys | 🟦 System Network Configuration Discovery | Windows Remote Management | | 🟥 Remote File Copy | | |
| | Regsvr32 | File System Permissions Weakness | Port Monitors | Execution Guardrails | Securityd Memory | 🟥 System Network Connections Discovery | | | 🟦 Standard Application Layer Protocol | | |
| | Rundll32 | Hidden Files and Directories | Process Injection | Exploitation for Defense Evasion | Two-Factor Authentication Interception | 🟦 System Owner/User Discovery | | | 🟥 Standard Cryptographic Protocol | | |
| | 🟦 Scheduled Task | Hooking | 🟦 Scheduled Task | Extra Window Memory Injection | | 🟥 System Service Discovery | | | Standard Non-Application Layer Protocol | | |
| | 🟥 Scripting | Hypervisor | Service Registry Permissions Weakness | 🟦 File Deletion | | System Time Discovery | | | Uncommonly Used Port | | |
| | Service Execution | Image File Execution Options Injection | Setuid and Setgid | File Permissions Modification | | Virtualization/Sandbox Evasion | | | Web Service | | |
| | Signed Binary Proxy Execution | Kernel Modules and Extensions | SID-History Injection | File System Logical Offsets | | | | | | | |
| | Signed Script Proxy Execution | Launch Agent | Startup Items | Gatekeeper Bypass | | | | | | | |
| | Source | Launch Daemon | Sudo | Group Policy Modification | | | | | | | |
| | Space after Filename | Launchctl | Sudo Caching | Hidden Files and Directories | | | | | | | |
| | Third-party Software | LC_LOAD_DYLIB Addition | 🟥 Valid Accounts | Hidden Users | | | | | | | |
| | Trap | Local Job Scheduling | 🟥 Web Shell | Hidden Window | | | | | | | |
| | Trusted Developer Utilities | Login Item | | HISTCONTROL | | | | | | | |
| | 🟥 User Execution | Logon Scripts | | Image File Execution Options Injection | | | | | | | |
| | 🟥 Windows Management Instrumentation | LSASS Driver | | Indicator Blocking | | | | | | | |
| | Windows Remote Management | Modify Existing Service | | 🟥 Indicator Removal from Tools | | | | | | | |
| | XSL Script Processing | Netsh Helper DLL | | Indicator Removal on Host | | | | | | | |
| | | New Service | | Indirect Command Execution | | | | | | | |
| | | Office Application Startup | | Install Root Certificate | | | | | | | |
| | | Path Interception | | InstallUtil | | | | | | | |
| | | Plist Modification | | Launchctl | | | | | | | |
| | | Port Knocking | | LC_MAIN Hijacking | | | | | | | |
| | | Port Monitors | | Masquerading | | | | | | | |
| | | Rc.common | | Modify Registry | | | | | | | |
| | | Re-opened Applications | | Mshta | | | | | | | |
| | | 🟥 Redundant Access | | Network Share Connection Removal | | | | | | | |
| | | Registry Run Keys / Startup Folder | | NTFS File Attributes | | | | | | | |
| | | 🟦 Scheduled Task | | 🟥 Obfuscated Files or Information | | | | | | | |
| | | Screensaver | | Plist Modification | | | | | | | |
| | | Security Support Provider | | Port Knocking | | | | | | | |
| | | Service Registry Permissions Weakness | | Process Doppelgänging | | | | | | | |
| | | Setuid and Setgid | | Process Hollowing | | | | | | | |
| | | Shortcut Modification | | Process Injection | | | | | | | |
| | | SIP and Trust Provider Hijacking | | 🟥 Redundant Access | | | | | | | |
| | | Startup Items | | Regsvcs/Regasm | | | | | | | |
| | | System Firmware | | Regsvr32 | | | | | | | |
| | | Systemd Service | | Rootkit | | | | | | | |
| | | Time Providers | | Rundll32 | | | | | | | |
| | | Trap | | 🟥 Scripting | | | | | | | |
| | | 🟥 Valid Accounts | | Signed Binary Proxy Execution | | | | | | | |
| | | 🟥 Web Shell | | Signed Script Proxy Execution | | | | | | | |
| | | Windows Management Instrumentation Event Subscription | | SIP and Trust Provider Hijacking | | | | | | | |
| | | Winlogon Helper DLL | | Software Packing | | | | | | | |
| | | | | Space after Filename | | | | | | | |
| | | | | Template Injection | | | | | | | |
| | | | | Timestomp | | | | | | | |
| | | | | Trusted Developer Utilities | | | | | | | |
| | | | | 🟥 Valid Accounts | | | | | | | |
| | | | | Virtualization/Sandbox Evasion | | | | | | | |
| | | | | Web Service | | | | | | | |
| | | | | XSL Script Processing | | | | | | | |

# What blue detected

# What red did that blue missed

Combine your powers for hunting parties

# How do you (and Frothly) “Play at Home” with ATT&CK?



“How are we defended?”

↓

“I can **communicate** about our defenses and make better **decisions**.”

“If it’s not an IP, how do I use it?”

↓

“I’m tracking **multiple** threats and I’m a Pyramid of Pain **master**.”

“I’m drowning in alerts and missing data!”

↓

“I can **prioritize** alerts and **use** the data I have.”

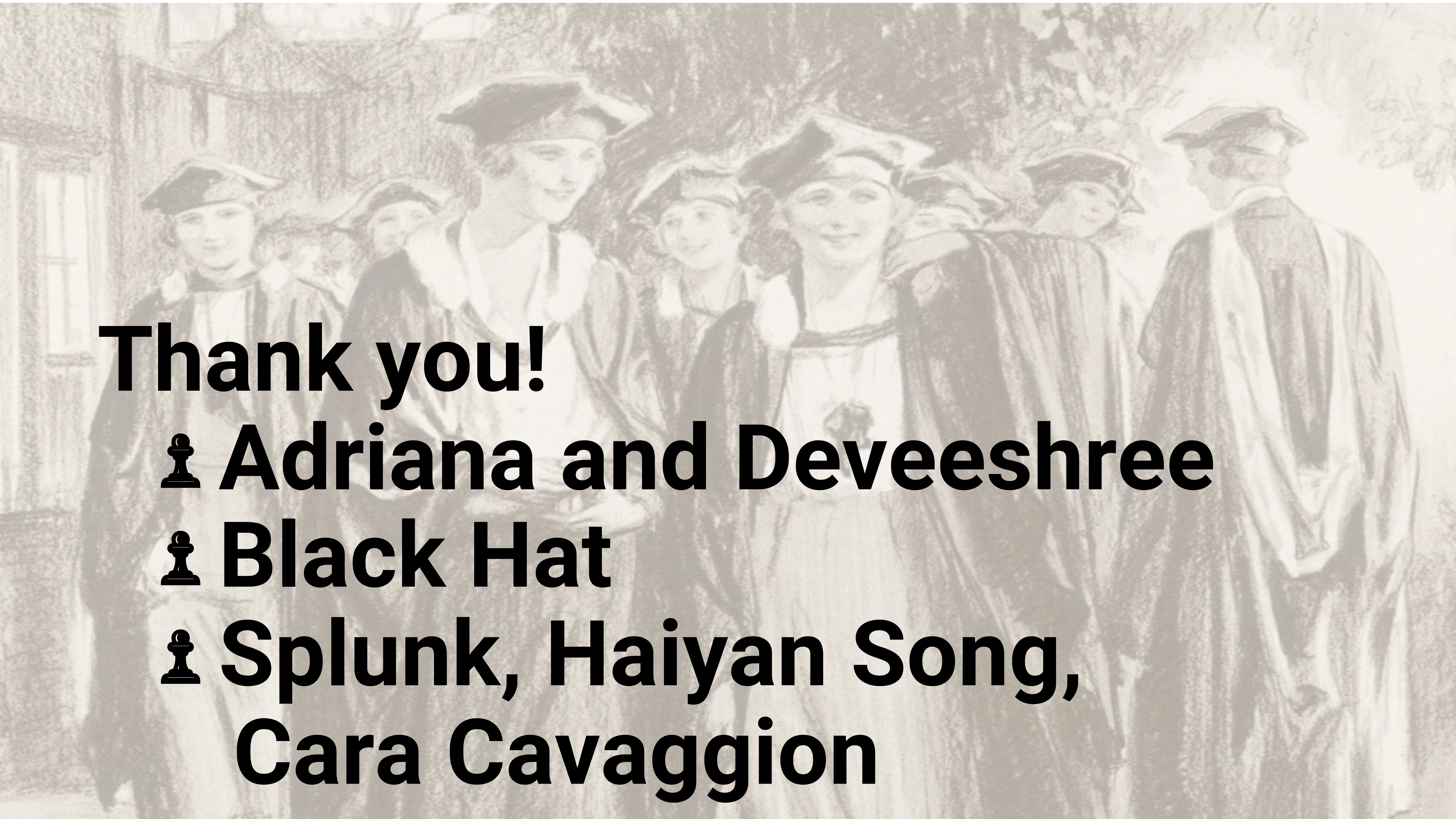
“I don’t know
how to help!”

↓

“I know how to **help**
defense get better.”

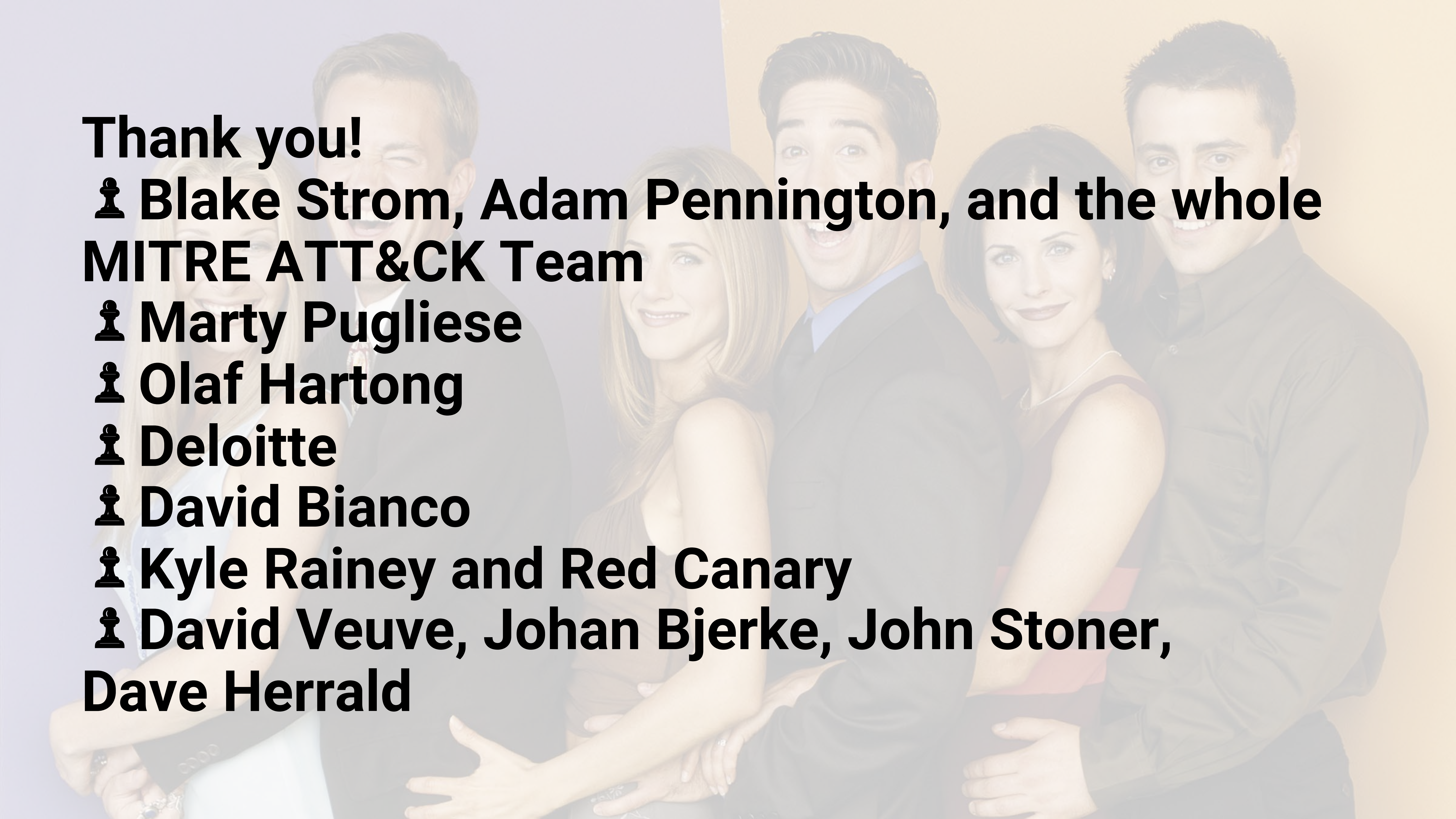
# Takeaways

- ATT&CK is for everyone
- Start small and be realistic
- Collaborate and cooperate



# Thank you!

- ♟ Adriana and Deveeshree
- ♟ Black Hat
- ♟ Splunk, Haiyan Song, Cara Cavaggion



Thank you!

♟ Blake Strom, Adam Pennington, and the whole MITRE ATT&CK Team

♟ Marty Pugliese

♟ Olaf Hartong

♟ Deloitte

♟ David Bianco

♟ Kyle Rainey and Red Canary

♟ David Veuve, Johan Bjerke, John Stoner, Dave Herrald

# References

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https://redcanary.com/blog/avoiding-common-attack-pitfalls/

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https://car.mitre.org/

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https://detect-respond.blogspot.com/2013/03/the-pyramid-of-pain.html

black hat USA 2019

AUGUST 3-8, 2019
MANDALAY BAY / LAS VEGAS

Questions?
-->Join us in Coral B

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(🐦 @LiketheCoins)
attack@mitre.org

Ryan Kovar
(🐦 @meansec)