

# PEOPLE'S REPUBLIC OF CHINA THREAT

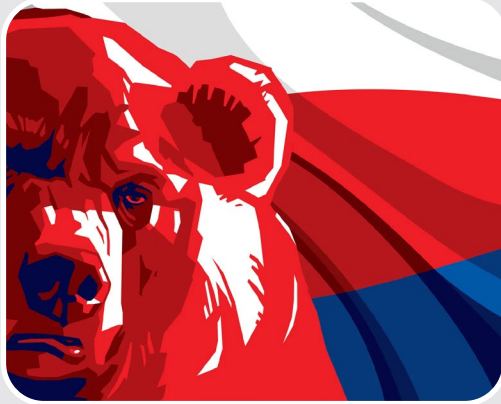


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Contributions By: US ProTech

# Threats – Dangerous Nation State APT groups



## Russia – (FSB, SVR, GRU)

**Motivation:** Harm, Disrupt, Demonstrate Capability to Adversaries.

**Capability:** Extremely Capable & Mature / Near Peer

### Demonstrated Ability:

- Remotely compromise ICS control systems, hardware and software across critical infrastructure.
- Cyber espionage and disruptive operations



## China – (PRC, CCP, PLA)

**Motivation:** Espionage

**Capability:** Highly Capable & Sophisticated / Near Peer

### Demonstrated Ability:

- Conducting cyber attacks that cause localized, temporary disruptive effects on critical infrastructure – such as disrupting natural gas pipelines for days/weeks
- Intellectual property theft



## Iran – (IRGC, Proxy Groups)

**Motivation:** Attack & Destroy

**Capability:** Increasing Sophistication

### Demonstrated Ability:

- Offensive Cyber fully integrated into Tehran's national security
- “Eye for an eye” approach in responding to attacks
- Sabotage, influence operations & disruption



## N. Korea – (DPRK, RGB)

**Motivation:** Generate Revenue & Espionage

**Capability:** Increasing Sophistication

### Demonstrated Ability:

- Remains a cyber espionage threat; conducts disruptive, destructive cyber attacks.
- Cyber operations previously supported regime priorities.
- Cyber crime, financial and destruction

# CHINA's Strategy



*We should make use of the intellectual resources of other countries... We should not be reluctant to spend money on recruiting foreigners... **It is a matter of strategic importance.***

—Deng Xiaoping, 1983



# China consistent threat since 2019


<https://www.odni.gov/files/ODNI/documents/assessments/ATA-2025-Unclassified-Report.pdf>

## CYBER

### ANNUAL THREAT ASSESSMENT OF THE U.S. INTELLIGENCE COMMUNITY


*China probably currently represents the broadest, most active, and persistent cyber espionage threat to U.S. Government and private-sector networks. China's cyber pursuits and its industry's export of related technologies increase the threats of aggressive cyber operations against the U.S. homeland, suppression of the free flow of information in cyberspace—such as U.S. web content—that Beijing views as threatening to the CCP's hold on power, and the expansion of technology-driven authoritarianism globally.*

If Beijing feared that a major conflict with the United States were imminent, it almost certainly would consider undertaking aggressive cyber operations against U.S. homeland critical infrastructure and military assets worldwide. Such a strike would be designed to deter U.S. military action by impeding U.S. decisionmaking, inducing societal panic, and interfering with the deployment of U.S. forces.

- 
- China almost certainly is capable of launching cyber attacks that could disrupt critical infrastructure services within the United States, including against oil and gas pipelines, and rail systems.

China leads the world in applying surveillance and censorship to monitor its population and repress dissent. Beijing conducts cyber intrusions that are targeted to affect U.S. and non-U.S. citizens beyond its borders—including journalists, dissidents, and individuals it views as threats—to counter views it considers critical of CCP narratives, policies, and actions.



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- China's cyber espionage operations have included compromising telecommunications firms, providers of managed services and broadly used software, and other targets potentially rich in follow-on opportunities for intelligence collection, attack, or influence operations.

# PRC Threat: Volt Typhoon

## Volt Typhoon

### Also Known By:

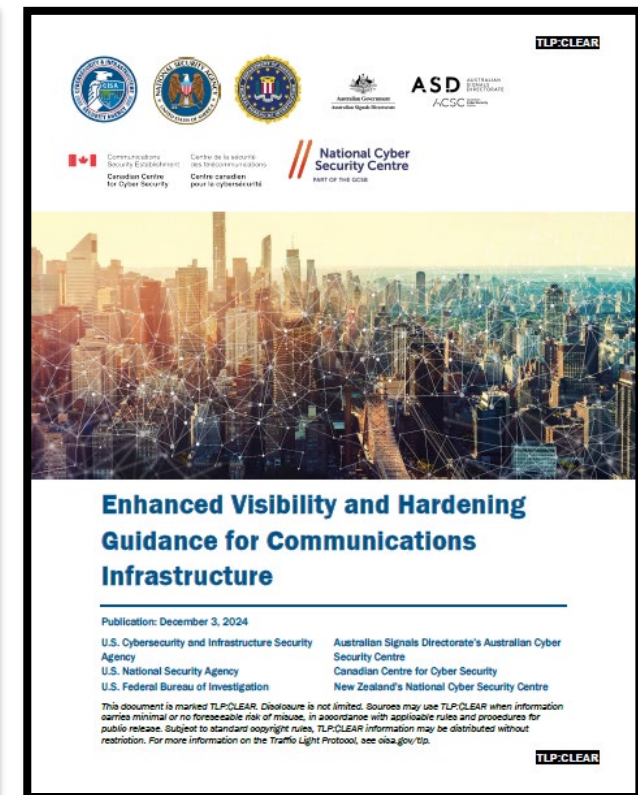
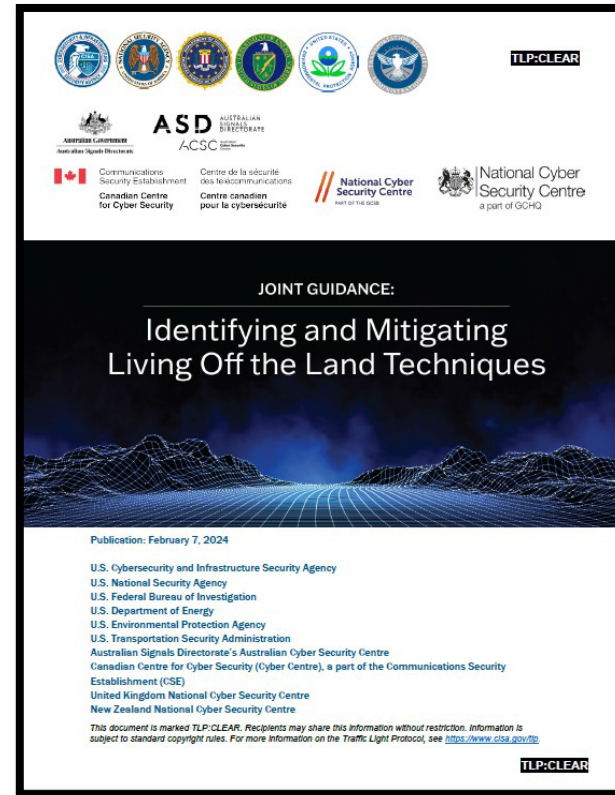
- BRONZE SILHOUETTE
- Vanguard Panda
- Insidious Taurus
- DEV-0391
- UNC3236
- Voltzite
- Redfly



Volt Typhoon is a People's Republic of China (PRC) state sponsored APT group that focuses on stealthy and targeted cyber espionage campaigns against critical infrastructure sectors.

There are multiple publicly disclosed Typhoon threat actor groups (*Volt, Flax, Salt, Silk, Granite, ...*).

# CISA Publications Related to PRC Threat



Observed Target Sectors: Communications, IT, Energy, Water, Transportation



<https://www.cisa.gov/china>



# How did we get here?

# How industry evolved in response to threats

## Past PRC TTPs

Initial Intrusion: Spearfishing

Persistence: Unique Malware

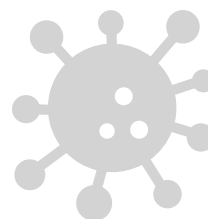
C2: Consistent and finger-printable

## Industry Response

Email security tools, sandboxing links

Malware analysis and IOC sharing

Infrastructure pattern recognition



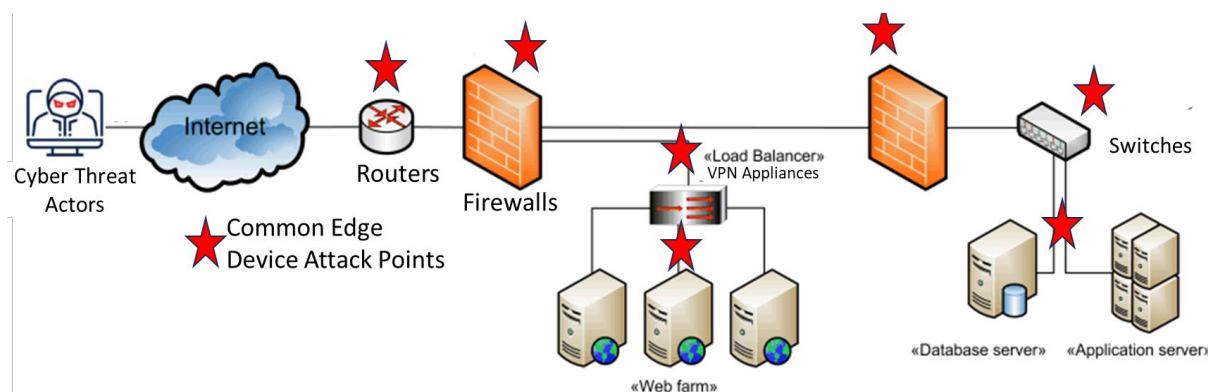
# How threat evolved in response to industry

## Past PRC TTPs

Initial Intrusion: Spearfishing

Persistence: Unique Malware

C2: Consistent and finger-printable



## Current PRC TTPs

★ Initial intrusion: edge device / supply chain exploit

Establish persistence: credential harvesting

C2 Channels: unique and hard to find.

Lateral movement: LOLbins or existing infrastructure

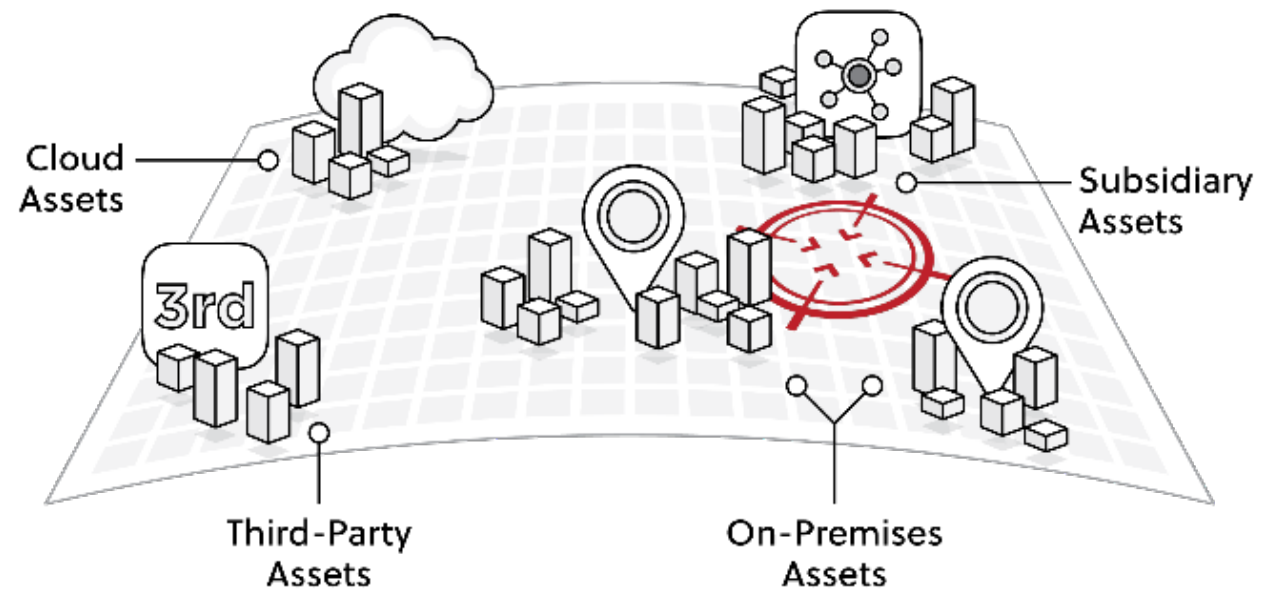
# Living off the land – what is it?

**LOLBins** – Attackers leverage existing tools to carry out their malicious activities

Offers the attacker

- Evade detection
- Avoid endpoint detection and response (EDR)
- Limit amount of activity seen by defenders

- ✓ WMIC
- ✓ PowerShell
- ✓ AD Tools
- ✓ PSEXec
- ✓ RDP
- ✓ Built In Tools



**YOUR ATTACK SURFACE**



# The Typhoons – Attack Vectors

**SOPHOS**

Firewall

**FORTINET**

 **paloalto**  
NETWORKS



**ManageEngine**  
a division of Zoho Corp.

- [CVE-2022-3236](#)

- [CVE-2022-42475](#)
- [CVE-2024-21762](#)

- [CVE-2024-3400](#)

- [CVE-2023-48788](#)
- [CVE-2024-55591](#)

- [CVE-2021-40539](#)



- [CVE-2021-26855](#)
- [CVE-2021-26857](#)
- [CVE-2021-26858](#)
- [CVE-2021-27065](#)



- [CVE-2023-46805](#)
- [CVE-2024-21887](#)
- [CVE-2025-22457](#)
- [CVE-2025-0282](#)



- [CVE-2018-0171](#)
- [CVE-2023-20198](#)
- [CVE-2023-20273](#)



- [CVE-2023-6548](#)
- [CVE-2023-6549](#)
- [CVE-2023-3519](#)



# Attack Walkthrough

# Volt Typhoon Activity

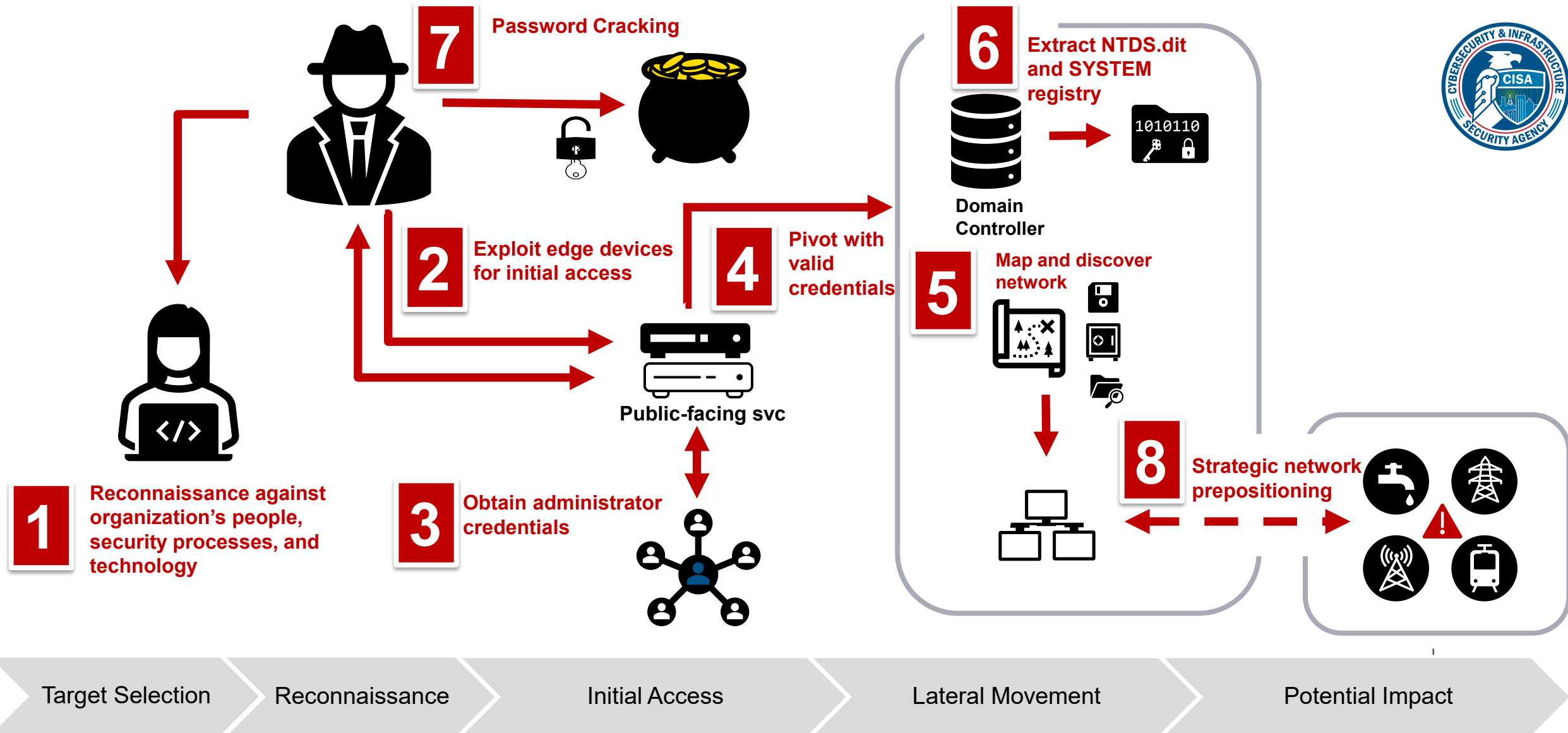
**Volt Typhoon is a sophisticated People's Republic of China (PRC) state-sponsored cyber threat actor group that targets US Critical Infrastructure (CI).**

Volt Typhoon follows a **five-step attack plan** when targeting US Critical Infrastructure.

1. Target Selection
2. Reconnaissance
3. Initial Access
4. Lateral Movement
5. Potential Impact

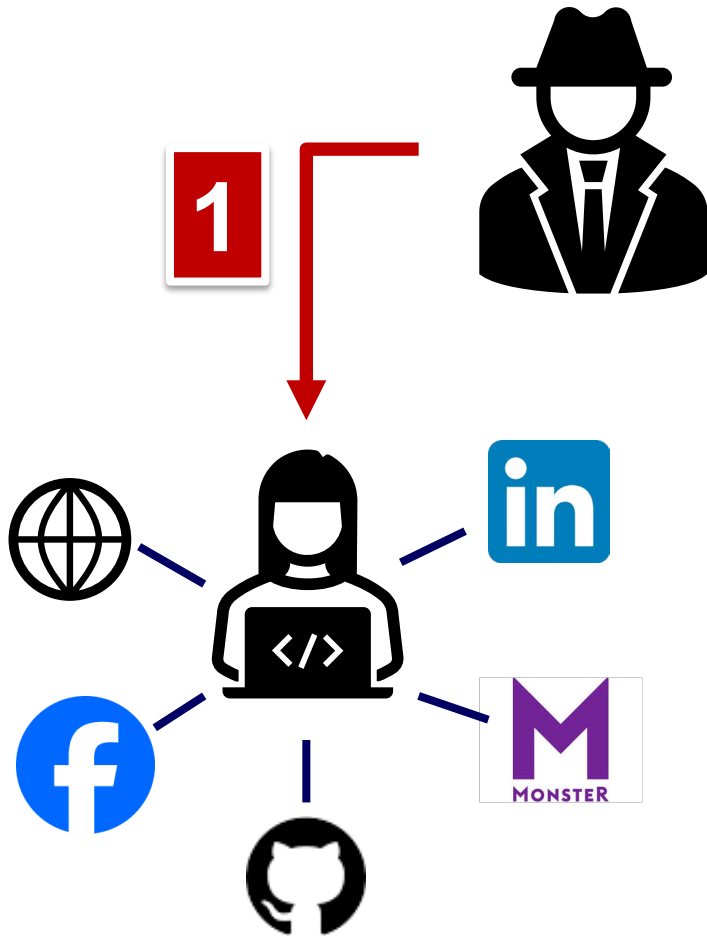


# Volt Typhoon Activity – Case Example



# Reconnaissance

## What information are you sharing?



- LinkedIn
- Job postings
- GitHub
- Facebook
- Websites
- Business Journals

Target Selection

**Reconnaissance**

Initial Access

Lateral Movement

Potential Impact

# Initial Access



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Exploit edge devices  
for initial access



## Mitigation - Start with the Basics!

- Identify - block and disable unnecessary edge services
- Limit remote access through VPN or gateways
- Enable logging on edge devices
- Require Multi-Factor Authentication
- Secure configuration of edge devices
  - CyHy | WAS
- Secure Configuration of Cloud Devices
  - SCUBA



Volt Typhoon actors typically obtain initial access through commonly exploited vulnerabilities, misconfigured edge devices or use valid credentials.

### CISA Cyber Hygiene Services

Vulnerability Scanning  
Web Application Scanning



ScubaGear  
ScubaGoggles

Available at <https://github.com/cisagov>

Target Selection

Reconnaissance

Initial Access

Lateral Movement

# Privilege Escalation and Lateral Movement



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## Obtain administrator credentials

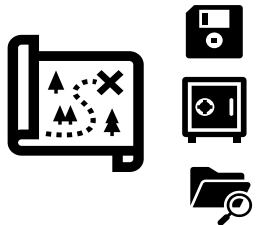
- Exploit and execute privilege escalation vulnerabilities on host
- Extract insecurely stored credentials on public facing appliance.
- Dump passwords from host operating system



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## Pivot with modified User or Group modified valid credentials

- Remote Desktop Protocol | Terminal Services
- PSEXEC
- Putty
- SSH
- API keys...



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## Map and discover network

- PowerShell – targeted queries on event logs
- WMIC



Target Selection

Reconnaissance

Initial Access

**Lateral Movement**

Potential Impact

# Obtain Credentials NTDS.dit Extraction

## Significance:

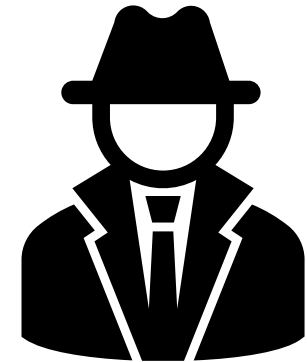
- Attacker gains access to every NT hash in domain
- Extracted hashes can be cracked or used in pass-the-hash attacks.
- Opens door to Golden Ticket attacks & persistent DA access

## Extraction Techniques:

- Volume Shadow Copy of the NTDS.dit file

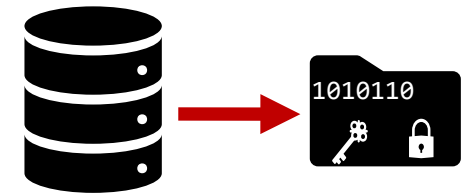
```
wmic process call create "ntdsutil \"ac i ntds\" ifm \"create full C:\Windows\Temp\pro  
  
wmic process call create "cmd.exe /c ntdsutil \"ac i ntds\" ifm \"create full C:\Windows\Temp\Pro"  
wmic process call create "cmd.exe /c mkdir C:\Windows\Temp\tmp & ntdsutil \"ac i ntds\" ifm \"create full  
C:\Windows\Temp\tmp\"  
  
"cmd.exe" /c wmic process call create "cmd.exe /c mkdir C:\windows\Temp\McAfee_Logs & ntdsutil \"ac i  
ntds\" ifm \"create full C:\Windows\Temp\McAfee_Logs\"  
  
cmd.exe /Q /c wmic process call create "cmd.exe /c mkdir C:\Windows\Temp\tmp & ntdsutil \"ac i ntds\" ifm  
\"create full C:\Windows\Temp\tmp\" 1> \\127.0.0.1\ADMIN$\<timestamp value> 2>&1
```

- The SYSKEY is extracted from the registry to decrypt the data contained in NTDS.dit



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**Extracting NTDS.dit  
and SYSTEM registry**



**Domain Controller**



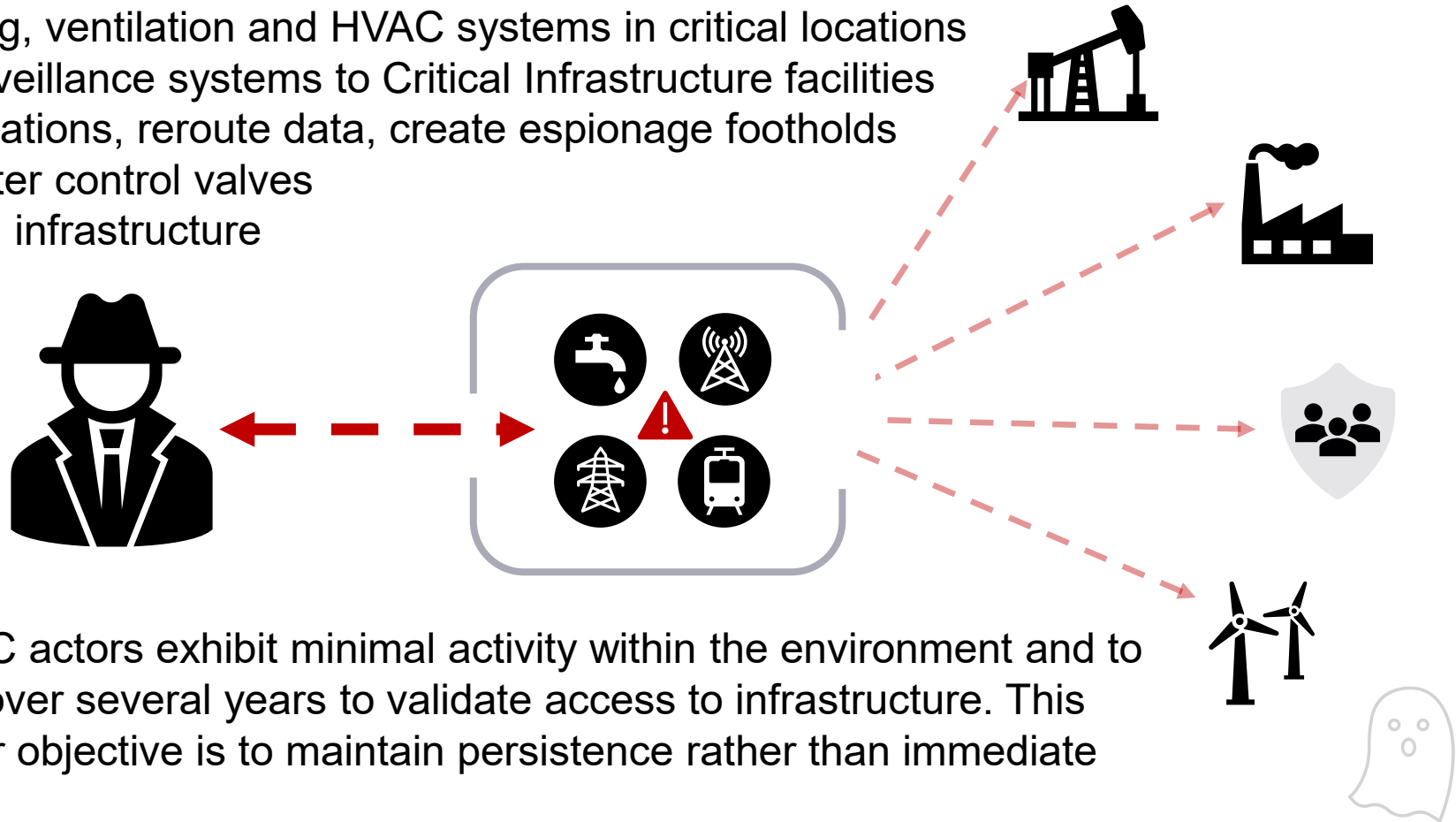
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# Operational Environment – Access & Persist

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## Gain Access to Operational Environment

- Manipulating heating, ventilation and HVAC systems in critical locations
- Access camera surveillance systems to Critical Infrastructure facilities
- Intercept communications, reroute data, create espionage footholds
- Open and close water control valves
- Manipulate physical infrastructure



After exploitation – PRC actors exhibit minimal activity within the environment and to re-target environment over several years to validate access to infrastructure. This activity suggesting their objective is to maintain persistence rather than immediate exploitation

Target Selection

Reconnaissance

Initial Access

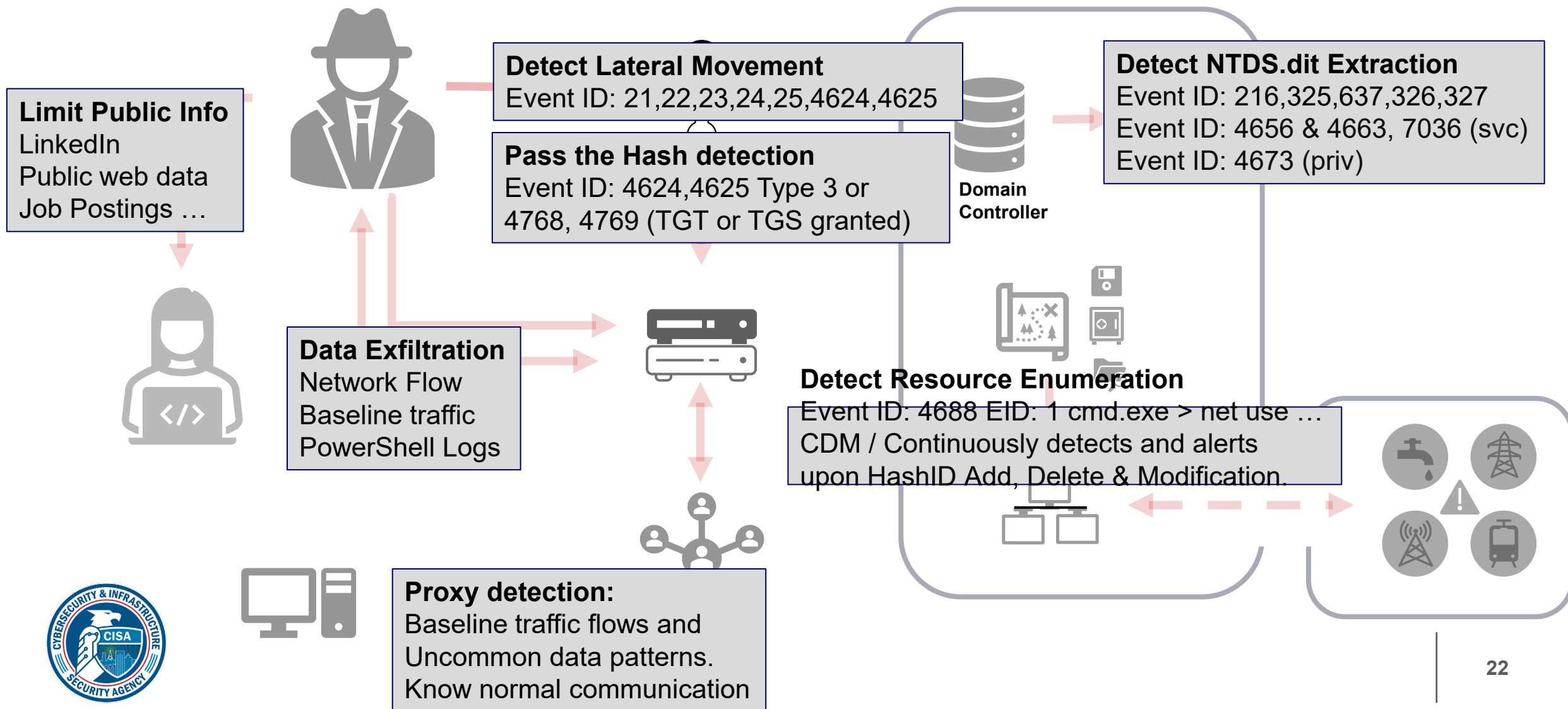
Lateral Movement

Potential Impact



# Detection & Mitigation Guidance

# Detection is possible ... if you look for it!



# Detection – Logging Vs. HashID Analytics

## Centralized Logging Vs. Host Based Forensics

- Implement Security Information and Event Management (SIEM)
- Logging / Network Based SIEM - verbose logging and aggregate logs in an out-of-band centralized location.
  - Increase log retention (hot, warm, cold) – what is your minimum?
  - Options: Splunk, QRadar, Securonix, Etc.
- Forensics / System Based SIEM - comprehensive comparative HashID Analytics directly from Host or System
  - Gain automated visibility and real-time continuous risk assessment into IoA's, loc's, ZDE's, and CVE's.
  - Monitor Users, Groups, Ports, Permissions, and Transactions at a forensic level, 24/7 without data entry.
  - Options: ANAMO CDM
- Volt Typhoon – extended dwell time (5 years)
- Fine-tune log alerts and utilize CDM to reduce noise.
- Test your playbooks
- **Perform Log Analysis and HashID Analytics to hunt for PRC threats and Technical Adversaries**



# Log Analysis – Key events to Look for

## Key Event Log Indicators:

- Event ID 216: Detecting changes in NTDS.dit database location
- Event ID 325: Creation of a new NTDS.dit database in unusual directories
- Event ID 637: Generation of a new flush map file for NTDS.dit
- Event ID 326: Mounting of NTDS.dit file from a shadow copy
- Event ID 327: Detachment of NTDS.dit
- Event ID 4656 & 4663: File Access Auditing SACL must be defined for ntds.dit file
- Event ID 25: (Term Services-Local Session): Successful RDP session reconnections
- Event ID 22: (Term Services-Local Session): Successful RDP Session Created
- Event ID 1017: (System Log): Server handle closures in unusual patterns/locations
- Event ID 1102: (Security Log): Security Logs Cleared
- Event ID 4624: (Security Log): Successfully Logged on (type 10: RemoteInteractive)
- Event ID 4688: (Security Log): A new process has been created



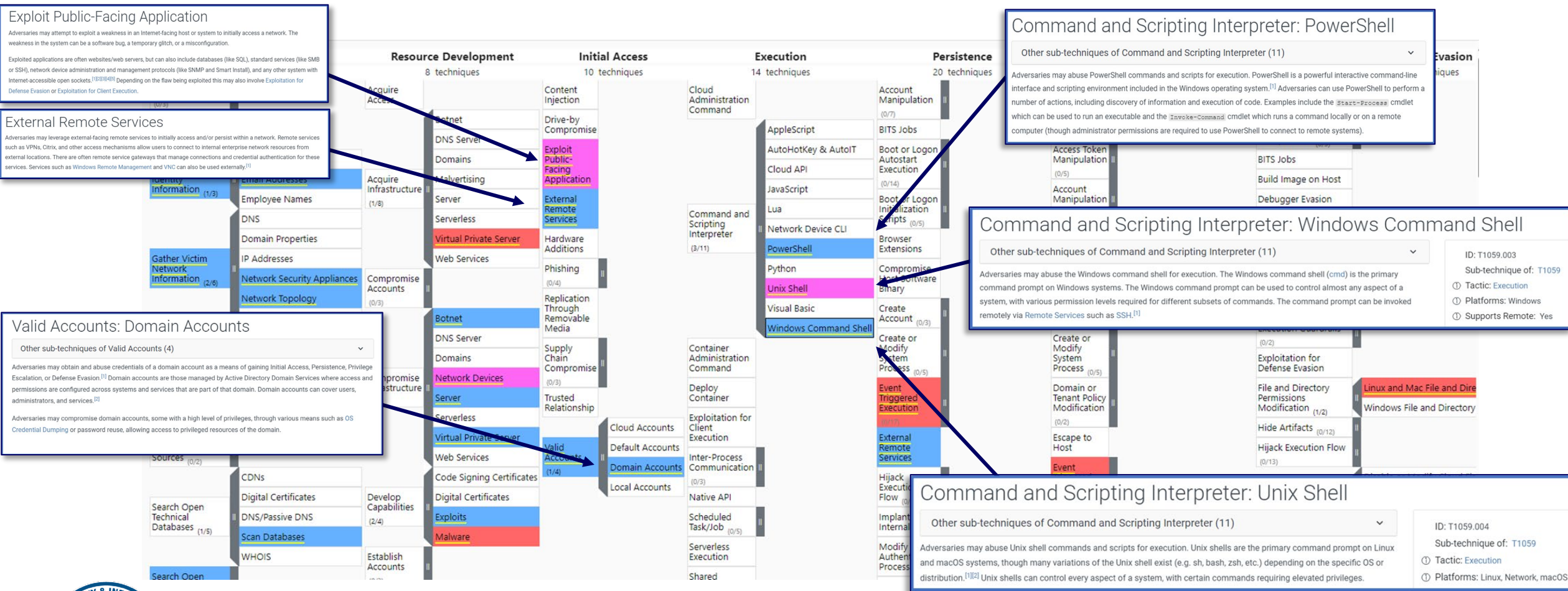
# Detection Opportunities

- Leverage "CDM" Continuous, Diagnostics & Mitigation (such as ANAMO CDM)
- <https://www.cisa.gov/resources-tools/programs/continuous-diagnostics-and-mitigation-cdm-program>
- **Suspicious PowerShell Use or Unusual Command Shell Activity:**
  - Monitor for commands such as *Get-EventLog security* – Event ID 4624 used to identify successful logons.
- **NTDS Dumping:**
  - Look for attempts to access or copy the ntds.dit file using commands like *ntdsutil* or *vssadmin* create shadow.
- **Event Log Monitoring:**
  - Event ID 4688: Enable logging of command line process creation to capture detailed command line activities.
  - Event ID 1102: Investigate all log clearing activities
- **PortProxy Usage:**
  - Detect the use of netsh interface portproxy commands to create unauthorized port forwarding rules (e.g., *netsh interface portproxy add v4tov4 listenport=...*, Fast Reverse Proxy, Earth Worm).
- **Cross-zone Communications:**
  - Monitor for communications between IT and OT networks or other segments.
- **Leverage Sysmon and Host-based Logs:**
  - Sysmon logs provide visibility into system activities, offering a detailed record of process creations, network connections, registry modifications, cryptographic hashes, and more

# Harden the Attack Surface

- **Allocate time and Resources:** Internal Threat Hunting – be proactive instead of reactive.
- **Vulnerability Scanning: Automated Continuously 24/7 Using ANAMO.** Or, Manually interrogate External networks weekly, Internal networks monthly (Free Cyber Hygiene Services)
- **Patching Internet-Facing Systems:** Edge devices are actively exploited for initial access – Zero-day vulnerabilities – Average time to exploit 5-days. Continuously monitor IoA's, IoC's and ZDE's 24/7 with ANAMO.
- **Software and System Hardening:** Applying vendor-provided or industry-standard hardening guides.
- **Tailored Mitigations for Volt Typhoon:** Behavior analytics, anomaly detection, and proactive hunting as part of a comprehensive security approach – 3<sup>rd</sup> party assessments.
- **Secure Credentials** - Unique passwords, eliminate group or shared accounts – group managed service accounts
- **Separation of User and Privileged Accounts:** Separate accounts for user and admin functions. PAWs
- **Privileged Access Management (PAM) Solutions: Continuously monitor 24/7 with ANAMO.** Consider PAM solutions for managing access to privileged accounts, including logging and alerting unusual activity.
- **Secure Remote Access & Sensitive Data:** Limit remote access to where it's needed and audit access
- **Network Segmentation:** Segment IT and OT environments and further isolate IT network to improve security.

# Detection is possible ... if you look for it!



ATT&CK® Navigator Overlay for Volt Typhoon



# “Prevention is ideal, but detection is a must.”

- Dr. Eric Cole (SANS)

## What if you could....

Know who has what Permission on which Device Anywhere and at Anytime, and at the same time Forensically track every Permission modification on every device with automatic alert notifications by tracking Comparative HashID Analytics?

If so, Contact US ProTech and ask to see Anamo CDM, today!



Directory Tree Permissions							
Track Changes Across Files in host							
Download CSV							
Host	Paths	User	Group	Octal	Symbolic	Event	TimeStamp
HERO	\Users\All Users\DockerDesktop\install-settings.json	UNKNOWN	UNKNOWN	774	rxwxrwxr--	added	Feb. 15, 2025, 10:16 a.m.
HERO	\Users\adade\Desktop\360_F_100689383_LyhzAVrP8ev2Sho2Rw3GA9CA1jTJF2eR.jpg	UNKNOWN	UNKNOWN	777	rxwxrwxrwx	added	Jan. 17, 2025, 4:46 p.m.
HERO	\Users\adade\Desktop\4-43021_diamond-png-transparent-image-transparent-background-transparent-diamond.png	UNKNOWN	UNKNOWN	777	rxwxrwxrwx	added	Jan. 17, 2025, 4:46 p.m.
HERO	\Users\adade\Desktop\Crunchyroll - Watch Popular Anime.Ink	UNKNOWN	UNKNOWN	777	rxwxrwxrwx	added	Dec. 17, 2024, 11:25 a.m.
HERO	\Users\adade\Desktop\Docker Desktop.Ink	UNKNOWN	UNKNOWN	777	rxwxrwxrwx	added	Dec. 13, 2024, 1:14 p.m.
HERO	\Users\adade\Desktop\Expenses.docx	UNKNOWN	UNKNOWN	777	rxwxrwxrwx	added	Dec. 13, 2024, 1:14 p.m.
HERO	\Users\adade\Desktop\360 Extreme Browser.Ink	UNKNOWN	UNKNOWN	777	rxwxrwxrwx	added	Nov. 24, 2024, 8:50 p.m.
HERO	\Users\adade\Desktop\Docker Desktop.Ink	UNKNOWN	UNKNOWN	777	rxwxrwxrwx	added	Nov. 16, 2024, 12:55 a.m.
HERO	\Users\All Users\Goodix\StorageAdapter-Moc.dmp	UNKNOWN	UNKNOWN	774	rxwxrwxr--	added	Nov. 2, 2024, 8:38 p.m.
HERO	\Users\adade\Desktop\Expenses.docx	UNKNOWN	UNKNOWN	777	rxwxrwxrwx	added	Oct. 22, 2024, 6:37 p.m.
Showing 1 to 10 of 11 entries							
Previous 1 2 Next							



# Any Questions or Comments?



For Additional Information On Eliminating  
**"Unauthorized Privileged Account Escalation"**

Contact:

**US ProTech, Inc. | ANAMO CDM**

[www.USProTech.com](http://www.USProTech.com) | <https://anamo.io/>

949.629.3900 | [Info@ANAMO.io](mailto:Info@ANAMO.io)

**Certified Cybersecurity Experts**