nedscaper

Defending Against Storm-1811

Insights from a real-time Attack Mitigation

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CTO @ Nedscaper

Some research was done in cooperation with **Microsoft Security Research**

Microsoft Security

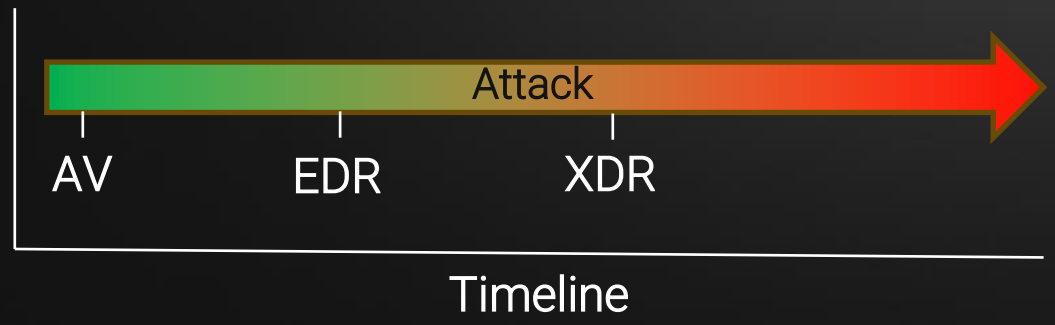
Big Thanks ☺

Disclaimer: the difference between AV and EDR/XDR

AV - AntiVirus blocks a threat(s) directly via signature detection

EDR - Endpoint Detection & Response detects malicious behavior (*compared to the baseline*) on the endpoint and blocks the threat(s)

XDR - eXtenderd Detection & Response detects the attack chain (multi-source) from '*patient-0 to the breach*' and blocks well known threats (e.g. BEC/AiTM & HumOR)



Example:
- MimiKatz install is AV detection
- MimiKatz execution is EDR detection
- MimiKatz DCsync to AD is XDR detection

Overview of the Storm-1811 Threat Actor

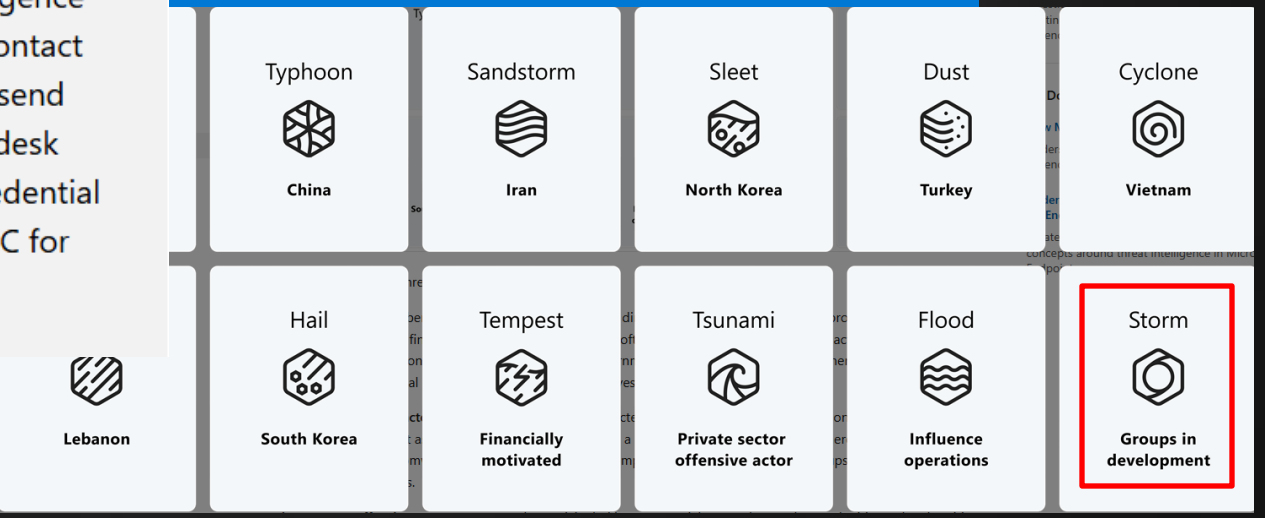
Very Sophisticated & Financially Motivated Cybercriminal Group

Research Threat intelligence Microsoft Defender Social engineering / phishing · 10 min read

Threat actors misusing Quick Assist in social engineering attacks leading to ransomware

June 2024 update: At the end of May 2024, Microsoft Threat Intelligence observed Storm-1811 using Microsoft Teams as another vector to contact target users. Microsoft assesses that the threat actor uses Teams to send messages and initiate calls in an attempt to impersonate IT or help desk personnel. This activity leads to Quick Assist misuse, followed by credential theft using EvilProxy, execution of batch scripts, and use of SystemBC for persistence and command and control.

Likely Russia and state-sponsored



Microsoft Threat Actor Naming

Defender XDR | Threat Intel Profile TTPs & IOCs

Threat actor December 20, 2023

Storm-1811

Share

Description TTPs Indicators (41)

Snapshot

The actor that Microsoft tracks as Storm-1811 is a financially motivated cybercriminal group known to deploy Black Basta ransomware in opportunistic attacks. For initial access, the actor has been observed abusing the client management tool Quick Assist to target users in social engineering attacks in April 2024. These attacks have led to malware like Qakbot and Cobalt Strike, followed by Black Basta ransomware deployment. Storm-1811 also uses remote monitoring and management (RMM) tools like ScreenConnect, Syncro Agent, and NetSupport Manager (also referred to as NetSupport RAT) to conduct lateral movement within the compromised environment, download and install additional malware, and launch arbitrary commands. The actor has also been observed dumping lsass.exe to access credentials. For ransomware deployment, Storm-1811 primarily uses PsExec, a legitimate tool from the Sysinternals suite, to deploy the ransomware payload remotely.

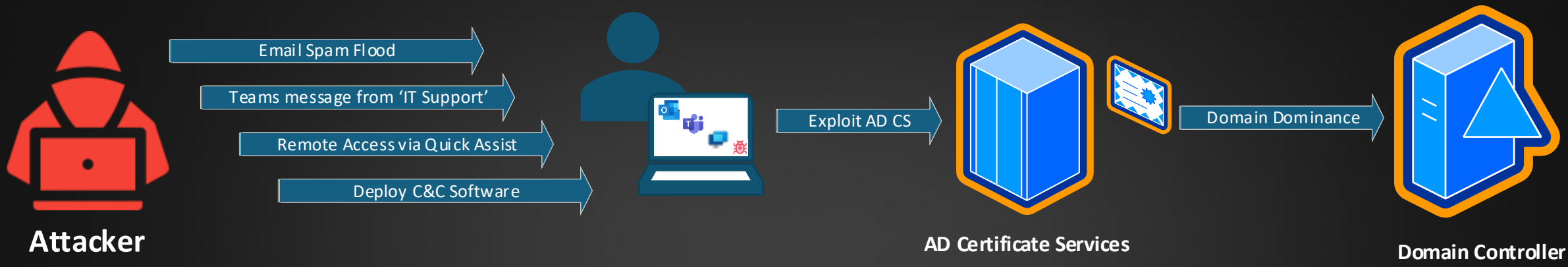
Description TTPs Indicators (41)

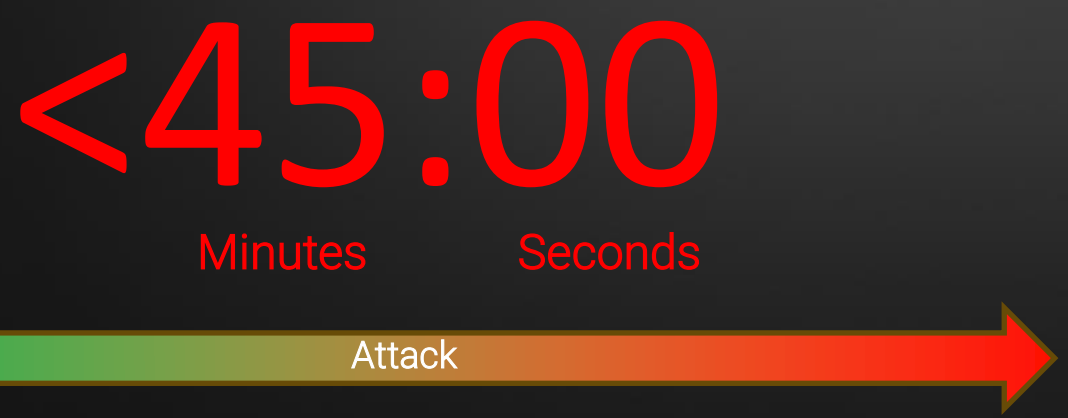
Initial access

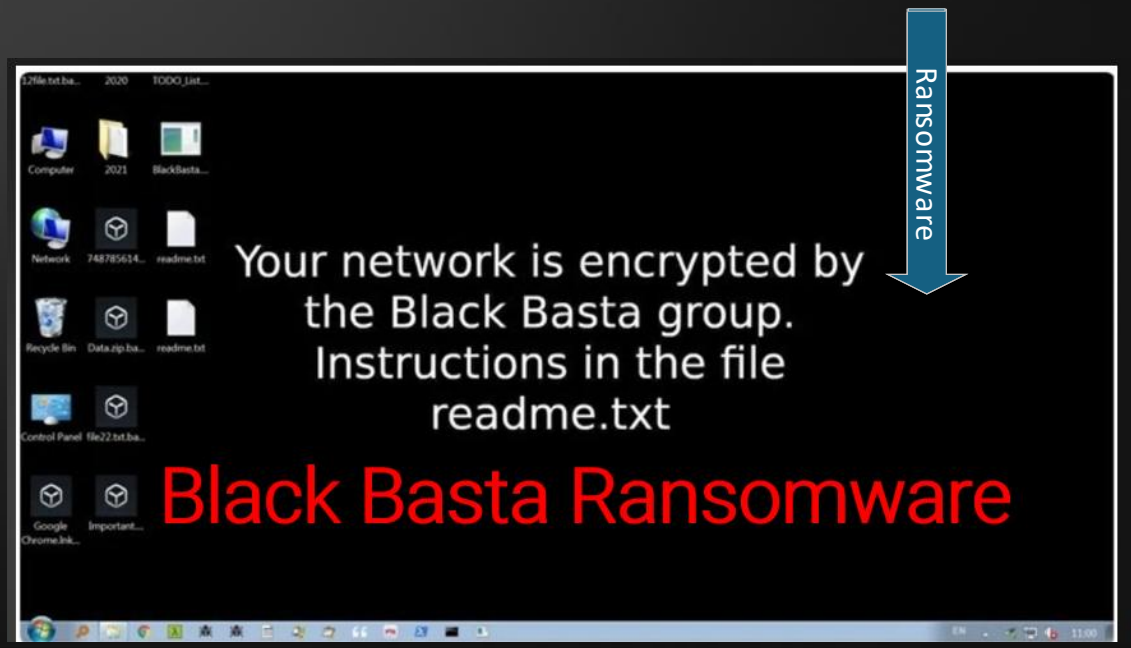
At the end of December 2023, Microsoft Threat Intelligence observed a new ZLoader malvertising campaign after a long hiatus since the takedown action by Microsoft in April 2022. In this recent campaign, ZLoader was distributed through malicious advertisements spoofing legitimate software downloads. The campaign operators behind ZLoader infections monetize their access to domain-joined devices by selling access-as-a-service to other groups, including ransomware affiliates. In addition to other capabilities, ZLoader can be used to download additional malicious payloads, like Cobalt Strike Beacon. Microsoft identified instances where ZLoader infections have led to Black Basta ransomware deployment by Storm-1811.

Since mid-April 2024, Microsoft Threat Intelligence has observed Storm-1811 misusing the client management tool Quick Assist to target users in social engineering attacks. For example, in some cases, Storm-1811 initiates link listing attacks – a type of email bombing attack, where they sign up targeted emails to multiple email

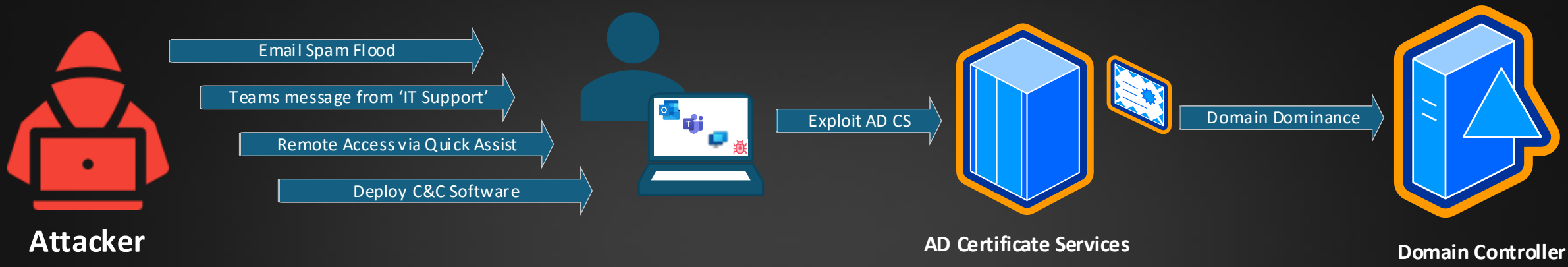
Overview of the Storm-1811 Attack Techniques

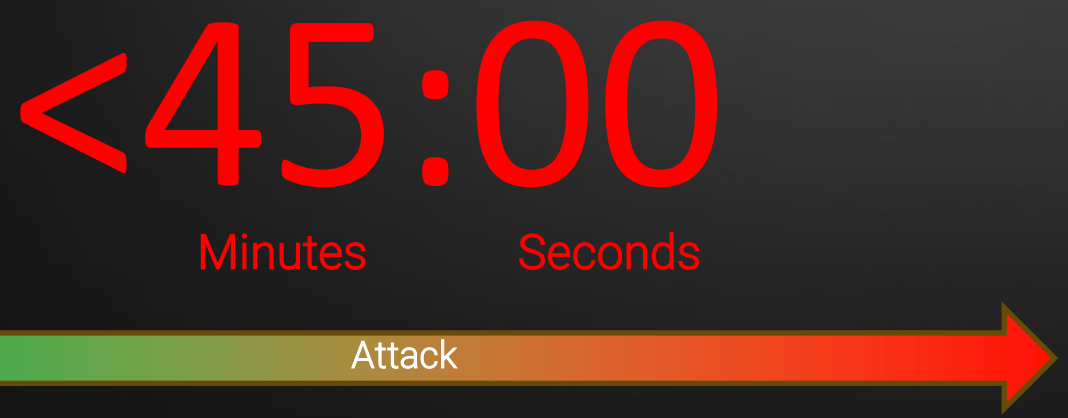




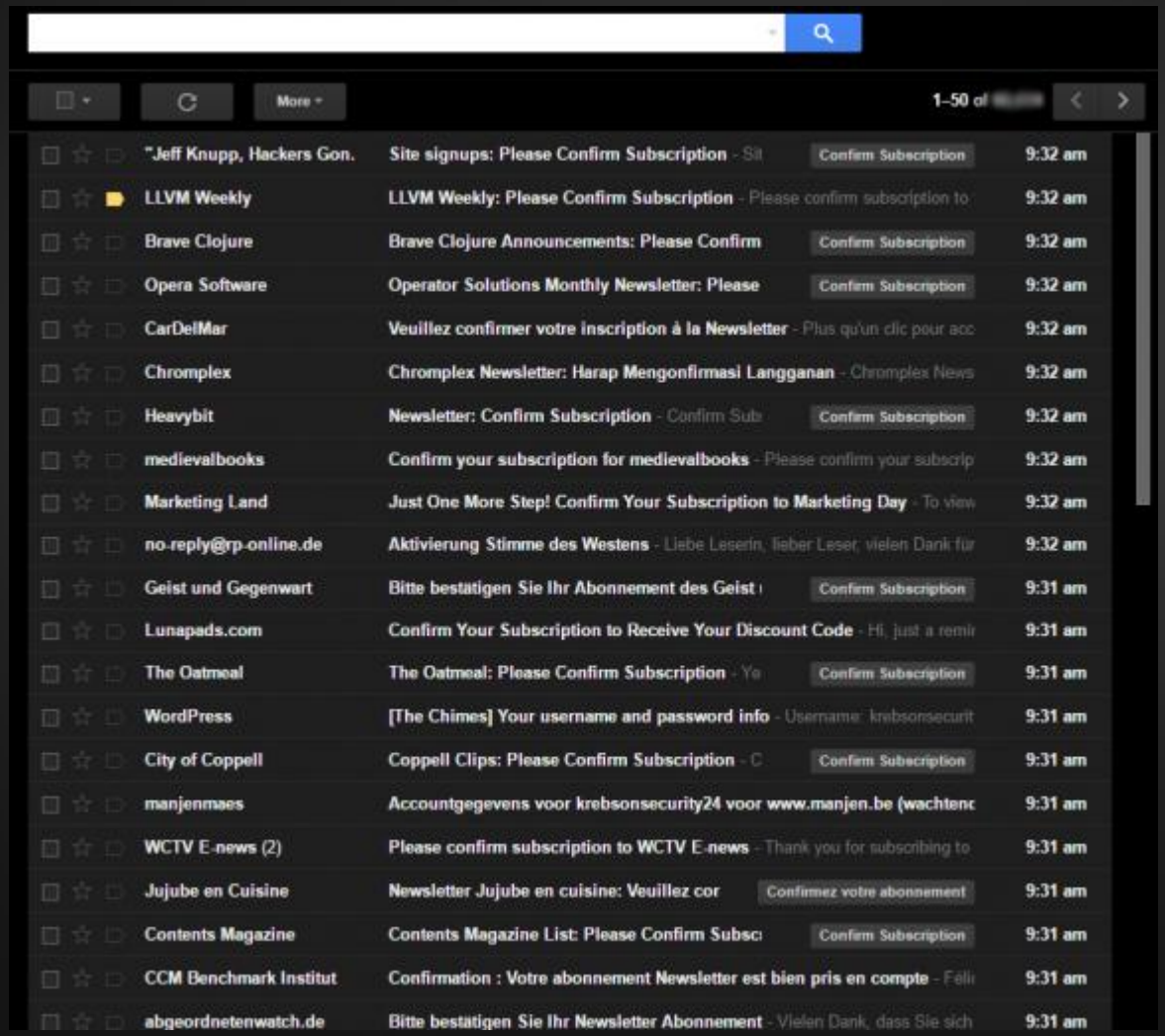


Overview of the Storm-1811 Attack Techniques





E-mail Spam Flood [E-mail Bomb] send hundreds of ‘Spam’ e-mails to a user in a short period of time [10-20 minutes]



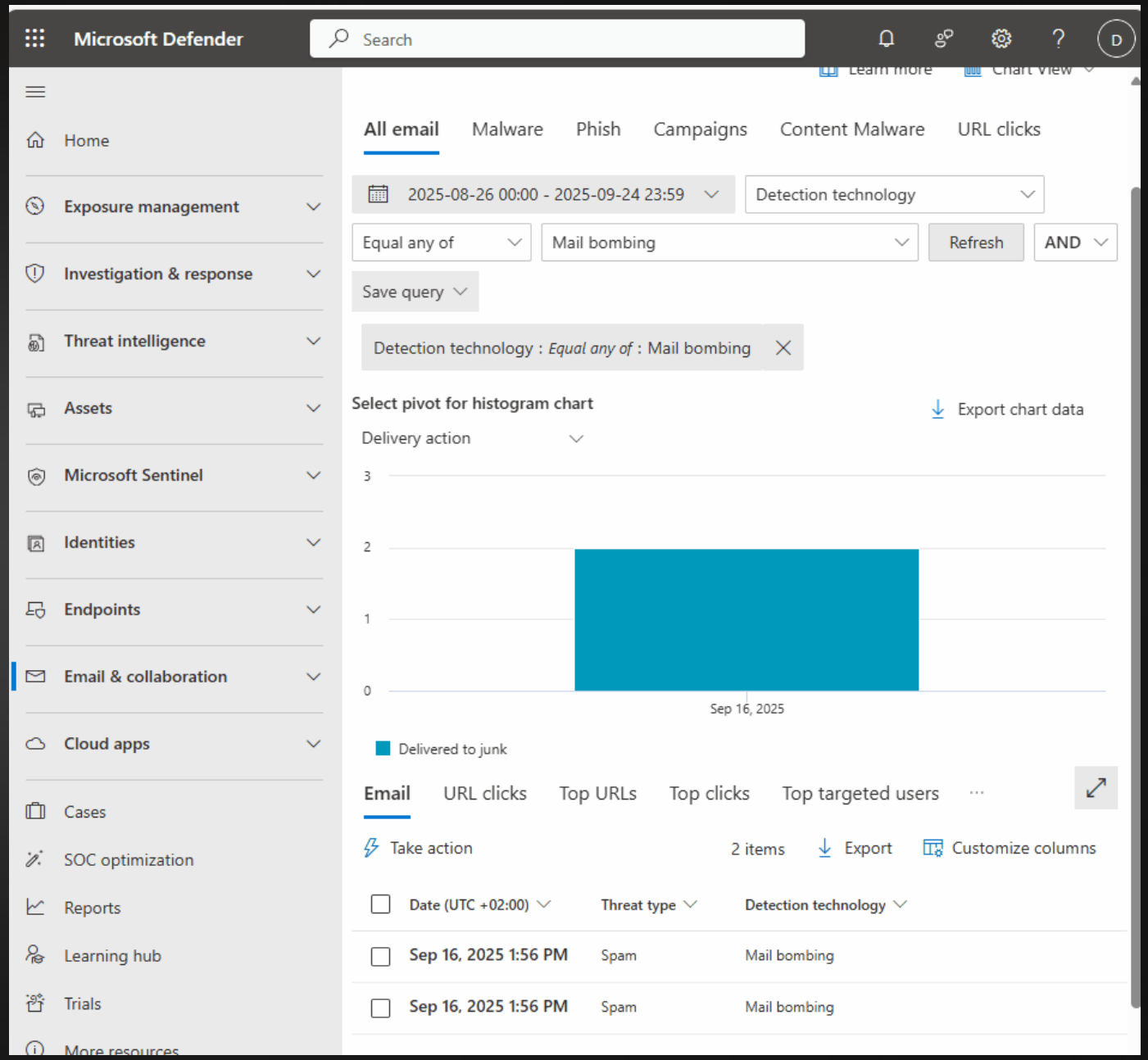
MITRE ATT&CK |

June 2025 UPDATE

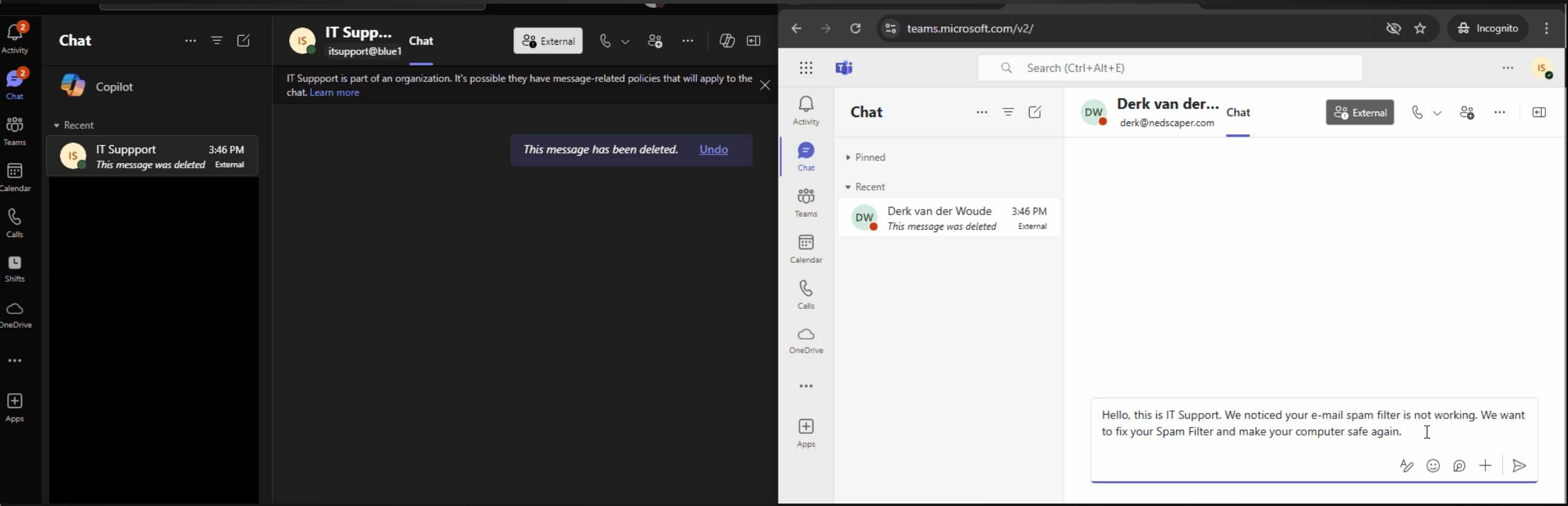
Detection by MDO
Defender for Office 365

Visible in the Threat Explorer, Email Entity and Advanced Hunting

Detection Technology
Mail Bombing

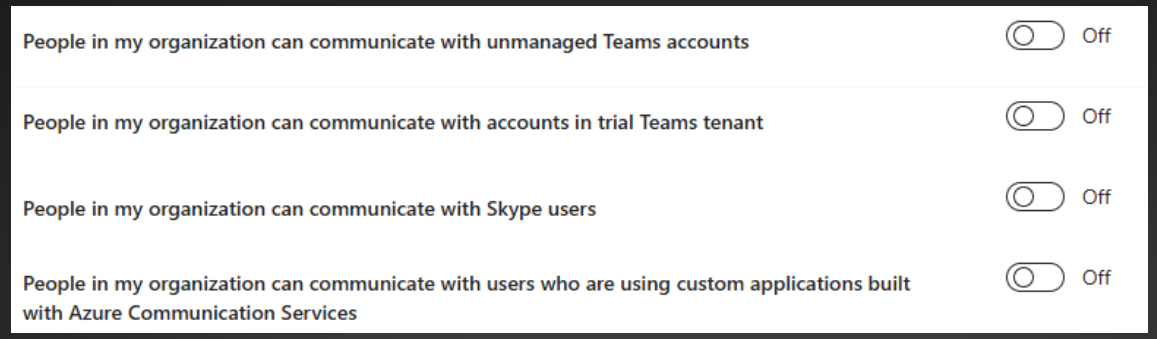


Outsourced ‘IT Support’ send a Teams message to the end user to fix the ‘broken’ Spam filter



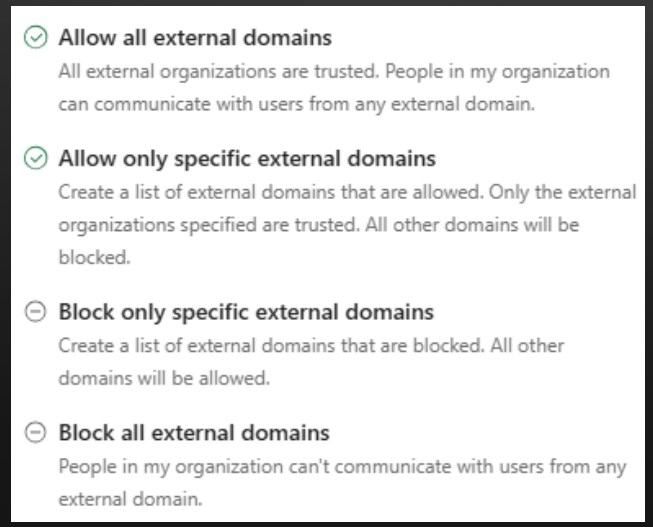
Prevention #1

If not required, Disable the options below in the Teams External Access settings



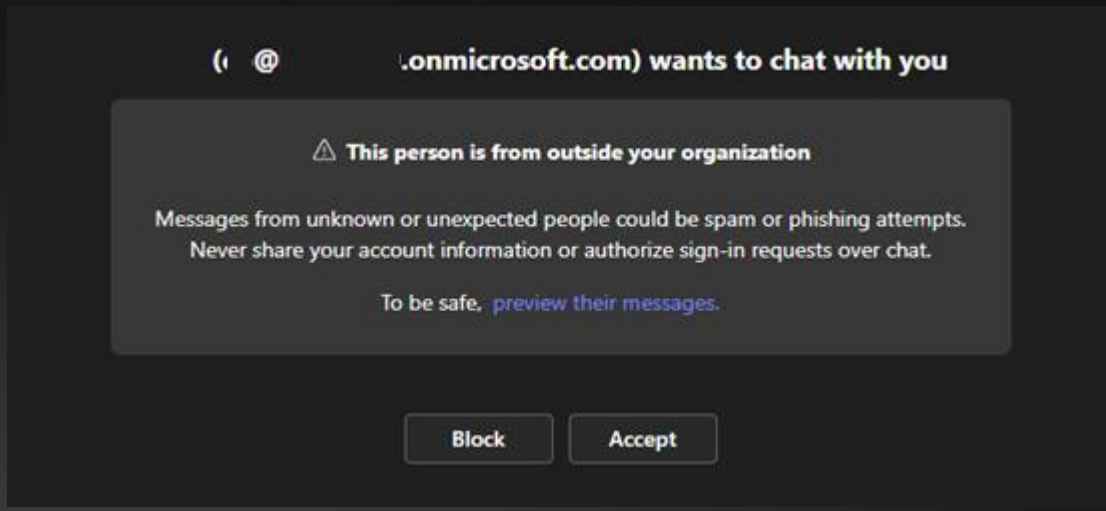
Prevention #2

Microsoft Teams can allow all (default) or specific domains, or block all or specific domains.



#1 User Awareness is key!!!

IT Suppport (External)

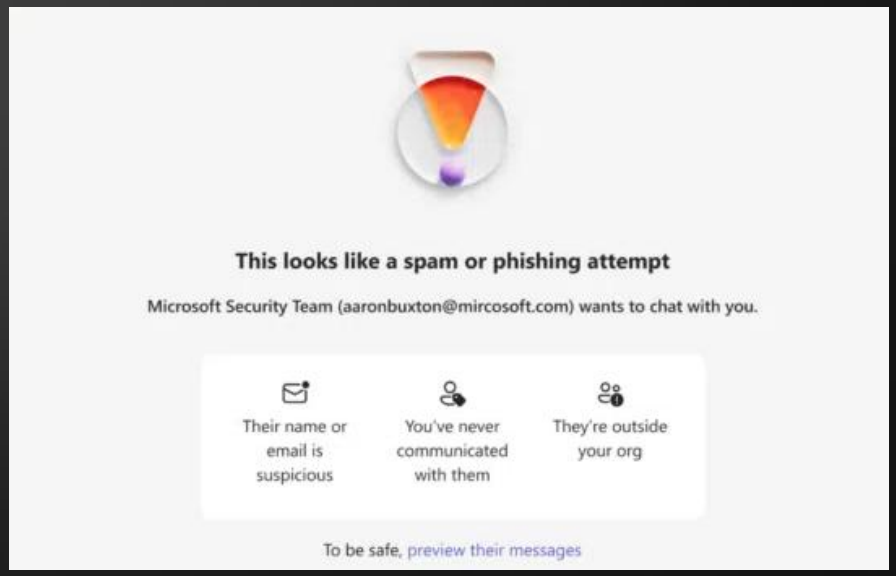


#2 Microsoft Teams: Brand Impersonation Protection for Teams Messaging [Feb-2025]

Microsoft Teams: Brand Impersonation Protection for Teams Messaging

Identify if an external user is impersonating a brand commonly targeted by phishing attacks, user via Teams messages.

Feature ID: 421190
Added to roadmap: 10/9/2024
Last modified: 11/6/2024
Product(s): Microsoft Teams
Cloud instance(s): Worldwide (Standard Multi-Tenant)
Platform(s): Desktop, Mac
Release phase(s): General Availability

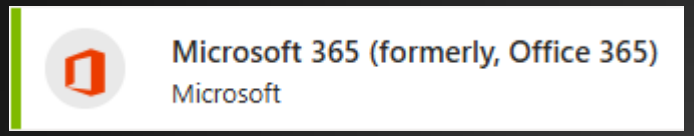


Detection #1 [Microsoft 365 E5]
Microsoft Defender XDR [Defender for Cloud Apps] detects suspicious external Teams messages

Detection #2 [Microsoft 365 E3 & Microsoft Sentinel]

Microsoft Sentinel detection rule with Severity High

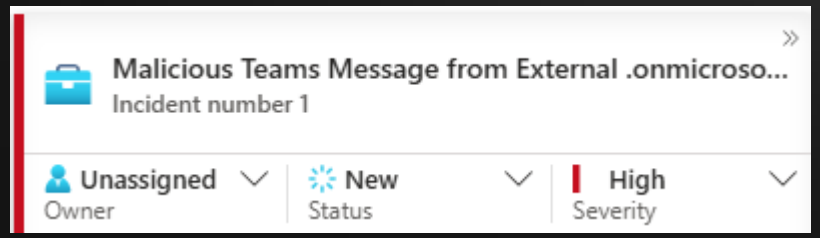
Data Connector



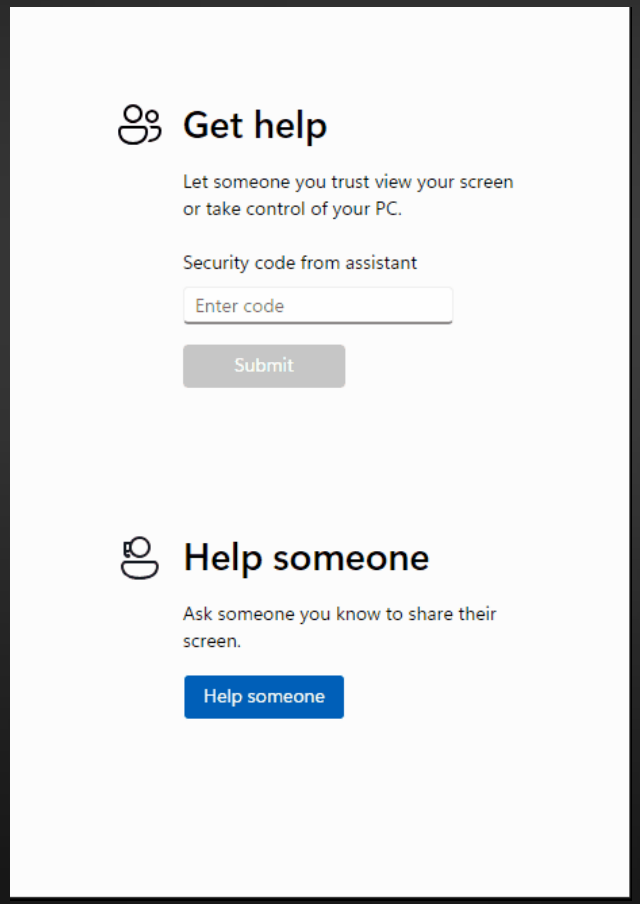
KQL query

```
OfficeActivity
| where RecordType contains "MicrosoftTeams" and Operation contains "ChatCreated"
| where UserId !contains "<tenant>.onmicrosoft.com"
| where UserId contains "onmicrosoft.com"
| project UserId
```

Detection

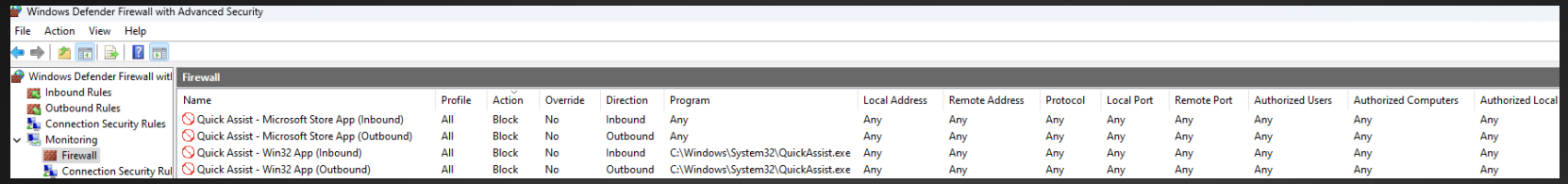


Quick Assist [standard Microsoft Windows application] is used for initial access to the device [domain] to discover the environment and install malicious software (via DLL Sideloading as an example) and ransomware



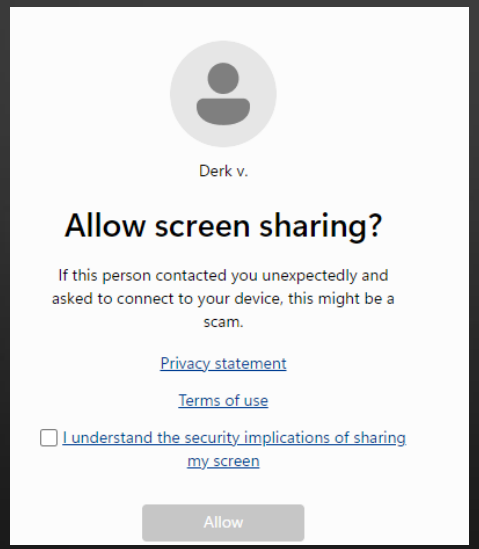
Prevention

Disable Quick Assist or block access from the internet [via FW rules]



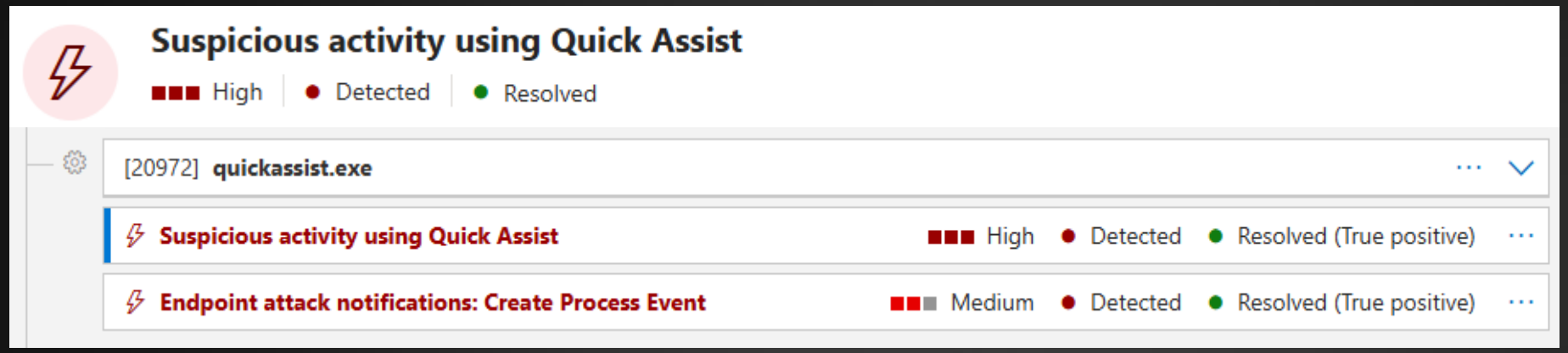
User Awareness is key!!!

Again ☺



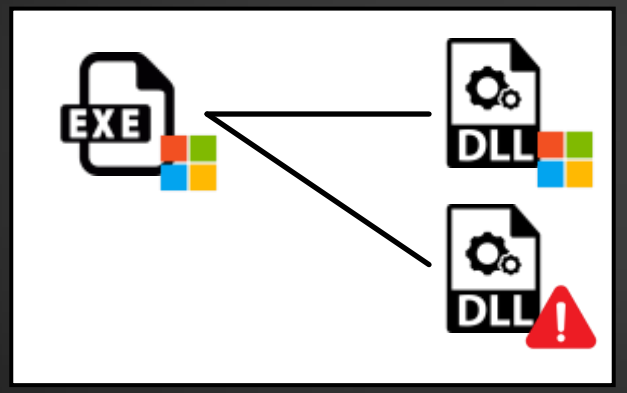
Detection

Microsoft Defender XDR [Defender for Endpoint] detects suspicious Quick Assist usage on the managed Endpoint



DLL Sideloading (also called Living of the Land) is a technique to load malicious .DLL (code) files from a standard Windows Executable.

Launch

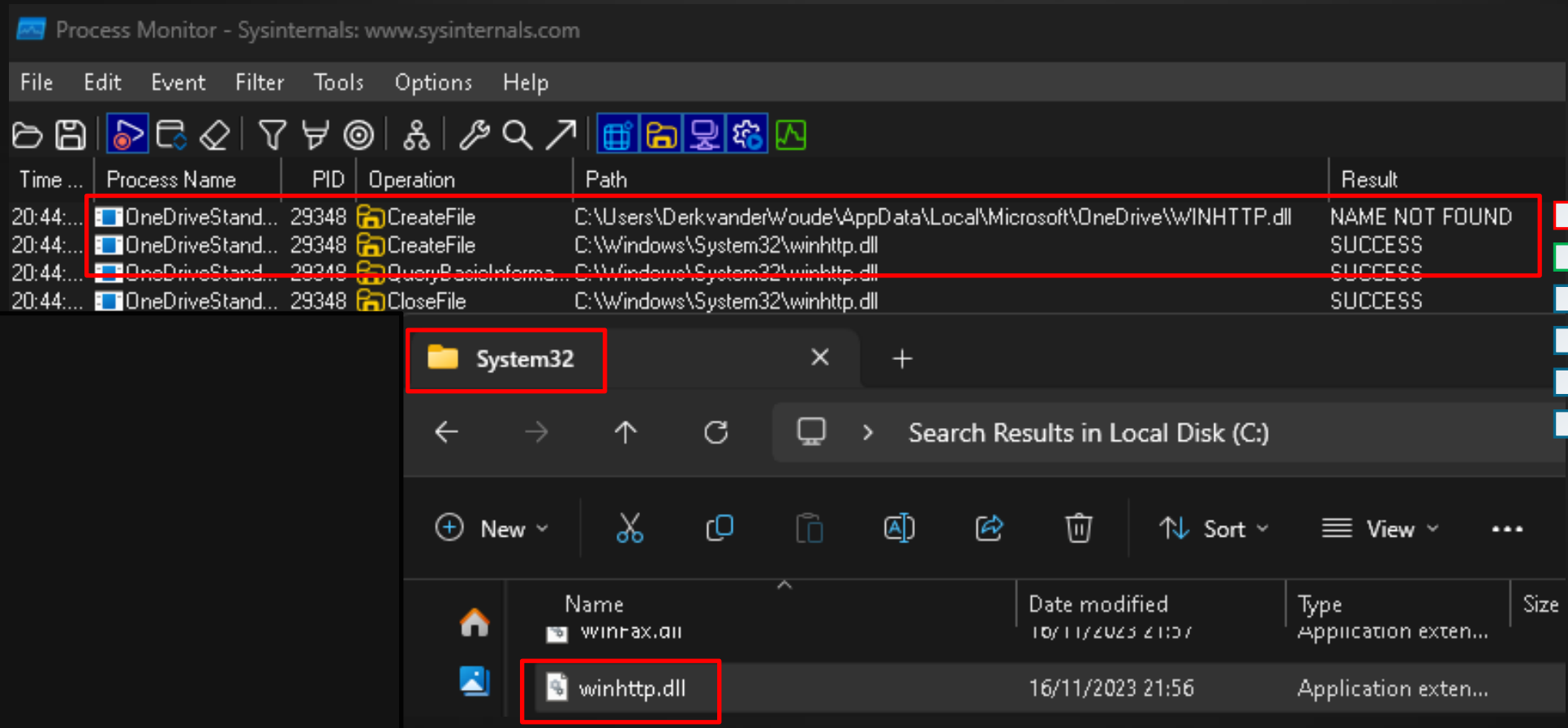


Attacker

DLL search order

1. Application Directory
2. C:\Windows\System32
3. C:\Windows\System
4. C:\Windows
5. Current Directory
6. PATH Variable Directories

Example OneDriveStandaloneUpdater.exe (persistence) which runs every day: Persistence]. Process Monitor [ProcMon] example



DLL search order

- Application Directory
- C:\Windows\System32
- C:\Windows\System
- C:\Windows
- Current Directory
- PATH Variable Directories

Prevention

The DLL is loaded in the context of the executable (e.g. Administrative Privileges) so no local admin for users is key.

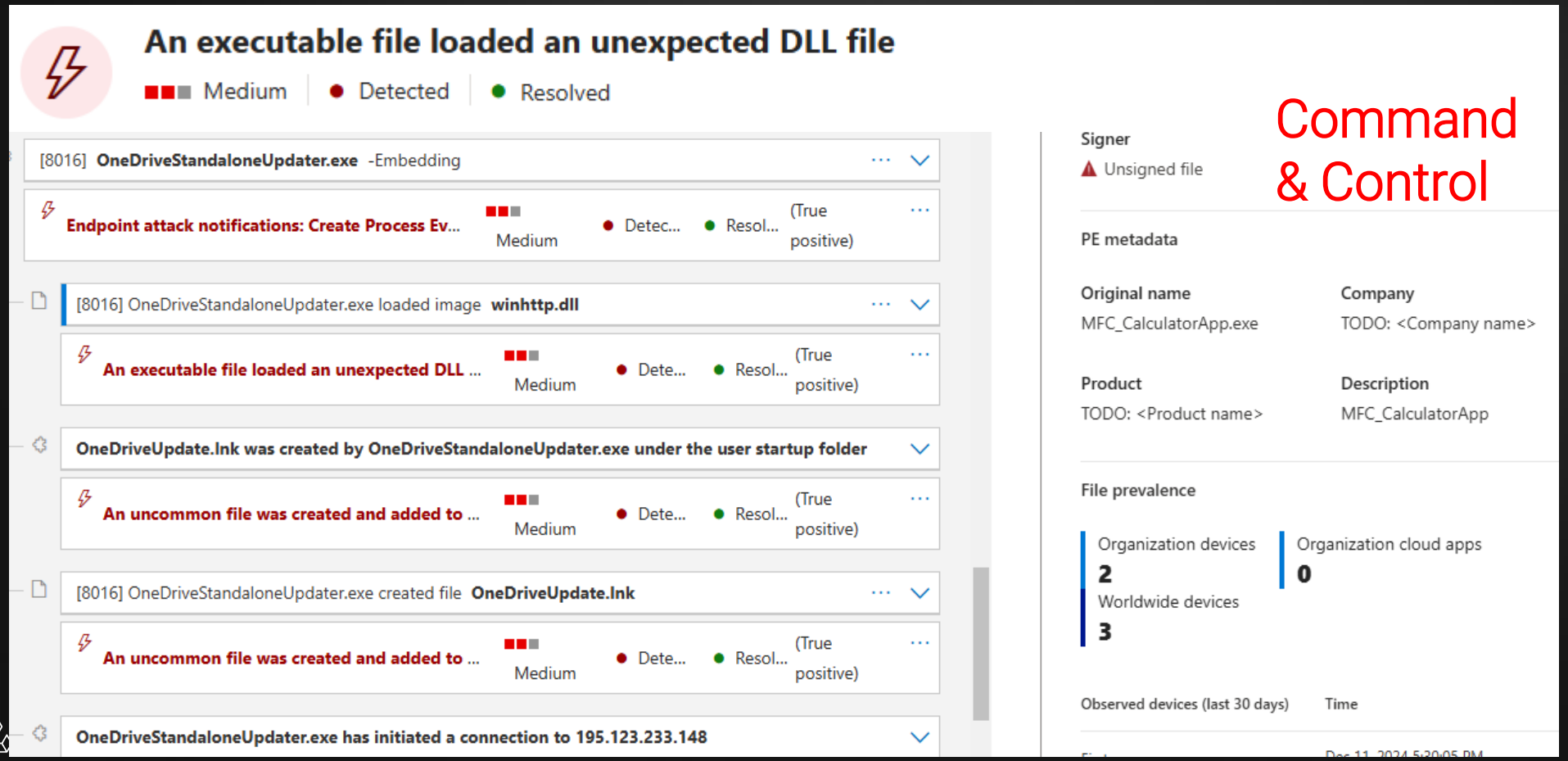
From a Microsoft perspective make sure Defender AntiVirus is running
- Real-time-, Cloud-delivered-, Network- and Tamper-Protection

Enable ASR (Attack Surface Reduction) rules in Block mode
- Block untrusted and unsigned processes that run from USB
- Block executable files from running unless they meet a prevalence, age, or trusted list criterion

And have a defence in-depth strategy

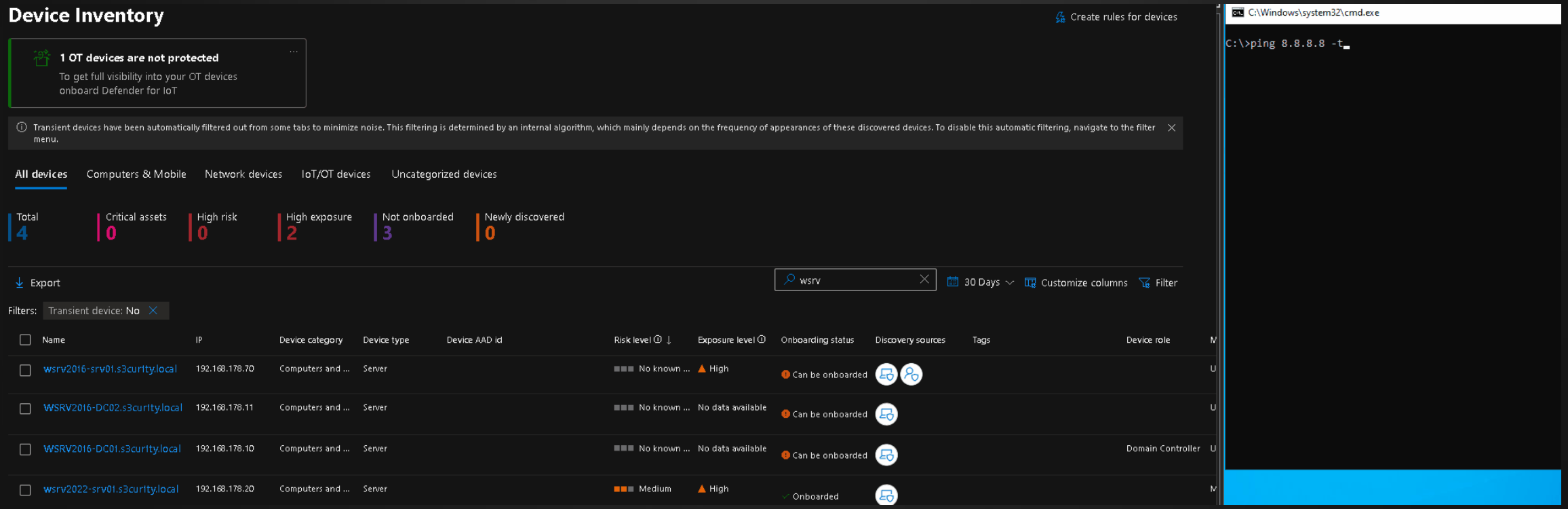
Detection

Microsoft Defender XDR [Defender for Endpoint] detects DLL Sideloading (*and more anomalies*) on the Endpoint



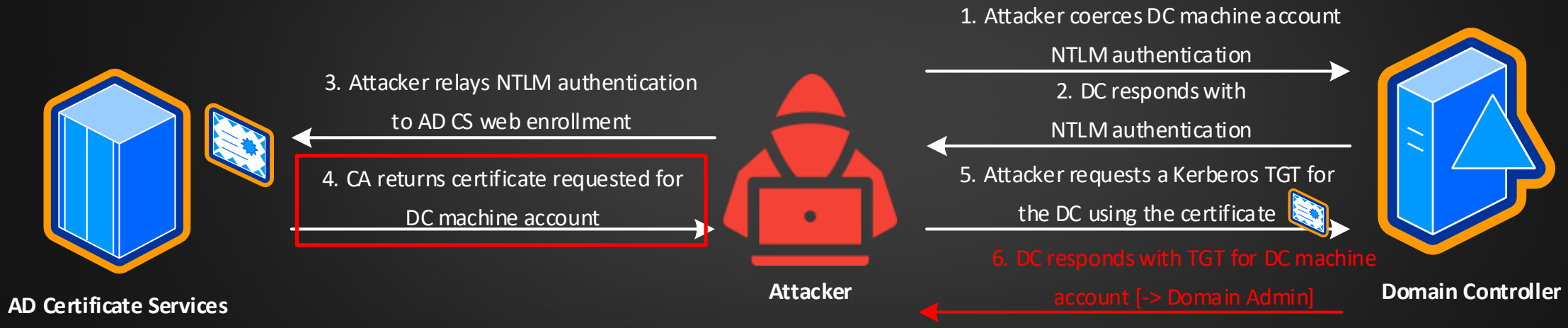
Remediation

Isolate the device (*and disable the user*) to prevent the attack from spreading (lateral movement)

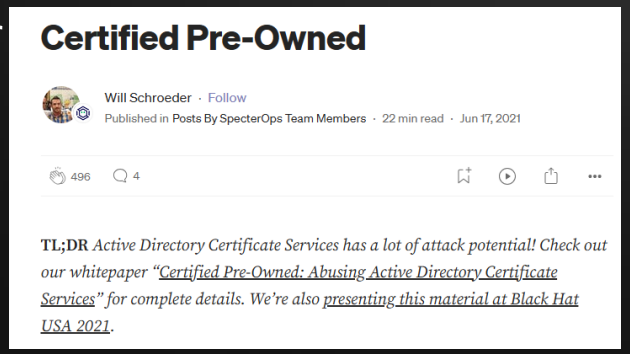


AD CS (Certificate Services) can be vulnerable to attacks.

For example, ESC8 (*insecure ADCS certificate enrollment IIS endpoints*) can be abused by a NTLM Relay Attack on the HTTP Web enrollment endpoint which uses NTLM as authentication method.



Whitepaper



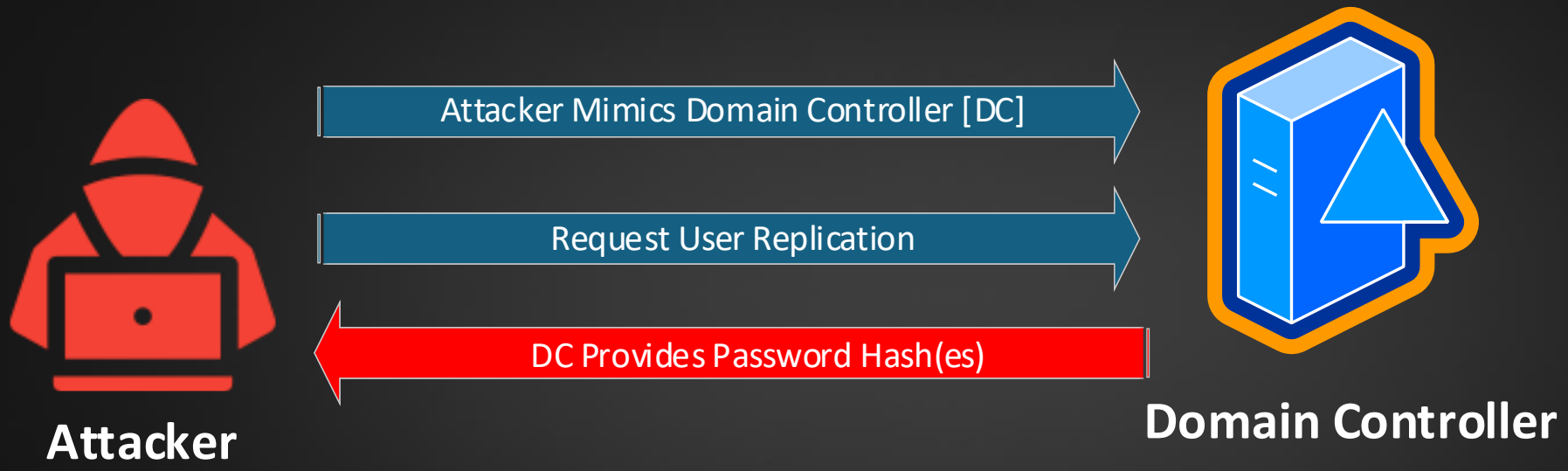
Certified Pre-Owned

Will Schroeder · Follow
Published in Posts By SpecterOps Team Members · 22 min read · Jun 17, 2021

496 4

TL;DR *Active Directory Certificate Services has a lot of attack potential! Check out our whitepaper "Certified Pre-Owned: Abusing Active Directory Certificate Services" for complete details. We're also presenting this material at Black Hat USA 2021.*

DCSync extracts all domain passwords [hashes] resulting in Domain Dominance

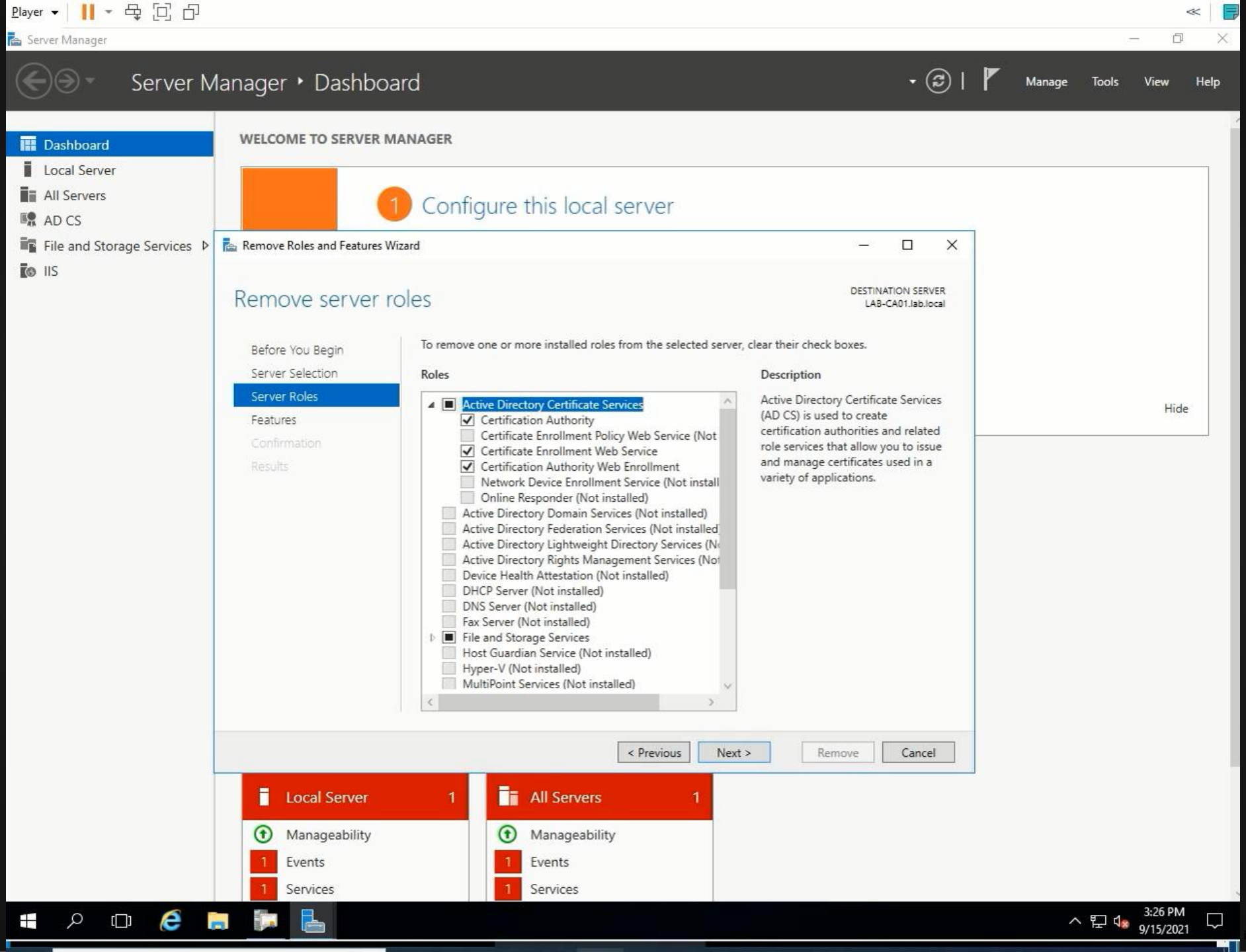


DCSync requires Domain Admin permissions.

Demo on the next slide

DEMO

Demo



Protection

Prevention (is better than cure) -> Dutch philosopher Desiderius Erasmus [year 1500]

Protect Active Directory (Certificate Services) via the Security Recommendations from Defender for Identity [Secure Score or Microsoft Security Exposure Management]

2	Resolve unsecure domain configurations	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity
3	Stop clear text credentials exposure	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity
4	Remove dormant accounts from sensitive groups	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity
5	Modify unsecure Kerberos delegations to prevent impersonation	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity
6	Reduce lateral movement path risk to sensitive entities	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity
7	Disable Print spooler service on domain controllers	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity
8	Protect and manage local admin passwords with Microsoft LAPS	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity
9	Resolve unsecure account attributes	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity
10	Stop weak cipher usage	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity
11	Edit misconfigured certificate templates ACL (ESC4)	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity
12	Edit insecure certificate enrollment IIS endpoints (ESC8)	+0.32%	0/5	To address	No	Yes	Identity	Defender for Identity

Prevention ESC8

Edit insecure certificate enrollment IIS endpoints (ESC8)

○ To address

Edit status & action plan Manage tags

General Exposed entities Implementation History (3)

Description

Active Directory Certificate Services (AD CS) enables Certificate Enrollment through various methods and protocols, including enrollment via HTTP-based methods - the Certificate Enrollment Service (CES) and the Web Enrollment interface (Certsrv). If these IIS endpoints have insecure configurations, they may be vulnerable to relay attacks (ESC8).

User impact

If the IIS endpoint allows NTLM authentication without enforcing protocol signing (HTTPS) or without enforcing Extended Protection for Authentication (EPA), it becomes vulnerable to NTLM relay attacks.

General **Exposed entities** Implementation History (3)

Export

Certificate Authority	Server hostname	Endpoints
S3CURITY-CA	WSRV2016-DC02	Click to view endpoints

General Exposed entities **Implementation** History (3)

Prerequisites

✓ You have Defender for Identity.

Next steps

For each endpoint, follow these steps:

1. Determine whether the endpoint is necessary and in regular use. If it is not used, it is advisable to disable it.
2. Deactivate NTLM and Negotiate authentication providers for the IIS endpoint.
3. If NTLM cannot be disabled, enable "Require SSL" and "Require Extended Protection" for the IIS endpoint.

For more information, please refer to the security advisory in the "Learn More" section.

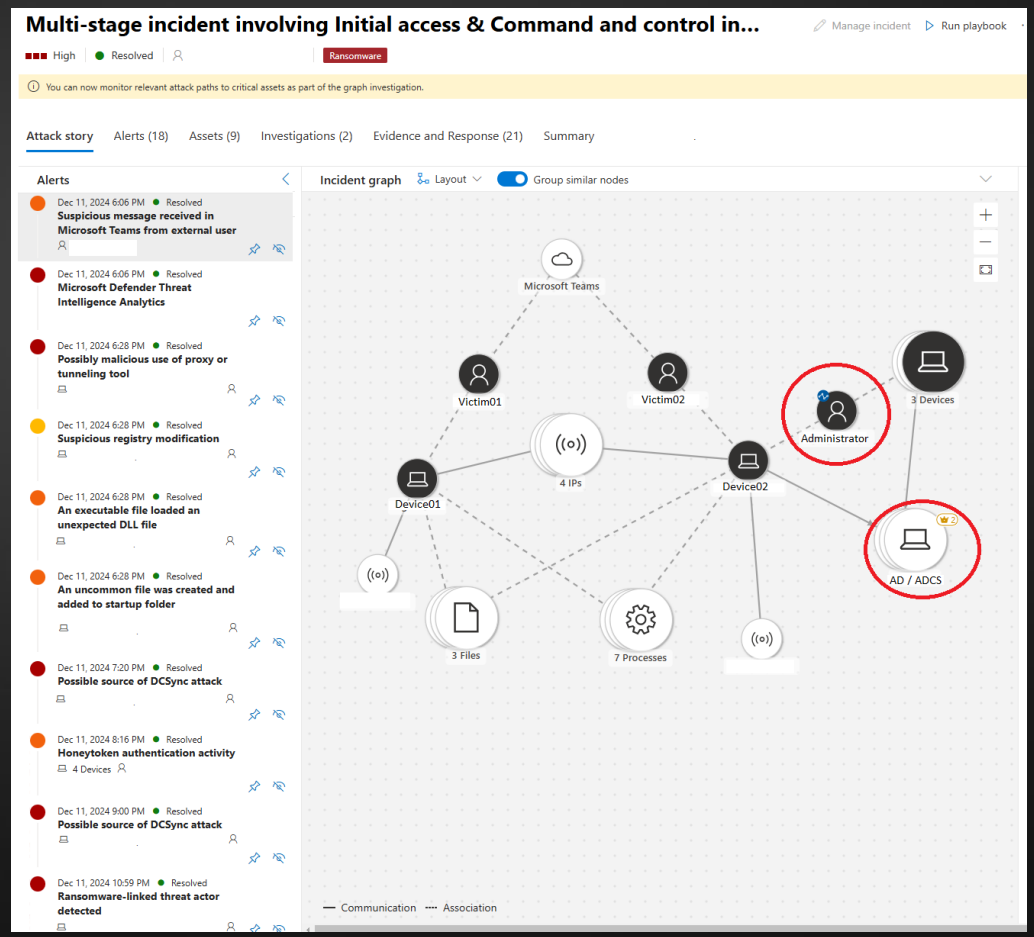
Detection

Defender XDR detects the attack as Multi-stage incident [from patient-zero to domain dominance / ransomware]…

Time is critical!!

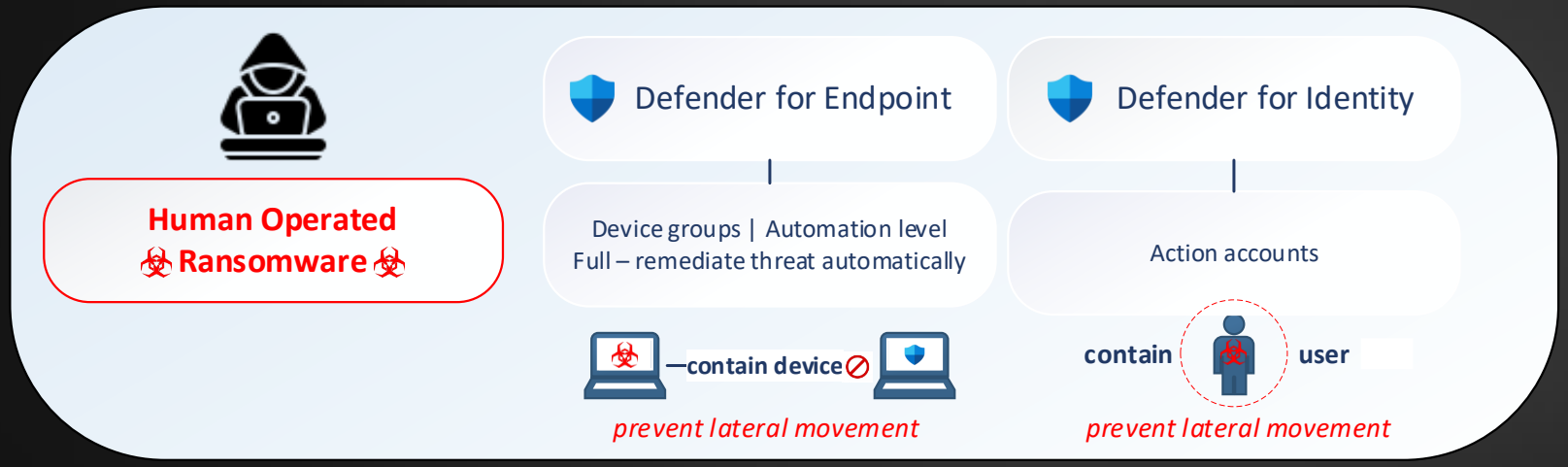
<45:00

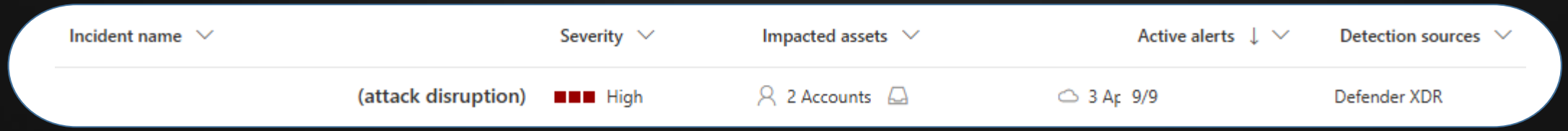
Minutes Seconds



Defender XDR | Automatic Attack Disruption

HumOR (*Human Operated Ransomware*) can be disrupted via Automatic Attack Disruption where the compromised device(s) and user(s) are contained to prevent lateral movement.

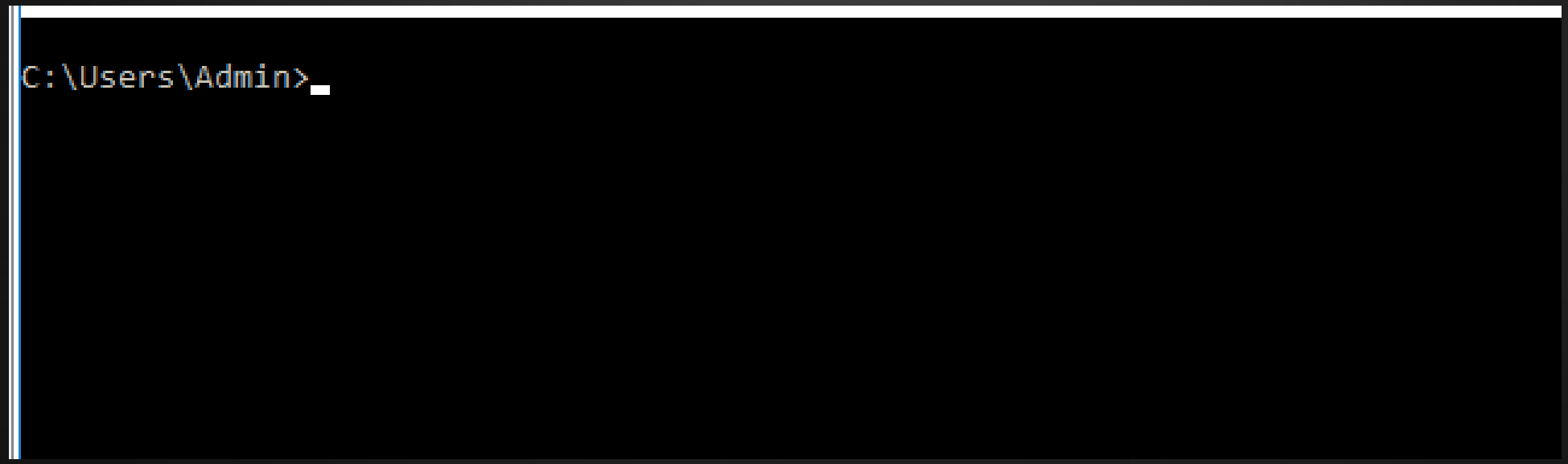




Pro-tip

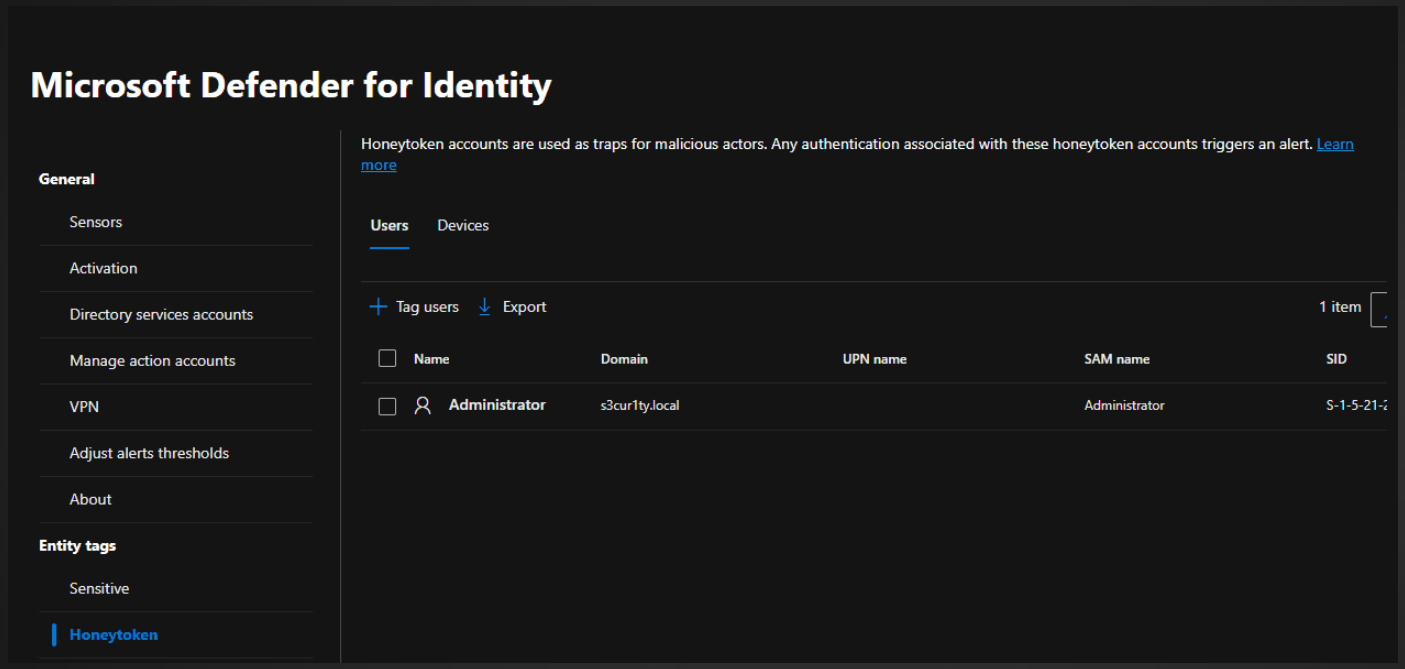
The Active Directory BTG (Break The Glass) account (*used only in case of emergency*) is a target for the Storm 1811 attackers

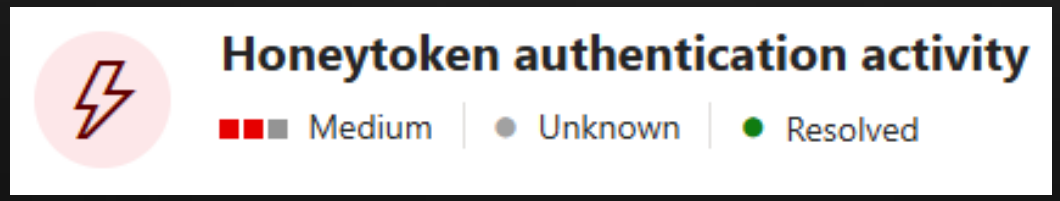
- rename the account from Administrator to ‘something else’ to avoid brute-force attack from the internet
- inside Active Directory there is no hiding (SID S-1-5-*domain*-500)



Pro-tip

Pro-tip ☺ add the Active Directory BTG [Break The Glass] as Honeytoken in Defender for Identity. Each Active Directory Logon results in an Alert





nedscaper

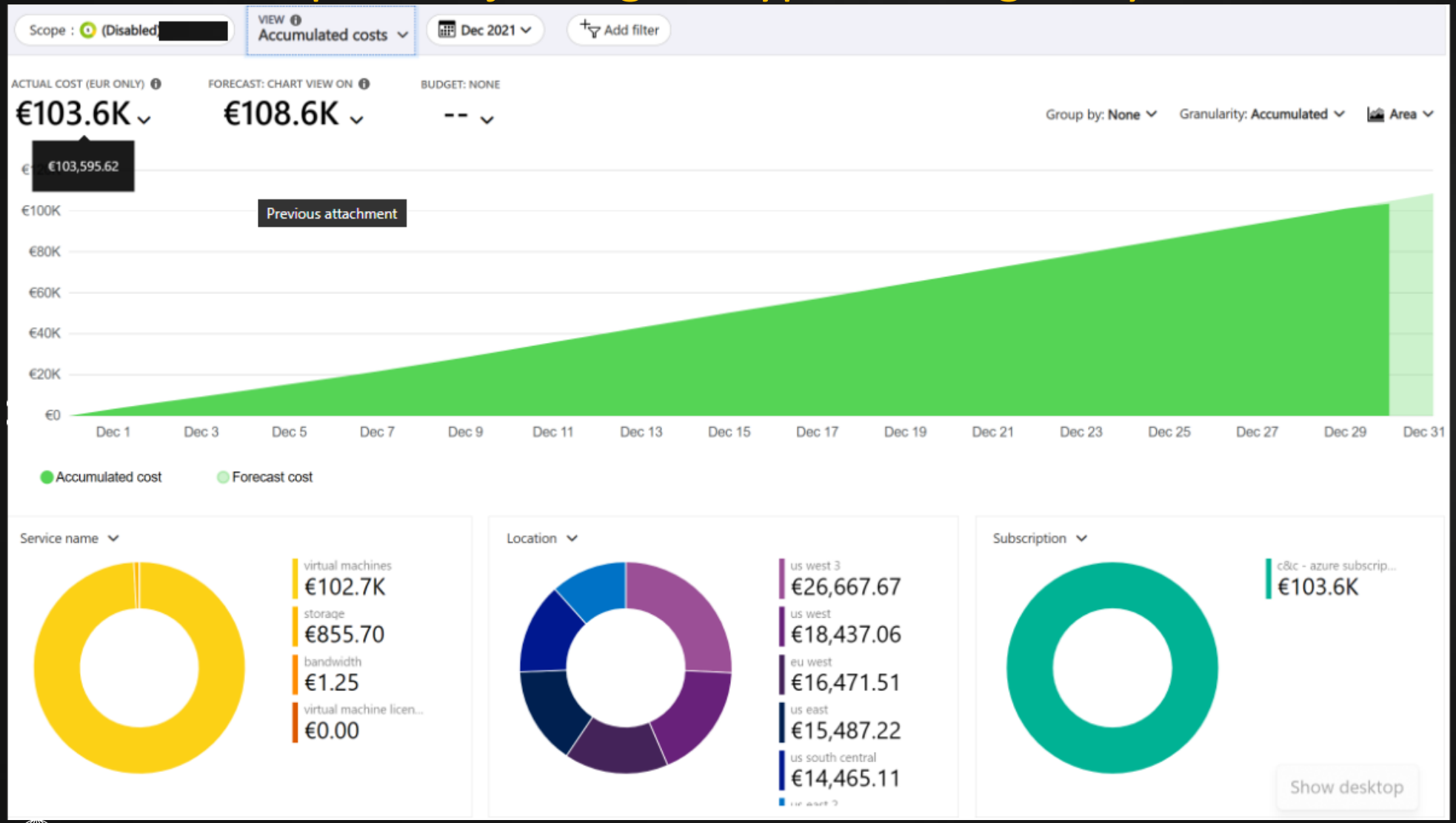
Azure Subscription Hijacking

Bonus ☺

Derk van der Woude
CTO @ Nedscaper

Pro-tip

Azure Subscription Hijacking & Crypto mining story …



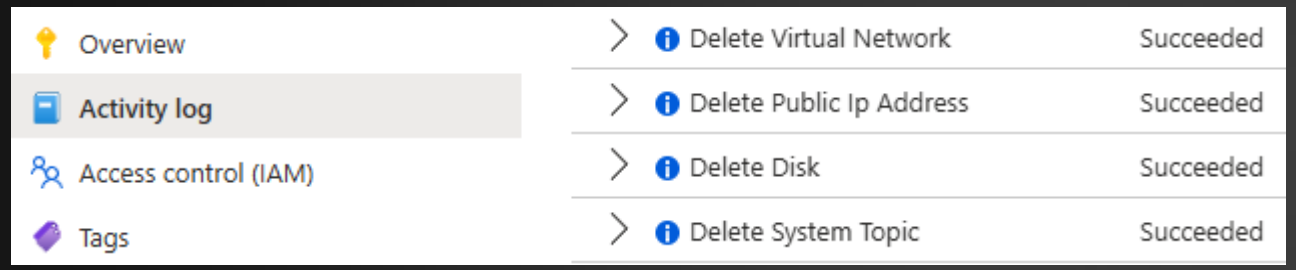
https://derkvanderwoude.medium.com/azure-subscription-hijacking-and-cryptomining-86c2ac018983

Pro-tip

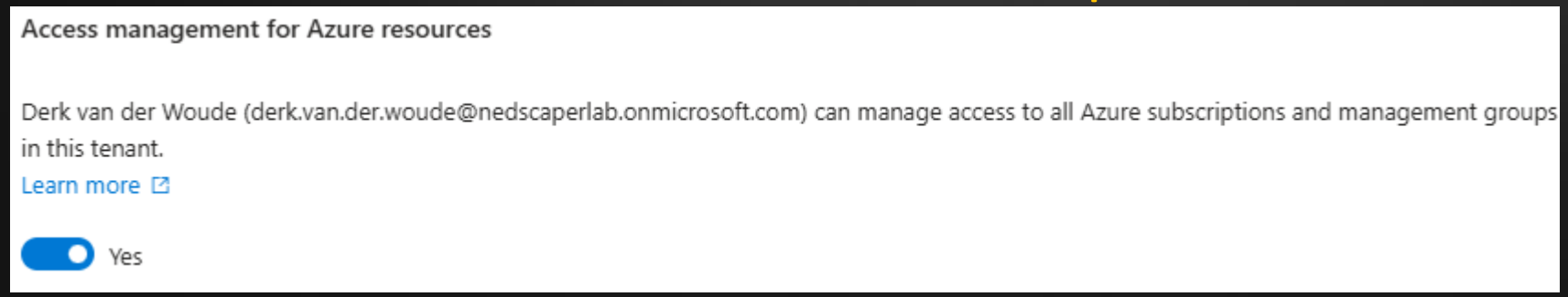
Azure Subscription Hijacking & Crypto mining

Important to know

- Payment information (Credit Card) is bound to the Subscription
- Audit Logs [Activity Log] are bound to the Subscription



- Entra allows access to All Azure Subscriptions with one button



https://derkvanderwoude.medium.com/azure-subscription-hijacking-and-cryptomining-86c2ac018983

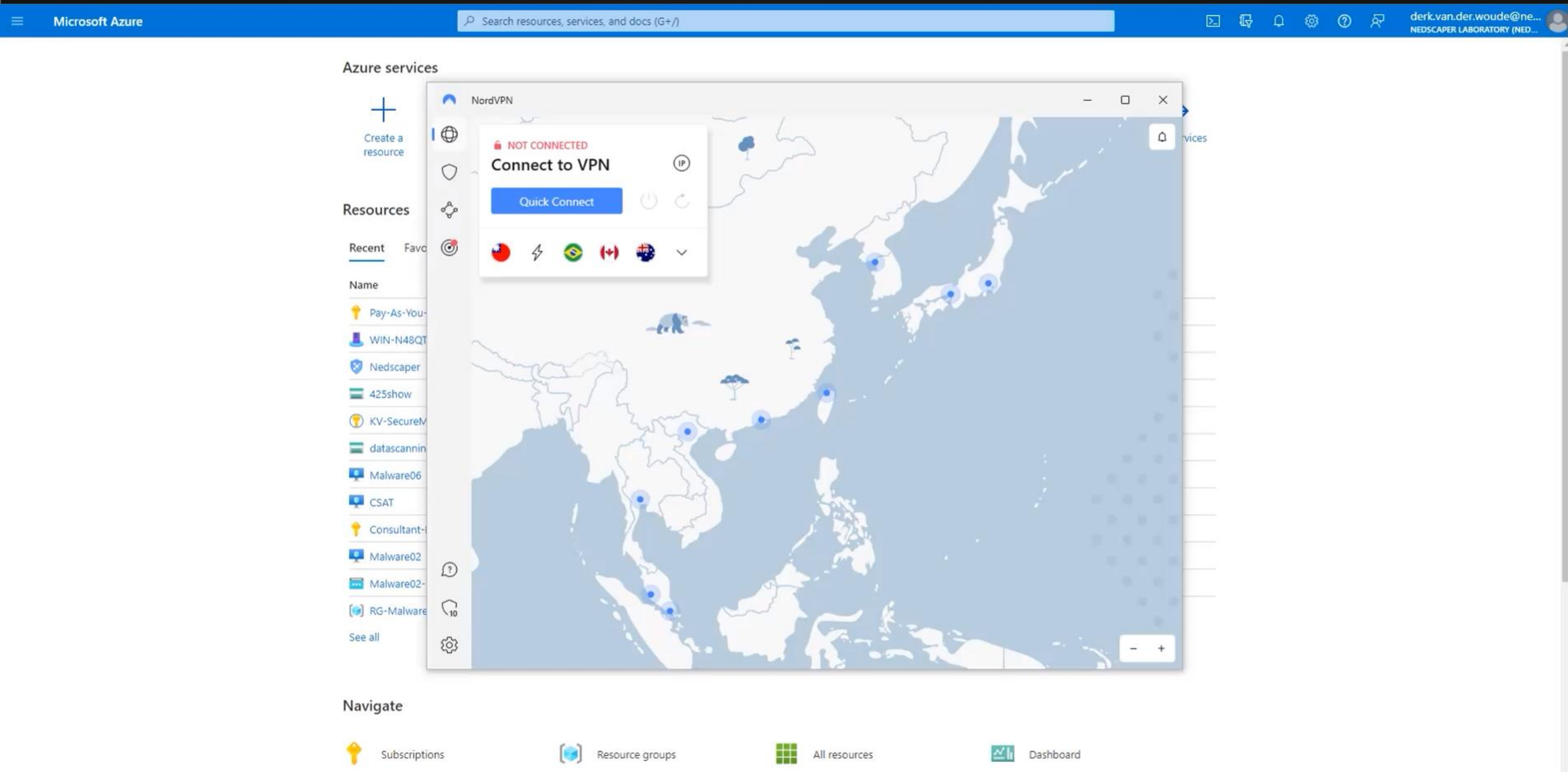
Pro-tip

Azure Subscription Hijacking & Crypto mining attack

Hacker 6 steps:

- Compromise Admin Account in Microsoft Tenant (@victim.com)
- Create Guest (account from Attacker Tenant, e.g. @hacker.com)
- Assign Azure Subscription Owner permissions to new Guest
- Logon with Attacker account @hacker.com
- Switch Directory to Victim Subscription
- Change Directory from @victim.com to @hacker.com

https://derkvanderwoude.medium.com/azure-subscription-hijacking-and-cryptomining-86c2ac018983



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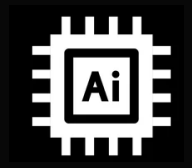

Questions?