



SPECTEROPS



TROOPERS

# Misconfiguration Manager

Still Overlooked, Still Overprivileged

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# Duane Michael

- Managing Consultant, Adversary Simulation at SpecterOps
- Contributor to SharpSCCM
- @subat0mik on all the things



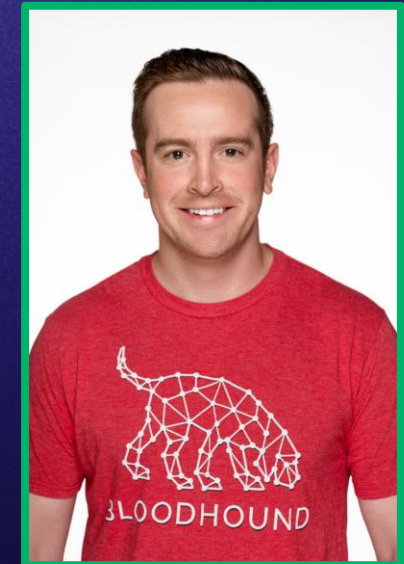
# Garrett Foster

- Senior Security Researcher at SpecterOps
- Primary author of SCCMHunter
- X: @unsigned\_sh0rt



# Chris Thompson

- Senior Security Researcher at SpecterOps
- Primary author of SharpSCCM and Maestro
- X: @\_Mayyhem





# Agenda

What this talk is (and is not) about



This presentation covers:

- 2024 Summary
- 1 Year of MM
- New Technique Highlights
- Community Contributions
- Q&A



This presentation does NOT cover:

- Walkthroughs of *all* offensive techniques
- Defensive and remediation walkthroughs
- Comprehensive treatment of topics discussed

# Misconfiguration Manager

Where we started

- What is Misconfiguration Manager
  - Released at SO-CON & TROOPERS 24
  - Captures all known adversary tradecraft targeting SCCM
  - Provides detection and mitigation guidance

# Misconfiguration Manager

Where we started...

- The initial release contained:
  - 9 TAKEOVERs
  - 5 RECONs
  - 5 CREDs
  - 3 ELEVATEs
  - 2 EXECs
  - 22 PREVENTs
  - 5 DETECTs
  - 1 CANARY

# Misconfiguration Manager

Where we are now...

- Over the past year, with the help of the community, we've added:
  - 1 TAKEOVER
  - 2 RECONs
  - 3 CREDs
  - 2 ELEVATEs
  - 3 EXECs
  - New COERCE category
  - 3 COERCEs
  - 6 DETECTS



What we (and the community) have been  
up to...



# TAKEOVER-1 Recap

Our favorite, and most common, TAKEOVER primitive

- Site database is not hosted on the coercion target
- Primary site servers and SMS Providers are "db\_owner" on site DB
- Coerce a system with one of these roles
- Relay it to site DB
- Grant SCCM "Full Administrator" by modifying "RBAC\_Admins" table



# The Problem with TAKEOVER-1

There was one glaring issue...

- When found, TAKEOVER-1 allows a privilege escalation from *Domain Users* to site/hierarchy compromise
- But... we couldn't reliably enumerate standalone site DBs
- We relied on SPNs and hostnames
  - `MSSQL/SQLSCCM01.CORP.LOCAL:1433`

# RECON-6

The solution to our problem



- Primary site servers and distribution points create reg keys
  - `HKLM\SOFTWARE\MICROSOFT\SMS\*`
- World-readable over WINREG, regardless of DACL
  - Key path set in local security policy on PSS and DP
- Keys contain site system information
- Weaponized in [pssrecon](#)
- *Discovered, weaponized, and contributed by Dylan Bradley (@slygoo)*



royal

VPS

Credentials

Ludus2

cluster\_sccmlab

kali

sccm-sitesrv

sccm-dc01

sccm-workstation

sccm-win10

workgroup

sccm-sql

sccm-distro

cluster\_testing

nb

new-SCCM-HA

new-SCCM-standalone

dev

New Folder

Application

Credentials

Default Settings

Overview

kali

sccm-sql

sccm-sitesrv

sccm-distro

Microsoft Configuration Manager (Connected to 123, Primary Site - sccm-sitesrv.ludus.domain) (Evaluation, 165 days left)

Home

Add User or Group

Create

Saved Searches

Search

Refresh

Delete

Administrative User

Show Status Messages

Properties

Site version is past the end of support.

Upgrade your site

1/1

Administration

Administration

Overview

Security

Administrative Users

Administrative Users 1 items

Search current node

Search

Add Criteria

Icon	Account Name	Account Display Name	Security Roles
	ludus\domainadmin		"Full Administrator"

ludus\domainadmin

Account Summary

Account Name:

ludus\domainadmin

Account Display Name:

Date Created:

6/4/2025 12:06 PM

Created By:

ludus\domainadmin

Date Modified:

6/4/2025 12:06 PM

Modified By:

ludus\domainadmin

Security Roles

Collections

Security Scopes

"All"

Assets and Compliance

Software Library

Monitoring

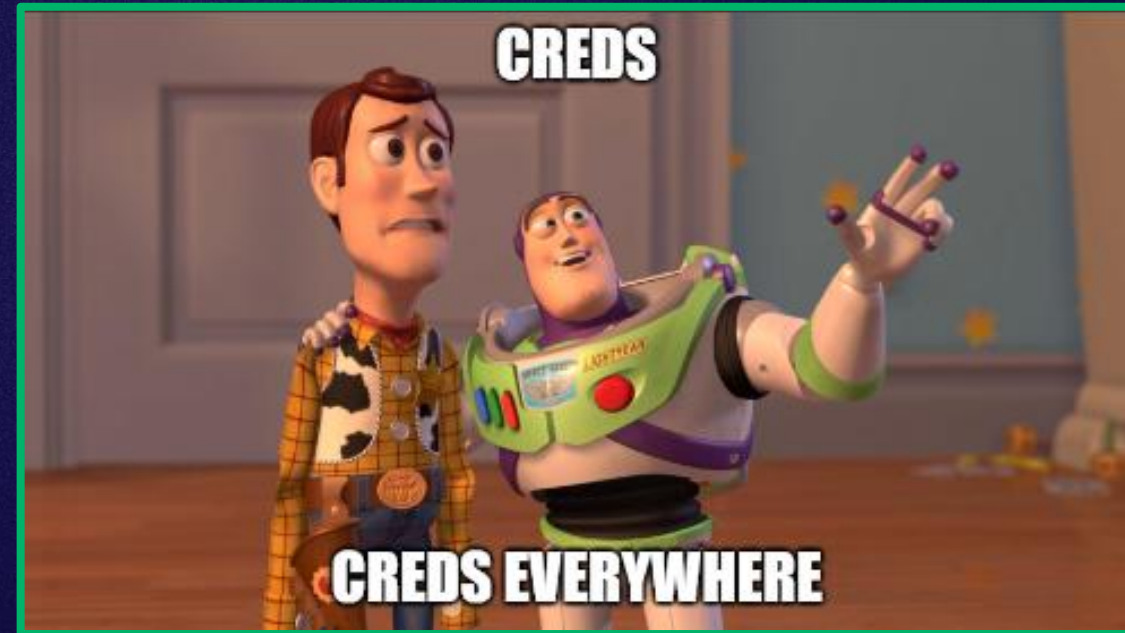
Administration

Community

# Time to Talk About Creds...

Again...

- There's more creds than we thought...
  - *Azure Application (Co-management), Discovery Accounts, Site-Installation Accounts, and more*
- All cred blobs retrievable via AdminService API and WMI (CRED-7 & 8)
  - CRED-7 weaponized by [Garrett](#)





```
(sccmhunter)-(kali@sccm-kali)-[~/sccmhunter]  
$ python3 sccmhunter.py admin -u domainadmin -p password -ip 10.6.10.15
```

4

# CRED-1 is More Practical

With the help of a little bit of PXE dust...

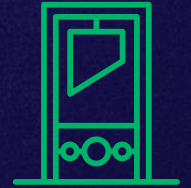


- CRED-1 can now be abused over SOCKS via C2
  - Previously required direct network access
  - Weaponized by [Adam Chester](#) in [cred1py](#)



# Do You Want to Terrify Your Target?

CmRc will help you do that!



- ConfigMgr Remote Control
  - Allows admins to RDP to clients or shoulder surf users
  - Viable as a standalone tool, only requires admin on target
  - Settings controllable by local admin of target or SCCM Admin
  - Invisible to target users
  - Shared clipboard

# Do You Want to Terrify Your Victim?

CmRc will help you do that!



- Viable as an execution technique a la VNC (EXEC-3)
- Requires local admin on target or SCCM admin
  - [Blogged](#) by [Chris Au](#)
- Also, a stealthy recon and credential access technique
  - Invisible to logged on users (shoulder surf)
  - Clipboard is shared
- *Allows taking over input and locking a user out while forcing them to watch you pillage!*



SCCM-DISTRO - Configuration Manager Remote Control

File View Action Help

Connected with "ludus\domainadmin".

Recycle Bin

Microsoft Edge

Host Name: SCCM-DISTRO  
User Name: ludus\domainadmin  
Last Working: 6/20/2025 7:23 PM

OS Version: Windows Server 2022 Standard Evaluation  
Release ID: 22H2  
Build: 22H2.210507.1500  
Patch: 22H2.210507.1500  
Kernel: 6.0.210507.1500  
IE Version: 11.0.220507.1500  
System: x64

IP Address: 10.3.10.12  
MAC Address: 08-00-27-00-00-00  
Default Gateway: 10.3.10.1  
DNS Servers: 10.3.10.1

Logon Domain: ludus  
Machine Domain: LUDUS.DOMAIN  
Logon Server: DC01

Boot Time: 6/20/2025 7:13 PM  
CPU: Dual 3.8 GHz AMD Ryzen 7 8845HS w/ Radeon 780M Graphics (Hyper-Threaded)  
Memory: 4096 MB  
Volumes: C:\ 250.00 GB NTFS  
Free Space: C:\ 232.43 GB NTFS

Windows Server 2022 Standard Evaluation  
Windows License valid for 163 days  
Build 20348.fe\_release.210507-1500

7:23 PM  
6/20/2025

SCCM-DISTRO | Authenticated

Remote Control Session Status

Computer name	SCCM-DISTRO
Being viewed by	ludus\domainadmin
Local address	10.3.10.12:2701
Viewer address	10.3.10.15:63086
Session start time	19:20:37
Authentication	Kerberos
Control mode	Full Control

Close Session Cancel

## Custom Device Settings



Specify the settings for devices. These settings override the default settings when they are a

Specify remote control settings on client computers.

### Device Settings



Enable Remote Control on clients	Enabled
Firewall exception profiles	Domain,Private,Public
Users can change policy or notification settings in Software Center	No
Allow Remote Control of an unattended computer	Yes
Prompt user for Remote Control permission	No
Prompt user for permission to transfer content from shared clipboard	No
Grant Remote Control permission to local Administrators group	Yes
Access level allowed	Full Control
Permitted viewers of Remote Control and Remote Assistance	1 Viewers
Show session notification icon on taskbar	No
Show session connection bar	No
Play a sound on client	No sound





Recycle Bin

Microsoft  
Edge

# LUDUS

CYBER RANGES

Host Name: SCCM-DISTRO  
User Name: domainuser  
Last Windows Update: 2022-03-03

OS Version: Windows Server 2022  
Release ID / Version: 21H2  
Build: 20348.587  
Patch-Version: 10.0  
Kernel: 6.3  
IE Version: 11.1.20348.0  
System Type: Server, Stand-alone, Terminal Server

IP Address: 10.3.10.12  
MAC Address: BC-24-11-F0-BE-98  
Default Gateway: 10.3.10.254  
DNS Server: 10.3.10.10

Logon Domain: ludus  
Machine Domain: LUDUS.DOMAIN  
Logon Server: DC01

Boot Time: 6/20/2025 7:13 PM  
CPU: Dual 3.8 GHz AMD Ryzen 7 8845HS w/ Radeon 780M Graphics (Hyper-Threaded)  
Memory: 4096 MB  
Volumes: C:\ 250.00 GB NTFS  
Free Space: C:\ 232.44 GB NTFS

Windows Server 2022 Standard Evaluation  
Windows License valid for 163 days  
Build 20348.fe\_release.210507-1500



Type here to search



7:31 PM  
6/20/2025



# ELEVATE-4

## Pre-Owned PXE Boot



- SCCM PKI configurations require client authentication certs for OSD
  - [Found](#) by [@onSec-fr](#)
- The cert is distributed to every PXE client during deployment
- It's a feature!\*
- "...only used during the OS deployment process."
  - "...use the same certificate for every OS deployment..."
- No PXE password = zero to hero
  - *Maybe even the site server...*

```
(sccmhunter)-(kali sccm-kali)-[~/demo/PXETHief]  
$
```

# ELEVATE-5

## Pre-Owned OSD Images



- Same PKI cert gets pushed into OSD images
- Images live on admin selected distribution points as packages
  - Found with CRED-6
- Just need an authenticated user to pull the images down
  - *But we've seen anonymous auth via HTTP...*



# Community Contributions

Thank you to everyone who has contributed!

- [Josh Prager](#) – DETECT-5-8
- Diego Lomellini – RECON-4, COERCE-1
- [Adam Chester](#) – CRED-1 Update
- [Alberto Rodriguez](#) & [Erik Hunstad](#) – CRED-6
- [Marshall Price](#) – DETECT-4
- [Dylan Bradley](#) – RECON-6
- *And everyone that's furthering SCCM tradecraft research & discovery!*

# Future Work

## Where we're going...

- Microsoft is collaborating and taking this seriously!
- There is SO much more work to be done:
  - Offensive research
  - Detection strategies
  - Configuration guidance
- We want to hear your stories and ideas!
- Pull requests welcome and encouraged
- Collaborate with us in [#sccm](#) on BloodHound Slack
  - Invite link: <https://ghst.ly/BHSlack>







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# Thank you!

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Duane Michael | @subat0mik

Garrett Foster | @garrfoster



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