VARONIS

Fighting a different battle than
conventional cybersecurity companies

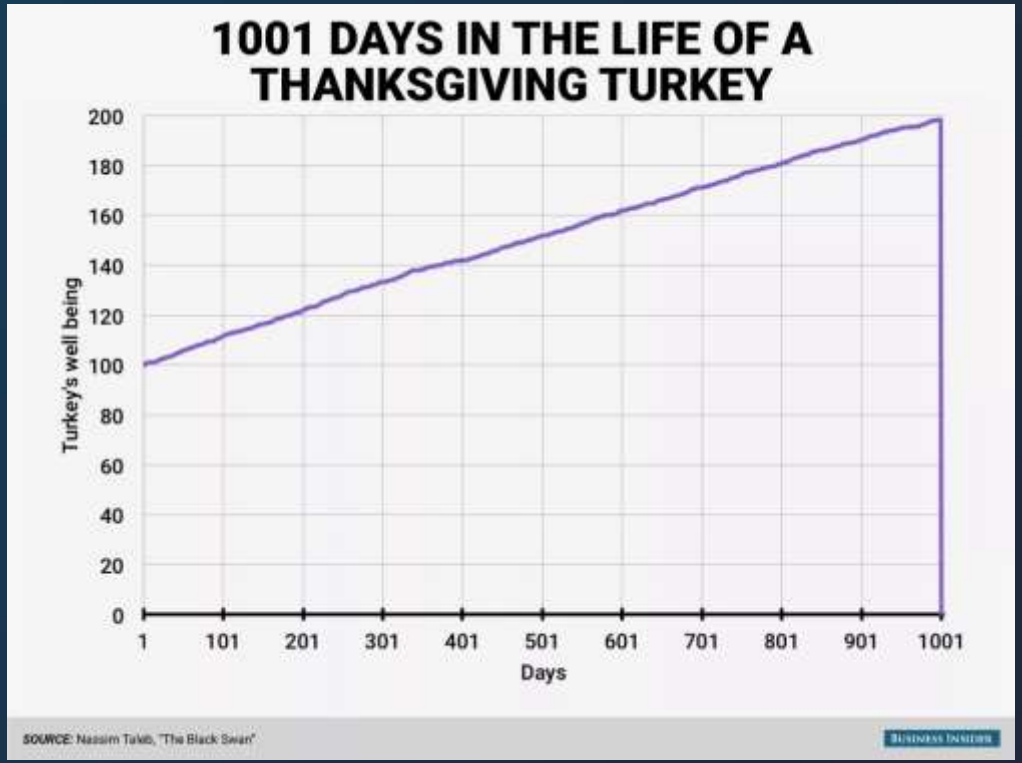
Attackers Prey on Uncertainty

How to Fail at Threat Detection

Agenda

- Attacker vs. Defender Mindset
- The New Threat Landscape
  - Sophisticated Insiders
  - Sophisticated External Attackers
- Rogue Insider Play-by-Play
- Encounter with a Russian APT
- Data-Centric Security Strategy

Turning the Black Swans White



Are You the Farmer or the Turkey?

“

Defenders live in a world of uncertainty.

The goal is to reduce the attacker’s window of opportunity and reduce uncertainty.

Visibility is the game.

”

Yossi Sassi

Do you have the visibility and context to answer these questions?

- Who is using which device?
- Who is connecting to our VPN? From where?
- Are any suspicious DNS requests being made?
- Who is using data on-premises and in the cloud?
- Is any data access suspicious or abnormal?
- Are users uploading sensitive data to insecure websites?


Sophisticated Insider Threats

How Insiders Evade Detection

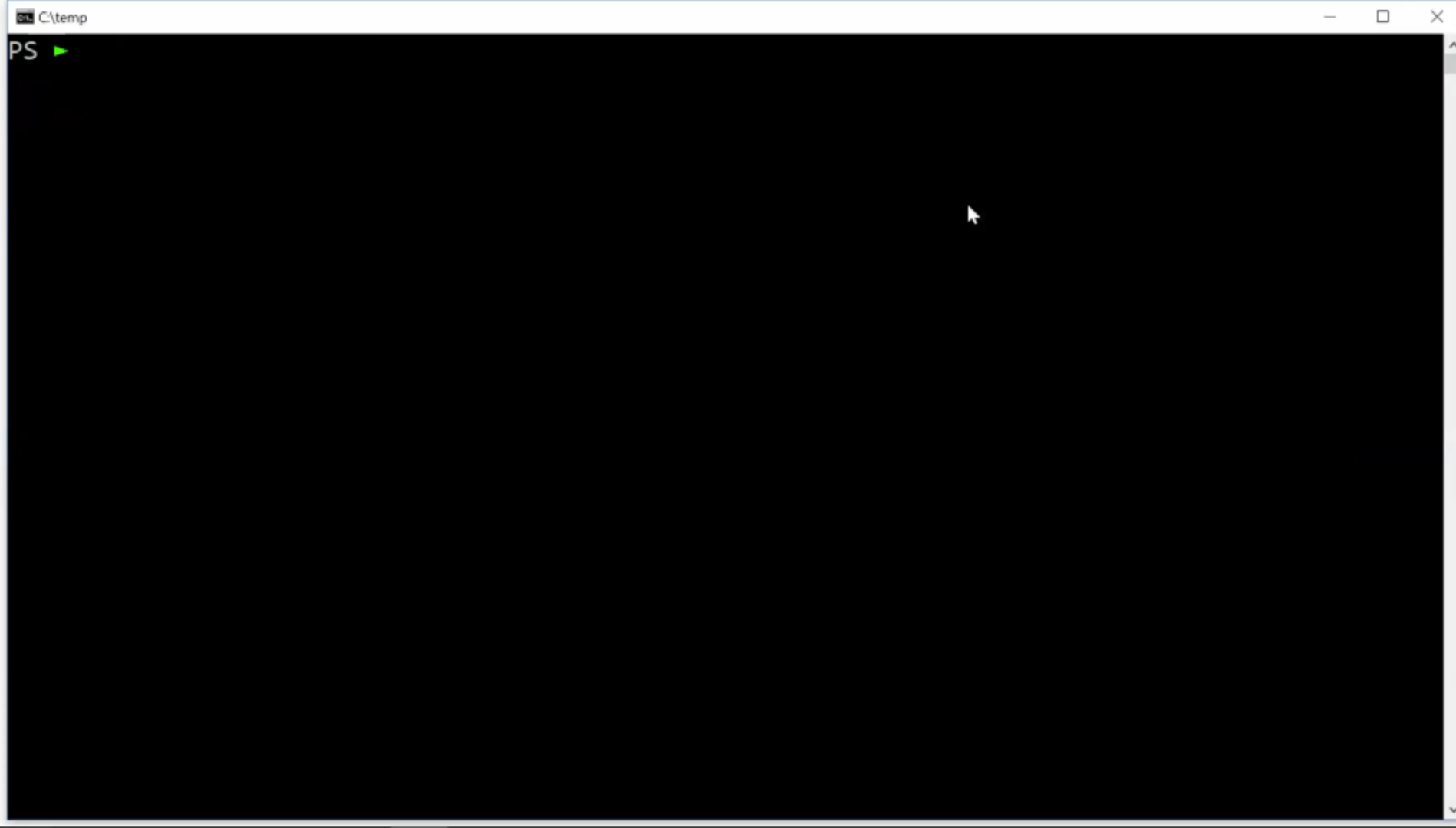
- Use a valid device during business hours
- Create shadow accounts or use service accounts
- Go low and slow
- Access unmonitored VIP mailboxes
- Grant permissions and then remove them
- Mask malicious activities with noise

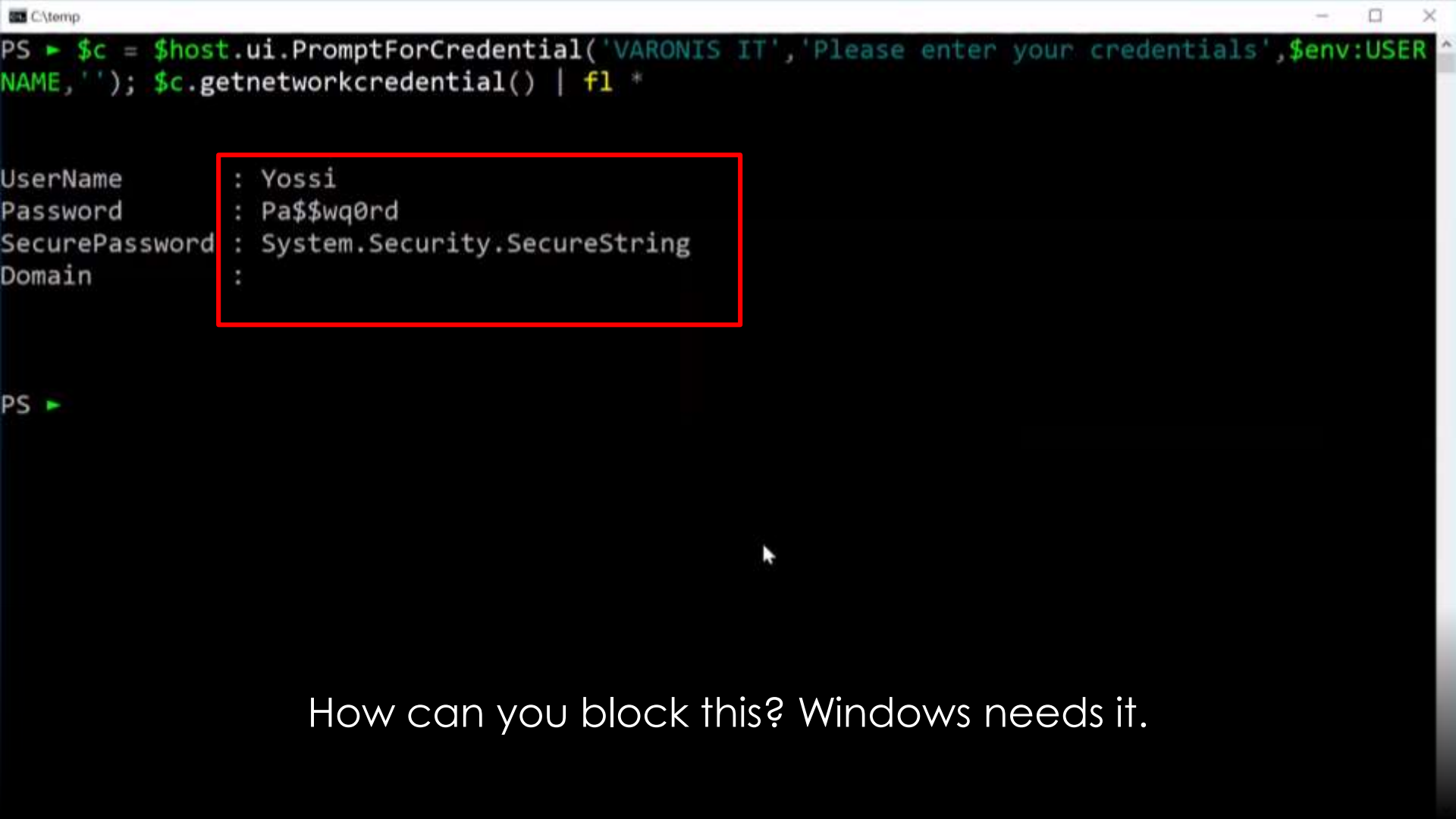

Sophisticated External Attackers

Living off the Land

- Only using resources already available
- Don’t touch the disk or trigger A/V scanning
- Load scripts in context of legitimate process (e.g., powershell.exe)
- File-less nature makes the indicators of compromise harder to detect

Ever get this prompt out of the blue?


C:\temp
PS ►


C:\temp
PS ► $c = $host.ui.PromptForCredential('VARONIS IT','Please enter your credentials',$env:USERNAME,''); $c.getnetworkcredential() | fl *
UserName : Yossi
Password : Pa$$wq0rd
SecurePassword : System.Security.SecureString
Domain :
PS ►
How can you block this? Windows needs it.

Here's an attack we detected recently

- A savvy engineer decides to monetize corporate secrets
- Compromises a service account with Domain Admin (Kerberoasting)
- Uses personal workstation crack the account's password
- With privileged service account, user scans file shares for confidential files
- ZIPs the files and exfiltrates via personal Gmail account

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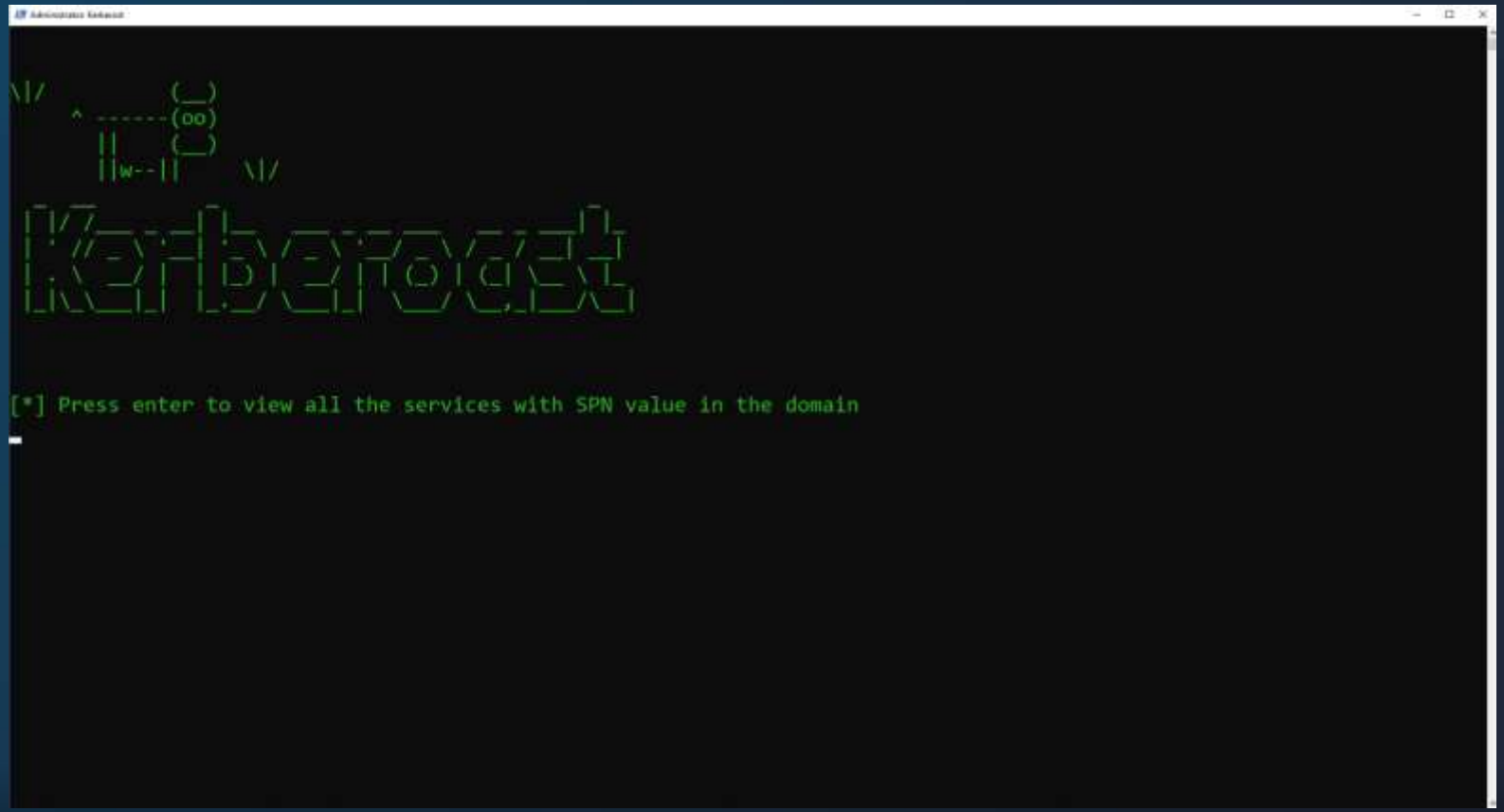
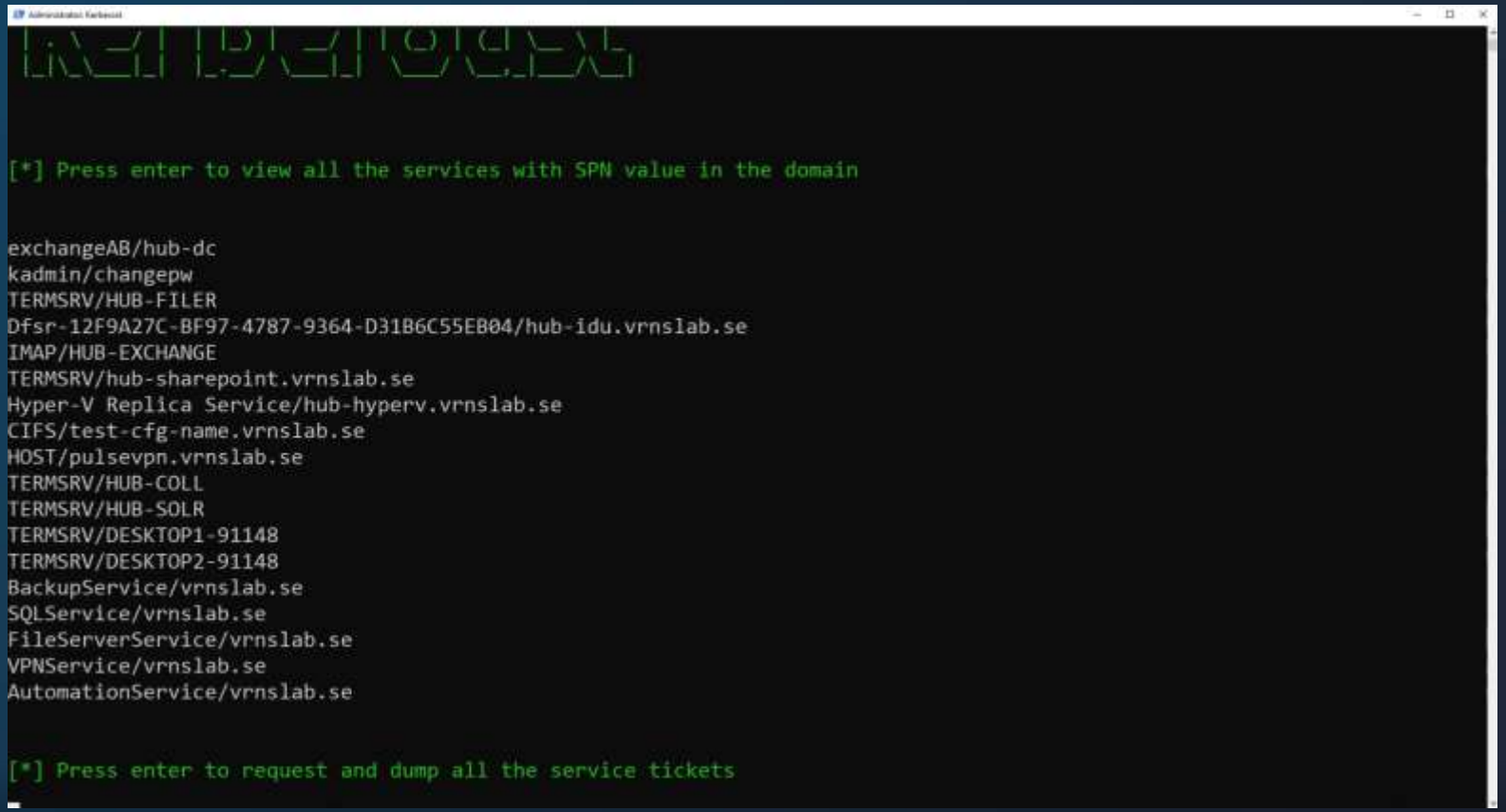
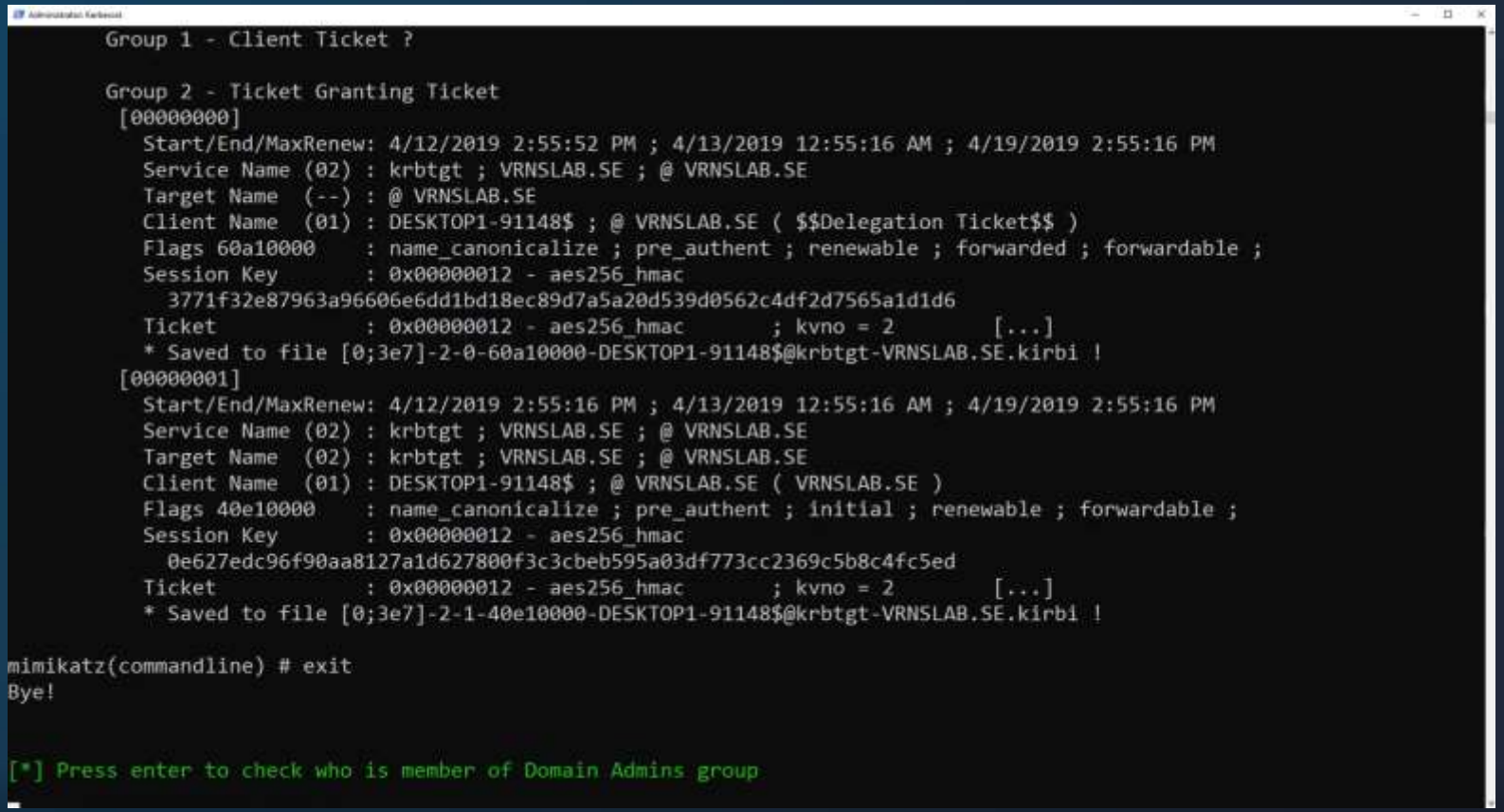


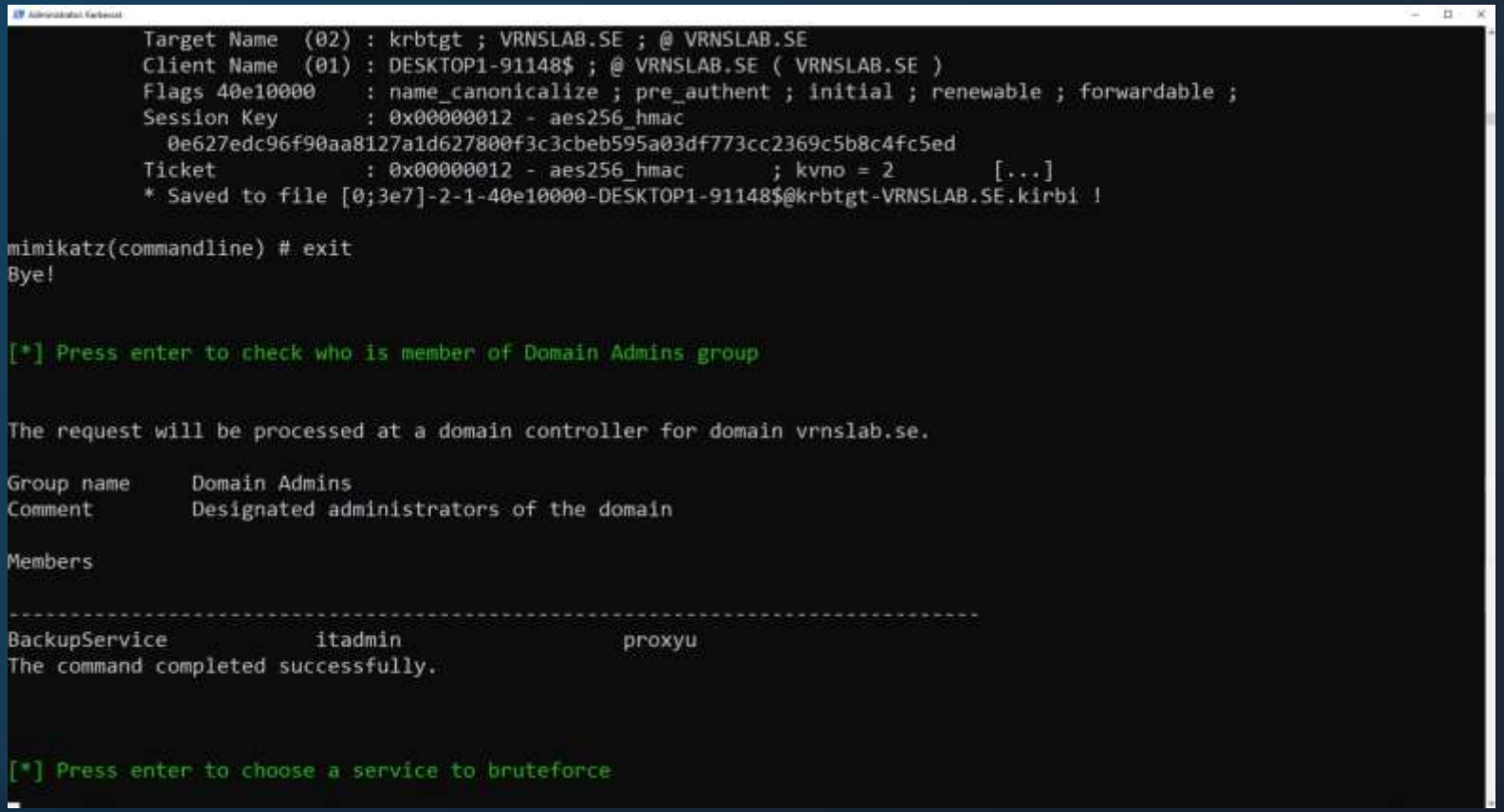
Step 1: Find accounts with Service Principal Names



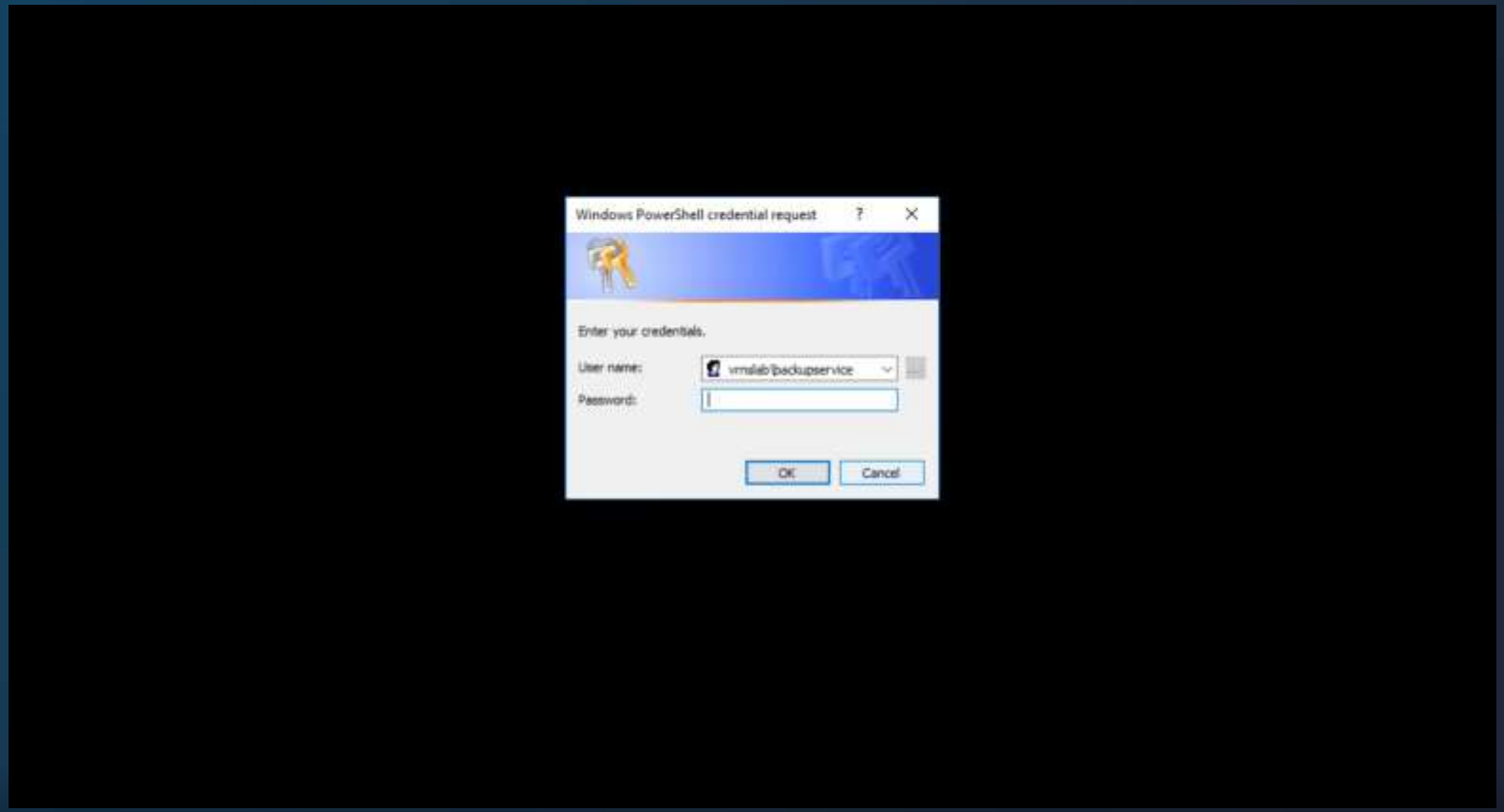
Step 2: Get their Kerberos tickets



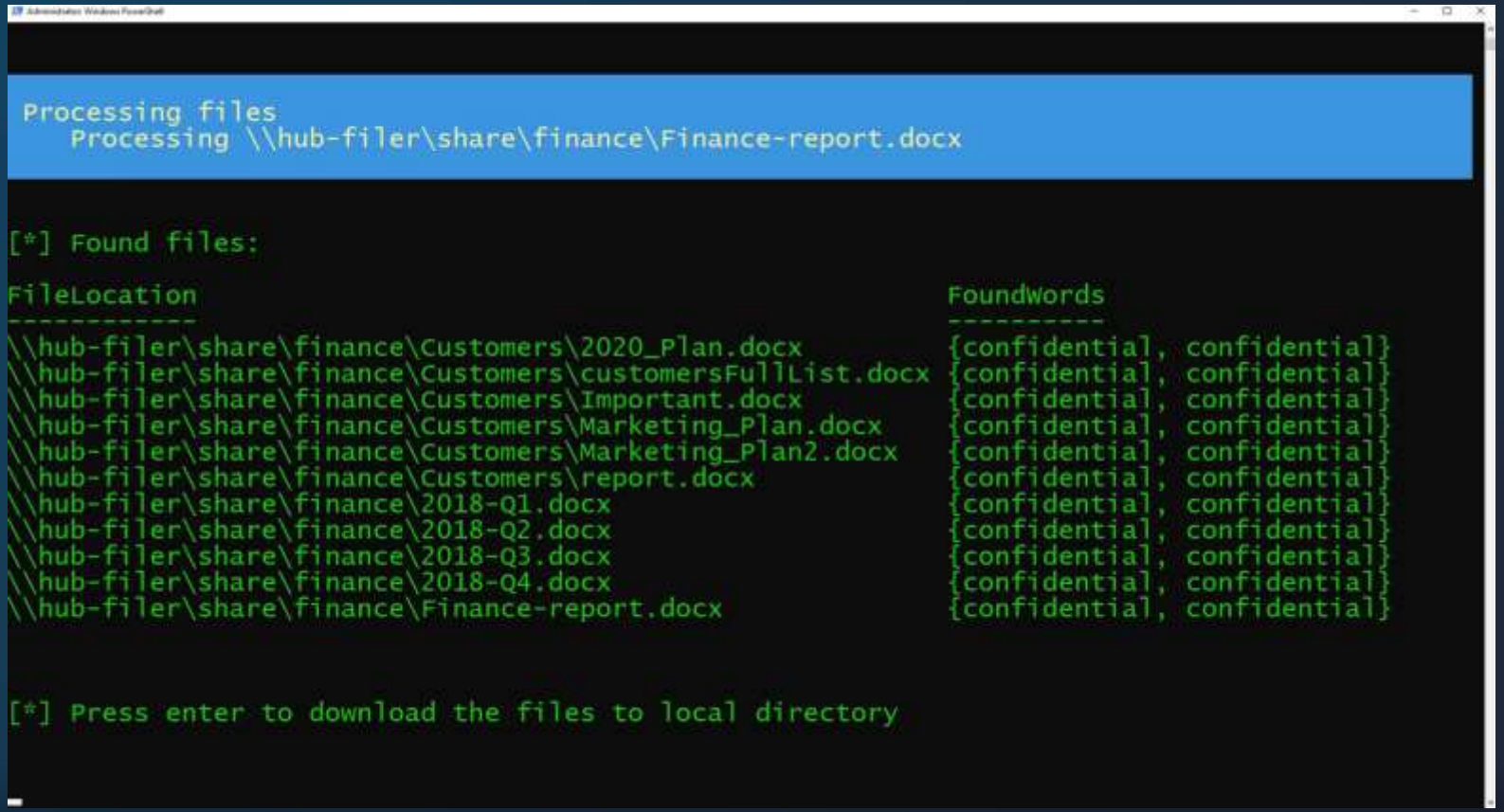
Step 3: Which of these accounts have elevated privileges?



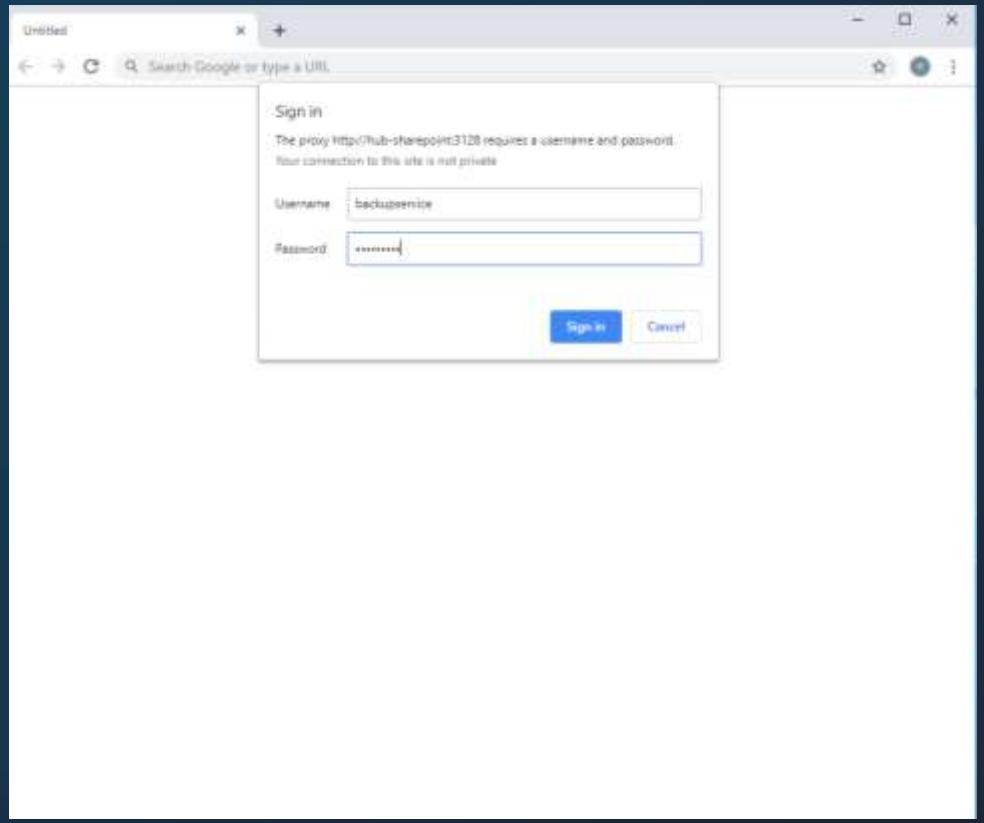
Step 4: Let's crack one (offline)



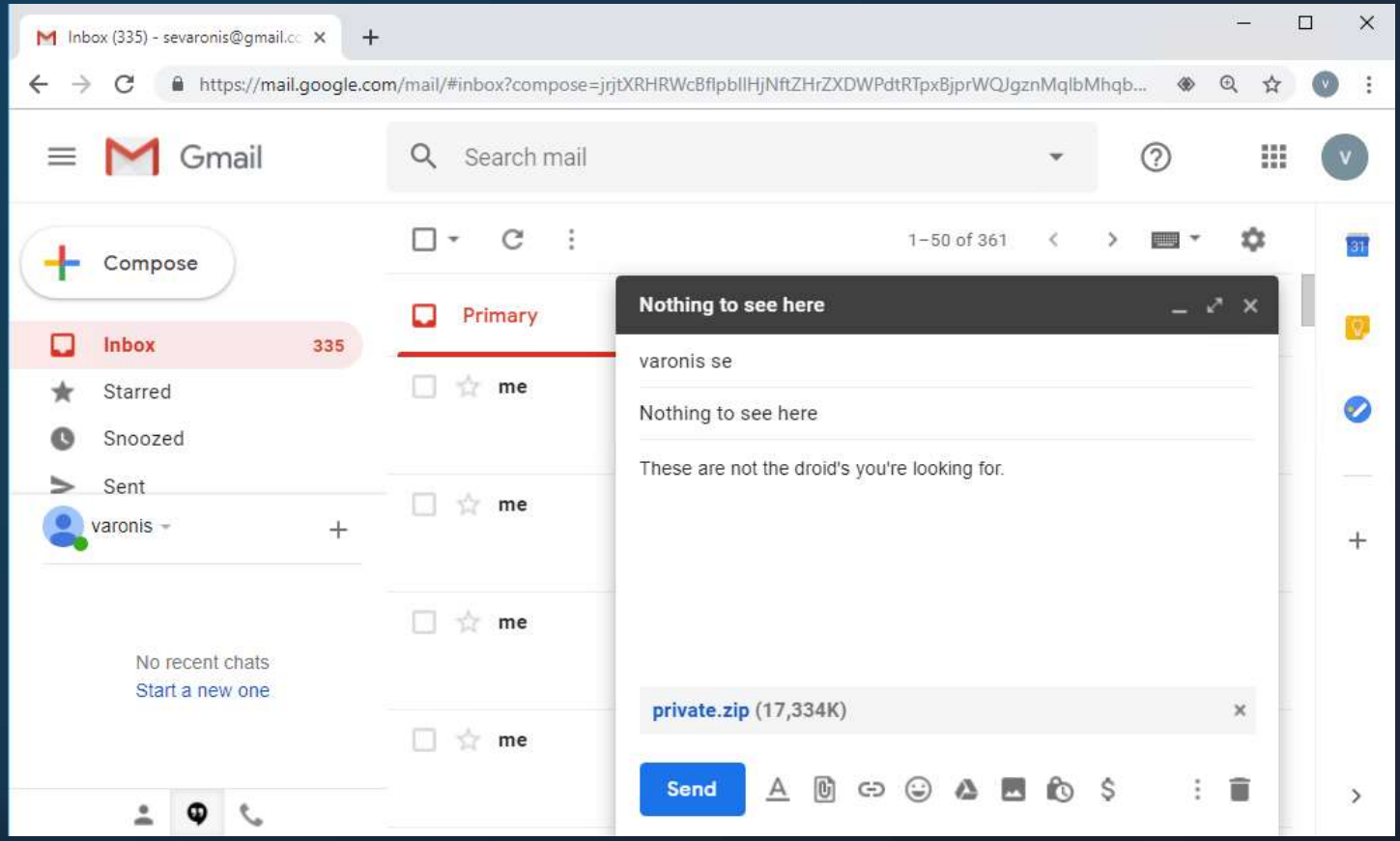
Step 5: Let's use our new account to find some files



Step 6: Put them in a zip file

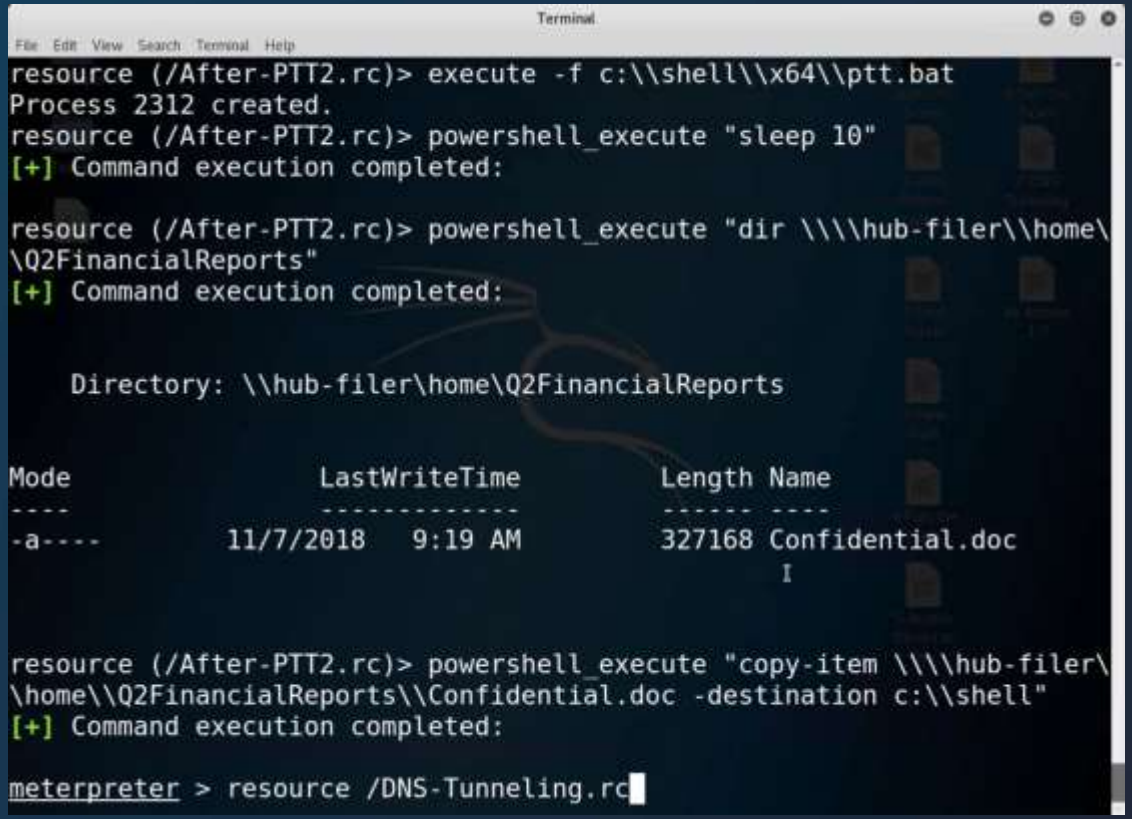


Step 7: Use Service Account to login to web proxy and Gmail

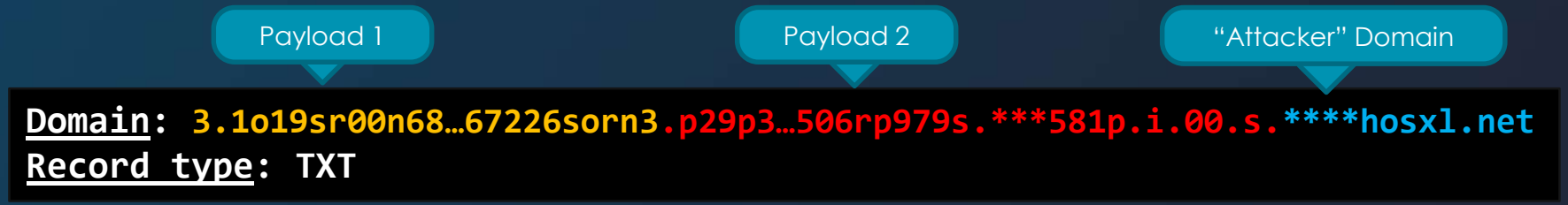


Step 8: Create an email and send

DNS tunneling is stealthier for exfiltration



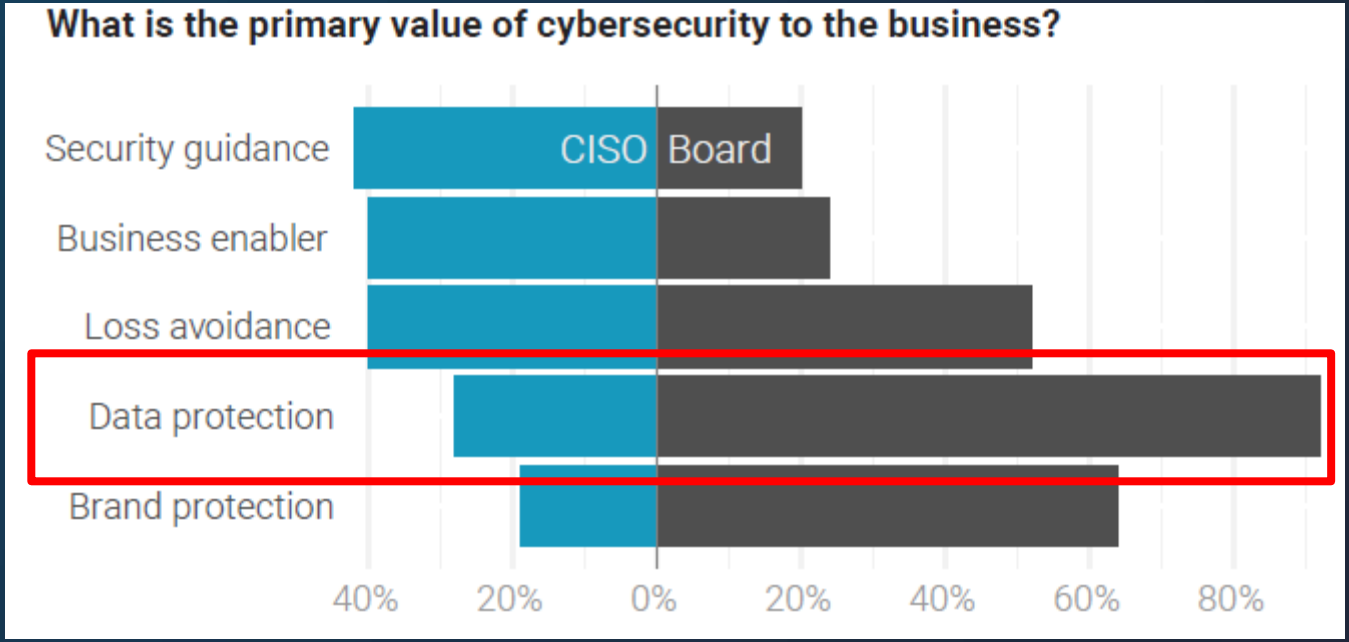
Especially when your security vendors do it, too!



How quickly & accurately can you answer the most important question:

“Is our **data** safe?”

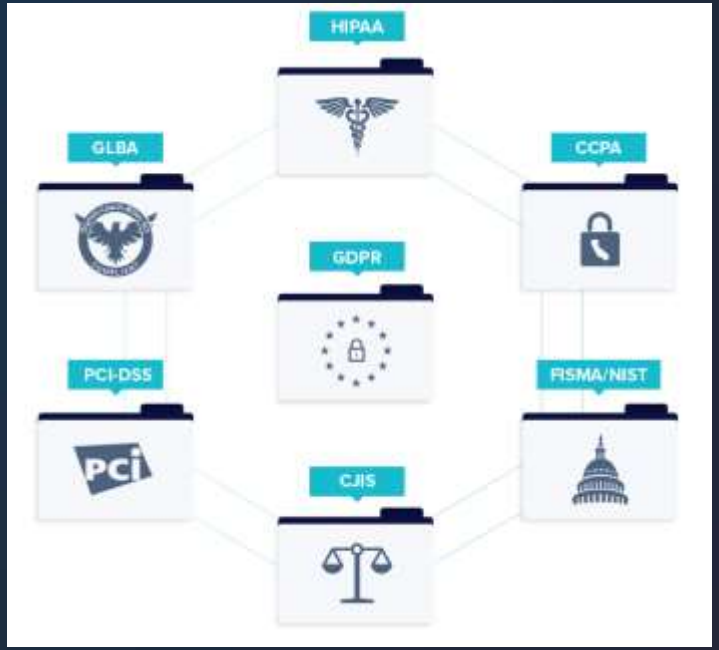
The CISO / Board Disconnect



Source: Source: The Cyber Balance Sheet, Cyentia Institute

Modern regulations are **data-centric**

- Where is your regulated data located?
- Is any of that data exposed and at-risk?
- Do only the right people have access?
- How is regulated data being processed?
- Can you find and delete personal data?



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So what visibility & context do we need?

ACTIVE DIRECTORY

DATA ACCESS

NETWORK & DNS

Potential ticket harvesting attack

BackupService logs into Jim-PC for the first time

Abnormal access to sensitive data by a service account

First time access to the internet by a service account

Data exfiltration attempt via DNS tunneling

Russian APT Encounter

- Varonis alerted on malicious activity
- Well-known IR firm told customer there was no sign of compromise
- Customer called the Varonis IR team to be sure
- IR team
  - Discovered and contained infection in 13 minutes
  - IR began remediation, recovery, and forensics
- Research team
  - Reversed Qbot malware and exposed C2 server
  - Extracted victim list and found future variants

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Malware Analysis: Reversing Qbot Banking Trojan

INFECTION

- Phishing emails w/ attachments
- Dropped malicious VBS file
- Loads payload with BITSAdmin

EVASION

- Looked for specific AVs and EDRs
- Malware signed with valid certificate
- Randomly generated filenames

PERSISTENCE

- Runs on startup
- Created registry value
- Created Scheduled Task

Malware Analysis: Show Me the Money

EXPLOITATION

- Opened explorer.exe
- Injected In-memory process
- Overwrote real explorer.exe

LATERAL MOVEMENT

- Scanned for domain users
- Brute-forced accounts
- Abused default credentials

EXFILTRATION

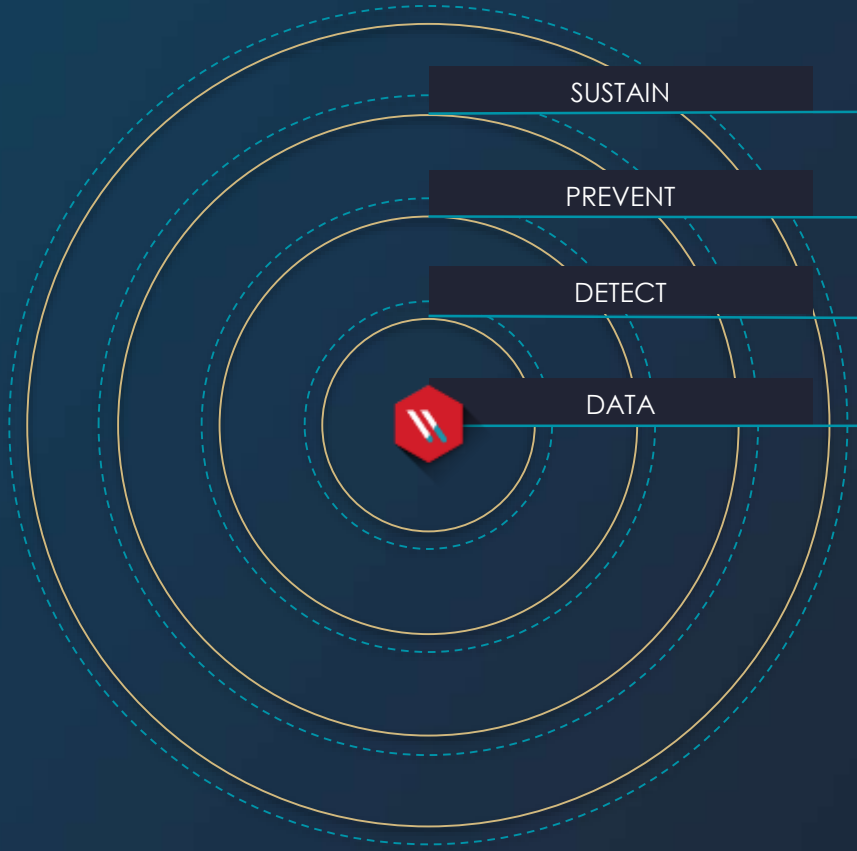
- Installed keylogger
- Stole banking site cookies
- Hooks API calls to intercept financial info

At Least 2,726 Victims Worldwide

How do we succeed as defenders?

We know what attackers want: it's almost always data

What if security started with data?



We'd efficiently sustain our secure state

Only the right people would have access

We'd monitor it for abuse

We'd know where our sensitive data lives

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Risk Assessments Reduce Uncertainty

- What kind of sensitive data do I have?
- Where is sensitive data overexposed?
- Where are users acting strangely or maliciously?
- What's being used and what's not?

Varonis Operational Journey

DEPLOY

- Deploy Varonis
- Discover privileged accounts
- Classify sensitive data
- Baseline activity
- Prioritize risk

OPERATIONALIZE

- Enable alerts and automate response
- Connect to SIEM
- Create and test incident response plans
- Operationalize reporting
- Apply labels
- Index for compliance

FIX

- Remediate exposed sensitive data
- Eliminate remaining global access groups
- Eliminate AD artifacts
- Quarantine sensitive data
- Archive/delete stale data

TRANSFORM

- Identify and assign data owners
- Simplify permissions structure
- Enable data-driven reporting

AUTOMATE

- Automate authorization workflow via Data Owners
- Automate periodic entitlement reviews
- Automate disposition, quarantining, policy enforcement

IMPROVE

- Regularly review risks, alerts and processes to ensure continuous improvement

Key Takeaways

- If you assume compromise, protecting data should be a priority
  - Be the farmer, not the turkey!
- Sophisticated insiders and external attackers can evade detection
- Defenders should seek to reduce uncertainty with visibility and context
- Combining the right ingredients can reduce TTD/TTR and help you answer: "Is our data safe?"
- Risk assessments are a great first step in reducing uncertainty