Does Security Always Have to Be Expensive?

Security Quick Wins in the Microsoft Windows Environment

Speaker Introduction

Enterprise and IT-Security

- 2016 – 2020 Bachelor
- 2020 – 2022 Master

- 2022 NVISO

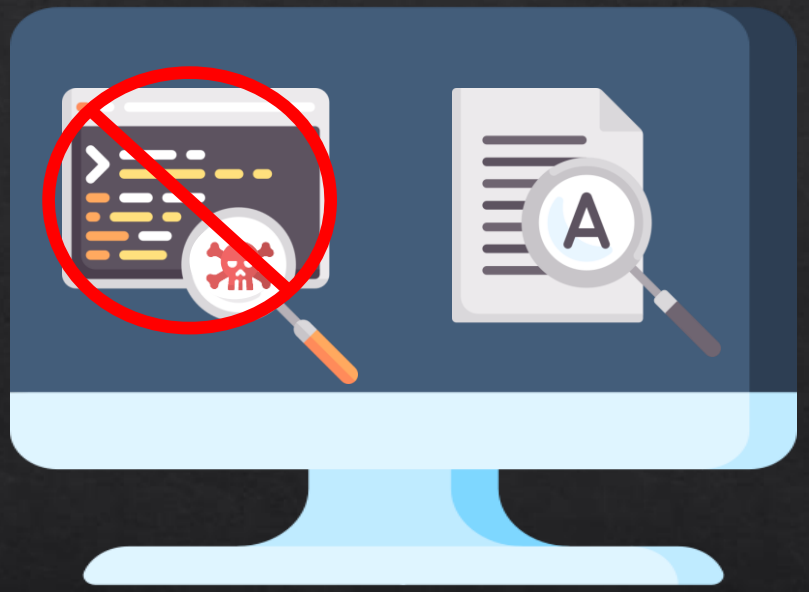
Software Security Assessment Team

Agenda

1. Some Facts and What Are Quick Wins?
2. Quick Wins
3. Tools
4. Conclusion

Some Facts and What Are Quick Wins?

QW#01: Notepad as Default Editor



Prevention:

- Unintentional execution of malicious scripts

  → .js, .wsh, .vbs, .sct, .wsf, .shs, .shb, .hta, .cmd, .bat, .cab, .ps1 …

QW#02: Strong Password Policy

Set min. password length

Require Complexity

A-Z, a-z, 0-9,
+#-,.?_!§$%& …

Prohibit most likely words / patterns

Name of:
- Person
- Product
- Organization

Dissimilarity

Significantly different from your previous passwords

[1]

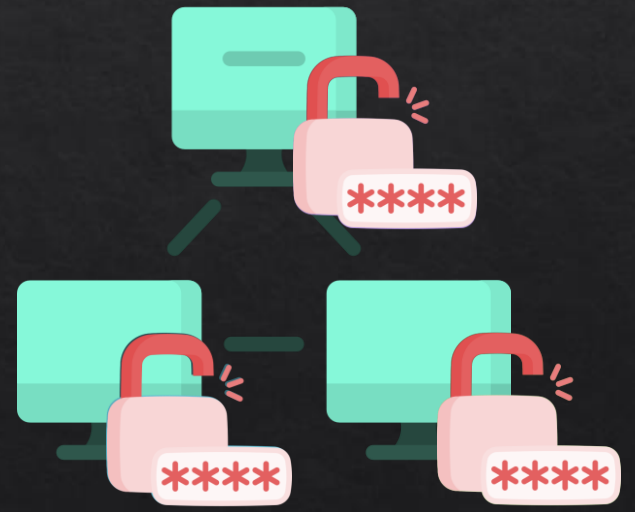
Prevention:

- Easy guessable passwords
- Password based attacks such as brute-force or dictionary attacks
- Credential stuffing
- Password spraying

QW#03: Use LAPS

Local Administrator Password Solution (LAPS) is a Windows feature that automatically manages and backs up the password of all local administrator accounts in a domain [2]

Without LAPS



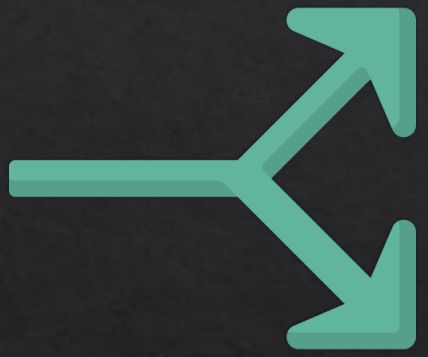
Prevention:

- Lateral-traversal attacks

QW#04: Account Separation

Administrator

Michel



Username: michel

Username: michel_adm

Prevention:

- It is more difficult to compromise highly privileged accounts

QW#05: Get Rid of Stored Credentials & Open Shares

- Description fields of AD accounts
- Text files, Excel sheets, or Word documents locally
- Scripts & config files (mostly on network shares)

Prevention:

- Lateral-traversal and privilege escalation attacks

QW#X06: ms-DS-MachineAccountQuota = 0

AD user attribute, that defines the number of machine accounts that a user is allowed to create in a domain [3]

ms-DS-MachineAccountQuota =

Recommended Value

Default Value

Prevention:

- Shadow IT
- Attacks such as noPack or Resource-Based Constrained Delegation

Kerberos Authentication

User: michel

1. Ticket request for michel

2. User ticket (TGT)

3. Ticket request for SQL Svc

4. Service ticket for SQL Svc (ST)

5. Auth to SQL Svc with ST

SQL Server

Key Distribution Center (KDC)

Authentication Server

Ticket Granting Server

Domain Controller (DC)

QW#07: DoesNotRequirePreAuth = False

AD user attribute, that indicates whether Kerberos pre-authentication is required to logon [4]

Settings
Account option

Do not require Kerberos preauthentication

Prevention:

- AS-REPRoasting

QW#08: Audit Service Accounts

Service accounts are elevated authorized accounts used by applications, services, or processes to perform specific functions within an IT environment [5]

SA passwords:

long & complex

periodically changed

Prevention:

- Kerberoasting

QW#09: Disable RC4 Encryption Type

RC4 is an insecure encryption type used to encrypt Kerberos tickets [6]

RC4 encryption key

User's NT hash (part of the NTLM hash)

~~RC4 and DES~~

AES or other strong encryption

Prevention:

- Fast offline password brute force (AS-REP Roasting & Kerberoasting)

QW#10: KRBTGT Password Change

The KRBTGT account is a local default account that acts as a service account for the KDC service. [7]

Change of KRBTGT password:

Times

Min. 10 h waiting period

~ Every 180 days

[8]

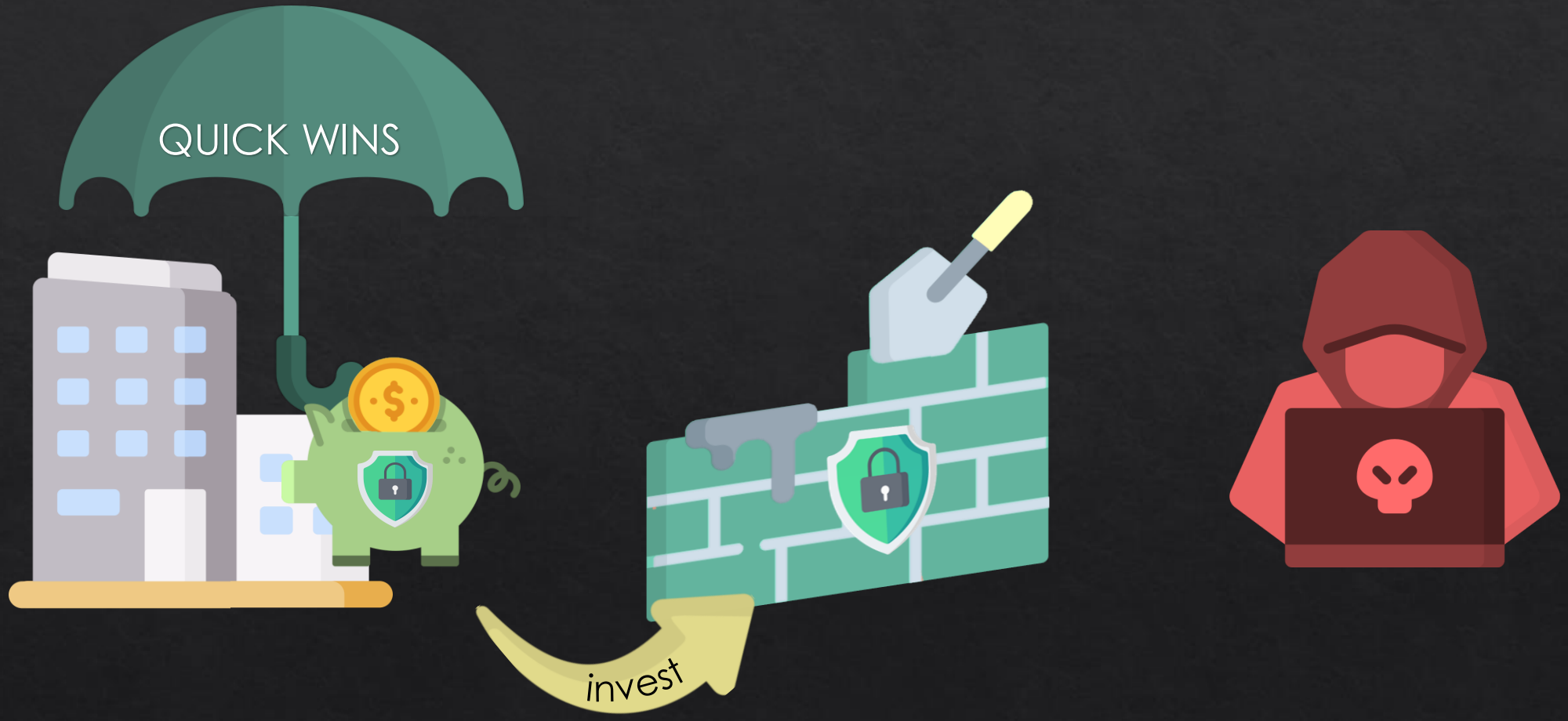
Prevention:

- Compromised AD by Golden Ticket attack

QW#11: Regular Use of Free Tools

- Finding strings / credentials:
  - SauronEye - https://github.com/vivami/SauronEye
  - PowerHuntShares https://github.com/NetSPI/PowerHuntShares
- Windows vulnerabilities & misconfigurations
  - winPEAS - https://github.com/carlospolop/PEASS-ng/tree/master/winPEAS
  - Seatbelt - https://github.com/GhostPack/Seatbelt
  - PowerUp - https://github.com/PowerShellEmpire/PowerTools/blob/master/PowerUp
- Active Directory vulnerabilities & misconfigurations
  - BloodHound - https://github.com/BloodHoundAD/BloodHound
  - PingCastle - https://www.pingcastle.com/
  - PurpleKnight - https://www.purple-knight.com/
  - Group3r - https://github.com/Group3r/Group3r
  - Adalanche - https://github.com/lkarlslund/Adalanche
  - ADExplorer - https://learn.microsoft.com/en-us/sysinternals/downloads/adexplor
  - PowerView - https://github.com/PowerShellEmpire/PowerTools/tree/master/PowerView
  - Certify - https://github.com/GhostPack/Certify

Conclusion



References

All icons created by Freepik – https://www.flaticon.com/authors/freepik

[1] https://support.microsoft.com/en-us/windows/create-and-use-strong-passwords-c5cebb49-8c53-4f5e-2bc4-fe357ca048eb

[2] https://learn.microsoft.com/en-us/windows-server/identity/laps/laps-overview

[3] https://learn.microsoft.com/en-us/windows/win32/adschema/a-ms-ds-machineaccountquota

[4] https://learn.microsoft.com/en-us/powershell/module/activedirectory/set-adaccountcontrol?view=windowsserver2022-ps

[5] https://learn.microsoft.com/en-us/windows-server/identity/ad-ds/manage/understand-service-accounts

[6] https://syfuhs.net/lessons-in-disabling-rc4-in-active-directory

[7] https://adsecurity.org/?p=483

[8] https://learn.microsoft.com/en-us/windows-server/identity/ad-ds/manage/forest-recovery-guide/ad-forest-recovery-reset-the-krbtgt-password

Q&A