THE SECRET LIFE OF KRBTGT

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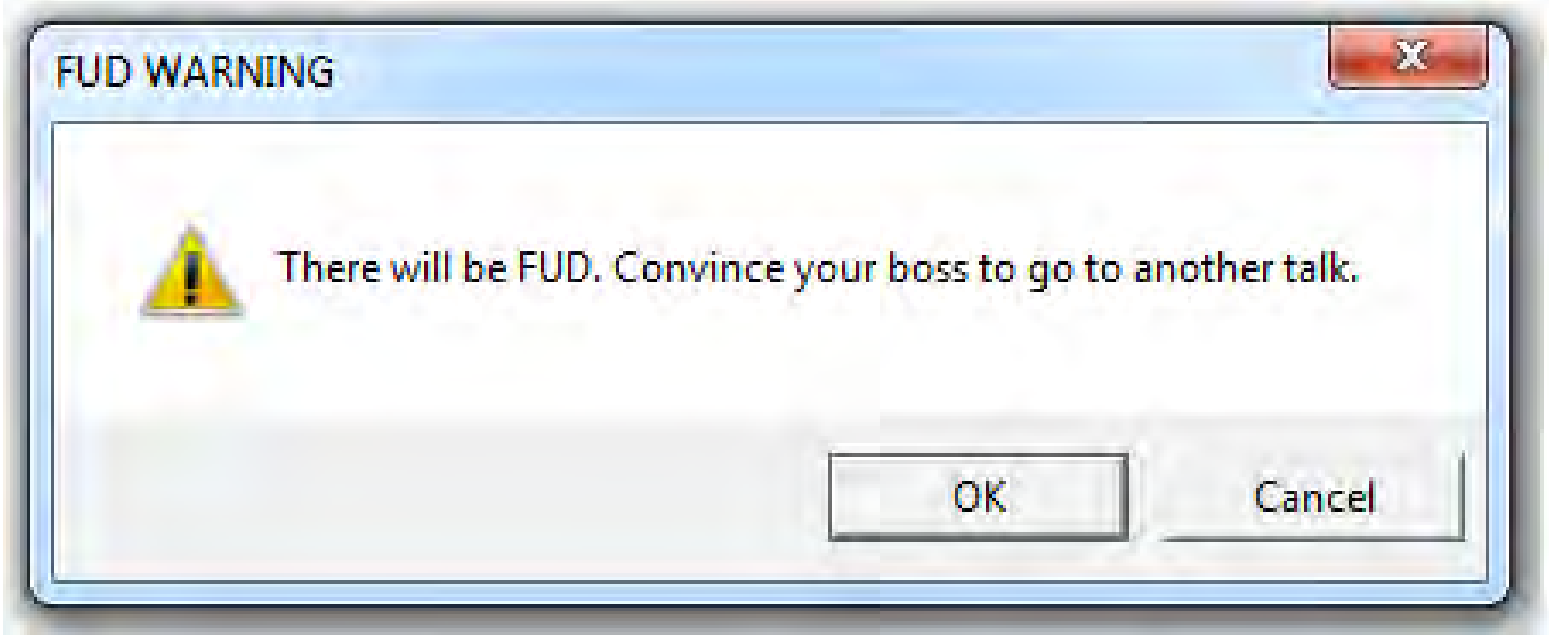
DEFCON

Bio

- Security Researcher/Tester (Harris Corp)
- Former Army Red Team Operator
- One of the developers of PowerSploit
- Twitter: @obscuresec
- Blog: www.obscuresec.com


FUD WARNING
There will be FUD. Convince your boss to go to another talk.
OK
Cancel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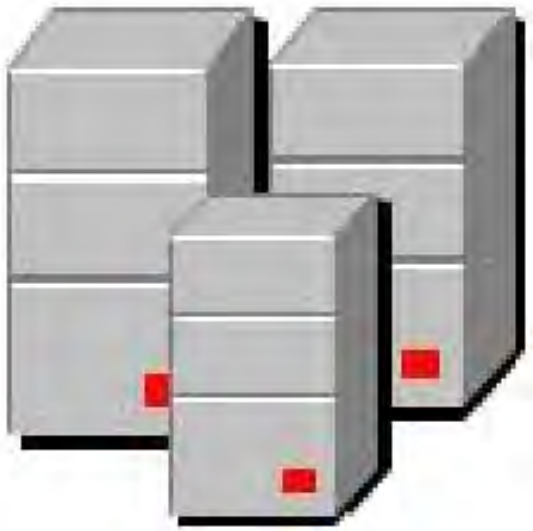
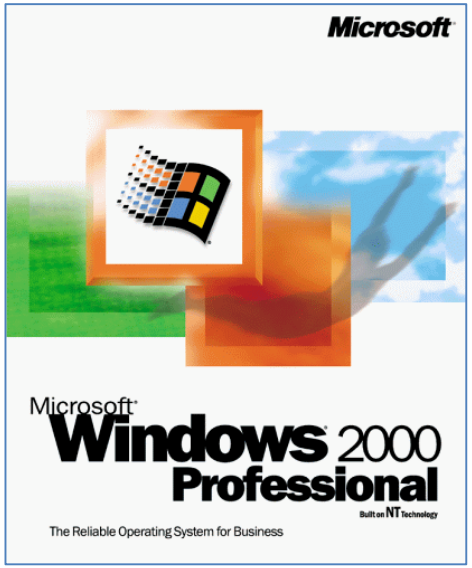
Say hello to krbtgt

He’s been here since the beginning



The Early Years: 2001-2004




```
/*
  DCOM RPC Overflow Discovered by LSD
   -> http://www.lsd-pl.net/files/get?WINDOWS/win32_dcom

  Based on FlashSky/Benjurry's Code
   -> http://www.xfocus.org/documents/200307/2.html

  Written by H D Moore <hdm [at] metasploit.com>
   -> http://www.metasploit.com/

  - Usage: ./dcom <Target ID> <Target IP>
  - Targets:
  -          0    Windows 2000 SP0 (english)
  -          1    Windows 2000 SP1 (english)
  -          2    Windows 2000 SP2 (english)
  -          3    Windows 2000 SP3 (english)
  -          4    Windows 2000 SP4 (english)
  -          5    Windows XP SP0 (english)
  -          6    Windows XP SP1 (english)

*/
```

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Growing Pains: 2005-2008

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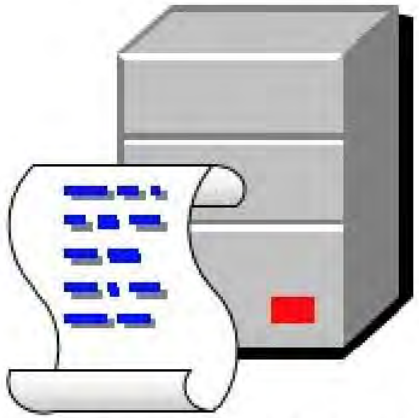
Maturity Realized: 2009-2012

Windows Server 2008



Group Policy Preferences

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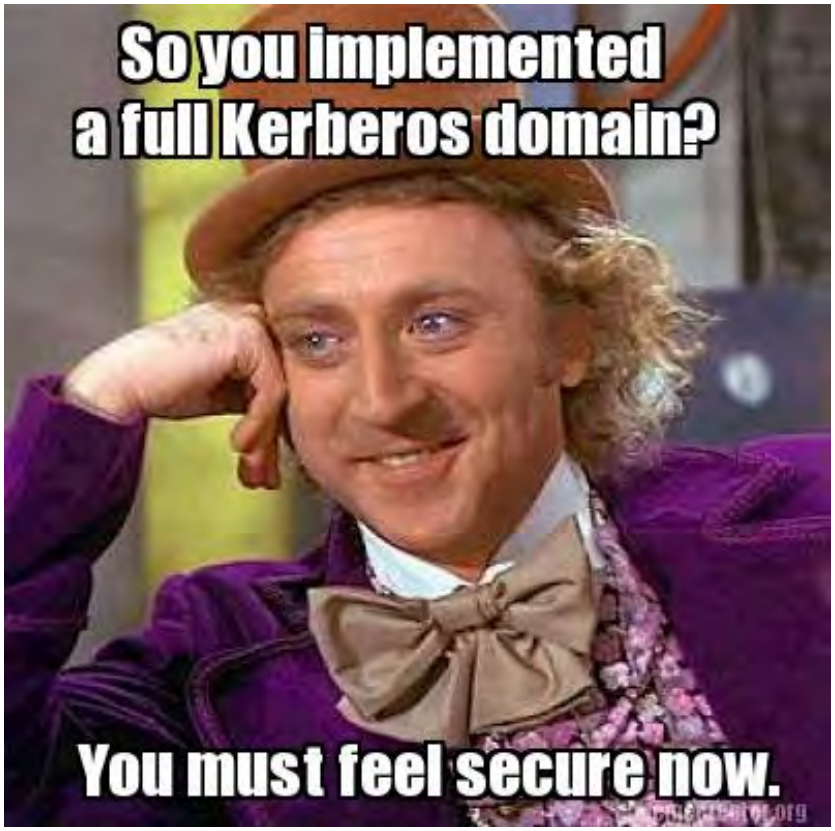
Meme Count: 1


WE PREVENT ADMIN ACCOUNT ABUSE
WITH GROUP POLICY PREFERENCES

Skeletons in the Closet: 2013-2014

Windows Server 2012

Meme Count: 2



http://blog.gentilkiwi.com/securite/mimikatz/golden-ticket-kerberos

How old is your krbtgt hash?

Know where your krbtgt hash is?

RAW Paste Data

```
Administrator:500:aad3b435b51404eeaad3b435b51404ee:67f89191aee12099ec7a754de34fc287:::
Guest:501:aad3b435b51404eeaad3b435b51404ee:31d6cfe0d16ae931b73c59d7e0c089c0:::
krbtgt:502:aad3b435b51404eeaad3b435b51404ee:52a6a5b7d2003afedf59f8848a54ea2c:::
carrie:1105:aad3b435b51404eeaad3b435b51404ee:5053e7c659a614ce46d99dcfb8d9763a:::
brett:1106:aad3b435b51404eeaad3b435b51404ee:8fdecf063cdac5d8407c5b1a75826fad:::
niky:1107:aad3b435b51404eeaad3b435b51404ee:ef00760ac292f0e8da9ca1850ee5be2f:::
kevin:1108:aad3b435b51404eeaad3b435b51404ee:5052340fe27eb55317e38a7876480b18:::
sean:1109:aad3b435b51404eeaad3b435b51404ee:ad0c54ced11a55168eef0429775b1f7e:::
nina:1110:aad3b435b51404eeaad3b435b51404ee:d22d7dfc2fb717d7663b47131b1e2347:::
cory:1111:aad3b435b51404eeaad3b435b51404ee:5053e7c659a614ce46d99dcfb8d9763a:::
jeff:1112:aad3b435b51404eeaad3b435b51404ee:b180be38c6c29a74431c966e57e4a7d8:::
joe:1113:aad3b435b51404eeaad3b435b51404ee:e50be861156e77e57e7247b3edc1d9b6:::
```

The point is…

If your enterprise has ever been compromised, it may still be compromised – even if you changed every password.

We scan so we are secure

Good luck with that

Meme Count: 3

XXX

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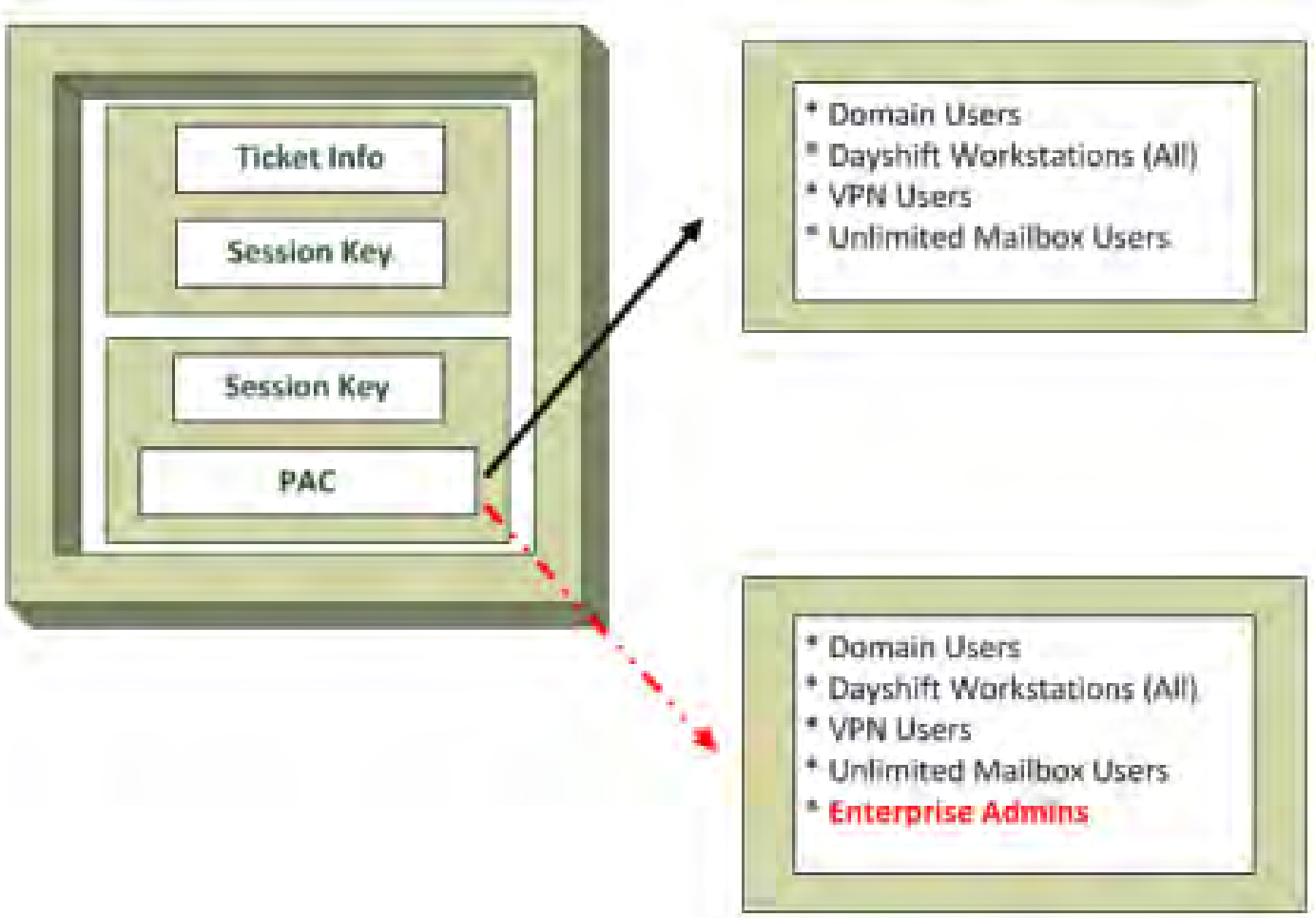
Kerberos Authentication

AS

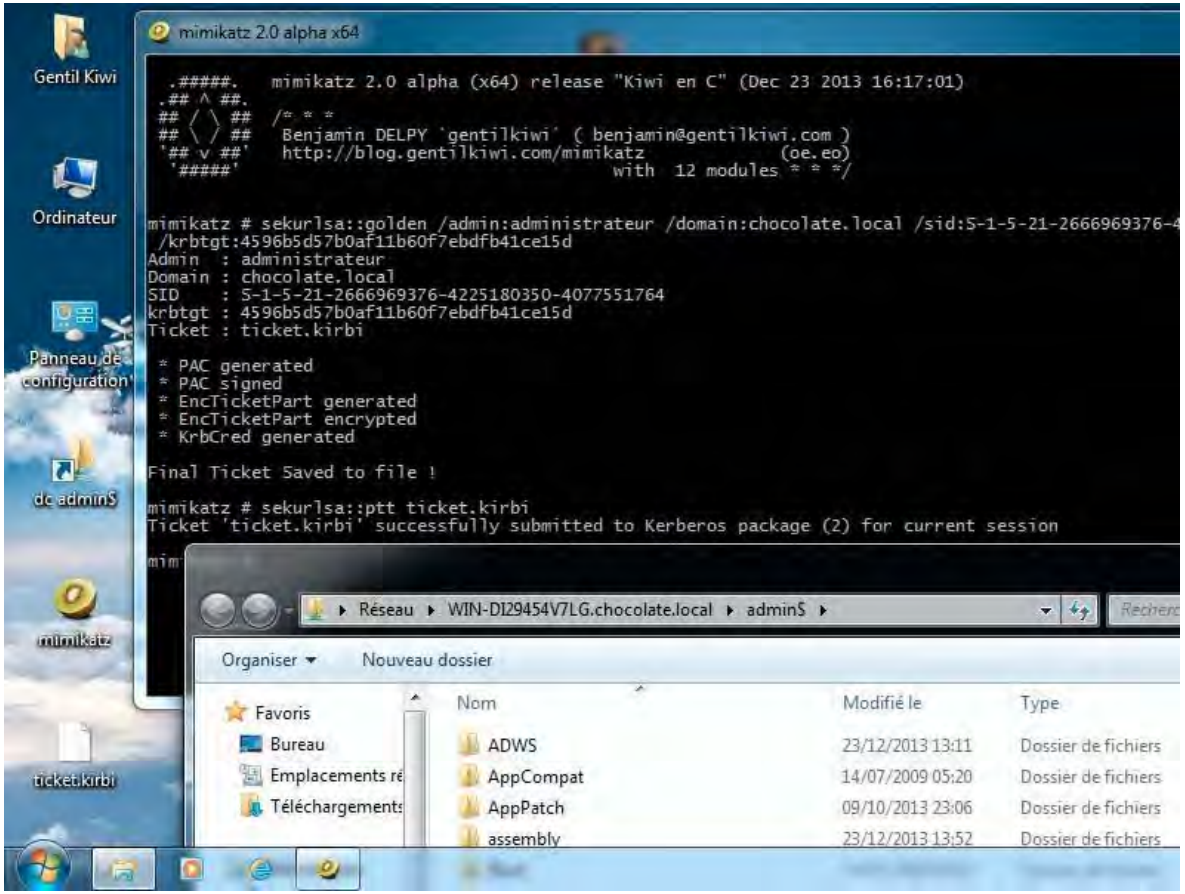
TGS

1. TGT requested by client
2. AS sends TGT and session key
3. Client requests access from TGS
4. TGS sends encrypted session key & ticket
5. Client sends service ticket to server
6. Server sends time stamp for client to verify

“Spoofed PAC” Attack



“Golden Ticket” Attack

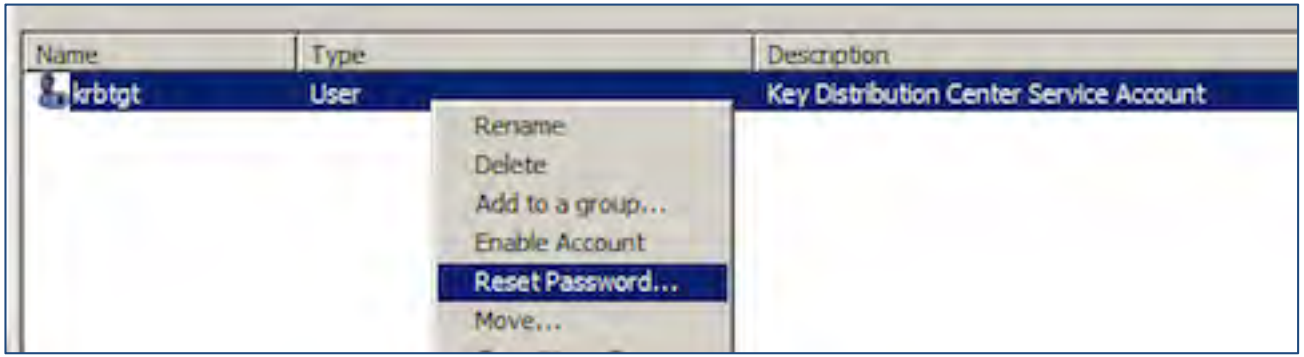


https://twitter.com/gentilkiwi/status/415147415474167808

Demo Time

Mitigation

- Don’t get owned again
- Use RODC where appropriate
- Upgrade functional level
- Reset the krbtgt account password on the PDC-emulator **TWICE**



Detection

- Needle in a hay stack
- Harder to detect than PtH
- Look for strange account activity
  - Low privileged account performing privileged actions

Thanks

- Skip Duckwall
- Benjamin Delpy
- Joe Bialek
- Will Peteroy
- Carlos Spicyweiner
- Matt Graeber
- Many others…

Questions?