SANS WhatWorks Summit 2008
Forensics and Incident Response

IR/Forensics Team Tactics Panel

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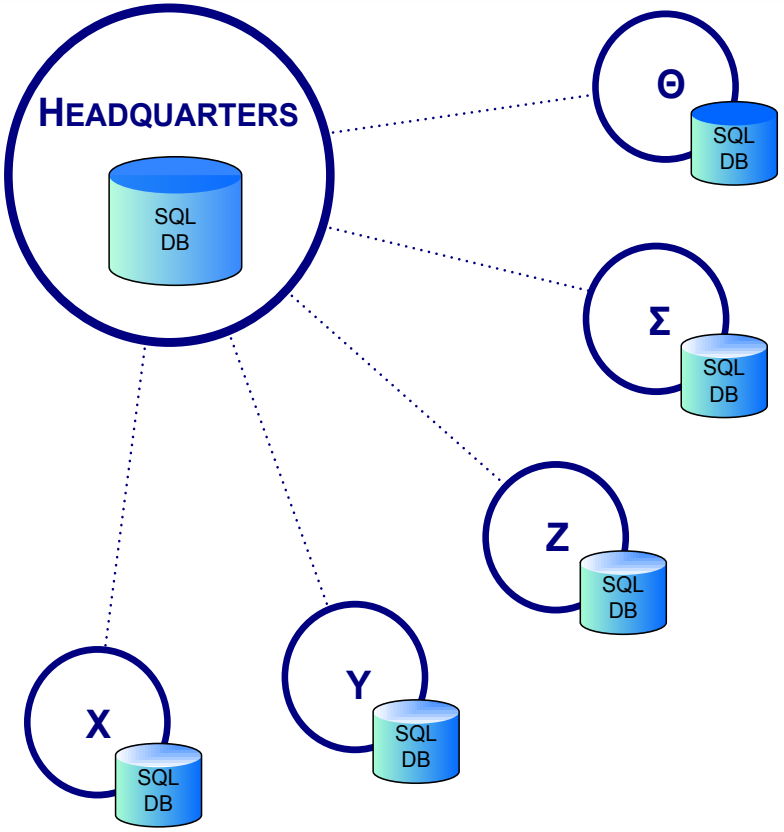
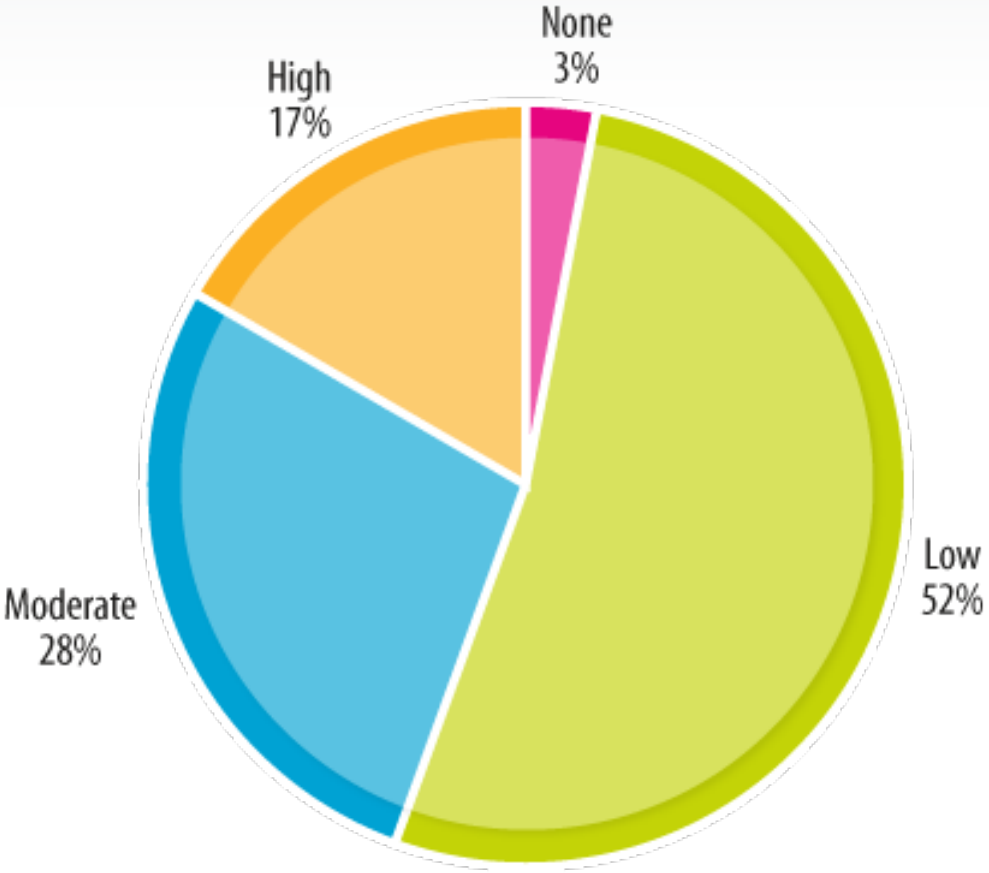
Case Study: Anti-Forensics

European bank suspected of having a data compromise.

- Local forensics firm investigated identity theft complaints, but found no evidence of a compromise.
- Bank wanted second opinion due to continued customer complaints.
- We were engaged to perform the follow-up investigation
- Determined that key evidence was missed due to AF:
  - RootAF to clean logs of IP addresses
  - Systems logs didn't match Firewall
  - Hide4Enc used to cloak data in pics
  - Encryption key extracted from memory
- Perpetrator successfully identified
- Law Enforcement handling prosecution.



How Prevalent is Anti-Forensics?



Attack Difficulty

None: No special skills or resources were used. The average user could have done it.

Low: Low-level skills and/or resources were used. Automated tools and Script Kiddies. Some Basic Anti-Forensics tools (point & click).

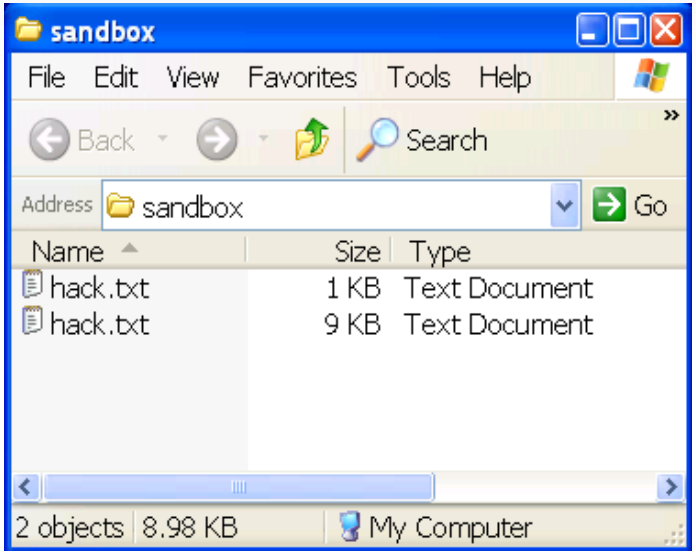
Moderate: The attack employed skilled techniques, minor customization, and/or significant resources. More sophisticated Anti-Forensics tools (some customization).

High: Advanced skills, significant customization and/or extensive resources were used. Multiple sophisticated Anti-Forensics tools (many customizations or home grown).

AF Effectiveness and Our Workarounds

Common AF Techniques Seen in the Wild:

- Zero Footprinting (Evidence Wiping)
- File Packers / Wrappers
- Data Hiding (Steganography, Encryption)
- Data Corruption / Injection
- Data Obfuscation (Letter Substitution)
- Blended Threats (Multiple Mixed AF)



Making our Case Despite Anti-Forensics:

- Many AF tools are not 100% (files may be locked, shared or in use)
- Think outside the box… Copies of wiped data may exist in less convention areas (tape backups, clustered peers, etc…)
- Evidence within the system's running memory (memdump)
- Journaled File Systems may retain some trace information or Metadata re: prior data
- When it comes to Stego… Look at the pictures…

- Understand that the case is going to take more time and set expectations accordingly…

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