Malware Dynamic Analysis

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http://opensecuritytraining.info/MalwareDynamicAnalysis.html
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This class is for people

- Who are interested in computer security
- Who want to understand how malware works
- Who want to start working on malware analysis, or who have recently started

[Image Sources]
- Middle-left, http://www.bbc.co.uk/northyorkshire/content/images/2006/04/05/downward_dog_400x300.jpg
Thanks to

- Xeno Kovah, Ben Schmoker and Frank Poz for reviewing class materials
- Ezra Moses, MITRE Institute tech support for setting up Ubuntu on the lab machines
- Openmalware.org (offensivecomputing.net) for sharing samples, very good resource

[Image Sources]
About me and you

• BE in CS and MS in CE (but mostly CS background)
• Security related work experience:
  – Malware analysis and analysis tool development
  – Security product reverse engineering
  – Windows memory integrity measurement/verification
  – Vulnerability research
  – Network IDS/IPS signature development
• Like hands-on work (coding, debugging, and reversing)
• How about you? Any particular topic that you want to learn from this class?
Outline (1)

• Part 1: Introduction
  – Observing an isolated malware analysis lab setup
  – Malware terminology
  – RAT exploration - Poison IVY
  – Behavioral analysis

• Part 2: Persistence techniques
  – Using registry keys
  – Using file systems
  – Using Windows services

[Image Sources]
• http://domaingang.com/wp-content/uploads/2012/10/domain-list.jpg
Outline (2)

• Part 3: Maneuvering techniques
  – (How malware strategically positions itself to access critical resources)
  – DLL/code injection
  – DLL search order hijacking...

• Part 4: Malware functionality
  – Keylogging, Phone home, Security degrading, Self-destruction, etc.
Outline (3)

• Part 5: Using an all-in-one sandbox
  – Cuckoo Sandbox
  – Malware Attribute Enumeration and Characterization (MAEC)
  – Different sandbox results comparison

• Part 6: Actionable output
  – Yara
  – Snort
Books

[Image Sources]

Class Conventions (1)

- Slides with 🧬 on the left corner means we will perform hands-on lab activities
- Slides with 🚨 include answers to lab questions, which often follows lab slides. **Please do not read the answers before you finish a lab ;)**
- Slides with a green bar on top means it’s background context

**[Image Sources]**
- Middle, Microsoft clip art
- Right, http://static.fjcdn.com/pictures/Curiosity+killed+the+cat.+source+smosh+facebook+page_06d5f5_3980829.jpg
Class Conventions (2)

- Lines starting with
  - `C:\>` means, you are asked to type in a DOS window on the Windows XP VM but it does not mean the command needs to be executed at the top level
  - `$` means, you are asked to type in a Linux terminal on the Ubuntu host machine

See notes for citation
Class Materials

• On the Ubuntu host machine
  – $ cd ~/MalwareClass && ls
  – $ cd ~/Updates && ls
  – $ virtualbox &

• On the *victim* VM
  – On Desktop, open MalwareClass directory

• Please see Notes for citation and check out the original works