Malware Analysis

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Topics

① Essential Requirement for Forensic Analysis

② Malware Identification Process

③ Freeware Tools

Forensic Analysis Requirements

- Backup the system
  - Forensic Backup
- Minimize the changes to the system
- Don't run command on the victim system
  - We need Incident Response Toolkits

Forensic Backup

- Creating Bit-stream Copies
  - Including contents of deleted files, unallocated space, bad sectors
- Verify with Cryptographic Checksum
  - md5, sha1

Incident Response Toolkits

- Contains the tools & utilities
- Operating System Tools/Commands
  - cmd.exe, netstat.exe, nbtstat.exe, arp.exe, ipconfig.exe
  - Static Binary (Unix, Linux)
- From 3rd parties
  - Foundstone : fport
  - Sysinternals : Autoruns, Process Explorer
- Others : netcat, md5sum

Analysis Procedures

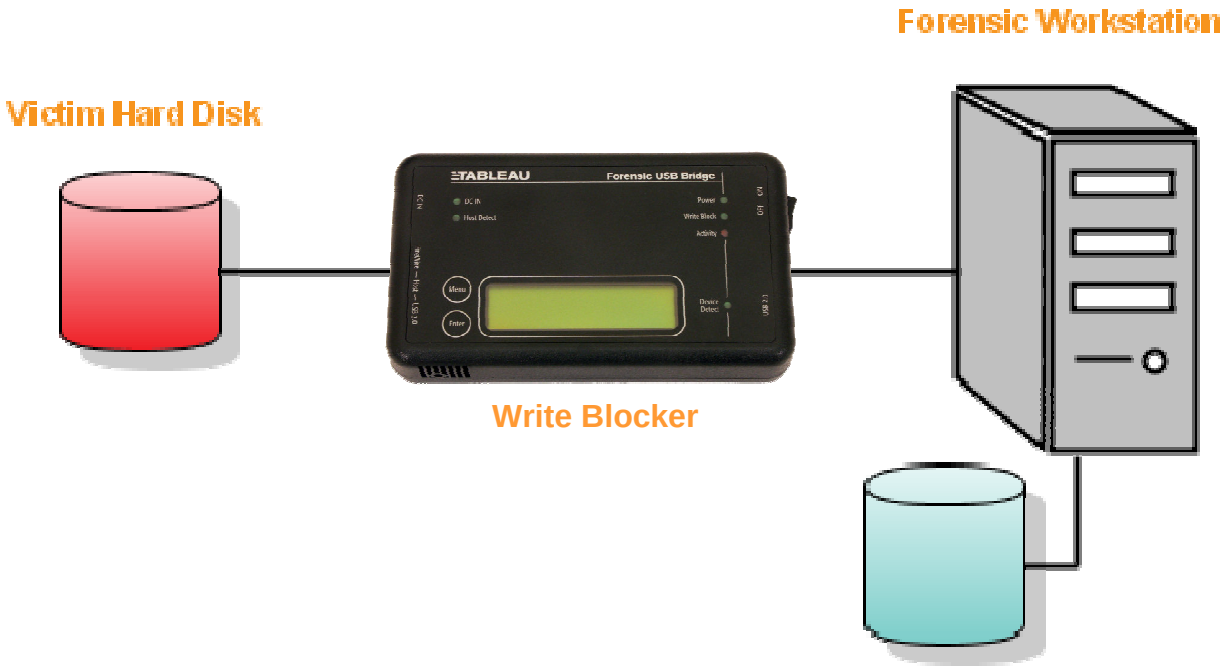
- Backup the Disk
- Rebuild it to Virtual Environment
- Boot the Virtual Environment
- Identify Rogue Listening Port
- Identify Rogue Process which creating ports
- Identify the Startup Methods

Forensic Copy

- Live Disk Cloning

Forensic Copy

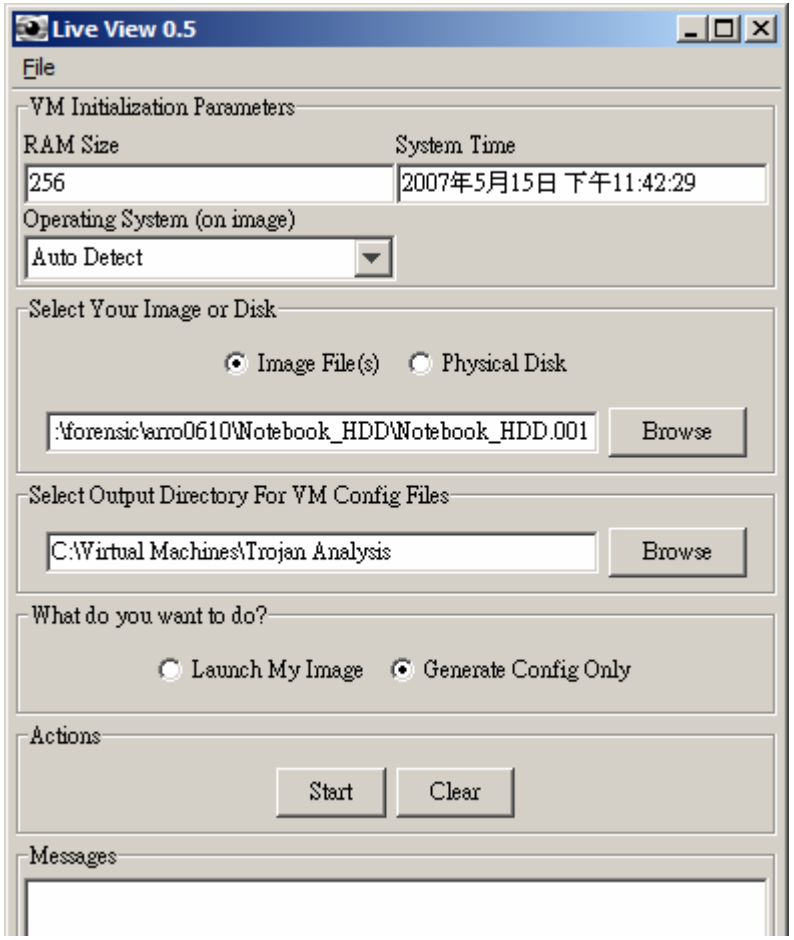
- Offline Cloning



Convert to Virtual Environment

- Tools
  - Convert disk image (raw) to VMware http://liveview.sourceforge.net
  - Run it in the VMware environment http://www.vmware.com

Liveview Example



Using IRT #1

- Finding rogue listening port
  - netstat –an
- Finding the process of opening the rogue port
  - fport -p

Using IRT #2

- Kill the process
  - pskill #
- Locate the trojan executable file
  - dir <<path of the trojan image >>
  - dir /a <<path of the trojan image >>
- Remove the file
- Reboot the Computer
- Verify Again

Using IRT #3

- Identify the auto start methods for the Trojan
  - Autoruns
- Optional
  - Process Explorer

Manual Removing Trojans

- Suspend the processes
- Kill all the processes
- Delete the trojans files
  - move is required in some cases
- Delete the registry key
  - Using regdelnull from www.sysinternals.com
    e.g. regdelnull hklm\software
- Reboot to verify
- Monitor using Process/File/Registry Mon

IR & Forensic CD

- Helix
  - http://www.e-fense.com/helix

Other References

- www.sysinternals.com
  - autoruns, procexp, pslist, pskill
- www.foundstone.com
  - fport

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- to promote best-practices in information security control,
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Thank you for listening