JASON DION

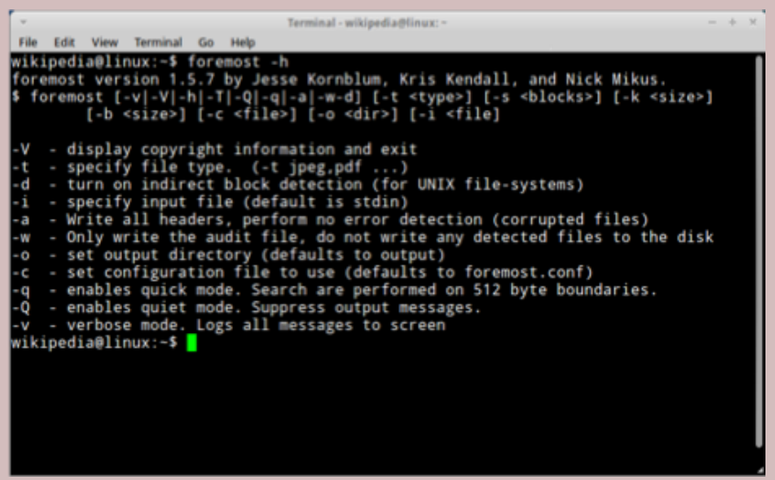
TRAINING THE CYBER SECURITY WORKFORCE

Forensic Software

CYBER INCIDENT RESPONSE

Forensic Software

- Commercial and Open-Source for:
  - Imaging
  - Analysis
  - Hashing and validation
  - Process and memory dumps
  - Password cracking
  - Log viewer



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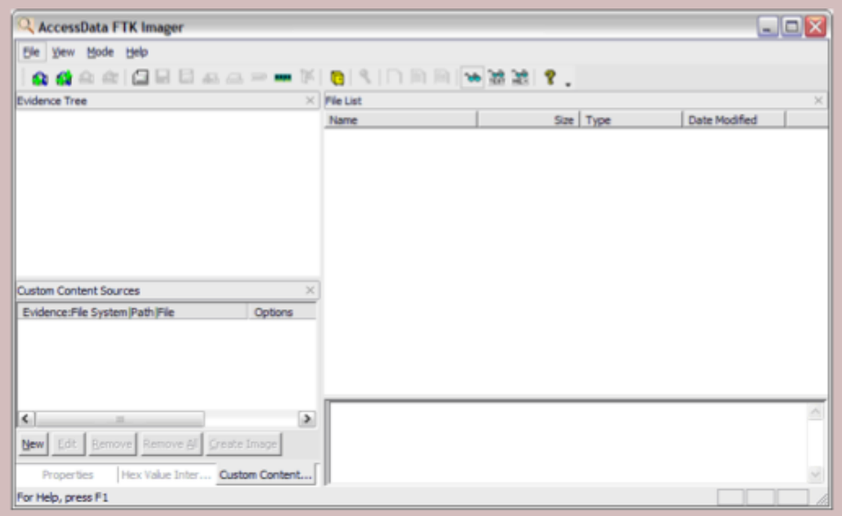
Imaging Media and Drives

- Bit by bit copy of a drive, including the slack space and unallocated space

- FTK Imager
- EnCase Imager
- dd



Analysis Software

- Creates timeline of system changes
- Validates file against known good copy
- File system analysis for hidden files, changes, access, and metadata
- Windows Registry analysis
- Log file parsing and analysis

- Examples:
  - Commercial:
    FTK and EnCase
  - Open-source:
    SIFT, CAINE, and Autopsy

Hashing and Validation

- Creates a unique file integrity check of a disk image after creation
- Used as part of chain of custody
- EnCase uses built-in hashing with its .EO1 format
- Should use both MD5 & SHA1/SHA256

Process and Memory Dumps

- State of the Operating System and data in-resident memory at time of collection
- Difficult to collect without changing the contents contained
- Useful to capture decryption keys for full disk encryption
- Hibernation files and crash dumps can also contain some of this data

Process and Memory Dumps

- Tools
  - fmem and LiME (Linux)
  - DumpIt (Windows)
  - Volatility Framework (Windows, Linux, OS X)
  - EnCase
  - FTK
- Memory dumps on system can be found at %SystemRoot%\MEMORY.DMP
- Dumps analyzed with Microsoft's WinDbg

Password Cracking/Recovery

- Encrypted and password protected files required cracking or guessing password
- Hacking tools like John The Ripper and Cain and Able can be used
- DOC, XLS, PPT, and ZIP files have other specialized password cracking tools:
  - Advanced Office Password Breaker
  - ElcomSoft's Distributed Password Recovery
  - Zip2John
  - …numerous others…

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Log Viewers

- Used to analyze log files from collected system images
- Can create timelines and visual the data