Cybersecurity Forensics

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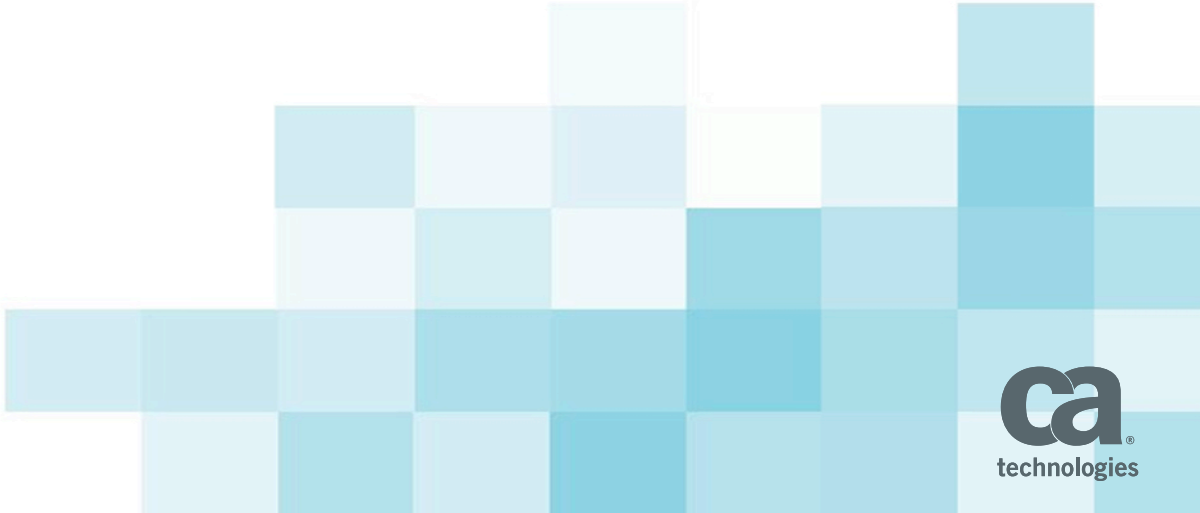

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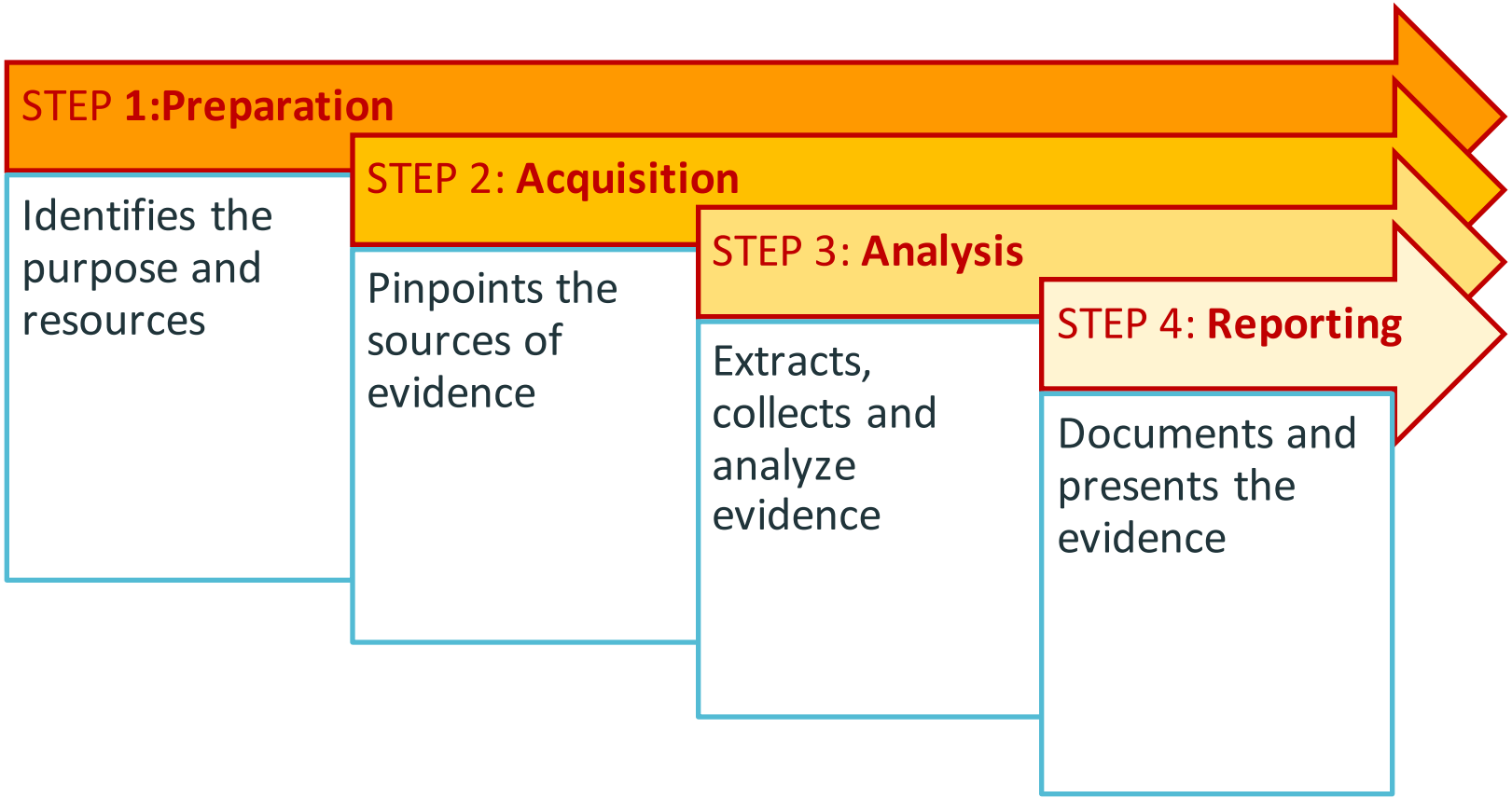
Forensics 101



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Types of Cyber Forensics

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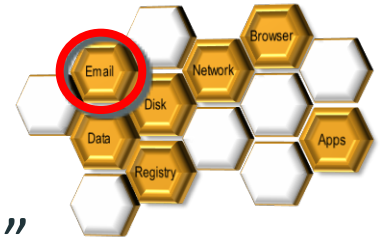
Cyber Forensics: Emails



- "Emails are like footprints in the snow."
- Deleting an email doesn't mean it erases the records. The work is similar to conventional detective work.
- MiTec Viewer
  - Reads Outlook Express, Windows Live Mail with search and filtering capabilities
- PST-OST Viewer
  - Allows you to view Outlook files without MS Exchange

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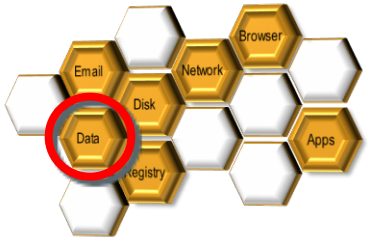
Cyber Forensics: Data



- Data mirroring is key in cyber forensics. Exact copy is created without alteration.
- Live View
  - Creates a VM of a physical disk. Allows us to view the data blocks with a user persona and full UX.
- DumpIt
  - Creates executable on USB for rapid IR needs.

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Cyber Forensics: Disk

- Disk imaging in cyber forensics involves recovery of hidden and erased files. Exact copy is created without alteration.
- Recuva
  - Free tool. Recovers deleted files from disks as well as SD cards, flash drives and cameras
- EDD
  - For rapid IR, it is used as an encrypted disk detector. It checks for encrypted volumes, and tells which transient evidences need to be saved.

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Cyber Forensics: Registry

- ‘R’ Forensics is about extracting *contextual metadata* more than the data or the user.
- MuiCache
  - Views the list in the MuiCache. (It is the Registry key that stores list of every application installed on the Windows o.s)
- USBDview
  - Lists all USBs connected to the computer (now or earlier!)
  - For each USB, it cites dev type, S No, vendor id, date, etc.

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Cyber Forensics: Network

- 'N' Forensics is about monitoring traffic, i.e, "data in motion" with the intent to collect evidence/samples.
- Wireshark
  - Popular tool, with both hackers and law enforcements.
  - Inspects frames → captures packets → displays user-data in its own GUI for analysis
- Network Miner
  - Windows-specific tool to detect open ports of network hosts.
  - Popular tool for network forensics analysis.

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Cyber Forensics: Browser

- ‘B’ Forensics is all about scanning the session trail left behind in the browser cache. Note that almost every browser uses a cache to expedite internet surfing.
- MyLastSearch
  - Scans the cache and browser history files looking for searches you’ve made with popular search engines and social networking sites.
- ChromeCacheView
  - Reads the cache folder to display cached files, URLs, access time, file type, etc. Similar tools exist for other browsers.

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Cyber Forensics: Apps

- ‘A’ Forensics comprises of reading the app-specific log files without knowing the application password.
- SkypeLogView
  - Displays details of incoming/outgoing calls, chat messages, and file transfers made by the Skype account.
- Y! Messenger Decoder
  - Views the chat sessions, sms, private messages, including emoticons without knowing the password. Similar tools exist for other browsers.

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General Tools for Forensics Investigation

1. SANS SIFT
2. Linux ‘dd’
3. Xplico
4. The Sleuth Kit
5. Hex Editor Neo
6. Oxygen Forensic Suite http://www.nist.gov/itl/ssd/cs/forensics-tool-testing.cfm

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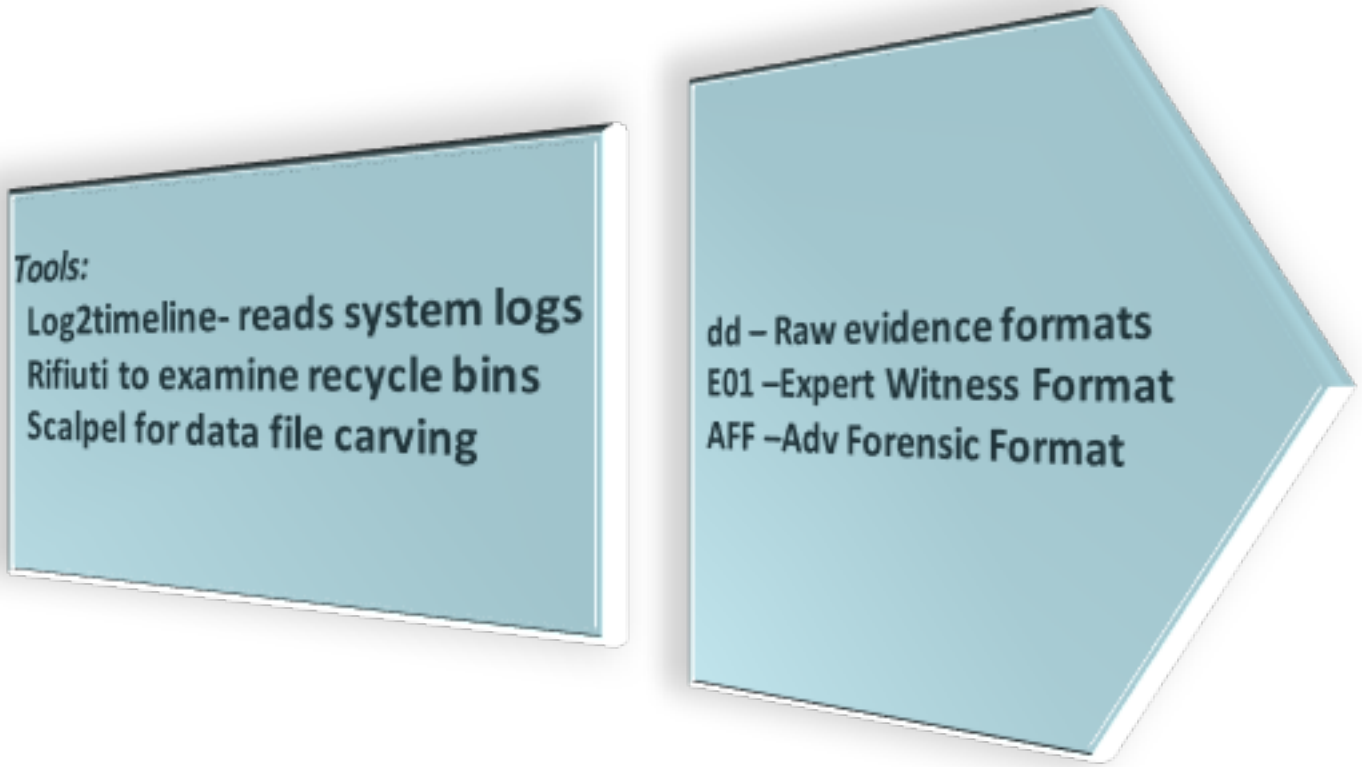
SANS Sift – Investigative Forensic Toolkit



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Linux ‘dd’ – Investigative Uses

- Available on almost all Linux o.s distributions
- Used for multifarious forensic tasks, including
  - Forensically wiping a drive
    - **`dd if=/dev/zero of=/dev/drv1 bs=1024`**
    - where if = input file, of = output file, bs = byte size
  - Creating raw image of a drive
    - **`dd if=/dev/drv1 of=/home/diptoc/newimage.dd bs=512 conv=noerror,sync`**
    - where bs = byte size, conv = conversion option
- Very powerful tool. Handle with care.
- *Old is gold!* In use ‘dd’ since 1984

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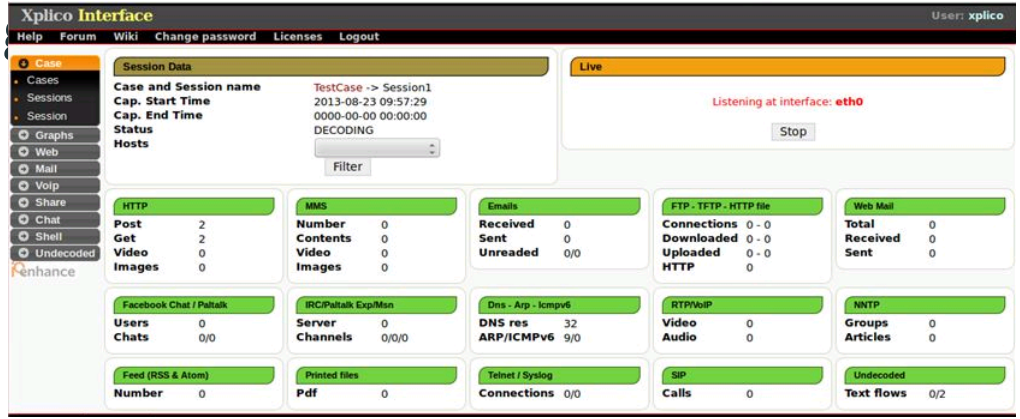
Xplico – Investigative Uses

- Open source tool for network forensic analysis
- Extracts application data from the net traffic, e.g.



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Synopsis of Cyber Forensics Tools & Techniques

- Iterative process
- Best of breed tools
- 360 coverage
- Step by step: prepare, acquire, analyze, report

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Summarizing Cyber Forensics Principles

- **Assess** user activity w.r.t usage patterns
- **Analyze** data remnants in transient states
- **Audit** logs to unravel stealth data that's encrypted
- **Assert** usage of content and contextual artifacts
- **Answer** the hard stuff:

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Thank You!

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