Federated Testing: Well-Tested Tools, Shared Test Materials & Shared Test Reports; The Computer Forensics Tool Catalog Website: Connecting Forensic Examiners With the Tools They Need

U.S. Cyber Crime Conference – May 2, 2014

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United States Department of Commerce
National Institute of Standards and Technology
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Overview

- Overview of CFTT
- Computer Forensic Tool Catalog website
- Federated Testing Project
- Summary
- Sponsors
- Questions
CFTT Overview

Computer Forensics Tool Testing Project

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CFTT – Computer Forensics Tool Testing Program provides a measure of assurance that the tools used in the investigations of computer-related crimes produce valid results.

Directed by a steering committee composed of representatives of the law enforcement community.

The steering committee selects tool categories for investigation and testing. A vendor may request testing of a tool, however the steering committee makes the decision about which tools to test.

CFTT is a joint project of: DHS, OLES, FBI, DoD, Secret Service, NIJ and other agencies.
CFTT Methodology

- Test Specification – Requirements
- Test Plan – Test Cases and Assertions
- Setup and Test Procedures
- Final Test Report Generation
Requirements

- **Requirements** – Statements used to derive test assertions that define expectations of a tool or application.

- **Core Requirements** – Requirements that all mobile device acquisition tools shall meet.

- **Optional Requirements** – Requirements that all mobile device acquisition tools shall meet on the condition that specified features or options are offered by the tool.
CFTT Methodology

- Test Specification – Requirements
- **Test Plan – Test Cases and Assertions**
- Setup and Test Procedures
- Final Test Report Generation
Test Plan

- Test Cases – Describe the combination of test parameters required to test each assertion.

- Assertions – General statements or conditions that can be checked after a test is executed.
CFTT Methodology

- Test Specification – Requirements
- Test Plan – Test Cases and Assertions
- Setup and Test Procedures
- Final Test Report Generation
Setup and Test Procedures

**Objective:** Documentation on data population of target media and test procedures providing third parties with information for an independent evaluation or replication of posted test results.

**Contents:**
- Techniques used for data population
- Test Case Execution Procedures
CFTT Methodology

- Test Specification – Requirements
- Test Plan – Test Cases and Assertions
- Setup and Test Procedures
- Final Test Report Generation
Test Report

- Results summary
- Test case selection
- Results by Test Case-Variation
- Testing environment
- Test results
Tool Validation

Tool validation results issued by the CFTT project at NIST provide information necessary for:

- Toolmakers to improve tools
- Users to make informed choices about acquiring and using computer forensic tools
- And for interested parties to understand the tools capabilities
Computer Forensics Tool Catalog Website – The Perfect Tool

- **Idea:** one tool that does everything
- **Reality:** need a bunch of tools
- **Solution:** an effective way for connecting practitioners to the tools they need
How Does the Tool Catalog Work?

It’s taxonomy-driven

Taxonomy: Forensic functionalities + associated technical parameters and technical parameter values

Example: *Deleted File Recovery*

Technical Parameters:

- “*Tool host OS / runtime environment*”: Windows, Linux, Mac
- “*Supported file systems*”: FAT16, FAT32, NTFS, exFAT, EXT3
- “*Overwritten file identification*”: supported, not supported
Taxonomy-driven: benefits

- It’s searchable
- Uniform information across tools
- It’s vendor populated
  - tool info more accurate, easier to collect
  - tool submissions reviewed at NIST before posting
  - field to list available test reports
## What’s in the Catalog?

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
<th>Description</th>
<th>Quantity</th>
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<td>Hardware Write Block</td>
<td>14</td>
<td>Remote Capabilities/Remote Forensics</td>
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<td>Deleted File Recovery</td>
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<td>Hash Analysis</td>
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<td>Software Write Block</td>
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<td>Media Sanitization/Drive Reuse</td>
<td>4</td>
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<td>Memory Capture &amp; Analysis</td>
<td>11</td>
<td>Web Browser Forensics</td>
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<td>Mobile Device Acquisition &amp; Analysis</td>
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<td>Windows Registry Analysis</td>
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<td>P2P Analysis</td>
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# Community/Vendor Participation

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<th>Defense Cyber Crime Center</th>
<th>Paraben Corporation</th>
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<td>Elcomsoft Co Ltd</td>
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<td>Fookes Software Ltd</td>
<td>Susteen Inc.</td>
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<td>Forensic Telecommunications Services Ltd</td>
<td>SysTools Software Private Limited</td>
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<td>ForensicSoft, Inc.</td>
<td>Tableau by Guidance Software</td>
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<td>Fox-IT</td>
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<td>X-Ways Software Technology AG</td>
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Demo
Federated Testing: Shared Test Materials & Well-Tested Tools

- Tools, methods and procedures must be validated
- Correct and efficient processing of digital evidence
- Admissibility to courts/judicial proceedings

Tool validation
- Difficult
- Expensive
- Time consuming
What is Federated Testing?

- Same tools used across agencies, labs and digital evidence sections – a lot of duplicated work

- The Computer Forensics Tool Testing (CFTT) Project at NIST currently creates tool specifications, test methods and test reports.

- Federated Testing is an expansion of CFTT to provide the digital forensics community with shared test materials for tool validation.

- Benefits:
  - Cost savings
  - Can improve quality of testing (rigorous methods and high quality testing materials)
Target Areas

CFTT has methodologies for:
- disk imaging
- Hardware Write Block*
- Mobile Devices*
- Forensic Media Preparation*
- Deleted File Recovery
- File Carving

Implementing:
- disk imaging \(\leftrightarrow\) available Fall 2014
What will the test materials look like?

- Platform for delivering the materials: live Linux (Ubuntu) CD

- Components:
  - Website
    - Reference information
  - Test Plan
  - Final report
  - Command line test support tools
    - Test case setup and analyze results
Demo
Summary

Computer Forensics Tool Catalog Website
- Purpose: provide an effective way for connecting practitioners with the tools they need
- Taxonomy-driven, vendor populated & searchable

Federated Testing
- Tool validation is difficult, expensive and time consuming
- Federated Testing is an expansion of CFTT to provide the digital forensics community with shared test materials for tool validation – coming this Fall!
Summary (cont.)

- Computer Forensics Tool Catalog website - Spread the word. Ask vendors you work with to list their tools. Give us feedback; tell us what you like/don’t like.

- Federated Testing – Give me you contact information. We’d love to get your feedback!
Project Sponsors

- Department of Homeland Security, Science and Technology Directorate (Major funding)
- NIST/OLES (Program management)
Contacts

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Questions?