A Framework of Distributed Agent-based Network Forensics System

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Agenda

- Concepts
- Classification
- Approaches
- Goals
- Architecture
- Functions
- Tools
- Characters
- Challenges

Network Forensics

On the First DFRWS:

The use of scientifically proven techniques to collect, fuse, identify, examine, correlate, analyze, and document digital evidence from multiple, actively processing and transmitting digital sources …

What is it?

My Opinion:

- Digital Forensics in Network Environment
- E-evidence IN network obtained
- Obtain e-evidence VIA network

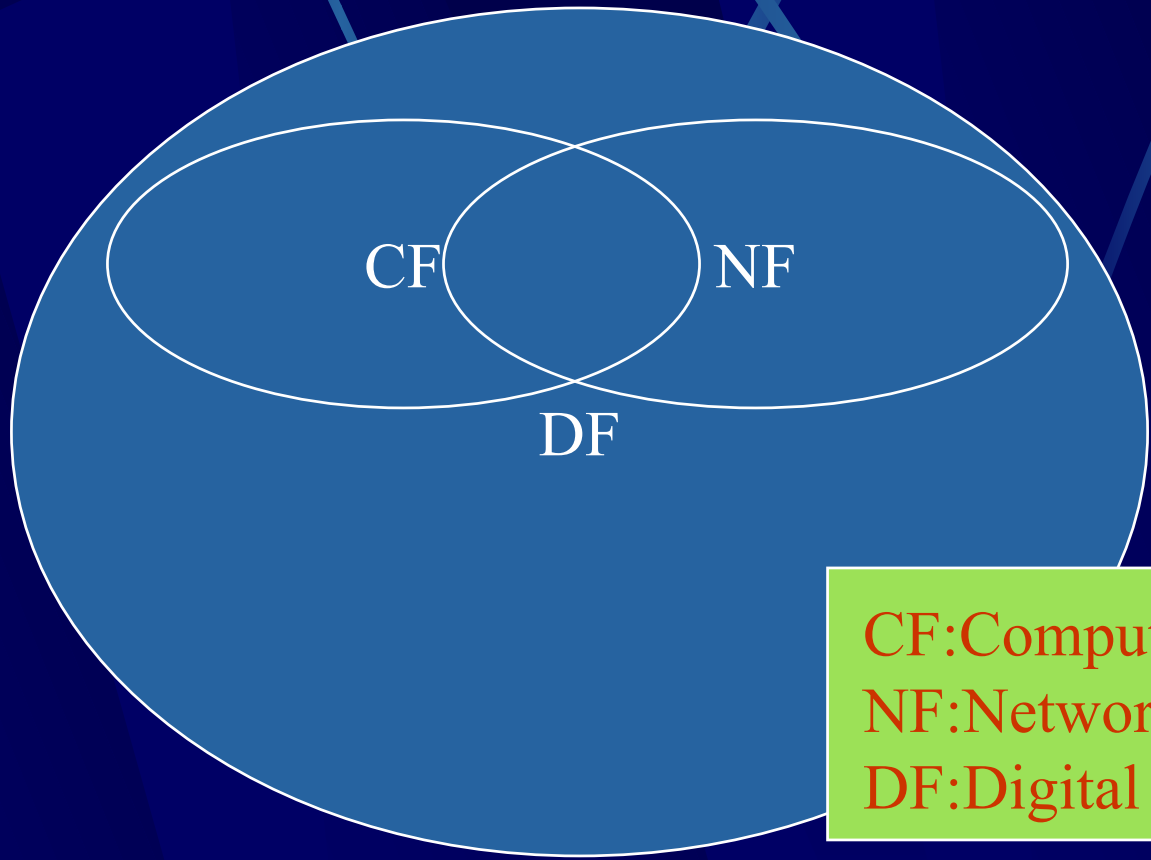
IN network

- Firewall log
- HIDS log
- NIDS alert
- Host System Event
- Network Packets

VIA network

- Log Analysis
- Log Integration
- Packet Capture
- Protocol Analysis
  - POP3,SMTP
  - FTP,TELNET,HTTP

Where is it?



CF:Computer Forensics
NF:Network Forensics
DF:Digital Forensics

Brother Or Child?

Internet Forensics

Wireless Forensics

Online Forensics

Approaches

- Packet Capture
- Packet Filter
- Protocol Analysis
- Data Fusion
- Distributed Agent
- Data Mining
- IP Traceback
- Mapping IP to Geographic Location

Goals

- Adaptive Capture of Network Traffic
- Integration of Forensics Data
- Active Response for Investigational Forensics
- Guide the Enhancement of Firewall and IDS system

System Architecture

- Network Forensics Database
- Network Forensics Server
- Network Forensics Distributed Agents

Server Function

- Build the Database of Mapping Topology
- Capture the Network Traffic
- Filter and Dump the Traffic Steam
- Transform Traffic Steam into Database
- Forensics Database Mining
- Network Protocol Analysis
- Network Surveying
- Network Attack Analysis and Visualization

Distributed Agent Function

- Integration with Distributed Firewall
- Integration with Distributed IDS
- Integration with HoneyNet
- Integration with the System Monitor
- Remote Network Forensics

Tools

- TcpDump/Windump
- Snort
- Ethereal
- VisualRoute
- SamSpade
- Nmap

Characters

- Adaptive
- Intelligent
- Cooperative
- Agent-based
- Distributed
- Integrative

Challenges

- Custody of Chain
- Privacy Protection vs Traffic Monitor
- Encrypted Traffic
- Traffic Volumes
- Covert Channel
- IP Spoof/Compromise Hops
- Anti Sniff

Web Site

- DFRWS
- IJDE (International Journal of Digital Evidence)
- JDI (Journal of Digital Investigation)
- National Center for Forensic Science
- Economic Crime Institute (ECI)
- SANS institute
- Global Information Assurance Certification
- FIRST
- CERT Coordination Center
- CERIAS

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Acknowledgement

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Q&A

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