Sniper Forensics 4.0: Reloaded

Presented by:

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Who Am I?

- Managing Consultant for the Trustwave SpiderLabs DFIR Team (Americas)
- Master's degree in Information Security
- Author of "Unix and Linux Forensic Analysis" by Syngress
- Author of the award winning blog, "The Digital Standard"
- Chosen as a SANS "Thought Leader" in 2010
- Member of the USSS Electronic Crimes Task Force (Dallas, OKC, Miami)
- Speaker @ SANS DFIR `09, '10, `11, `12, The Computer Forensics Show '09, '10, Direct Response Forum '09, SecTor `09,`10,`11,`12, USSS ECTF – Miami & Dallas, The Next HOPE '10, BSIDESLV '10, DEFCON 18 & 20, LM Connect `10, GFIRST `11, `12, SecureTech `11
- Former US Army Signal Corps Warrant Officer

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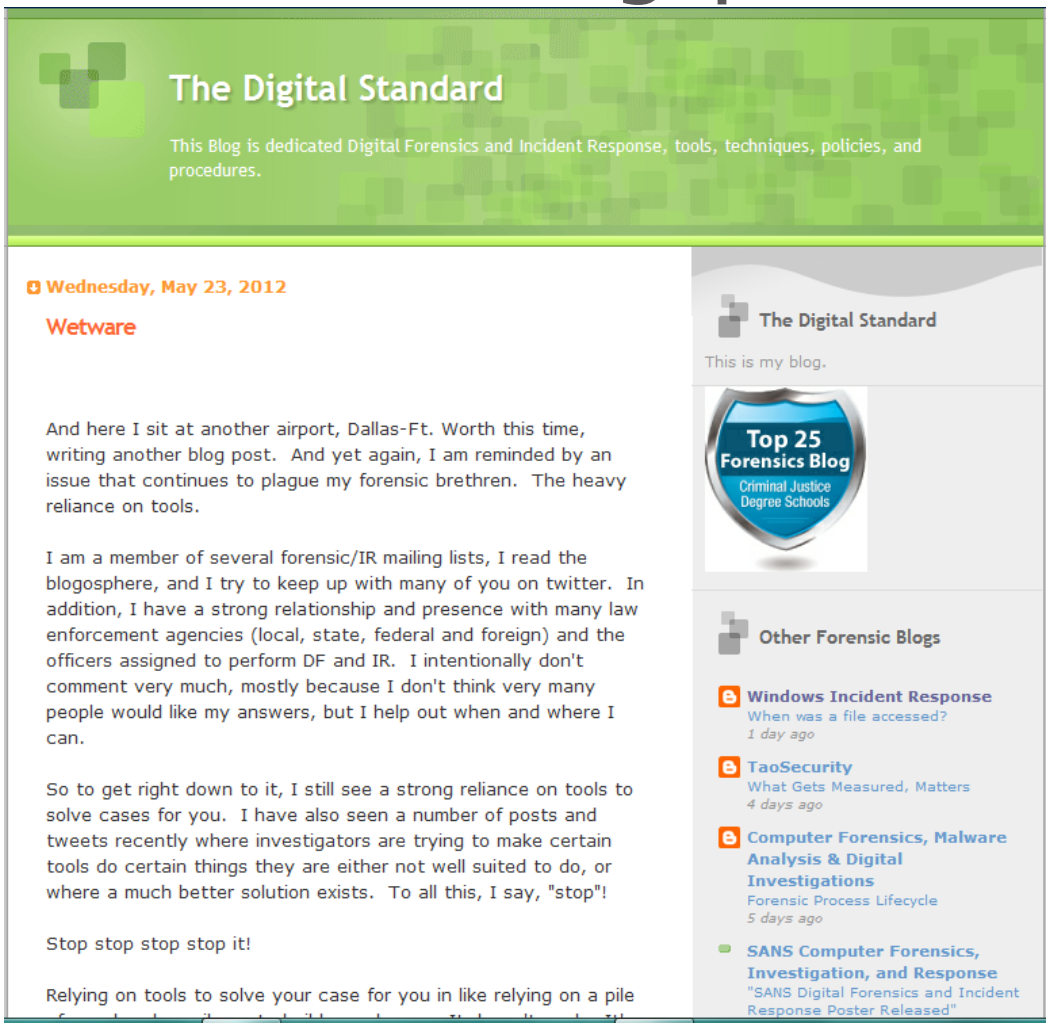

The Digital Standard

This Blog is dedicated Digital Forensics and Incident Response, tools, techniques, policies, and procedures.

Wednesday, May 23, 2012

Wetware

And here I sit at another airport, Dallas-Ft. Worth this time, writing another blog post. And yet again, I am reminded by an issue that continues to plague my forensic brethren. The heavy reliance on tools.

I am a member of several forensic/IR mailing lists, I read the blogosphere, and I try to keep up with many of you on twitter. In addition, I have a strong relationship and presence with many law enforcement agencies (local, state, federal and foreign) and the officers assigned to perform DF and IR. I intentionally don't comment very much, mostly because I don't think very many people would like my answers, but I help out when and where I can.

So to get right down to it, I still see a strong reliance on tools to solve cases for you. I have also seen a number of posts and tweets recently where investigators are trying to make certain tools do certain things they are either not well suited to do, or where a much better solution exists. To all this, I say, "stop"!

Stop stop stop stop it!

Relying on tools to solve your case for you in like relying on a pile

The Digital Standard

This is my blog.

Top 25 Forensics Blog
Criminal Justice Degree Schools

Other Forensic Blogs

Windows Incident Response
When was a file accessed?
1 day ago

TaoSecurity
What Gets Measured, Matters
4 days ago

Computer Forensics, Malware Analysis & Digital Investigations
Forensic Process Lifecycle
5 days ago

SANS Computer Forensics, Investigation, and Response
"SANS Digital Forensics and Incident Response Poster Released"

Agenda

- Recap – What is Sniper Forensics?
- The Evolution of Sniper Forensics
- What are the benefits of using Sniper Forensics?
- Battlefield
- Gun Shy
- Lethal Forensication
- Conclusion

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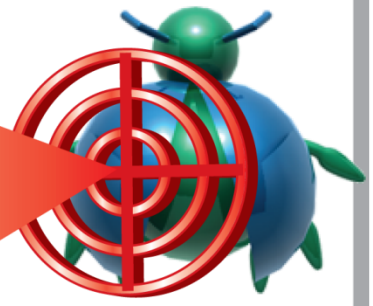
The Evolution of: Sniper Forensics

- "The process of taking a targeted, deliberate approach to forensic investigations."
  - Create an investigation plan
  - Apply sound logic
    - Locard's Exchange Principle
    - Occam's Razor
    - The Alexiou Principle
  - Extract what needs to be extracted, nothing more
  - Allow the data to provide the answers
  - Report on what was done
  - Answer the questions



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Sniper Forensics v2.0: Target Acquisition

- What do I snipe?
  - Registry Hives
    - SAM
    - Security
    - System
    - Software
    - NTUSER.DAT
- How do I actually DO that?
  - Manually via FTK using F-Response
  - Script it
- How do I interpret the data?
  - Infiltration
  - Aggregation
  - Exfiltration

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Sniper Forensics v3.0: Hunt

- Identify Indicators of Compromise (IOC)
- 1000 yard stare
- In The Cross Hairs
- Lethal Forensication / Expert Eyes
- Endgame

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Sniper Forensics v4.0: Reloaded

- Sniper Forensics has traditionally been used on single systems, or small business environments.
- On cases where you knew something was going on, and you likely had the right system(s).
- What happens when the environment is larger than just a few systems?
- What happens when you don't exactly know what you're looking for?
- Same weapon…different scope!

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Battlefield

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Current Operating Environment

"They're P0wn1ng ery'body out here!"

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Targets

- Data of value
  - Payment Card Data
  - Trade Secrets
  - Government Agencies
  - Emergency Response Data
  - Law Enforcement Agencies
  - Government Contractors
- Hacktivism / Occupy
  - They don't like you
  - They don't like what you stand for

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Actors

- Foreign Governments
- Organized Crime Syndicates
- Terror Organizations
- Hacktivist Groups
- Individuals

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Goals

- Monetization
  - Steal data of value
  - Monetize valuable data on the black market
- Havoc
  - Disrupt critical services
  - Destroy industry reputation
- Harm
  - Cause bodily harm or injury
  - Destroy physical property

Gun Shy

Perceived Complexity

- Often increased due to Analysis Paralysis
  - What do I do now?
  - There's too much data!
  - Too many systems!

- This is often the step that crushes investigators.
  - Lack of an investigation plan
  - Erroneous steps are made
  - Real progress is hindered

Force Multiplier

- "A capability that, when added to and employed by a combat force, significantly increases the combat potential of that force and thus enhances the probability of successful mission accomplishment."

http://www.thefreedictionary.com/force+multiplier

Force Multiplier #1 - Logic

- What were you brought in for?
  - What happened?
  - Who was involved and how?
- What intel was provided by the client?
  - Malware?
  - When did the activity take place?
  - What do they have that is worth taking (the bad guys are not there just for the heck of it)?
  - Which systems are known to be affected?
  - What is the significance of those systems?

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Force Multiplier #2 – Alexiou Principle

- Apply the Alexiou Principle
  - What questions were you brought in to answer?
  - What data do you need to answer those questions?
  - How do you extract and analyze that data?
  - What does the data tell you?

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Force Multiplier #3 - Wetware

- What is the attack (very simply, what's going on)?
- Establish IOCs
- Expand the search to all potentially affected systems (go look for the IOCs)
- Use what the customer already has in place to aid your search
- Document the affected systems

Example Scenario

Example Scenario

- Company X has been hit by a Spear Phishing attack.
- During the attack, an undetermined number of employees clicked on a link provided in an email attachment.
- The client has secret formulas that if exposed to their competition, would adversely affect their business.

Intel

- You know that company X has secret formulas – *Something Worth Stealing*
- You know that a Spear Phishing Attack has been launched against company X. You have a copy of the email and the attachment – *Breach Triad*
  - *You know how it got in, you can figure out what it did, and then you should know how it got data out.*
- You know that at least one individual has clicked on the link.

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Investigation Plan

- Analyze the email
  - Analyze the headers
  - Source?
  - Unique characteristics?
- Analyze the attachment
  - Embedded malware?
  - Functionality *(Breach Triad)*

- Generate Indicators of Compromise

Lethal Forensication

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Lethal Forensication

- Analysis of the email should help you determine the intent of the attack
  - Where did it come from? (email headers)
  - Linguistic anomalies?
  - When was it sent?
  - How was it labeled?
  - Who was it sent to?
    - Where could the attackers have obtained that list?
    - What is unique about the targeted individuals?
  - What did it do?

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Lethal Forensication

- Malware
  - How was it dropped
  - What type of data did it target
  - How did it aggregate that data
  - Where did it send the data
  - Does it propagate
    - If so, how

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Lethal Forensication

- Indicators of Compromise
  - What are the characteristics of infection?
    - The more detailed this can be, the better! (and honestly, the smaller this can be, the better)
    - This is how you will know an infected system from a non-infected system
  - Propagation method
    - How does it move from one system to another
      - So you can contain it
      - So you can prevent re-infection

Lethal Forensication

- ICED – Four step incident response process
  - Identify
    - What is the threat
  - Contain
    - Using the IOCs, prevent further propagation
  - Eradicate
    - Remove the malware from the affected systems
  - Defend
    - Update, patch, train

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Conclusion

Conclusion

- The Sniper Forensics methodology is no different in an Incident Response scenario within a larger infrastructure.
- The same principles apply
  - Occam
  - Locard
  - Alexiou
- Create an investigation plan
- Use intel provided by the client

Edmond Locard at work.

Conclusion

- Establish IOCs
- Determine propagation method
- ICED
  - Identify
  - Contain
  - Eradicate
  - Defend

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Conclusion

- Take good case notes
- Use the strengths of your teammates to tag team the investigation (High Powered Teaming)
  - May need expertise in:
    - Network forensics
    - Malware analysis
    - Single system forensics
      - Registry analysis
      - Timeline analysis

- Use the client's utilities to your advantage
  - AV
  - IDS/IPS

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Questions?

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