## CYBERCRIME PREVENTION SEMINAR

**Protect Yourself and Your Business** 

**Presented by:** 

## **Drew Sanford**

and Hi-Link Technology Group



Drew Sanford is the CO-Founder of CARVIR, LLC. a security vendor focused at enabling Managed Service Providers to bring Enterprise Class Tools into the SMB space. CARVIR's clients MSPs from all over North America and the World.

Before founding CARVIR, Drew served as COO and Co-Owner of a Nashville, TN based MSP that served customers in the Southern part of the United States focused on the Automotive, Manufacturing, Distribution and Medical verticals.

Drew has served as CIO of numerous organizations during his career and has co-written two books.

In his personal life, Drew enjoys serving as a board member on numerous area non-profits focused on the arts and the underserved within the community.

## **Cyber Security Goals**

- State of Security 2018
- Latest Attacks
- >Who Are The Victims
- The Problem We Face
- ➤What You Can Do







## Have you or do you personally know someone that has been infected with Ransomware?

≻Yes ≻No



### **Are Small & Midsized Businesses Safe?**



76% businesses experienced situations where malware / exploits have bypassed AV solutions
 14% small businesses rate their ability to mitigate cyber risks, vulnerabilities and attacks as highly effective

## **Not Just Big Business**



of all small businesses will suffer a cyber breach this year.



of all breaches happen to SMBs, just like yours.



of all breaches could have been prevented with today's technology.



## **AV Is No Match For The New Threat Landscape**



- Ransomware, trojans, worms, backdoors
- File-less / Memory-based malware



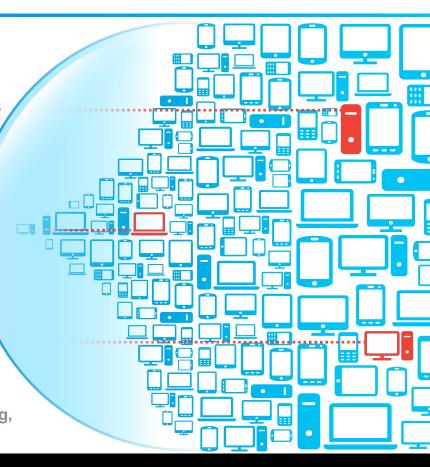
- Document-based exploits
  - Browser-based exploits





Attacks

- Script-based: Powershell, Powersploit, WMI, VBS
- Credentials: credential-scraping, Mimikatz, tokens



## **Traditional AV Solutions Cannot Keep Pace**

#### Total Malware

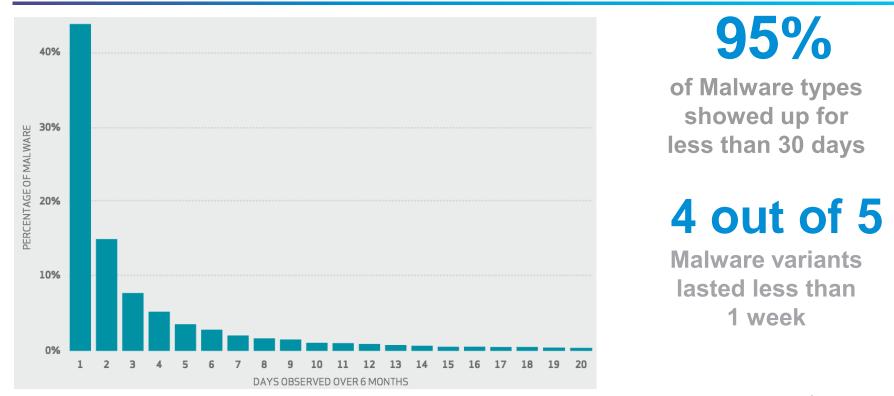


## **390K**

new malicious code samples per day (according to AV-Test.org)

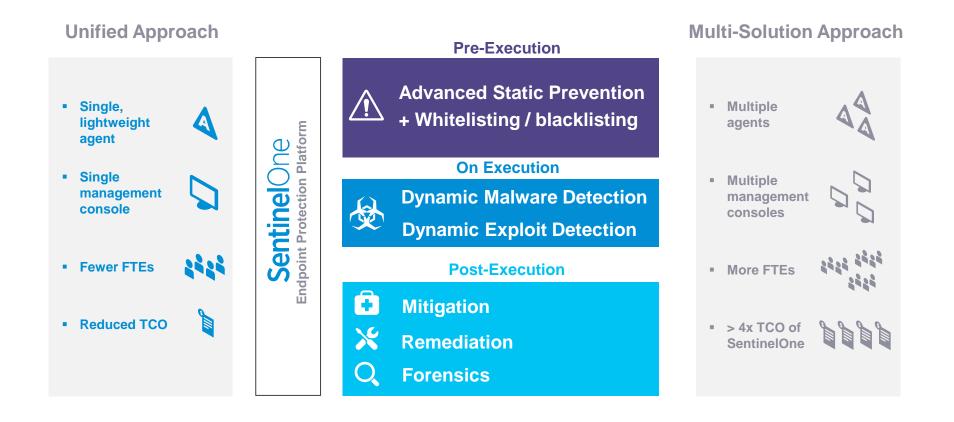


### Legacy AV Vendors Cannot Respond Fast Enough





## **Multiple-Tools vs. Unified Approach**



## **Anatomy Of A Ransomware Attack**

Entry: Email, Drive-By Click, or Insider Threat

**Protecting The Human Is Your First Priority** 

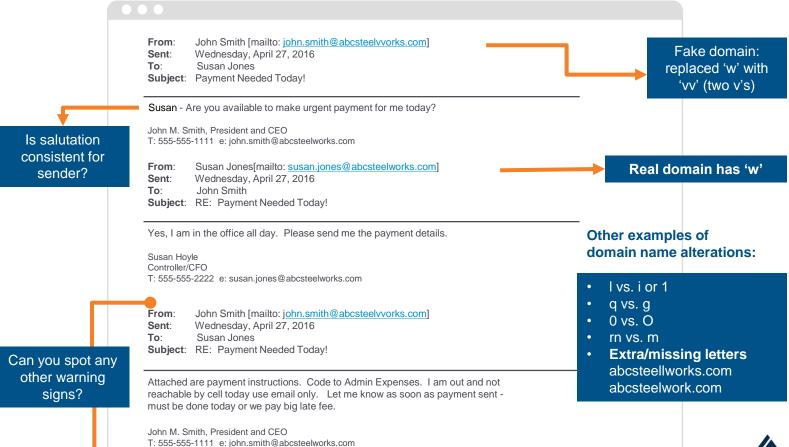
- 1) Every Email
- 2) Every Website
- 3) Every Click
- 4) Every Shared Network File
- 5) Every Cloud Storage File
- 6) Every Device
- 7) Every Employee
- 8) Every Time







## **SPAM Techniques**





## Should you pay the ransom if you get infected?

≻Yes ≻No



## **\$2,100,000 Per Week In Ransom Payments**

In February, officials at Hollywood (Calif.) Presbyterian Medical Center paid a relatively small sum, \$17,000 in Bitcoin, for the release of their patient data and their multi-million dollar HIT system after a ransomware attack. But one well-known security industry firm, Symantec, Mountain View, Calif., estimated in 2012 that ransomware practitioners knocked down more than \$30,000 per day in ransom payments world-wide.

Today, "it's probably more like \$300,000 a day," said Michael Bruemmer, vice president of Experian's data breach resolution unit, and it's made largely on volume. "The average payment is about 2 Bitcoins, or \$670. It's really small amounts."



## **Victims Don't Talk**

The reason the public is not hearing more about them is because the victims don't talk.

"It's like an iceberg, where you only see 30% above the water," Bruemmer said since many in healthcare industry remain quiet about getting hit.

## **What's Your Reputation Worth?**







#### SECURITY

#### **Connecticut Courts Hit with Ransomware Attack**

According to court officials, 114 of the 535 servers were affected, but the threat has since been contained.

BY DAVID OWENS, THE HARTFORD COURANT / MARCH 9, 2018



5 Ways to Initiate Communication about Cybersecurity

3 Ways to Fight the Cybertalent War

3 Ways to Stop Business Email Compromise

Cybersecurity Has a Metrics Problem — Here's What You Can Do About It

JITERSTOCK

 $\rm (TNS)-A$  ransom ware attack has knocked the Connecticut court system's computers off line.

The ransomware infection began Friday morning, said Melissa Farley, a Judicial Branch spokeswoman.



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VISIT BLOG





MONDAY JUN. 18, 2018

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Breaking News

### Computer Virus Contained After Spreading To 12 Agencies, DAS Said



By Christine Dempsey · Contact Reporter cdempsey@courant.com

FEBRUARY 26, 2018, 5:50 PM | HARTFORD

**S** tate employees worked throughout the weekend to contain a virus that had spread to more than 100 computers, a Department of Administrative Services spokesman said Monday.

Jeffrey Beckham said most computers were protected, but the virus infected about 160 in a dozen agencies. The impact to state business is not expected to be significant, he said.

The bug was detected late Friday afternoon, Beckham said, and staff noticed that it matched the profile of a ransomware virus. The DAS technical security team began to work with the agencies for which the alert was triggered.

Agency IT workers went to work and commissioners were alerted to the virus. DAS worked with agency employees to get it under control so it wouldn't spread further.

They made "significant progress," he said, and contained the virus Sunday night. Most computers were protected by antivirus software and other precautions.

"The total number of infected machines that were not handled by antivirus protections was approximately 160 across 12 agencies," Beckham said.





#### EAT & DRINK LIFE & STYLE ARTS & CULTURE HOME & PROPERTY BEST OF WESTCHESTER\*

"Cybersecurity is a current trend that all industries are dealing with. The challenge is to provide convenient, flexible technology tools to employees and consumers without compromising the security of our systems."

-Robert Lanni, CIO & SVP, Combe Inc.



#### 914INC.: If your IT budget were limitless, what would be on your wish list and why?

**Coppola:** I'd put more into securing systems. You don't want to be the next Yahoo, the next company that gets hit. You don't want to be on the front page of the papers [because of something like that].

**Cacchiani:** With all the money in the world, I would spend more on the planning side, to be sure we can build what we need to execute.

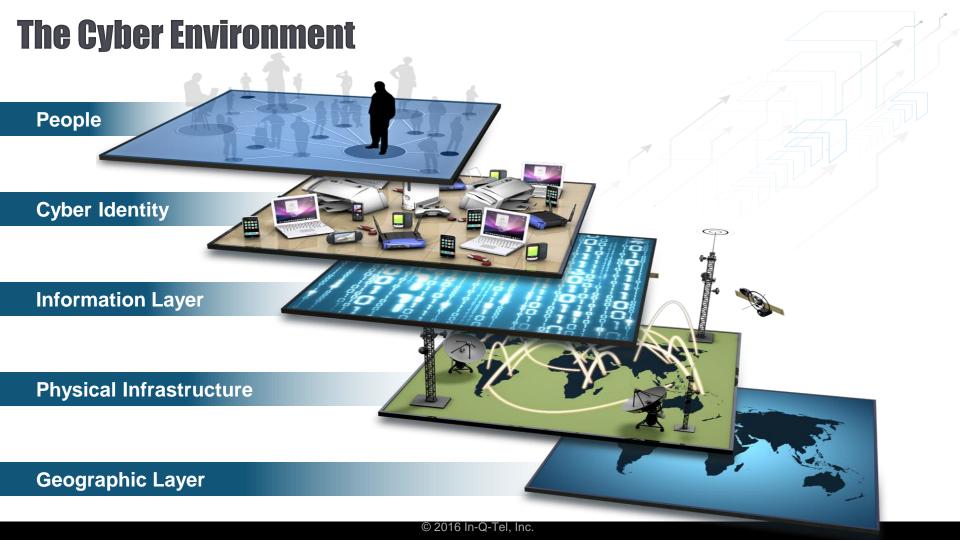
**Jacknis:** One issue with budgets is the push and pull between maintaining what you have and investing in new technology. As a CIO, I was aggressive in throwing old things out, but a lot of CIOs don't have the power to do that. Many of them would like to do new things because 70 percent of their budget is just maintaining old things.

**Lanni:** I would invest in IT R&D to expand the use of artificial intelligence, robotics, and home automation — the Internet of Things. All of these technologies will have an increased impact on how we work, play, shop, socialize, and live. Plus, I think they are cool.

#### 914INC.: What are the most common mistakes made by business owners or managers, regarding IT needs?



Q

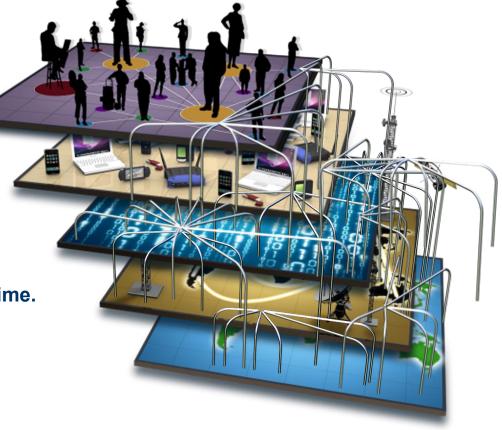


## **Everything Connected**

One individual...

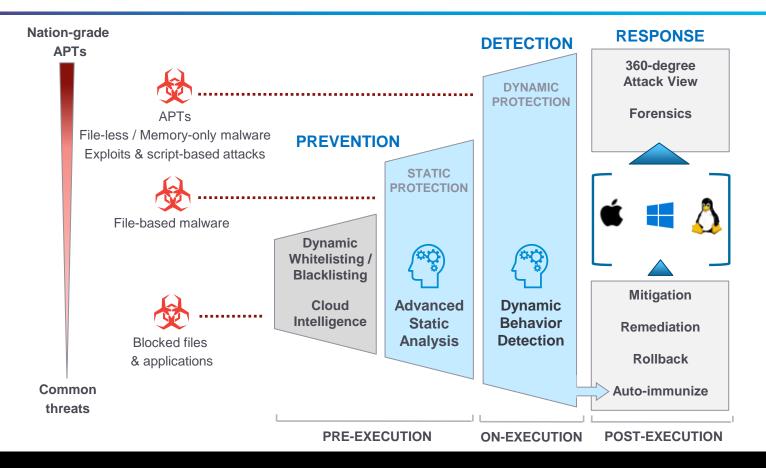
...with multiple, complex relationships to other levels of the environment...

...that also change over time.

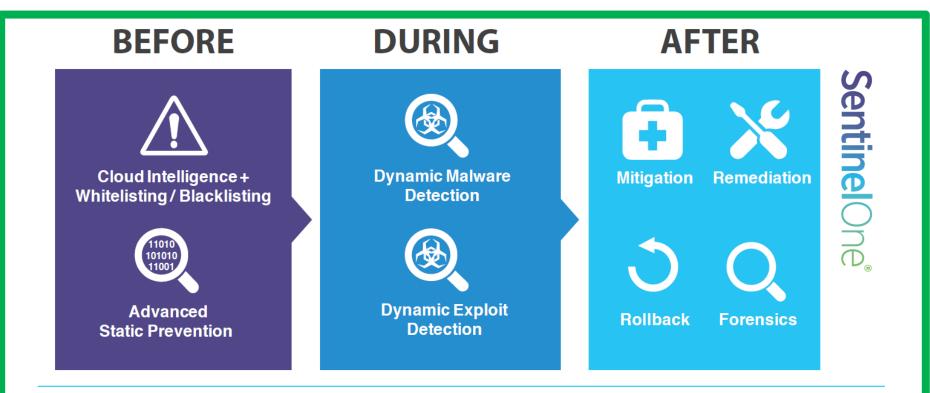


© 2016 In-Q-Tel, Inc.

## **The SentinelOne Endpoint Protection Platform**







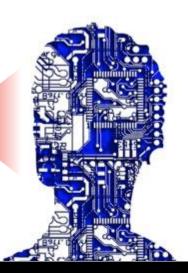
### **Advanced Static Prevention**

- Major breakthrough in signature-less detection, based on machine learning
- Deep File Inspection (DFI) engine prevents advanced malware-- on access
- Supported on all endpoint platforms: Windows / MacOS / Linux
- Engine supports all mitigation actions

**31,000** Unique file characteristics

defined and referenced



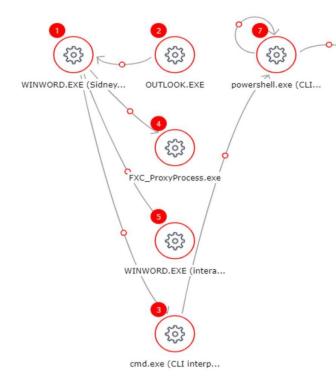


### detection | **prevention** | ransomware rollback | forensics

203

kartoshka.exe





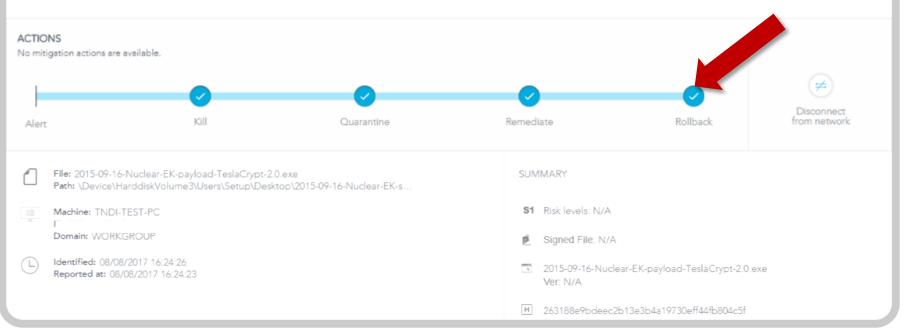
| imitation (CLI interpreter) (PID 664)  |         | X      |
|--|---------|--------|
|  | DETAILS | EVENTS |
| 2017-06-09T15:28:59.638000             |         |        |
| ⓒ} cmd.exe (CLI interpreter) (PID 664) |         |        |
| Arguments:                             |         |        |

/c "waitfor /t 10 atzywron & bitsadmin /transfer uwymyr /download ...

### detection | prevention | ransomware rollback | forensics

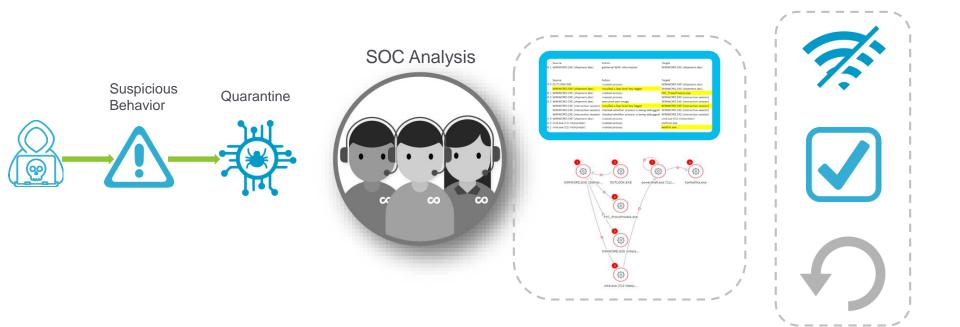
#### BINARY ANALYSIS

#### 2015-09-16-Nuclear-EK-payload-TeslaCrypt-2.0.exe



| 0.1  | Source<br>WINWORD.EXE (shipment.doc) | Action<br>gathered WMI information        | Target<br>WINWORD.EXE (shipment.doc) |
|------|--------------------------------------|---|--------------------------------------|
|      | Source                               | Action                                    | Target                               |
| .9.5 | OUTLOOK.EXE                          | created process                           | WINWORD.EXE (shipment.doc)           |
|      | WINWORD.EXE (shipment.doc)           | installed a low level key logger          | WINWORD.EXE (shipment.doc)           |
| 0.1  | WINWORD.EXE (shipment.doc)           | created process                           | FXC_ProxyProcess.exe                 |
| 0.3  | WINWORD.EXE (shipment.doc)           | created process                           | WINWORD.EXE (interactive session)    |
| 0.3  | WINWORD.EXE (shipment.doc)           | executed own image                        | WINWORD.EXE (interactive session)    |
|      | WINWORD.EXE (interactive session)    | installed a low level key logger          | WINWORD.EXE (interactive session)    |
|      | WINWORD.EXE (interactive session)    | checked whether process is being debugged | WINWORD.EXE (interactive session)    |
|      | WINWORD.EXE (interactive session)    | checked whether process is being debugged | WINWORD.EXE (interactive session)    |
| 5.9  | WINWORD.EXE (shipment.doc)           | created process                           | cmd.exe (CLI interpreter)            |
| 6.0  | cmd.exe (CLI interpreter)            | created process                           | conhost.exe                          |
| 6.1  | cmd.exe (CLI interpreter)            | created process                           | waitfor.exe                          |

### detection | quarantine | SOC | **remediation**



## **Visionary Leader on the 2017 Gartner MQ**



"...SentinelOne has had stellar growth in the enterprise EPP market, and expects it to continue for the next couple of years as it maintains a reputation as a leading NGAV vendor."

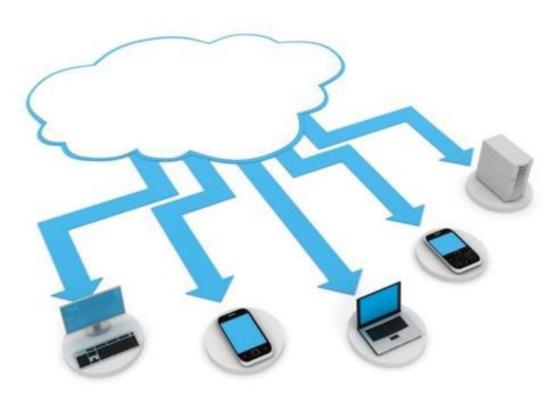
#### Visionary Quadrant Leader

Gartner 2017 Magic Quadrant Endpoint Protection Platforms

### Gartner, Magic Quadrant for Endpoint Protection Platforms, 30 January 2017

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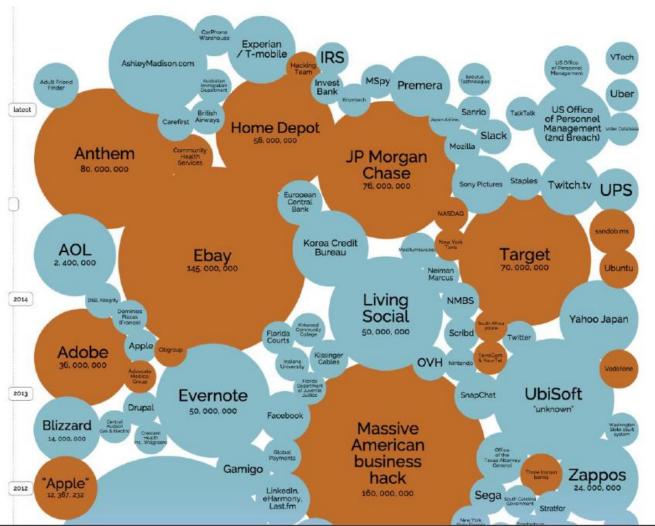
Your data and applications are moving to the cloud:

62% of organizations will run 100% of their IT in the cloud by 2020.



Your employees are mobile and connected everywhere:

61% of workers report working outside the office at least part of the time

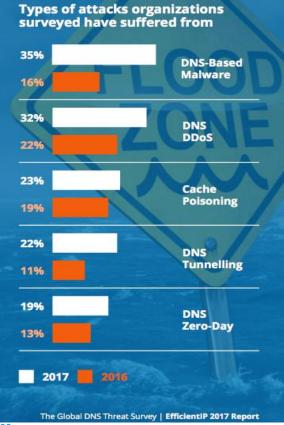


Data breaches are at an all-time high:

43% of companies had a data breach in the past year.

Attacks are broader, deeper and more sophisticated than ever before

## **DNS Security is Crucial**



01

02

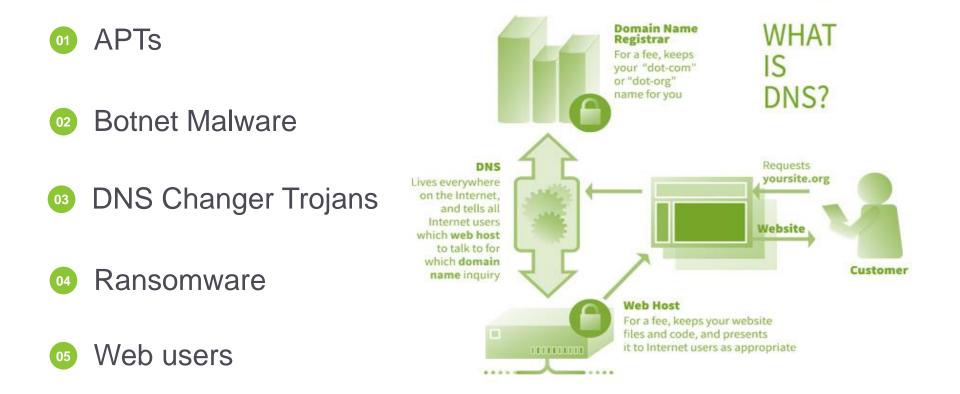
76% subject to a DNS attack

- Networks exploited by:
  - Botnet Command and Control (C&C) -
- Advanced Persistent Threat (APTs) -
- Drive-by-downloads -
- Phishing -

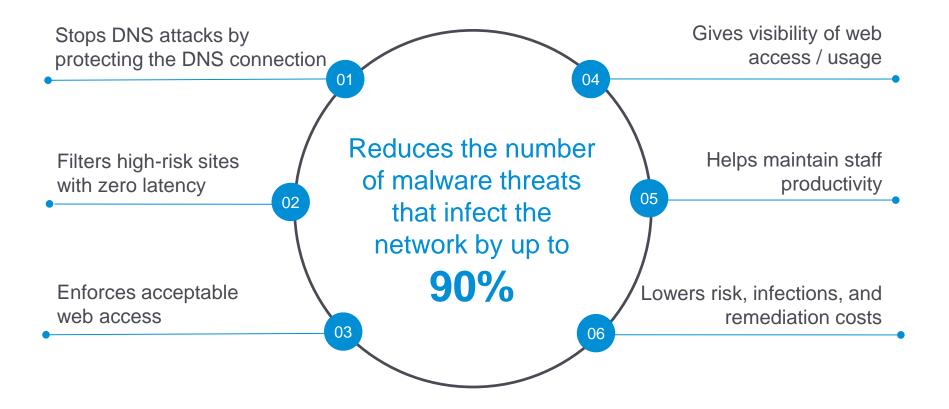
03

Ports 80 & 443 are generally open

## **Primary DNS Risks**



### Webroot SecureAnywhere® DNS Protection





- What devices in your network have logs?
- Is there valuable security related data in the logs?
- Do you monitor them?
  - Real-time
  - Hourly
  - Daily
  - Weekly
  - Monthly
  - Yearly





- Even a small network can generate millions of log records daily generating dozens or hundreds of "alerts"
- Each of these logs has a unique format
- Maybe you have implemented a syslog server and tried to monitor for specific lines of activity
- Now how do you leverage it?

This is where SIEM begins and basic log management ends!

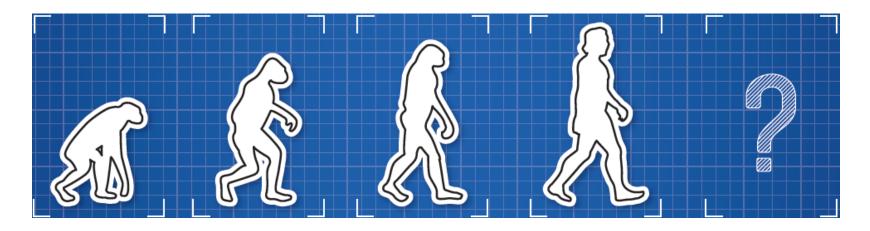




- Security and Event Management (SIEM)
  - Coined by Gartner in 2005
- An approach that combines:
  - SIM (Security Information Management)
    - Collecting, monitoring and analyzing security related data from logs
  - SEM (Security Event Management)
    - Alerting on specific triggers in log data
- Pronounced "sim" with a silent e



### **The Evolution of SIEM?**



#### Centralized Log Management

Centralized log collection and storage is used to fulfill an operational need.

#### SIEM

The technology began to extract intelligence from logs to meet a compliance or security need.

#### SIEM ++

SIEM vendors add adjacent technologies like VAS, IDS, flow analysis and deception (honeynet), for greater security and compliance

#### SIEM-As-A-Service

With greater intelligence comes the need for more monitoring and analysis, but a skills shortage creates a market for managed or comanaged options that help provide a better SIEM ROI.

#### SIEM-As-A-Utility (future)

In the future, security will be built into the foundation of the network devices.

## **The Questions We Must Answer**

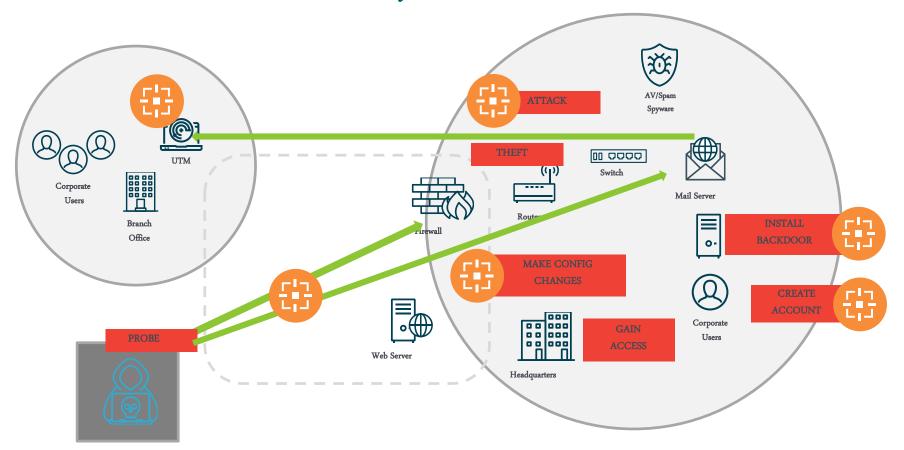
- The 4 W's
  - Who
    - Who is being attacked?
  - What
    - What is it trying to do?
  - Where
    - Where is the attack coming from?
  - When
    - When did it happen?



## Detect and Respond



### Anatomy of an Attack



### **Powered by**



- $\checkmark$  No Hardware Required
- ✓ Over 2,100 Log Types / Sources
- ✓ Threat Response Capabilities
- ✓ Ideal for compliant-centric customers



**Continuum SOC Managed** 





#### COMPLIANCE

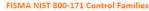
#### ✓ PCI DSS

- ✓ HIPAA
- ✓ 23 NYCRR 500
- ✓ SOX 404
- ✓ FISMA/NIST 800-53
- ✓ GPG-13
- ✓ SANS CAG
- ✓ GLBA
- ✓ EU GDPR
- ✓ NISPOM
- ✓ FFIEC/CFPB

#### ✓ ICD503/DCID 6/3



- 🗸 JAFAN
- ✓ NERC / CIP
- ✓ DoDI 8500
- ✓ ARS v2.0
- ✓ ISO 27001
- ✓ ISO 27002
- ✓ SAS-70-SOC
- ✓ NCUA
- ✓ GCSx
- ✓ DFARS
- ✓ NIST 800-171



Access Control



#### PCI Data Security Standard – High Level Overview

| Build and Maintain a Secure<br>Network and Systems | <ol> <li>Install and maintain a firewall configura</li> <li>Do not use vendor-supplied defaults for</li> </ol>  |
|--|---|
| Protect Cardholder Data                            | Protect stored cardholder data.     Encrypt transmission of cardholder dat  |
| Maintain a Vulnerability<br>Management Program     | <ol> <li>Encrypt damandor of calculoted data</li> <li>Protect all systems against malware an</li> <li>Develop and maintain secure systems a</li> </ol>          |
| Implement Strong Access<br>Control Measures        | <ol> <li>Restrict access to cardholder data by b</li> <li>Identify and authenticate access to syst</li> <li>Restrict physical access to cardholder d</li> </ol> |
| Regularly Monitor and<br>Test Networks             | <ol> <li>Track and monitor all access to network</li> <li>Regularly test security systems and pro</li> </ol>  |
| Maintain an Information<br>Security Policy         | 12. Maintain a policy that addresses inform   |

#### Statement of Compliance – PCI DSS v3.2

|   | EventTracker Solution   |
|---|---|
| Requirement 1: Install and Maintain a<br>firewall configuration to protect data<br>1.1.1 A formal process for approving and<br>testing all network connections and changes<br>to the firewall and router configuration.               | EventTracker supports 1.1.<br>firewall and router configu<br>investigations, and reports  |
| 1.1.5 Description of groups, roles, and<br>responsibilities for management of network<br>component.   | EventTracker supports 1.1.<br>allowed or denied, secure<br>and ports within the organ<br>via investigations and repo                                    |
| 1.1.6 Documentation of business justification<br>and approval for use of all services, protocols,<br>and ports allowed, including documentation<br>of security features implemented for those<br>protocols considered to be insecure. | EventTracker supports test<br>providing details of allowe<br>and ports within the organ   |
| 1.2.1 Restrict inbound and outbound traffic<br>to that which is necessary for the cardholder<br>data environment, and specifically deny all<br>other traffic.   | EventTracker supports for<br>details of allowed or denie<br>traffic to the cardholder di<br>and reports. This will allow<br>outbound traffic is being n |
| 1.2.2 Secure and synchronize router<br>configuration files.   | EventTracker supports for<br>firewall synchronization or<br>by providing details of fire<br>via investigations and repo                                 |
| 1.3.1 Implement a DMZ to limit inbound<br>traffic to only system components that<br>provide authorized publicly accessible<br>services, protocols, and ports.   | EventTracker supports for<br>details of allowed or denie<br>between the DMZ environ<br>internal network environm<br>reports.                            |
| 1.3.2 Limit inbound Internet traffic to<br>IP addresses within the DMZ.   | EventTracker supports for<br>alert on allowed or denied<br>external Internet and the o<br>environment via investigat                                    |

#### 171 Central Families

\_



EventTracker

#### **EventTracker Statement of Compliance for HIPAA**

#### Administrative Safeguards:

| HIPAA Control Requirements  | EventTracker Solution  | EventTracker<br>Reports | Alert |
|---|--|-------------------------|-------|
| Section: 164.308(a) (1) (i)<br>Security management process. Implement<br>policies and procedures to prevent, detect,<br>contain, and correct security violations.   | Fully featured auditing of access, changes, and<br>configuration of all systems creating, receiving,<br>maintaining, and transmitting ePH land recording of<br>who changed what, when, and where, ensures HIPA<br>compliance. Centralized consolidation and archival or<br>audit trials, using predefined and custom-built reports<br>covering all major types of activities across the entre<br>IT infrastructure.  | Yes                     | Yes   |
| Section: 164.308(a) (1) (a) (0)<br>Information system activity review:<br>Implement procedures to regularly review<br>records of information system activity, such<br>as audit logs, access reports, and security<br>incident tracking reports.   | Extensive auditing and reporting on both administrative<br>and user activity in Active Directory, Group Policy, Exchange,<br>the file servers, virtual environments (Whware, Microsoft),<br>SQL Servers. Detection of who did what, when, and where<br>with advanced rollback capabilities of unauthorized<br>actions. Centraliaed consolidation and archival or audit<br>trials with web-based reporting using predefined and<br>custom-built reports covering all major types of activities:<br>logins, logoffs, user account operations, file access on<br>servers, workstation, both successful and the failed ones. | Yes                     | Yes   |
| Section: 164.308(a) (3) (ii) (C)<br>Termination procedures: Implement procedures<br>for terminating access to electronic protected<br>health information when the employment of<br>workforce member ends.   | Auditing of disabled accounts, automated<br>de-provisioning of inactive user accounts. Create report<br>of all disable account.  | Yes                     | Yes   |
| Section: 164.308(a) (4) (1)<br>Information access management, Implement<br>policies and procedures for authorizing access<br>to electronic protected health information<br>that are consistent with the applicable<br>requirements of subpart E of this part.   | Auditing of files, folders and their permissions across<br>the entire II infrastructure for early detection of<br>unauthorized changes to security access settings<br>(e.g. granting of new permissions, changes of user access<br>rights, etc.) and ensure adequacy of technical controls.  | Yes                     | Yes   |
| Section: 164.308(a) (4) (ii) (A)<br>Isolating health care clearinghouse functions:<br>If a healthcare clearinghouse part of a<br>larger organization, the clearinghouse must<br>implement policies and procedures that protect<br>the electronic protected health information of<br>the clearinghouse from unauthorized access<br>by the larger organization. | Complete auditing and automated change documentation<br>for all types of access rights, privileges, and policies<br>that control access to workstations, programa,<br>transactions, and other systems to detect violations<br>of HIPAA compliance security measures.   | Yes                     | Yes   |
| by the larger organization.<br>Section: 164.306(a) (4) (iii) (c)<br>Access stabilishment and modification:<br>Implement policies and procedures that,<br>based upon the entity's access authorization<br>policies, establish, document, review, and<br>modify a user's right of access to a workstation,<br>transaction, program, or process.                 | Complete auditing and automated change documentation<br>for all types of access rights, privileges, and policies<br>that control access to workstations, programs,<br>transactions, and other systems to detect violations<br>of HIPAA compliance security measures.   | Yes                     | Yes   |

## What Should You Do Today?

□ Vulnerability assessment

- Review how your IT team handles SPAM, technical policies and computer updates
- Employee training
- Replace your old anti-virus software
- Turn on all the security features of your firewall
- Encrypt anything that goes mobile
   Backup, backup and backup again





**Have a cyber incident response plan!** 

# Q&A

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