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Understanding The “Why” In Enterprise Application Security Strategy

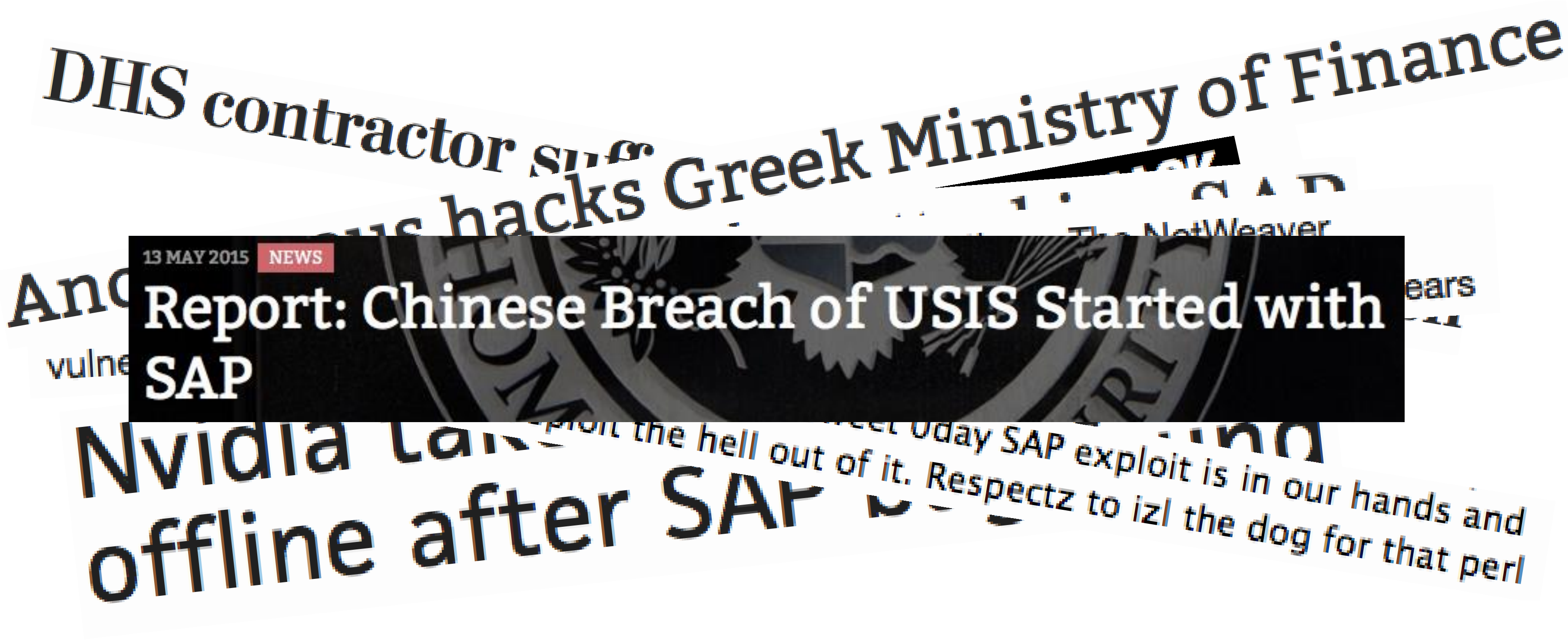
Connect to Protect

Troy Grubb

Information Security Manager,
GRC & SAP Security
The Hershey Company
@TroyRGrubb

#RSAC

SAP Security – The New Reality



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13 MAY 2015 NEWS

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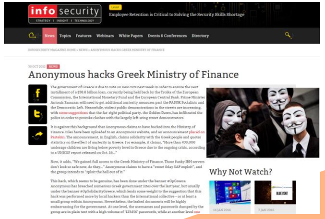
SAP Security – The New Reality

The Escalation of SAP Security Breaches

2012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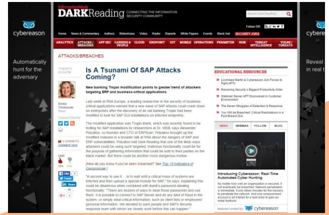

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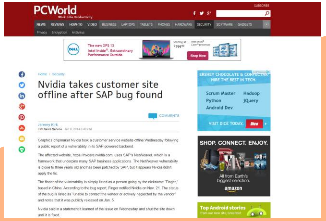

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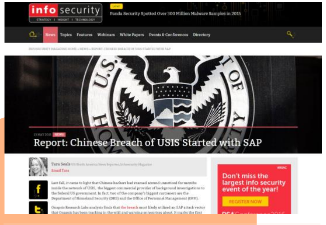
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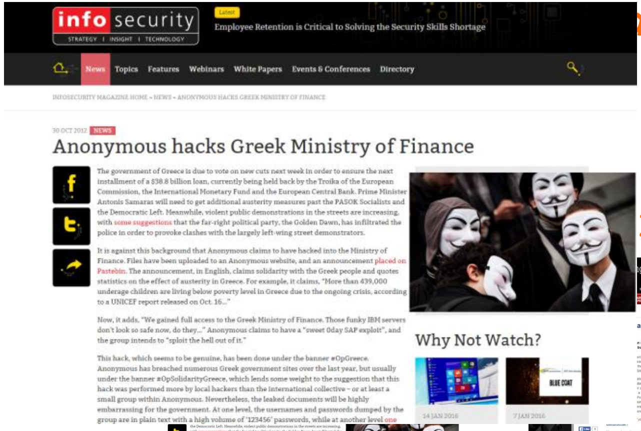

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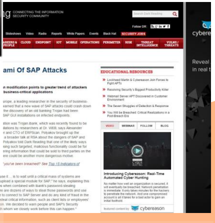

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featured content by cybereason

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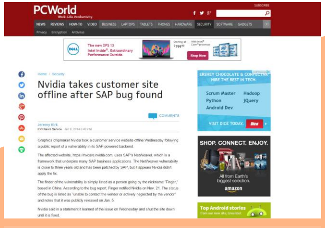

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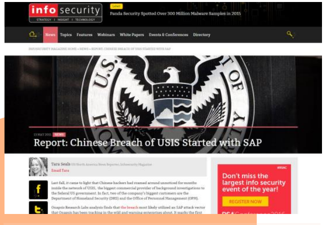

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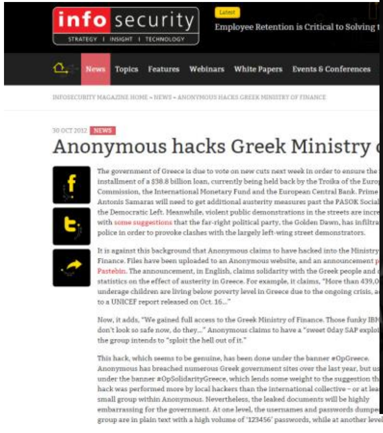
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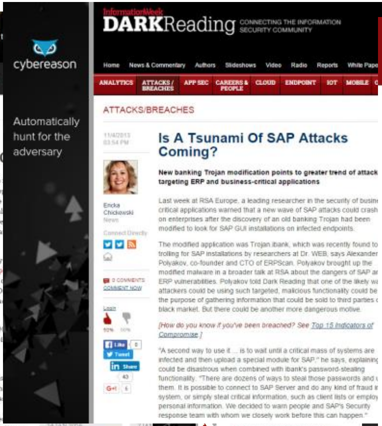
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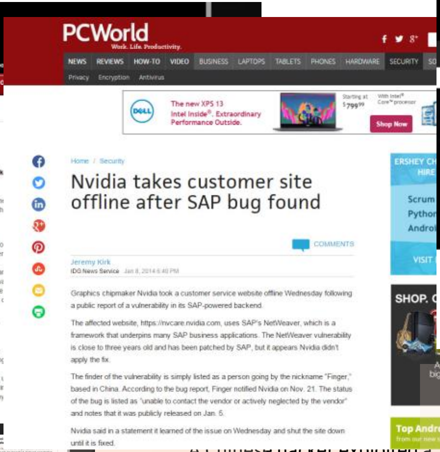
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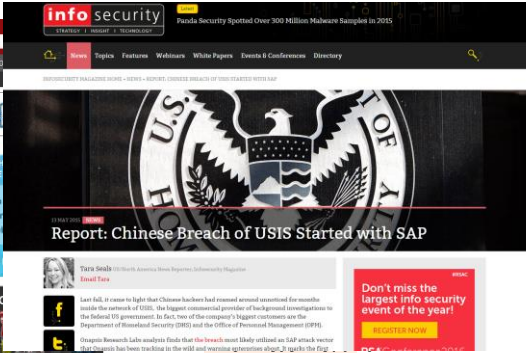
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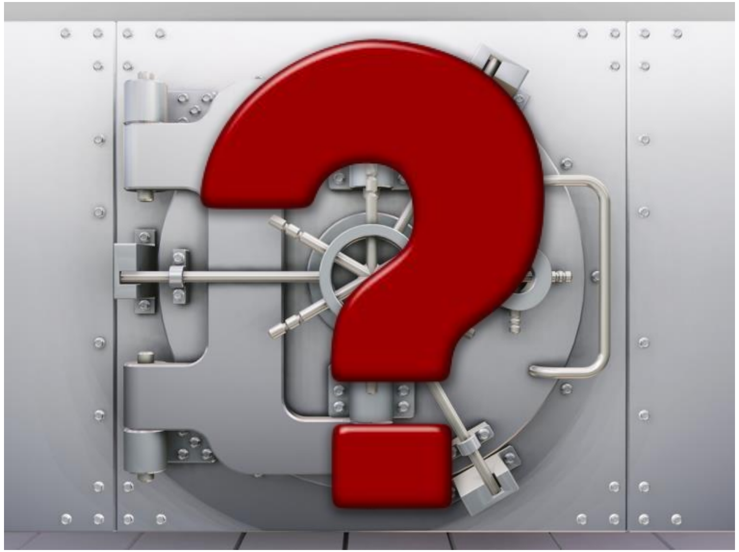
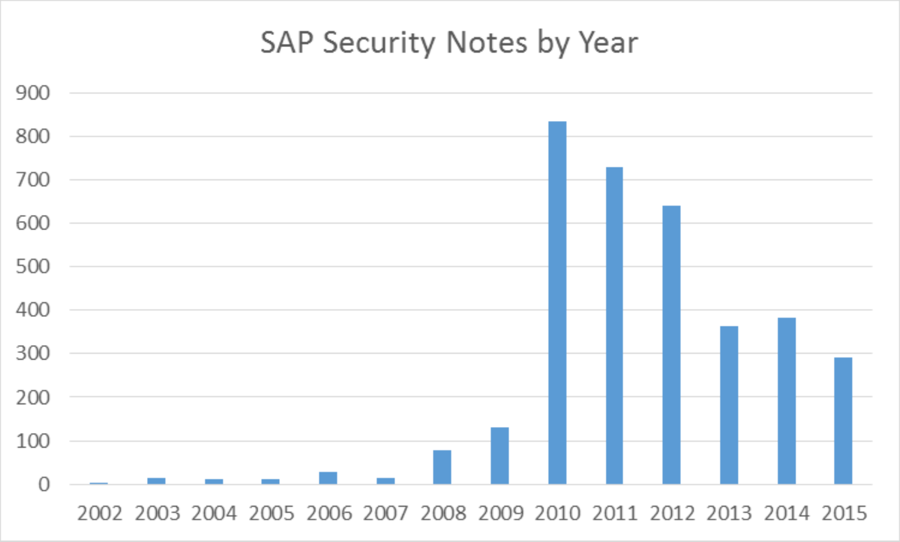
Risk of SAP Insecurity

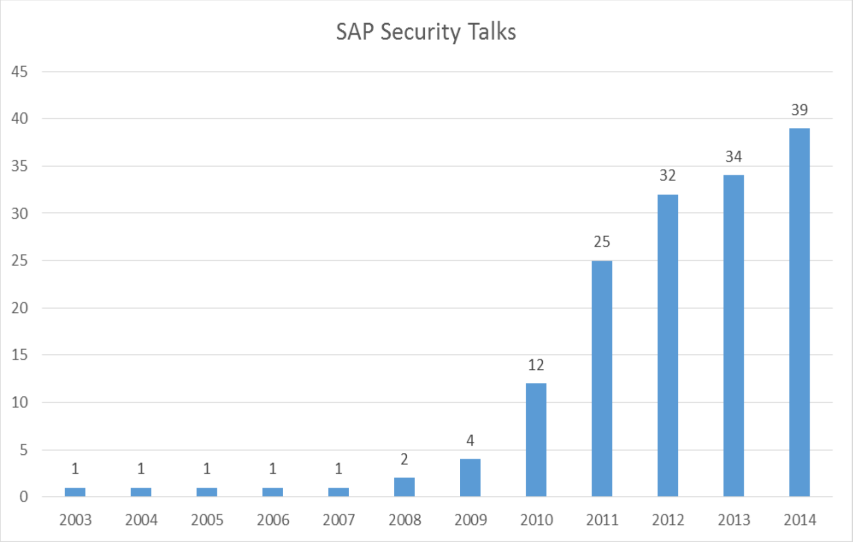
- Risk = Loss (Threat + Vulnerability)
  - Sensitive Information
    - Tangible Assets – Tech IP, Customer/Vendor Data, Financial Records, Personnel Records (PII)
  - Loss is significant
    - 74% of world's financial transactions touch and SAP System
    - 86% of global fortune 500 run SAP software
    - SAP serves > 263,000 customers in 190 countries
    - "The impact of an SAP breach is serious to catastrophic in 92% of organizations" – Ponemon Institute
    - Average cost of breach involving SAP systems if $4.5 Million Dollars



We identify SAP in the scope of our "crown jewels"

Changes in SAP Environment





Security Gap

- SAP Security Team
  - Operations and Infrastructure ERP teams
  - Reactive/Tactical service oriented
  - Success defined by audit and compliance
  - Other risks were out of scope
- Information Security Team
  - Vulnerability Management/Malware Defense
  - Cyber Defense/Incident Response
  - Weak in SAP Knowledge
- Both groups identified the other as responsible making it difficult to pursue an SAP Security Strategy

SO LIKE I WAS SAYING... I WAS AUDITING LAST YEAR'S AUDIT AND I DETERMINED WE NEED ANOTHER AUDIT... PHEW!... LUCKY I CAUGHT THAT...
HUH? IS IT GETTIN HOT IN HERE?

Are our SAP Systems Secure?

- **Common Responses**
  - Patch Management/ System Recommendations
  - Configuration Management/Configuration Validation
  - Early Watch/ SOSS
  - Service Market Place/SAP Security Guides
  - RAL/UCON

  - **End State**
    - SAP Security Team Solely Responsible
    - The unknown?

Transition to Information Security

Speaking a common language

SAP Critical Controls	SANS Top 20
Reduce Attack Surface	3 - Secure Configurations for Hardware and Software on Servers
Gateway Security	10 - Secure Configurations for Network Devices such as Firewall, Routers, and Switches
Protect Default Users	12- Controlled Use of Administrative Privileges
Secure RFC Management	11 - Limitation and Control of Network Services
Secure Communications	3 - Secure Configurations for Hardware and Software on Servers
Password Management / SSO	16 - Account Monitoring and Control
Maintain Security Logs	18 - Incident Response and Mgmnt 14 - Maintenance, Monitoring and Analysis of Audit Logs
Patch Management / SDLC	6 - Application Software Security
System Configurations	3 - Secure Configurations for Hardware and Software on Servers
Access Management	15 - Controlled Access Based on the Need to Know
Secure Code	6 - Application Software Security
Data Classification	1 - Device Inventory 2 - Application / Software Inventory
Critical Access	12- Controlled Use of Administrative Privileges

SAP Security Framework

Vulnerability Management
- Secure communications
- Attack surface
- Gateway
- Default users
- Secure RFCs
- Password Management
- Security Logs
- Configuration
- Patch Management
- System Configuration

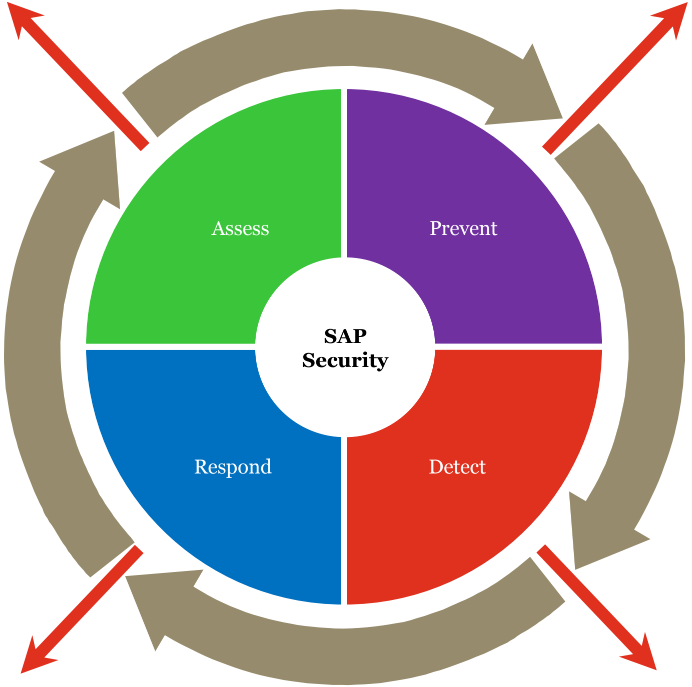
Crown Jewels
- Identification
- Inventory
- Data/Asset Classification

Application Security
- Code reviews
- Architecture

GRC Access Control
- Administrative Privilege
- System administration
- Transport management
- SODs/Fraud Protection

Control Enhancements
Solution Development
Architecture
- Network segmentation

Investigate Issues
Resolve Problems
Incident Response



Role Design
- Production
- Non-production

GRC Access Control / IDM
- Automated workflows w/ integrated risk checks

Governance
- Access attestation
- Role recertification
- Critical access reviews

Control implementation
- Password management
- Default accounts
- Secure comms (SNC, https)
- Gateway security
- RFC security (UCON)
- Configuration standards
- Logging activities

Configuration validation
- Password management
- Default accounts
- Attack surface
- Gateway
- Configuration

Log monitoring
- Network
- System
- Table
- Document
- Security

Onapsis D&R

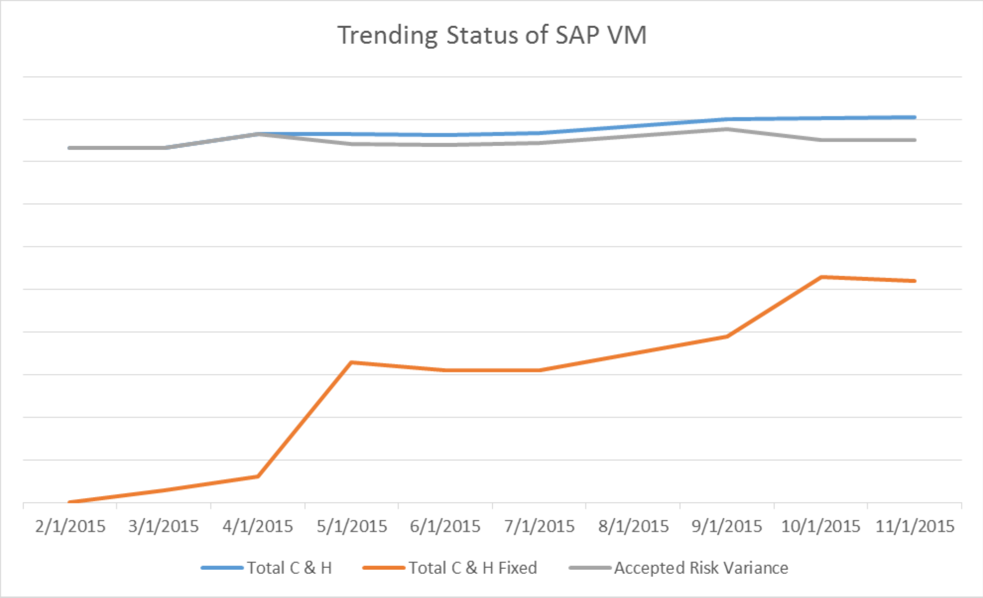
SAP VM Program Overview

SAP VM Program

- POC in 2014 established context
- Leadership support based on business driver of differential protection of critical assets
- Founded program in February of 2015
- Core team members from SAP Security, Basis, and Information Security
- Meet on regular schedule to identify, prioritize, and remediate risk
- Communicate to management on monthly basis
- Founded on external intelligence by partnering with 3rd Party SAP Security Research and Vulnerability Management Company
  - Holistic, Complete, Scalable Intelligence

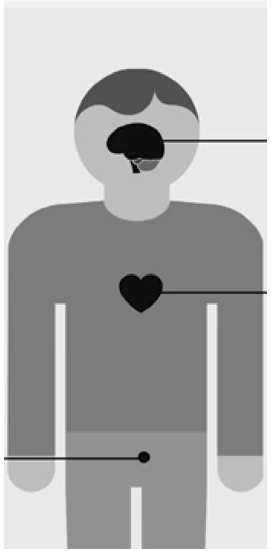
SAP VM Program Impacts

- **Operational Impacts**
  - Identification of previously unrecognized risk
  - > 60% Reduction in 12 months
- **Strategic Impacts**
  - Holistically, completely, and accurately define **risk** posture
  - **Risk** visualization and analysis can be used to communicate up, down, and across the organization
  - Leadership interest and support put risk into business context

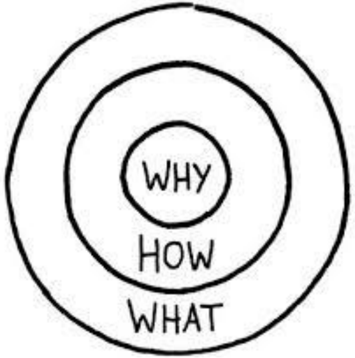


Strategy of "Why"

- **"Why" people buy** -
  - The Four Horsemen: Amazon/Apple/Facebook & Google--Who Wins/Loses
    - Scott Galloway – Clinical Professor of Marketing, NYU Stern



- **Start with "Why" – Simon Sinek**
  - Provide a platform for success and drive purpose

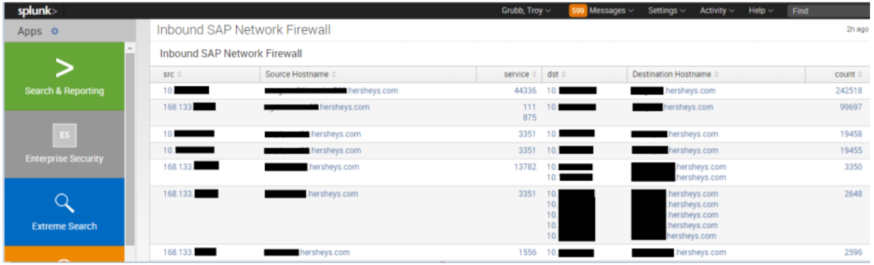


Prevention

- Mitigation and reductions via SAP Vulnerability Management Program
  - Configuration Management
- Configuration Validation
  - 2 Target Systems
    - ZSEC - Alerting
    - ZSECGOLD – Gold client
- Patch Management
- System Recommendations
  - Used in combination with ConfVal for new system implementations
- New Standards for new system implementations
  - UCON, RAL, Network Segmentation

Detection and Response

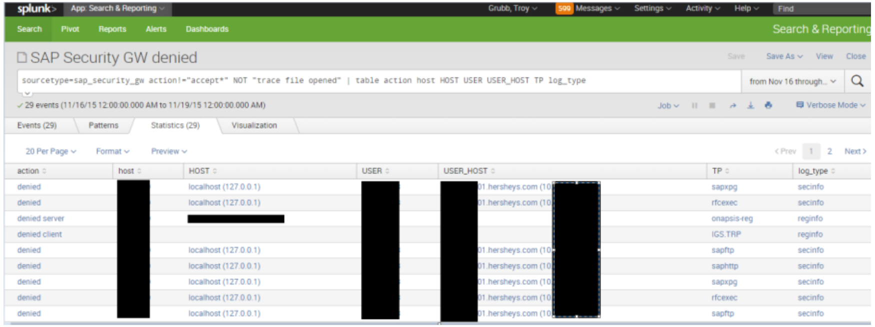
- Configuration Validation
- Log Monitoring/Alerting
- Splunk
  - SAP Audit Logs
  - SAP ICM logs
  - SAP Gateway Logs
  - Enterprise Firewall Logs
- IDS Signatures
- SAP RAL
  - Read Access Logging
- Expanded partnership with 3rd party to provide scale



Inbound SAP Network Firewall

Inbound SAP Network Firewall

src	Source Hostname	service	dst	Destination Hostname	count
10.[redacted]	[redacted]hersheys.com	44336	10.[redacted]	[redacted]hersheys.com	242518
168.133.[redacted]	[redacted]hersheys.com	111 875	10.[redacted]	[redacted]hersheys.com	99697
10.[redacted]	[redacted]hersheys.com	3351	10.[redacted]	[redacted]hersheys.com	19458
10.[redacted]	[redacted]hersheys.com	3351	10.[redacted]	[redacted]hersheys.com	19455
168.133.[redacted]	[redacted]hersheys.com	13782	10.[redacted] 10.[redacted]	[redacted]hersheys.com hersheys.com	3350
168.133.[redacted]	[redacted]hersheys.com	3351	10. 10. 10. 10. 10.[redacted]	[redacted]hersheys.com hersheys.com hersheys.com hersheys.com hersheys.com	2648
168.133.[redacted]	[redacted]hersheys.com	1556	10.[redacted]	[redacted]hersheys.com	2596



SAP Security GW denied

```
sourcetype=sap_security_gw action!="accept*" NOT "trace file opened" | table action host HOST USER USER_HOST TP log_type
```

✓ 29 events (11/16/15 12:00:00.000 AM to 11/19/15 12:00:00.000 AM)

action	host	HOST	USER	USER_HOST	TP	log_type
denied	[redacted]	localhost (127.0.0.1)	[redacted]	[redacted]01.hersheys.com (10[redacted]	sapxpg	secinfo
denied	[redacted]	localhost (127.0.0.1)	[redacted]	[redacted]01.hersheys.com (10[redacted]	rfcexec	secinfo
denied server	[redacted]	[redacted]	[redacted]	[redacted]	onapsis-reg	reginfo
denied client	[redacted]		[redacted]	[redacted]	IGS.TRP	reginfo
denied	[redacted]	localhost (127.0.0.1)	[redacted]	[redacted]01.hersheys.com (10[redacted]	sapftp	secinfo
denied	[redacted]	localhost (127.0.0.1)	[redacted]	[redacted]01.hersheys.com (10[redacted]	saphttp	secinfo
denied	[redacted]	localhost (127.0.0.1)	[redacted]	[redacted]01.hersheys.com (10[redacted]	sapxpg	secinfo
denied	[redacted]	localhost (127.0.0.1)	[redacted]	[redacted]01.hersheys.com (10[redacted]	rfcexec	secinfo
denied	[redacted]	localhost (127.0.0.1)	[redacted]	[redacted]01.hersheys.com (10[redacted]	sapftp	secinfo

“Apply” Slide

- Identify your business critical applications and who is responsible for system security
- Bridge the gap between SAP Security and Information Security teams
- Review the maturity and efficiency of your SAP Control Framework and build/redesign your SAP control framework based on risk
- Don’t attempt to scale to fix all issues but instead work to influence others around you but showing progress towards realistic goals
- Transfer the risk by deploying a holistic and complete assessment and communication capability

Q&A

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- @TroyRGrubb