

Security Intelligence. Think Integrated.

- · IBM Security Intelligence
- Intelligent Detection and Optimized Response



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Sampling of 2013 security incidents by attack type, time and impact

conjecture of relative breach impact is based on publicly disclosed information regarding leaked records and financial losses



Size of circle estimates relative impact of incident in terms of cost to business.





Perimeter defenses are not enough against today's kill chain







Cost of cyber-crime is increasing



The annual cost of cyber-crime in the U.S. now stands at *\$11.6 million* per organization, up 26 percent from 2012.

Source: "2013 Cost of Cyber-Crime Study", Ponemon Institute





And Breach Duration is Increasing



Attackers spend an estimated **243** *days* on a victim's network before they are discovered1.

Once they have been discovered, it takes **32** *days* on average to resolve a cyber-attack, up from 24 days (33%) in 20122.

Total time from attack to resolution: **275 days**

Sources: 1Mandiant M-Trends 2013 Report: Attack the Security Gap, 22013 Cost of Cyber-Crime Study", Ponemon Institute,





Making detection and response more important than ever

Nearly *two-thirds* (63%) of organizations learn they are breached from an external source.

38% of targets were attacked again once the original incident was remediated

Source: Mandiant M-Trends 2013 Report - Attack the Security Gap





Why are attackers so successful?



 Accelerating number of security breaches

Inadequate and ineffective tools

to configure and manage

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it all



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Self-Assessment: On a day-to-day basis, where is your organization?



Basic

- Log management
- Compliance
- Vulnerability scans
- Proficient
 - Security information and event management
 - Network flow monitoring
 - Vulnerability management
 - Configuration and risk management
- Optimized
 - Defined processes
 - Incident investigation
 - Proactive remediation



Best Practices – Intelligent Detection and Optimized Response



Prevention - Predict and prioritize security weaknesses

- Gather threat intelligence information
- Manage vulnerabilities and risks
- Augment vulnerability scan data with context for optimized prioritization
- Manage device configurations (firewalls, switches, routers, IPS/IDS)



Rapidly investigate incidents when they occur

- Quickly and easily trace step-bystep actions of an attacker (forensic analysis)
- Uncover the root cause of a breach, remediate, take corrective and preventative action

Real-time reaction to exploits

- Correlate logs, events, network flows, identities, assets, vulnerabilities, configurations and add context
- Use automated solutions to make data actionable by existing staff

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Detect deviations from normal to identify malicious activity

- Establish baseline behaviors
- Monitor and investigate anomalies

Security covers a range of activities - integration across technologies is required





Security Intelligence - Insights across the event timeline



Security Intelligence

The actionable information derived from the analysis of security-relevant data available to an organization





Security Information and Event Management

Extensive Data Sources

...Suspected Incidents







Single console for intelligent detection and optimized response







Network Flow Analytics

- Network traffic doesn't lie. Attackers can stop logging and erase their tracks, but can't cut off the network (flow data)
 - Deep packet inspection for Layer 7 flow data
 - Pivoting, drill-down and data mining on flow sources for advanced detection and forensics



Providing visibility into attacker communications to detect anomalies that might otherwise get missed **Destination Bytes**

(Sum)

531 531 708

191 621 654

168 802 101

46 819 290

111 228 020

20 635 741

23 125 267

Source Bytes (Sum)

16 319 315

44 216 868

37 349 699

131 172 458

37 885 116

10 726 080

654 743



Anomaly detection

Flexible anomaly detection capabilities identify meaningful discrepancies by rule, threshold, or deviation from normal range



Reports traffic from an IP address known to be in a country that does not have remote access right.

"Information security is becoming a big data and analytics problem. ...Some of the most sophisticated attacks can only be found with detailed activity monitoring to determine meaningful deviations from 'normal' behavior." Neil MacDonald, Gartner, June 2012





Identity and Access Management Integration with SIEM

My Offenses		Flow Bias (Total Bytes)	
No results were returned for th	is item.	Zoom: <u>max</u> 2012-F	eb, 19/18:59 - 20/00:59
Most Severe Offenses	8	400000	
Offense Name	Magnitude	Ę	
User Login Attempt preceded by General Authentication Failed - Event	- Inners In	^{об} 200000	i dharan
Multiple Login Failures for the Same User			
Most Recent Offenses	8	0 19:30 20:30 21:30 2	2:30 23:30 00:30
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Multiple Login Failures for the Same User		Top Category Types	
Top Log Sources (Event Count)		Category	Offenses
Zoom: max	2012-Feb, 19/18:59 - 20/00:59	General Authentication Failed	3
6000		User Login Failure	2
		User Login Attempt	1
		Auth Server Login Failed	1
4000		Object Not Cached	
		Top Sources	
Identity and Access Management evaluation	vent logs offer	Source	Threat
rich insights into actual users and the second s	neir roles	10.251.196.1	
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break-ins tied to actual users & role	S	Top Local Destinations	
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Identity and Access Management with SIEM Use Case

An attacker steals system administrator login credentials then grants increased permissions to invalid user

Privileged Identity Management sends SIEM details of the privilege escalation

SIEM notifies security analyst

		ow Level Category	30	burce in	Destination IP			
	Misc Sys	tem Event	Multiple	(4)	127.0.0.1			
	User Log	in Success	Multiple	(3)	127.0.0.1			
	User Acc	ount Changed	Multiple	(2)	127.0.0.1			
	General A	Audit Event	Multiple	(2)	127.0.0.1			
	Passwor	d Change Succeeded	9.12	7.13.87	127.0.0.1			
	User Acc	ount Added	9.12	7.13.87	127.0.0.1			
	User Log	in Failure	Multiple	(2)	127.0.0.1			
	User Rig	ht Assigned	9.12	7.12.111	127.0.0.1			
Eve	ent Informa	ation		- 10 111	107.0.0.1			
Ev	ent Name:	ADD_ROLE						
Lo Ca	w Level tegory:	User Right Assigned						
Ev De	ent scription:	Add role to user						
Ma	gnitude:		(2)	Relevance:	1			
Us	ername:	qa.encentuate.com\bouncy15						
Sta	art Time:	Oct 9, 2013 3:56:45 PM		Storage Time:	Oct 9, 2013 3:56:45 PM			
Ch Us (cu	anged er ıstom):	qa.encentuate.com\bouncy17						

Security analyst views a recording that shows compromised administrator granting a user rights outside of the formal process



Security analyst revokes compromised account access to prevent further malicious action





Extending Security Intelligence to Incident Forensic Investigations





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Security teams must *reduce the time to detect and respond to threats*. Confusion and wasted time aid the attacker.

Disparate tools with limited intelligence inhibit productivity and efficacy in analysing incidents

Dependency on specialized skills to conduct detailed investigations

Difficulty identifying true incidents hidden in mounds of data

Customer Challenges in Employing Network Forensics

Critical gaps exist in available forensics and threat mitigation offerings to recover from an incident















Next generation network forensics: know what happened, fast



Leverage Security Information and Event Management to optimize the process of investigating and gathering evidence on advanced attacks and data breaches

Tells you exactly when an incident occurred	Discovers true offenses and prioritizes forensics investigations Enables search-driven data exploration to return detailed, multi-level results in seconds		
Merges powerful forensics capability with simplicity	 Full packet capture for complete session reconstruction Unified view of all flow, user, event, and forensic information Retrace activity in chronological order 		
Delivers intelligence to guide forensics investigations	 Visually construct threat actor relationships Builds detailed user and application profiles across multiple IDs 		



Improved Network Security

From session data analysis yielding basic application insights

Flow Information						
Protocol:	tcp_ip	Application:	Web	.Facebook Application		
Magnitude:	(4)	Relevance:	6	Severity:	1	Credibility:
First Packet Time:	2010-10-04 01:00:17	End Time:	201	0-10-04 01:00:17		
Event Name:	Web.Facebook.Application					
Low Level Category:	Web					
Event Description:	Application detected with HTTP decoder domain lo	okup				
FBStatusPost (custom):	my%20ssn%20is%20123-45-6789%2C%20and%	20my%20credit%20card%20number%20is	%2012	34-4321-45		
HTTP User-Agent (custom):	Mozilla/5.0 (Windows; U; Windows NT 6.1; en-US) iframe_loaded=false&post_form_id=14d949fea3c	AppleWebKit/533.4 (KHTML, like Gecko) Ch cd51/54ad9b4a8ae0816c HTTP/1.1	rome/5.	0GET /ajax/j		
HTTP Host (custom):	www.facebook.com				ΟΤ	
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To full visualization of extended relationships and embedded content

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Better clarity into entities and identities

From standard asset identity information

Attacker Summary 🌰 Details						
Magnitude		User	dwight.spencer			
Description	10.100.50.21	Asset Name	Unknown			
Vulnerabilities	0	MAC				
Location	Server Network.Server Network	Asset Weight	0			

To rich visualizations of digital impressions showing extended relationships







Helps IT Security teams

Use intuition more than technical training

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2 Visualize digital impressions of attackers











Client example: An international energy company reduces billions of events per day to find those that should be investigated

Optimize threat analysis

An international energy firm analyzes **2 billion** events per day to find **20-25** potential offenses to investigate

Business challenge

- · Reducing huge number of events to find the ones that need to be investigated
- Automating the process of analyzing security data

Solutions (SIEM, Flow Analysis, Risk Management)

Combined analysis of historical data with real-time alerts to gain a 'big picture' view and uncover patterns of unusual activity humans miss and immediately block suspected traffic



Client example: A financial information provider hardens defenses against threats and fraud

Optimize risk management

financial information provider tracks **250 activity baselines** and saved

50-80% on staffing versus alternative solutions

Business challenge

- · Detect wide range of security threats affecting public-facing Web applications
- · Help identify subtle changes in user behavior that could indicate fraud or misuse
- Exceed ISO 27001 standard

Solutions (SIEM, Flow Analysis, X-Force, Network IPS)

Combine analysis of historical data with real-time alerts to gain a 'big picture' view and uncover patterns of unusual activity humans miss and immediately block suspected traffic





Summary: Security Intelligence for Detection and Response



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Questions?

Statement of Good Security Practices: IT system security involves protecting systems and information through prevention, detection and response to improper access from within and outside your enterprise. Improper access can result in information being altered, destroyed or misappropriated or can result in damage to or misuse of your systems, including to attack others. No IT system or product should be considered completely secure and no single product or security measure can be completely effective in preventing improper access. IBM systems and products are designed to be part of a comprehensive security approach, which will necessarily involve additional operational procedures, and may require other systems, products or services to be most effective. IBM DOES NOT WARRANT THAT SYSTEMS AND PRODUCTS ARE IMMUNE FROM THE MALICIOUS OR ILLEGAL CONDUCT OF ANY PARTY.

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