IBM z Systems

Big Data Requires Big Protection

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June 12, 2015

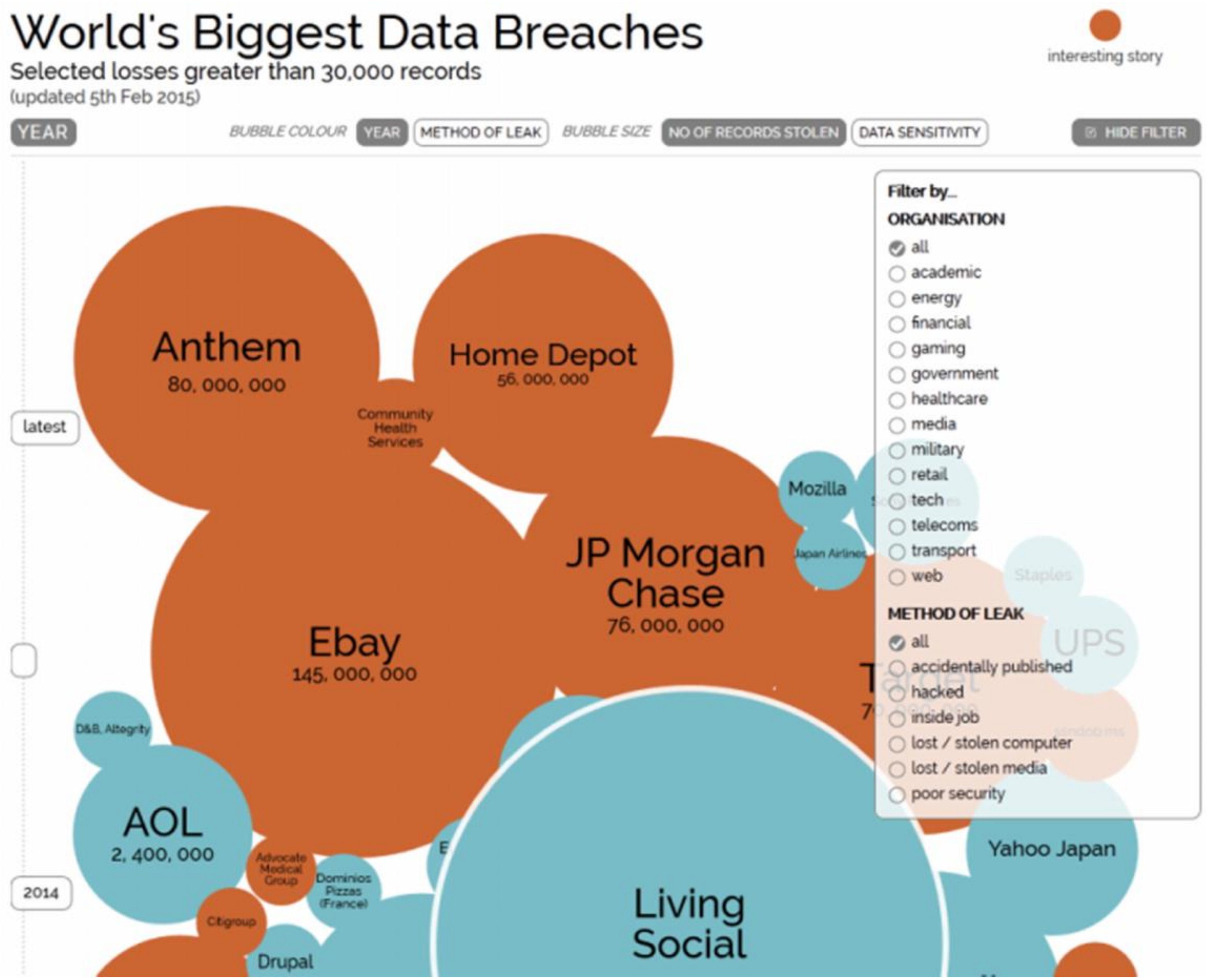
Agenda

- Big Data opportunities and threats
- Proactive and preventative information protection
- Summary and Call to Action

The who's who of the world's biggest data breaches….

IBM z Systems

http://www.informationisbeautiful.net/visualizations/worlds-biggest-data-breaches-hacks/#



World's Biggest Data Breaches

Selected losses greater than 30,000 records

(updated 5th Feb 2015)

YEAR | *BUBBLE COLOUR* YEAR | METHOD OF LEAK | *BUBBLE SIZE* NO OF RECORDS STOLEN | DATA SENSITIVITY | HIDE FILTER

Filter by...

ORGANISATION

- ● all
- ○ academic
- ○ energy
- ○ financial
- ○ gaming
- ○ government
- ○ healthcare
- ○ media
- ○ military
- ○ retail
- ○ tech
- ○ telecoms
- ○ transport
- ○ web

METHOD OF LEAK

- ● all
- ○ accidentally published
- ○ hacked
- ○ inside job
- ○ lost / stolen computer
- ○ lost / stolen media
- ○ poor security

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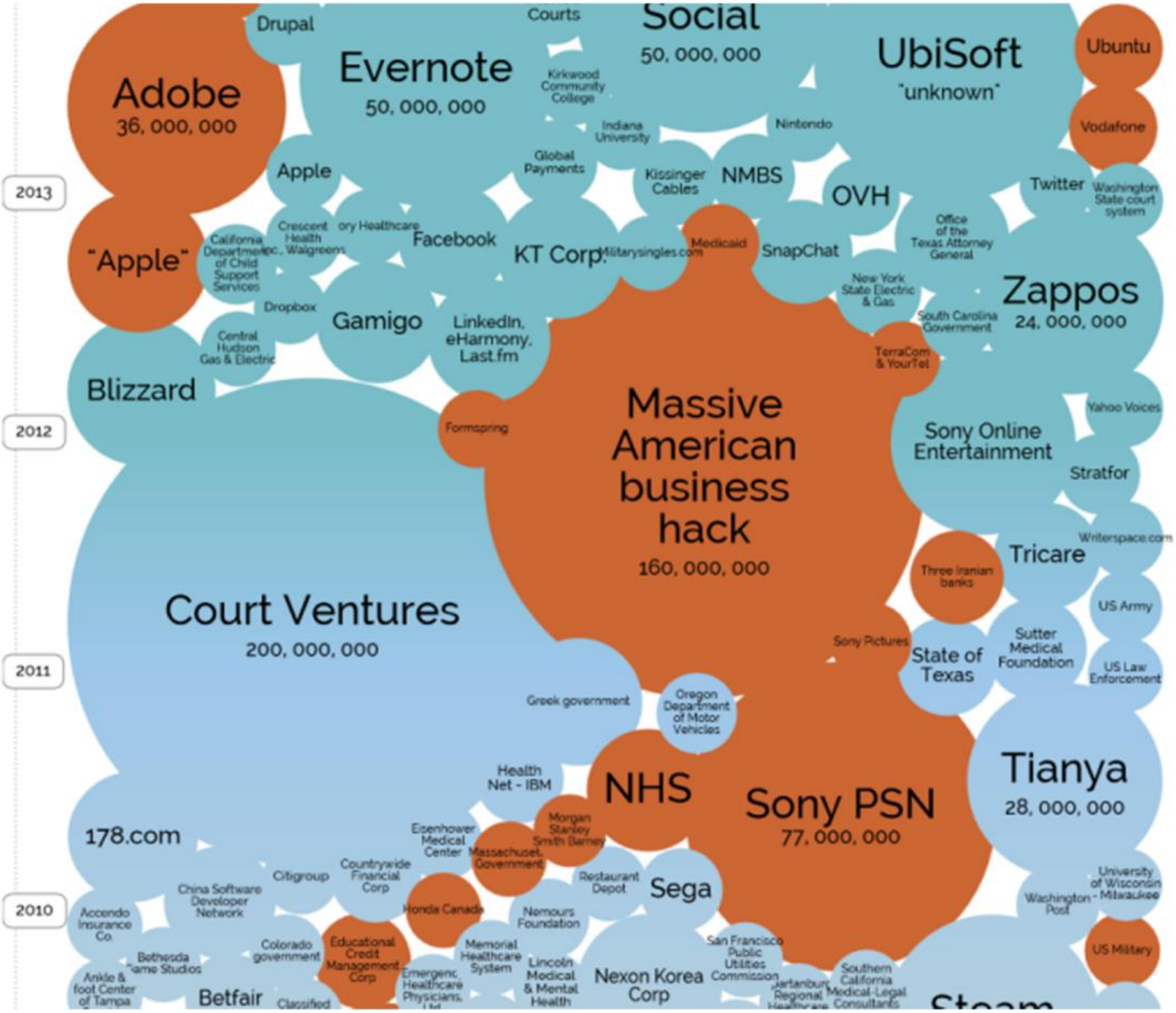

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Why is it happening?

private | public | SaaS

Data is…
✓Leaving the Data Center
✓Stored on shared drives
✓Hosted by 3rd party
✓Managed by 3rd party

Consumerization of IT

BYOD | Apps | Social

Data is…
✓Generated 24x7
✓Used Everywhere
✓Always Accessible
✓On private devices

Everything is Everywhere

Hadoop | No-SQL | Files

Data is…
✓Produced in high volumes
✓Stored unstructured
✓Analyzed faster/cheaper
✓Monetized

Data Explosion

✓There is **more data**
✓Data is **leaving the data center**
✓Data is **consumed everywhere**
✓Data is **worth more** than ever before

Data Security is frequently in the news

President Obama declared that the “cyber threat is one of the most serious economic and national security challenges we face as a nation.”

Former NSA director tells the Financial Times that a cyber attack could cripple the nation’s banking system, power grid, and other essential infrastructure.

U.S. Defense Secretary Chuck Hagel said that intelligence leaks by National Security Agency (NSA) contractor Edward Snowden were a serious breach that damaged national security.

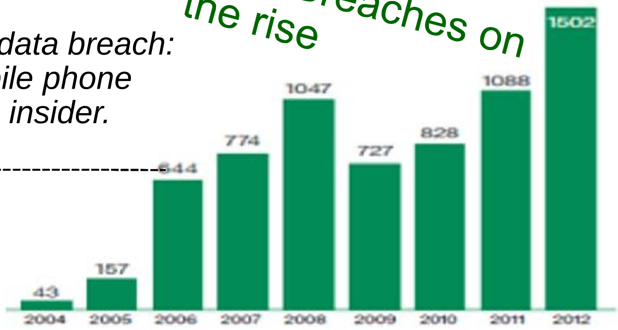
Hackers had broken into its in-store payments systems, in what could be the largest known breach of a retail company’s computer network. Estimated 60 million credit card details stolen.

Hackers orchestrated multiple breaches of Sony’s PlayStation Network knocking it offline for 24 days and costing the company an estimated $171 million, and significantly damaged brand reputation.

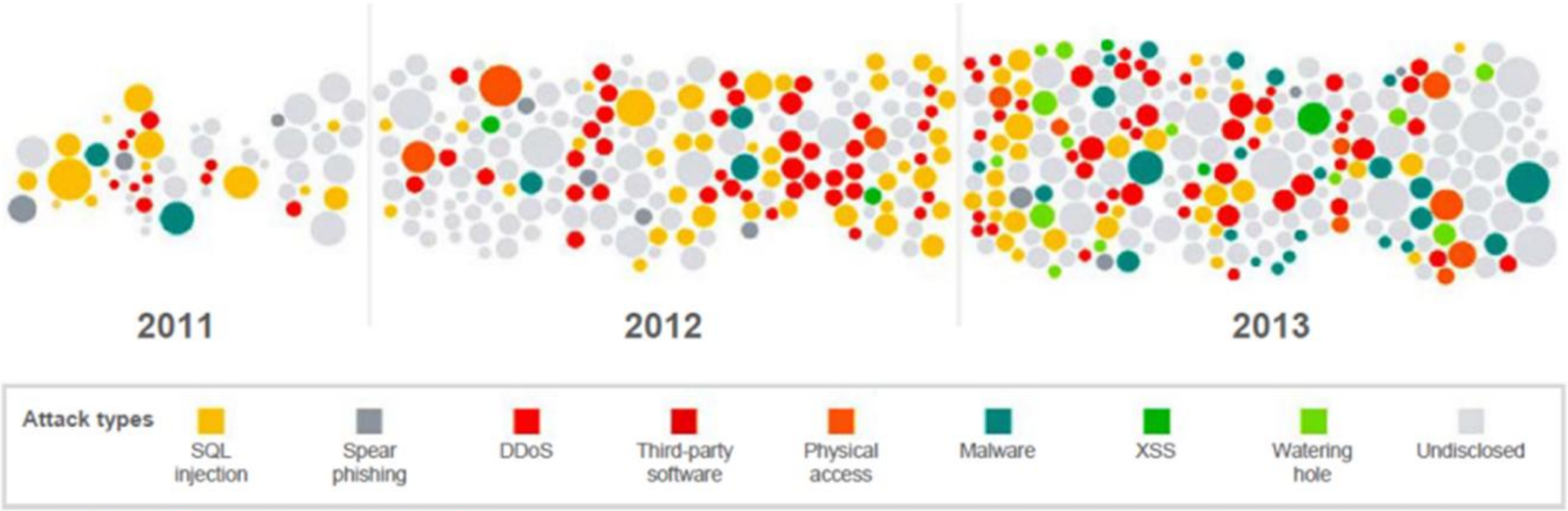
One of the world’s largest corporations has been hit with a widespread data breach: Vodafone Germany, personal information on more than two million mobile phone customers has been stolen, extracted from an internal databases by an insider.

In an act of industrial espionage, the Chinese government launched a massive and unprecedented attack on Google, Yahoo, and dozens of other Silicon Valley companies…. Google admitted that some of its intellectual property had been stolen.

Data Breaches on the rise

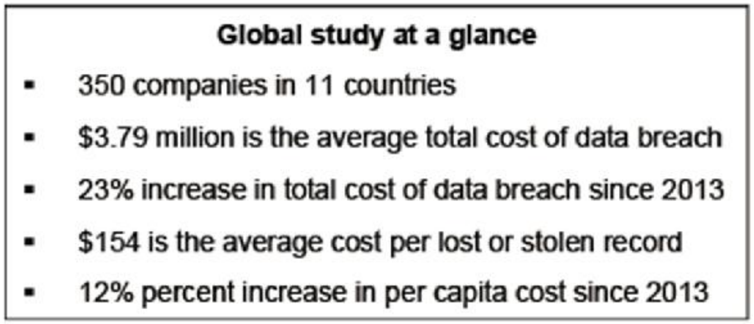


Data breaches are on the rise…



Source: IBM X-Force Threat Intelligence Quarterly – 1Q 2014

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



Global study at a glance

- 350 companies in 11 countries
- $3.79 million is the average total cost of data breach
- 23% increase in total cost of data breach since 2013
- $154 is the average cost per lost or stolen record
- 12% percent increase in per capita cost since 2013

Ponemon Instittue 2015

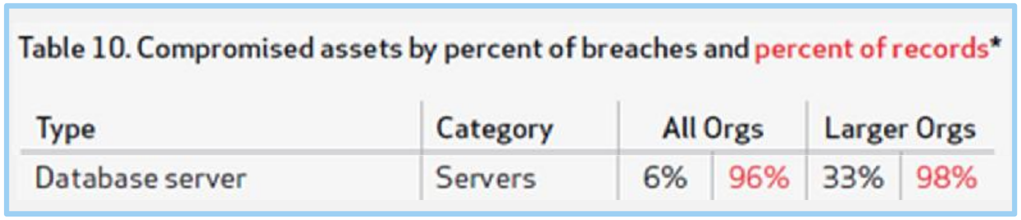


Table 10. Compromised assets by percent of breaches and percent of records*

Type	Category	All Orgs		Larger Orgs	
Database server	Servers	6%	96%	33%	98%

Data Breach Report from Verizon Business RISK Team.

http://www.verizonbusiness.com/resources/reports/rp_data-breach-investigations-report-2012_en_xg.pdf

Data Governance and Security are changing rapidly

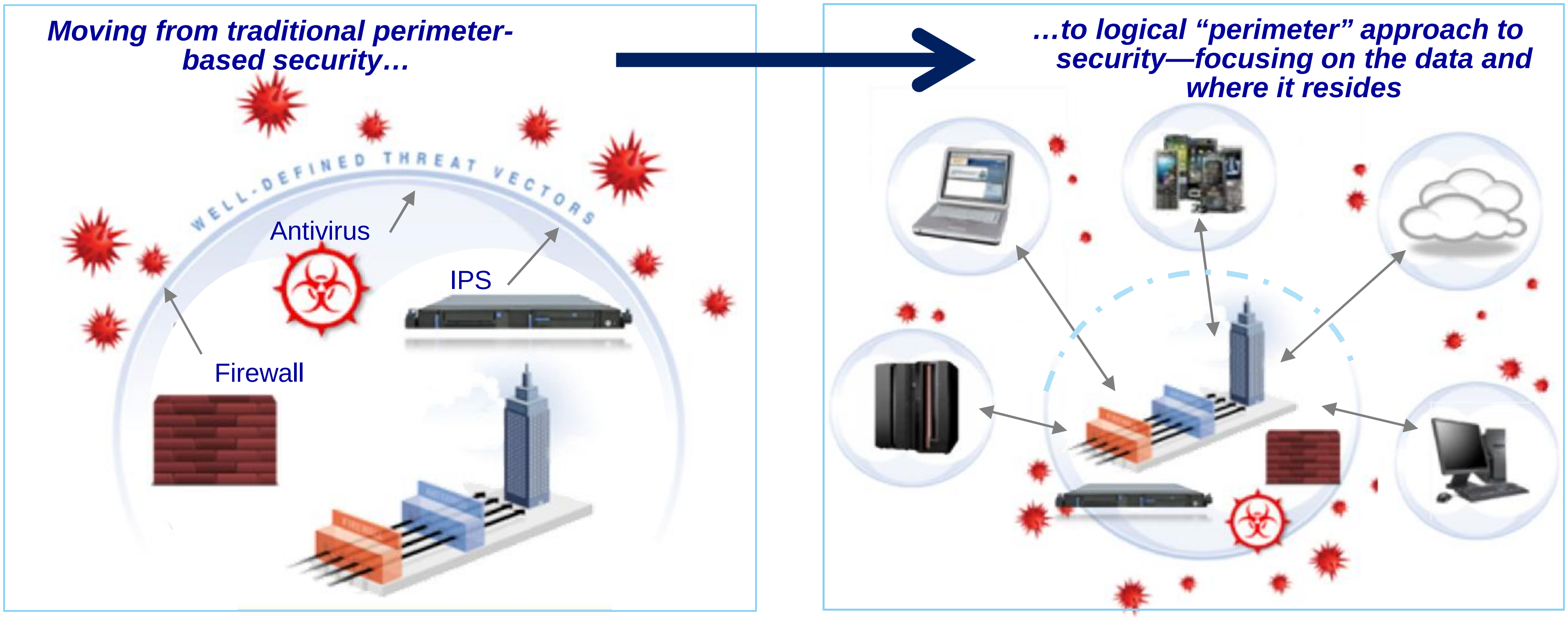
Data Explosion

Consumerization of IT

Everything is Everywhere

Attack Sophistication

Extending the perimeter; focus shifts to protecting the DATA



Moving from traditional perimeter-based security…

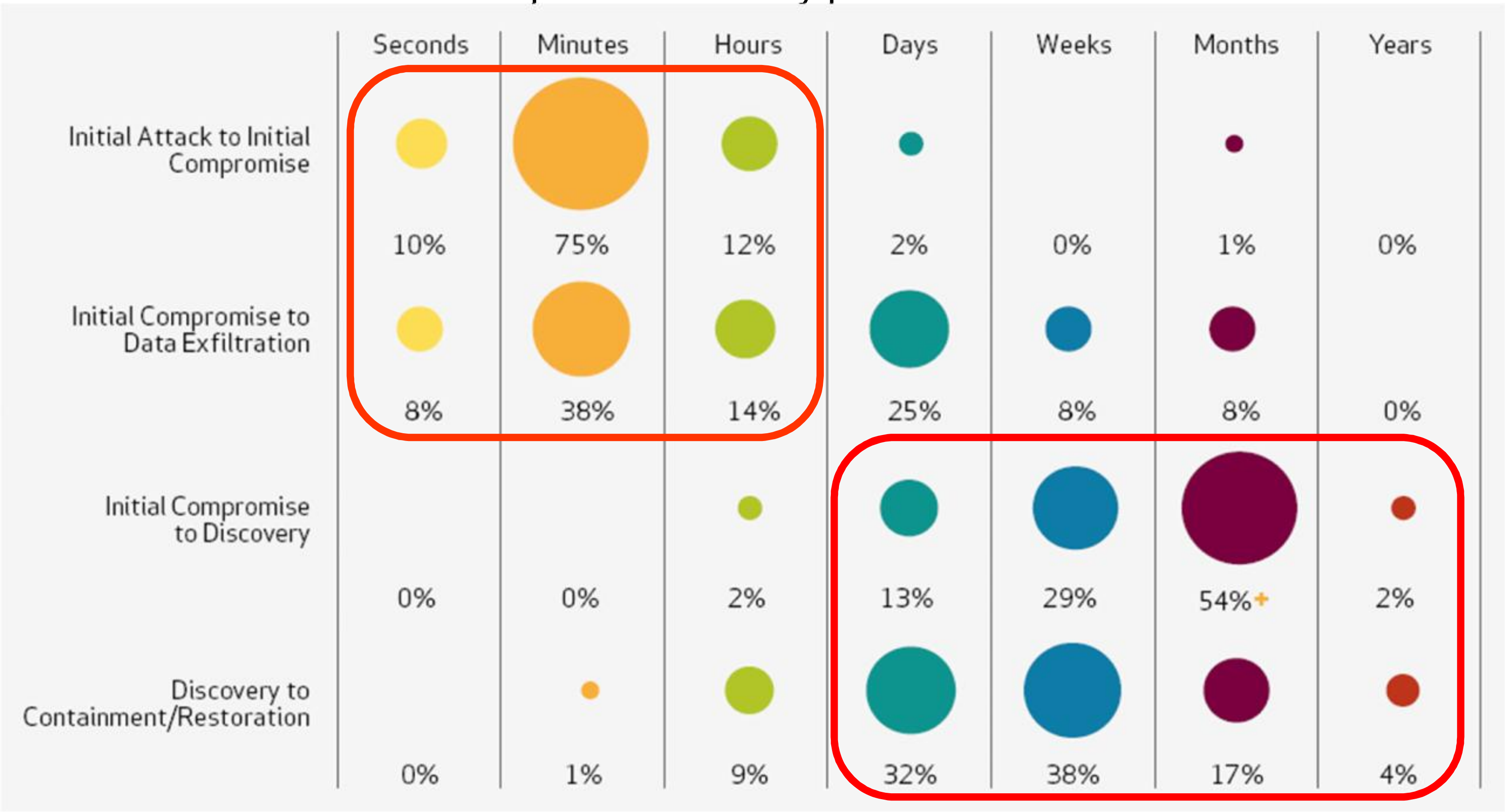
…to logical "perimeter" approach to security—focusing on the data and where it resides

- Cloud, Mobile and Data momentum is breaking down the traditional perimeter and forcing us to look at security differently
- Focus needs to shift from the perimeter to the data that needs to be protected

Real time monitoring and alerting is key

- Attacks occur in minutes yet not discovered for months without real-time monitoring
- Customers will say they have their own solution – but they never monitor in real time
- They can’t act as fast as the bad guys with home grown solutions.

Time span of events by percent of breaches



	Seconds	Minutes	Hours	Days	Weeks	Months	Years
Initial Attack to Initial Compromise	10%	75%	12%	2%	0%	1%	0%
Initial Compromise to Data Exfiltration	8%	38%	14%	25%	8%	8%	0%
Initial Compromise to Discovery	0%	0%	2%	13%	29%	54%+	2%
Discovery to Containment/Restoration	0%	1%	9%	32%	38%	17%	4%

http://www.verizonbusiness.com/resources/reports/rp_data-breach-investigations-report-2012_en_xg.pdf?CMP=DMC-SMB_Z_ZZ_ZZ_Z_TV_N_Z038

z Systems and Big Data

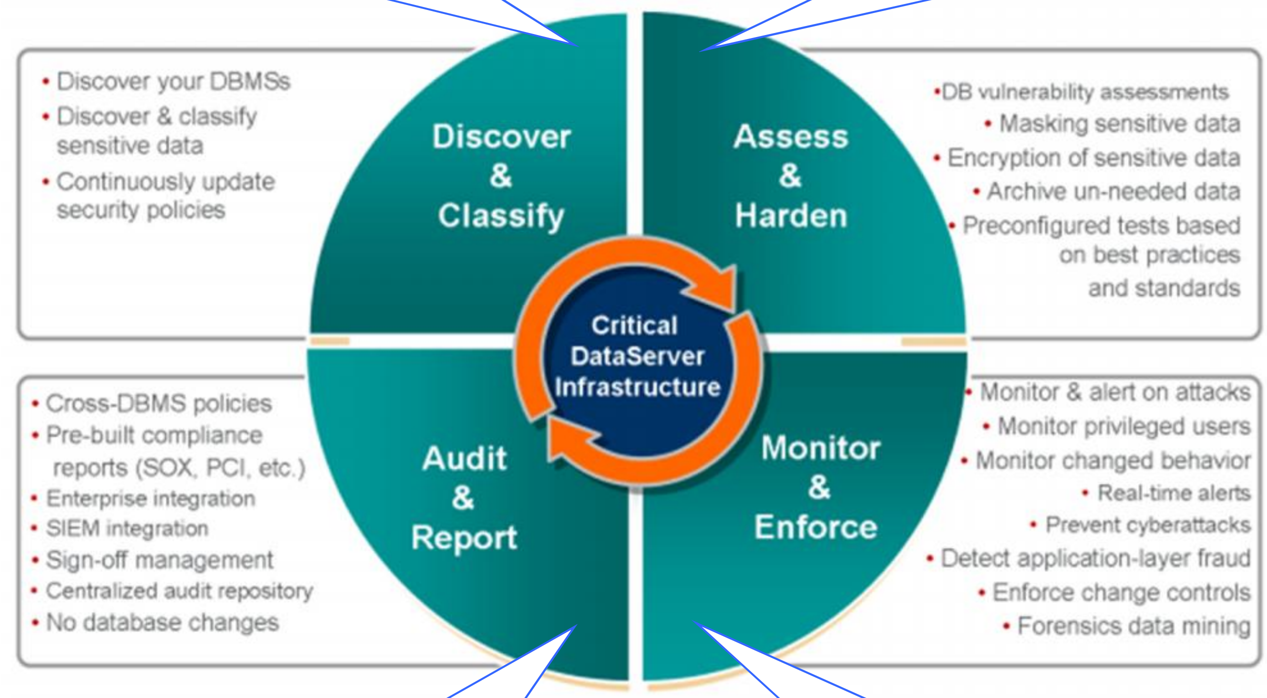
A significant data source for today's business critical analytics

- **Data that originates and/or resides on zEnterprise**
  - 2/3 of business transactions for U.S. retail banks
  - 80% of world's corporate data
- **Businesses that run on zEnterprise**
  - 92 of the top 100 worldwide banks
  - 24 of the top 25 U.S. retailers
  - 10 of the top 10 global life/ health insurance providers
- **The downtime of an application running on z Systems = approx 5 minutes per yr**
- **EAL 5+ certification**
  - 2X performance improvement with crypto coprocessors for more secure transactions (z13 compared to EC12)

IBM InfoSphere Information Governance solutions

Data Security Architect
"I need to understand where data is and how it is related to other data. I also need to identify sensitive data and how it is to be classified from a security perspective."

Corp Compliance Officer
"We have to comply with regulatory and industry mandates and must protect the organization from negative external visibility resulting from failed audits and non-compliance."



- Discover your DBMSs
- Discover & classify sensitive data
- Continuously update security policies

- DB vulnerability assessments
- Masking sensitive data
- Encryption of sensitive data
- Archive un-needed data
- Preconfigured tests based on best practices and standards

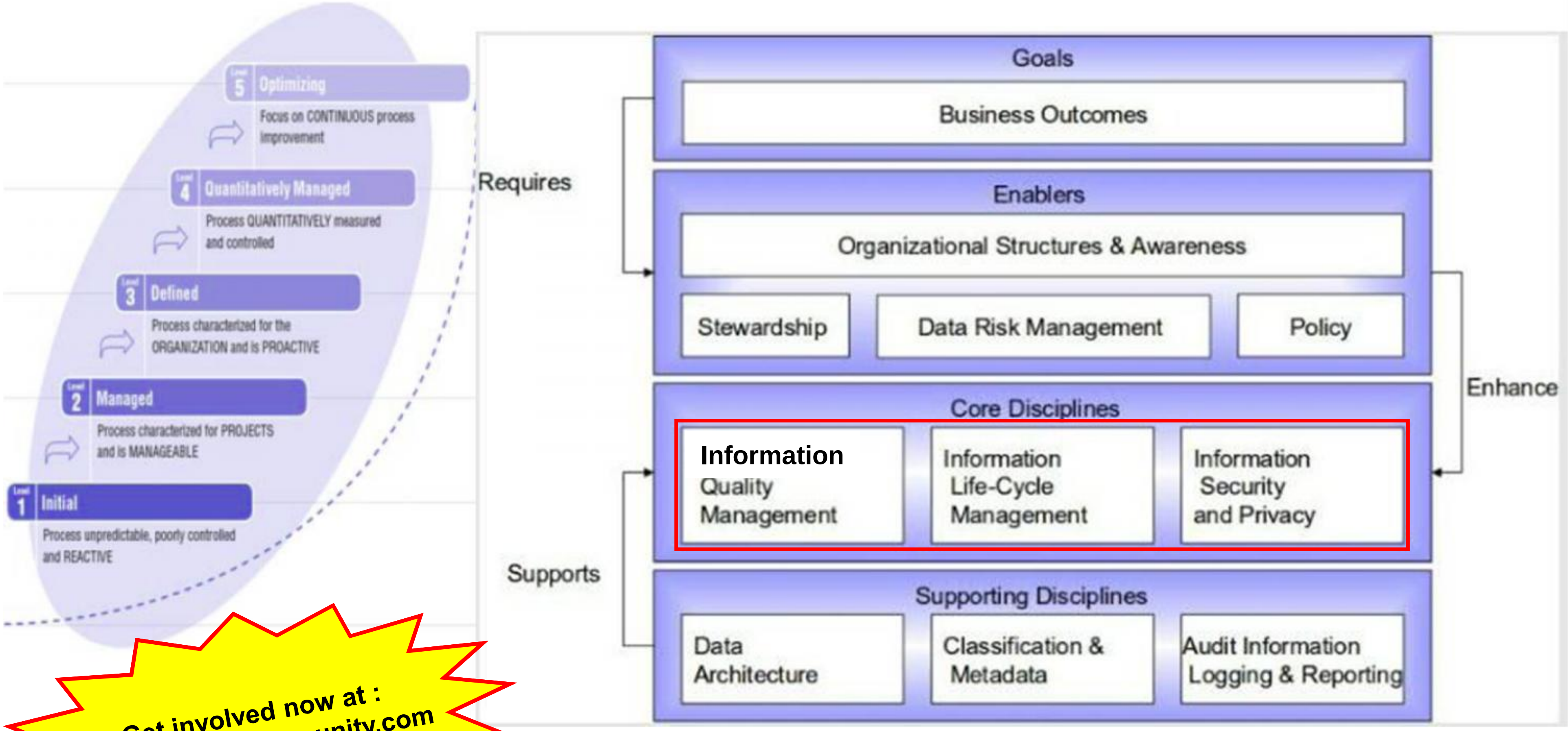
- Cross-DBMS policies
- Pre-built compliance reports (SOX, PCI, etc.)
- Enterprise integration
- SIEM integration
- Sign-off management
- Centralized audit repository
- No database changes

- Monitor & alert on attacks
- Monitor privileged users
- Monitor changed behavior
- Real-time alerts
- Prevent cyberattacks
- Detect application-layer fraud
- Enforce change controls
- Forensics data mining

Auditor
"I need 100% visibility and transparency into the who, what, where, why and how of what's been happening with the data."

Chief Security Office
"I need tools that help me interpret and implement security policies into IT deliverables. I also need better ways to manage security and be alerted of potential threats before a breach occurs."

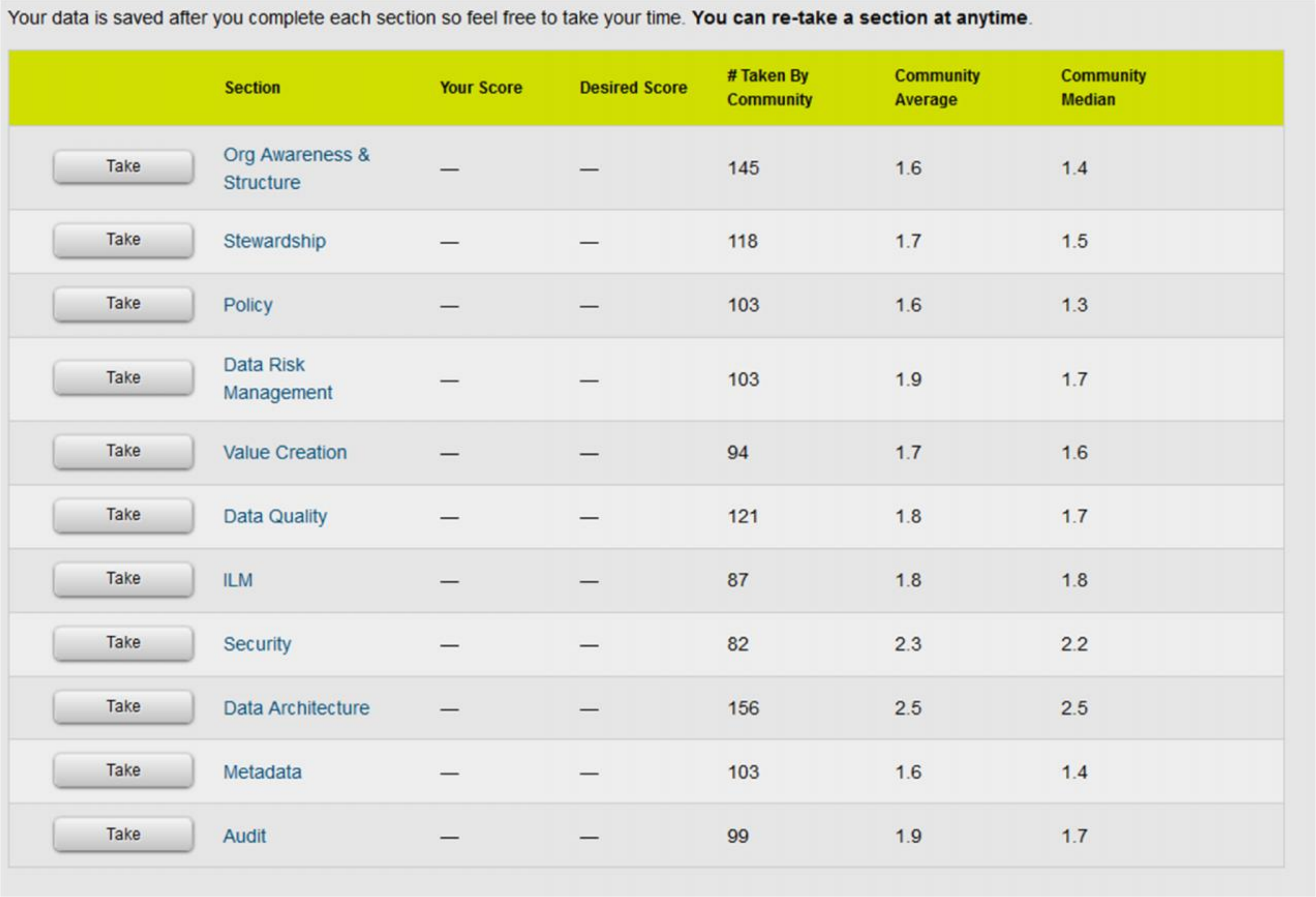
Core disciplines need to be in place to achieve benefits


Level 5 Optimizing
Focus on CONTINUOUS process improvement
Level 4 Quantitatively Managed
Process QUANTITATIVELY measured and controlled
Level 3 Defined
Process characterized for the ORGANIZATION and is PROACTIVE
Level 2 Managed
Process characterized for PROJECTS and is MANAGEABLE
Level 1 Initial
Process unpredictable, poorly controlled and REACTIVE
Requires
Supports
Enhance
Goals
Business Outcomes
Enablers
Organizational Structures & Awareness
Stewardship
Data Risk Management
Policy
Core Disciplines
Information Quality Management
Information Life-Cycle Management
Information Security and Privacy
Supporting Disciplines
Data Architecture
Classification & Metadata
Audit Information Logging & Reporting

Get involved now at : www.infogovcommunity.com

"Information governance is the orchestration of ***people, process and technology*** *to enable an organization to leverage information as an enterprise asset. Information Governance safeguards information, keeps auditors and regulators satisfied, uses improved data quality to improve customer satisfaction, lower business risk retain customers and constituents and drive new opportunities"*

Take the Information Governance Maturity Survey



Your data is saved after you complete each section so feel free to take your time. **You can re-take a section at anytime**.

	Section	Your Score	Desired Score	# Taken By Community	Community Average	Community Median
Take	Org Awareness & Structure	—	—	145	1.6	1.4
Take	Stewardship	—	—	118	1.7	1.5
Take	Policy	—	—	103	1.6	1.3
Take	Data Risk Management	—	—	103	1.9	1.7
Take	Value Creation	—	—	94	1.7	1.6
Take	Data Quality	—	—	121	1.8	1.7
Take	ILM	—	—	87	1.8	1.8
Take	Security	—	—	82	2.3	2.2
Take	Data Architecture	—	—	156	2.5	2.5
Take	Metadata	—	—	103	1.6	1.4
Take	Audit	—	—	99	1.9	1.7

Agenda

- Big Data opportunities and threats
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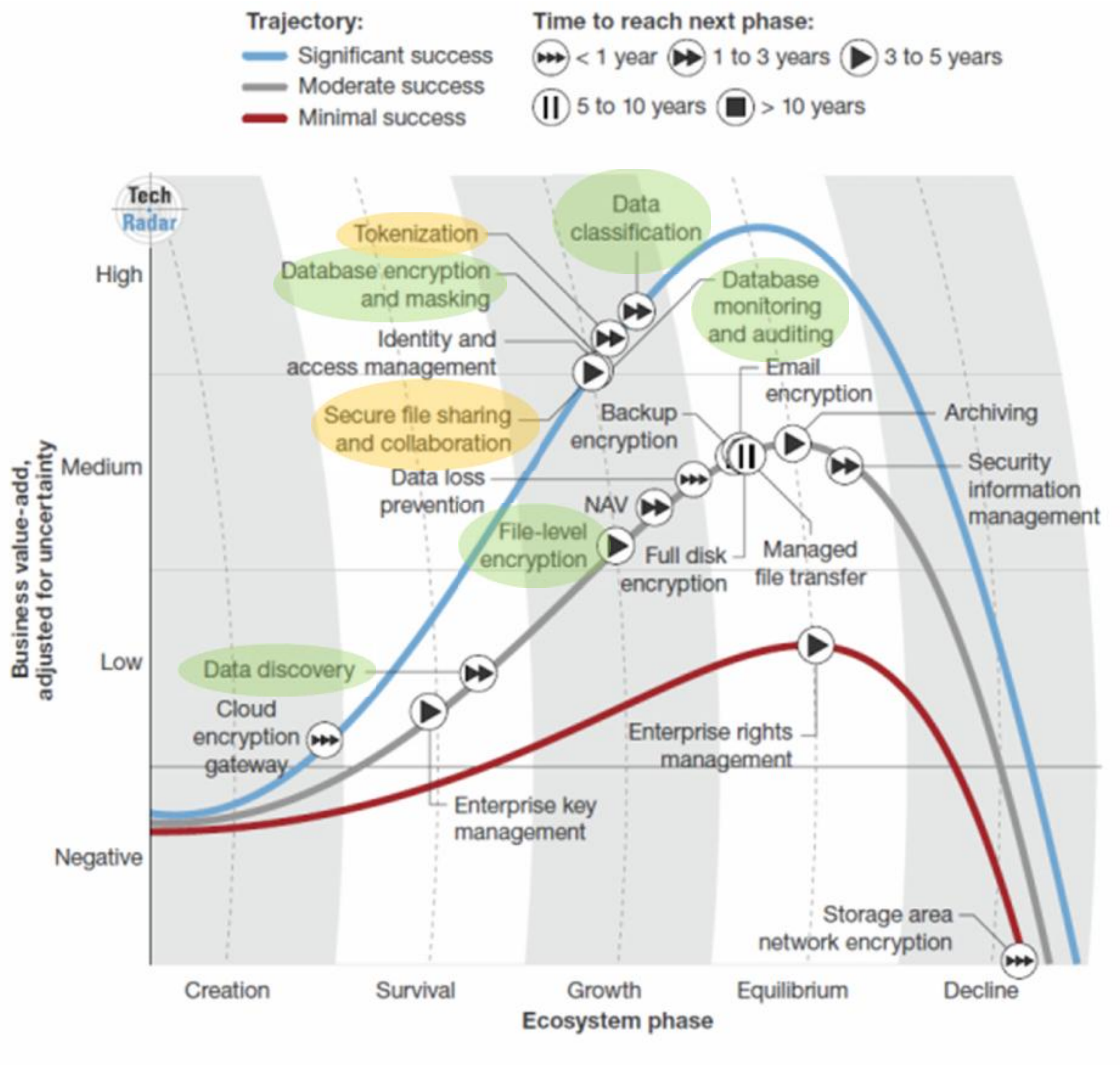
Focus moving to Data Centric Security



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Source: Forrester Research, Inc.

FORRESTER®

"The shift to data-centric security is finally happening"

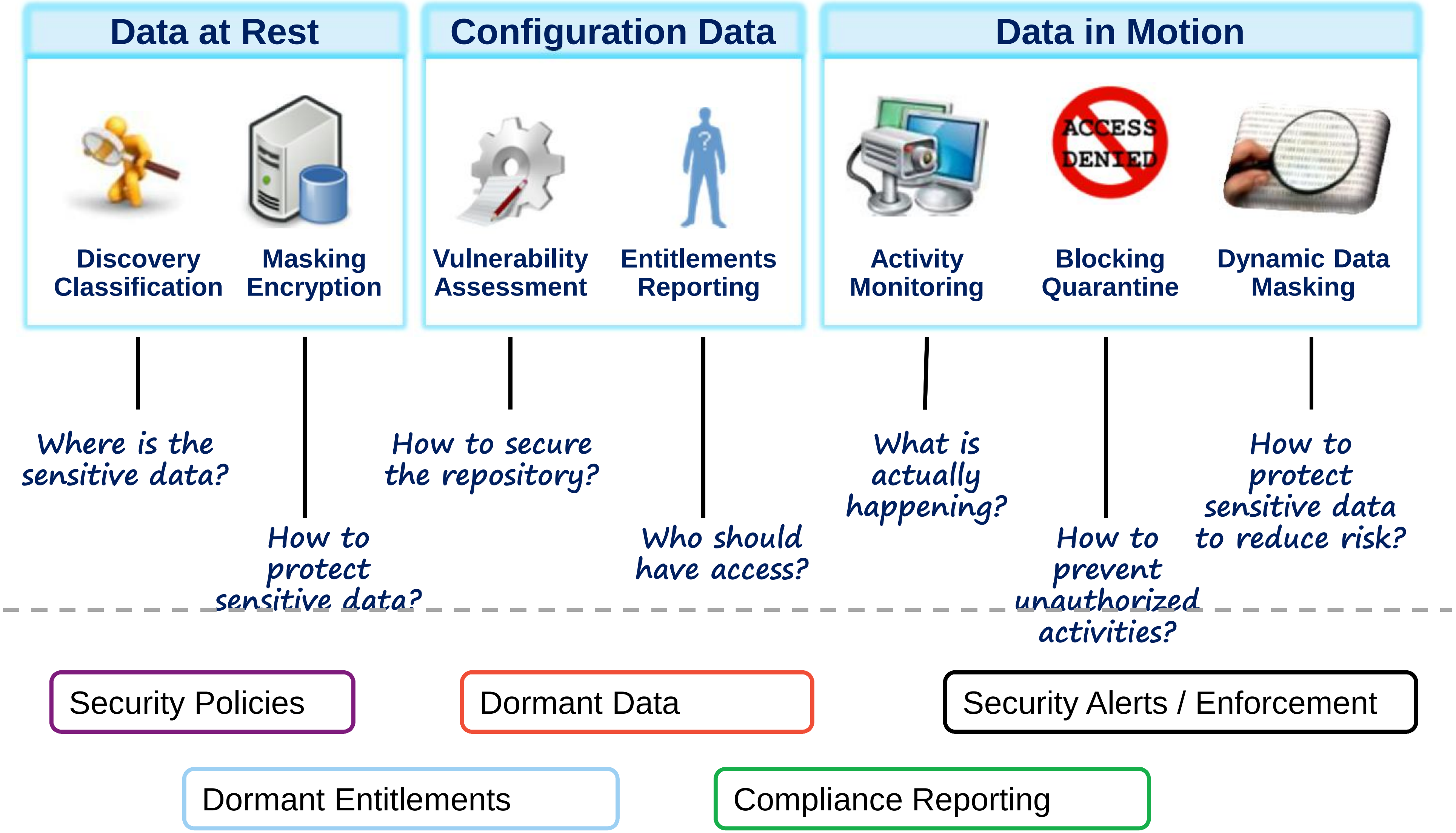
TechRadar™: Data Security, Q2 2014

by Stephanie Balaouras, John Kindervag, and Heidi Shey, April 22, 2014

🟢 Market leader

🟡 Within a year

How we do it?



Data at Rest

Discovery Classification

Masking Encryption

Configuration Data

Vulnerability Assessment

Entitlements Reporting

Data in Motion

Activity Monitoring

Blocking Quarantine

Dynamic Data Masking

Where is the sensitive data?

How to protect sensitive data?

How to secure the repository?

Who should have access?

What is actually happening?

How to prevent unauthorized activities?

How to protect sensitive data to reduce risk?

Security Policies

Dormant Data

Security Alerts / Enforcement

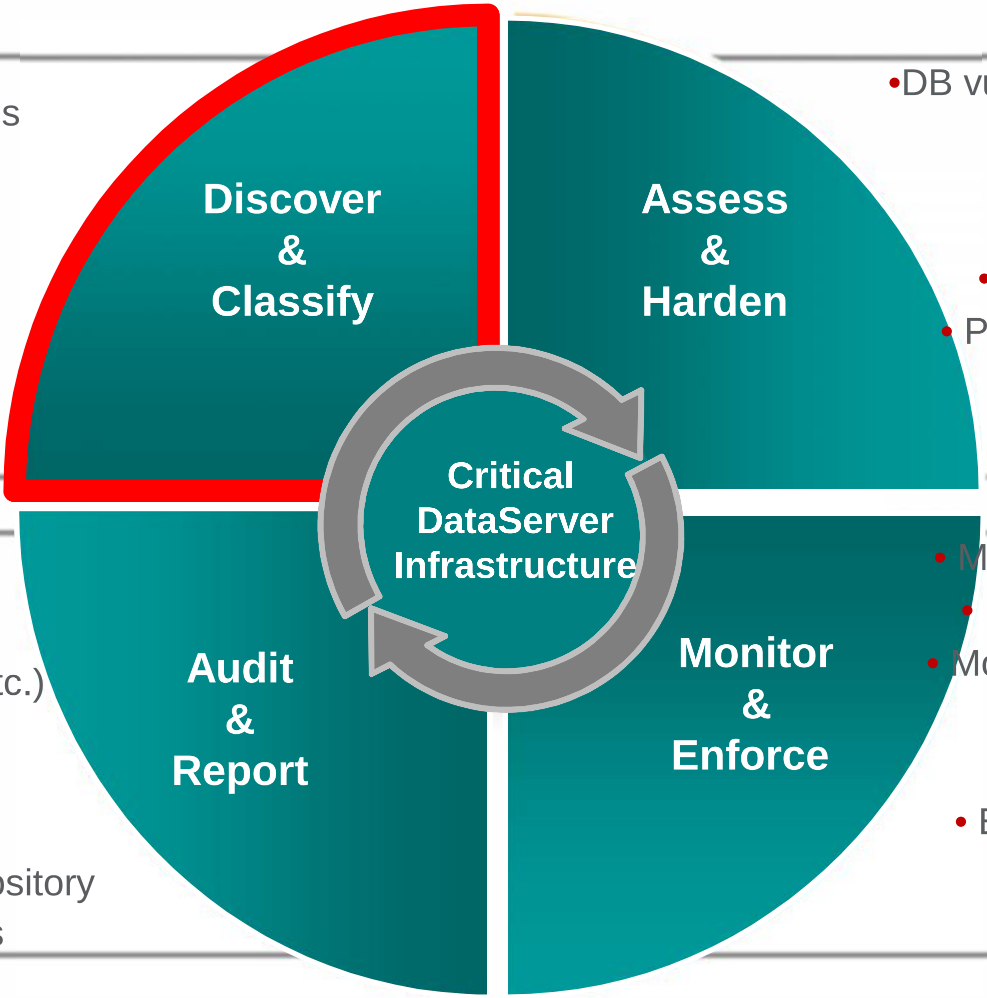
Dormant Entitlements

Compliance Reporting

Address the Full Data Protection Lifecycle

- Discover your DBMSs
- Discover & classify sensitive data
- Continuously update security policies

- DB vulnerability assessments
- Masking sensitive data
- Encryption of sensitive data
- Archive un-needed data
- Preconfigured tests based on best practices / standards



- Cross-DBMS policies
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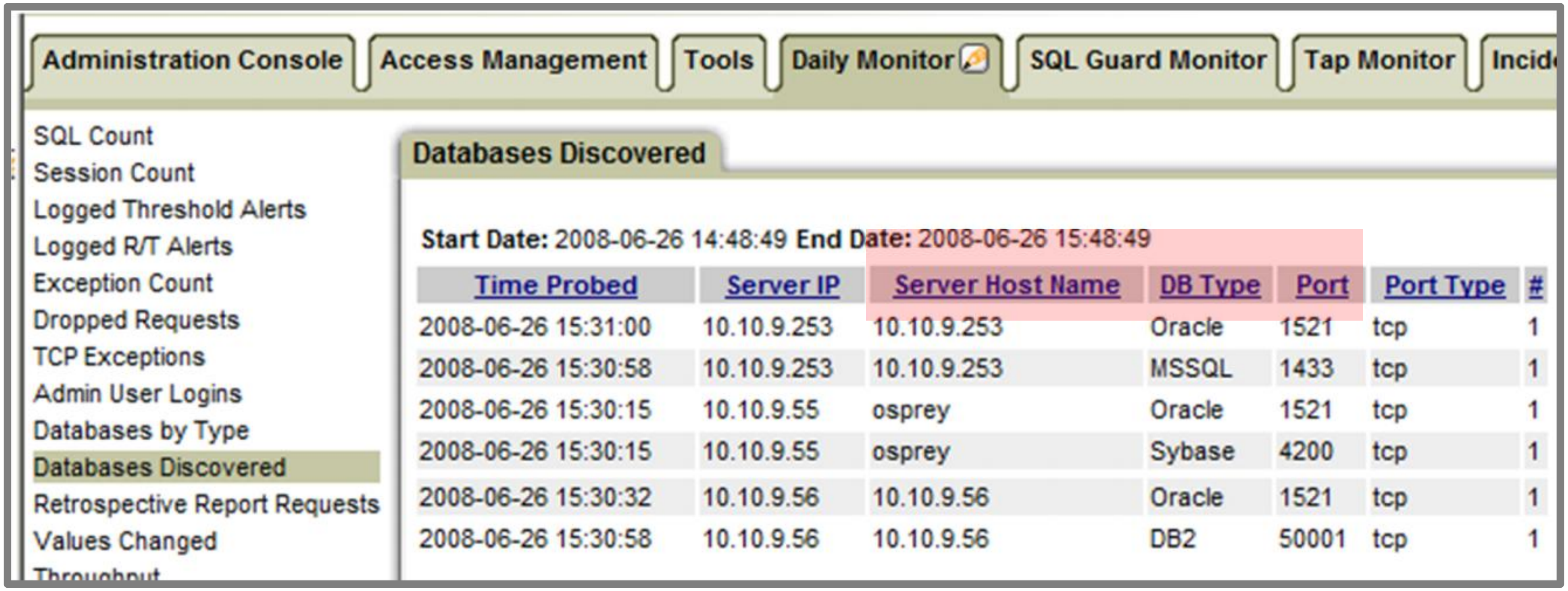
- Enforce change controls
- Forensics data mining

Find your Data Servers

- Scan the network to develop an inventory of databases
- Schedule regular scans to discover new instances
- Policy-based actions
    - Alerts
    - Add to group for monitoring



Databases Discovered

Start Date: 2008-06-26 14:48:49 **End Date:** 2008-06-26 15:48:49

Time Probed	Server IP	Server Host Name	DB Type	Port	Port Type	#
2008-06-26 15:31:00	10.10.9.253	10.10.9.253	Oracle	1521	tcp	1
2008-06-26 15:30:58	10.10.9.253	10.10.9.253	MSSQL	1433	tcp	1
2008-06-26 15:30:15	10.10.9.55	osprey	Oracle	1521	tcp	1
2008-06-26 15:30:15	10.10.9.55	osprey	Sybase	4200	tcp	1
2008-06-26 15:30:32	10.10.9.56	10.10.9.56	Oracle	1521	tcp	1
2008-06-26 15:30:58	10.10.9.56	10.10.9.56	DB2	50001	tcp	1

Sensitive Data Discovery

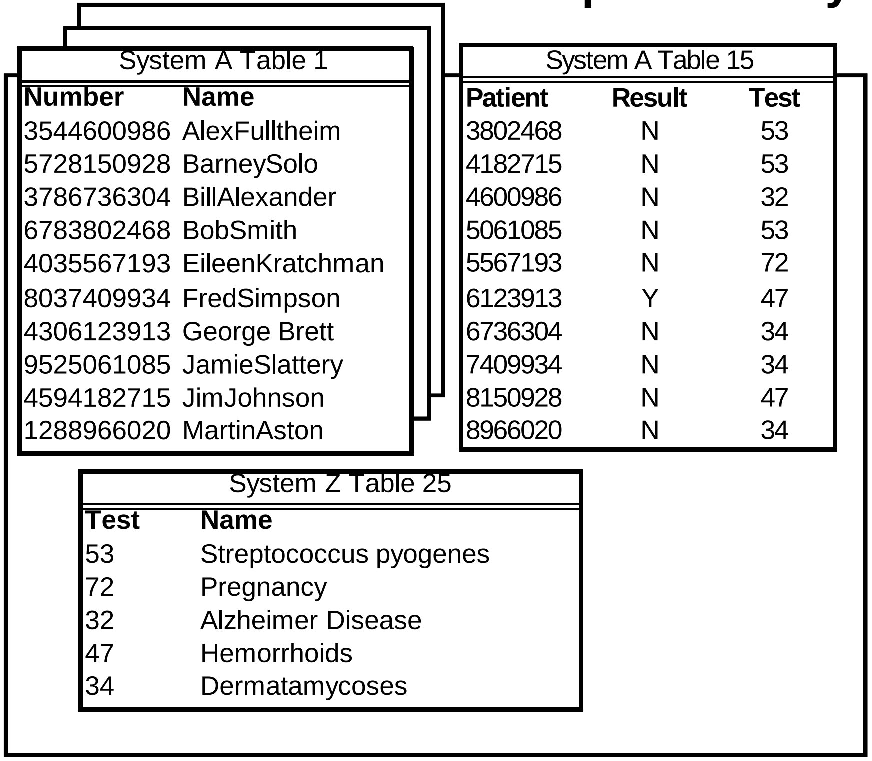
The Problem: Finding Sensitive Data can be difficult:

- Sensitive data can’t be found just by a simple data scan.
- “Corporate memory” is poor
- Hundreds of tables and millions of rows:
- Data quality problems make discovery more difficult

The Solution:

- Common PII data element discovery
  - Pre-Defined Scanning
- Custom sensitive data discovery
  - Supply Discovery with “descriptions/examples”
  - Discovery will scan for matching columns
- Hidden sensitive data discovery
  - Sensitive data embedded in free text columns
    - Scan by “floating” patterns
  - Sensitive data that is partial or hidden

Sensitive Relationship Discovery



System A Table 1

Number	Name
3544600986	AlexFulltheim
5728150928	BarneySolo
3786736304	BillAlexander
6783802468	BobSmith
4035567193	EileenKratchman
8037409934	FredSimpson
4306123913	George Brett
9525061085	JamieSlattery
4594182715	JimJohnson
1288966020	MartinAston

System A Table 15

Patient	Result	Test
3802468	N	53
4182715	N	53
4600986	N	32
5061085	N	53
5567193	N	72
6123913	Y	47
6736304	N	34
7409934	N	34
8150928	N	47
8966020	N	34

System Z Table 25

Test	Name
53	Streptococcus pyogenes
72	Pregnancy
32	Alzheimer Disease
47	Hemorrhoids
34	Dermatamycoses

Address the Full Data Protection Lifecycle

- Discover your DBMSs
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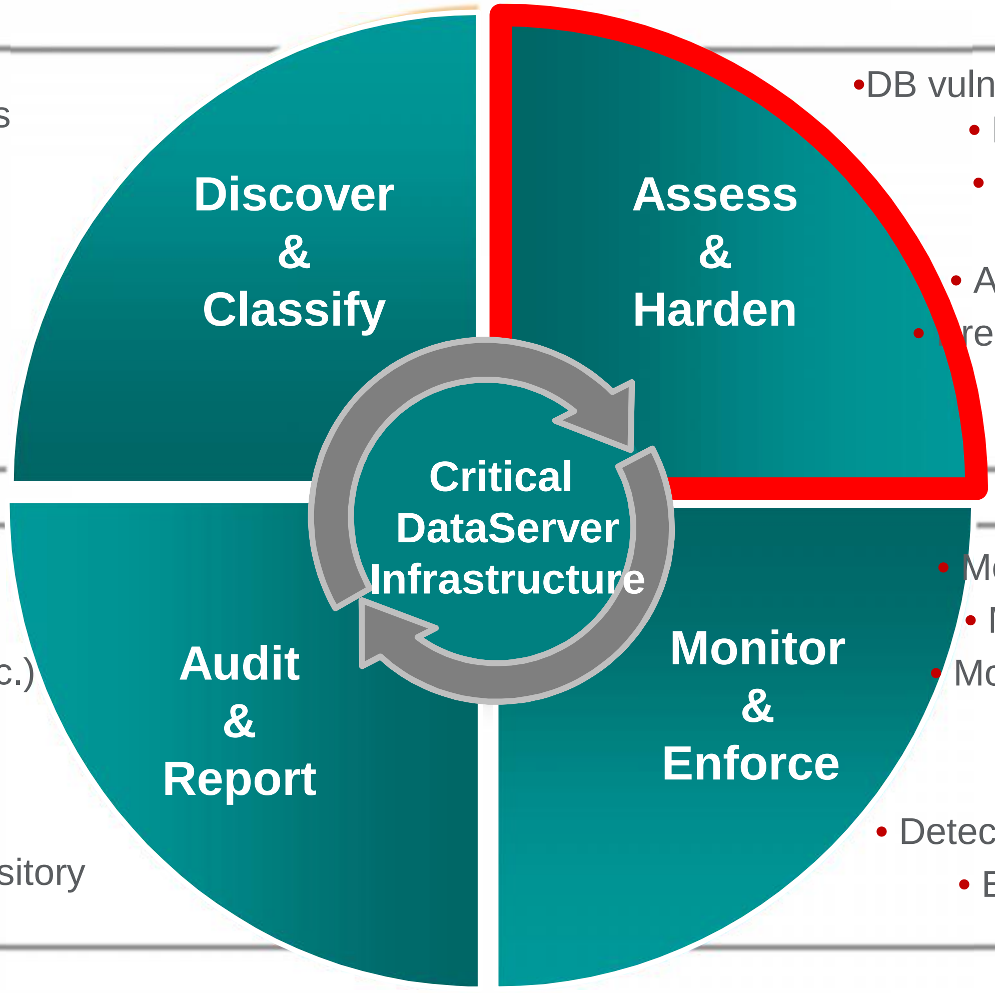
- reconfigured tests based on best practices and standards



Discover & Classify

Assess & Harden

Critical DataServer Infrastructure

Audit & Report

Monitor & Enforce

- Cross-DBMS policies
- Pre-built compliance reports (SOX, PCI, etc.)
- Enterprise integration
- SIEM integration
- Sign-off management
- Centralized audit repository
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- Monitor & alert on attacks
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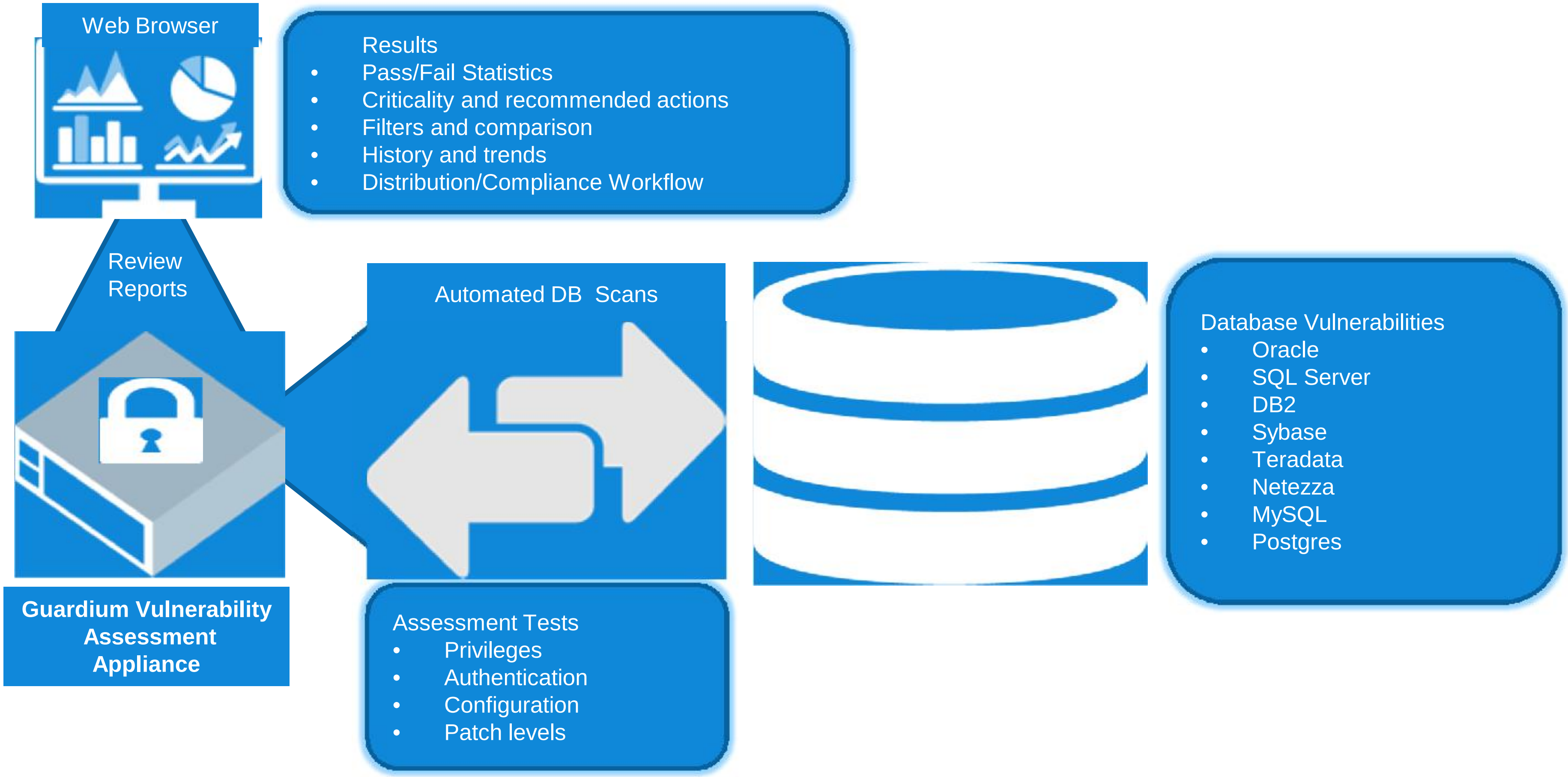
Vulnerability Assessment

Based on best practices

Cost effectively improve the security of data servers by conducting automated database vulnerability assessment tests



Web Browser

Results

- Pass/Fail Statistics
- Criticality and recommended actions
- Filters and comparison
- History and trends
- Distribution/Compliance Workflow

Review Reports

Automated DB Scans

Database Vulnerabilities

- Oracle
- SQL Server
- DB2
- Sybase
- Teradata
- Netezza
- MySQL
- Postgres

Guardium Vulnerability Assessment Appliance

Assessment Tests

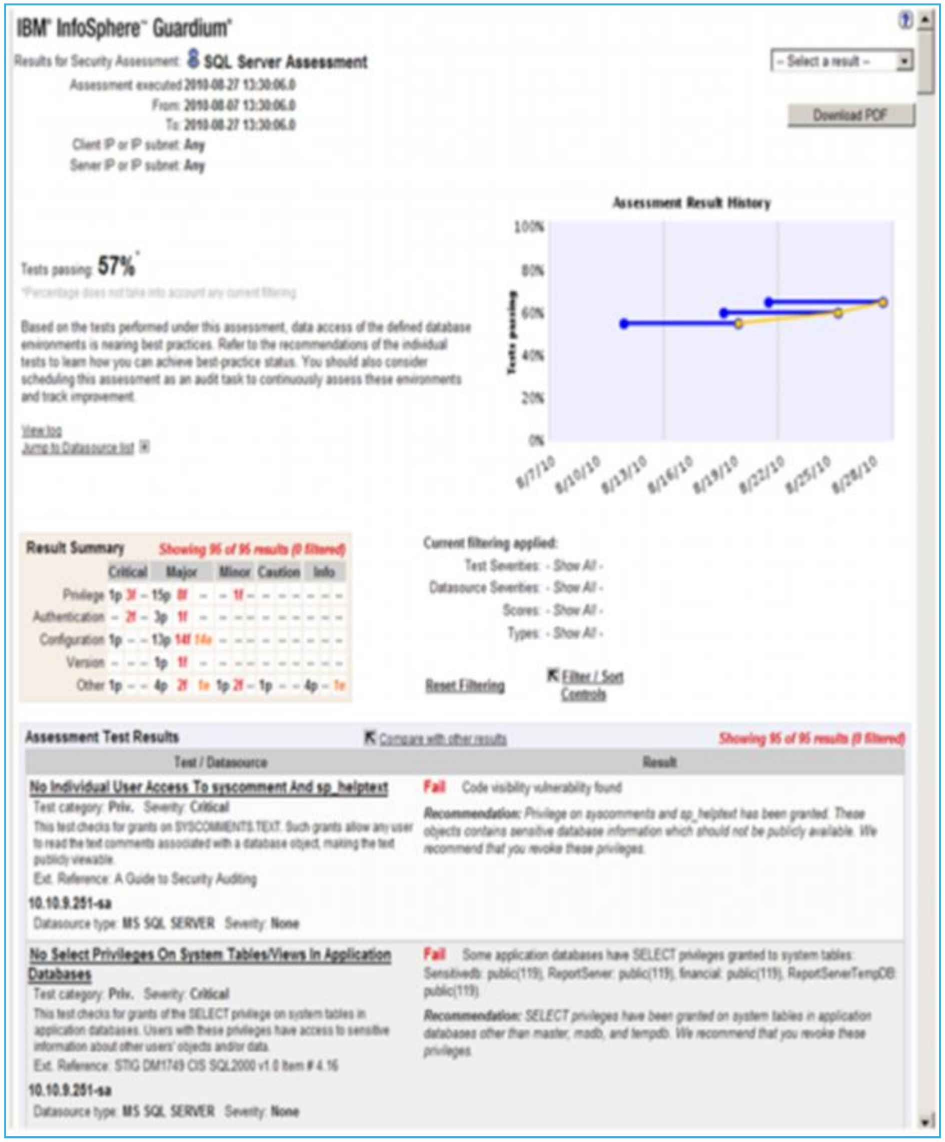
- Privileges
- Authentication
- Configuration
- Patch levels

Identify Unpatched and Misconfigured Systems

Current Test Results

Prioritized Breakdown

Detailed Test Results



IBM® InfoSphere™ Guardium®

Results for Security Assessment: **SQL Server Assessment**

Assessment executed 2010-08-27 13:30:06.0
From: 2010-08-07 13:30:06.0
To: 2010-08-27 13:30:06.0
Client IP or IP subnet: **Any**
Server IP or IP subnet: **Any**

Tests passing: **57%***

*Percentage does not take into account any current filtering

Based on the tests performed under this assessment, data access of the defined database environments is nearing best practices. Refer to the recommendations of the individual tests to learn how you can achieve best-practice status. You should also consider scheduling this assessment as an audit task to continuously assess these environments and track improvement.

View log
Jump to Datasource list

Result Summary *Showing 95 of 95 results (0 filtered)*

	Critical			Major			Minor			Caution			Info		
Privilege	1p	3f	–	15p	8f	–	–	1f	–	–	–	–	–	–	–
Authentication	–	2f	–	3p	1f	–	–	–	–	–	–	–	–	–	–
Configuration	1p	–	–	13p	14f	14e	–	–	–	–	–	–	–	–	–
Version	–	–	–	1p	1f	–	–	–	–	–	–	–	–	–	–
Other	1p	–	–	4p	2f	1e	1p	2f	–	1p	–	–	4p	–	1e

Current filtering applied:
Test Severities: - *Show All* -
Datasource Severities: - *Show All* -
Scores: - *Show All* -
Types: - *Show All* -

Reset Filtering
Filter / Sort Controls

Assessment Test Results Compare with other results *Showing 95 of 95 results (0 filtered)*

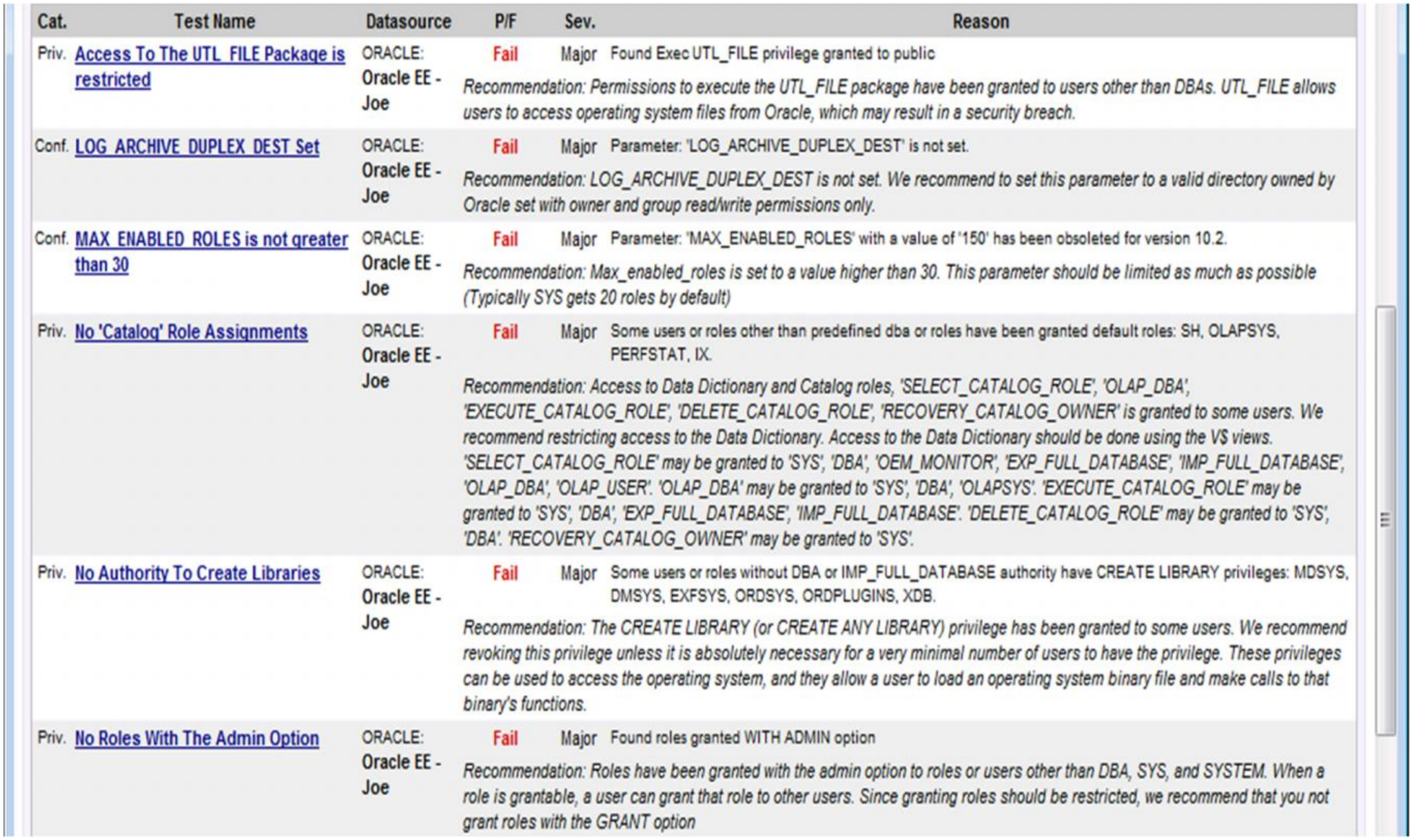
Test / Datasource	Result
No Individual User Access To syscomment And sp_helptext Test category: **Priv.** Severity: **Critical** This test checks for grants on SYSCOMMENTS.TEXT. Such grants allow any user to read the text comments associated with a database object, making the text publicly viewable. Ext. Reference: A Guide to Security Auditing **10.10.9.251-sa** Datasource type: **MS SQL SERVER** Severity: **None**	Fail Code visibility vulnerability found ***Recommendation:*** *Privilege on syscomments and sp_helptext has been granted. These objects contains sensitive database information which should not be publicly available. We recommend that you revoke these privileges.*
No Select Privileges On System Tables/Views In Application Databases Test category: **Priv.** Severity: **Critical** This test checks for grants of the SELECT privilege on system tables in application databases. Users with these privileges have access to sensitive information about other users' objects and/or data. Ext. Reference: STIG DM1749 CIS SQL2000 v1.0 Item # 4.16 **10.10.9.251-sa** Datasource type: **MS SQL SERVER** Severity: **None**	Fail Some application databases have SELECT privileges granted to system tables: Sensitivedb: public(119), ReportServer: public(119), financial: public(119), ReportServerTempDB: public(119) ***Recommendation:*** *SELECT privileges have been granted on system tables in application databases other than master, msdb, and tempdb. We recommend that you revoke these privileges.*

Result History

Filters and Sort Controls

Detailed Remediation Suggestions

Eliminate inappropriate privileges



Cat.	Test Name	Datasource	P/F	Sev.	Reason
Priv.	Access To The UTL_FILE Package is restricted	ORACLE: Oracle EE - Joe	Fail	Major	Found Exec UTL_FILE privilege granted to public *Recommendation: Permissions to execute the UTL_FILE package have been granted to users other than DBAs. UTL_FILE allows users to access operating system files from Oracle, which may result in a security breach.*
Conf.	LOG_ARCHIVE_DUPLEX_DEST Set	ORACLE: Oracle EE - Joe	Fail	Major	Parameter: 'LOG_ARCHIVE_DUPLEX_DEST' is not set. *Recommendation: LOG_ARCHIVE_DUPLEX_DEST is not set. We recommend to set this parameter to a valid directory owned by Oracle set with owner and group read/write permissions only.*
Conf.	MAX_ENABLED_ROLES is not greater than 30	ORACLE: Oracle EE - Joe	Fail	Major	Parameter: 'MAX_ENABLED_ROLES' with a value of '150' has been obsoleted for version 10.2. *Recommendation: Max_enabled_roles is set to a value higher than 30. This parameter should be limited as much as possible (Typically SYS gets 20 roles by default)*
Priv.	No 'Catalog' Role Assignments	ORACLE: Oracle EE - Joe	Fail	Major	Some users or roles other than predefined dba or roles have been granted default roles: SH, OLAPSYS, PERFSTAT, IX. *Recommendation: Access to Data Dictionary and Catalog roles, 'SELECT_CATALOG_ROLE', 'OLAP_DBA', 'EXECUTE_CATALOG_ROLE', 'DELETE_CATALOG_ROLE', 'RECOVERY_CATALOG_OWNER' is granted to some users. We recommend restricting access to the Data Dictionary. Access to the Data Dictionary should be done using the V$ views. 'SELECT_CATALOG_ROLE' may be granted to 'SYS', 'DBA', 'OEM_MONITOR', 'EXP_FULL_DATABASE', 'IMP_FULL_DATABASE', 'OLAP_DBA', 'OLAP_USER'. 'OLAP_DBA' may be granted to 'SYS', 'DBA', 'OLAPSYS'. 'EXECUTE_CATALOG_ROLE' may be granted to 'SYS', 'DBA', 'EXP_FULL_DATABASE', 'IMP_FULL_DATABASE'. 'DELETE_CATALOG_ROLE' may be granted to 'SYS', 'DBA'. 'RECOVERY_CATALOG_OWNER' may be granted to 'SYS'.*
Priv.	No Authority To Create Libraries	ORACLE: Oracle EE - Joe	Fail	Major	Some users or roles without DBA or IMP_FULL_DATABASE authority have CREATE LIBRARY privileges: MDSYS, DMSYS, EXFSYS, ORDSYS, ORDPLUGINS, XDB. *Recommendation: The CREATE LIBRARY (or CREATE ANY LIBRARY) privilege has been granted to some users. We recommend revoking this privilege unless it is absolutely necessary for a very minimal number of users to have the privilege. These privileges can be used to access the operating system, and they allow a user to load an operating system binary file and make calls to that binary's functions.*
Priv.	No Roles With The Admin Option	ORACLE: Oracle EE - Joe	Fail	Major	Found roles granted WITH ADMIN option *Recommendation: Roles have been granted with the admin option to roles or users other than DBA, SYS, and SYSTEM. When a role is grantable, a user can grant that role to other users. Since granting roles should be restricted, we recommend that you not grant roles with the GRANT option*

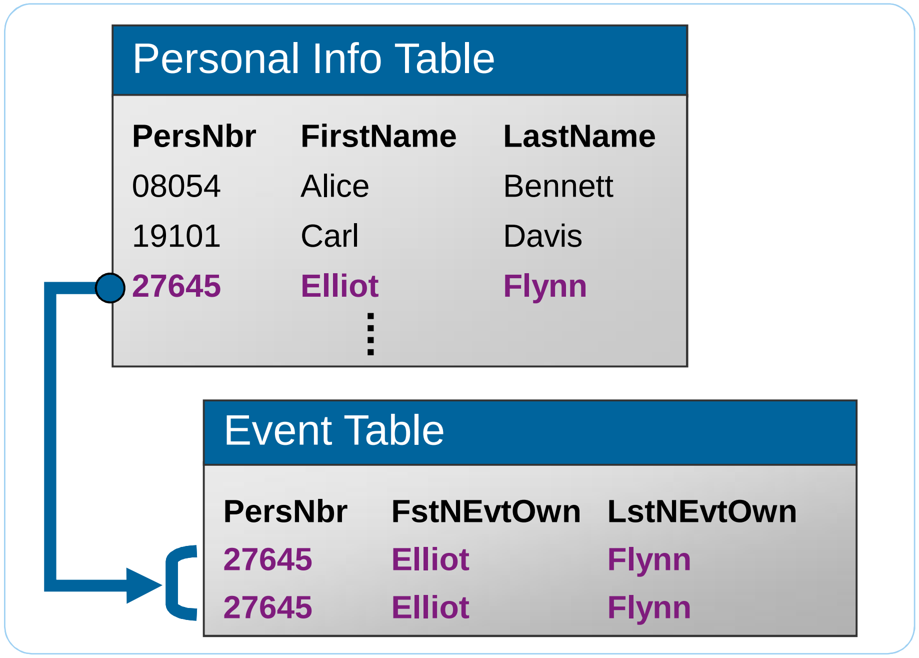
Sensitive Data Masking

Masked or transformed data must be appropriate to the context:

- –Consistent formatting (alpha to alpha)
- –Within permissible range of values
- –Context and application aware
- –Maintain referential integrity

A comprehensive set of data masking techniques to transform or de-identify data, including:

- **String literal values**
- **Character substrings**
- **Random or sequential numbers**
- **Arithmetic expressions**
- **Concatenated expressions**
- **Date aging**
- **Lookup values**
- **Trans Col**

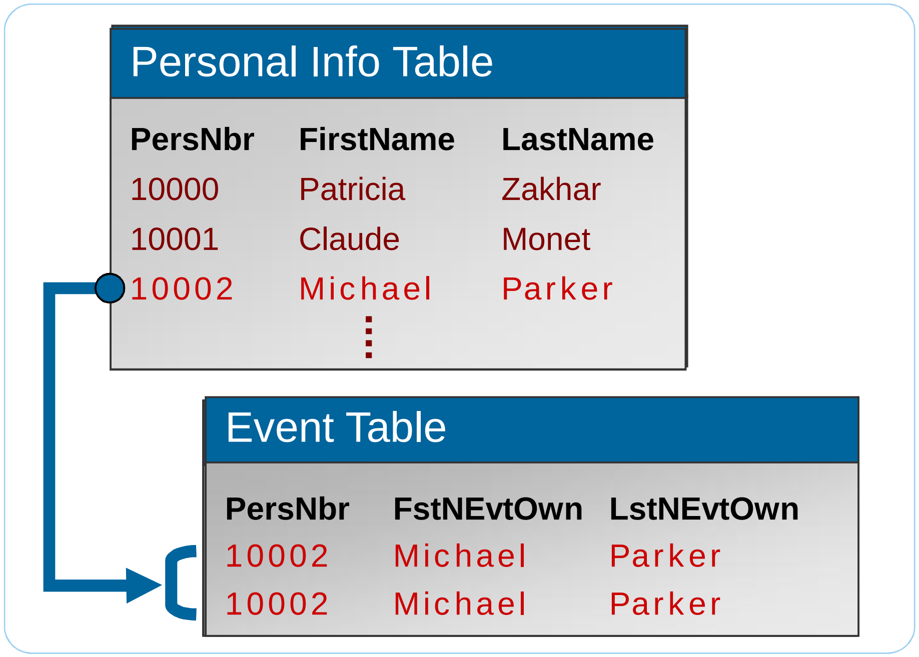


Personal Info Table

PersNbr	FirstName	LastName
08054	Alice	Bennett
19101	Carl	Davis
27645	Elliot	Flynn
⋮		

Event Table

PersNbr	FstNEvtOwn	LstNEvtOwn
27645	Elliot	Flynn
27645	Elliot	Flynn



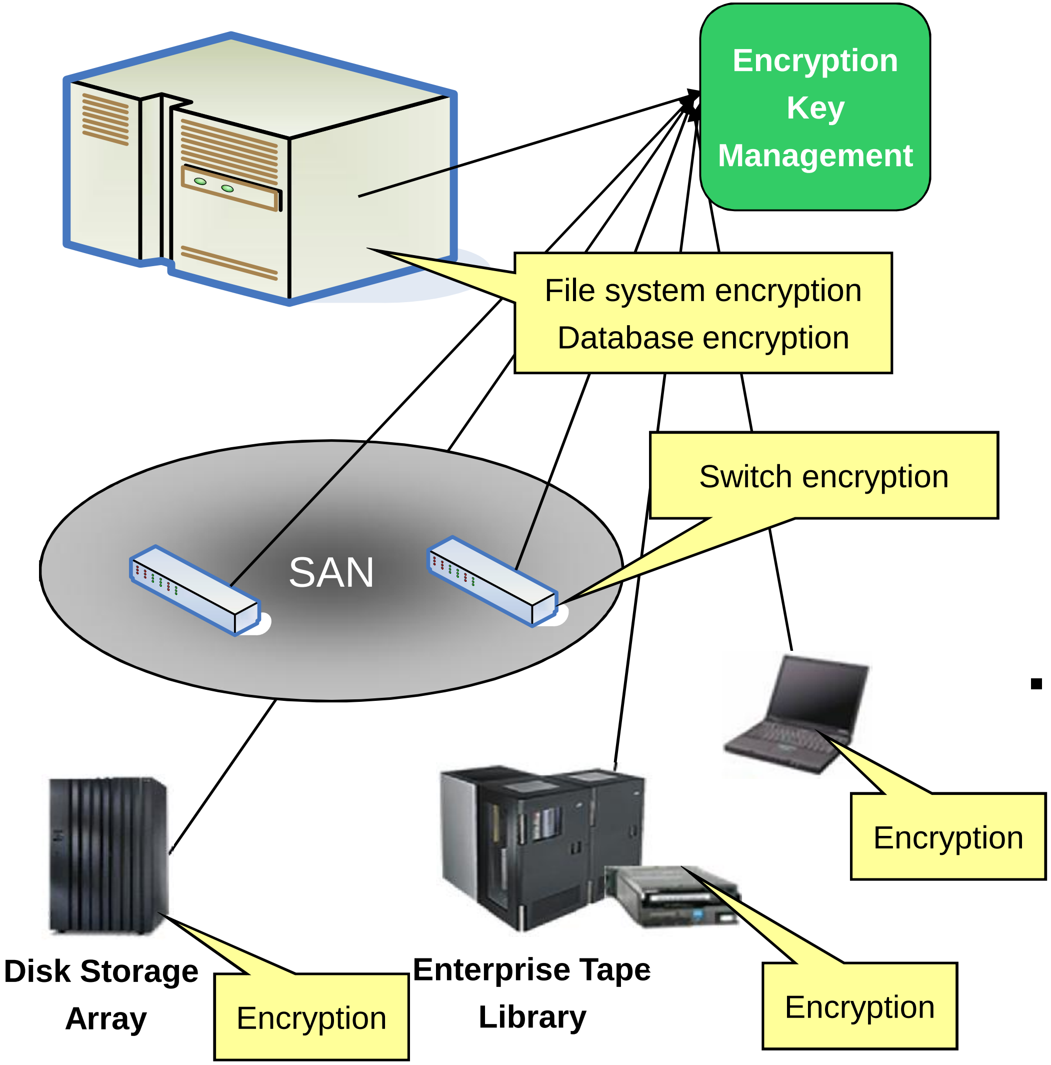
Personal Info Table

PersNbr	FirstName	LastName
10000	Patricia	Zakhar
10001	Claude	Monet
10002	Michael	Parker
⋮		

Event Table

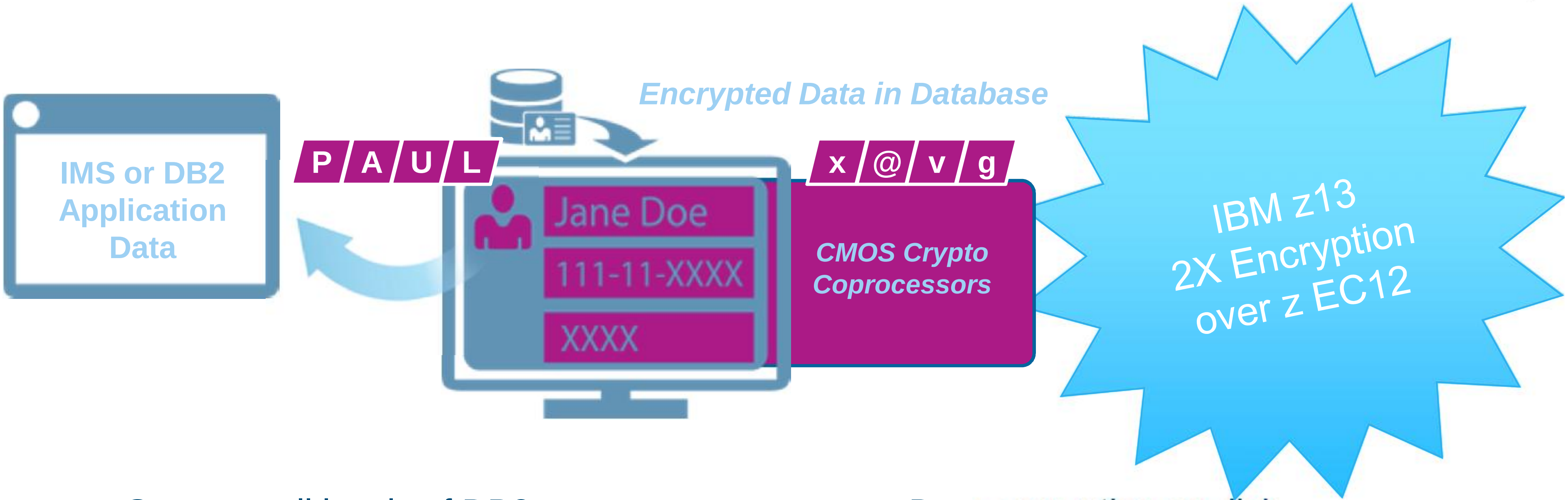
PersNbr	FstNEvtOwn	LstNEvtOwn
10002	Michael	Parker
10002	Michael	Parker

Encryption is everywhere – but where and how makes a difference



- **Encryption choices – why should encryption be built into storage**
  - Performance – cryptography can be computationally intensive
  - Efficiency - encrypted data is not able to be compressed or de-duplicated
  - Security - Data in transit should use temporary keys, data at rest should have long term retention and robust management
  - Scalability – best to distribute cryptography across many devices
- **Key Management Interoperability Protocol Standard makes this viable**
  - Four years now have demonstrated interoperability at the RSA conference with 8+ vendors
  - TKLM includes a c source reference implementation

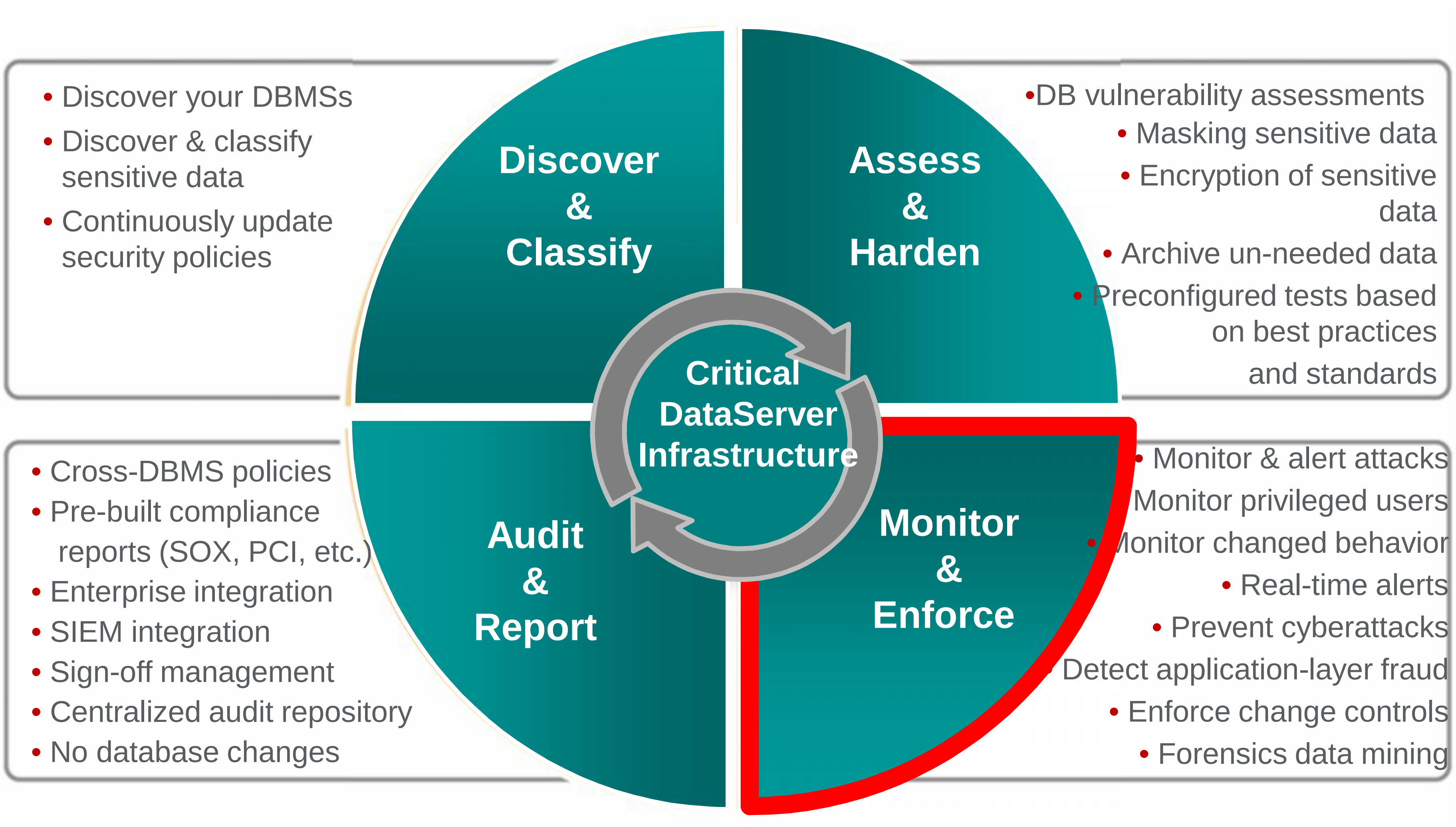
Data Encryption for DB2 and IMS



- Supports all levels of DB2
- No application changes needed
- Applications need no awareness of keys
- Supports both secure key and clear key encryption
- Index access is unaffected by encryption
- Compatible with DB2 Load/Unload utilities and DB2 Tools
- EDITPROC, FIELDPROC, or UDF invocation

- Data encryption on disk
- Data on channel is encrypted (protects against channel/network sniffers)
- Existing authorization controls accessing this data are unaffected
- Assumption made that access is through the DBMS, or, direct access invokes the DBMS data exits

Address the Full Data Protection Lifecycle



- Discover your DBMSs
- Discover & classify sensitive data
- Continuously update security policies

Discover & Classify

Assess & Harden

- DB vulnerability assessments
- Masking sensitive data
- Encryption of sensitive data
- Archive un-needed data
- Preconfigured tests based on best practices and standards

Critical DataServer Infrastructure

- Cross-DBMS policies
- Pre-built compliance reports (SOX, PCI, etc.)
- Enterprise integration
- SIEM integration
- Sign-off management
- Centralized audit repository
- No database changes

Audit & Report

Monitor & Enforce

- Monitor & alert attacks
- Monitor privileged users
- Monitor changed behavior
- Real-time alerts
- Prevent cyberattacks
- Detect application-layer fraud
- Enforce change controls
- Forensics data mining

Data Activity Monitoring

✓ **Activity Monitoring**

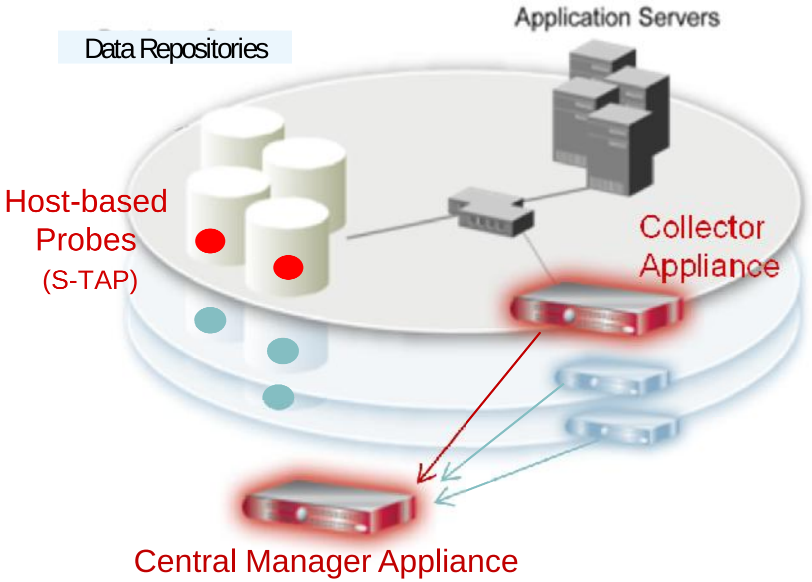
Continuous, policy-based, real-time monitoring of all data traffic activities, including actions by privileged users

✓ **Blocking & Masking**

Data protection compliance automation

✓ **Vulnerability Assessment**

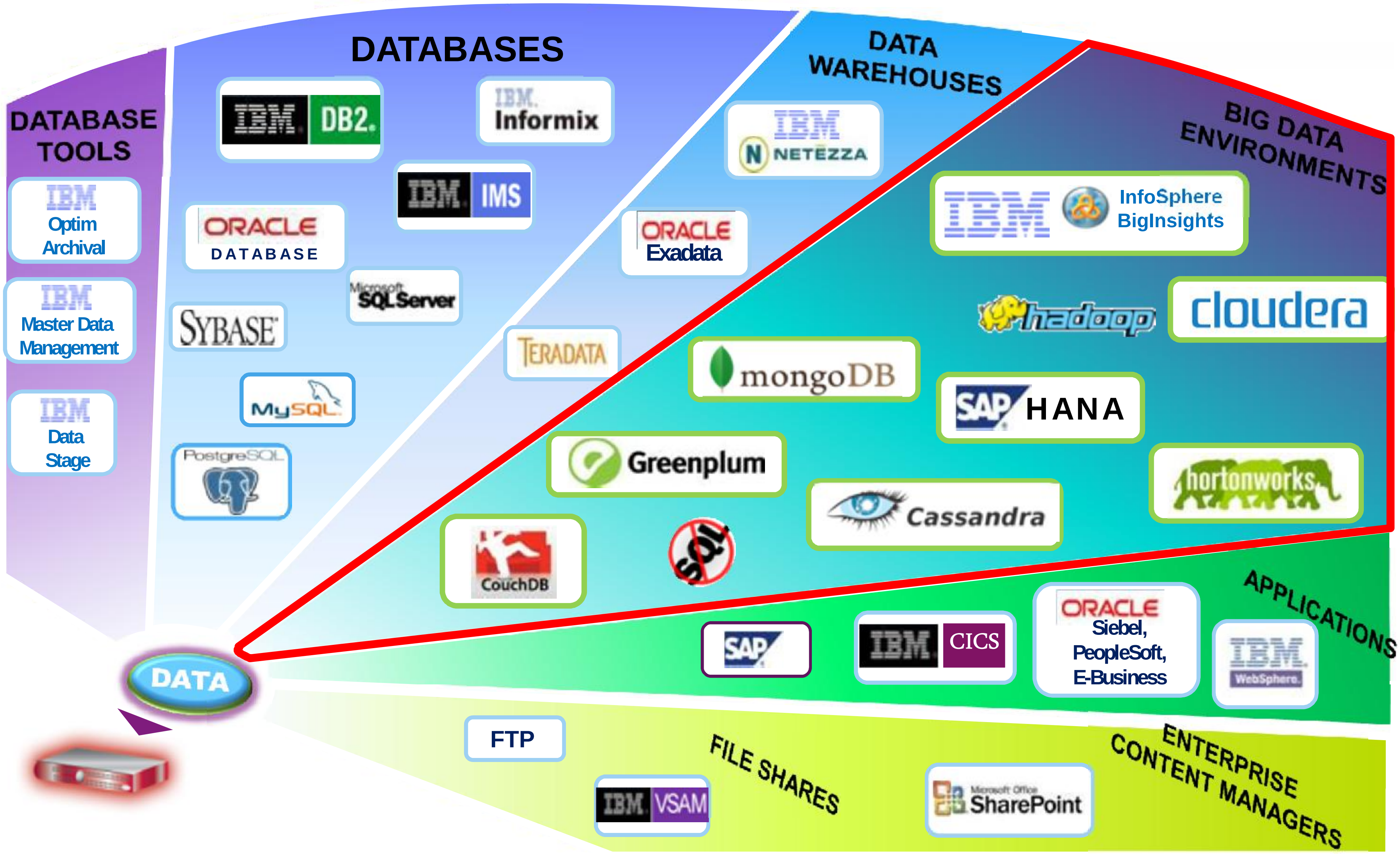
Database infrastructure scanning for missing patches, mis-configured privileges and other vulnerabilities



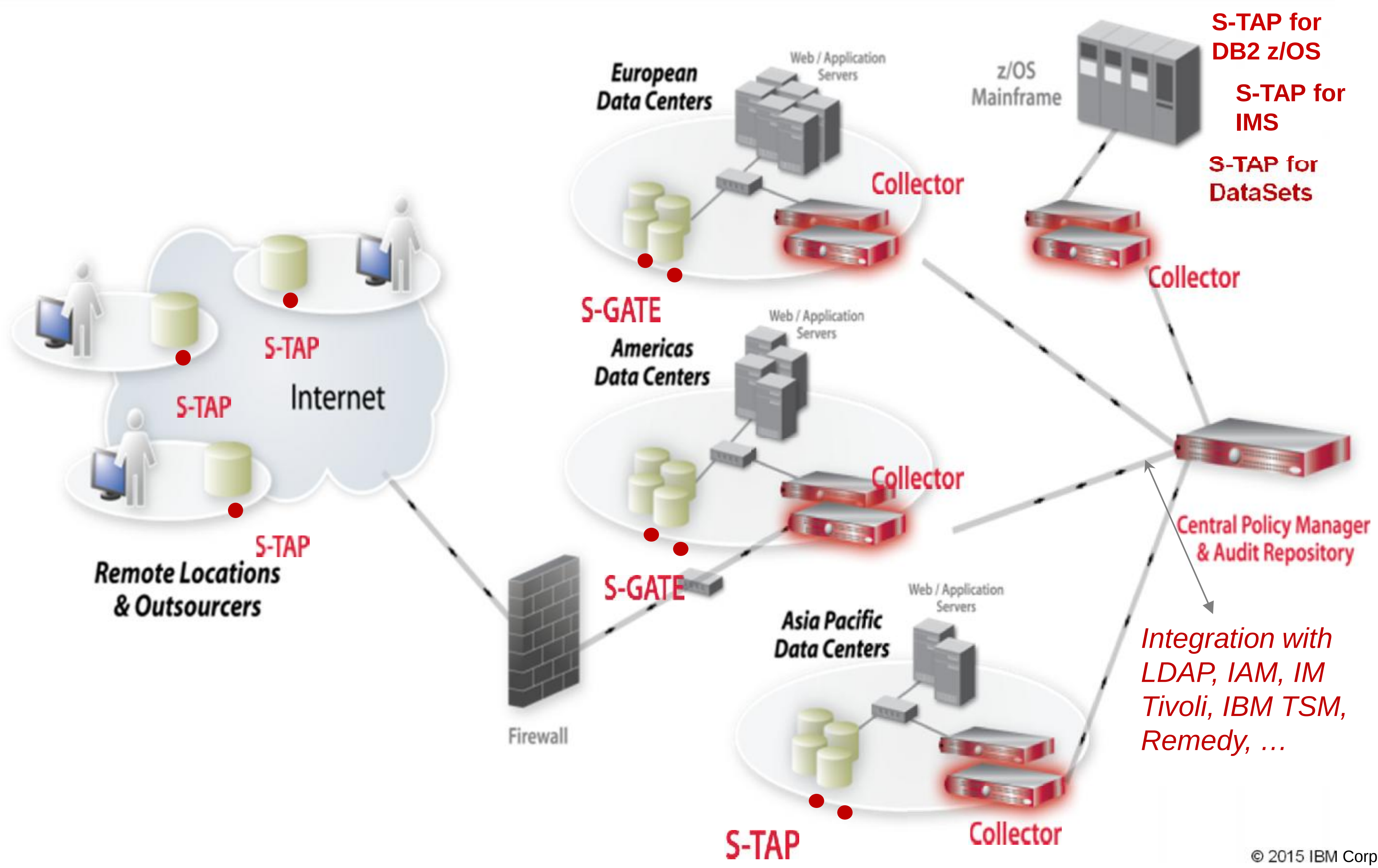
Key Characteristics

- Single Integrated Appliance
- Non-invasive/disruptive, cross-platform architecture
- Dynamically scalable
- SOD enforcement for DBA access
- Auto discover sensitive resources and data
- Detect or block unauthorized & suspicious activity
- Granular, real-time policies
  - *Who, what, when, how*
- 100% visibility including local DBA access
- Minimal performance impact
- Does not rely on resident logs that can easily be erased by attackers, rogue insiders
- No environment changes
- Prepackaged vulnerability knowledge base and compliance reports for SOX, PCI, etc.
- Growing integration with broader security and compliance management vision

Extend Activity Monitoring to Big Data, Warehouses, File Shares



Scalable Multi-Tier Architecture



S-TAP for
DB2 z/OS

S-TAP for
IMS

S-TAP for
DataSets

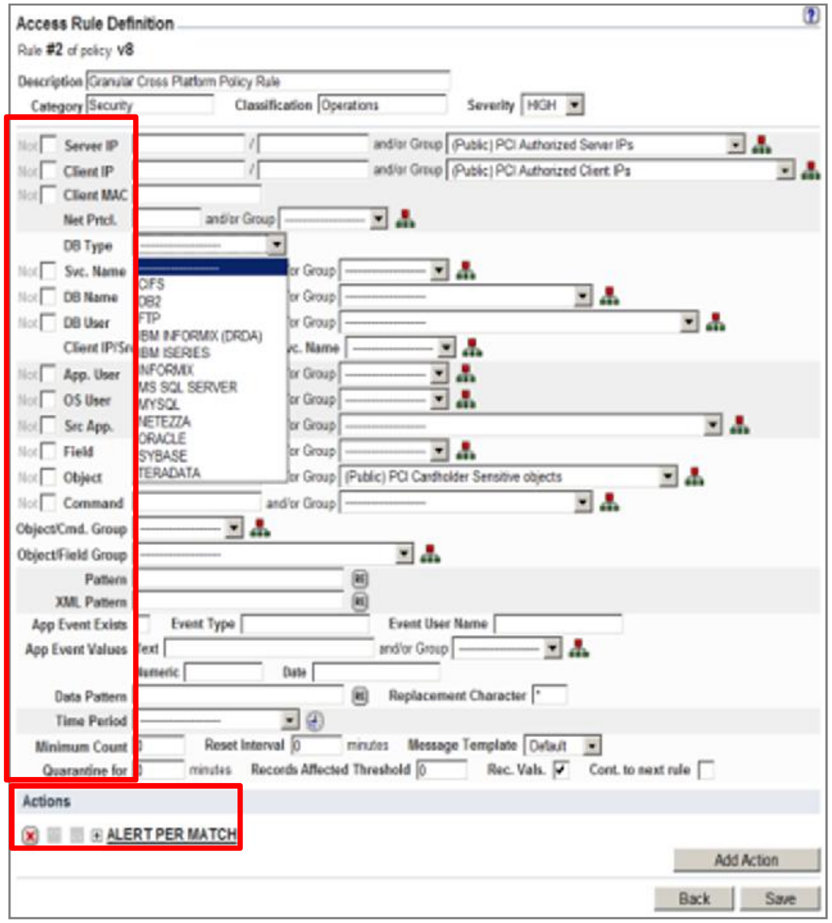
*Integration with
LDAP, IAM, IM
Tivoli, IBM TSM,
Remedy, …*

Cross-platform policies and auditing across enterprise

Unified cross-platform policies easily defined

Responsive actions defined within policies

Single audit repository enables enterprise-wide compliance reporting
and analytics



Access Rule Definition

Rule #2 of policy v8

Description: Granular Cross Platform Policy Rule

Category: Security

Classification: Operations

Severity: HIGH

Not □ Server IP / and/or Group: (Public) PCI Authorized Server IPs

Not □ Client IP / and/or Group: (Public) PCI Authorized Client IPs

Not □ Client MAC

Not □ Object ... and/or Group: (Public) PCI Cardholder Sensitive objects

Replacement Character: *

Minimum Count: 0

Reset Interval: 0 minutes

Message Template: Default

Quarantine for: 0 minutes

Records Affected Threshold: 0

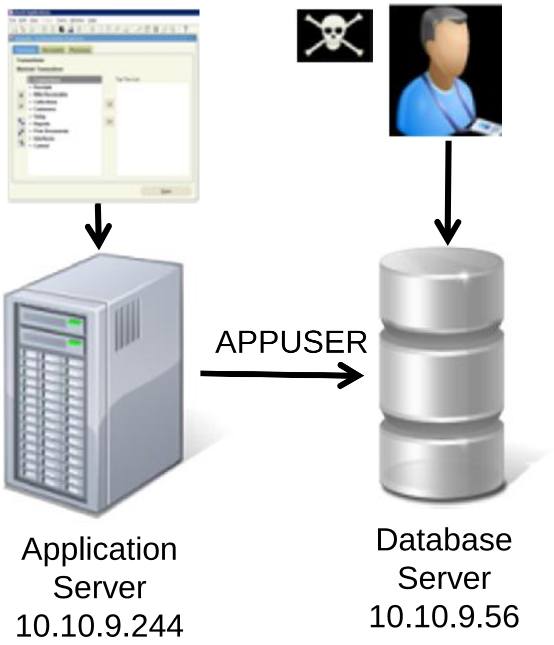
Rec. Vals. ☑

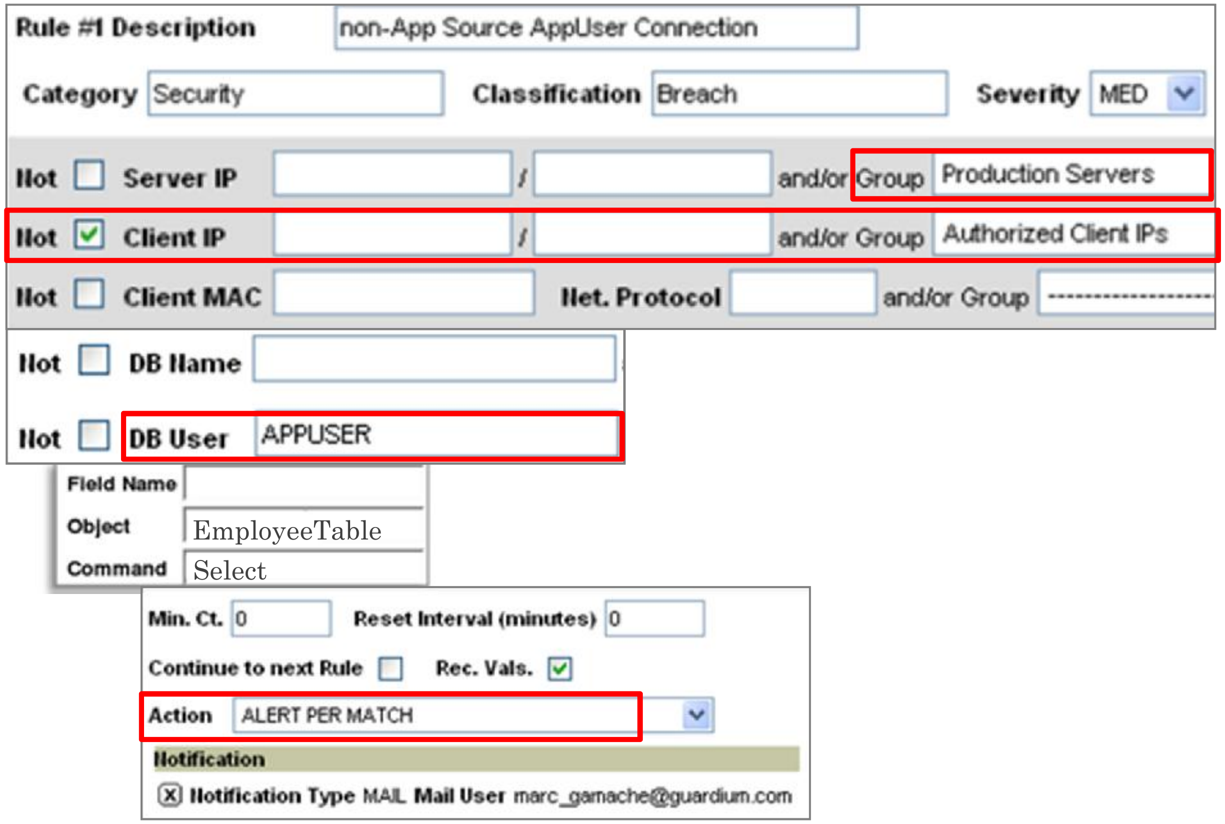
Cont. to next rule □

Actions

ALERT PER MATCH

A simple policy example: *Application bypass*





Rule #1 Description: non-App Source AppUser Connection

Category: Security Classification: Breach Severity: MED

Not	□	Server IP		/	and/or Group	Production Servers
Not	☑	Client IP		/	and/or Group	Authorized Client IPs
Not	□	Client MAC		Net. Protocol	and/or Group	-------------------
Not	□	DB Name				
Not	□	DB User	APPUSER			

Field Name:

Object: EmployeeTable

Command: Select

Min. Ct. 0 Reset Interval (minutes) 0

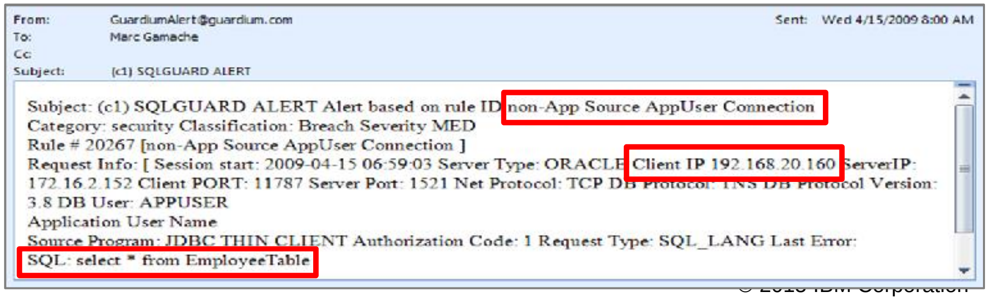
Continue to next Rule □ Rec. Vals. ☑

Action: ALERT PER MATCH

Notification

☒ Notification Type MAIL Mail User marc_gamache@guardium.com

Sample Alert



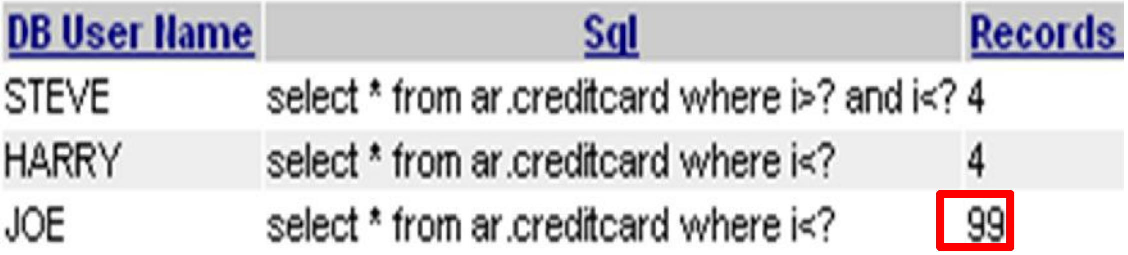
From: GuardiumAlert@guardium.com Sent: Wed 4/15/2009 8:00 AM
To: Marc Gamache
Cc:
Subject: (c1) SQLGUARD ALERT

Subject: (c1) SQLGUARD ALERT Alert based on rule ID non-App Source AppUser Connection
Category: security Classification: Breach Severity MED
Rule # 20267 [non-App Source AppUser Connection]
Request Info: [Session start: 2009-04-15 06:59:03 Server Type: ORACLE Client IP 192.168.20.160 ServerIP: 172.16.2.152 Client PORT: 11787 Server Port: 1521 Net Protocol: TCP DB Protocol: TNS DB Protocol Version: 3.8 DB User: APPUSER
Application User Name
Source Program: JDBC THIN CLIENT Authorization Code: 1 Request Type: SQL_LANG Last Error:
SQL: select * from EmployeeTable

Identify inappropriate use by authorized users

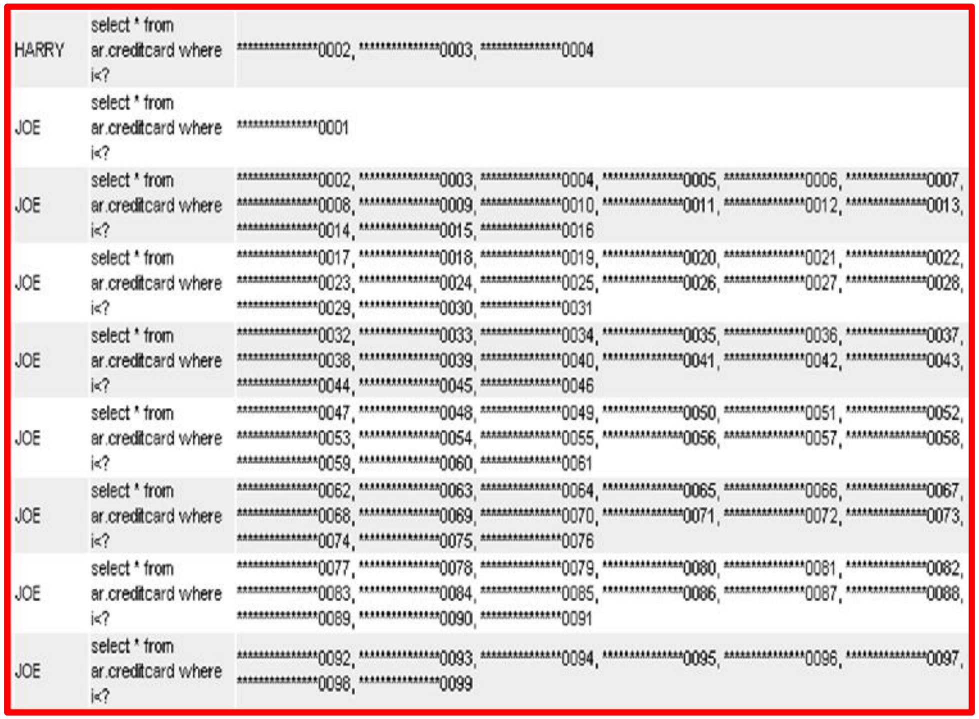
Should my customer service rep view 99 records in an hour when the average is 4?

Is this normal?



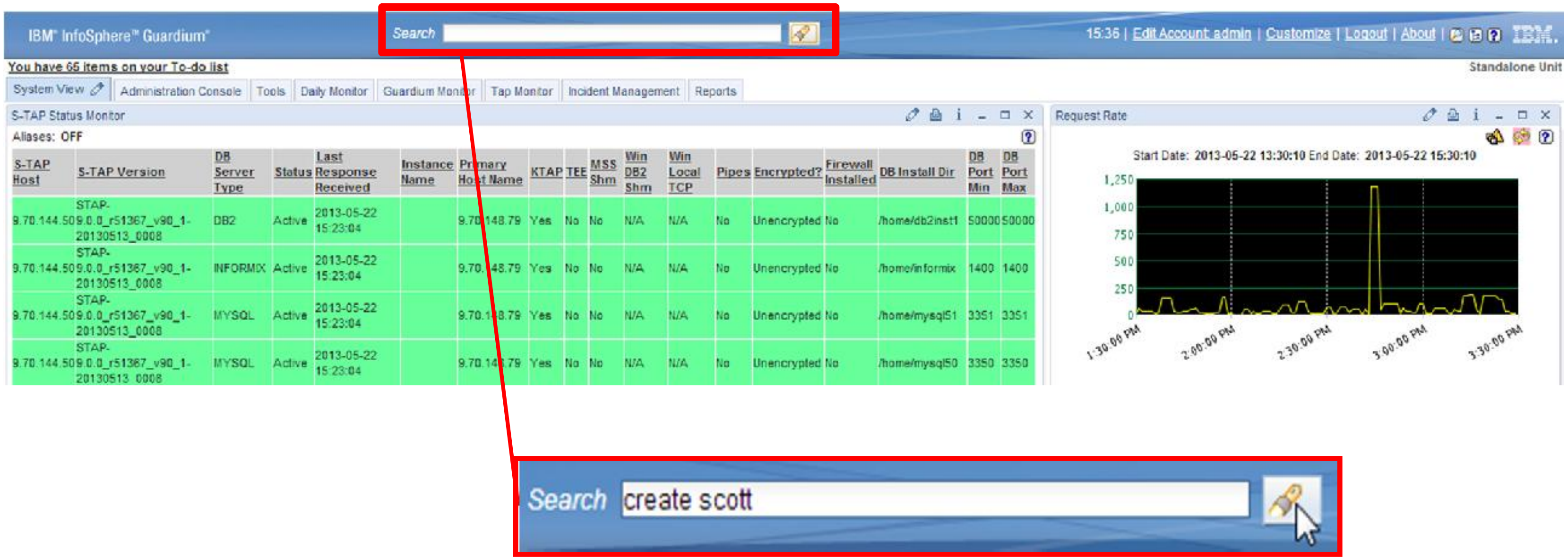
DB User Name	Sql	Records
STEVE	select * from ar.creditcard where i>? and i<?	4
HARRY	select * from ar.creditcard where i<?	4
JOE	select * from ar.creditcard where i<?	99

What did they see?



HARRY	select * from ar.creditcard where i<?	************0002, ************0003, ************0004
JOE	select * from ar.creditcard where i<?	************0001
JOE	select * from ar.creditcard where i<?	************0002, ************0003, ************0004, ************0005, ************0006, ************0007, ************0008, ************0009, ************0010, ************0011, ************0012, ************0013, ************0014, ************0015, ************0016
JOE	select * from ar.creditcard where i<?	************0017, ************0018, ************0019, ************0020, ************0021, ************0022, ************0023, ************0024, ************0025, ************0026, ************0027, ************0028, ************0029, ************0030, ************0031
JOE	select * from ar.creditcard where i<?	************0032, ************0033, ************0034, ************0035, ************0036, ************0037, ************0038, ************0039, ************0040, ************0041, ************0042, ************0043, ************0044, ************0045, ************0046
JOE	select * from ar.creditcard where i<?	************0047, ************0048, ************0049, ************0050, ************0051, ************0052, ************0053, ************0054, ************0055, ************0056, ************0057, ************0058, ************0059, ************0060, ************0061
JOE	select * from ar.creditcard where i<?	************0062, ************0063, ************0064, ************0065, ************0066, ************0067, ************0068, ************0069, ************0070, ************0071, ************0072, ************0073, ************0074, ************0075, ************0076
JOE	select * from ar.creditcard where i<?	************0077, ************0078, ************0079, ************0080, ************0081, ************0082, ************0083, ************0084, ************0085, ************0086, ************0087, ************0088, ************0089, ************0090, ************0091
JOE	select * from ar.creditcard where i<?	************0092, ************0093, ************0094, ************0095, ************0096, ************0097, ************0098, ************0099

Quick Search (db activities, exception, violations)



You have 65 items on your To-do list

S-TAP Status Monitor

Aliases: OFF

S-TAP Host	S-TAP Version	DB Server Type	Status	Last Response Received	Instance Name	Primary Host Name	KTAP	TEE	MSS Shm	Win DB2 Shm	Win Local TCP	Pipes	Encrypted?	Firewall Installed	DB Install Dir	DB Port Min	DB Port Max
9.70.144.50	STAP-9.0.0_r51367_v90_1-20130513_0008	DB2	Active	2013-05-22 15:23:04		9.70.148.79	Yes	No	No	N/A	N/A	No	Unencrypted	No	/home/db2inst1	50000	50000
9.70.144.50	STAP-9.0.0_r51367_v90_1-20130513_0008	INFORMIX	Active	2013-05-22 15:23:04		9.70.148.79	Yes	No	No	N/A	N/A	No	Unencrypted	No	/home/informix	1400	1400
9.70.144.50	STAP-9.0.0_r51367_v90_1-20130513_0008	MYSQL	Active	2013-05-22 15:23:04		9.70.148.79	Yes	No	No	N/A	N/A	No	Unencrypted	No	/home/mysql51	3351	3351
9.70.144.50	STAP-9.0.0_r51367_v90_1-20130513_0008	MYSQL	Active	2013-05-22 15:23:04		9.70.148.79	Yes	No	No	N/A	N/A	No	Unencrypted	No	/home/mysql50	3350	3350

Start Date: 2013-05-22 13:30:10 End Date: 2013-05-22 15:30:10

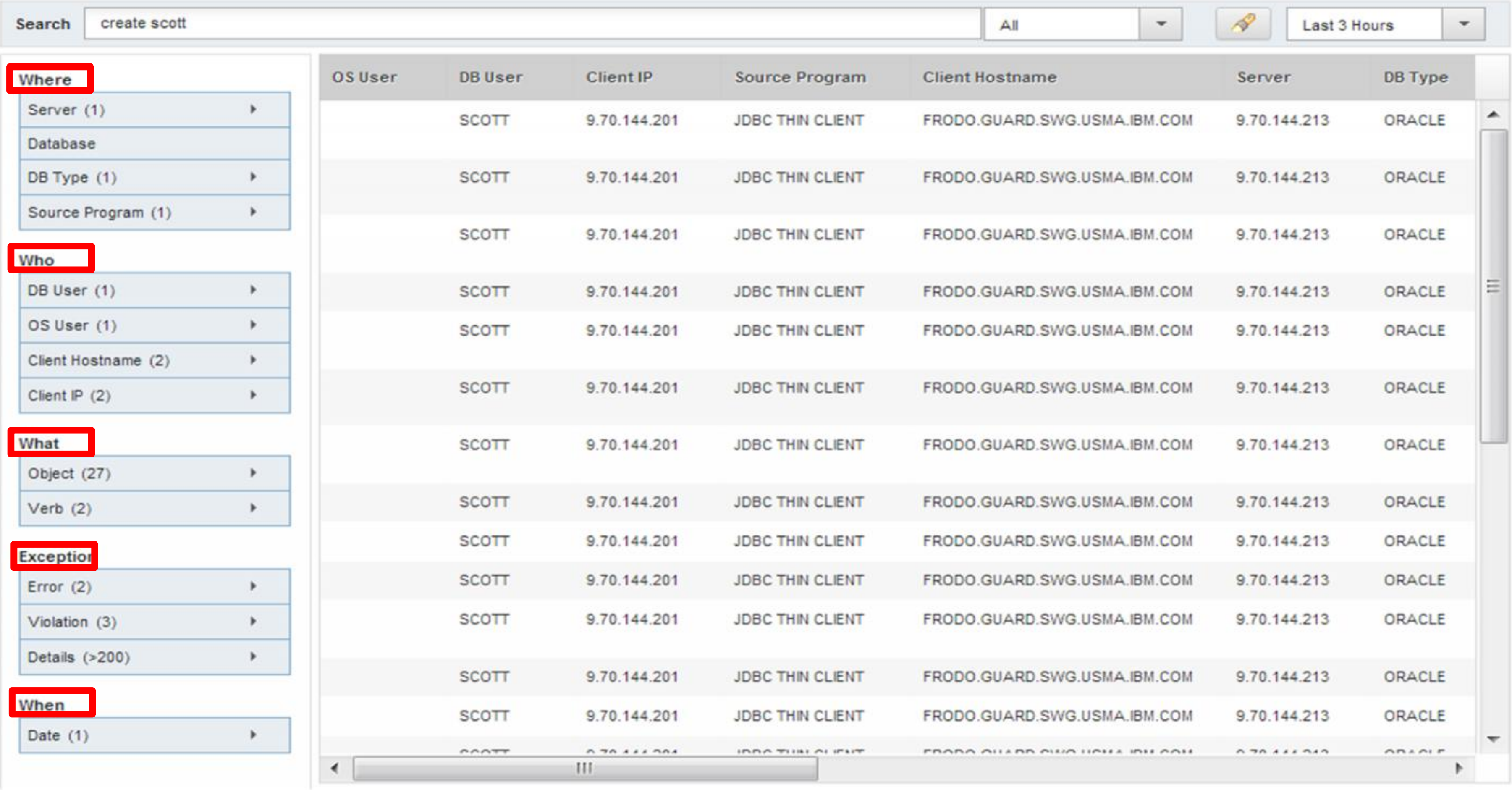
Search: create scott

For manually entered search terms, the following rules apply:

- For exact match, use double quotes. **Example:** "Connection Profiling List Alert"
- For results that have all specified terms (AND condition), enter terms separated by a space. **Example:** hadoop getlisting
- To get results that include any specified terms, use **OR** (or |) between the terms. **Example:** hadoop OR client
- To exclude a term, use **NOT** (or -). **Example:** NOT hadoop
- Use the wildcard character (*) at beginning or end of a string. **Example:** *.10.70.30

User Interface & APIs

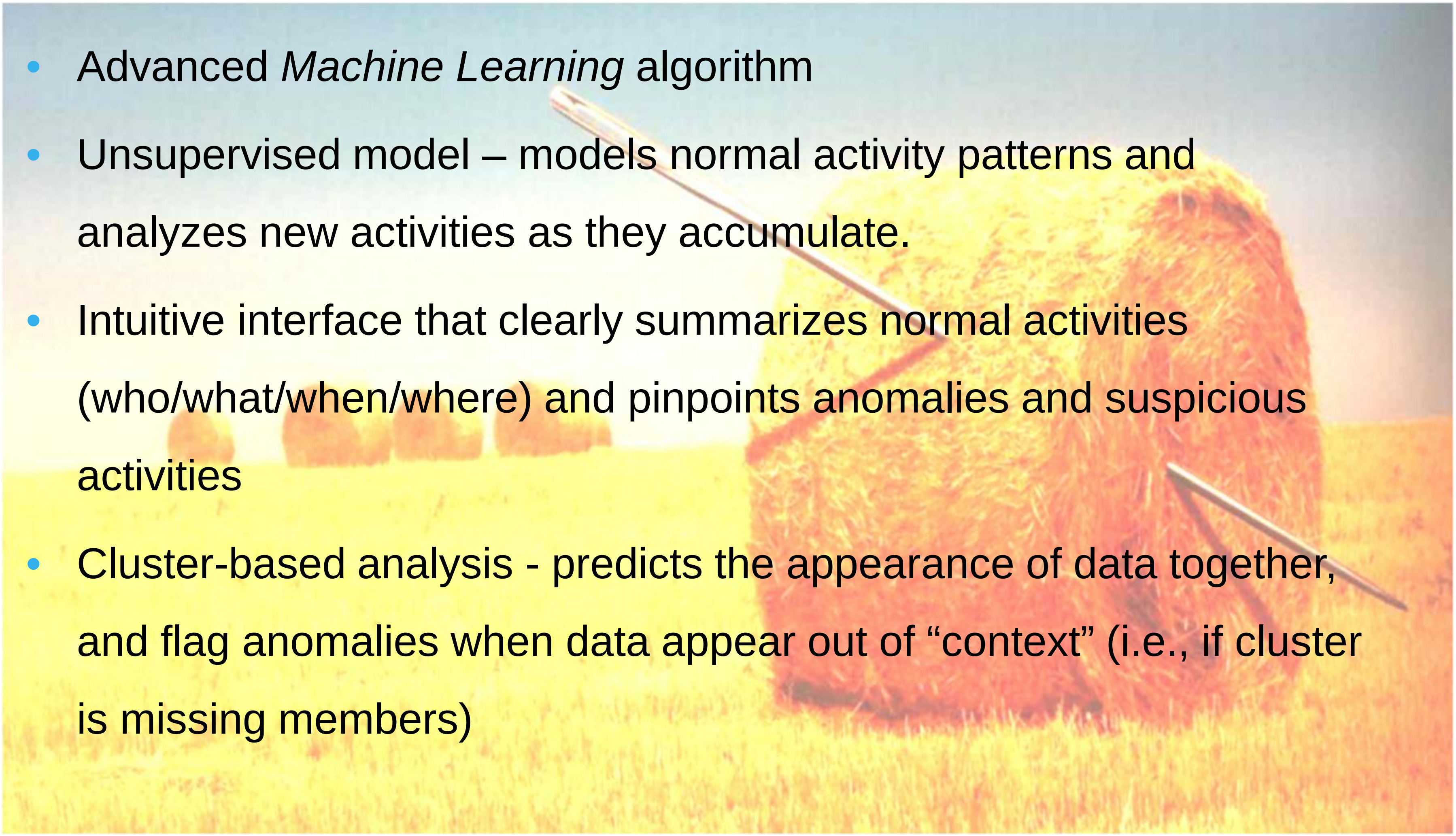
Quick Search (cont)



Search: create scott — All — Last 3 Hours

OS User	DB User	Client IP	Source Program	Client Hostname	Server	DB Type
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE
	SCOTT	9.70.144.201	JDBC THIN CLIENT	FRODO.GUARD.SWG.USMA.IBM.COM	9.70.144.213	ORACLE

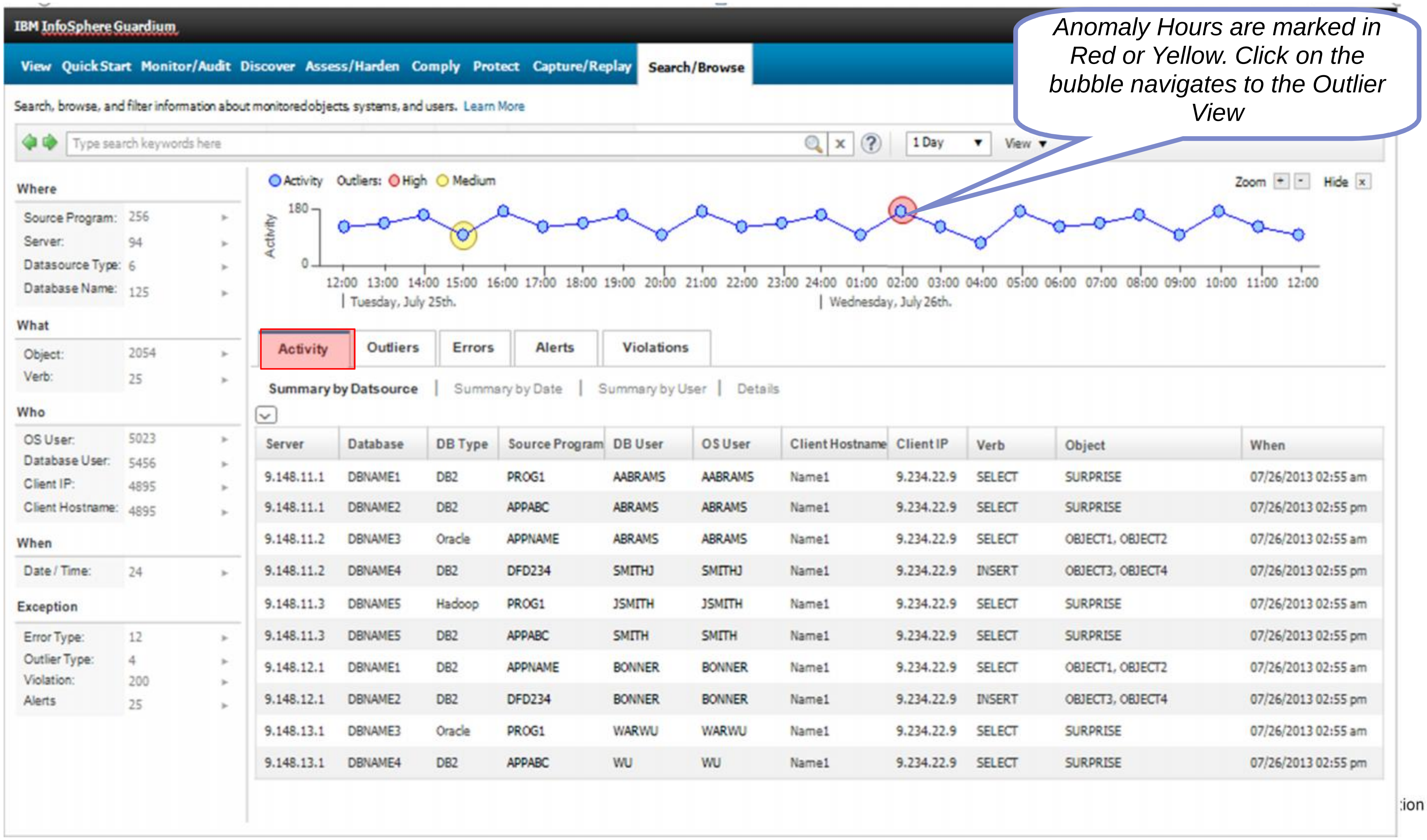
Outliers – finding the needle in the security haystack



- Advanced *Machine Learning* algorithm
- Unsupervised model – models normal activity patterns and analyzes new activities as they accumulate.
- Intuitive interface that clearly summarizes normal activities (who/what/when/where) and pinpoints anomalies and suspicious activities
- Cluster-based analysis - predicts the appearance of data together, and flag anomalies when data appear out of “context” (i.e., if cluster is missing members)

Outliers Analysis

The user opens ‘Search/Browse’ to see the all activity overview.
In the overview chart the user notices medium (Tuesday, 15:00 clock) and high (Wednesday, 02:00) marked outliers.
The user wants to get more information especially about the high classified outliers.



Search, browse, and filter information about monitoredobjects systems, and users. Learn More

Where

Source Program:	256
Server:	94
Datasource Type:	6
Database Name:	125

What

Object:	2054
Verb:	25

Who

OS User:	5023
Database User:	5456
Client IP:	4895
Client Hostname:	4895

When

Date / Time:	24

Exception

Error Type:	12
Outlier Type:	4
Violation:	200
Alerts	25

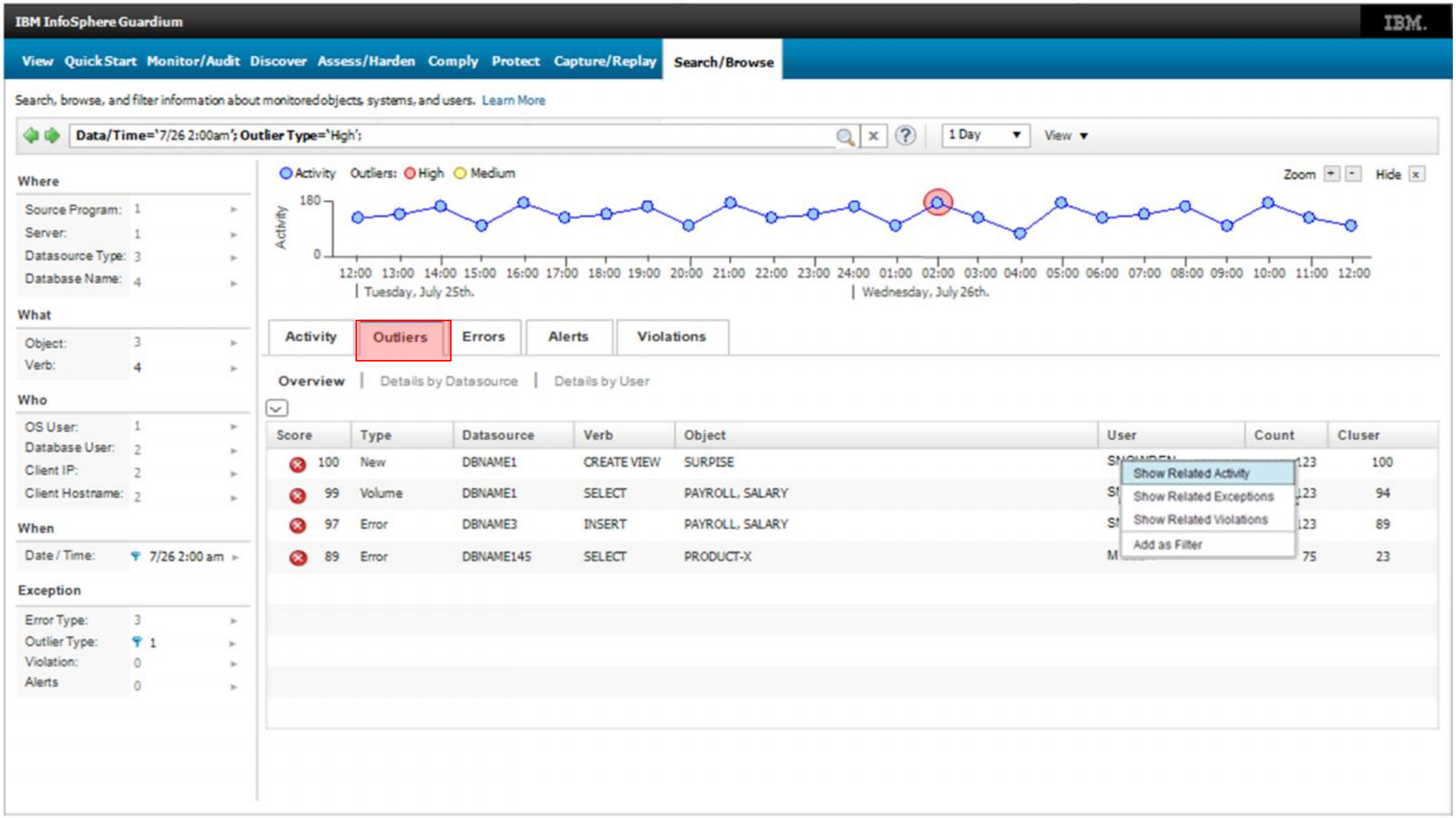
Server	Database	DB Type	Source Program	DB User	OS User	Client Hostname	Client IP	Verb	Object	When
9.148.11.1	DBNAME1	DB2	PROG1	AABRAMS	AABRAMS	Name1	9.234.22.9	SELECT	SURPRISE	07/26/2013 02:55 am
9.148.11.1	DBNAME2	DB2	APPABC	ABRAMS	ABRAMS	Name1	9.234.22.9	SELECT	SURPRISE	07/26/2013 02:55 pm
9.148.11.2	DBNAME3	Oracle	APPNAME	ABRAMS	ABRAMS	Name1	9.234.22.9	SELECT	OBJECT1, OBJECT2	07/26/2013 02:55 am
9.148.11.2	DBNAME4	DB2	DFD234	SMITHJ	SMITHJ	Name1	9.234.22.9	INSERT	OBJECT3, OBJECT4	07/26/2013 02:55 pm
9.148.11.3	DBNAME5	Hadoop	PROG1	JSMITH	JSMITH	Name1	9.234.22.9	SELECT	SURPRISE	07/26/2013 02:55 am
9.148.11.3	DBNAME5	DB2	APPABC	SMITH	SMITH	Name1	9.234.22.9	SELECT	SURPRISE	07/26/2013 02:55 pm
9.148.12.1	DBNAME1	DB2	APPNAME	BONNER	BONNER	Name1	9.234.22.9	SELECT	OBJECT1, OBJECT2	07/26/2013 02:55 am
9.148.12.1	DBNAME2	DB2	DFD234	BONNER	BONNER	Name1	9.234.22.9	INSERT	OBJECT3, OBJECT4	07/26/2013 02:55 pm
9.148.13.1	DBNAME3	Oracle	PROG1	WARWU	WARWU	Name1	9.234.22.9	SELECT	SURPRISE	07/26/2013 02:55 am
9.148.13.1	DBNAME4	DB2	APPABC	WU	WU	Name1	9.234.22.9	SELECT	SURPRISE	07/26/2013 02:55 pm

Anomaly Hours are marked in Red or Yellow. Click on the bubble navigates to the Outlier View

:ion

Outliers Details

The ‚Outliers‘ tab contains more information about the selected timeframe with high classified outliers.
The ‘Type’ explains the reason. Examples: New/Unique, Rare, Exceptional Volume, Exceptional Errors
The user can then interactively investigate each finding by Filtering-In / Out data or by using the Context Menu to navigate to the “Related Activities”, “Related Errors”, History or any other related data.



Search, browse, and filter information about monitored objects, systems, and users.

Data/Time='7/26 2:00am'; Outlier Type='High';

Where

Source Program:	1
Server:	1
Datasource Type:	3
Database Name:	4

What

Object:	3
Verb:	4

Who

OS User:	1
Database User:	2
Client IP:	2
Client Hostname:	2

When

Date / Time:	7/26 2:00 am

Exception

Error Type:	3
Outlier Type:	1
Violation:	0
Alerts	0

Score	Type	Datasource	Verb	Object	User	Count	Cluser
100	New	DBNAME1	CREATE VIEW	SURPISE	SN[illegible]	[illegible]23	100
99	Volume	DBNAME1	SELECT	PAYROLL, SALARY	S[illegible]	[illegible]23	94
97	Error	DBNAME3	INSERT	PAYROLL, SALARY	S[illegible]	[illegible]23	89
89	Error	DBNAME145	SELECT	PRODUCT-X	M[illegible]	75	23

Monitoring on System z - Recent Enhancements

- Termination of suspicious DB2 activity
  - Terminate a DB2 thread that a Guardium policy has flagged as high risk
- Many new System z RACF vulnerability tests
  - directly or via zSecure Integration
- New Entitlement Reporting for z
  - DB2 Catalog and RACF via zSecure
- New monitoring of DataSet activity (sequential and partitioned)
- Centralized IMS management
- Expanded DB2 monitoring including DB2 start and stop
- Resiliency across network or server outages
  - Consistent across all platforms
- Appliance based policy administration
  - Consistent with Distributed policies on Guardium UI

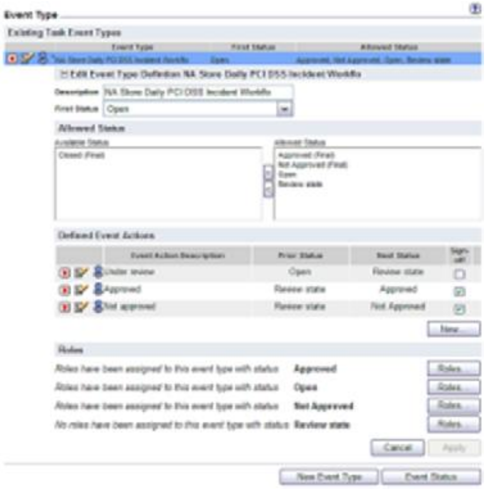
Automate oversight processes to ensure compliance and reduce operational costs

Easily create custom processes by specifying unique combination of workflow steps, actions and users

- Use case
  Different oversight processes for financial servers than PCI servers

Supports automated execution of oversight processes on a report line item basis, maximizing efficiency without sacrificing security

- Use case
  Daily exception report contains 4 items I know about and have resolved, but one that needs detailed investigation. Send 3 on for sign-off;
  hold one



Event Type

Existing Task Event Types

Event Type	First Status	Allowed Status
NA Store Daily PCI DSS Incident Workflo	Open	Approved, Not Approved, Open, Review state

Edit Event Type Definition NA Store Daily PCI DSS Incident Workflo

Description: NA Store Daily PCI DSS Incident Workflo
First Status: Open

Allowed Status

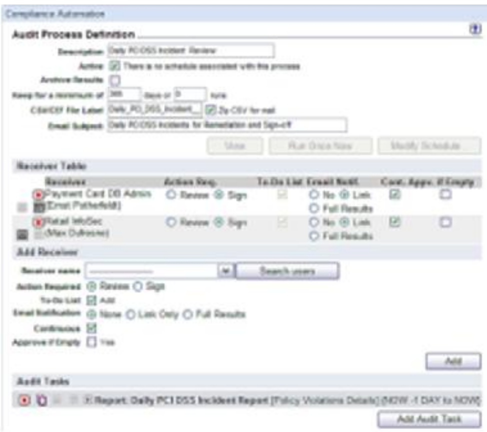
Available Status: Closed (Final)
Allowed Status: Approved (Final), Not Approved (Final), Open, Review state

Defined Event Actions

Event Action Description	Prior Status	Next Status	Sign-off
Under review	Open	Review state	□
Approved	Review state	Approved	☑
Not approved	Review state	Not Approved	☑

Roles

Roles have been assigned to this event type with status **Approved**
Roles have been assigned to this event type with status **Open**
Roles have been assigned to this event type with status **Not Approved**
No roles have been assigned to this event type with status **Review state**



Compliance Automation

Audit Process Definition

Description: Daily PCI DSS Incident Review
Active: ☑ There is no schedule associated with this process
Archive Results: □
Keep for a minimum of: 365 days or 0 runs
CSV/CEF File Label: Daily_PCI_DSS_Incident_ ☑ Zip CSV for mail
Email Subject: Daily PCI DSS Incidents for Remediation and Sign-off

Receiver Table

Receiver	Action Req.	To-Do List	Email Notif.	Cont.	Appr. if Empty
Payment Card DB Admin (Ernst Pfatterfeldt)	○ Review ● Sign	☑	○ No ● Link ○ Full Results	☑	□
Retail InfoSec (Max Dufresne)	○ Review ● Sign	☑	○ No ● Link ○ Full Results	☑	□

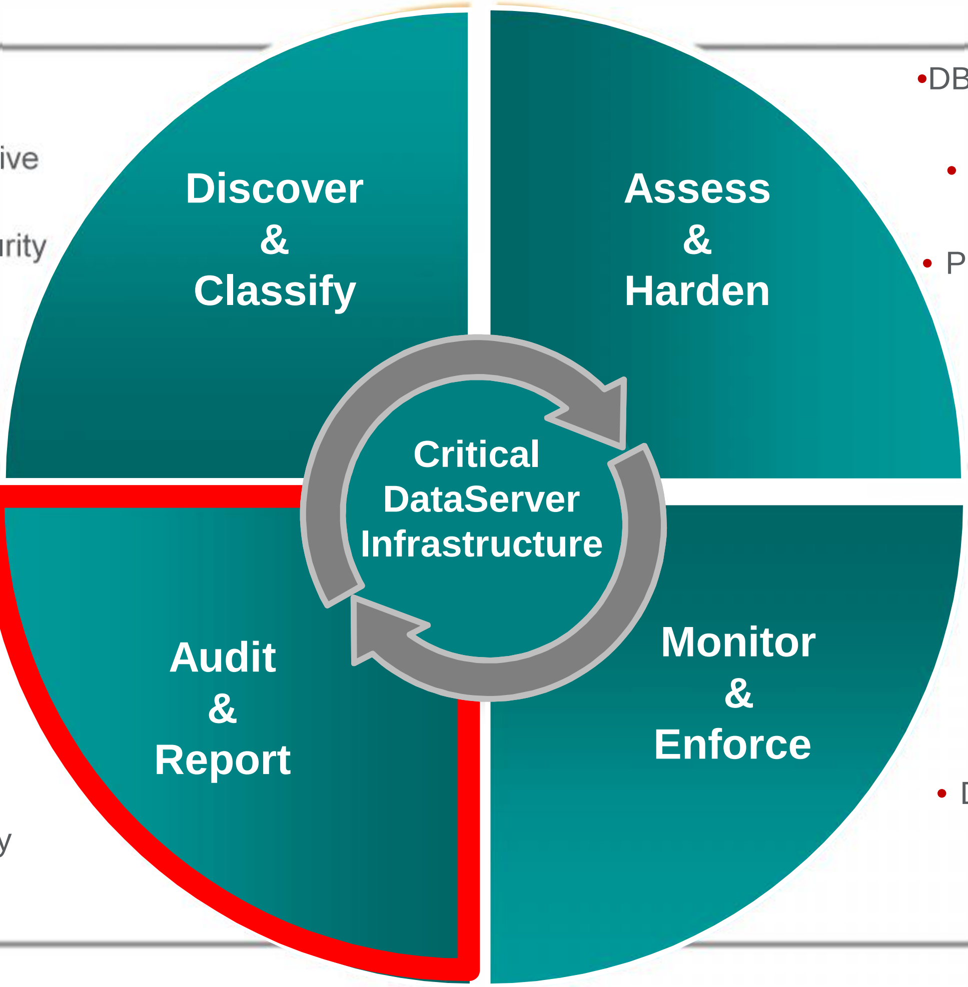
Add Receiver

Receiver name: ---------------
Action Required: ● Review ○ Sign
To-Do List: ☑ Add
Email Notification: ● None ○ Link Only ○ Full Results
Continuous: ☑
Approve if Empty: □ Yes

Audit Tasks

Report: Daily PCI DSS Incident Report [Policy Violations Details] (NOW -1 DAY to NOW)

Address the Full Data Protection Lifecycle



- Discover your DBMSs
- Discover & classify sensitive data
- Continuously update security policies

- DB vulnerability assessments
- Masking sensitive data
- Encryption of sensitive data
- Archive un-needed data
- Preconfigured tests based on best practices and standards

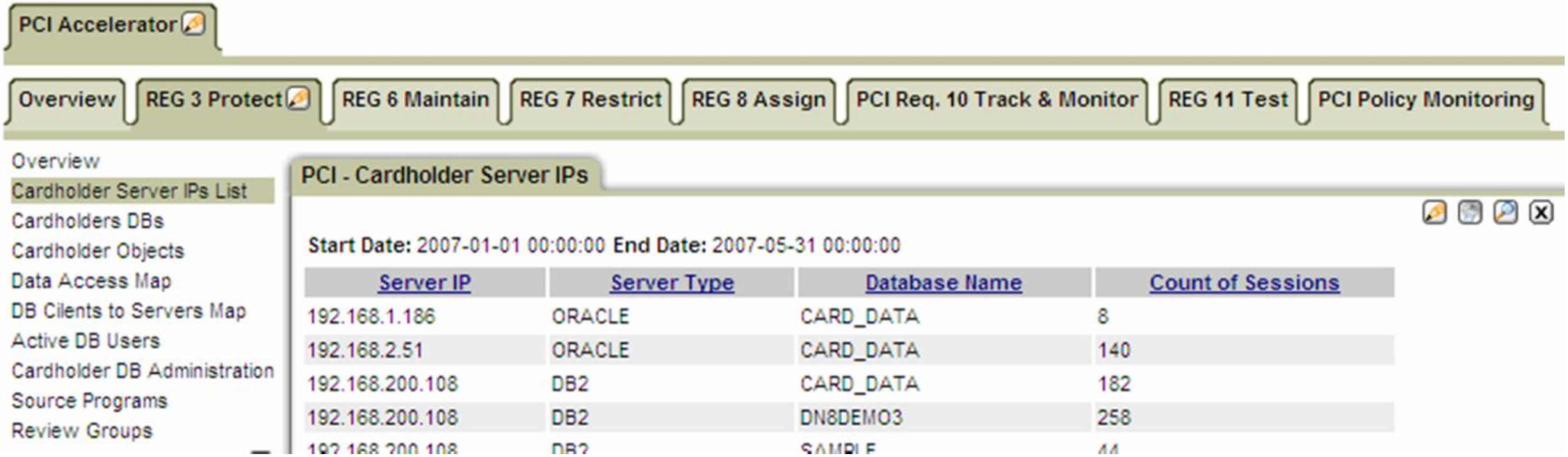
- Cross-DBMS policies
- Pre-built compliance reports (SOX, PCI, etc.)
- Enterprise integration
- SIEM integration
- Sign-off management
- Centralized audit repository
- No database changes

- Monitor & alert on attacks
- Monitor privileged users
- Monitor changed behavior
- Real-time alerts
- Prevent cyberattacks
- Detect application-layer fraud
- Enforce change controls
- Forensics data mining

Audit and Report

Custom and Pre-Built Compliance Reports

- Custom reporting
- SOX and PCI accelerators
  - Financial application monitoring (EBS, JD Edwards, Peoplesoft, etc)
  - Authorized application access only
  - Automated compliance reporting, sign-offs & escalations (SOX, PCI, NIST, etc.)

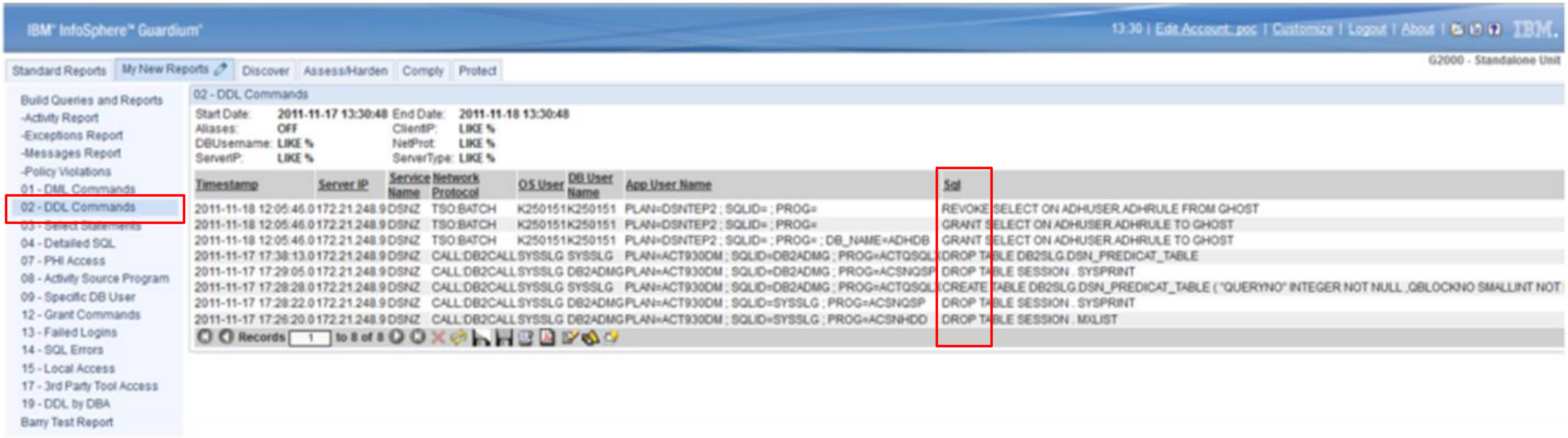


Start Date: 2007-01-01 00:00:00 **End Date:** 2007-05-31 00:00:00

Server IP	Server Type	Database Name	Count of Sessions
192.168.1.186	ORACLE	CARD_DATA	8
192.168.2.51	ORACLE	CARD_DATA	140
192.168.200.108	DB2	CARD_DATA	182
192.168.200.108	DB2	DN8DEMO3	258
192.168.200.108	DB2	SAMPLE	44

Reporting

DDL and DCL



02 - DDL Commands

Start Date:	2011-11-17 13:30:48	End Date:	2011-11-18 13:30:48
Aliases:	OFF	ClientIP:	LIKE %
DBUsername:	LIKE %	NetProt:	LIKE %
ServerIP:	LIKE %	ServerType:	LIKE %

Timestamp	Server IP	Service Name	Network Protocol	OS User	DB User Name	App User Name	Sql
2011-11-18 12:05:46.0	172.21.248.9	DSNZ	TSO:BATCH	K250151	K250151	PLAN=DSNTEP2 ; SQLID= ; PROG=	REVOKE SELECT ON ADHUSER.ADHRULE FROM GHOST
2011-11-18 12:05:46.0	172.21.248.9	DSNZ	TSO:BATCH	K250151	K250151	PLAN=DSNTEP2 ; SQLID= ; PROG=	GRANT SELECT ON ADHUSER.ADHRULE TO GHOST
2011-11-18 12:05:46.0	172.21.248.9	DSNZ	TSO:BATCH	K250151	K250151	PLAN=DSNTEP2 ; SQLID= ; PROG= ; DB_NAME=ADHDB	GRANT SELECT ON ADHUSER.ADHRULE TO GHOST
2011-11-17 17:38:13.0	172.21.248.9	DSNZ	CALL:DB2CALL	SYSSLG	SYSSLG	PLAN=ACT930DM ; SQLID=DB2ADMG ; PROG=ACTQSQLX	DROP TABLE DB2SLG.DSN_PREDICAT_TABLE
2011-11-17 17:29:05.0	172.21.248.9	DSNZ	CALL:DB2CALL	SYSSLG	DB2ADMG	PLAN=ACT930DM ; SQLID=DB2ADMG ; PROG=ACSNQSP	DROP TABLE SESSION . SYSPRINT
2011-11-17 17:28:28.0	172.21.248.9	DSNZ	CALL:DB2CALL	SYSSLG	SYSSLG	PLAN=ACT930DM ; SQLID=DB2ADMG ; PROG=ACTQSQLX	CREATE TABLE DB2SLG.DSN_PREDICAT_TABLE ("QUERYNO" INTEGER NOT NULL ,QBLOCKNO SMALLINT NOT
2011-11-17 17:28:22.0	172.21.248.9	DSNZ	CALL:DB2CALL	SYSSLG	DB2ADMG	PLAN=ACT930DM ; SQLID=SYSSLG ; PROG=ACSNQSP	DROP TABLE SESSION . SYSPRINT
2011-11-17 17:26:20.0	172.21.248.9	DSNZ	CALL:DB2CALL	SYSSLG	DB2ADMG	PLAN=ACT930DM ; SQLID=SYSSLG ; PROG=ACSNHDD	DROP TABLE SESSION . MXLIST

Ability to Monitor Data Definition Language Commands

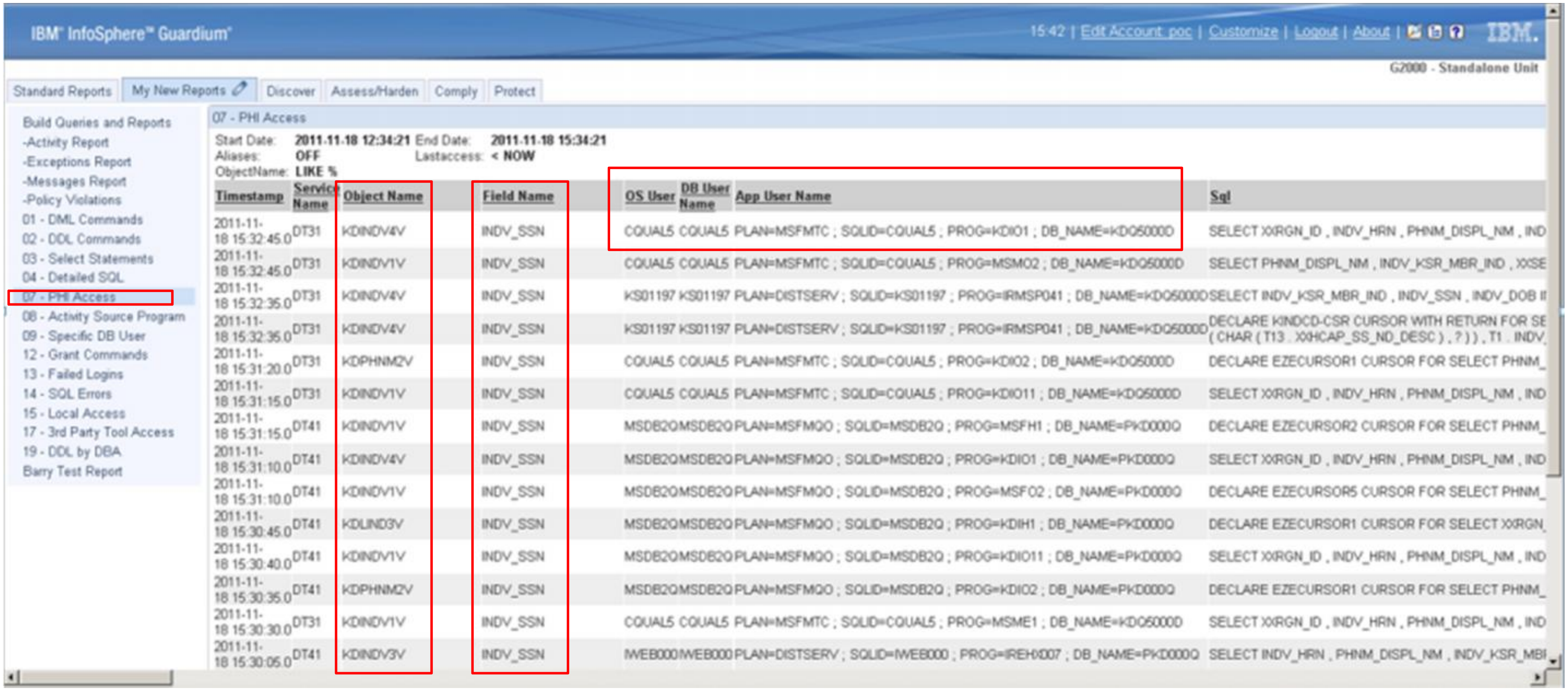
- Create, Alter, Drop, etc.

Ability to Monitor Data Control Language Commands

- Grant, Revoke, etc.

Reporting

Sensitive Data Access



07 - PHI Access

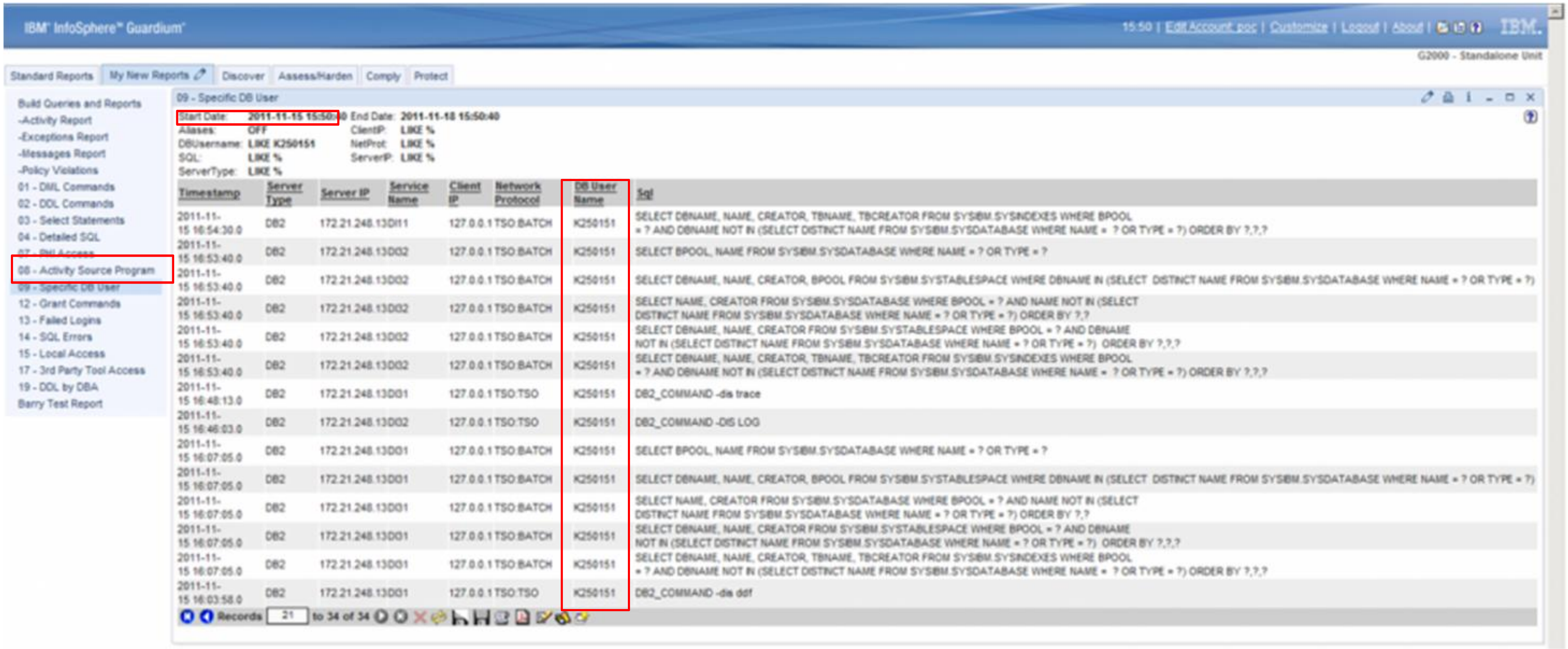
Start Date: **2011-11-18 12:34:21** End Date: **2011-11-18 15:34:21**
Aliases: **OFF** Lastaccess: **< NOW**
ObjectName: **LIKE %**

Timestamp	Service Name	Object Name	Field Name	OS User	DB User Name	App User Name	Sql
2011-11-18 15:32:45.0	DT31	KDINDV4V	INDV_SSN	CQUAL5	CQUAL5	PLAN=MSFMTC ; SQLID=CQUAL5 ; PROG=KDIO1 ; DB_NAME=KDQ5000D	SELECT XXRGN_ID , INDV_HRN , PHNM_DISPL_NM , IND
2011-11-18 15:32:45.0	DT31	KDINDV1V	INDV_SSN	CQUAL5	CQUAL5	PLAN=MSFMTC ; SQLID=CQUAL5 ; PROG=MSMO2 ; DB_NAME=KDQ5000D	SELECT PHNM_DISPL_NM , INDV_KSR_MBR_IND , XXSE
2011-11-18 15:32:35.0	DT31	KDINDV4V	INDV_SSN	KS01197	KS01197	PLAN=DISTSERV ; SQLID=KS01197 ; PROG=IRMSP041 ; DB_NAME=KDQ5000D	SELECT INDV_KSR_MBR_IND , INDV_SSN , INDV_DOB II
2011-11-18 15:32:35.0	DT31	KDINDV4V	INDV_SSN	KS01197	KS01197	PLAN=DISTSERV ; SQLID=KS01197 ; PROG=IRMSP041 ; DB_NAME=KDQ5000D	DECLARE KINDCD-CSR CURSOR WITH RETURN FOR SE (CHAR (T13 . XXHCAP_SS_ND_DESC) , ?)) , T1 . INDV_
2011-11-18 15:31:20.0	DT31	KDPHNM2V	INDV_SSN	CQUAL5	CQUAL5	PLAN=MSFMTC ; SQLID=CQUAL5 ; PROG=KDIO2 ; DB_NAME=KDQ5000D	DECLARE EZECURSOR1 CURSOR FOR SELECT PHNM_
2011-11-18 15:31:15.0	DT31	KDINDV1V	INDV_SSN	CQUAL5	CQUAL5	PLAN=MSFMTC ; SQLID=CQUAL5 ; PROG=KDIO11 ; DB_NAME=KDQ5000D	SELECT XXRGN_ID , INDV_HRN , PHNM_DISPL_NM , IND
2011-11-18 15:31:15.0	DT41	KDINDV1V	INDV_SSN	MSDB2Q	MSDB2Q	PLAN=MSFMQO ; SQLID=MSDB2Q ; PROG=MSFH1 ; DB_NAME=PKD000Q	DECLARE EZECURSOR2 CURSOR FOR SELECT PHNM_
2011-11-18 15:31:10.0	DT41	KDINDV4V	INDV_SSN	MSDB2Q	MSDB2Q	PLAN=MSFMQO ; SQLID=MSDB2Q ; PROG=KDIO1 ; DB_NAME=PKD000Q	SELECT XXRGN_ID , INDV_HRN , PHNM_DISPL_NM , IND
2011-11-18 15:31:10.0	DT41	KDINDV1V	INDV_SSN	MSDB2Q	MSDB2Q	PLAN=MSFMQO ; SQLID=MSDB2Q ; PROG=MSFO2 ; DB_NAME=PKD000Q	DECLARE EZECURSOR5 CURSOR FOR SELECT PHNM_
2011-11-18 15:30:45.0	DT41	KDLIND3V	INDV_SSN	MSDB2Q	MSDB2Q	PLAN=MSFMQO ; SQLID=MSDB2Q ; PROG=KDIH1 ; DB_NAME=PKD000Q	DECLARE EZECURSOR1 CURSOR FOR SELECT XXRGN_
2011-11-18 15:30:40.0	DT41	KDINDV1V	INDV_SSN	MSDB2Q	MSDB2Q	PLAN=MSFMQO ; SQLID=MSDB2Q ; PROG=KDIO11 ; DB_NAME=PKD000Q	SELECT XXRGN_ID , INDV_HRN , PHNM_DISPL_NM , IND
2011-11-18 15:30:35.0	DT41	KDPHNM2V	INDV_SSN	MSDB2Q	MSDB2Q	PLAN=MSFMQO ; SQLID=MSDB2Q ; PROG=KDIO2 ; DB_NAME=PKD000Q	DECLARE EZECURSOR1 CURSOR FOR SELECT PHNM_
2011-11-18 15:30:30.0	DT31	KDINDV1V	INDV_SSN	CQUAL5	CQUAL5	PLAN=MSFMTC ; SQLID=CQUAL5 ; PROG=MSME1 ; DB_NAME=KDQ5000D	SELECT XXRGN_ID , INDV_HRN , PHNM_DISPL_NM , IND
2011-11-18 15:30:05.0	DT41	KDINDV3V	INDV_SSN	IWEB000	IWEB000	PLAN=DISTSERV ; SQLID=IWEB000 ; PROG=IREHX007 ; DB_NAME=PKD000Q	SELECT INDV_HRN , PHNM_DISPL_NM , INDV_KSR_MBI

Ability to Monitor Access to Objects and Fields Containing Sensitive Data

Reporting

Specific User Activity



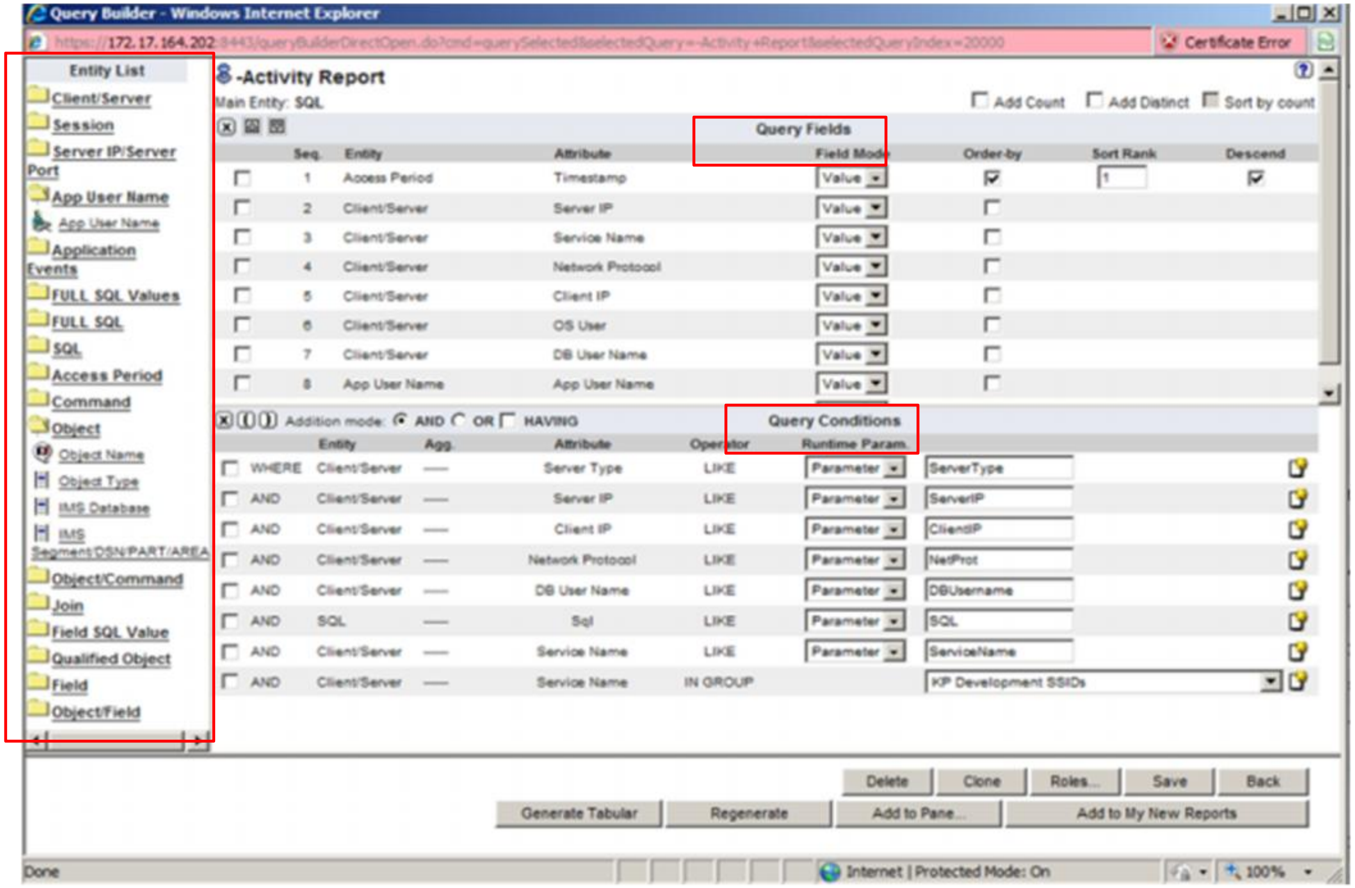
Start Date: 2011-11-15 15:50:40 End Date: 2011-11-18 15:50:40
Aliases: OFF ClientIP: LIKE %
DBUsername: LIKE K250151 NetProt: LIKE %
SQL: LIKE % ServerIP: LIKE %
ServerType: LIKE %

Timestamp	Server Type	Server IP	Service Name	Client IP	Network Protocol	DB User Name	Sql
2011-11-15 16:54:30.0	DB2	172.21.248.13	DI11	127.0.0.1	TSO:BATCH	K250151	SELECT DBNAME, NAME, CREATOR, TBNAME, TBCREATOR FROM SYSIBM.SYSINDEXES WHERE BPOOL = ? AND DBNAME NOT IN (SELECT DISTINCT NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?) ORDER BY ?,?,?
2011-11-15 16:53:40.0	DB2	172.21.248.13	D002	127.0.0.1	TSO:BATCH	K250151	SELECT BPOOL, NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?
2011-11-15 16:53:40.0	DB2	172.21.248.13	D002	127.0.0.1	TSO:BATCH	K250151	SELECT DBNAME, NAME, CREATOR, BPOOL FROM SYSIBM.SYSTABLESPACE WHERE DBNAME IN (SELECT DISTINCT NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?)
2011-11-15 16:53:40.0	DB2	172.21.248.13	D002	127.0.0.1	TSO:BATCH	K250151	SELECT NAME, CREATOR FROM SYSIBM.SYSDATABASE WHERE BPOOL = ? AND NAME NOT IN (SELECT DISTINCT NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?) ORDER BY ?,?
2011-11-15 16:53:40.0	DB2	172.21.248.13	D002	127.0.0.1	TSO:BATCH	K250151	SELECT DBNAME, NAME, CREATOR FROM SYSIBM.SYSTABLESPACE WHERE BPOOL = ? AND DBNAME NOT IN (SELECT DISTINCT NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?) ORDER BY ?,?,?
2011-11-15 16:53:40.0	DB2	172.21.248.13	D002	127.0.0.1	TSO:BATCH	K250151	SELECT DBNAME, NAME, CREATOR, TBNAME, TBCREATOR FROM SYSIBM.SYSINDEXES WHERE BPOOL = ? AND DBNAME NOT IN (SELECT DISTINCT NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?) ORDER BY ?,?,?
2011-11-15 16:48:13.0	DB2	172.21.248.13	D001	127.0.0.1	TSO:TSO	K250151	DB2_COMMAND -dis trace
2011-11-15 16:46:03.0	DB2	172.21.248.13	D002	127.0.0.1	TSO:TSO	K250151	DB2_COMMAND -DIS LOG
2011-11-15 16:07:05.0	DB2	172.21.248.13	D001	127.0.0.1	TSO:BATCH	K250151	SELECT BPOOL, NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?
2011-11-15 16:07:05.0	DB2	172.21.248.13	D001	127.0.0.1	TSO:BATCH	K250151	SELECT DBNAME, NAME, CREATOR, BPOOL FROM SYSIBM.SYSTABLESPACE WHERE DBNAME IN (SELECT DISTINCT NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?)
2011-11-15 16:07:05.0	DB2	172.21.248.13	D001	127.0.0.1	TSO:BATCH	K250151	SELECT NAME, CREATOR FROM SYSIBM.SYSDATABASE WHERE BPOOL = ? AND NAME NOT IN (SELECT DISTINCT NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?) ORDER BY ?,?
2011-11-15 16:07:05.0	DB2	172.21.248.13	D001	127.0.0.1	TSO:BATCH	K250151	SELECT DBNAME, NAME, CREATOR FROM SYSIBM.SYSTABLESPACE WHERE BPOOL = ? AND DBNAME NOT IN (SELECT DISTINCT NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?) ORDER BY ?,?,?
2011-11-15 16:07:05.0	DB2	172.21.248.13	D001	127.0.0.1	TSO:BATCH	K250151	SELECT DBNAME, NAME, CREATOR, TBNAME, TBCREATOR FROM SYSIBM.SYSINDEXES WHERE BPOOL = ? AND DBNAME NOT IN (SELECT DISTINCT NAME FROM SYSIBM.SYSDATABASE WHERE NAME = ? OR TYPE = ?) ORDER BY ?,?,?
2011-11-15 16:03:58.0	DB2	172.21.248.13	D001	127.0.0.1	TSO:TSO	K250151	DB2_COMMAND -dis ddf

Ability to Report on a Specific User’s Activity

Reporting

Custom Report Building


Query Builder - Windows Internet Explorer
https://172.17.164.202:8443/queryBuilderDirectOpen.do?cmd=querySelected&selectedQuery=-Activity+Report&selectedQueryIndex=20000
Certificate Error
Delete
Clone
Roles...
Save
Back
Generate Tabular
Regenerate
Add to Pane...
Add to My New Reports
Done
Internet | Protected Mode: On
100%

Entity List

- Client/Server
- Session
- Server IP/Server Port
- App User Name
  - App User Name
- Application Events
- FULL SQL Values
- FULL SQL
- SQL
- Access Period
- Command
- Object
  - Object Name
  - Object Type
  - IMS Database
  - IMS Segment/DSN/PART/AREA
- Object/Command
- Join
- Field SQL Value
- Qualified Object
- Field
- Object/Field

8 -Activity Report

Main Entity: SQL

□ Add Count □ Add Distinct □ Sort by count

Query Fields

	Seq.	Entity	Attribute	Field Mode	Order-by	Sort Rank	Descend
□	1	Access Period	Timestamp	Value	☑	1	☑
□	2	Client/Server	Server IP	Value	□		
□	3	Client/Server	Service Name	Value	□		
□	4	Client/Server	Network Protocol	Value	□		
□	5	Client/Server	Client IP	Value	□		
□	6	Client/Server	OS User	Value	□		
□	7	Client/Server	DB User Name	Value	□		
□	8	App User Name	App User Name	Value	□		

Addition mode: ● AND ○ OR □ HAVING

Query Conditions

		Entity	Agg.	Attribute	Operator	Runtime Param.	
□	WHERE	Client/Server	—	Server Type	LIKE	Parameter	ServerType
□	AND	Client/Server	—	Server IP	LIKE	Parameter	ServerIP
□	AND	Client/Server	—	Client IP	LIKE	Parameter	ClientIP
□	AND	Client/Server	—	Network Protocol	LIKE	Parameter	NetProt
□	AND	Client/Server	—	DB User Name	LIKE	Parameter	DBUsername
□	AND	SQL	—	Sql	LIKE	Parameter	SQL
□	AND	Client/Server	—	Service Name	LIKE	Parameter	ServiceName
□	AND	Client/Server	—	Service Name	IN GROUP		KP Development SSIDs

Ability to Easily Create Custom Reports Through Point and Click Interface

Agenda

- Big Data opportunities and threats
- Proactive and preventative measures to information protection
- Summary and Call to Action

Summary and call to action..

- **Enterprise wide protection across many databases, platforms and data streams**
  - ***Preventative and proactive data security controls***
  - ***Real-time data threat detection and monitoring alerts***
  - ***Support for many data streams – not just transactional***
  - ***Extensive integration capabilities***
  - ***Fast implementation with automated workflows, predefined compliance reports and policies***
  - ***Data Masking, Encryption and vulnerability assessment.***
- **Sign up for future related papers in 2015 “The world of DB2 for z/OS” on LinkedIn and Facebook**

Useful URLs

- ***www.ibm.com/software/os/systemz/security/***
- ***www.ibm.com/guardium***
- ***www.ibm.com/bigdata/z***
- ***www.infogovcommunity.com***

THINK

BIG

THINK

Z

Thank You