Information Management

IBM

Monitorización y Auditoría de Bases de Datos InfoSphere Guardium for z

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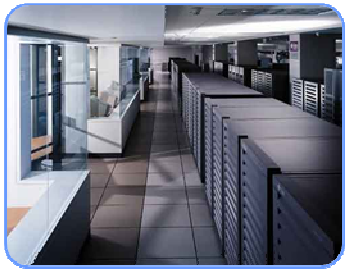
Guardium®
SAFEGUARDING DATABASES™ | AN IBM® COMPANY

InfoSphere Guardium Introducción

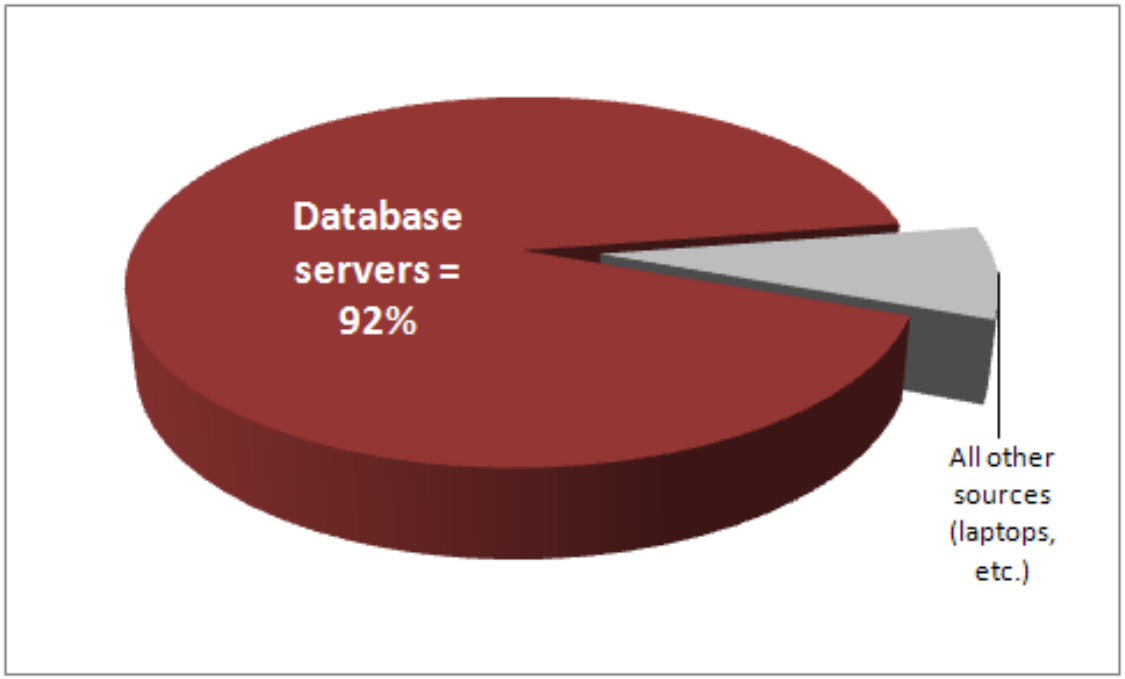
Monitorización continua en tiempo real de todas las actividades de base de datos para:

1. **Prevenir fuga de información y brechas**
   - Proteger frente a ataques internos y externos
2. **Garantizar la gobernabilidad del dato**
   - Evitar accesos no autorizados y cambios a información sensible (por ejemplo, por usuarios privilegiados)



3. **Reducir el coste de cumplimiento**
   - Controles automatizados y centralizados:
     - ✓ Gestores de Bases de Datos (Oracle, DB2, SQL Server, …)
     - ✓ Enterprise applications (ERP, CRM, HR, analytics, …)
     - ✓ Normativas y regulaciones (SOX, PCI, LOPD,…)
     - ✓ Unidades de negocio y centros de datos distribuidos
   - Mínimo impacto en rendimiento
   - Sin cambios en bases de datos o aplicaciones

La mayor parte de los registros comprometidos residen en servidores de bases de datos



http://www.verizonbusiness.com/resources/reports/rp_2010-data-breach-report_en_xg.pdf

Ataques de SQLInjection: Aumento 134% en 2008

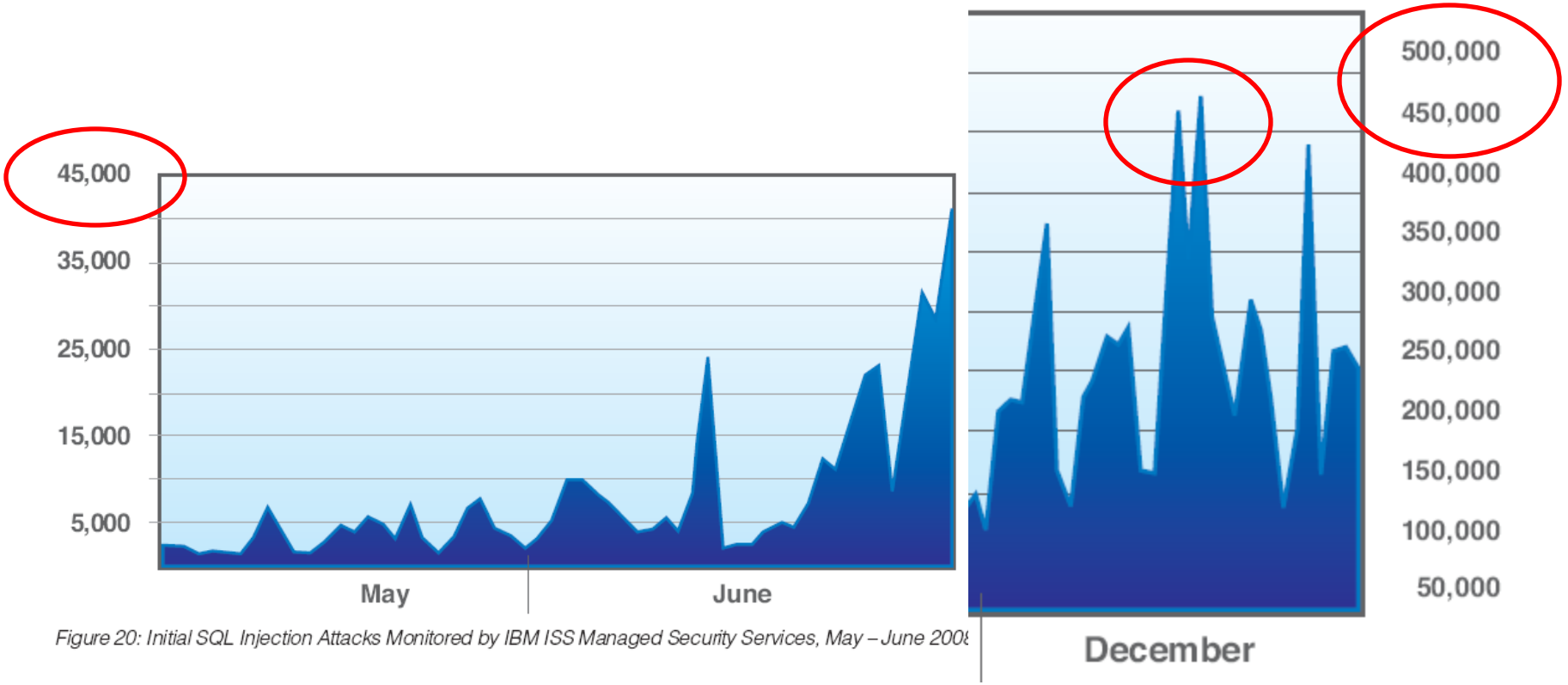


Figure 20: Initial SQL Injection Attacks Monitored by IBM ISS Managed Security Services, May – June 200

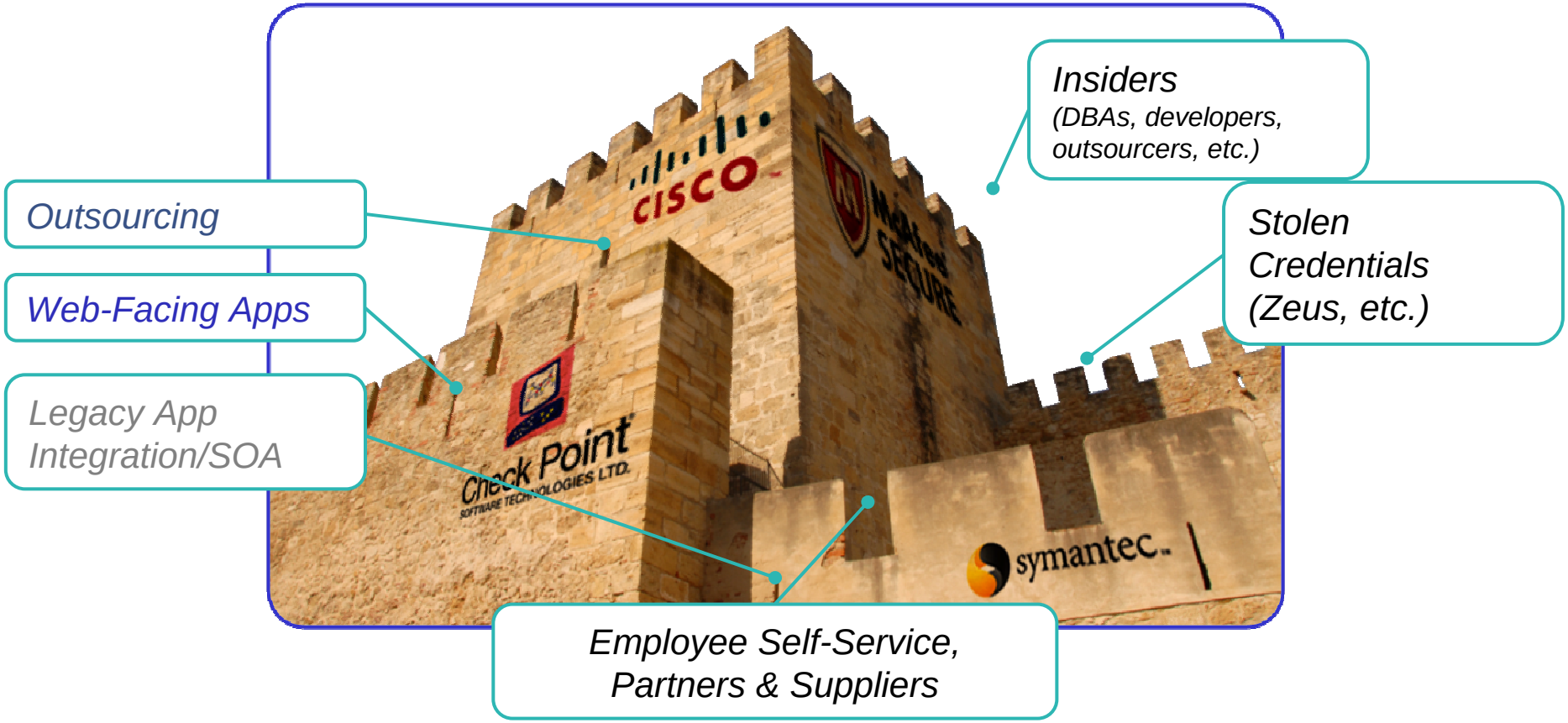
- SQL Injection reemplazó a cross-site scripting como vulnerabilidad #1
- Los nuevos ataques utilizan toolkits automatizados; inyectan malware dentro de las bases de datos
- "The bad guys are getting in and not being detected." --IBM

Fuente: IBM Internet Security Systems X-Force® 2008 Trend & Risk Report, Enero 2009

Las defensas perimetrales ya no son suficientes

"A fortress mentality will not work in cyber. We cannot retreat behind a Maginot Line of firewalls."

- William J. Lynn III,
  U.S. Deputy Defense Secretary



Retos habituales: Auditoría DB2 en z/OS

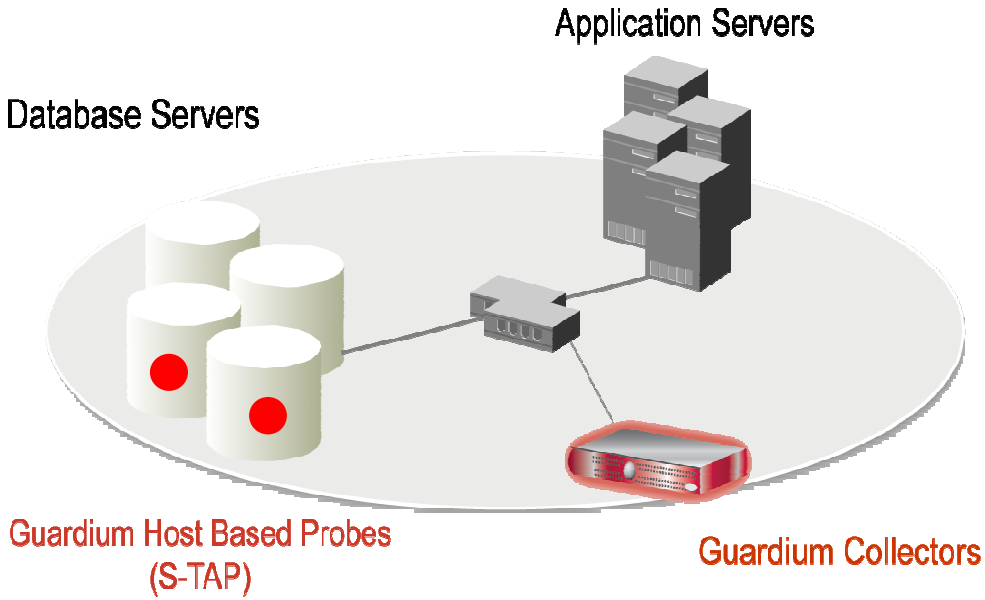
- Presiones de **organismos reguladores** para demostrar que se emplean controles adecuados
  - Especialmente relativos a usuarios privilegiados (DBAs, SYSADMINs, …)
- La mayor parte de los entornos DB2 en z/OS tienen **auditoría mínima**
  - Requiere un esfuerzo manual, por parte de los DBAs, muy significativo
- El RACF a veces se percibe como un control de seguridad suficiente, aunque el **RACF no**:
  - Evita actualizaciones no autorizadas si el usuario tiene privilegios sobre los datos
  - Previene acceso a datos sensibles que no están en el ámbito de su alcance
  - Proporciona información de detalle de auditoría de qué hizo el usuario mientras accedía a DB2
- No soporta **Separación de Funciones/Roles**, que supone un riesgo potencial de Seguridad
  - Las trazas de DB2 usadas para auditoría son gestionadas por DBAs que están siendo auditados

El Cumplimiento de Regulaciones

Audit Requirements	COBIT (SOX)	PCI-DSS	ISO 27002	Data Privacy & Protection Laws	NIST SP 800-53 (FISMA)
1. Access to Sensitive Data (Successful/Failed SELECTs)		✓	✓	✓	✓
2. Schema Changes (DDL) (Create/Drop/Alter Tables, etc.)	✓	✓	✓	✓	✓
3. Data Changes (DML) (Insert, Update, Delete)	✓		✓		
4. Security Exceptions (Failed logins, SQL errors, etc.)	✓	✓	✓	✓	✓
5. Accounts, Roles & Permissions (DCL) (GRANT, REVOKE)	✓	✓	✓	✓	✓

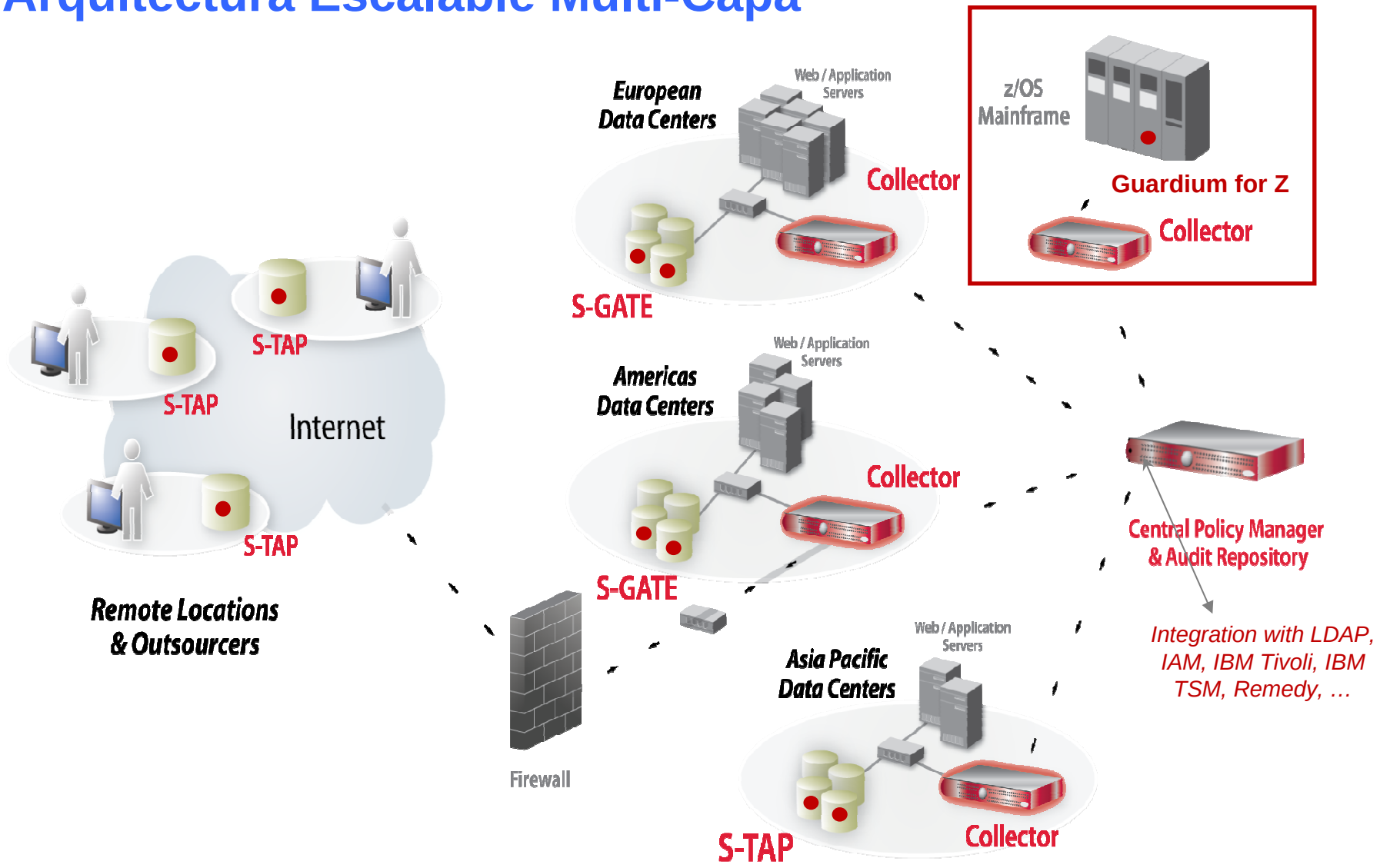
DDL = Data Definition Language (aka schema changes)
DML = Data Manipulation Language (data value changes)
DCL = Data Control Language

Monitorización de Bases de Datos en Tiempo Real

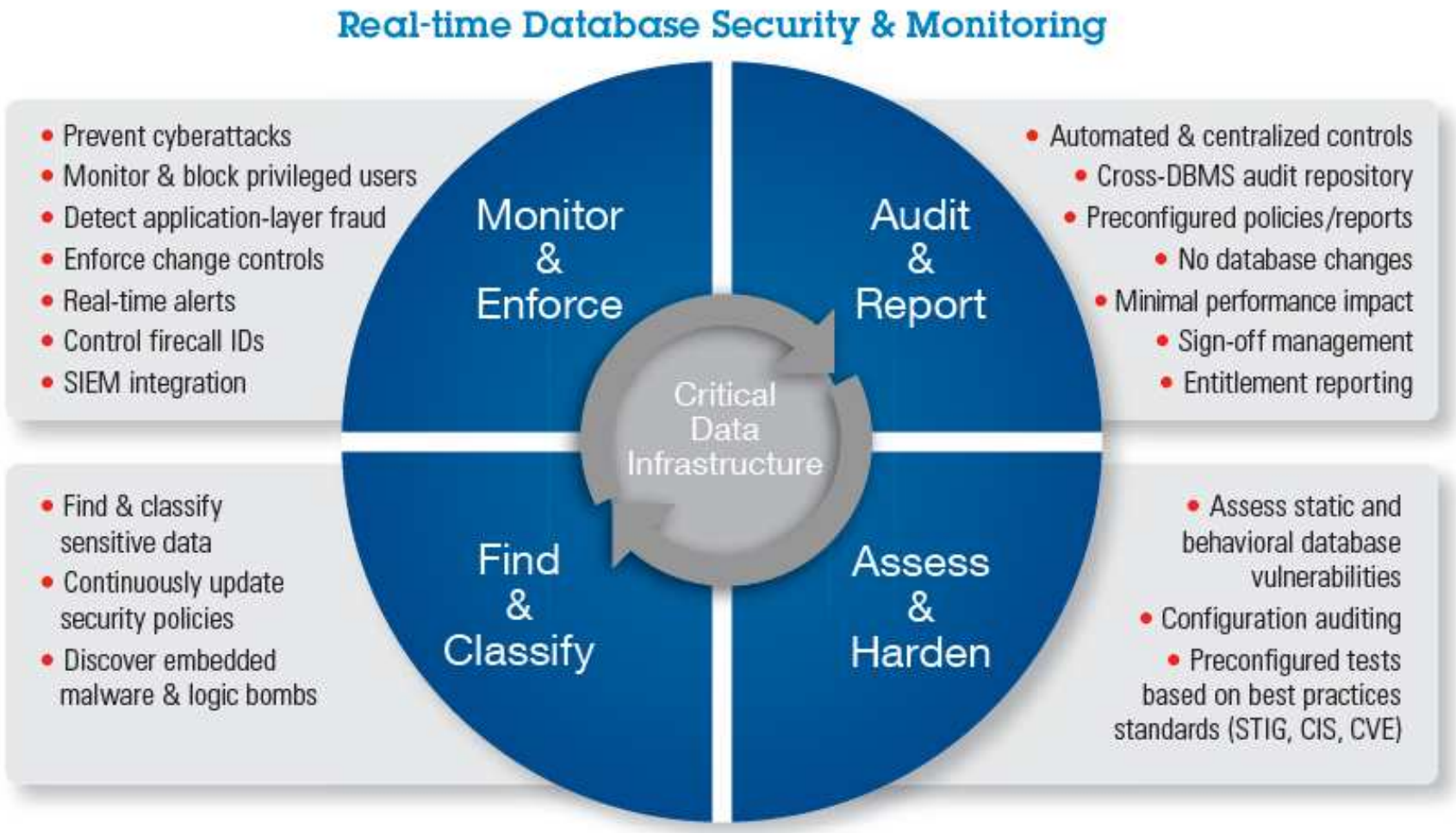


- **Arquitectura no-invasiva**
  - Fuera de la Base de Datos
  - Impacto mínimo en rendimiento (2-3%)
  - Sin cambios al DBMS o aplicativos
- **Solución multi-plataforma**
- **100% visibilidad incluyendo accesos locales de DBAs**
- **Refuerza segregación de funciones**
- **No depende de los logs nativos del DBMS que pueden ser borrados por atacantes o personal interno**
- **Granular, políticas en tiempo real y auditoría**
  - *Quién, dónde, cuándo, cómo*
- **Informes automatizados de cumplimiento, trazabilidad y escalado** (SOX, PCI, NIST, etc.)

Arquitectura Escalable Multi-Capa



Gestión del ciclo de vida completo de la Seguridad en bases de datos y del Compliance con Guardium

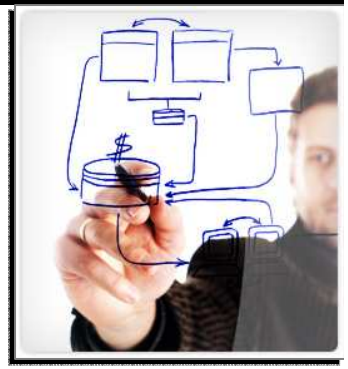


Introducción a InfoSphere Guardium 8

Monitorización de bases de datos más completa para Reducir Riesgos, Simplificar el Cumplimiento de Normativas y Reducir Costes de Auditoría

- El soporte de plataformas más amplio disponible, incluyendo System z
- Monitorización mejorada de SAP para luchar contra el fraude
- Primera solución para monitorizar repositorios SharePoint para acceso a datos sensibles (financieros, diseños, etc.)
- Mitigación de riesgos y seguridad a nivel de datos robusta
  - *Desde la monitorización hasta controles de acceso proactivos*
  - *Bloqueo mejorado: Cuarentena y gestión de Fire-ID*
- Reducción del coste y complejidad del cumplimiento
  - *Políticas centralizadas y automatizadas para múltiples plataformas y DBMS*
  - *Automatización avanzada del workflow de compliance*

InfoSphere Guardium 8 – Mejoras Adicionales



- **Entitlement reporting**
  - Solución unificada para todos los gestores y plataformas soportadas
- **Mejoras en Vulnerability Assessment**
  - 500 nuevos tests
  - Se añaden tags para el estándar CVE
  - Basado en estándares de la industria CIS Benchmark & DoD STIG
- **Integración con Tivoli Security and Information Management (TSIEM)**
  - Combina información de monitorización de bases de datos con información de log de otras fuentes (Windows, Unix, firewalls, IDS, etc.)
  - Portal para seguridad y compliance a nivel de empresa
- **Nuevos gestores de bases de datos soportados**
  - PostgreSQL & Netezza
  - Complementa soporte previo de IBM DB2 and Informix, Oracle, SQL Server, Sybase, MySQL, Teradata
- **Mejoras en escalabilidad, usabilidad y rendimiento basado en feedback continuo de instalaciones actuales**

Auditoría Detallada

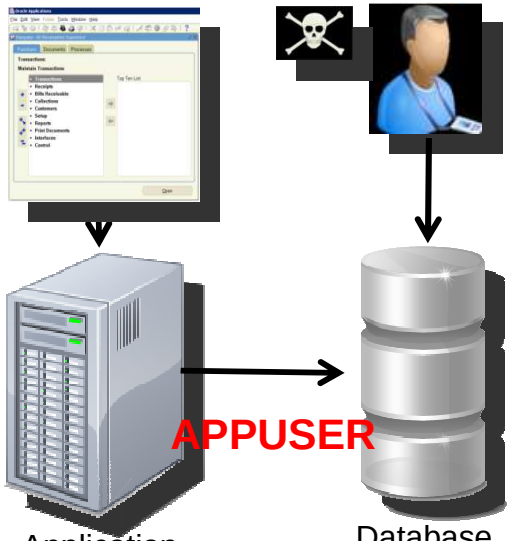
Todo el tráfico SQL se analiza y se filtra en tiempo real para proveer información específica a los auditores

Client IP
OS user ID
Client host name
Domain login
Client OS
MAC
TTL
Origin
Failed logins

Server IP
Server port
Server name
Session
SQL patterns
Network protocol
Server OS
Timestamp
App user ID
Access programs

ALL SQL commands
Fields
Objects
Verbs
DDL
DML
DCL
DB user ID
DB version
DB type
DB protocol
Ports
SQL errors
SELECTs
Bind values

Políticas Granulares con Alertas de Tiempo Real



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: INVENTORY

Command: DROP TABLE

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

ALERT DAILY
ALERT ONCE PER SESSION
ALERT PER MATCH
ALERT PER TIME GRANULARITY
ALLOW
IGNORE RESPONSES PER SESSION
IGNORE SESSION
IGNORE SQL PER SESSION
LOG FULL DETAILS
LOG FULL DETAILS PER SESSION
LOG FULL DETAILS WITH VALUES
LOG FULL DETAILS WITH VALUES PER SESSION
LOG MASKED DETAILS
LOG ONLY
RESET
S-GATE ATTACH
S-GATE DETACH
S-GATE TERMINATE
S-TAP TERMINATE
SKIP LOGGING

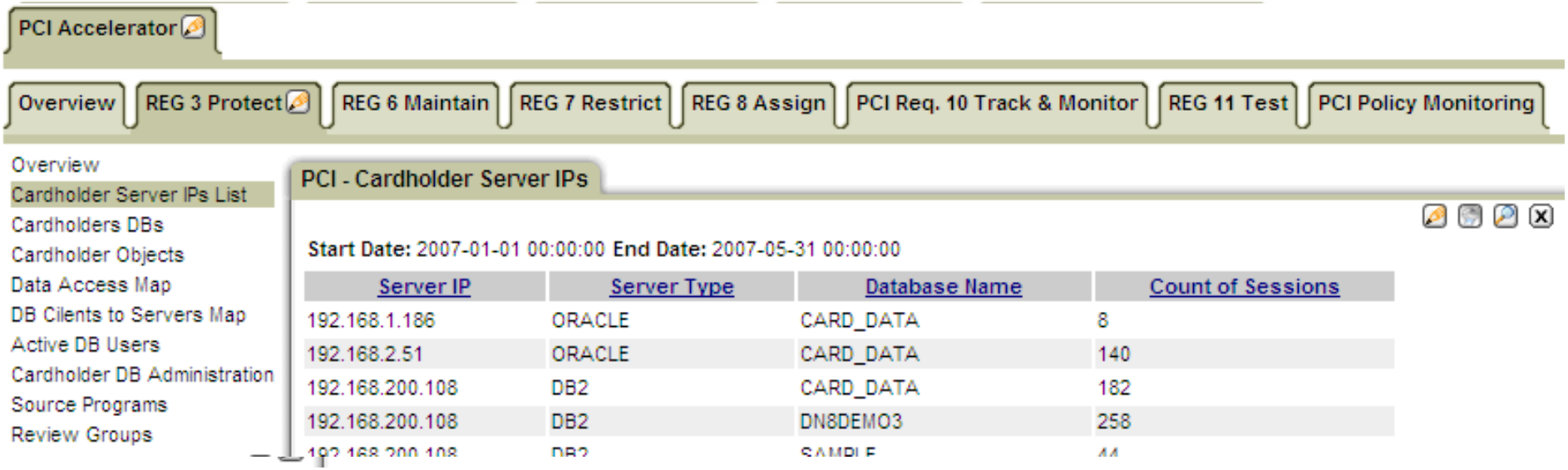
CIFS
DB2
FTP
IBM DB2 Z/OS
IBM ISERIES
IMS
Informix
MS SQL SERVER
MYSQL
Oracle
Sybase
TERADATA

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

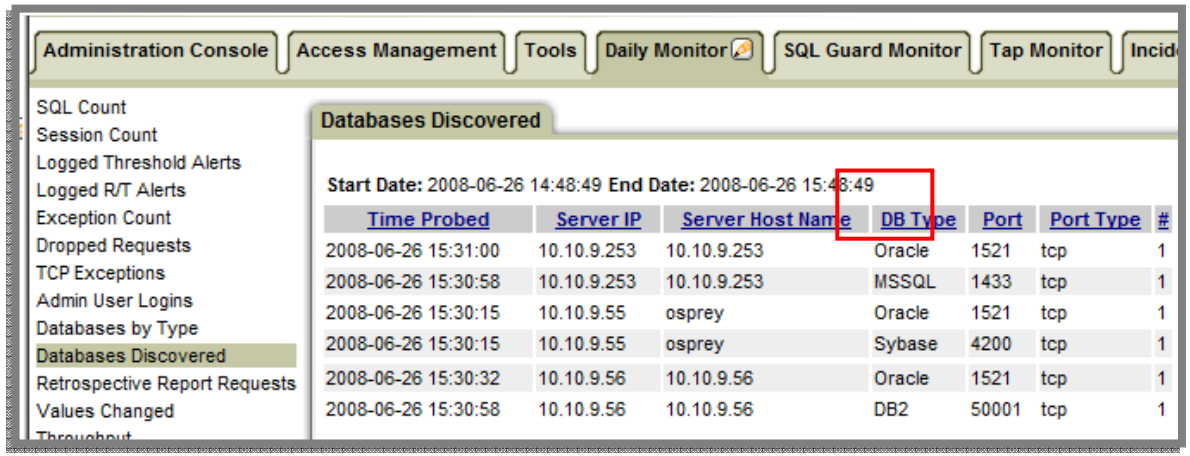
Subject: (c1) SQLGUARD ALERT Alert based on rule ID non-App Source AppUser Connection
Category: security Classification: Breach Severity MED
Rule # 20267 [non-App Source AppUser Connection]
Request Info: [Session start: 2009-04-15 06:59:03 Server Type: ORACLE Client IP 192.168.20.160 ServerIP: 172.16.2.152 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

Auditoría y Generación de Informes (Reporting)

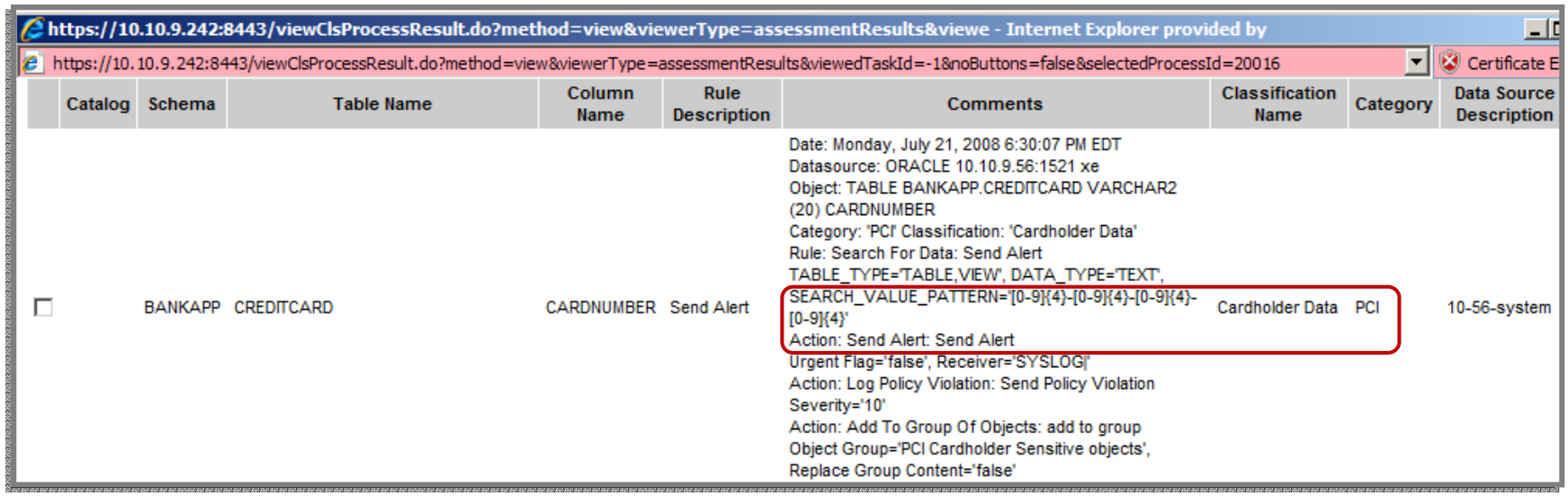
- **Dispone de diversos aceleradores de cumplimiento de normativas (SOX, PCI, Basilea II, HIPAA…)**
  - Monitorización de aplicaciones financieras (EBS, JD Edwards, PeopleSoft, etc)
  - Sólo acceso de aplicación autorizado
  - Informes de cumplimiento automatizados, revisión, firma y escalado (SOX, PCI, NIST, etc.)



Descubrimiento de Bases de Datos y Clasificación de Datos Sensibles



- ✓ Descubrimiento de bases de datos
- ✓ Descubrimiento de datos sensibles
- ✓ Acciones basadas en políticas
  - *Alertas*
  - *Añadir a un grupo de objetos sensibles*



Evaluar y Reforzar – Análisis de Vulnerabilidades (VA)

- Basados en estándares reconocidos tales como STIG y CIS benchmark tests.
- Cobertura completa del entorno global de las bases de datos:
  1. *Comportamiento Observado*
  2. *Bases de Datos*
  3. *Sistema Operativo*

Tests passing: **38%**

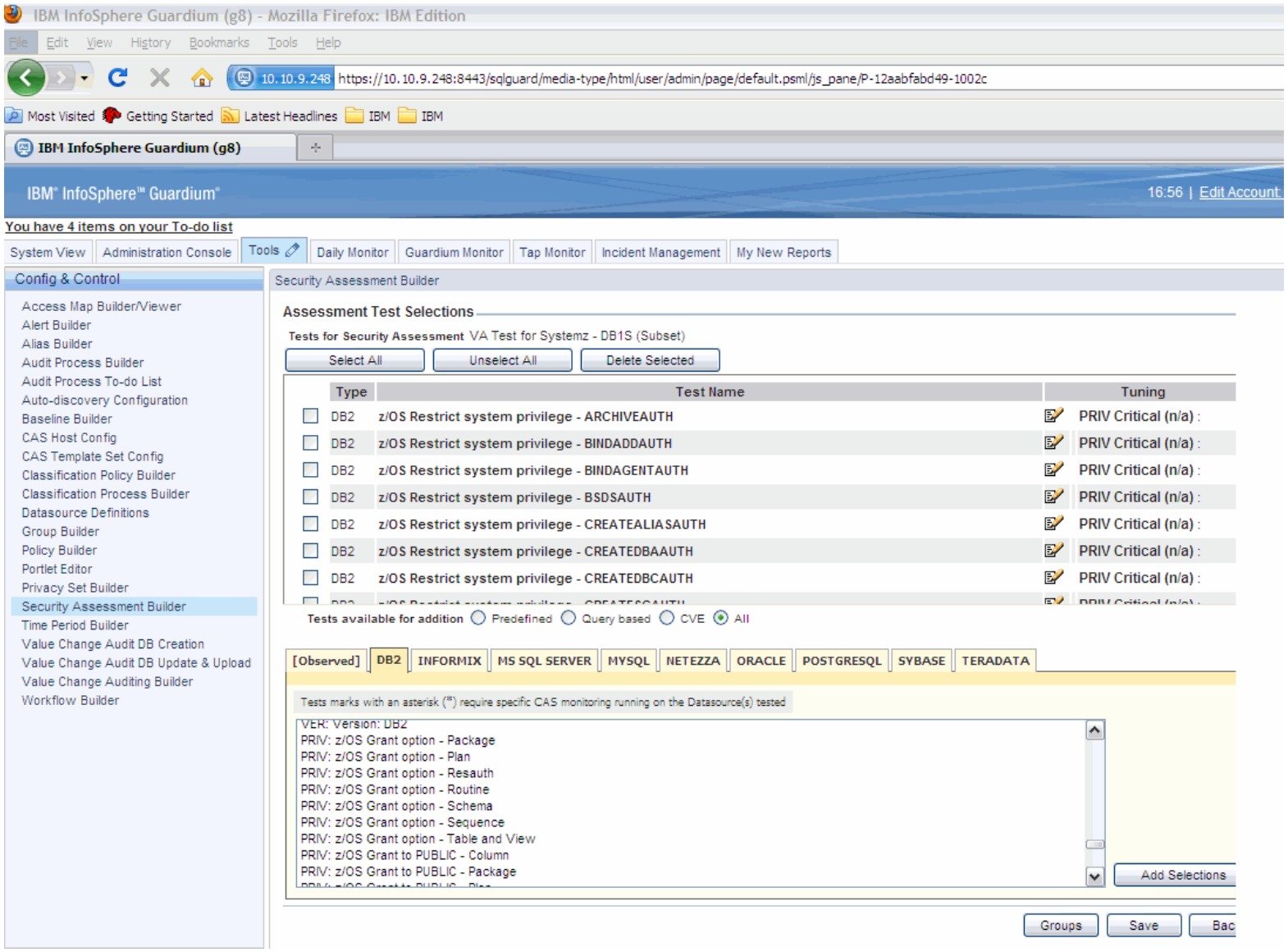
Based on the tests performed under this assessment, data access of the defined database environments requires improvement. Refer to the recommendations of the individual tests to learn how you can address problems within your environment and what you should focus upon first. Once you have begun addressing these problems 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 93 of 93 results (0 filtered)*

	Critical			Major			Minor			Caution			Info		
Privilege	8p	16f	--	2p	3f	--	--	2f	--	--	--	--	--	--	--
Authentication	--	6f	--	--	1f	--	--	1f	--	--	--	--	--	--	--
Configuration	2p	2f	--	5p	6f	4e	2p	2f	4e	--	6f	1e	--	1f	--
Version	--	--	--	--	2f	--	--	--	--	--	--	--	--	--	--
Other	1p	--	--	3p	2f	--	3p	1f	--	--	--	--	6p	1f	--

VA Configuración – Selección de Tests

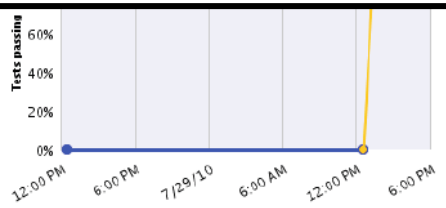


VA for DB2 z/OS – Ejemplo de resultados

Tests passing: **97%***

*Percentage does not take into account any current filtering

Based on the tests performed under this assessment, data access of the defined database environments conform to best practices. You have a controlled environment in terms of the tests performed. You should consider scheduling this assessment as an audit task to continuously assess these environments.



Result Summary — Showing 59 of 59 results (0 filtered)

	Critical	Major	Minor	Caution	Info
Privilege	48p 2f	8p	–	–	–
Authentication	–	–	–	–	–
Configuration	1p	–	–	–	–
Version	–	–	–	–	–
Other	–	–	–	–	–

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

Assessment Test Results — Showing 59 of 59 results (0 filtered)

Test / Datasource	Result
z/OS Restrict system privilege - SYSADMAUTH Test category: **Priv.** Severity: **Critical** The SYSADMAUTH privilege grants the authority to a grantee with system administration authority. It is recommended that SYSADMAUTH privilege be granted to authorize users only. This test exclude grantee who is a member of SYSADM. Ext. Reference: Guardium, Test ID 2164	Fail SYSADM privilege has been granted to unauthorize users. **Recommendation:** We recommend you revoke SYSADMAUTH from unauthorize grantee. You can use this command to revoke: REVOKE SYSADM FROM <grantee> BY ALL. To exclude authorize SYSADMAUTH grantee, you can create a group then populate it with authorize grantee and link your group to this test.

z/OS Grant option - Routine
Test category: **Priv.** Severity: **Critical**
This test check for object privilges on routines that has been granted with the grant option. A routine can be a user-defined function, cast function, or stored procedure. Grant option is not a good practice and should be avoid where possible. When object privileges are granted with the grant option, a user can grant privileges on that object to other users. We do not recommend granting objects privilege with grant option. This test exclude grantee who is a member of SYSADM and SYSIBM user. Granteetype 'P' is also excluded from this test.
Ext. Reference: Guardium, Test ID 2180

DPS: DB2 z/OS 9.1 rocket
Datasource type: **DB2** Severity: **None**
Details: Grantee causing failure:

z/OS Grant option - Schema
Test category: **Priv.** Severity: **Critical**
This test check for schema privilges that has been granted with the grant option. Grant option is not a good practice and should be avoid where possible. When object privileges are granted with the grant option, a user can grant privileges on that object to other users. We do not recommend granting objects privilege with grant option. This test exclude grantee who is a member of SYSADM and SYSIBM user.
Ext. Reference: Guardium, Test ID 2181

DPS: DB2 z/OS 9.1 rocket
Datasource type: **DB2** Severity: **None**
Details: Grantee causing failure:

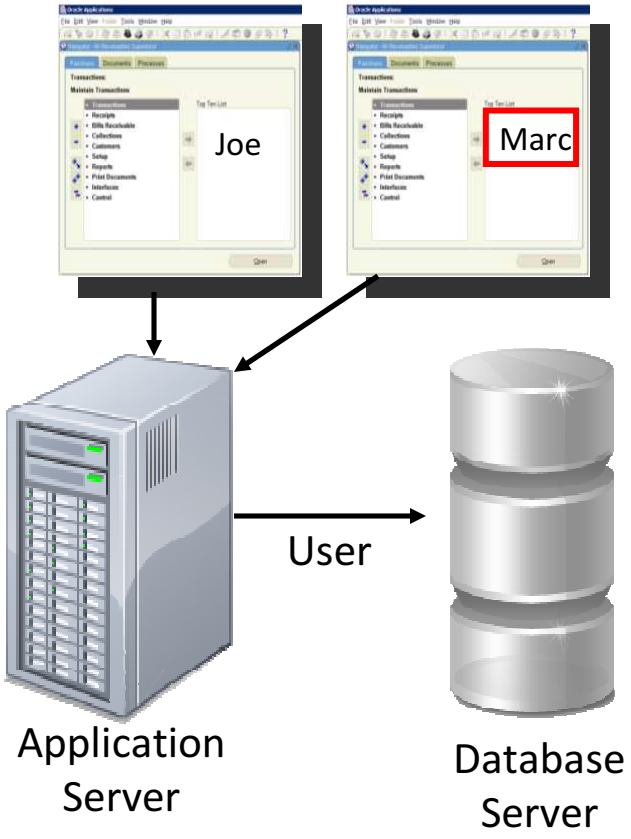
z/OS Grant option - Sequence
Test category: **Priv.** Severity: **Critical**
This test check for object privilges on sequences that has been granted with the grant option. Grant option is not a good practice and should be avoid where possible. When object privileges are granted with the grant option, a user can grant privileges on that object to other users. We do not recommend granting objects privilege with grant option. This test exclude grantee who is a member of SYSADM and SYSIBM user. Granteetype 'P' is also excluded from this test.
Ext. Reference: Guardium, Test ID 2182

Recomendaciones tras evaluación de Vulnerabilidades

Assessment Test Results — Compare with Previous Results — *Showing 93 of 93 results (0 filtered)*

Cat.	Test Name	Datasource	P/F	Sev.	Reason
Conf.	DBA Profile PASSWORD_LIFE_TIME Is Limited	ORACLE: Oracle on Ocean	Fail	Critical	User profile [DEFAULT] setup parameter PASSWORD_LIFE_TIME found out of defined threshold value
					Recommendation: The PASSWORD_LIFE_TIME parameter is not set, allowing users to retain the same password indefinitely. Passwords that have been in use for long periods of time ar likely to become known to unauthorized users. We recommend that you set this parameter in order to limit the lifetime of users' passwords.
Conf.	DBA Profile PASSWORD_VERIFY_FUNCTION Is Implemented	ORACLE: Oracle on Ocean	Fail	Critical	Found active profile 'APPL_PROFILE, DEFAULT' with PASSWORD_VERIFY_FUNCTION not implemented
					Recommendation: No Password Verification Routine has been implemented. We recommend that you implement a password function to prevent the use of weak passwords.
Auth.	Default Accounts Password Changed	ORACLE: Oracle on Ocean	Fail	Critical	2 active pre-defined users have default passwords.
					Recommendation: Some predefined Oracle user accounts are still enabled and still have the Oracle default password. These predefined Oracle users and passwords are well-known to anyone familiar with Oracle, and represent one of the easiest entry points for attacks and data theft/damage. We recommend that your remove any predefined Oracle user accounts that are not absolutely required, and we strongly recommend that you change the passwords for any of these users who are required.
Priv.	No Access To 'Users' Catalog Tables	ORACLE: Oracle on Ocean	Fail	Critical	Some users or roles without 'SELECT_CATALOG_ROLE' authority have access to 'DBA_USERS' or 'ALL_USERS': CTXSYS, PUBLIC.
					Recommendation: Access to the DBA_USERS or ALL_USERS tables has been granted to users other than DBA or SELECT_CATALOG_ROLE. We recommend restricting access to these tables for security reasons.

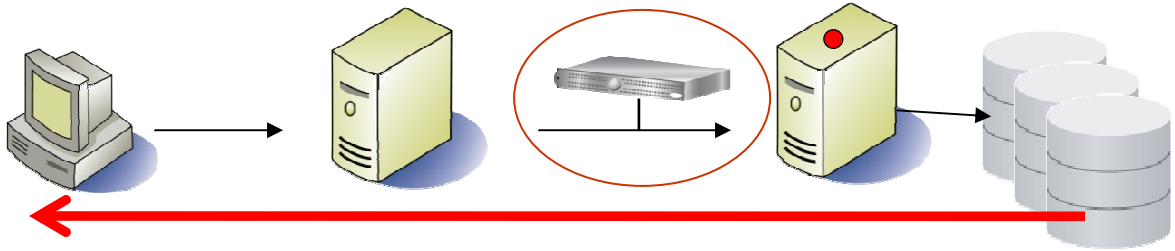
Identificación del fraude en la capa de aplicación



DB User Name	Application User	Sql
APPUSER	joe	select * from EmployeeRoleView where UserName=?
APPUSER	joe	select * from EmployeeTable
APPUSER	marc	insert into EmployeeTable values (?,?,?,?,?,?,?,?)

- ***Problema***: el servidor de aplicaciones usa una cuenta genérica de servicio para acceder a las bases de datos
  - ***No identifica quién*** inició la transacción (connection pooling)
- ***Solución***: Guardium realiza seguimiento del acceso al ***usuario de aplicación asociado con comandos SQL específicos***
  - Soporte incluido para la mayoría de las aplicaciones empaquetadas de empresas (Oracle EBS, PeopleSoft, SAP, Siebel, Business Objects, Cognos…) y aplicaciones propias (WebSphere…)

Monitorización de Fuga de Información



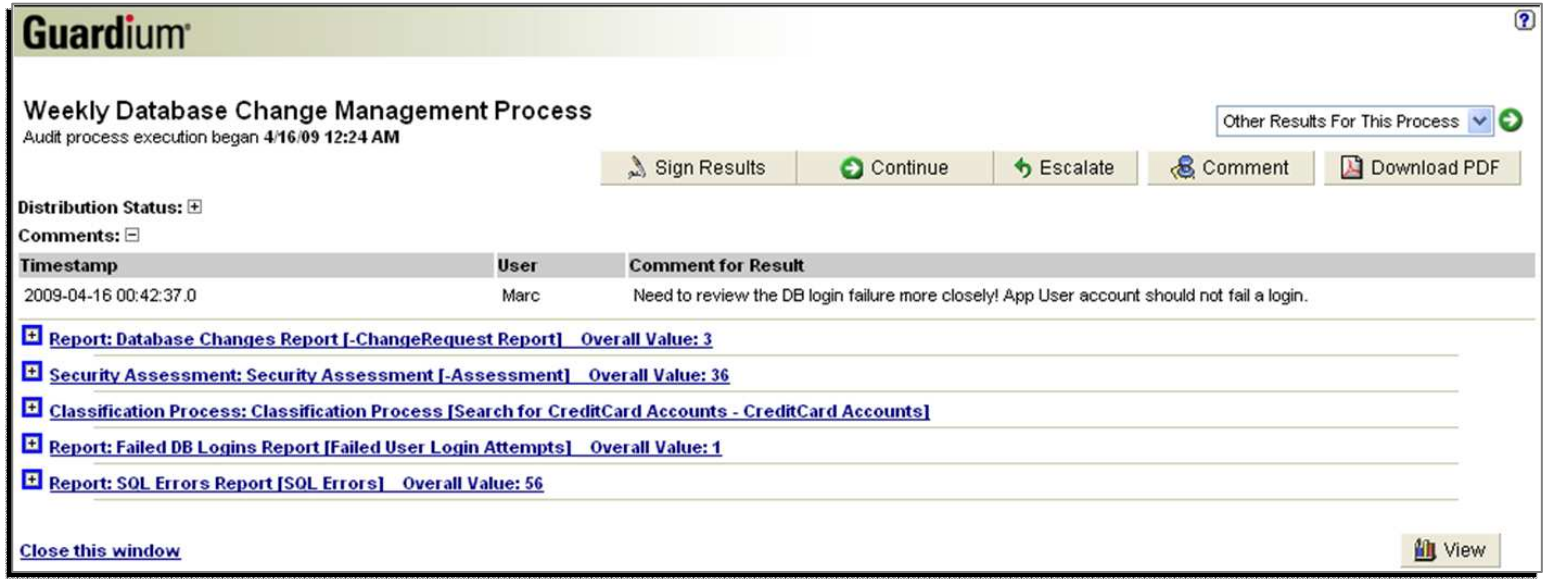
¿Es correcto esto?

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

¿Qué fue lo que vio?

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
	select * from	**********0077, **********0078, **********0079, **********0080, **********0081, **********0082

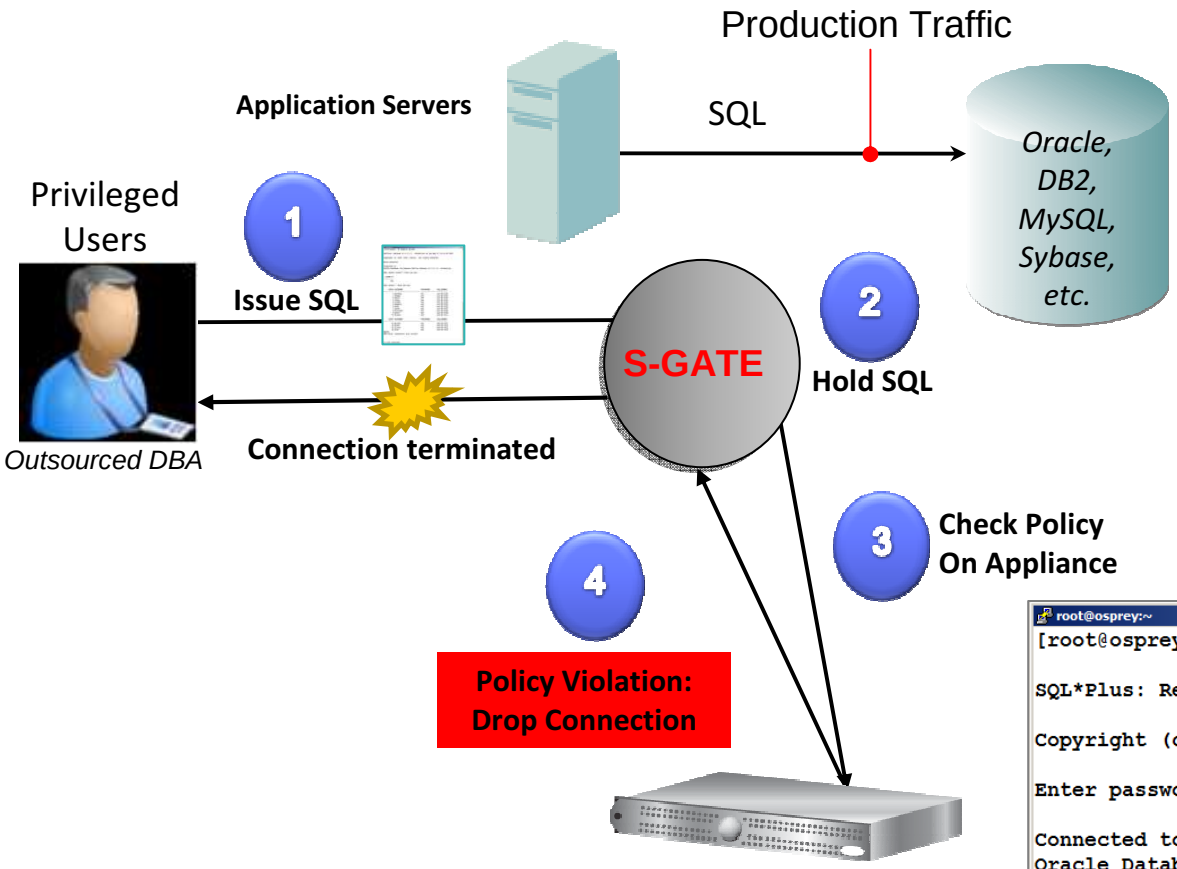
Workflow: Firmas y Escalados automatizados



- **Automatiza el flujo completo (workflow) de compliance**
  - *Distribución de informes al equipo revisor*
  - *Firma electrónica*
  - *Escalados*
  - *Comentarios y manejo de excepciones*

- **Ayuda a los auditores a documentar los procesos de revisión de documentos**
- **Los resultados del proceso de auditoría se almacenan con datos de auditoría en un repositorio seguro**
- **Centraliza y simplifica el proceso de compliance**

Prevenir de manera proactiva violaciones de políticas en tiempo real

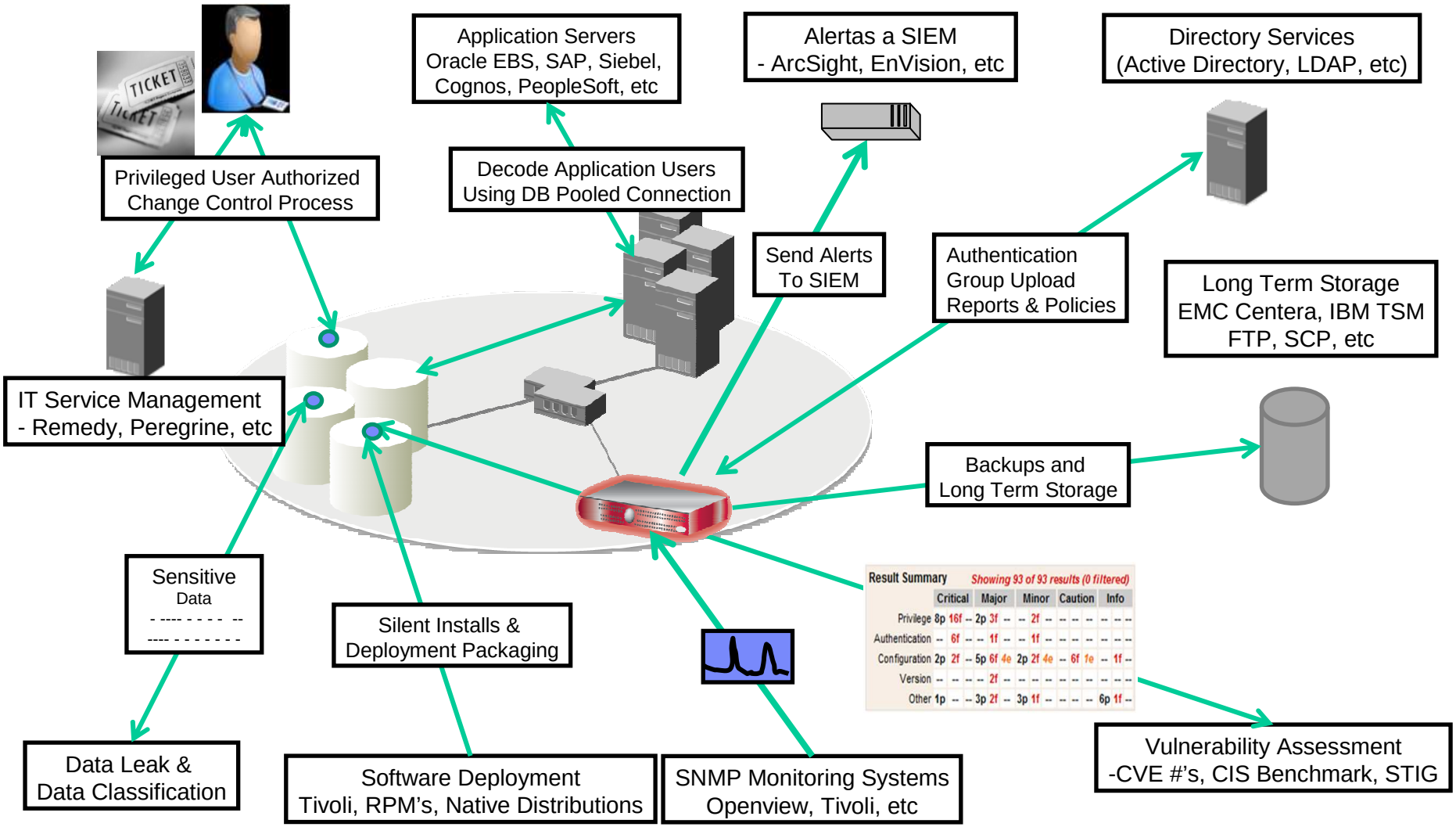


- ✓ Sin cambios en las bases de datos
- ✓ Sin cambios en las aplicaciones
- ✓ Sin riesgo de appliances inline que puedan interferir con el tráfico de aplicaciones
- ✓ Políticas Cross-DBMS
- ✓ Bloqueo de acciones de usuarios privilegiados

```
root@osprey:~
[root@osprey ~]# sqlplus system

SQL*Plus: Release 10.2.0.1.0 - Production on Tue May 27 01:13:32 20

Copyright (c) 1982, 2005, Oracle.  All rights reserved.

Enter password:

Connected to:
Oracle Database 10g Express Edition Release 10.2.0.1.0 - Production

SQL> select * from creditcard;
select * from creditcard
*
ERROR at line 1:
ORA-03113: end-of-file on communication channel

SQL>
```

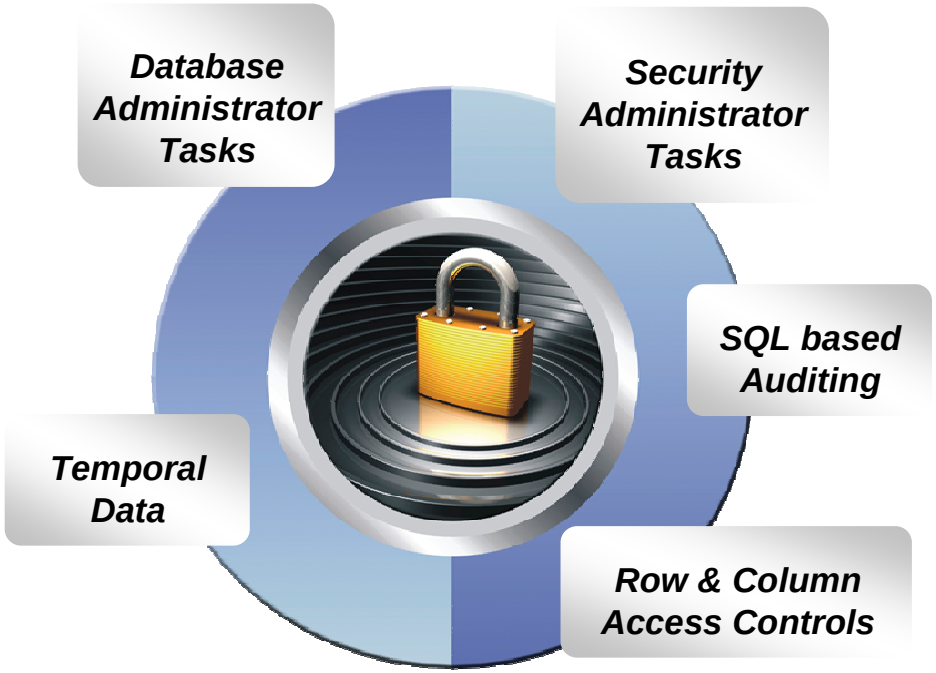
Session Terminated

Integración con Infraestructura Existente



Requisitos del Auditor: Planificar, Proteger y Auditar

- **Acceso a datos**
  - Minimizar el uso de autorizaciones de superusuario tales como SYSADM
  - Un grupo, que no sea el propietario de los datos, debería gestionar el acceso a datos restringidos
- **Auditoría de datos**
  - Cualquier acceso dinámico o uso de una autorización privilegiada necesita ser auditada
  - Conservar y gestionar los datos de auditoría por largos periodos de tiempo (según normativas)
- **Privacidad de datos**
  - Todo el acceso dinámico a las tablas que contengan información restringida, debe ser protegida



Today's Mainframe:
The power of industry-leading security, the simplicity of centralised management

Roles que intervienen en Monitorización y Auditoría

OPERACION DE SEGURIDAD

- ✓Políticas Tiempo Real
- ✓Rastro seguro de auditoría
- ✓Bloqueo a información sensible
- ✓Minería de datos & forense

CUMPLIMIENTO DE AUDITORÍA

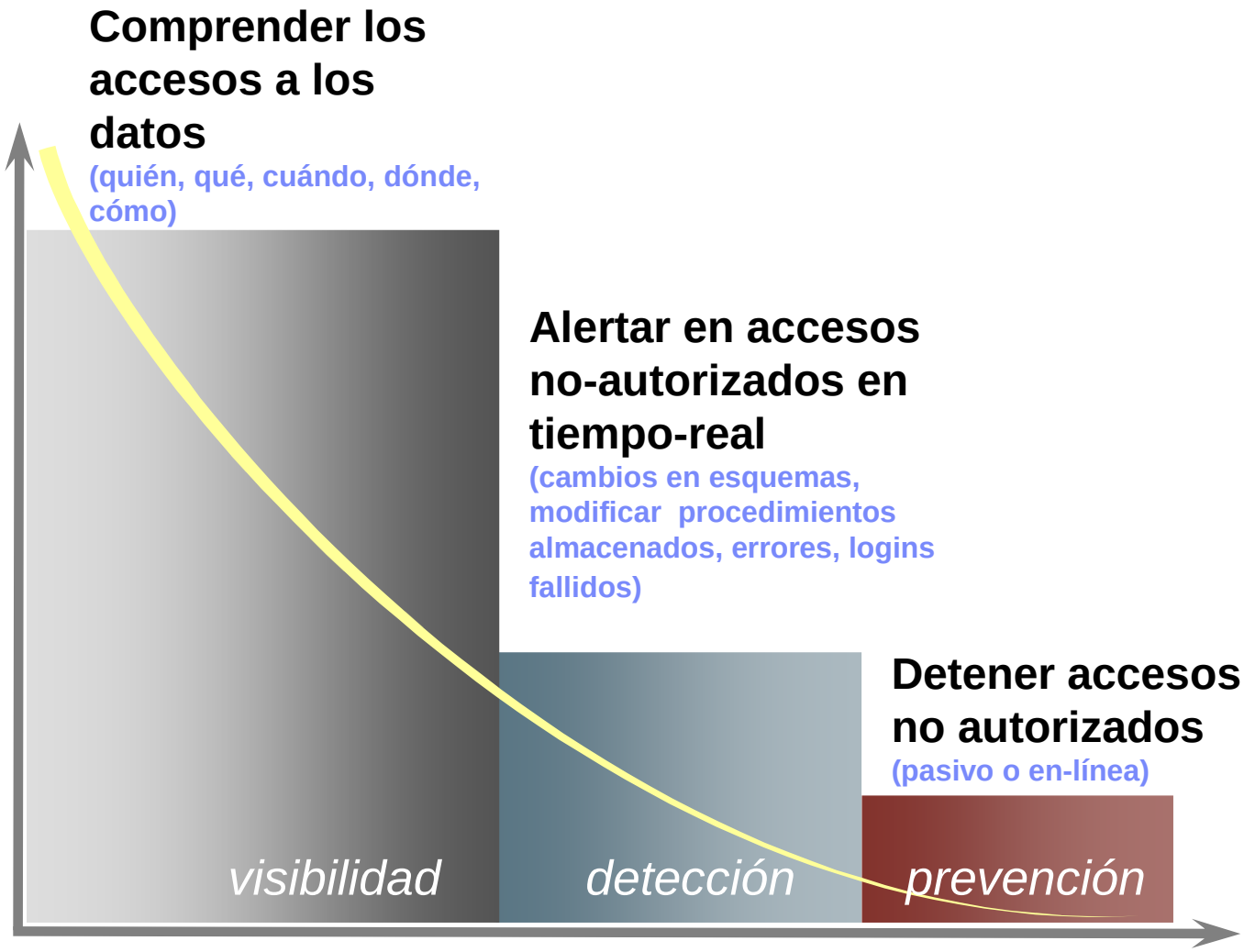
- ✓Segregación de tareas
- ✓Informes de Mejores Prácticas
- ✓Controles Automatizados

BASES DE DATOS Y APLICACIONES

- ✓Impacto Mínimo
- ✓Administración de Cambios
- ✓Optimización de Rendimiento
- ✓Parches y Configuración

Guardium: 100% Visibilidad & Visión Unificada

Implantación por fases



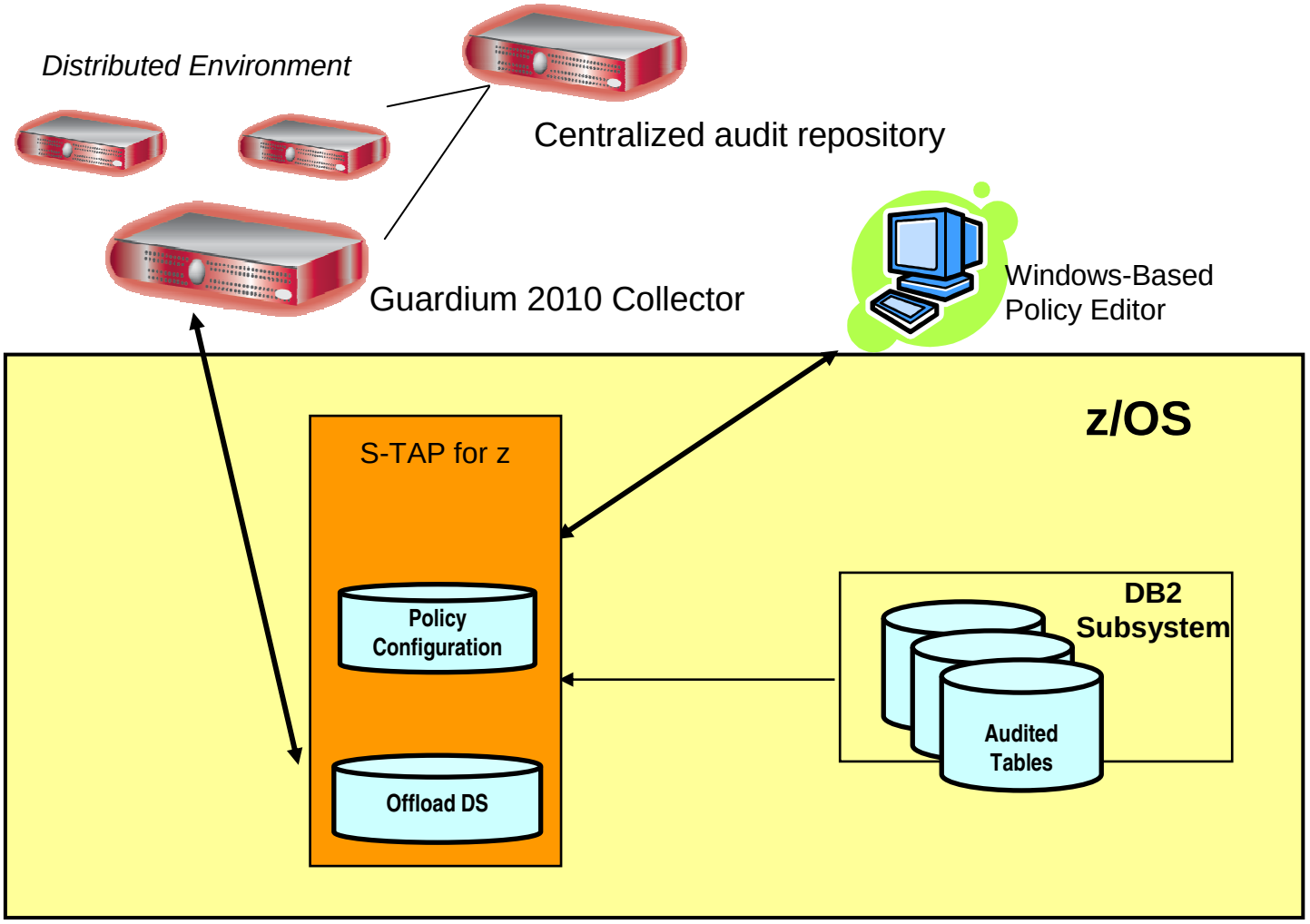
Características de Guardium for z

- Proporciona una **vista unificada** y un registro seguro de actividades de auditoría para todas las acciones relacionadas con bases de datos – cubre entornos mainframe y distribuidos
  - Proporciona informes de cumplimiento a nivel de empresa, análisis y diagnóstico forense
- Puede ser gestionada por auditores (no DBAs), favoreciendo la **segregación de roles**
- Reduce los costes de cumplimiento y el esfuerzo a través de **controles automatizados y centralizados** (vs. procesos manuales y ad hoc)
  - Con automatización de un workflow de cumplimiento (firmas, escalados, …)
- Aprovecha la tecnología IBM disponible en el mainframe
- Impacto mínimo en rendimiento

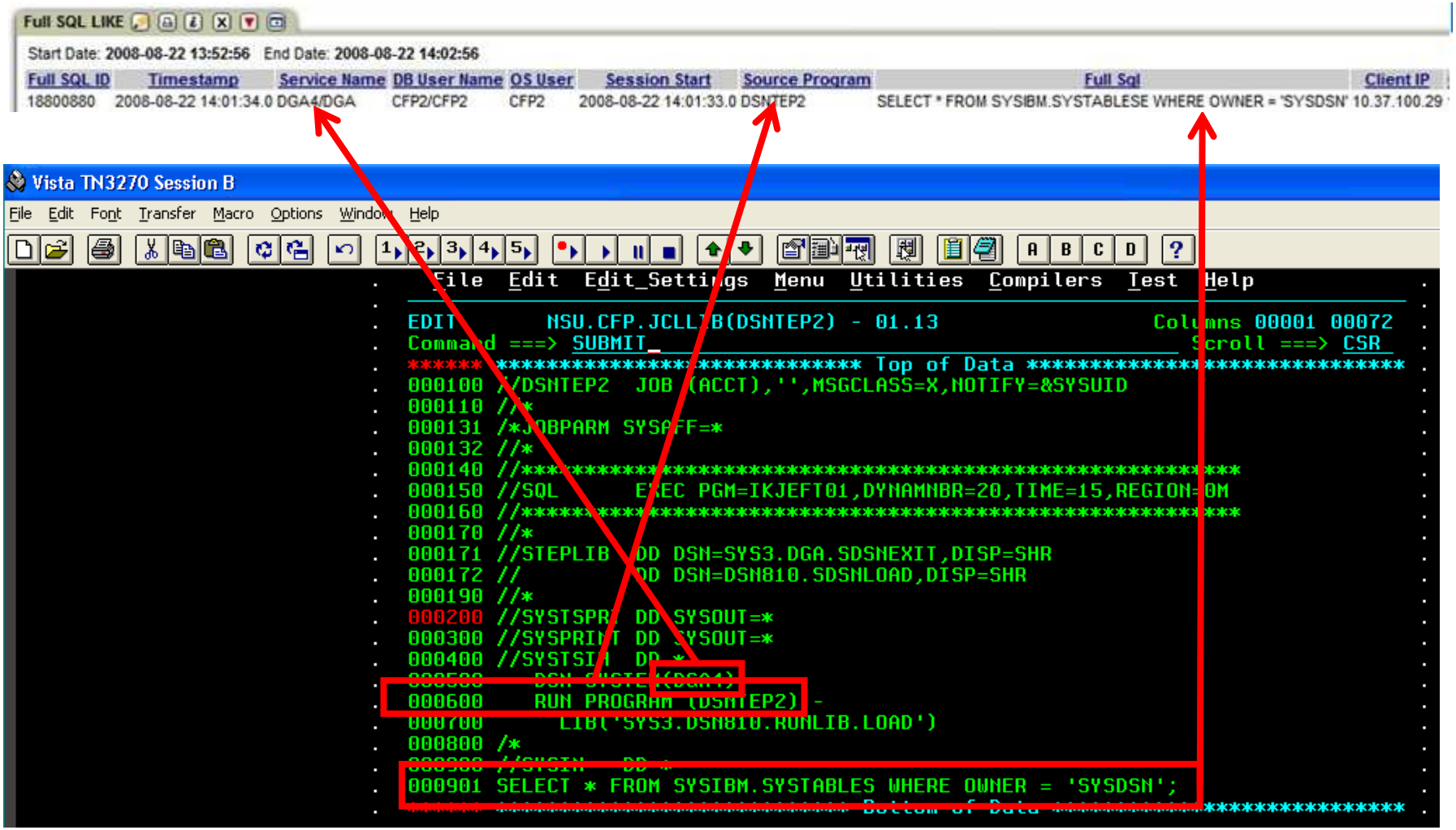
Características de Guardium for z

- **Utiliza la mejor tecnología de captura de eventos de DB2 en z/OS**
  - Despliegue con poco impacto
    - Datos de auditoría enviados al *Guardium appliance*, pueden aislarse del subsistema auditado
  - No necesita utilizar las clases 4 y 5 de la traza de audit
  - Inversión permanente del laboratorio en mejoras de rendimiento y de recogida de datos para adaptarse a los requisitos de clientes
  - Óptimo rendimiento para clientes que utilizan el IBM Query Monitor
    - La monitorización de queries y los requisitos de auditoría aprovechan un mismo colector de procesos
- **Emplea la mejor tecnología de seguridad de bases de datos de Guardium**
  - Aprovecha la funcionalidad off-host de Guardium
- **Se integra dentro del entorno Guardium de auditoría del resto de gestores de bases de datos existentes en la empresa**
  - Reporting y alertas unificados, agregación centralizada de datos de auditoría

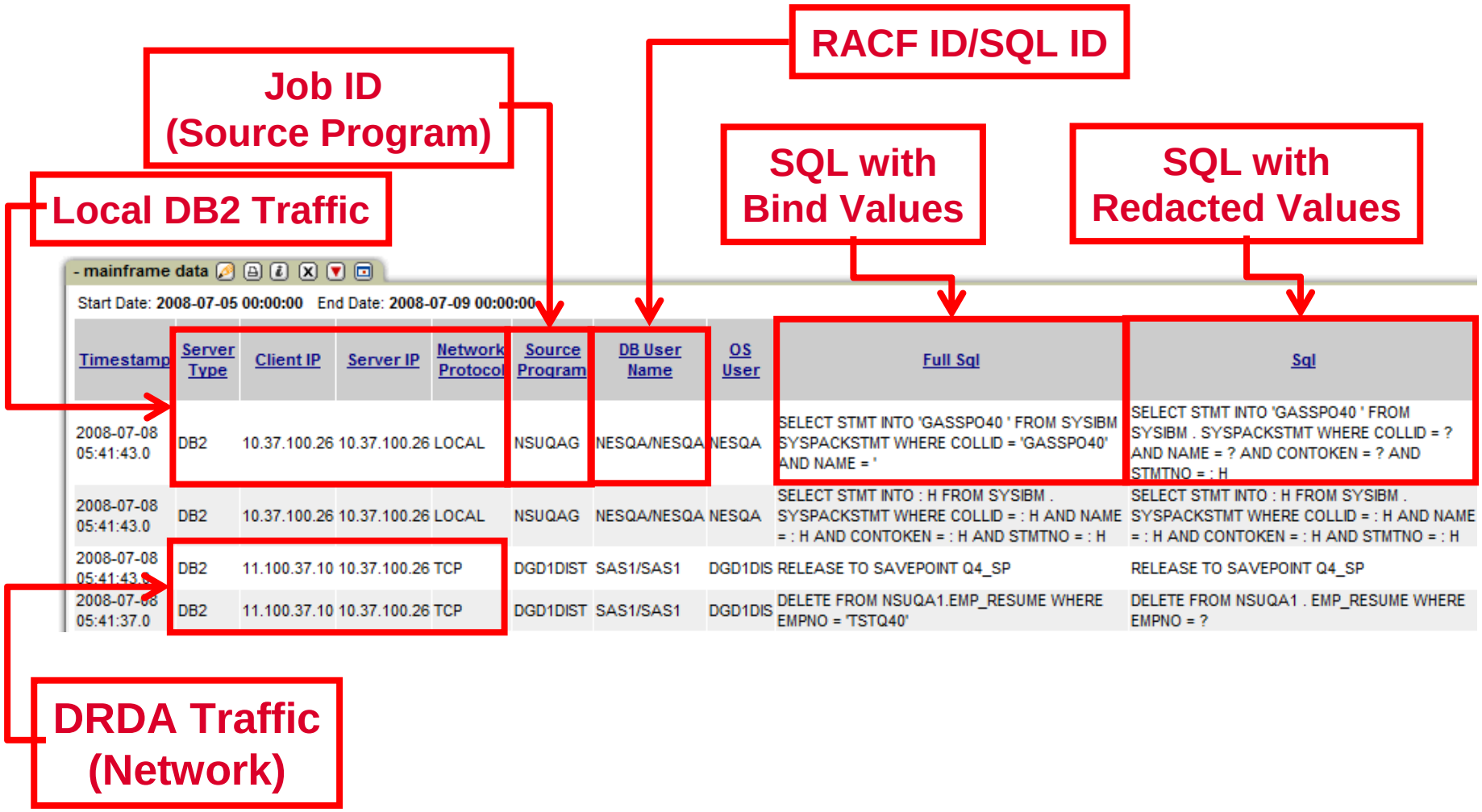
Guardium for z –Arquitectura



Ejemplo de Información de Auditoría registrada



Ejemplo de Informe de datos de Auditoría en Guardium



Ejemplo de informe de auditoría (continuación)

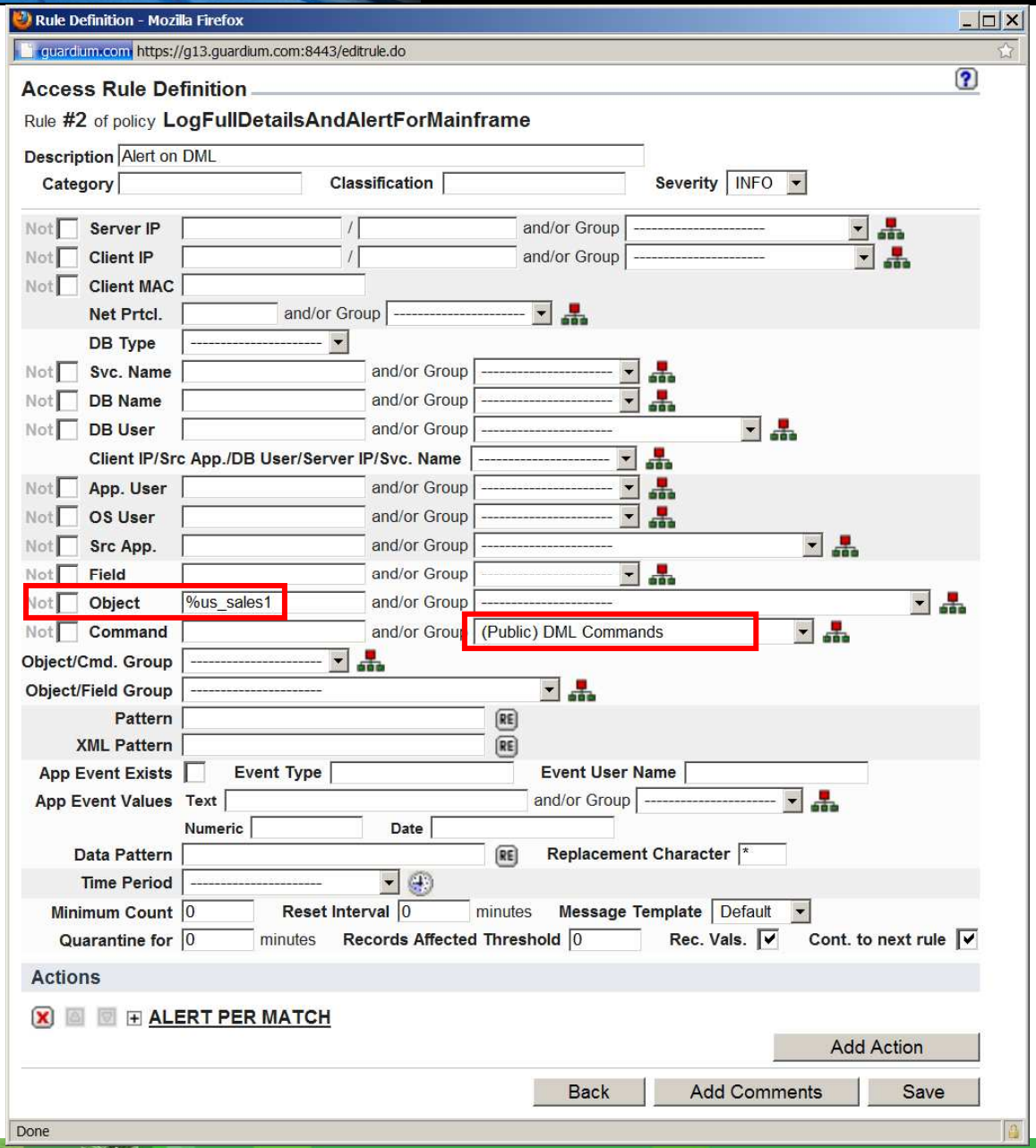
- SQL Trace

Start Date: 2010-06-07 15:09:45 End Date: 2010-06-08 18:09:45
Aliases: OFF CLIENTIP: LIKE %
DBUSER: LIKE % FULLSQL: LIKE %
SEVERIP: LIKE % SQL: LIKE %

Timestamp	Client IP	Server IP	Server OS	DB User Name	OS User	Sql
2010-06-08 03:11:24.0	15.22.19.50	RL25	Z/OS	GU0002	GU0002	REVOKE EXECUTE ON PROCEDURE SYSIBM.SQLTABLEPRIVILEGES FROM PUBLIC BY ALL RESTRICT
2010-06-07 22:12:28.0	15.22.19.50	RL25	Z/OS	GU0001	GU0001	INSERT INTO udt_table VALUES(CAST(? AS udt1), CAST(? AS udt2), CAST(? AS udt3))
2010-06-08 03:04:29.0	15.22.19.50	RL25	Z/OS	GU0001	GU0001	INSERT INTO udt_table VALUES(CAST(? AS udt1), CAST(? AS udt2), CAST(? AS udt3))
2010-06-07 22:14:09.0	15.22.19.50	RL25	Z/OS	GU0001	GU0001	delete from camp_roster where NAME like ?
2010-06-08 03:12:13.0	15.22.19.50	RL25	Z/OS	GU0002	GU0002	GRANT CREATEIN,ALTERIN,DROPIN ON SCHEMA va_test_schema TO QA_TEST
2010-06-08 03:11:10.0	15.22.19.50	RL25	Z/OS	GU0002	GU0002	REVOKE EXECUTE ON PACKAGE NULLID.SYSSN101 FROM PUBLIC BY ALL
2010-06-08 02:29:05.0	15.22.19.50	RL25	Z/OS	GU0002	GU0002	GRANT ALL ON TABLE VA_TEST.EMP TO VA_TEST

Alertas

- Los datos de auditoría procesados pueden generar alertas
- Alertas sobre cualquier componente dentro de la política
- En el ejemplo, US_SALES1 con Comandos DML



Alertas

- Los datos de auditoría procesados pueden generar alertas

Policy Violations / Incident Management

Start Date: **2010-06-01 10:09:28** End Date: **2010-06-09 10:09:28**
Aliases: **ON**

Violation Log Id	Timestamp	Category Name	Access Rule Description	Client IP	Server IP	DB User Name	Full SQL String	Severity Description
6	2010-06-08 18:46:11.0		Alert on DML	10.10.10.50	10.10.9.32	GU0001	DELETE FROM GU0001.US_SALES1 WHERE INVOICE#=1	INFO
5	2010-06-08 18:45:08.0		Alert on DML	10.10.10.50	10.10.9.32	GU0001	INSERT INTO GU0001.US_SALES1 (INVOICE#, CUST_ID, SALE_VALUE, SALE_INSERT_TS, SALE_UPDATE_TS) VALUES (7,300 ,3545.33 , '2010-06-08 18:31:46.813102','2010-06-08 18:31:46.813102')	INFO

Cómo ayuda Guardium al cumplimiento con PCI-DSS

Reqt.	Description	Guardium PCI Capabilities
2	**Do not use vendor defaults for system passwords**	**Comprehensive suite of DBMS-specific tests based on industry standards (CIS, STIG)**
	• Configure system parameters to prevent misuse	• Checks for default passwords, unpatched systems, misconfigured privileges, etc.
	• Encrypt non-console admin access	• Audits usage and alerts on misuse
		• Locks configurations after vulnerabilities remediated
		• Monitors encrypted traffic (Oracle ASO, SSL, etc.) without need for key storage
3	**Protect stored cardholder data**	**Real-time, database leak prevention**
		• Continuous, real-time, policy-based monitoring with proactive security (alerts, blocking)
		• Compensating control for column-level encryption
		• Auto-discovers & classifies stored data; identifies sensitive data in query result stream
6	**Maintain secure systems**	**Centralized vulnerability and configuration assessment**
	• Establish a process to identify security vulnerabilities	• Ensures current patches applied & vulnerable SPs identified; "virtual patching"
	• Follow change control procedures for all configuration changes	• Alerts on all configuration changes, inside and outside databases
	• Separation of duties (development, test and production)	• Enforces separation of duties with real-time alerting and granular access controls
7	**Restrict access to cardholder data**	**Proactive, real-time access control (independent of native DBMS controls)**
		• Policies defined by source IP or application, OS or DB user, time, SQL command, object, etc.
		• Blocks any unauthorized user, including administrators, from accessing cardholder data
		• Compensating control for unsegmented networks
8	**Assign a unique ID to each person with computer access**	**Complements native DBMS controls with external, cross-DBMS controls**
	• Enforce password policies	• Alerts on credential sharing, failed logins, account creation, privilege escalation
	• Limit repeated access attempts	• Verifies password policies are enforced; can lock accounts or terminate sessions
10	**Track and monitor access to cardholder data**	**Continuous, granular auditing with scalable architecture to handle high transaction volumes**
		• Fine-grained audit trail of all database activities (SELECT, DDL, DML, DCL, logins, logouts, etc.)
		• Does not rely on native trace or audit logs: minimal perf. impact (2-3%), enforces sep. of duties
		• Tracks all network and local connections, including direct access by DBAs (shared memory, etc.)
		• Audit information stored securely in hardened appliance to prevent anti-forensics or tampering
		• Identifies fraud by resolving end-user IDs in connection-pooling apps (SAP, Cognos, PeopleSoft, etc.
		• Integrates with LDAP, IAM, TCIM, TSM, SIEM, change management, CMDBs, etc.
		• Compliance workflow automation (electronic sign-offs, escalations) demonstrates oversight process
		• PCI Accelerator provides pre-configured reports based on best practices
11	**Regularly test security systems and processes**	**Integrated vulnerability scanning, file integrity monitoring & behavioral vulnerability testing**
	• Run internal and external vulnerability scans	• Includes hundreds of pre-configured vulnerability tests for all major DBMS/OS combinations
	• Deploy integrity monitoring to detect modif. of critical sys. files	• Tracks changes to DB configuration files, environ./registry variables, executables and OS files
12	**Maintain an Information Security Policy**	**Robust automated controls for enforcing information security policies**
	• Monitor/analyze alerts and distribute to appropriate personnel	• Real-time alerts, correlation alerts, centralized aggregation of all audit data, SIEM integration
	• Monitor and control all access to data	• Automated sign-offs demonstrate formal oversight process
		• 100% visibility & control over all database transactions (with blocking)

IBM

Gracias

Guardium®

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