IMS Data Governance

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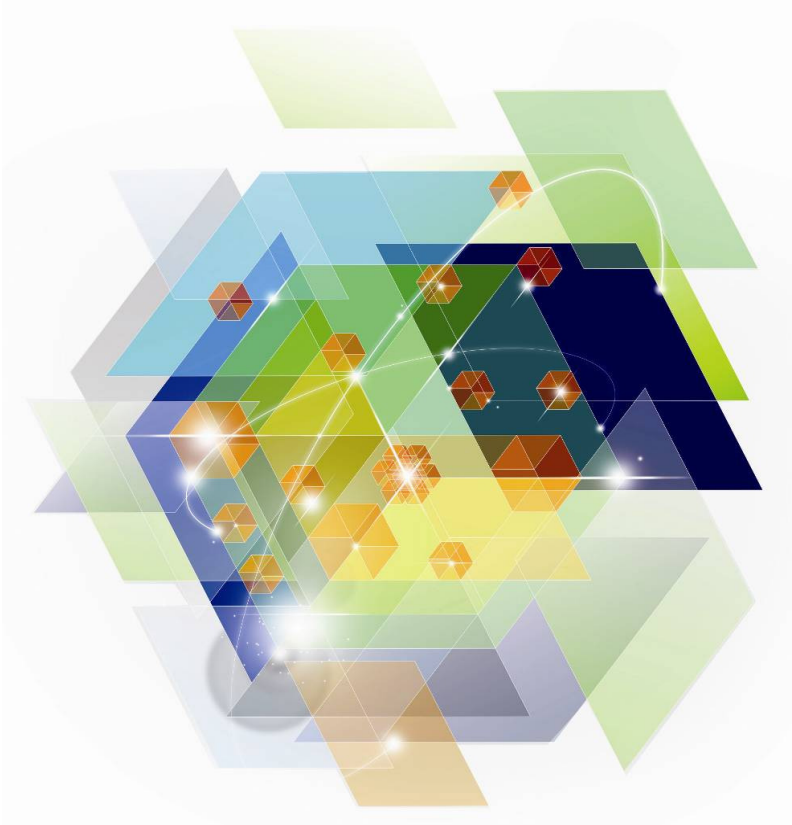

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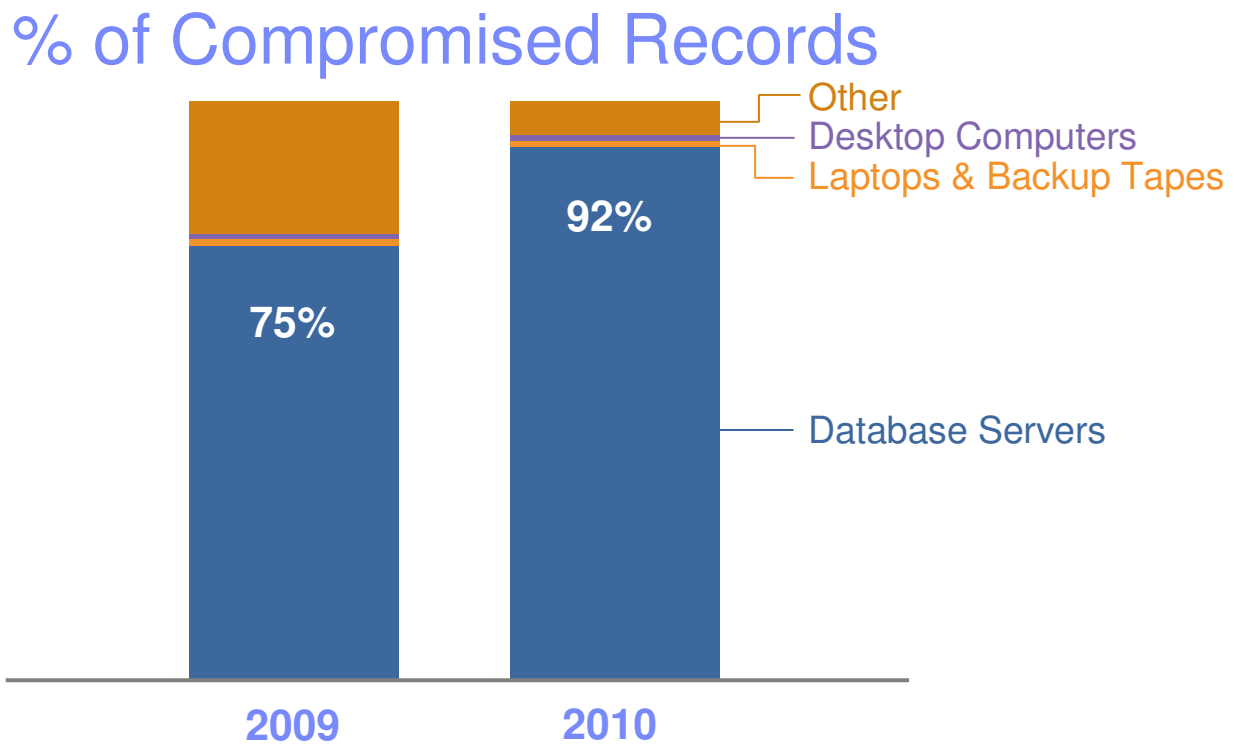
Database servers are the primary source of breached data



Sources: Verizon Business Data Breach Investigations Report 2009, 2010

Although much angst and security funding is given to offline data, mobile devices, and end-user systems, these assets are simply not a major point of compromise.

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Growing Compliance Mandates

- **Explosion in successful breaches has resulted in growing regulation of sensitive data in North America**
  - SOX
  - HIPAA
  - PCI DSS
  - 46 state-specific data privacy laws
  - Gramm-Leach-Bliley
- **Many EU and Asian countries have enacted similar regulations**
  - EU Data Privacy Directive and supporting local laws
  - C-SOX
  - FIEL
  - PCI DSS
  - etc.

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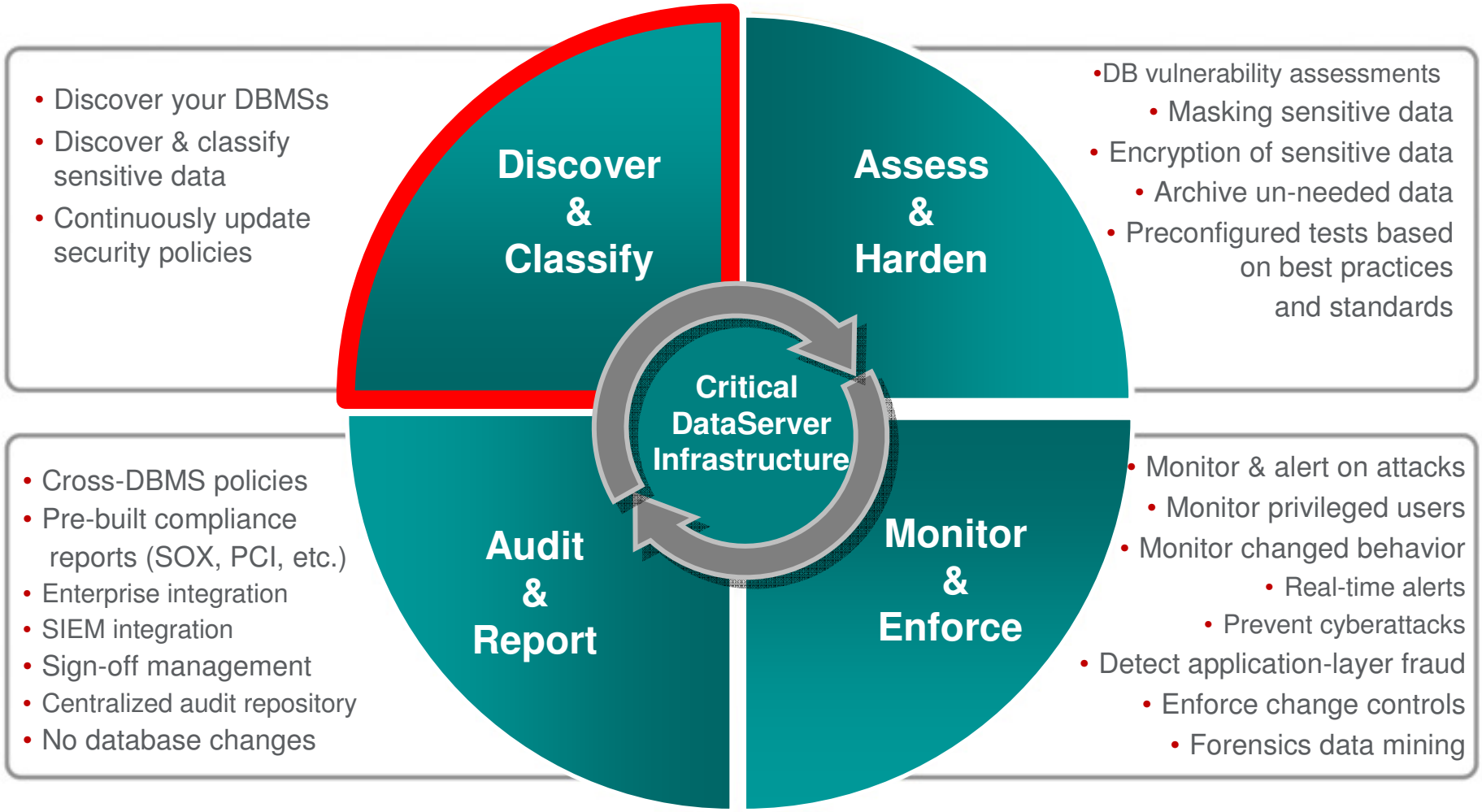
Address the Full Data Protection Lifecycle



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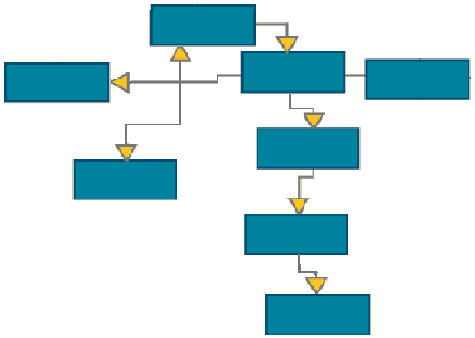
Understanding a Complete Business Object



Represents application data record – payment, invoice, customer

- Referentially-intact subset of data across related tables and applications; includes metadata

Provides “historical reference snapshot” of business activity

Federated extract support across enterprise data stores

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Sensitive Data Discovery

- **Common PII data element discovery**
  - Pre-Defined Scanning
- **Custom sensitive data discovery**
  - Supply Discovery with “descriptions/examples”
    - *Patterns*
    - *Data 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
    - Use Transformation Discovery to find data that are “transformed”

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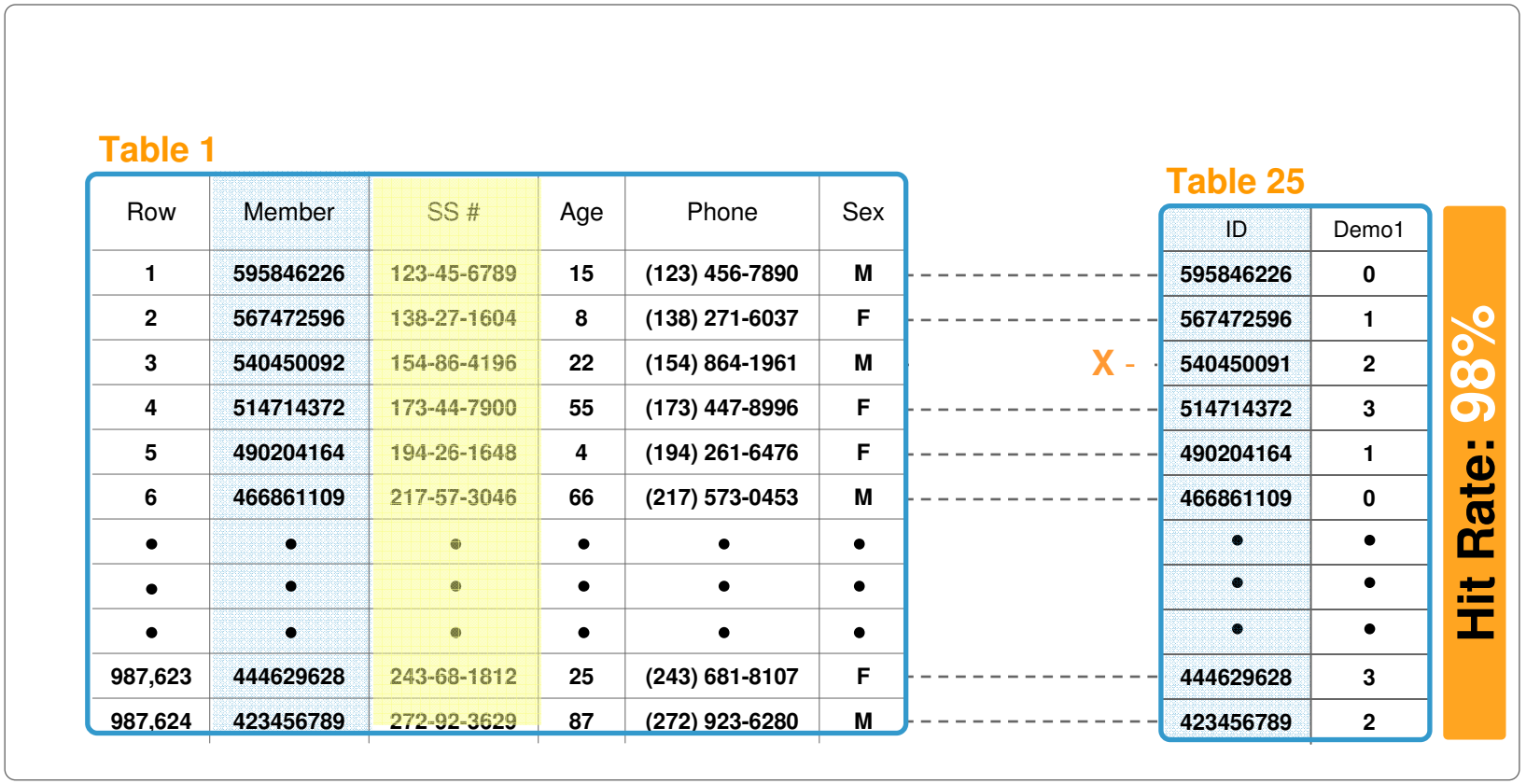
InfoSphere Discovery Speeds Understanding Data

IBM InfoSphere Discovery

The Discovery Engine analyzes **data values** to **automatically discover** the columns that **relate rows** across data sources, and the columns which contain **sensitive data**.



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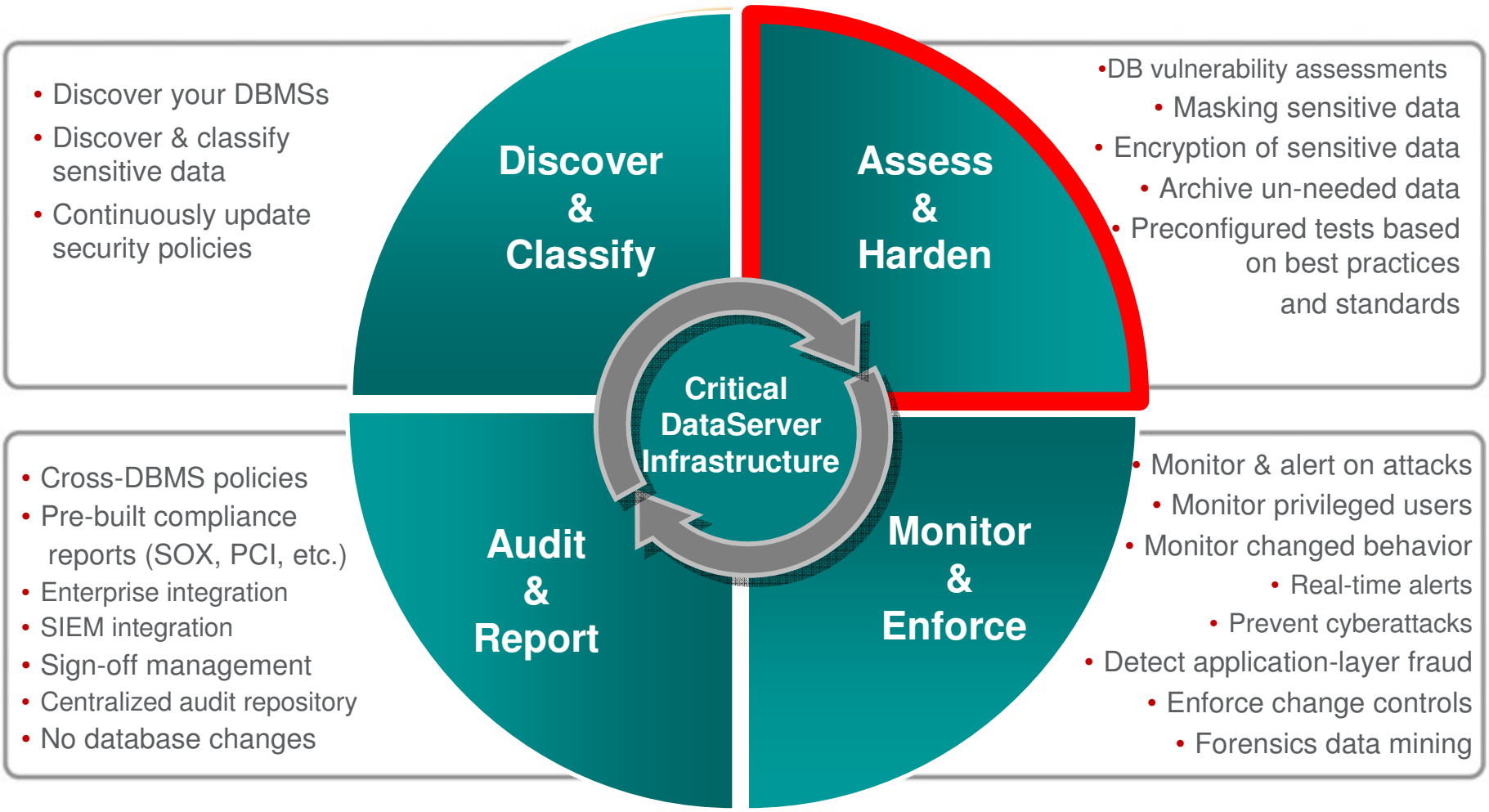
Address the Full Data Protection Lifecycle



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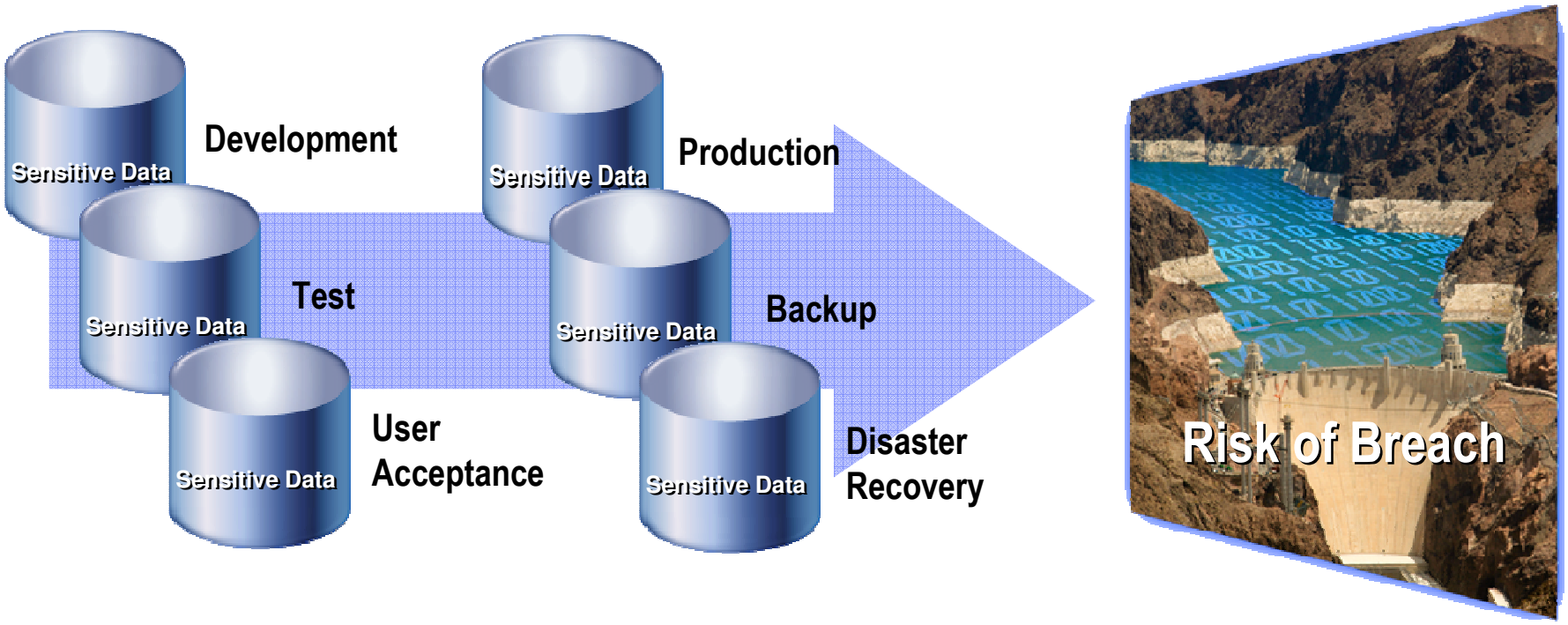
Limit the scope of compliance and security concerns

Sensitive Data Proliferation



Actual risk and compliance burden =
Original production data + all derived clones

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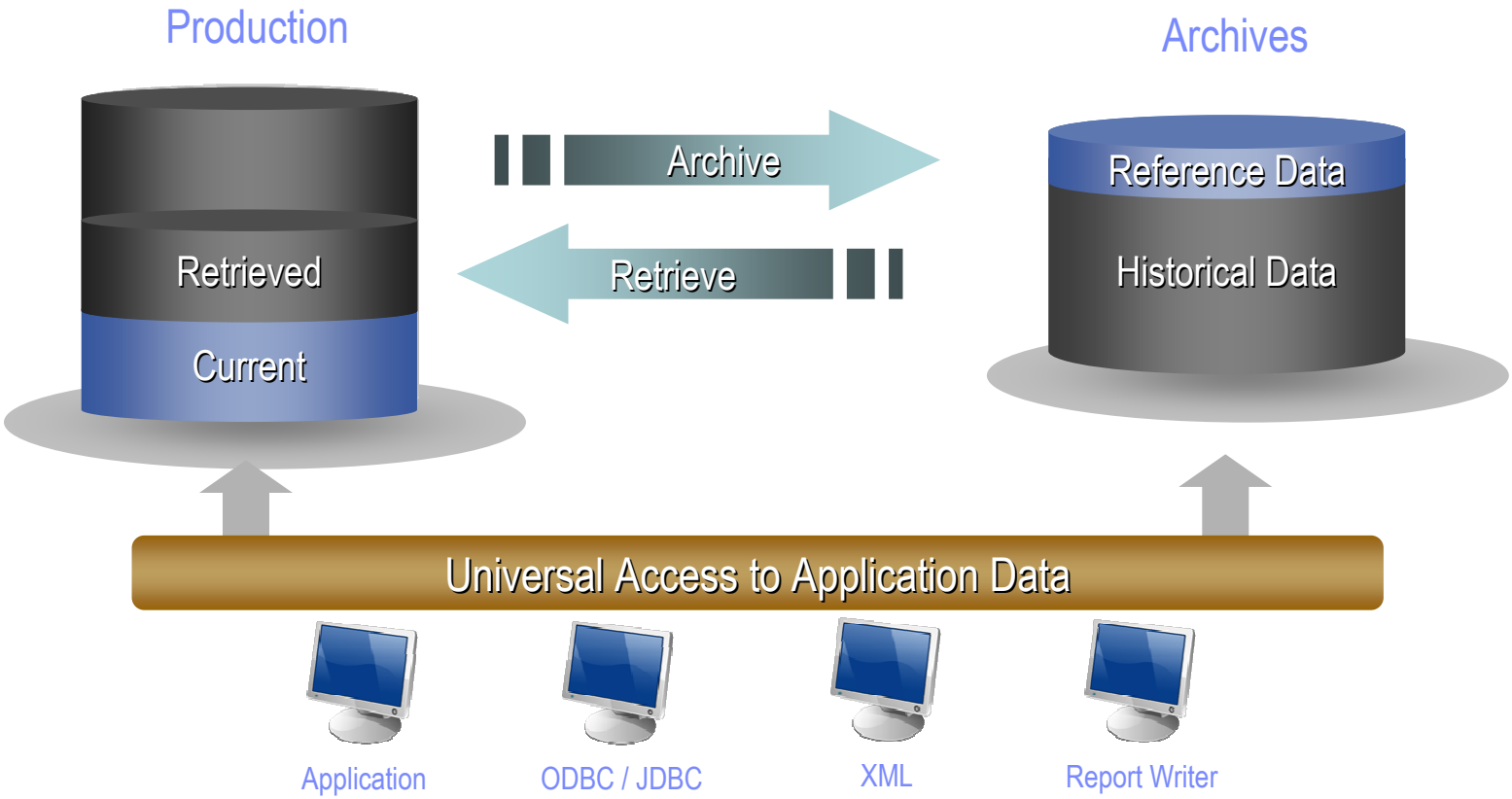
Archive inactive data to limit compliance scope



Archiving is an intelligent process for *moving* inactive or infrequently accessed data that still has *value*, while providing the ability to *search and retrieve* the data

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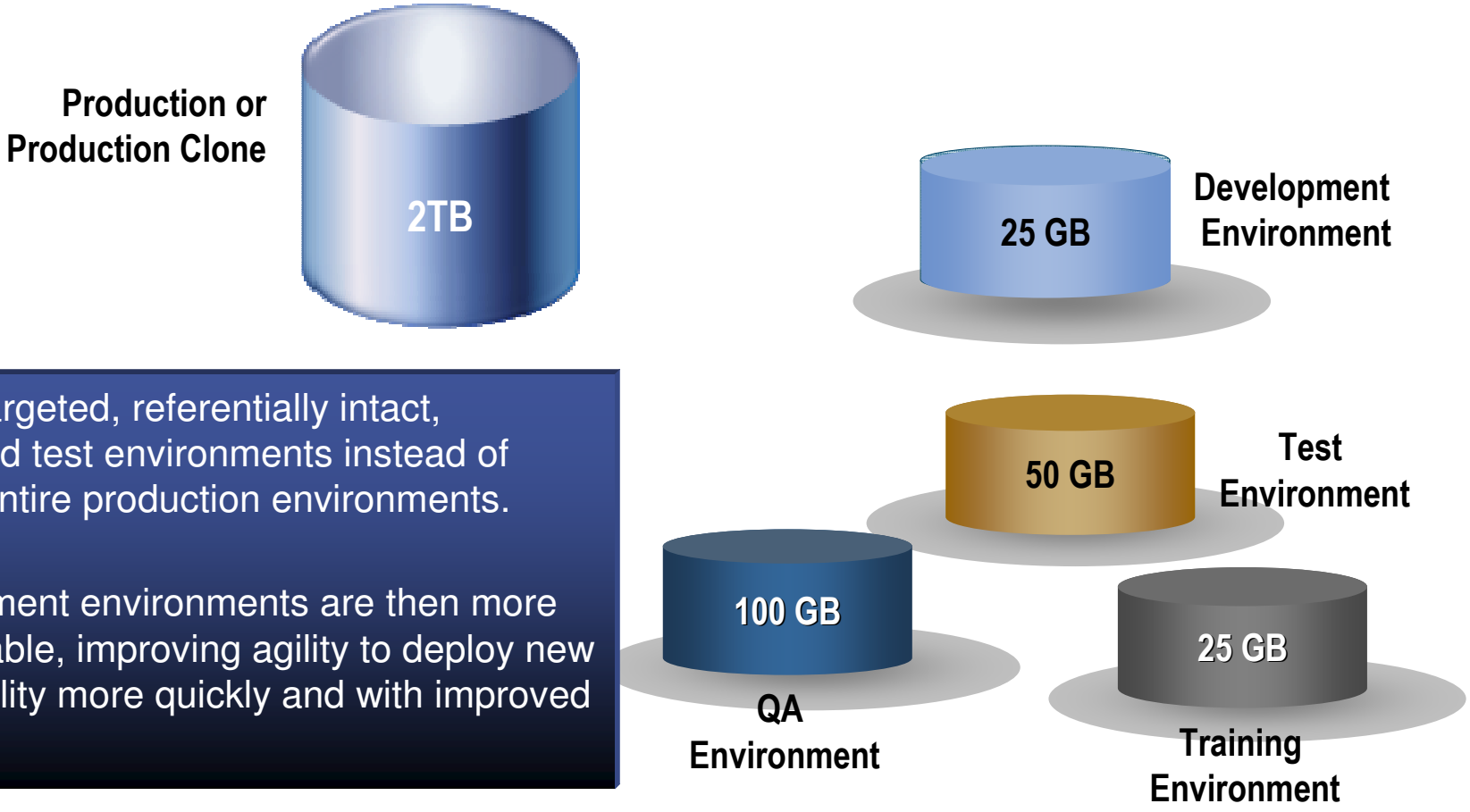
Effective Test Data Management



Create targeted, referentially intact, right-sized test environments instead of cloning entire production environments.

Development environments are then more manageable, improving agility to deploy new functionality more quickly and with improved quality.

Out-of-the-box subset support for packaged ERP/CRM applications:

ORACLE e-businesssuite | PeopleSoft | SIEBEL | JDEdwards Enterprise Software | SAP | Other

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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**

Example 1

Patient Information

Patient No.	123456	**SSN**	333-22-4444		
Name	Erica Schafer				
Address	12 Murray Court				
City	Austin	**State**	TX	**Zip**	78704

Data is masked with contextually correct data to preserve integrity of test data

Example 2

Personal Info Table

PersNbr	FirstName	LastName
10000	Jeanne	Renoir
10001	Claude	Monet
10002	**Pablo**	**Picasso**

Referential integrity is maintained with key propagation

Event Table

PersNbr	FstNEvtOwn	LstNEvtOwn
10002	**Pablo**	**Picasso**
10002	**Pablo**	**Picasso**

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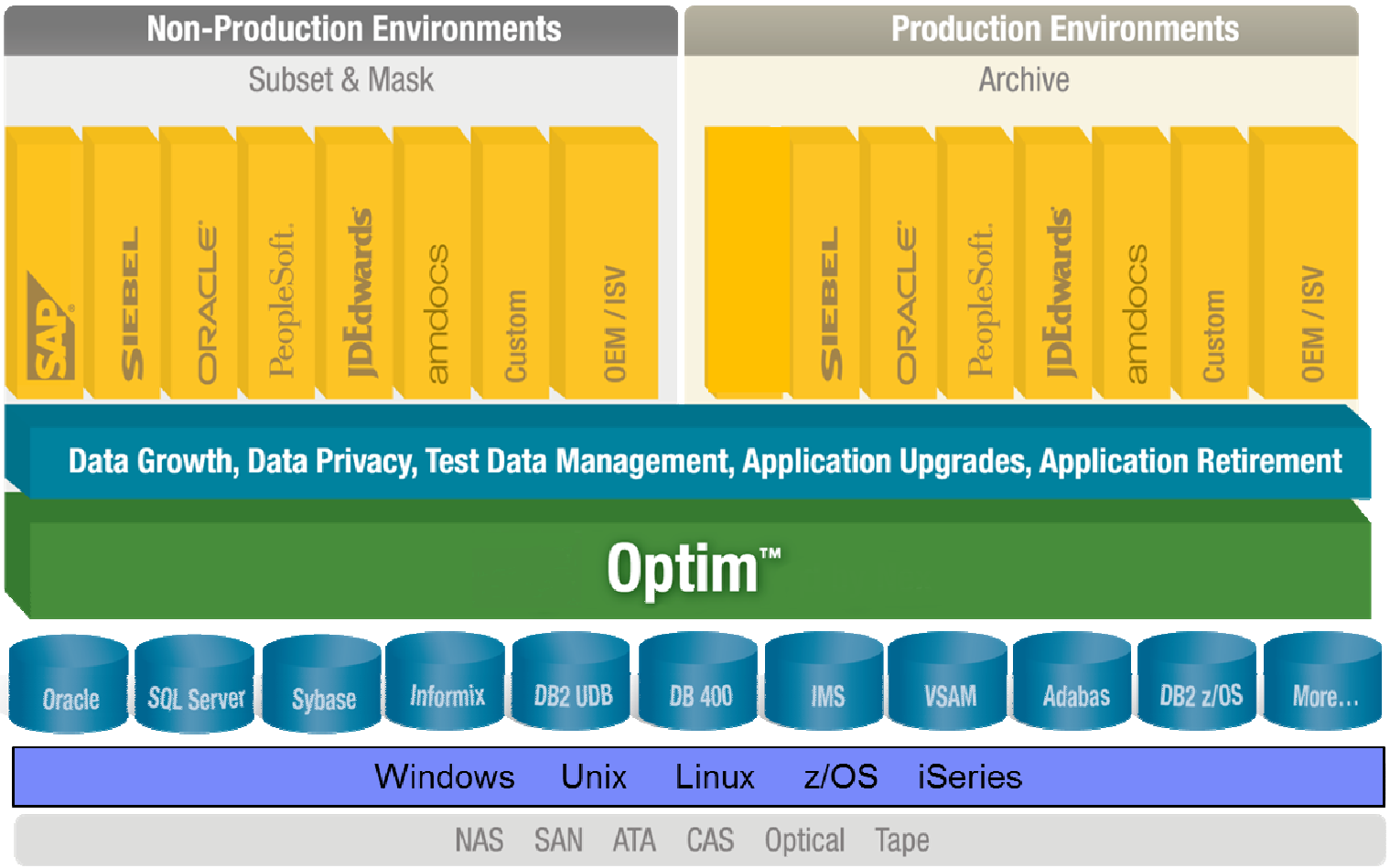
Optim's Enterprise Architecture

- Single scalable architecture provides central point to extract, store, restore, and protect (mask) application data records



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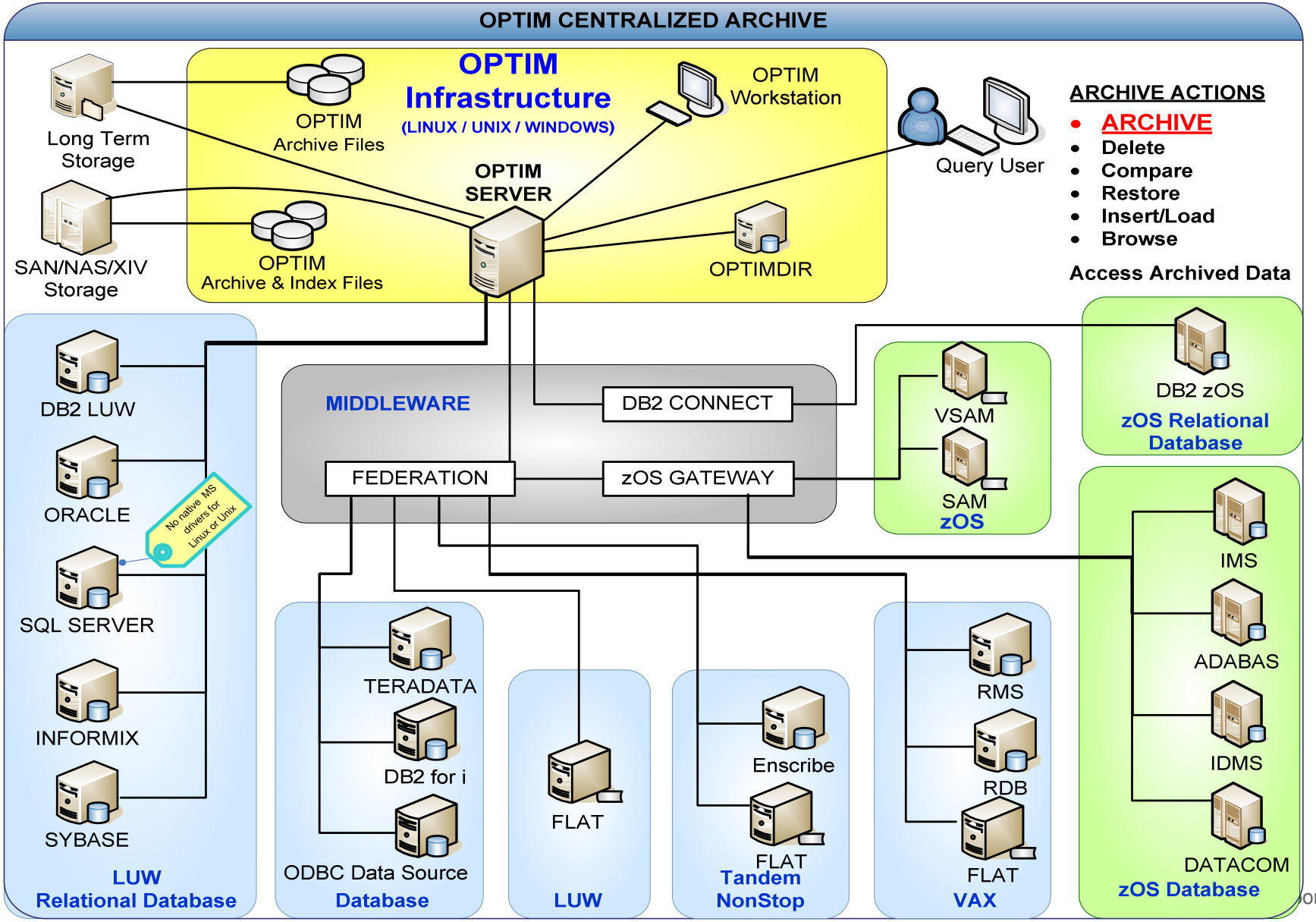
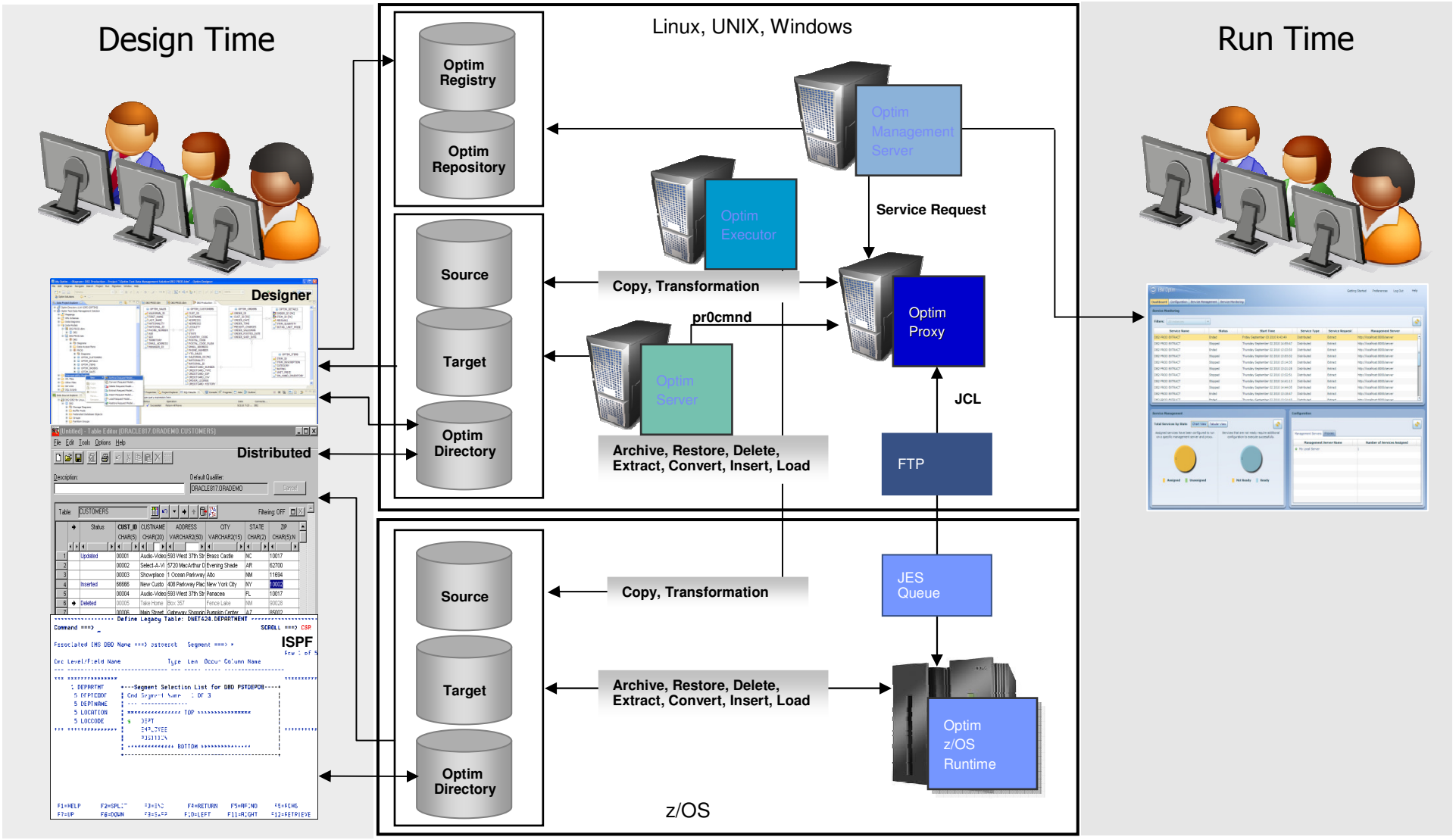
Infosphere Optim centralized architecture



Optim Architecture: Designer and Manager



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OPTIM for z/OS Family of Product

- **Test data management (TDM)**
  - Approach to creating and managing test or non-production environments to meet the needs of various stakeholders and business requirements.
    - Extract related subsets of production data that are targeted to functionality under test
    - Quickly and easily refresh test environments
  - Improvement for application quality & customer satisfaction
  - Support for DB2, IMS DB, VSAM
- **Data Masking (DM)**
  - Removing, masking or transforming elements that could be used to identify an individual
    - De-identify data for privacy protection
    - Compare “before” and “after” images of test data
  - Support for DB2, IMS DB, VSAM
- **Database archiving and application’s data retirement with Data Growth (DG)**
  - Segregate historical data to secure archive
  - Align performance to service level targets
  - Reclaim underutilized capacity
  - Support for DB2, IMS DB, VSAM
    - IMS DB and VSAM support provided by Distributed Data growth based on Classic Federation on z/OS and InfoSphere Federation Server

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InfoSphere Guardium Data Encryption for DB2 & IMS Databases

- Provides user-customizable EDITPROCs for DB2
- Works at the DB2 row level
- Provides user customizable segment edit exits for IMS
- Works at the IMS segment level
- Conforms to the existing z/OS security model
- Exploits zSeries Crypto Hardware features and corresponding Integrated Cryptographic Services Facility (ICSF) technologies, resulting in low overhead encryption/decryption

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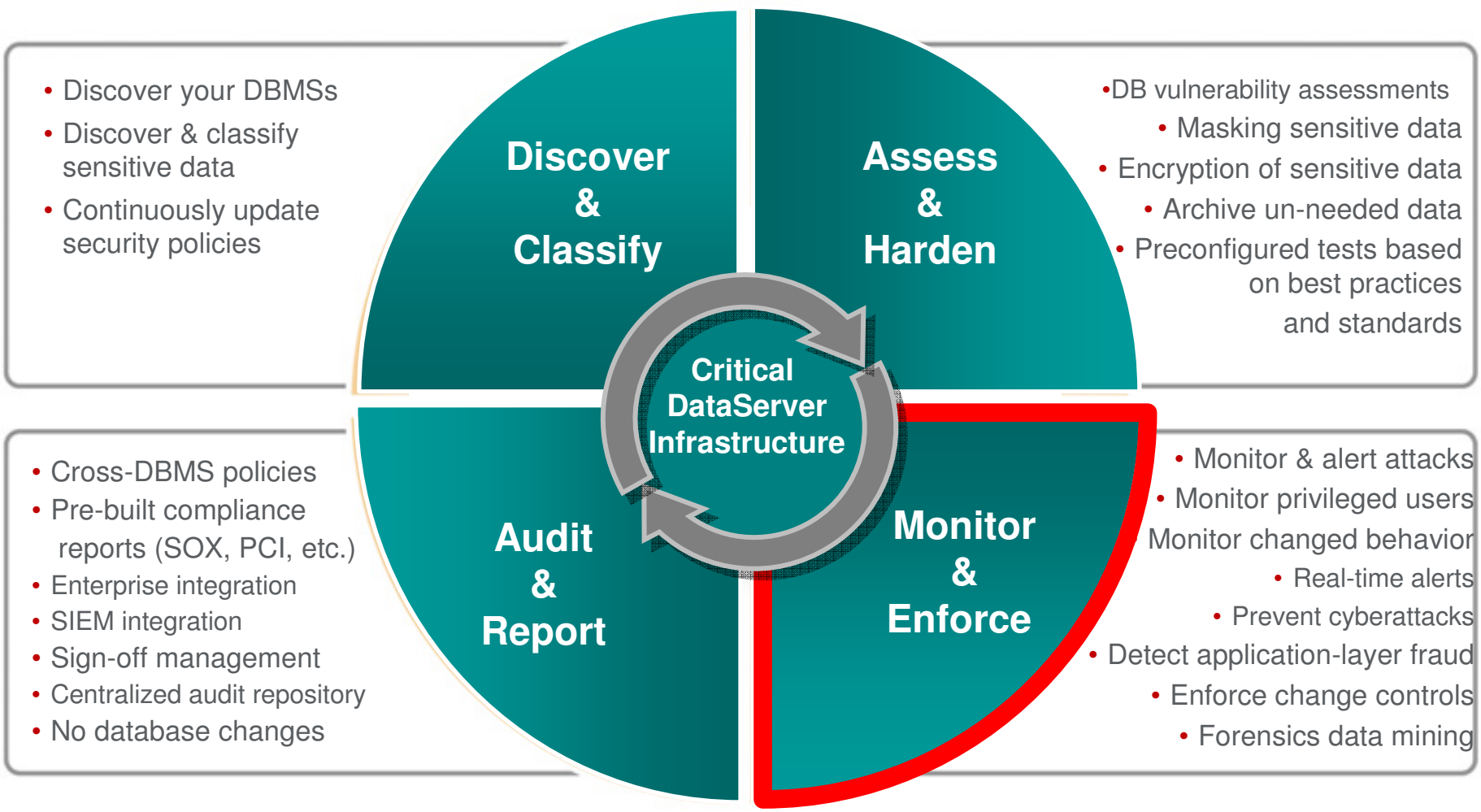
Address the Full Data Protection Lifecycle



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Customer Challenges: Auditing on z/OS

- **Regulatory pressures to demonstrate adequate controls**
  - Especially around privileged users (DBAs, SYSADMINs, …)
- **Most z/OS environments have minimal auditing**
  - Requires significant manual effort by DBAs
- **RACF sometimes perceived as sufficient security control, but RACF does not:**
  - Capture unauthorized update if the user has authority to the data
  - Capture access to sensitive data that is not within scope of their job
  - Capture a granular audit trail of what the user did while accessing the DBMS
- **Does not support Separation of Duties (SoD) + represents security risk and exposure**
  - Trace processes managed by DBAs that are being monitored

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Guardium for z

- **Provides a single unified view and secure audit trail of all database activities – across *both* mainframe and distributed environments**
  - Enterprise-wide compliance reporting, analytics & forensics
- **Can be managed by non-DBAs, thereby supporting SoD**
- **Reduces compliance cost and effort via automated and centralized controls (vs. manual, ad hoc processes)**
  - With compliance workflow automation (sign-offs, escalations, …)
- **Based on mainframe technology developed by IBM**
- **Minimal impact on performance**

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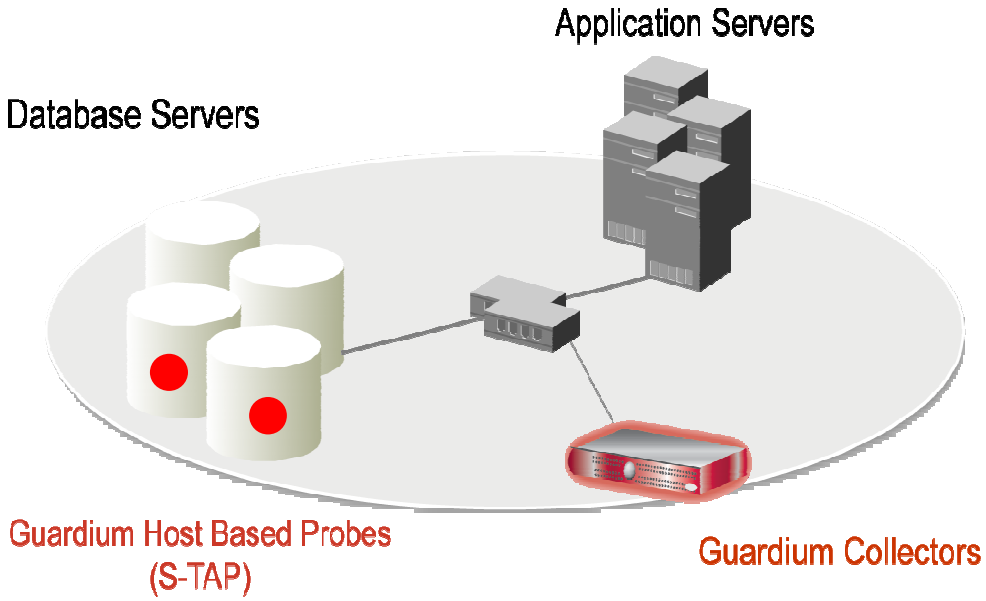
Guardium Database Activity Monitoring



- Non-invasive architecture
  - Outside database
  - Minimal performance impact
  - No DBMS or application changes
- Cross-DBMS solution
- 100% visibility including local DBA access

- Enforces separation of duties
- Does not rely on DBMS-resident logs that can easily be erased by attackers, rogue insiders
- Granular, real-time policies & auditing
  - *Who, what, when, how*
- Automated compliance reporting, sign-offs & escalations (SOX, PCI, NIST, etc.)

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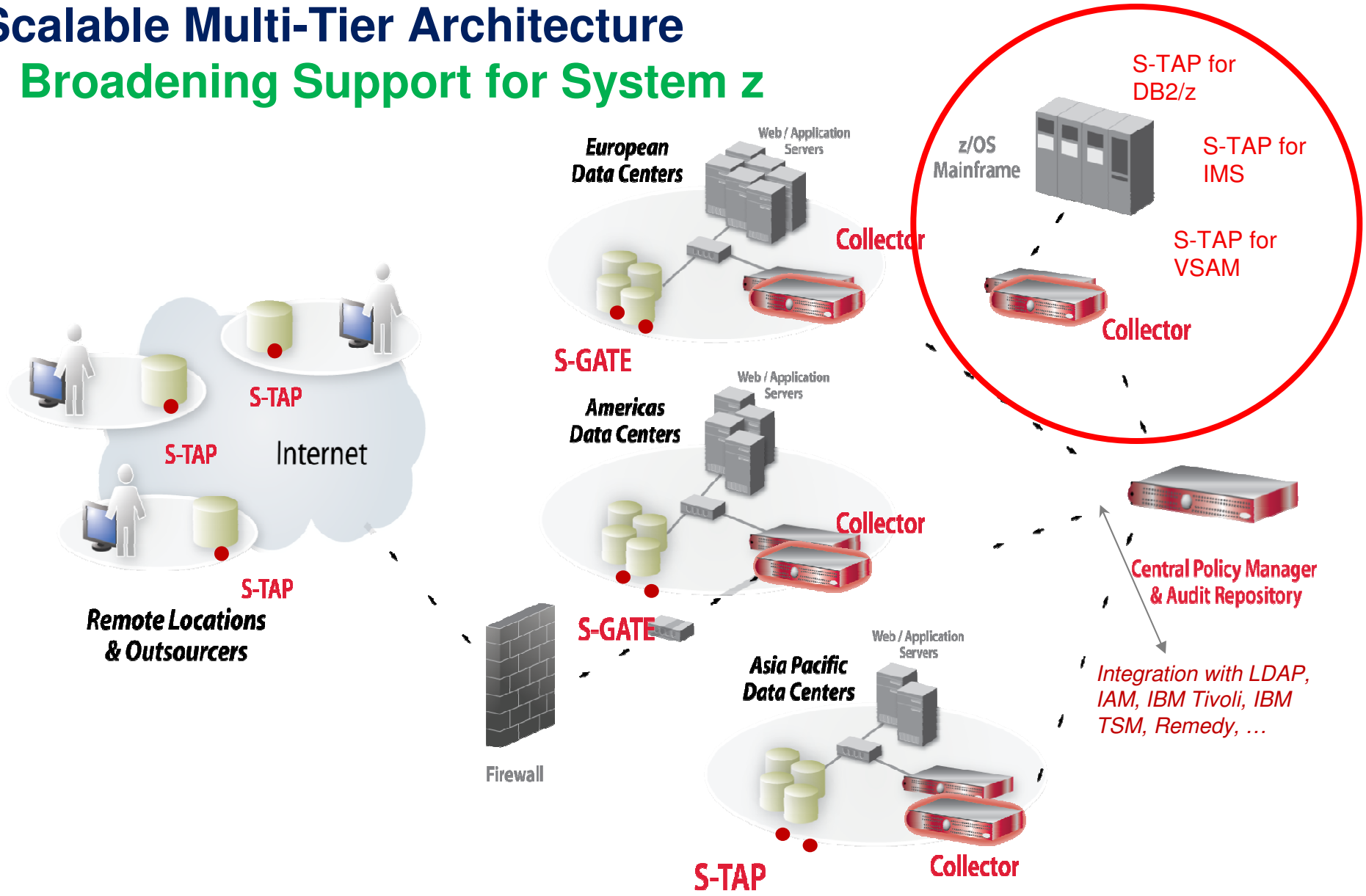
Scalable Multi-Tier Architecture

Broadening Support for System z



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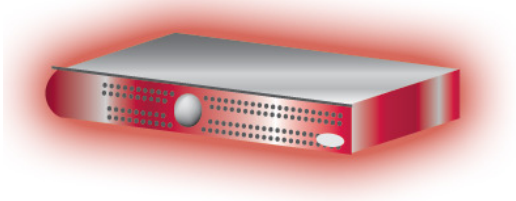
InfoSphere Guardium Appliance



- **The Appliance is a stand alone box**
  - Hardened Linux OS and DBMS kernel
  - Pre-configured, firmware updated
  - Secure audit repository
    - All audit information is stored in a secure repository that cannot be modified by anyone—even privileged users
- **Root access to the appliance is not provided**
  - Prevents administrators from accessing the base OS, file system, or embedded database to view or modify audit data
- **Appliance collects audit data from different agent 'probes‘ like S-TAP**
- **End user access is via Web Browser application**

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Guardium for System z Version 8.2

- New support for IMS
  - New S-TAP for IMS
  - Capture IMS activity for delivery to Guardium Appliance
  - Real-Time monitoring of IMS events
  - Comprehensive Auditing of IMS
  - Custom IMS security and compliance reports

- New support for VSAM
  - New S-TAP for VSAM
  - Capture VSAM file activity to enhance your DB monitoring
  - VSAM security and compliance reporting

- Enhanced support for DB2/z
  - Ongoing performance improvements
  - Unified administration of DB2 S-TAP within the Guardium appliance
  - Elimination of FTP – all event data is streamed in real-time
  - Increased filtering flexibility of authorization id's

- Enhanced support for DB2/z Vulnerability Assessment

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Guardium S-TAP for IMS Collection Overview

Databases

- All Reads of IMS DBs and segments using IMS DLI GET calls (GN, GU, GNP, etc).
- Changes, INSERT, UPDATE and DELETE calls (REPL, ISRT, DLET)
- Same for IMS Batch jobs and IMS Online regions

Segments

- Ability to audit and report READ, INSERT, UPDATE, and DELETE calls on specific database segments
- READ and DELETE calls retain the concatenated key of the audited segment
- UPDATE and INSERT calls retain the concatenated key of the audited segment as well as the segment data, as found in the DLI call I/O area

You can select which calls to audit per target

- For example: all databases, all segments, one DB and one segment of the DB,
- each segment can have different calls audited
- When a call is to be collected, the relevant information is gathered
  - e.g. call type, userid, PSB name, DBName, Segment Name, etc.
  - We do not gather the segment search argument

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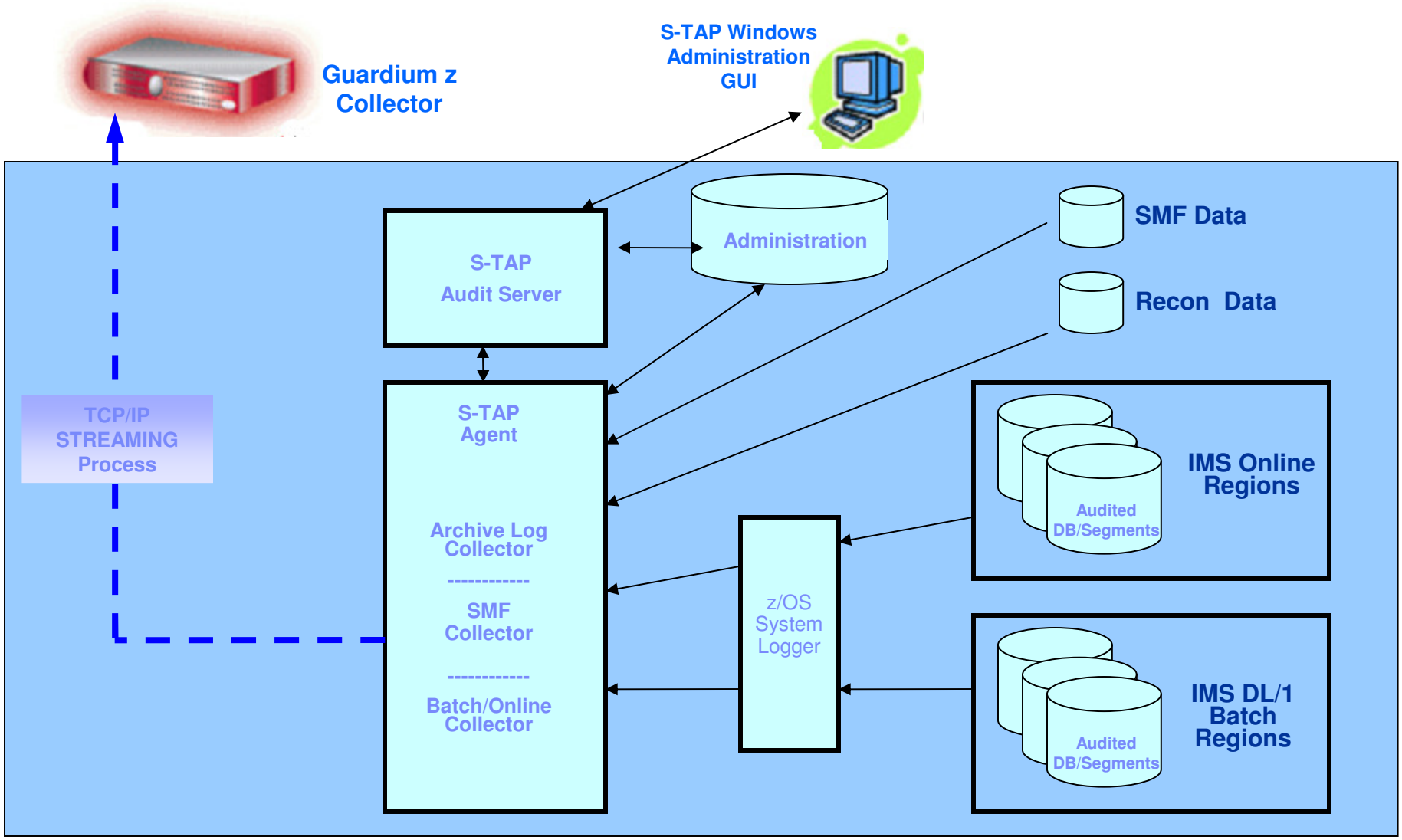
Guardium S-TAP for IMS on z/OS Architecture



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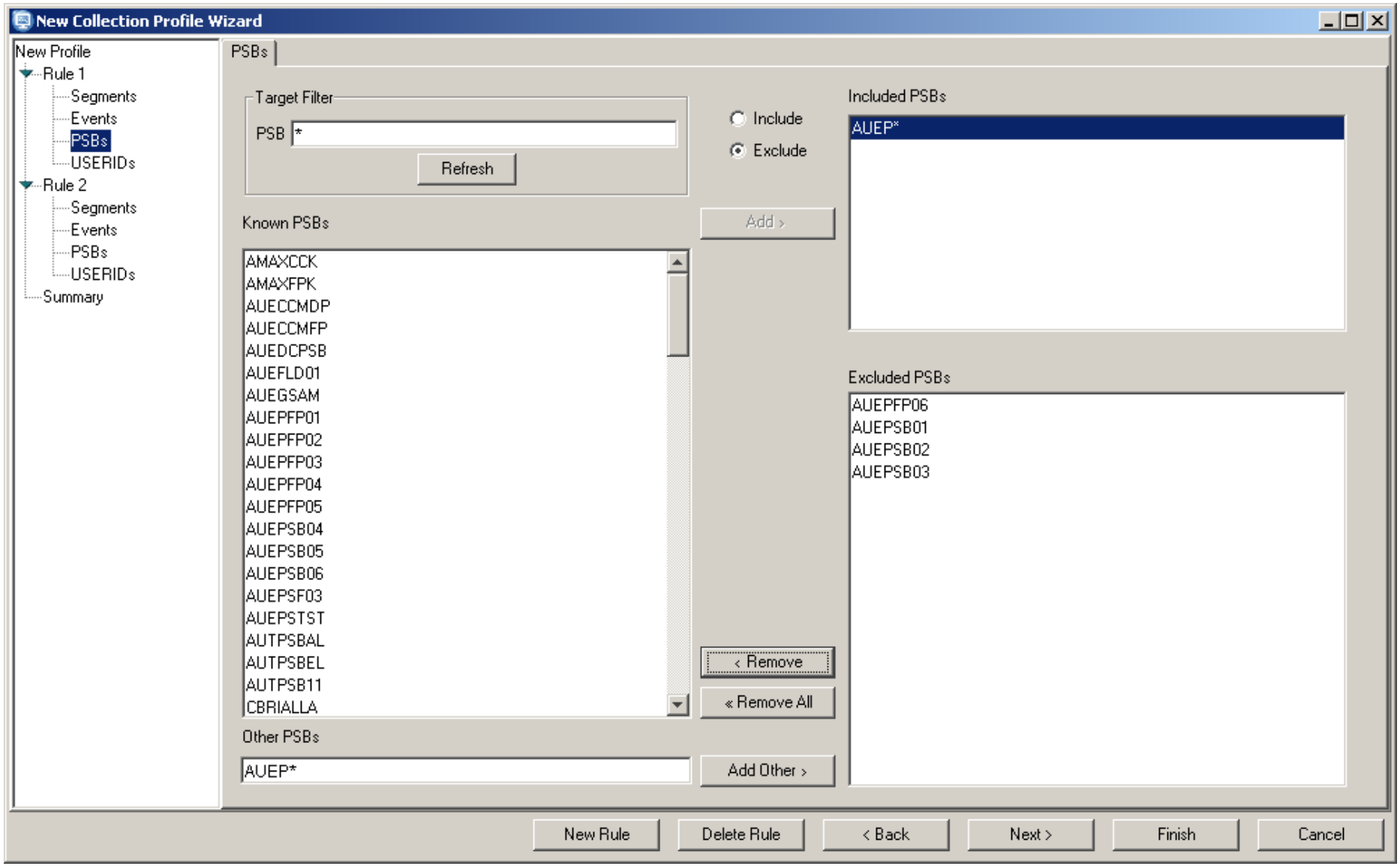
PSB Collection



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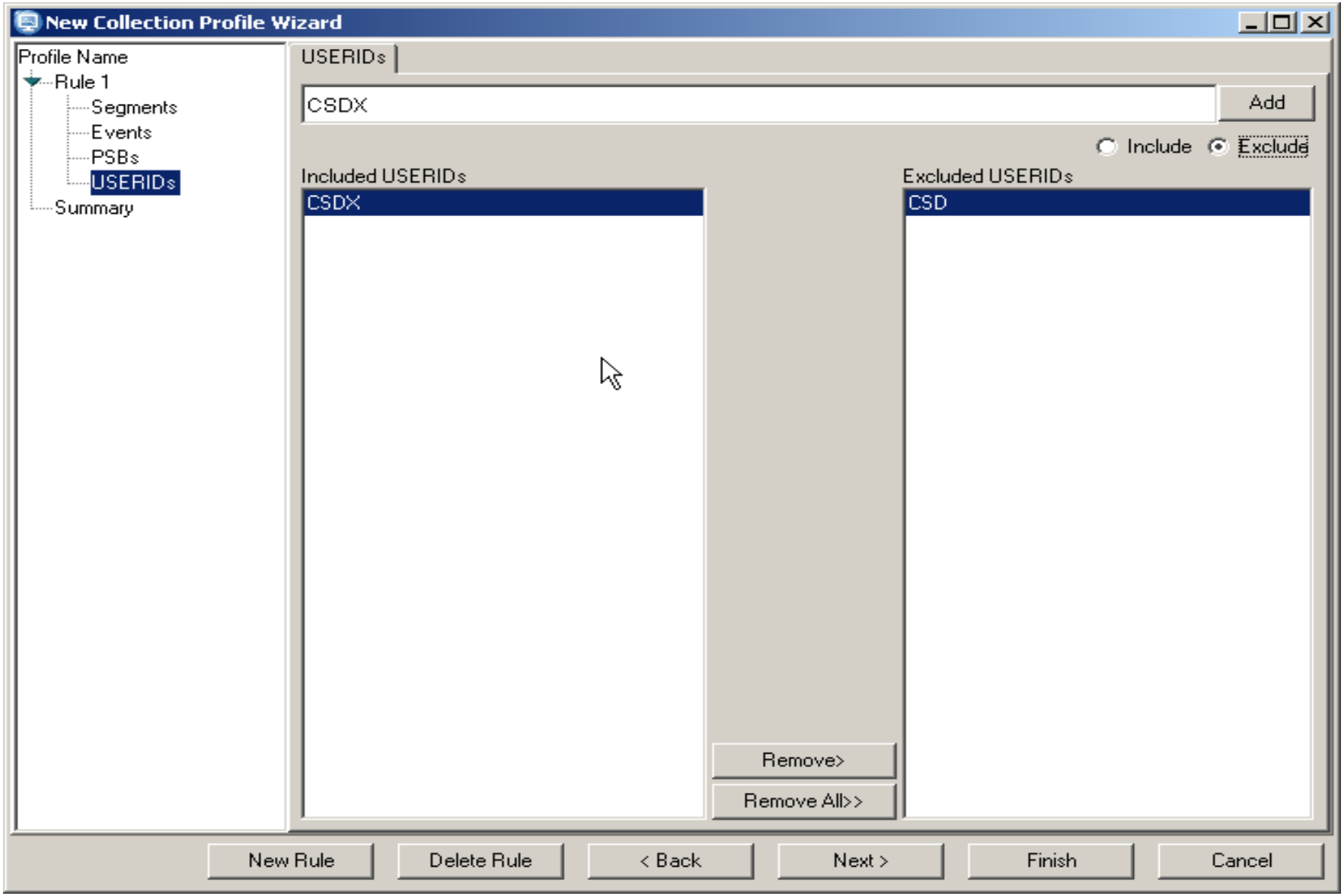
USERID Collection



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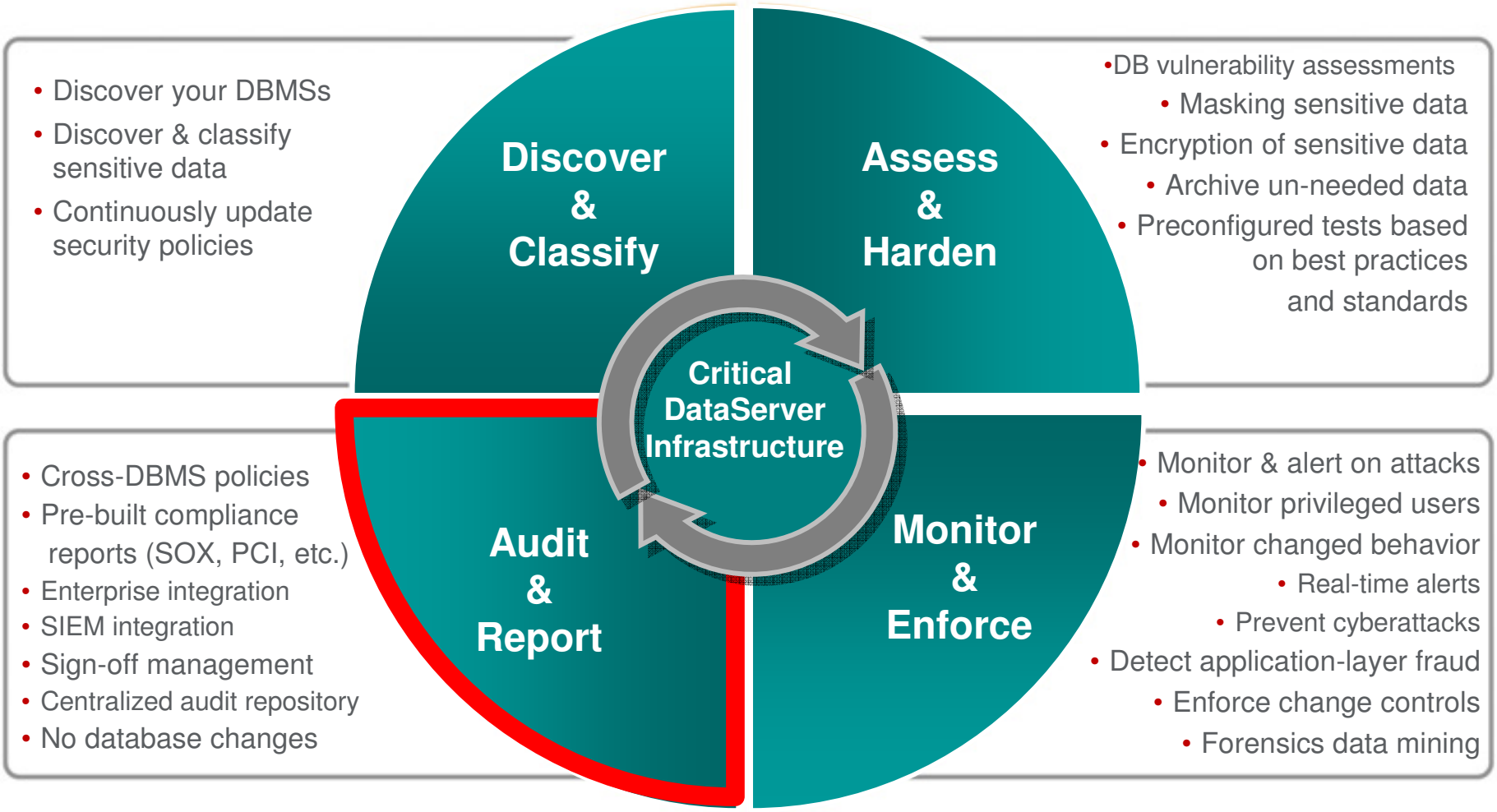
Address the Full Data Protection Lifecycle



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IMS Data integrated into Guardium reporting

IMS DLI Summary 2

Start Date:	2011-08-10 06:00:00	End Date:	2011-08-10 08:00:00
Aliases:	OFF	Database:	LIKE %
IMS_Name:	LIKE %12	JobName:	LIKE %
JobNumber:	LIKE %	PSB_Name:	LIKE %
Segment:	LIKE %	UserID:	LIKE %

Min Timestamp	Max Timestamp	IMS Context	IMS Job Name	IMS Job Number	IMS Database	IMS Segment	IMS User ID	IMS PSB Name	Servic Name
2011-08-10 06:11:02.0	2011-08-10 06:11:02.0	DB Level GET	TSTCMDDC	J0053357	AUECCMDD	LEVELF	CSIVANA	AUECCMDP	IMSV1:
2011-08-10 06:11:02.0	2011-08-10 06:11:02.0	DB Level REPLACE	TSTCMDDC	J0053357	AUECCMDD	LEVELF	CSIVANA	AUECCMDP	IMSV1:
2011-08-10 06:11:02.0	2011-08-10 06:11:02.0	Segment Level GET	TSTCMDDC	J0053357	AUECCMDD	LEVEL5	CSIVANA	AUECCMDP	IMSV1:
2011-08-10 06:11:02.0	2011-08-10 06:11:02.0	Segment Level GET	TSTCMDDC	J0053357	AUECCMDD	LEVELC	CSIVANA	AUECCMDP	IMSV1:
2011-08-10 06:11:02.0	2011-08-10 06:11:02.0	Segment Level REPLACE	TSTCMDDC	J0053357	AUECCMDD	LEVEL5	CSIVANA	AUECCMDP	IMSV1:
2011-08-10 06:11:02.0	2011-08-10 06:11:02.0	Segment Level REPLACE	TSTCMDDC	J0053357	AUECCMDD	LEVELC	CSIVANA	AUECCMDP	IMSV1:
2011-08-10 06:11:07.0	2011-08-10 06:11:07.0	DB Level GET	TSTCMDFC	J0053358	AUECCMFD	LEVELF	CSIVANA	AUECCMFP	IMSV1:
2011-08-10 06:11:07.0	2011-08-10 06:11:07.0	DB Level REPLACE	TSTCMDFC	J0053358	AUECCMFD	LEVELF	CSIVANA	AUECCMFP	IMSV1:
2011-08-10 06:11:07.0	2011-08-10 06:11:07.0	Segment Level GET	TSTCMDFC	J0053358	AUECCMFD	LEVEL5	CSIVANA	AUECCMFP	IMSV1:

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