



Security Inside Out

Latest Innovations in Oracle Database 12c

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Oracle Security Solutions





2013 DATA BREACH INVESTIGATIONS REPORT

Over 1.1B Served

67%

Records breached
from servers

76%

Breached using weak
or stolen credentials

69%

Discovered by an
external party

97%

Preventable with
basic controls

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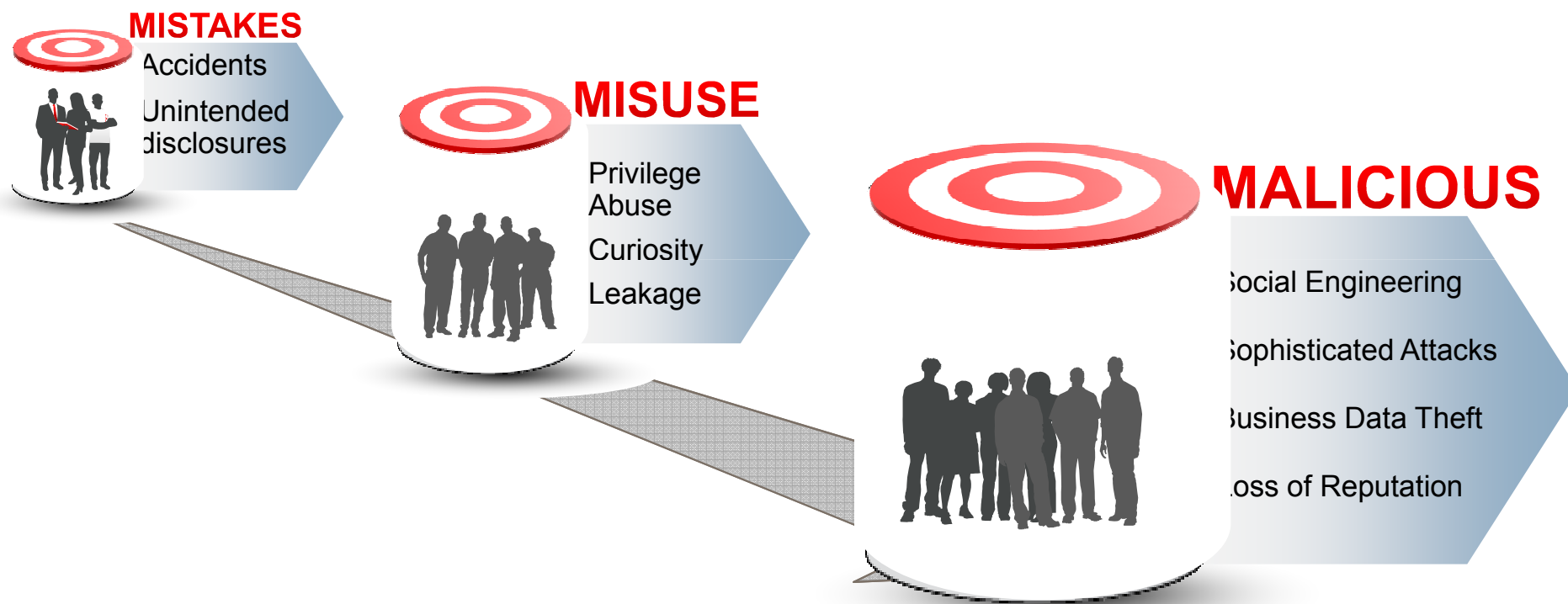


Agenda

- Data Protection Challenges
- Database Security Strategy
- Oracle Database 12c Defense-in-Depth
- Conclusion

From Mistakes to Malicious

Basic Security is Not Enough for Today's Business





Security Issues for New IT and Business Models

Consolidation, Cloud, Outsourcing, Partners, ...

- Manage risks when data goes into someone else's hand
- 7x24 support requires many highly privileged users
- Meet application's security requirements
- Meet changing compliance requirements
- Provide “scrubbed” data to dev/test/partners

Oracle Database 12c

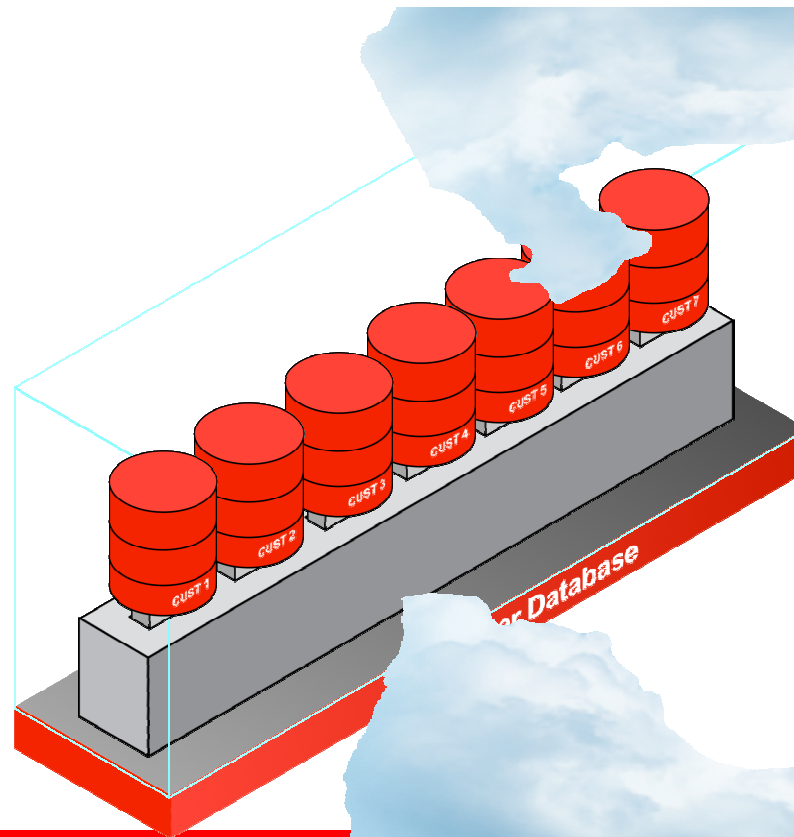
game **C**hanging
Customer driven
designed for the **C**loud

- 5 years in development
- 500 new features
- 2,500 person years development
- 3,000 systems used in testing
- 1 million feature tests run daily
- 1.2 million hours of stress tests

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Multitenant Architecture for SaaS

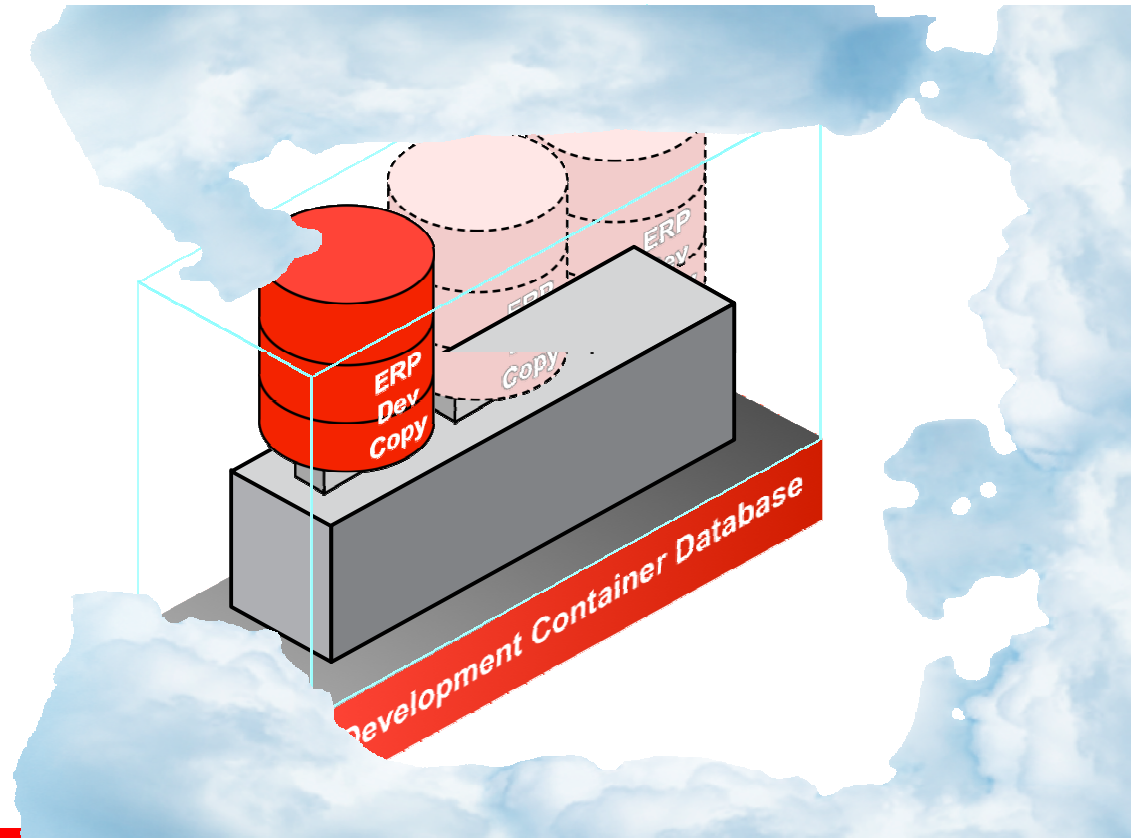
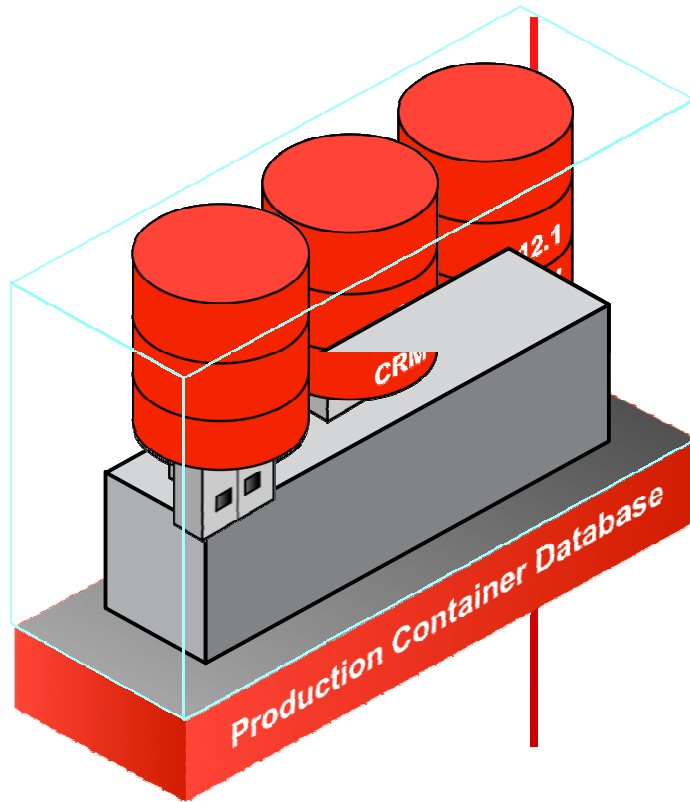
Each customer's data in private pluggable database



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Creating Databases for Test and Development

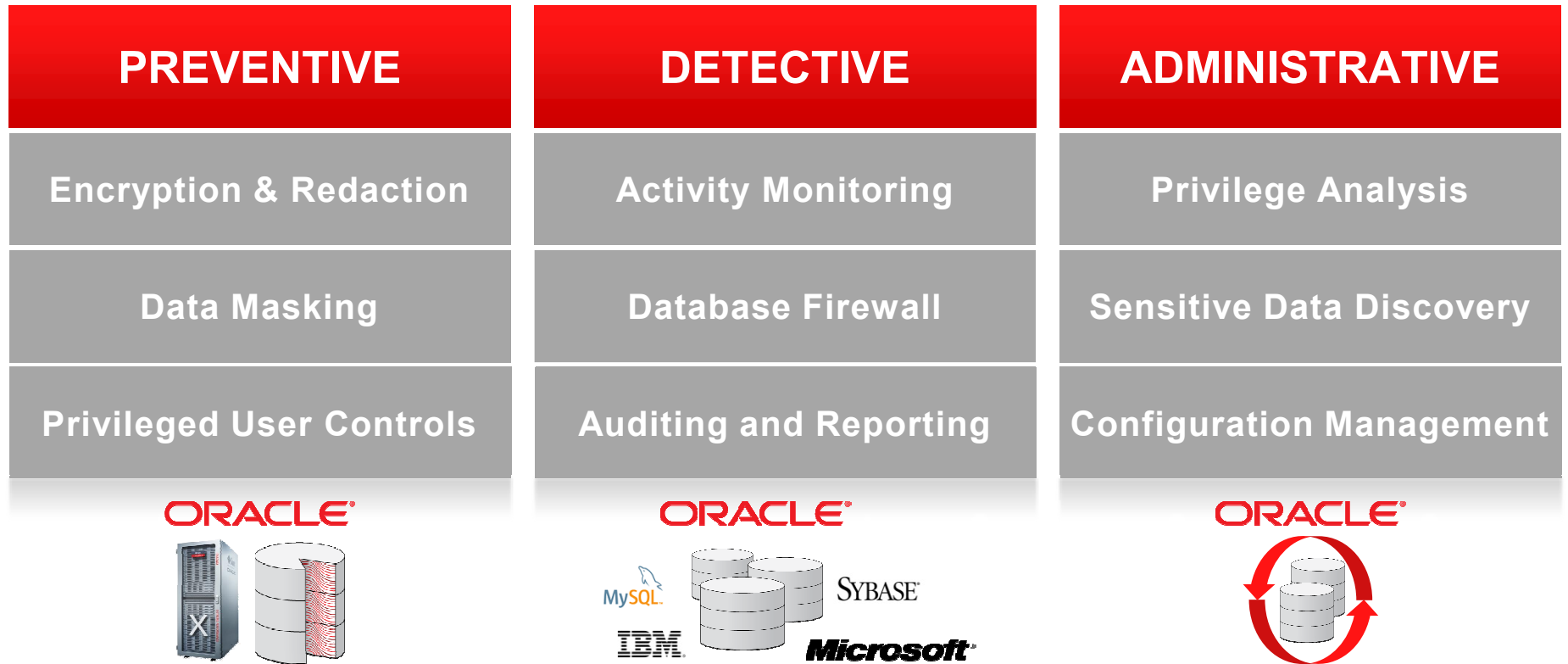
Fast, flexible copy and snapshot of pluggable databases



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Defense-in-Depth for Maximum Security



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Oracle Database Security Solutions

Defense-in-Depth for Maximum Security

PREVENTIVE

Encryption & Redaction

Data Masking

Privileged User Controls

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DETECTIVE

Activity Monitoring

Database Firewall

Auditing and Reporting

ORACLE®



ADMINISTRATIVE

Privilege Analysis

Sensitive Data Discovery

Configuration Management

ORACLE®



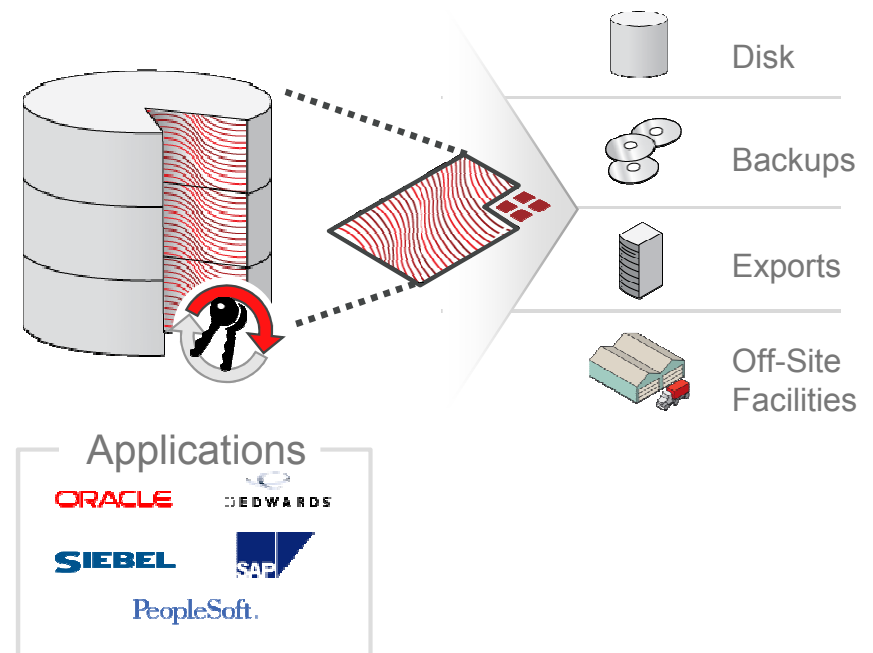
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Transparent Data Encryption

Preventive Control for Oracle Databases

Oracle Advanced Security

- Encrypts tablespaces or columns
- Prevents access to data-at-rest
- Requires no application changes
- Built-in two-tier key management
- “Near Zero” overhead with modern SPARC and Intel processors
- Integrated with Oracle technologies
 - Exadata, Compression, ASM, GoldenGate, DataPump, log file



Redacting Data Challenges

Secure sensitive
personal
information

Redact data in
applications,
queries and reports

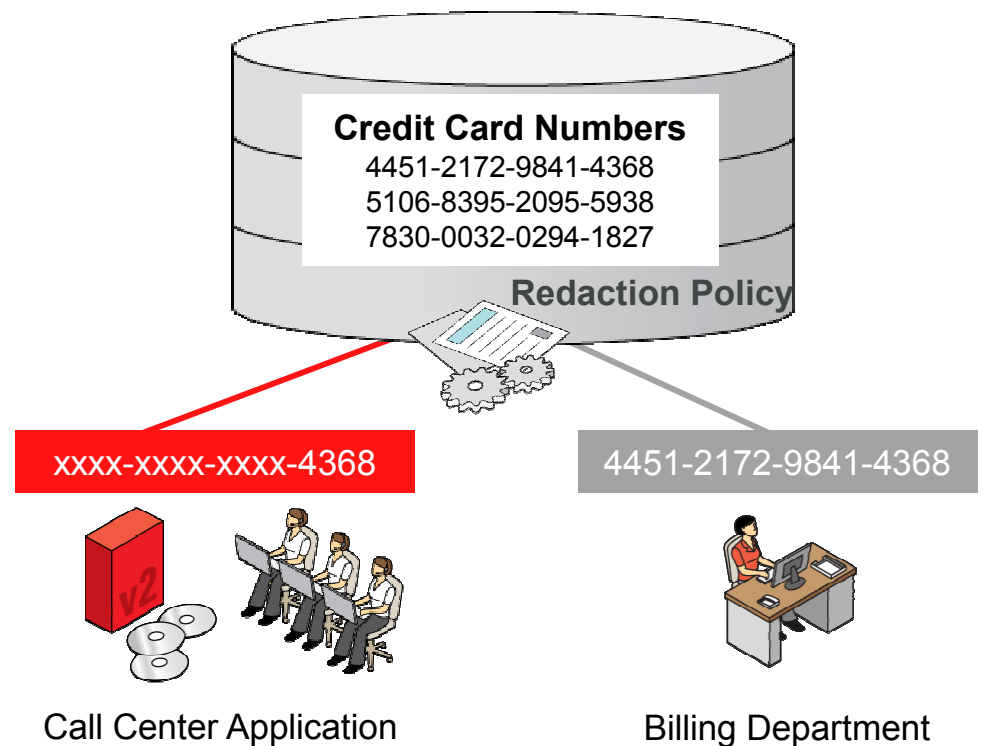
Avoid changing
applications,
queries and reports

Redaction of Sensitive Data Displayed

Preventive Control for Oracle Database

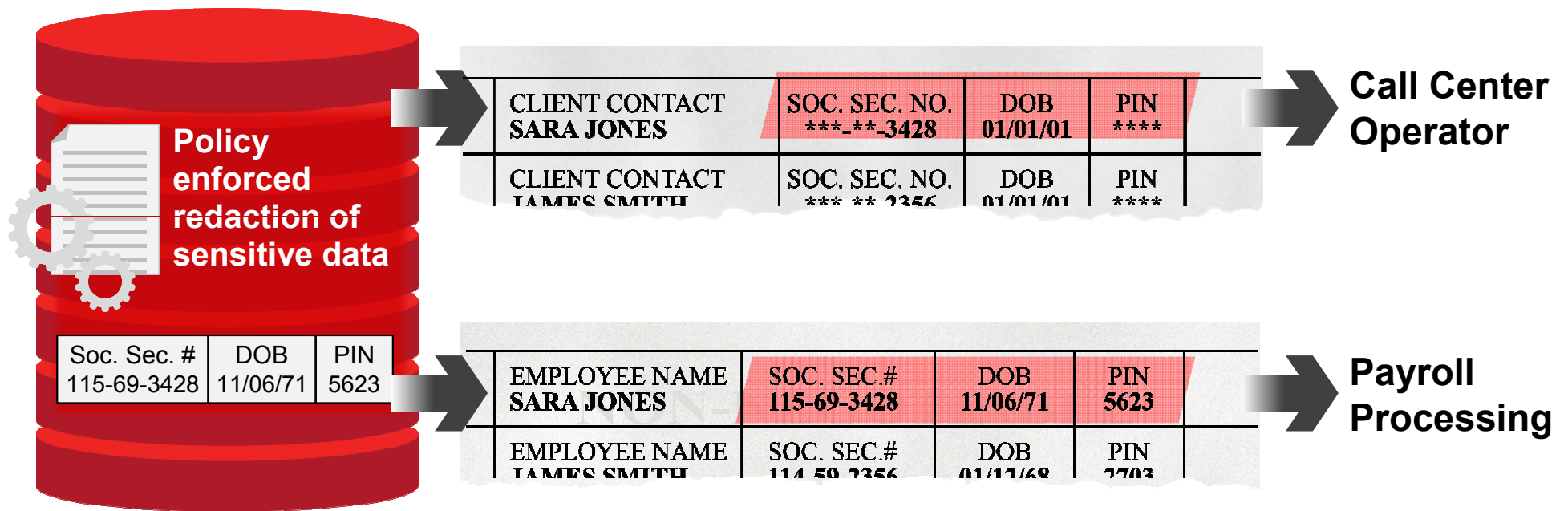
Oracle Advanced Security

- Real-time redaction of application data based upon user name, IP, application context, and other session factors
- Full, partial, fixed redaction
- Library of redaction policies and point-and-click policy definition
- Transparent to typical applications
- No impact on operational activities



Redacting Sensitive Data

Mask Application Data Dynamically



Masking Data for Nonproduction Use

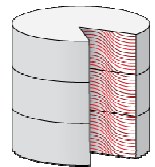
Preventive Control

Oracle Data Masking

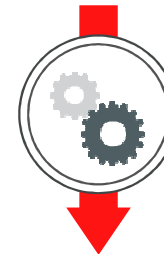
- Replaces sensitive application data
- Detects/Preserves Referential integrity
- Extensible template library and formats
- Integrates with subsetting and Real Application Testing
- Supports masking in non-Oracle databases

LAST_NAME	SSN	SALARY
AGUILAR	203-33-3234	40,000
BENSON	323-22-2943	60,000

Production



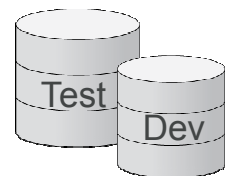
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E-BUSINESS SUITE



ORACLE
FUSION APPLICATIONS

LAST_NAME	SSN	SALARY
ANSKEKSL	323-23-1111	60,000
BKJHHEIEDK	252-34-1345	40,000

Non-production



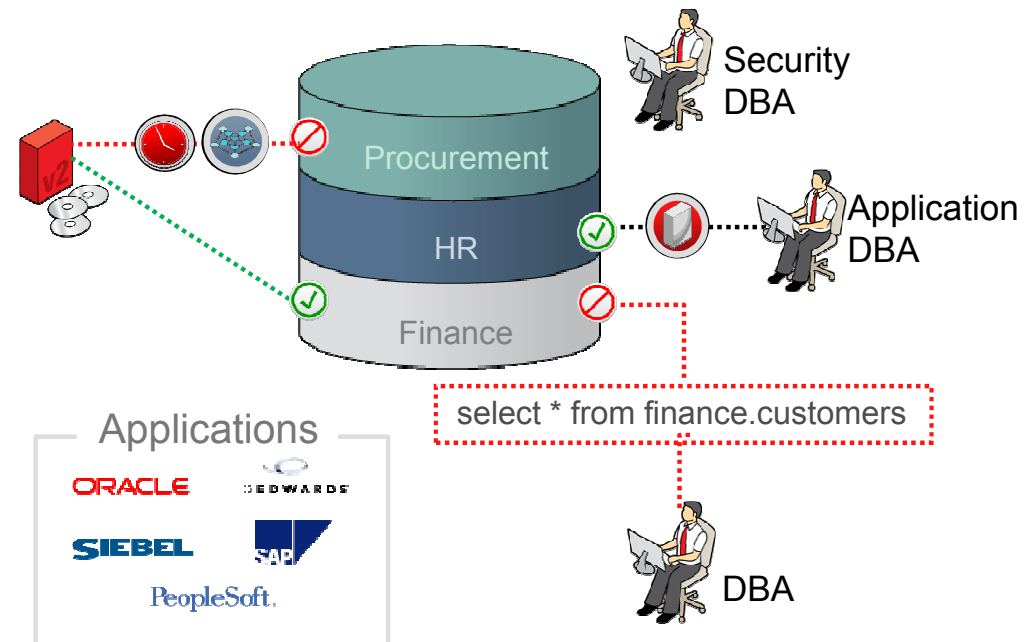
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Privileged User Controls

Preventive Control for Oracle Databases

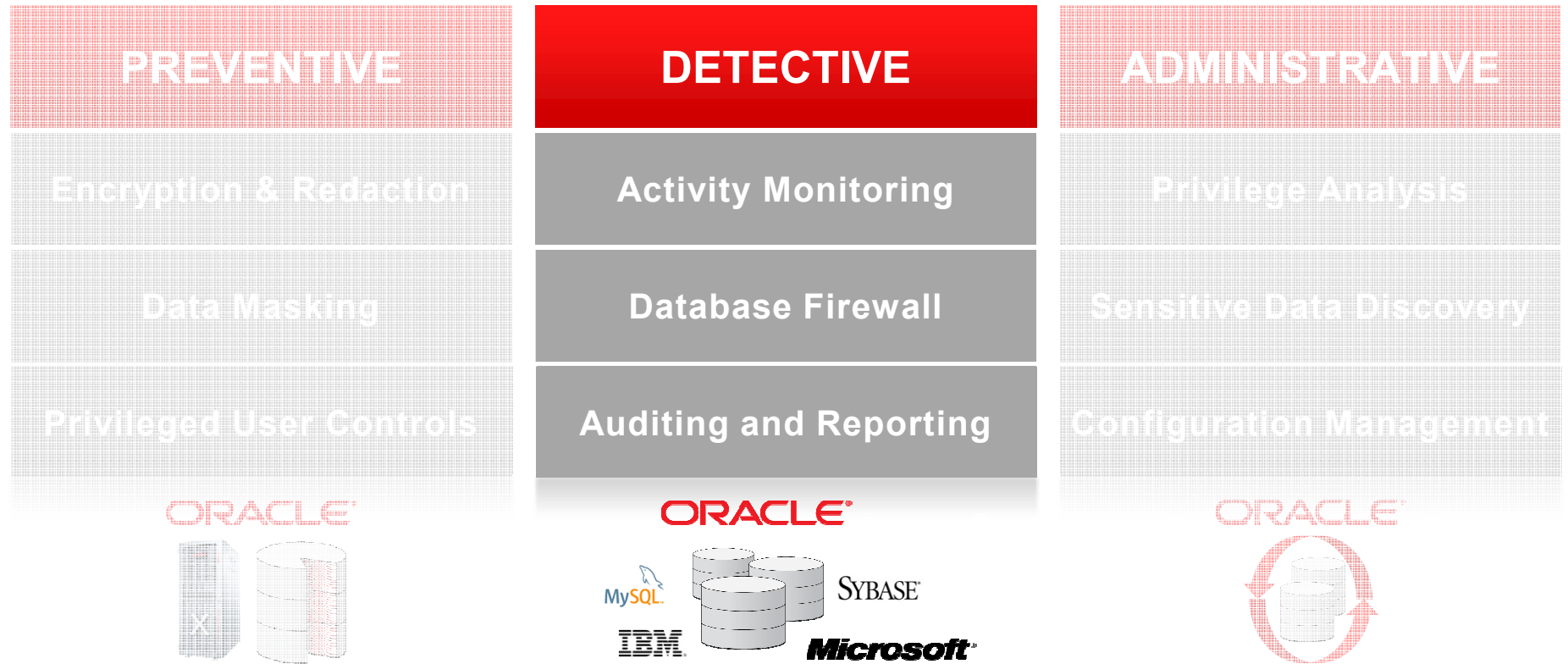
Oracle Database Vault

- Blocks threats that target privileged database accounts
- Creates Realms or protective zones around sensitive schemas or objects
- Restricts DBA access to realm data
- Restricts access to sensitive data during patching
- Supports multi-factor rules on SQL commands
- Enforces enterprise data governance, separation of duties, and least privilege



Oracle Database Security Solutions

Defense-in-Depth for Maximum Security



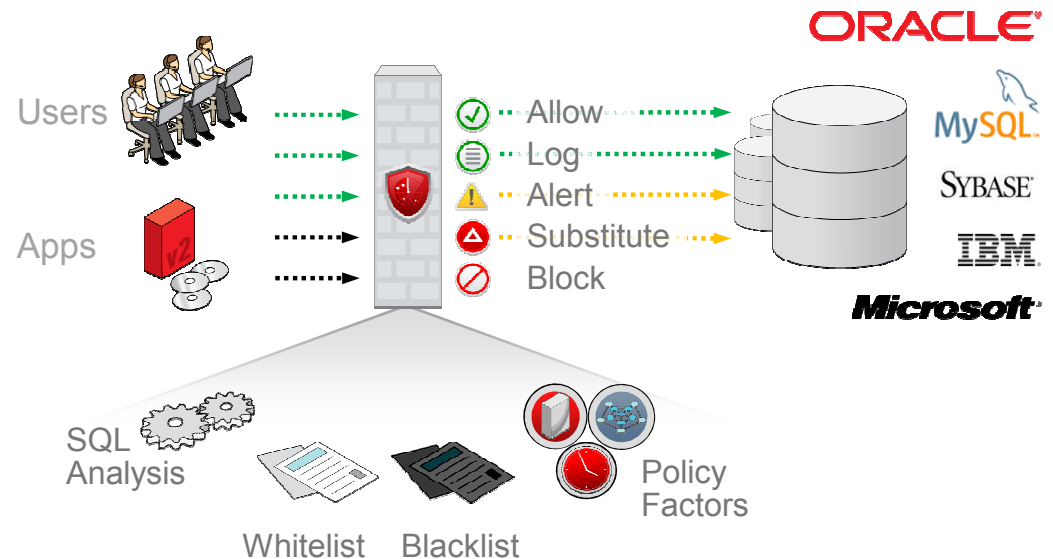
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Database Activity Monitoring and Firewall

Detective Control for Oracle and non-Oracle Databases

Oracle Audit Vault and Database Firewall

- Monitors and logs database network traffic
- Detects and blocks unauthorized database activity including SQL injection attacks
- Highly accurate SQL grammar analysis
- Whitelist approach to enforce activity
- Blacklists for managing high risk activity
- Scalable secure software appliance



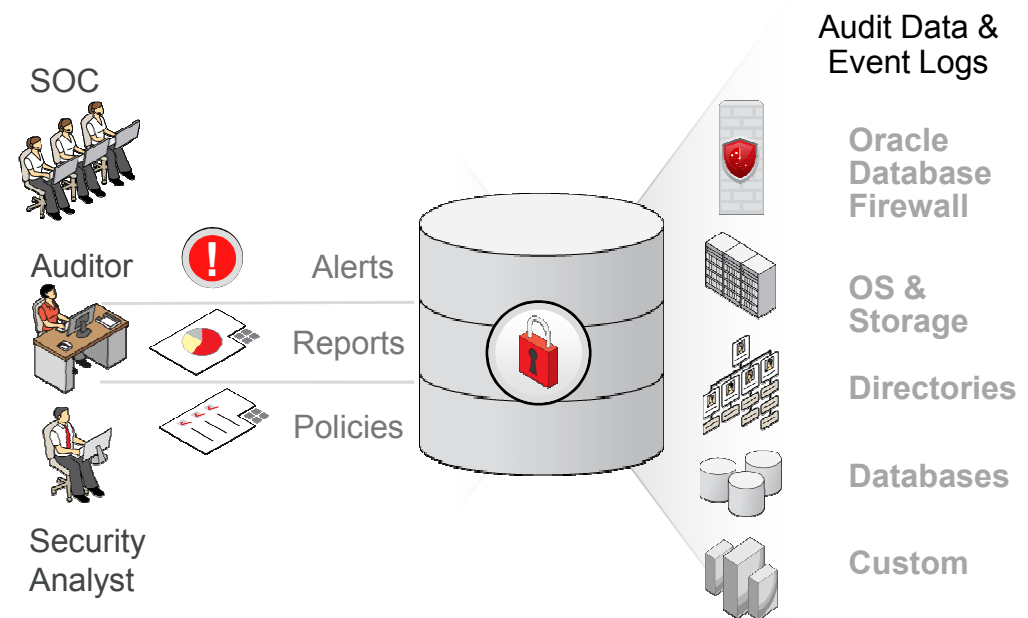
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Audit, Report, and Alert in Real-Time

Detective Control for Oracle and non-Oracle Databases

Oracle Audit Vault and Database Firewall

- Collect and Analyze audit/event data
- Centralized secure audit repository
- Consolidated multi-source reporting
- Out-of-the box and custom reports
- Conditional real-time alerts
- Fine-grain separation of duties
- Secure, scalable software appliance



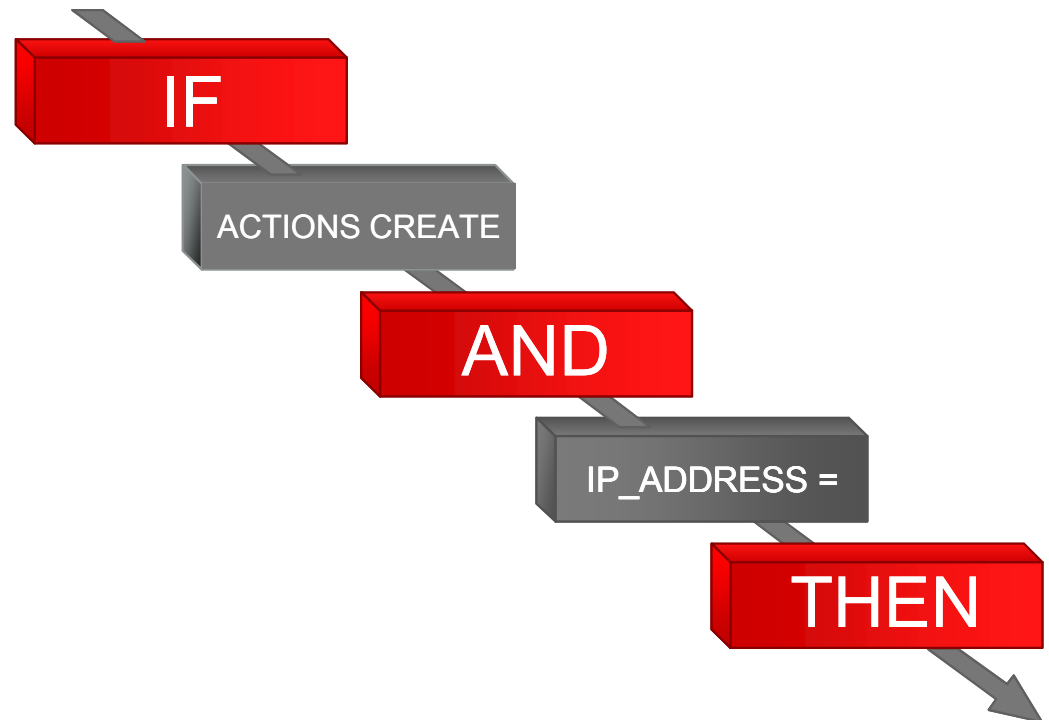
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Conditional Auditing Framework

Detective Control for Oracle Database 12c

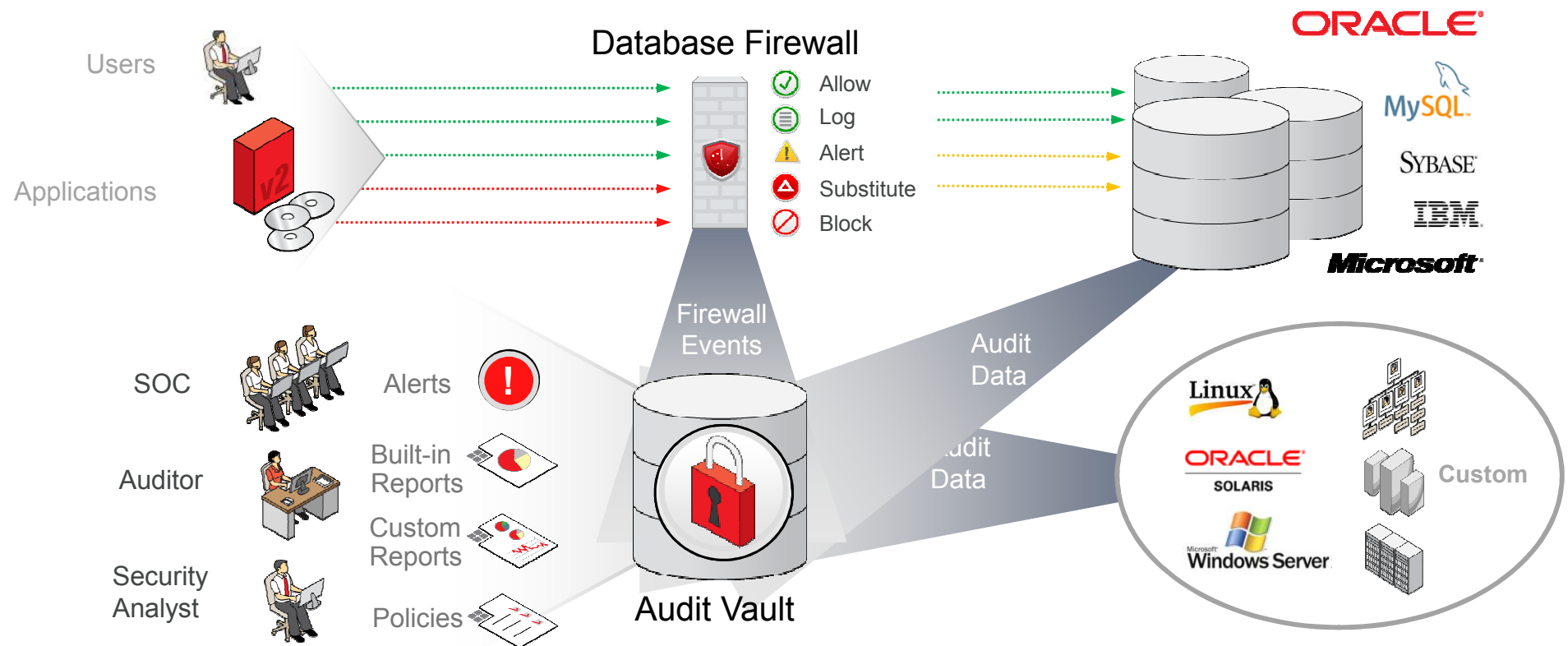
Database Auditing

- New policy- and condition-based syntax
 - What: CREATE, ALTER, ALL, ...
 - Where: Set of Privileges, Roles, objects
 - When: IP_ADDRESS != "10.288.241.88"
 - Exceptions: Except HR
- Group audit settings for manageability
- New roles: Audit Viewer and Audit Admin
- Out-of-box audit policies
- Single unified database audit trail



Oracle Audit Vault and Database Firewall

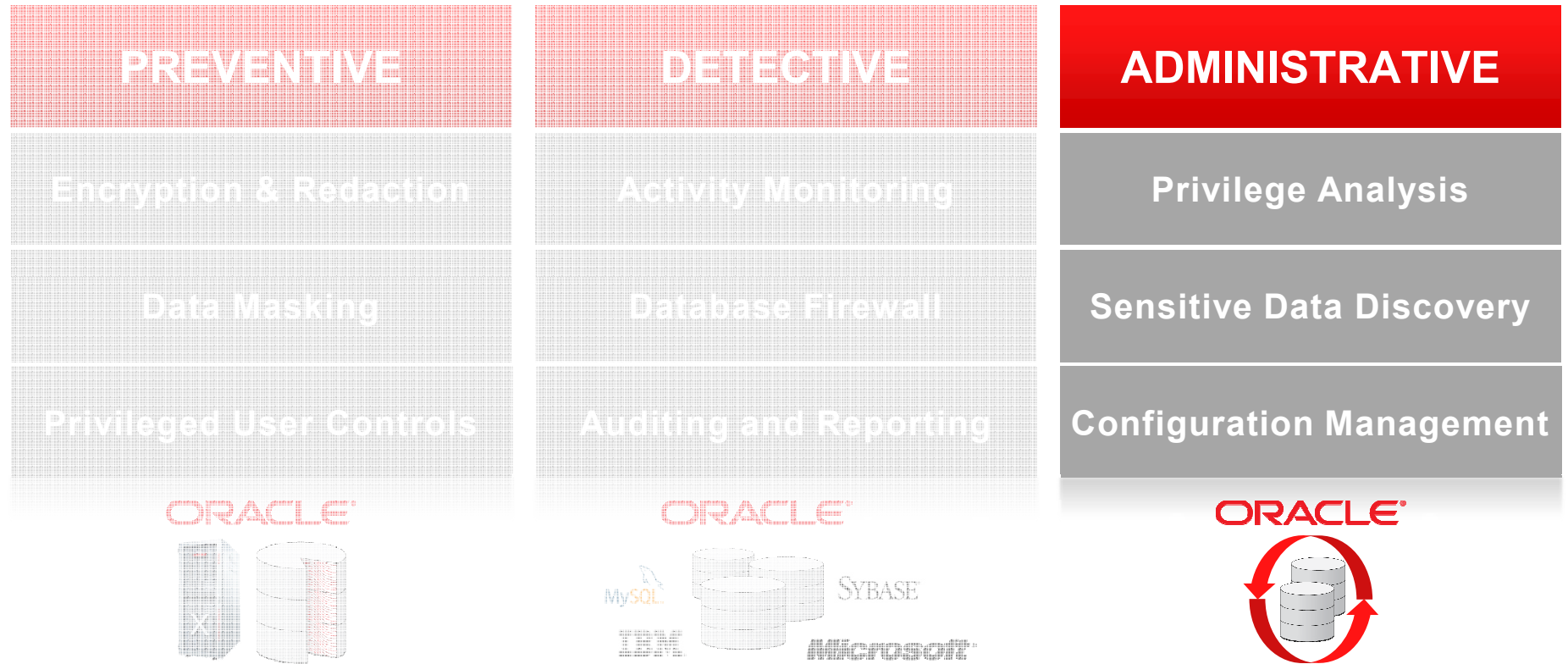
Detective Control for Oracle and Non-Oracle Databases



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Defense-in-Depth for Maximum Security

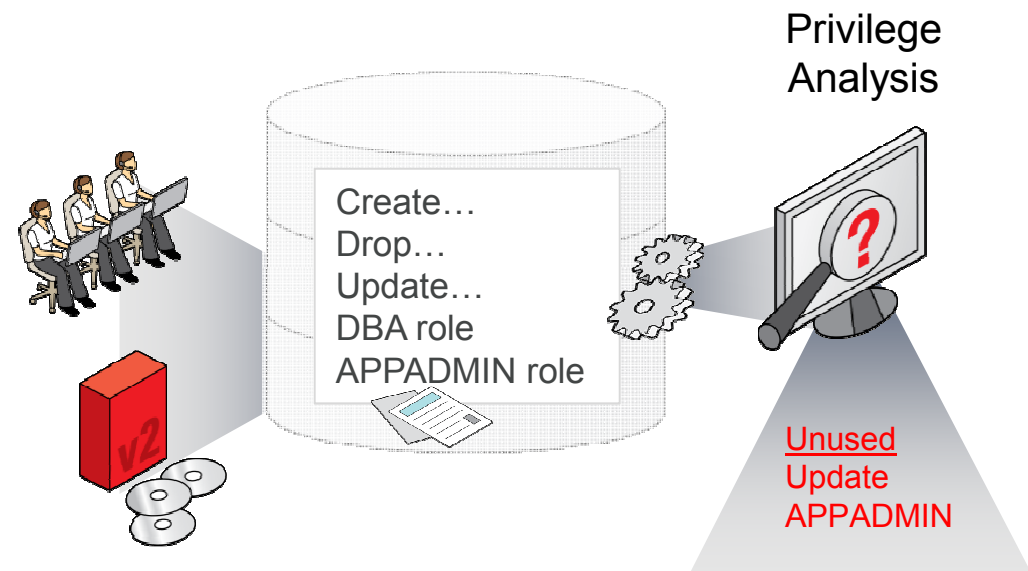


Discover Use of Privileges and Roles

Administrative Control for Oracle Database 12c

Oracle Database Vault

- Turn on privilege capture mode
- Report on actual privileges and roles used in the database
- Helps revoke unnecessary privileges
- Enforce least privilege and reduce risks
- Increase security without disruption

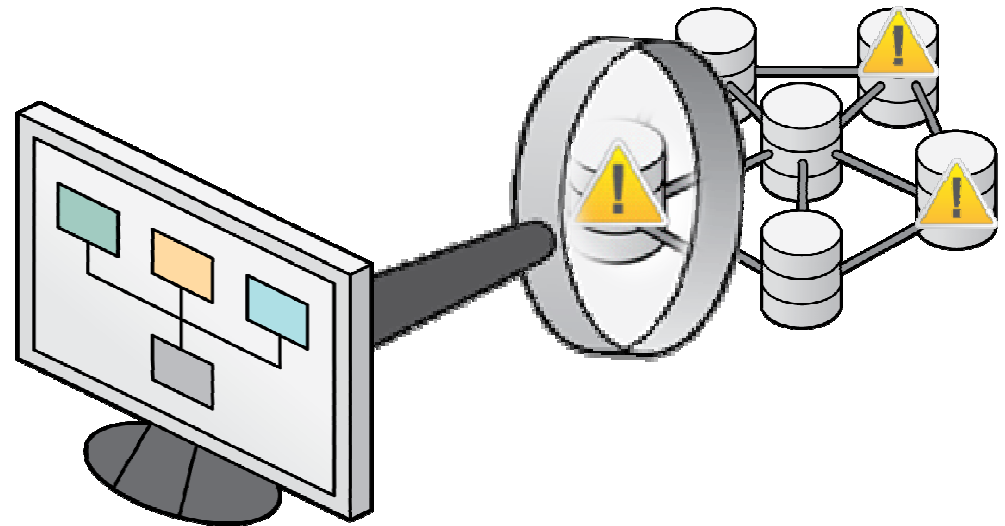


Discover Sensitive Data and Databases

Administrative Control for Oracle Databases

Oracle Enterprise Manager 12c

- Scan Oracle databases for sensitive data
- Built-in, extensible data definitions
- Discover application data models
- Protect sensitive data appropriately: encrypt, redact, mask, audit...

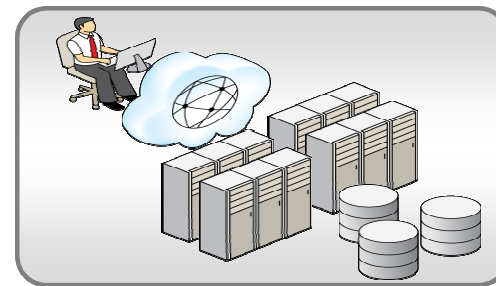


Configuration Management

Administrative Control for Oracle Databases

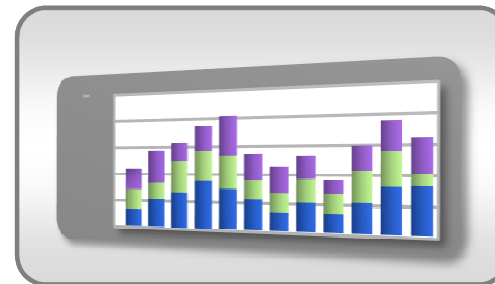
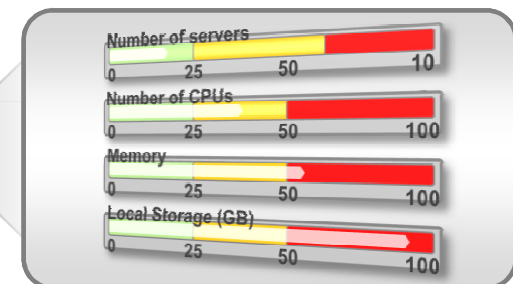
Oracle Database Lifecycle Management

- Discover and classify databases
- Scan for secure configuration against a library of best practices and standards
- Detect unauthorized changes
- Automated remediation
- Patching and provisioning



Discover

Scan & Monitor

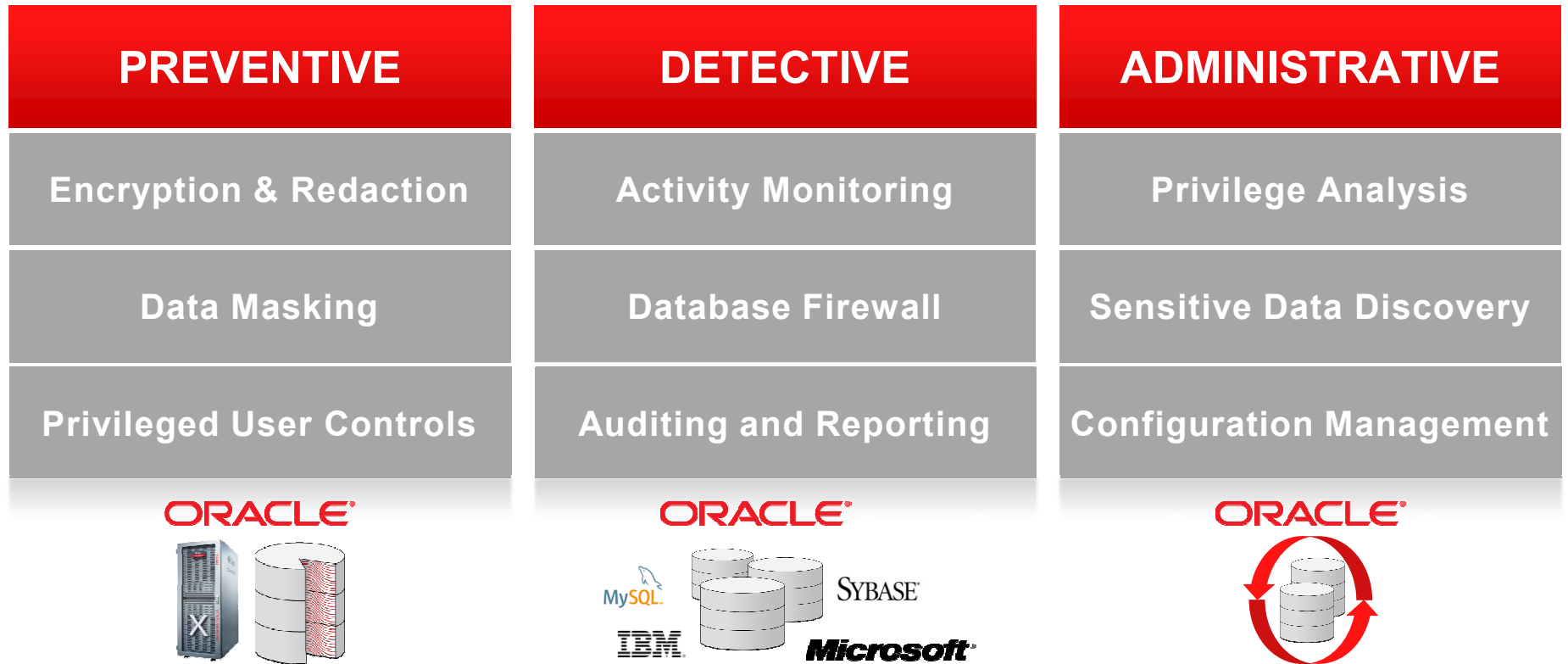


Patch

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Oracle Database Security Solutions

Defense-in-Depth for Maximum Security



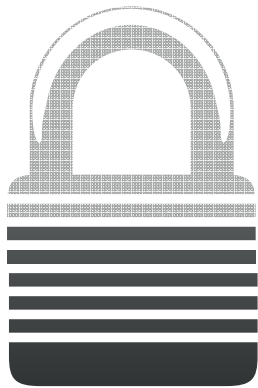
Oracle Database 12c

More Security Capabilities Than Any Previous Release

Big leap in
Performance

HARDWARE
CRYPTOGRAPHIC
ACCELERATION

Sensitive
Data Discovery



Unified EM
Security Console

Privilege
Analysis

NEW SEPARATION
of DUTY ROLES

DATABASE on WINDOWS as a SERVICE

Conditional
Auditing

Real Application
Security

Mandatory
Realms

Data Redaction

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Customer Case Studies

Enterprise Ready, Simple, Flexible, Scalable

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Use Code: db12c



**Securing
Oracle Database 12c:
A Technical Primer**

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DATABASE

Michelle Malcher
Paul Needham
Scott Rotondo
James Spooner

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