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The following is intended to outline our general product direction. It is intended for information purposes only, and may not be incorporated into any contract. It is not a commitment to deliver any material, code, or functionality, and should not be relied upon in making purchasing decisions. The development, release, and timing of any features or functionality described for Oracle's products remains at the sole discretion of Oracle. Release timing for Oracle Database 12c is planned for Calendar Year 2013.



# Security Inside Out

Latest Innovations in Oracle Database 12c

Guy Chiasson  
Security Solution Specialist  
Oracle

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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# Targets Increasing as Attacks Evolve

DBAs, OS Admins, Developers, Multiple Copies of the Data, etc.

## Anatomy of an Attack

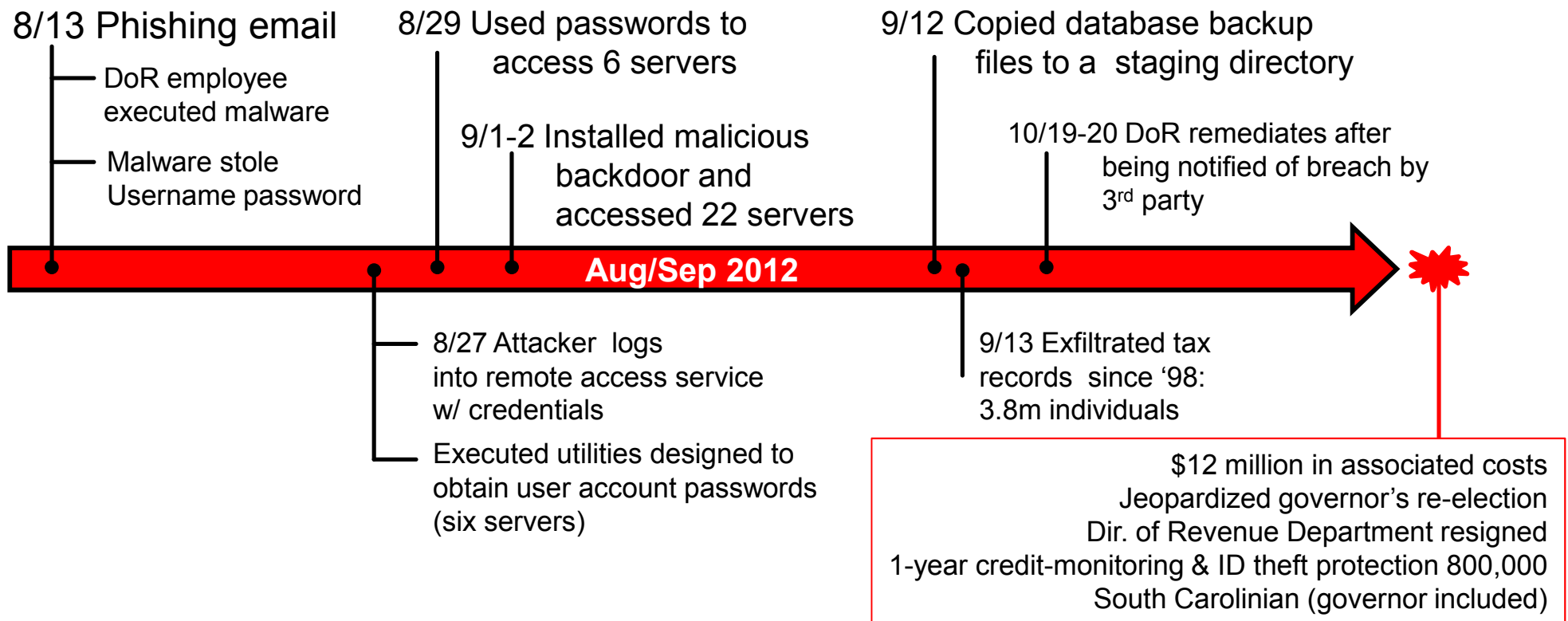
*“You don’t bother to just simply hack the organization and its infrastructure; you focus much more of your attention on hacking the employees....”*

*Uri Rivner  
CTO, RSA (Security Division of EMC)*

The screenshot shows a LinkedIn search interface. The search bar at the top contains the text 'database administrator'. Below the search bar, the results are displayed in a list. The first result is for Mike Elquist, a Senior Database Administrator at Myriad Genetics. The second result is for Brian Guthals, a SQL Server Database Administrator at Specialized Loan Servicing. The third result is for Linda C., a Consultant in management and technology, speciality Oracle DBA. The fourth result is for Andrew Brittain, a Senior Database Administrator at eMason, Inc. The fifth result is for Bradley Eacker, a Computer Software Consultant and Professional. The search results are sorted by Relevance. The search bar and the result count '402,351 results' are circled in red.

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# Example: South Carolina's Data Breach

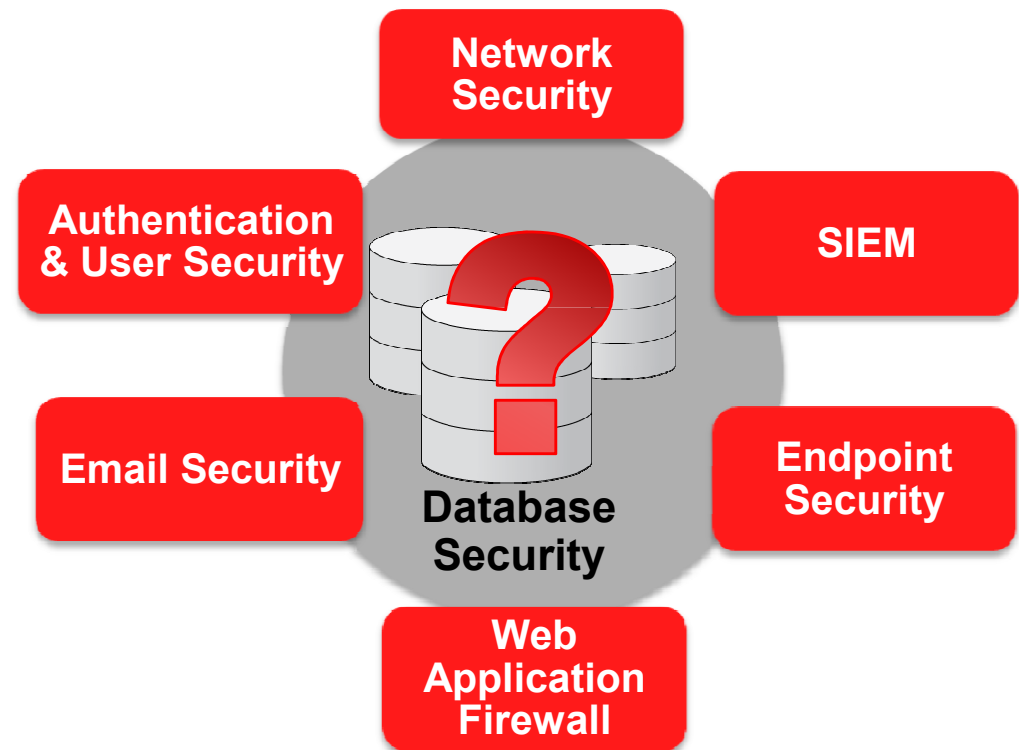


# Why Are Databases So Vulnerable?

80% of IT Security Programs Don't Address Database Security

## Forrester Research

*“Enterprises are taking on risks that they may not even be aware of. Especially as more and more attacks against databases exploit legitimate access.”*



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# Oracle Database Security Solutions

Defense-in-Depth for Maximum Security

## PREVENTIVE

Encryption

Redaction and Masking

Privileged User Controls

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## DETECTIVE

Activity Monitoring

Database Firewall

Auditing and Reporting

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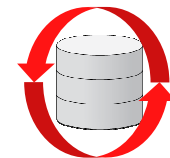
## ADMINISTRATIVE

Privilege Analysis

Sensitive Data Discovery

Configuration Management

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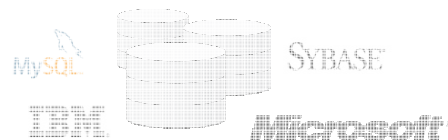
## DETECTIVE

Activity Monitoring

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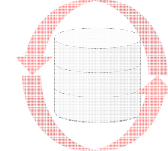
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Privilege Analysis

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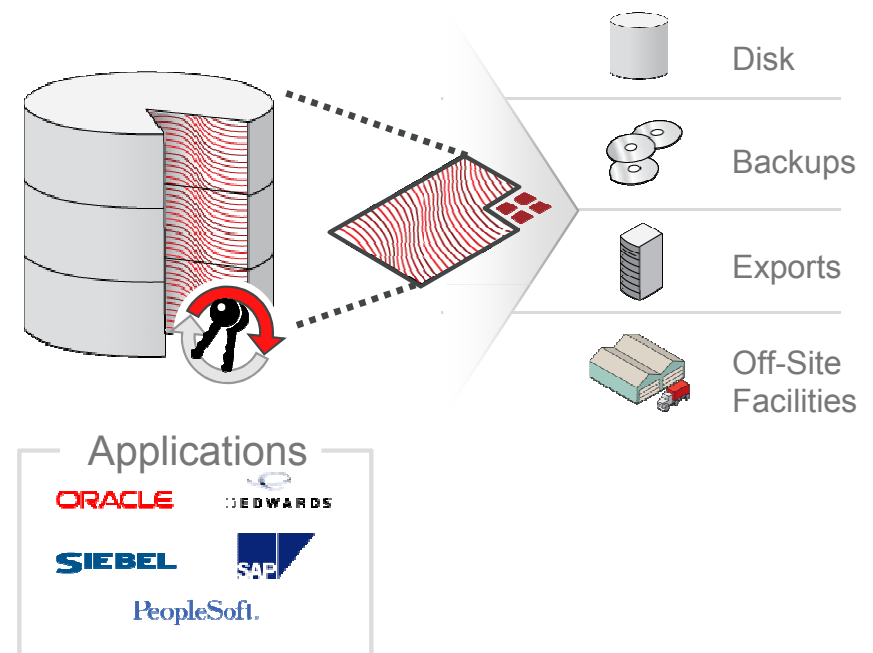
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# Encryption is the Foundation

## Preventive Control for Oracle Databases

### Oracle Advanced Security

- Transparent data encryption
- Prevents access to data at rest
- Requires no application changes
- Built-in two-tier key management
- “Near Zero” overhead with hardware
- Integrations with Oracle technologies
  - e.g. Exadata, Advanced Compression, ASM, Golden Gate, DataPump, etc.

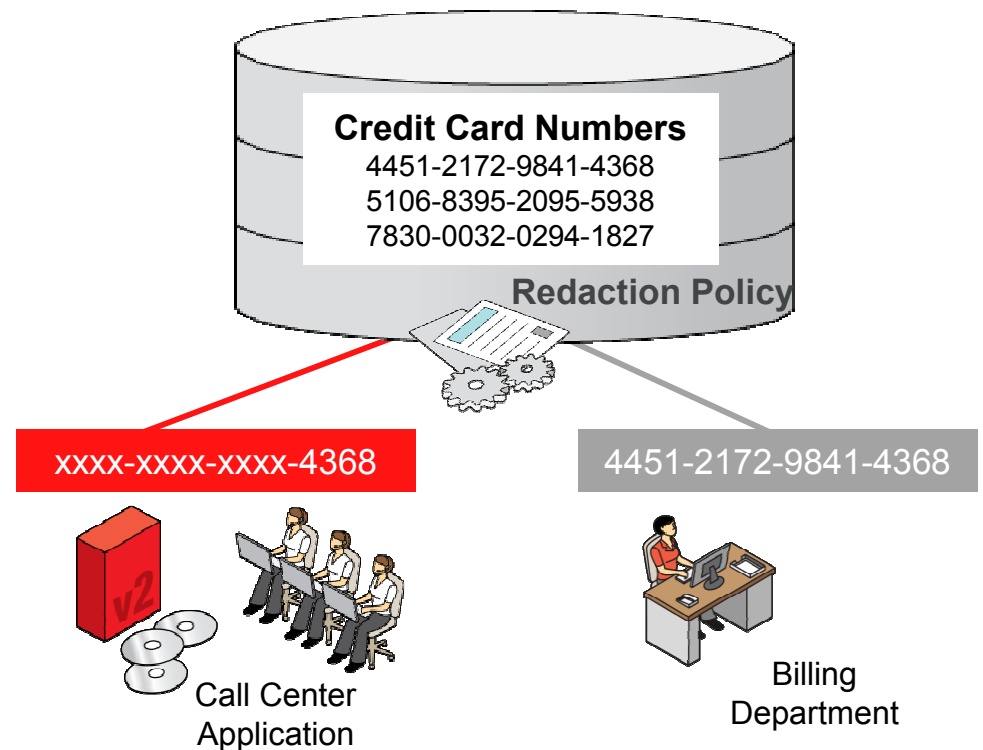


# Redaction of Sensitive Data Displayed

## Preventive Control for Oracle Database 12c

### Oracle Advanced Security

- Real-time sensitive data redaction based on database session context
- Library of redaction policies and point-and-click policy definition
- Consistent enforcement, policies applied to data
- Transparent to applications, users, and operational activities



# Masking Data for Non-Production Use

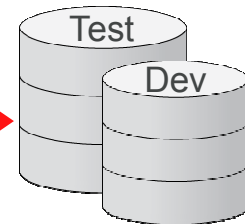
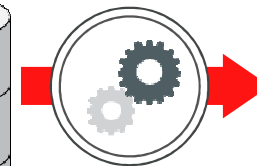
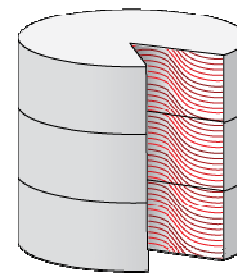
## Preventive Control for Oracle Databases

### Oracle Data Masking

- Replace sensitive application data
- Referential integrity detected/preserved
- Extensible template library and formats
- Application templates available
- Support for masking data in non-Oracle databases

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

Production



Non-Production

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

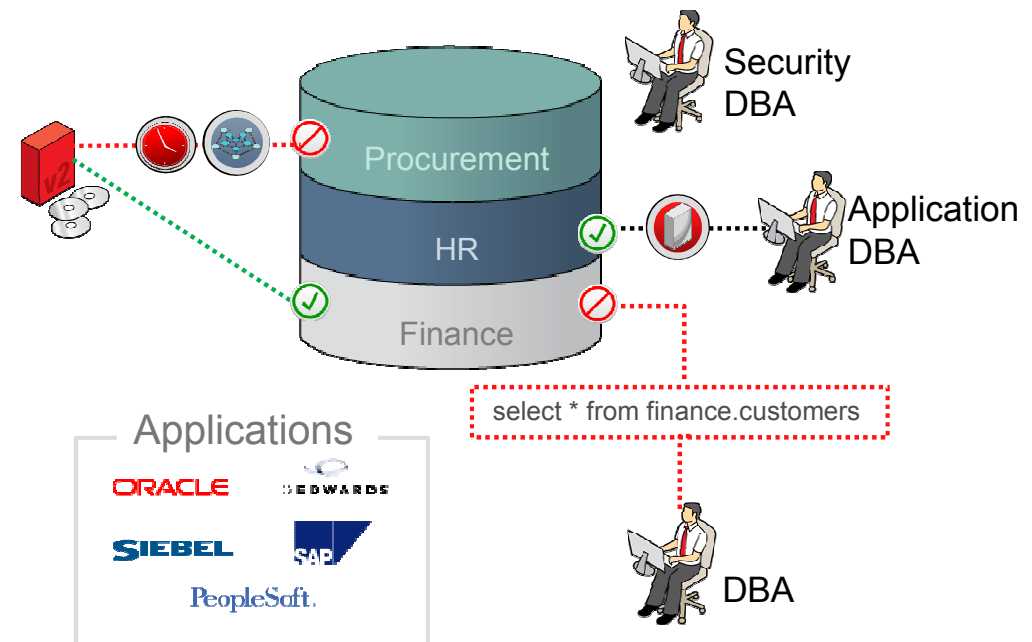
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# Privileged User Controls

## Preventive Control for Oracle Databases

### Oracle Database Vault

- Limit DBA access to application data
- Multi-factor SQL command rules
- Realms create protective zones
- Enforce enterprise data governance, least privilege, segregation of duties
- Out of the box application policies

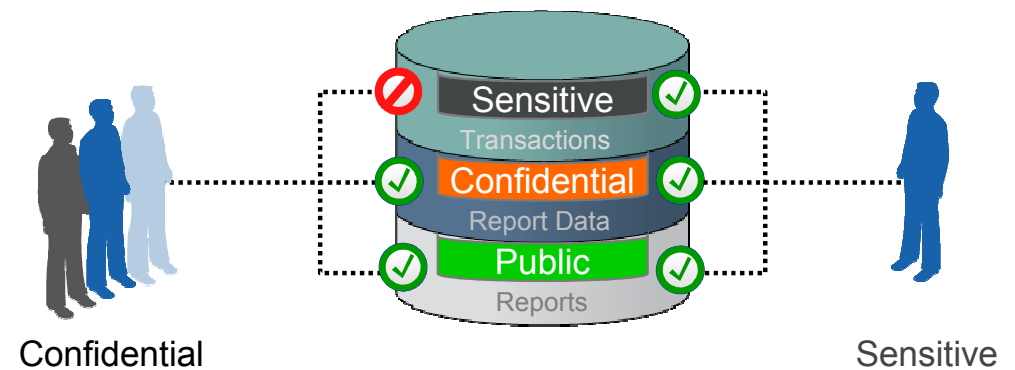


# Label Based Access Control

## Preventive Control for Oracle Databases

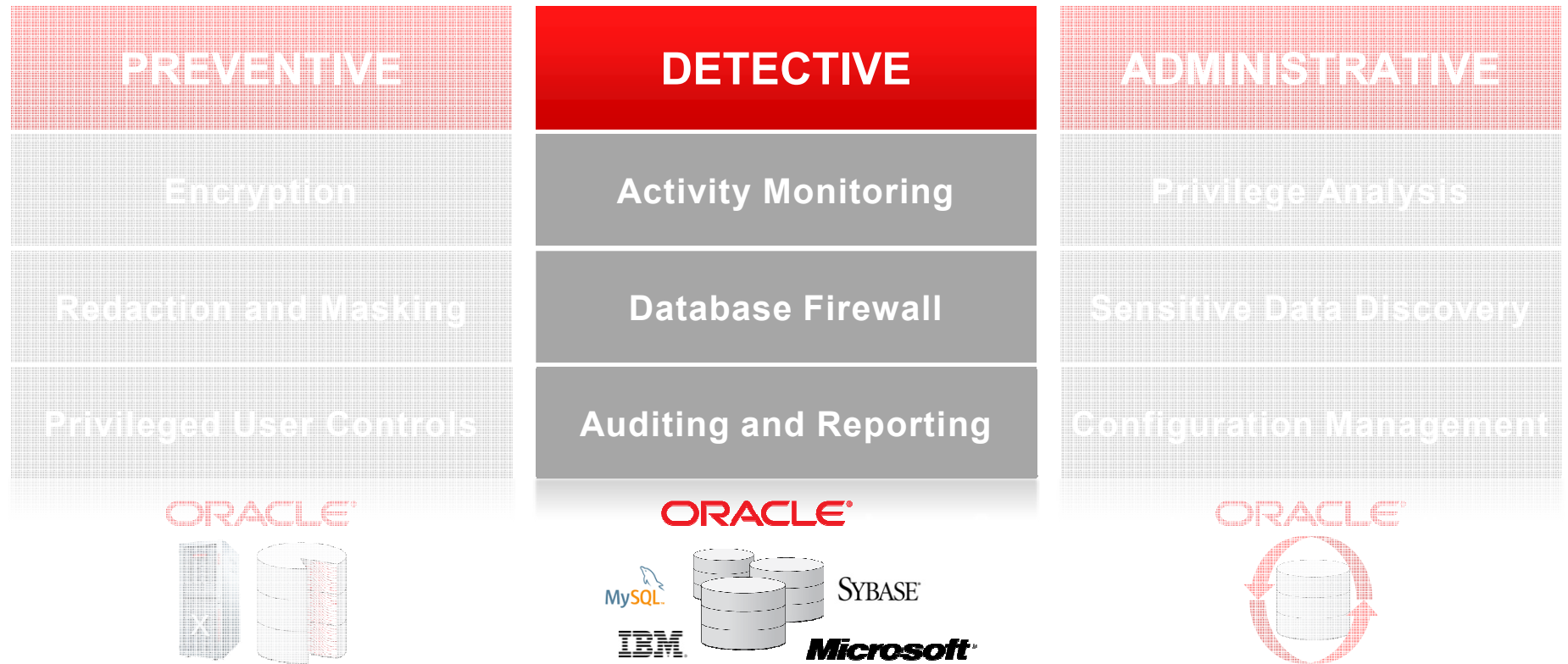
### Oracle Label Security

- Virtual information partitioning for cloud, SaaS, hosting environments
- Classify users and data using labels
- Labels based on business drivers
- Automatically enforced row level access control, transparent to applications
- Labels can be factors in other policies



# Oracle Database Security Solutions

## Defense-in-Depth for Maximum Security

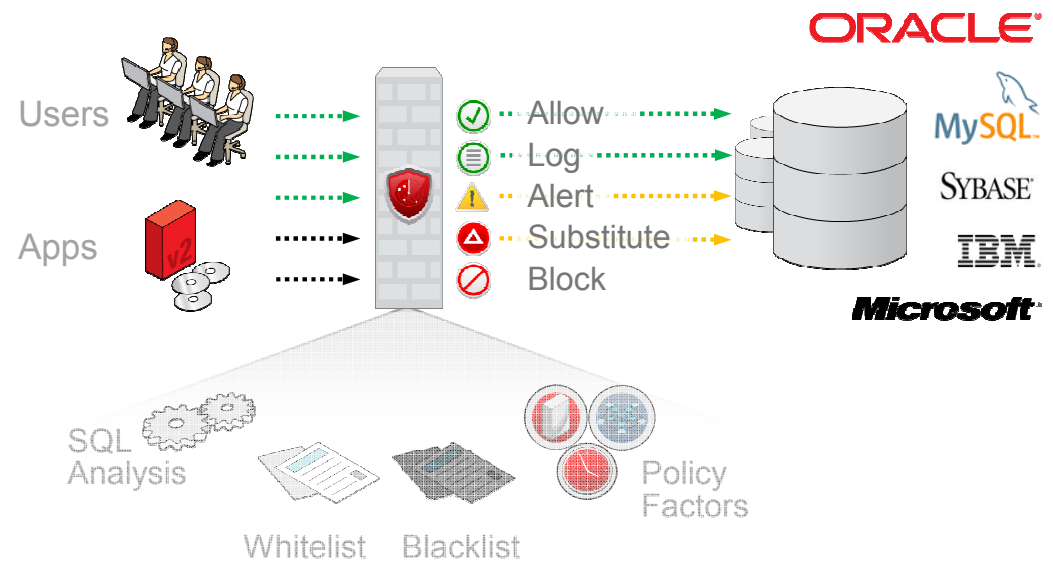


# Database Activity Monitoring and Firewall

## Detective Control for Oracle and non-Oracle Databases

### Oracle Audit Vault and Database Firewall

- Monitors network traffic, detect and block unauthorized activity
- Highly accurate SQL grammar analysis
- Can detect/stop SQL injection attacks
- Whitelist approach to enforce activity
- Blacklists for managing high risk activity
- Scalable secure software appliance



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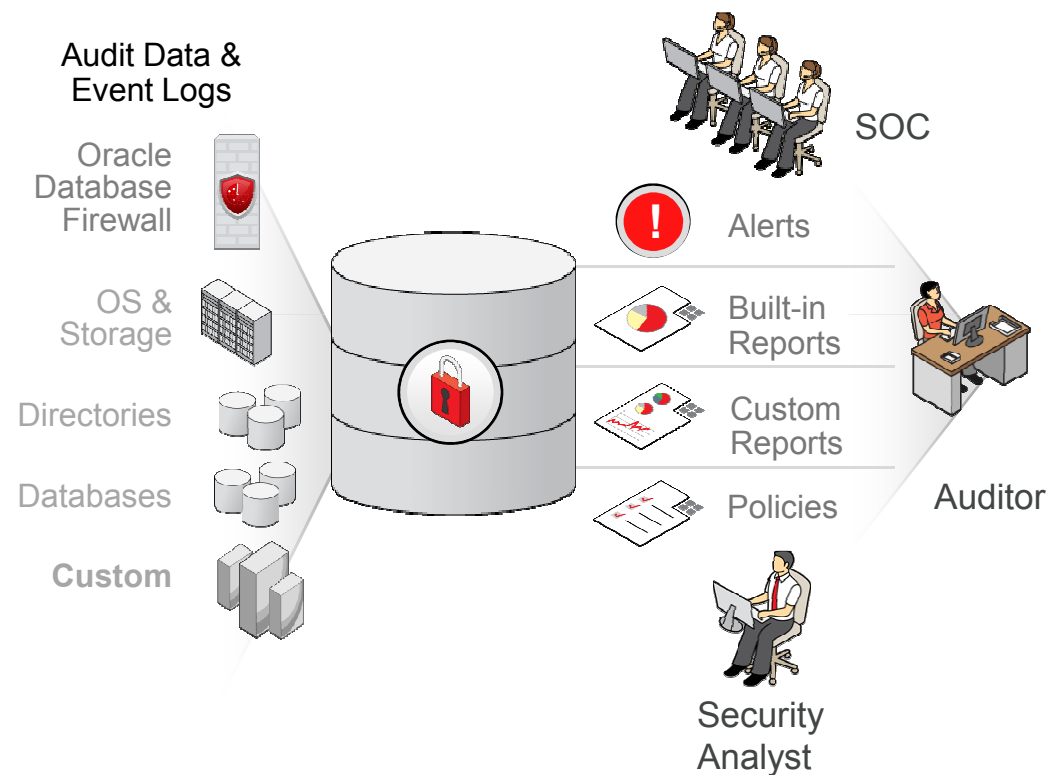


# Audit, Report, and Alert in Real-Time

## Detective Control for Oracle and non-Oracle Databases

### Oracle Audit Vault and Database Firewall

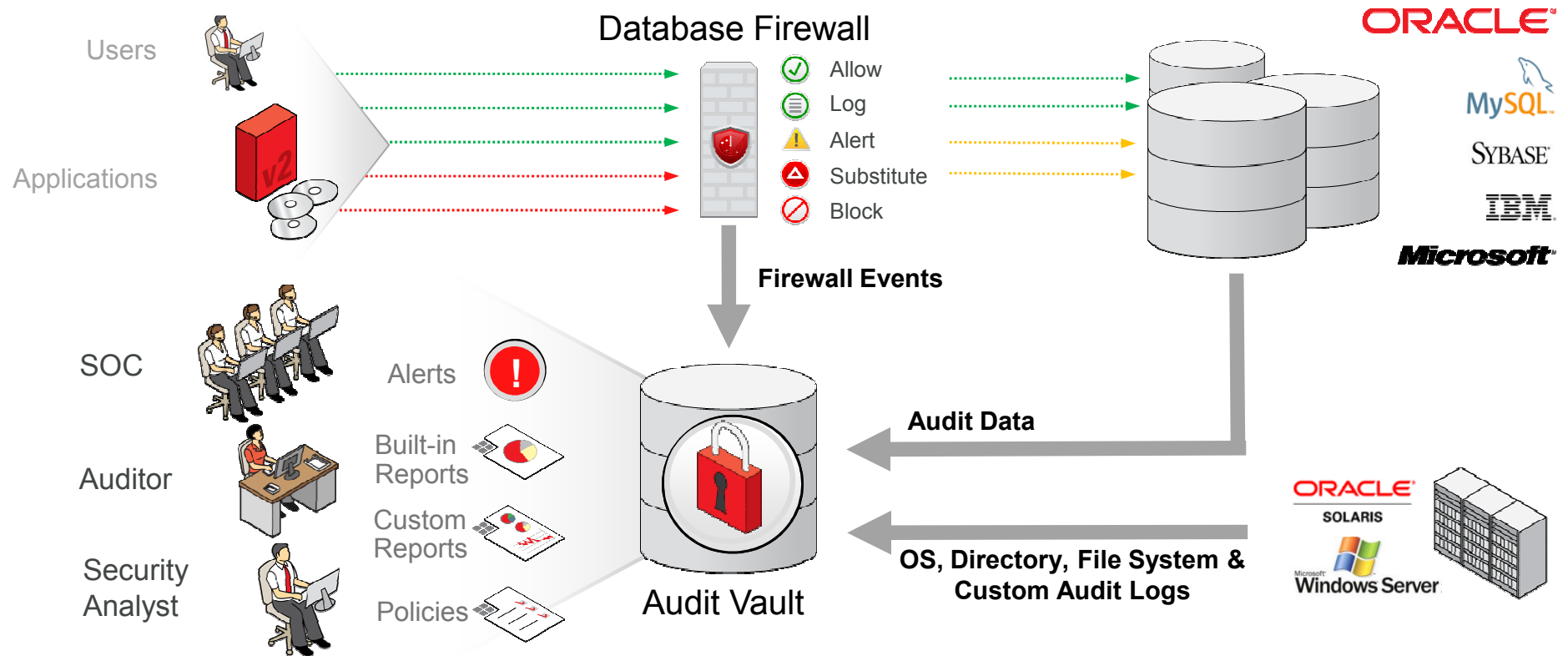
- Centralized secure repository delivered as secure, scalable software appliance
- Powerful alerting - thresholds, group-by
- Out-of-the box and custom reports
- Consolidated multi-source reporting
- Built-in fine grain segregation of duties



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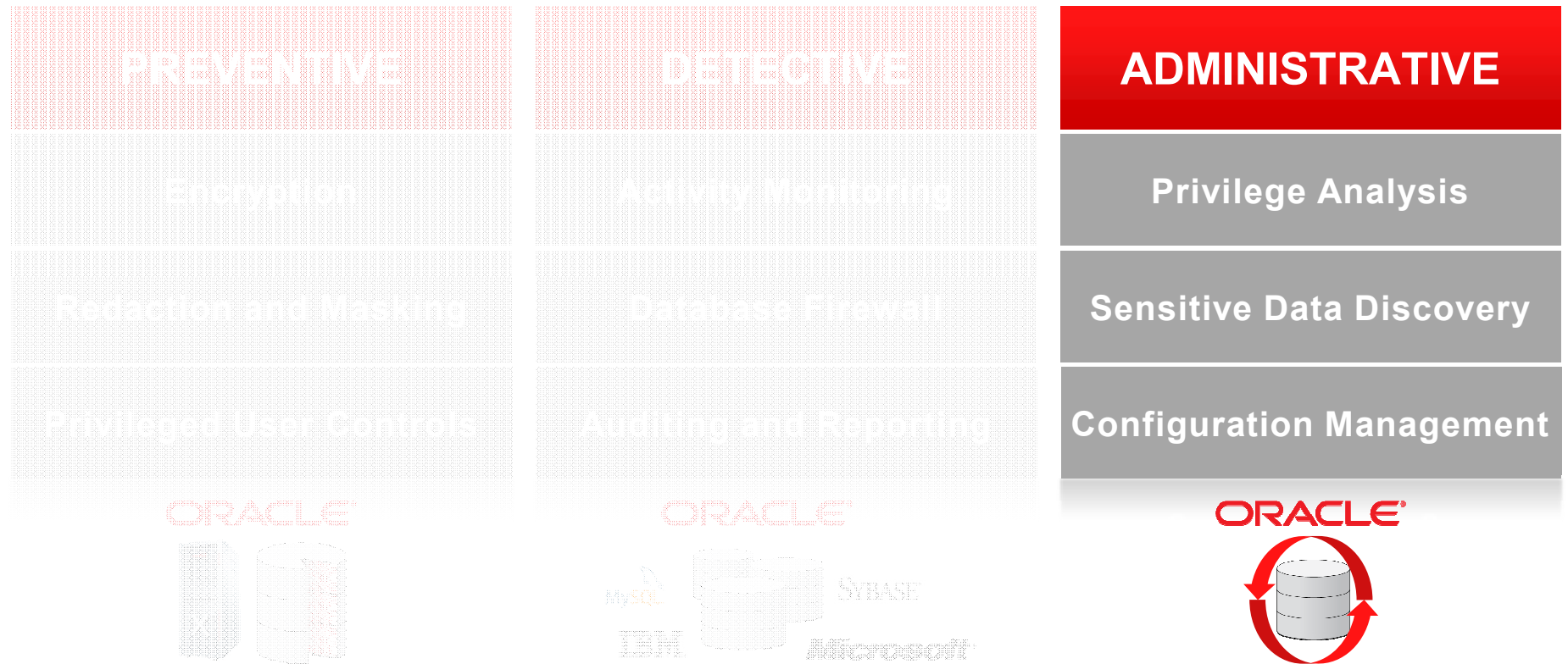
# Oracle Audit Vault and Database Firewall

## New Solution for Oracle and Non-Oracle Databases



# Oracle Database Security Solutions

## Defense-in-Depth for Maximum Security

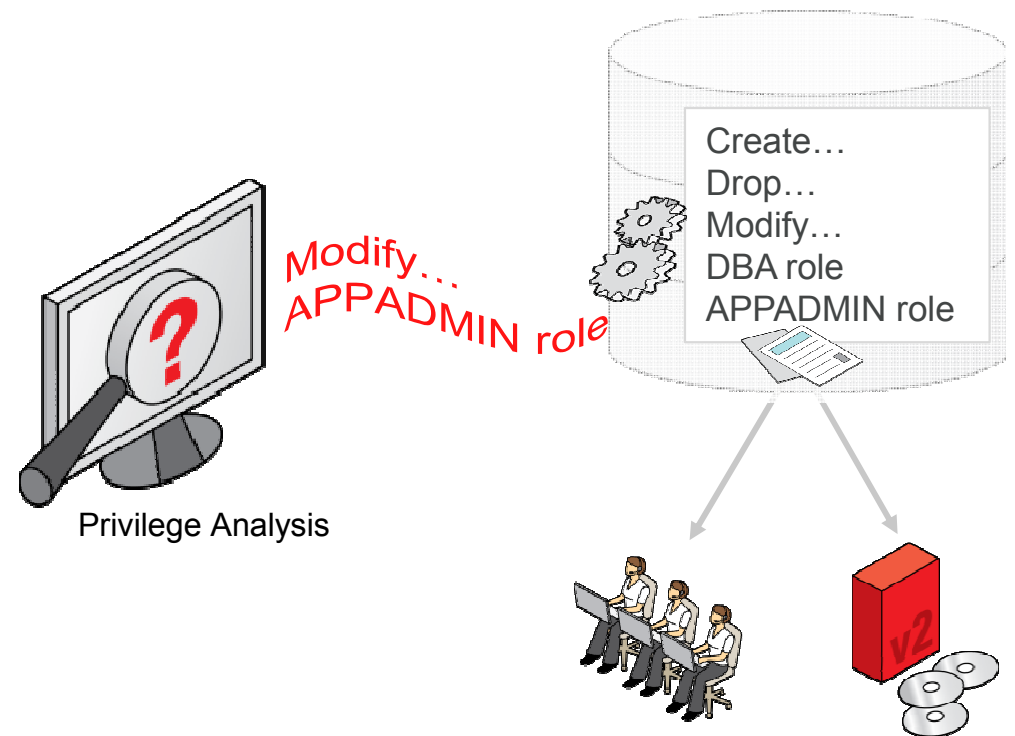


# Discover Use of Privileges and Roles

## 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

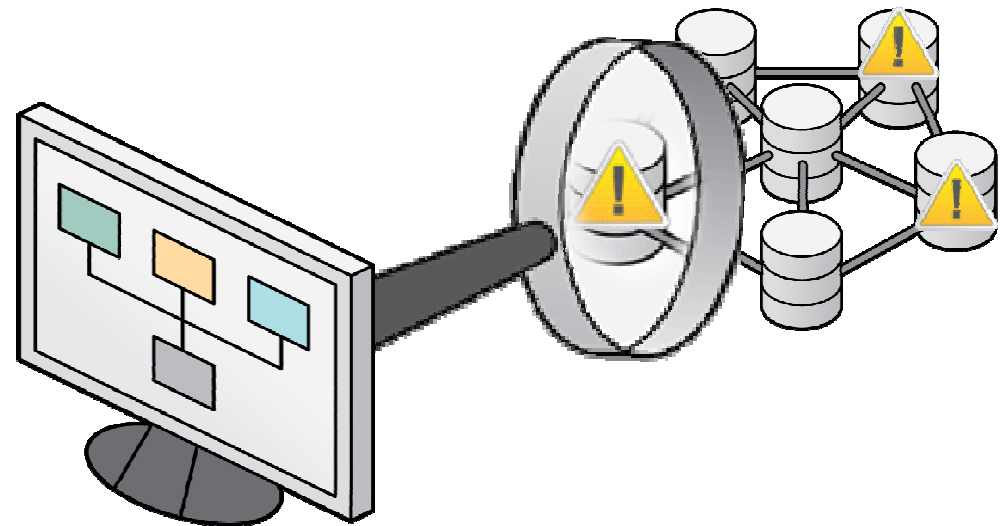


# Discover Sensitive Data and Databases

## Administrative Control for Oracle Database 12c

### Oracle Enterprise Manager 12c

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

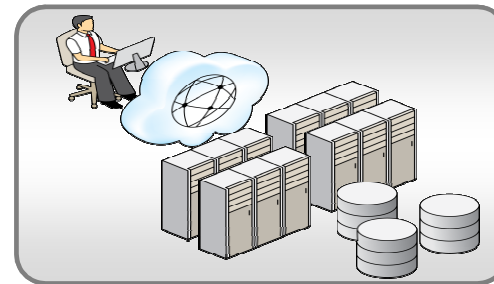


# Configuration Management

## Administrative Control for Oracle Databases

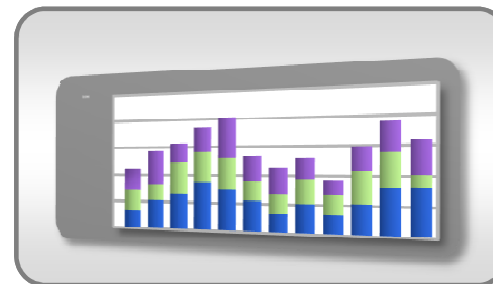
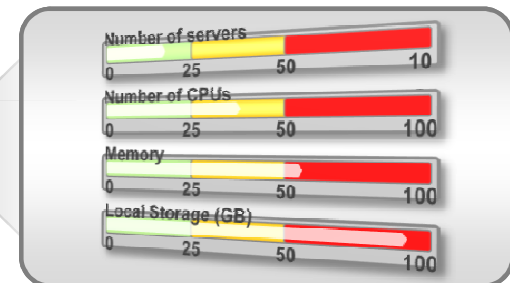
### Oracle Database Lifecycle Management

- Discover and classify databases
- Scan for best practices, standards
- Detect unauthorized changes
- Automated remediation
- Patching and provisioning



**Discover**

**Scan & Monitor**



**Patch**

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Defense-in-Depth for Maximum Security

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## DETECTIVE

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# Oracle Database Security Customers

## Customers Worldwide Rely on Oracle

### Customer Benefits

- Enterprise ready
- Security and compliance
- Simple and flexible
- Speed and scale

[oracle.com/goto/database/security-customers](http://oracle.com/goto/database/security-customers)



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# Oracle Database Security Resources

[www.oracle.com/database/security](http://www.oracle.com/database/security)

- Data Sheets
- Whitepapers
- Webcasts
- Case Studies
- Events
- News
- and more...

The screenshot shows the Oracle Database Security Resources page. At the top is the Oracle logo and a navigation bar with links like 'Sign In/Register for Account', 'Help', 'Select Country/Region', 'Communities', 'I am a...', 'I want to...', and a search bar. Below this is a secondary navigation bar with links for 'PRODUCTS AND SERVICES', 'SOLUTIONS', 'DOWNLOADS', 'STORE', 'SUPPORT', 'TRAINING', 'PARTNERS', and 'ABOUT'. A breadcrumb trail indicates the path: 'Products and Services > Oracle Database > Database Security > Resources'. The main header features the text 'Oracle Database Security' and 'Security Inside Out' over a red background with a digital security graphic. Below the header is a horizontal menu with categories: 'Oracle Audit Vault and Database Firewall', 'Advanced Security', 'Database Vault', 'Label Security', and 'Data Masking'. The content area is divided into three columns: 'What's New' (announcing Oracle Audit Vault and Database Firewall), 'Customer Highlights' (video: Customers Discuss Oracle Database Vault), and 'Events' ((ISC)2 Webcast: Data Breaches are the Tip of the Iceberg). Each column has a 'More' link. At the bottom, there are tabs for 'Overview' and 'Resources'. The 'Resources' tab is active, showing 'Featured Resources' (including 'Cost Effective Security and Compliance with Oracle Database 11g (PDF)' and 'Enterprise Data Security Self-Assessment') and 'Data Sheets' (including 'Oracle Audit Vault and Database Firewall (PDF)', 'Oracle Exadata Database Machine: Security Overview (PDF)', and 'Oracle Advanced Security (PDF)'). A 'Live Sales Chat' button and a contact section with the number 'Oracle 1-800-633-0738' and links for 'Have Oracle call you' and 'Global contacts' are also visible.



# Q&A

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**SECURITY**  
INSIDE  
OUT

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