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Playing in the Same Sandbox: MySQL and Oracle

Lynn Ferrante, Senior Sales Technical Consultant, Oracle

Safe Harbor Statement

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.

Oracle's Investment in MySQL
Rapid Innovation

Make MySQL a Better MySQL

- #1 Open Source Database for Web Applications
- "M" in most complete LA<u>M</u>P stack
- Embedded

Develop, Promote and Support MySQL

- Improved engineering, consulting and support
- Leverage 24x7, World-Class Oracle Support

MySQL Community Edition

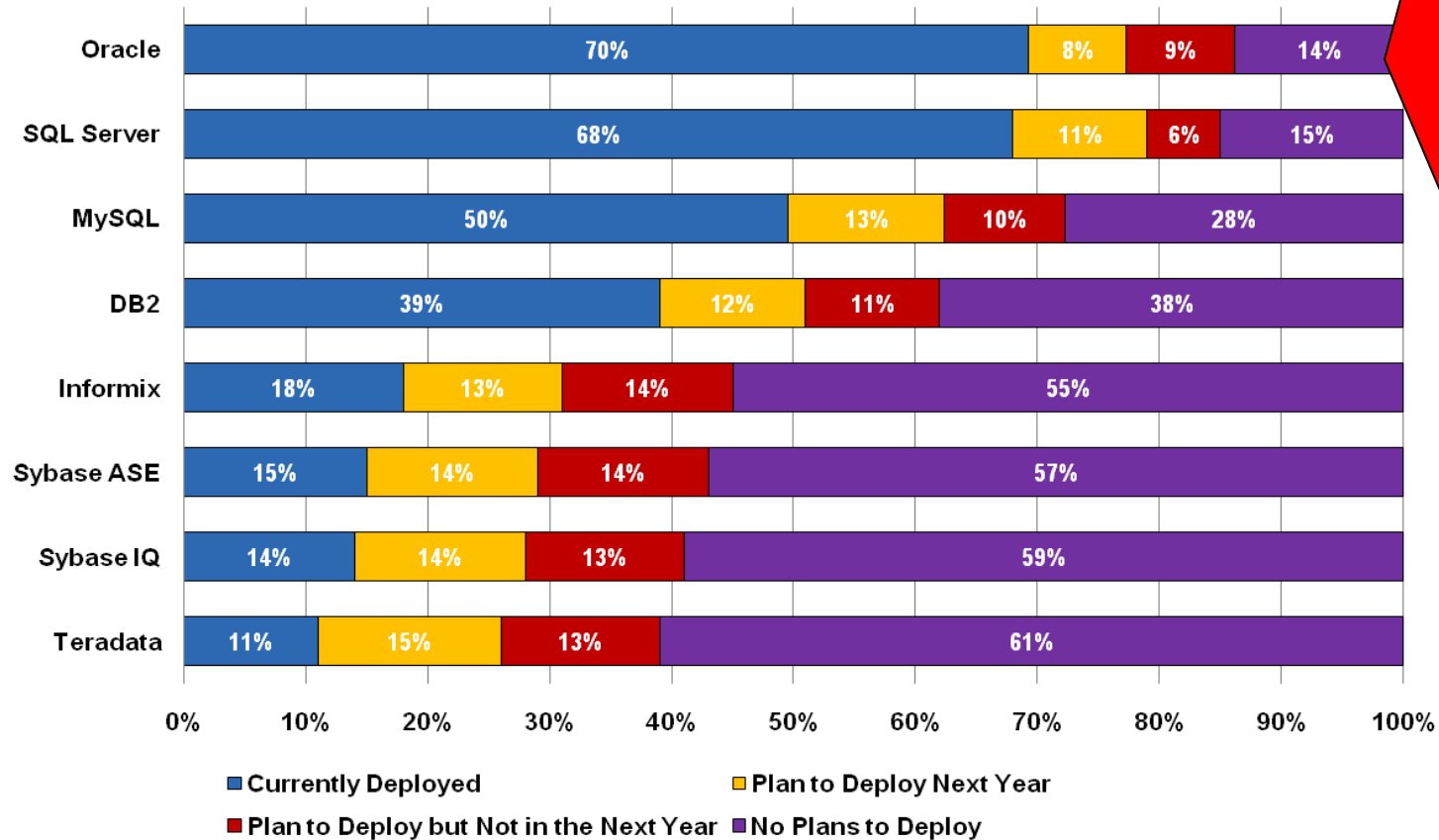- Source and binary releases
- GPL license

MySQL: Open Source (GPL)

Available to download and use under the GPL:

- MySQL Database (Community Server)
- MySQL Cluster
- MySQL Workbench Community Edition
- MySQL Utilities (in Python)
- MySQL Connectors
- MySQL Proxy
- Documentation (free to use, not covered under GPL)
- Forums

Oracle+MySQL Demographic

Chart data (Gartner):

Database	Currently Deployed	Plan to Deploy Next Year	Plan to Deploy but Not in the Next Year	No Plans to Deploy
Oracle	70%	8%	9%	14%
SQL Server	68%	11%	6%	15%
MySQL	50%	13%	10%	28%
DB2	39%	12%	11%	38%
Informix	18%	13%	14%	55%
Sybase ASE	15%	14%	14%	57%
Sybase IQ	14%	14%	13%	59%
Teradata	11%	15%	13%	61%

Gartner

Estimate that 70% are using MySQL too

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MySQL Database
Performance, Reliability, Ease of Use
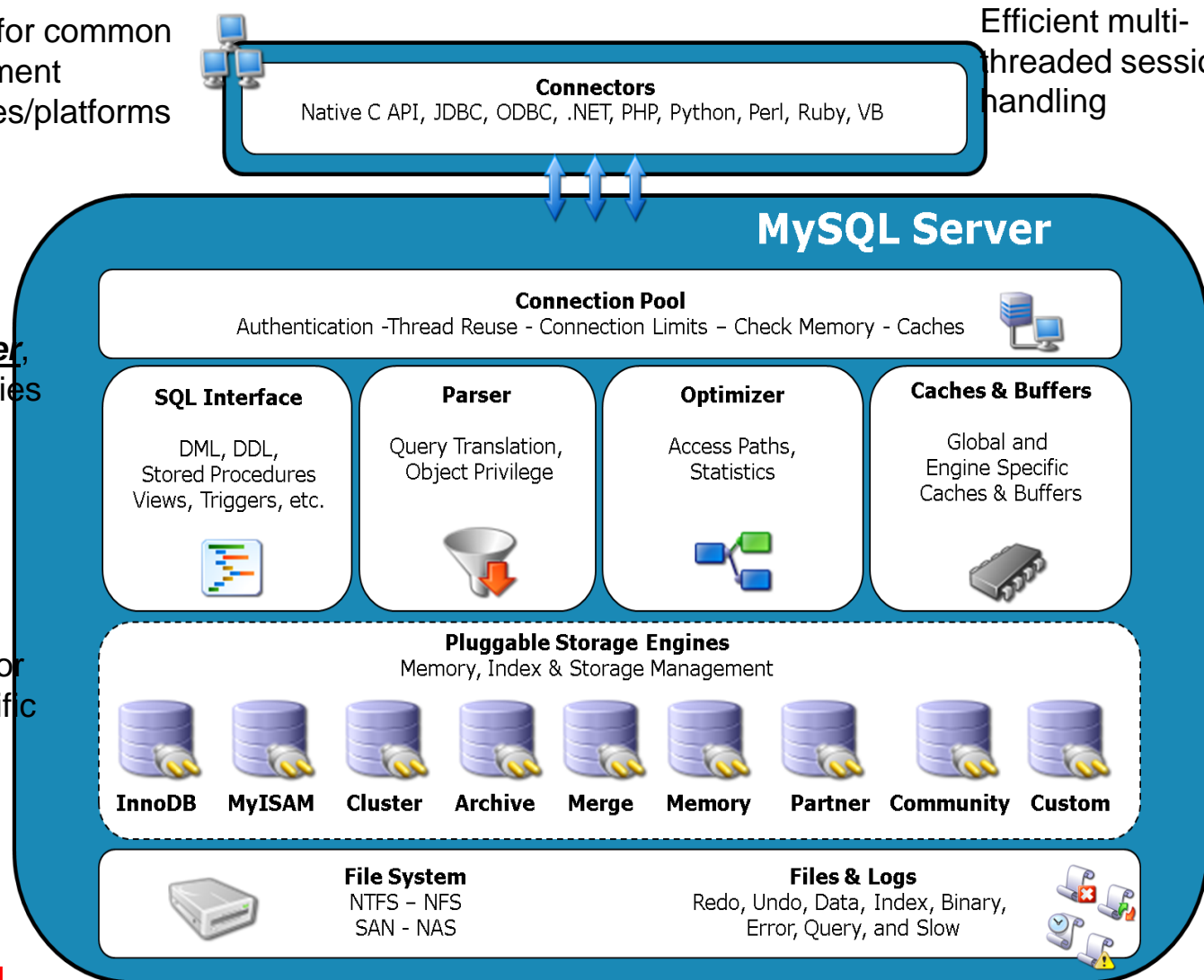

Support for common development languages/platforms

Efficient multi-threaded session handling

Full DML, DDL parsing, cost based *optimizer*, caching of queries and result sets

Flexible Storage Engine options for application specific storage needs

Connectors
Native C API, JDBC, ODBC, .NET, PHP, Python, Perl, Ruby, VB

MySQL Server

Connection Pool
Authentication -Thread Reuse - Connection Limits – Check Memory - Caches

SQL Interface	Parser	Optimizer	Caches & Buffers
DML, DDL, Stored Procedures Views, Triggers, etc.	Query Translation, Object Privilege	Access Paths, Statistics	Global and Engine Specific Caches & Buffers

Pluggable Storage Engines
Memory, Index & Storage Management

InnoDB   MyISAM   Cluster   Archive   Merge   Memory   Partner   Community   Custom

File System
NTFS – NFS
SAN - NAS

Files & Logs
Redo, Undo, Data, Index, Binary, Error, Query, and Slow
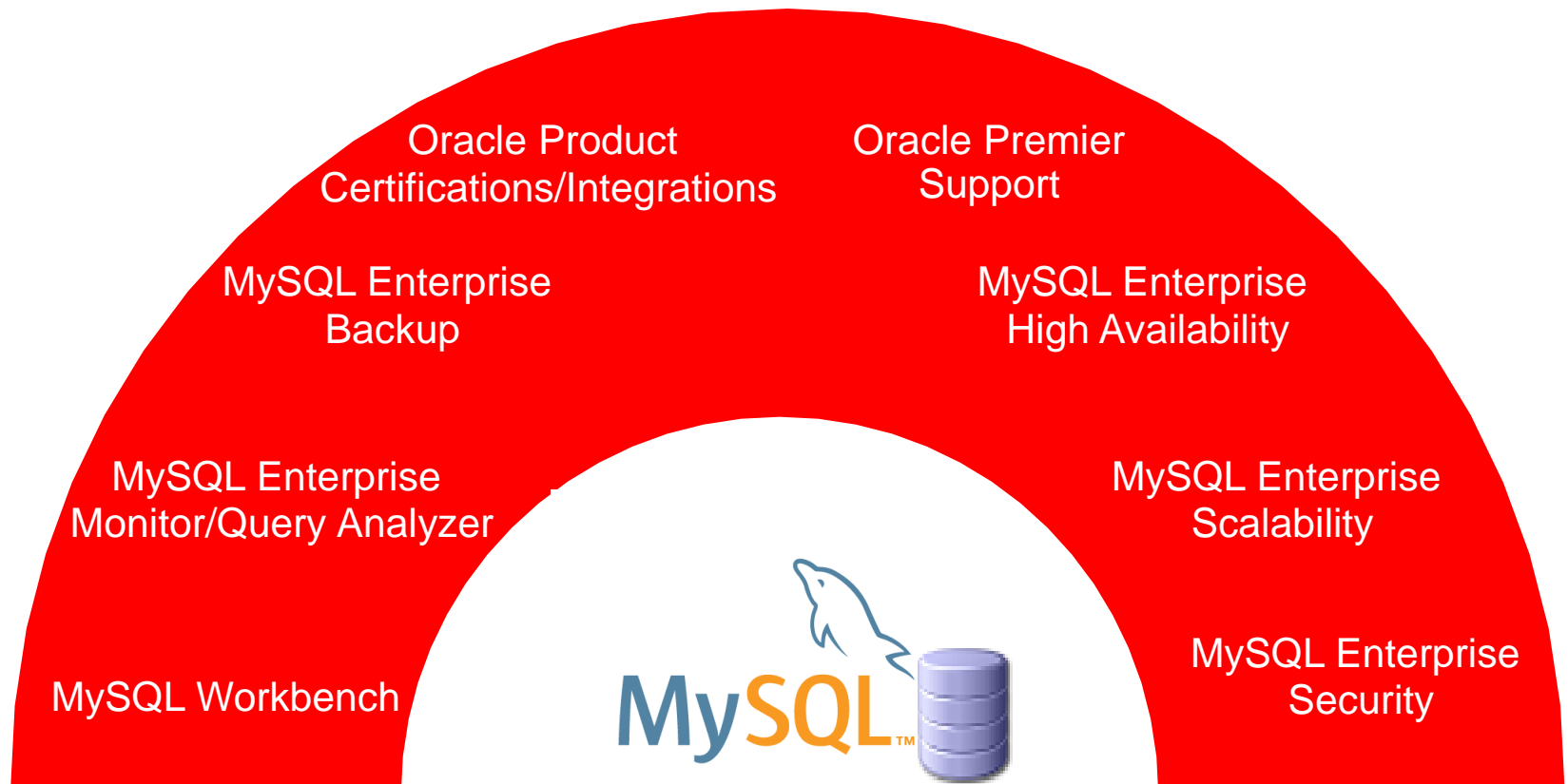
MySQL 5.6: A Better MySQL

New!

- MySQL 5.6 builds on MySQL 5.5 by improving:
    - **<u>Optimizer</u>** for better Performance, Scalability
    - **<u>Performance Schema</u>** for better instrumentation
    - **<u>InnoDB</u>** for better transactional throughput
    - **<u>Replication</u>** for higher availability, data integrity
    - **<u>"NotOnlySQL" options</u>** for better flexibility

Web Cloud Embedded On-Premise

Try it now:

dev.mysql.com/downloads/mysql

MySQL Enterprise Edition

Oracle Product
Certifications/Integrations

Oracle Premier
Support

MySQL Enterprise
Backup

MySQL Enterprise
High Availability

MySQL Enterprise
Monitor/Query Analyzer

MySQL Enterprise
Scalability

MySQL Workbench

MySQL Enterprise
Security

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MySQL Enterprise Edition

Enables you to manage your Oracle and MySQL databases with Oracle tools/solutions you are already using.
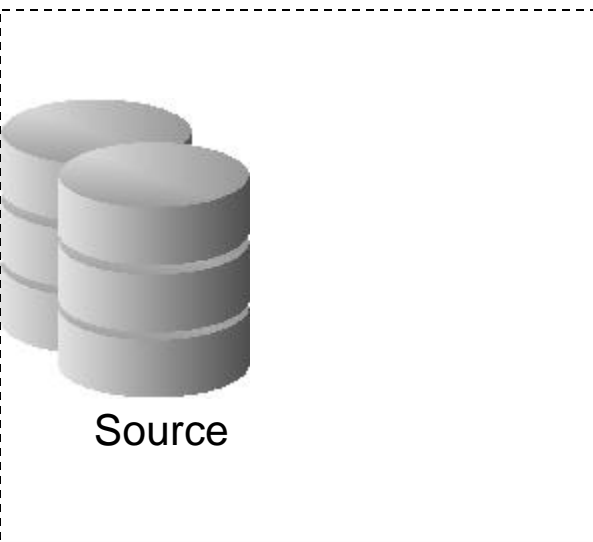
Oracle Product Certifications/Integrations

Oracle Premier Support

MySQL Enterprise Backup

MySQL Enterprise Monitor/Query Analyzer

MySQL Enterprise Security

MySQL Enterprise Scalability

MySQL Enterprise High Availability

MySQL Workbench
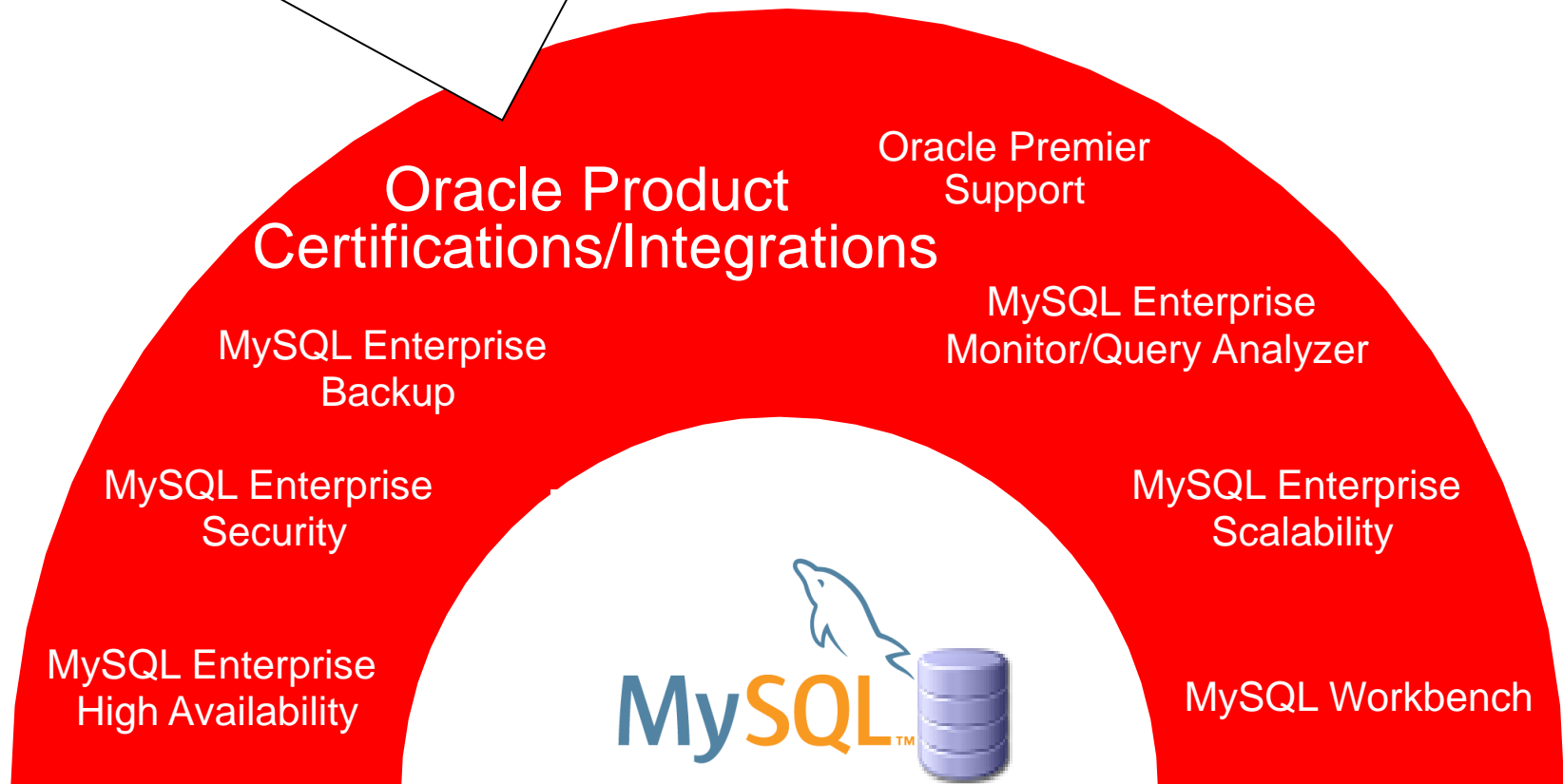
MySQL and Oracle Golden Gate

Available Now

- Heterogeneous, real time replication

- MySQL specific optimizations

- Hybrid web, enterprise applications

- Real time data warehousing, reporting, and query offloading

- MySQL EE certified, Cluster in progress

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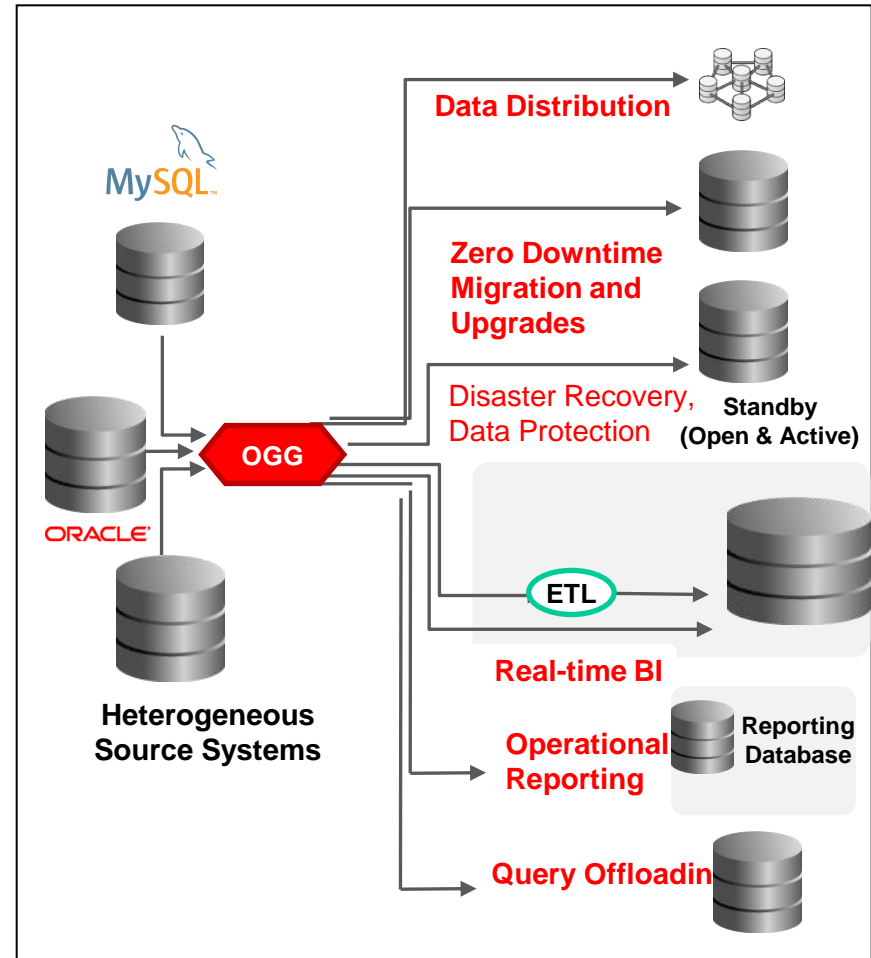
GoldenGate: Expanded Heterogeneity with Latest Release

Databases	O/S and Platforms
Oracle GoldenGate Capture: • MySQL • Oracle • DB2 for v 9.7 • DB2 for v 10 on z/OS • Microsoft SQL Server for 2008 R1, R2 • Sybase ASE, 15.5 • Teradata • Enscribe • SQL/MP • SQL/MX • JMS message queues Oracle GoldenGate Delivery: • All listed above, plus: •TimesTen, IBM System i • Netezza, Greenplum, & HP Neoview • ETL products	Linux Sun Solaris Windows 2000, 2003, XP HP NonStop HP-UX IBM AIX IBM z Series zLinux

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How Goldengate Works

Source

Target

How Goldengate Works

Capture: committed transactions are captured (and can be filtered) as they occur by reading the <u>transaction logs</u>.
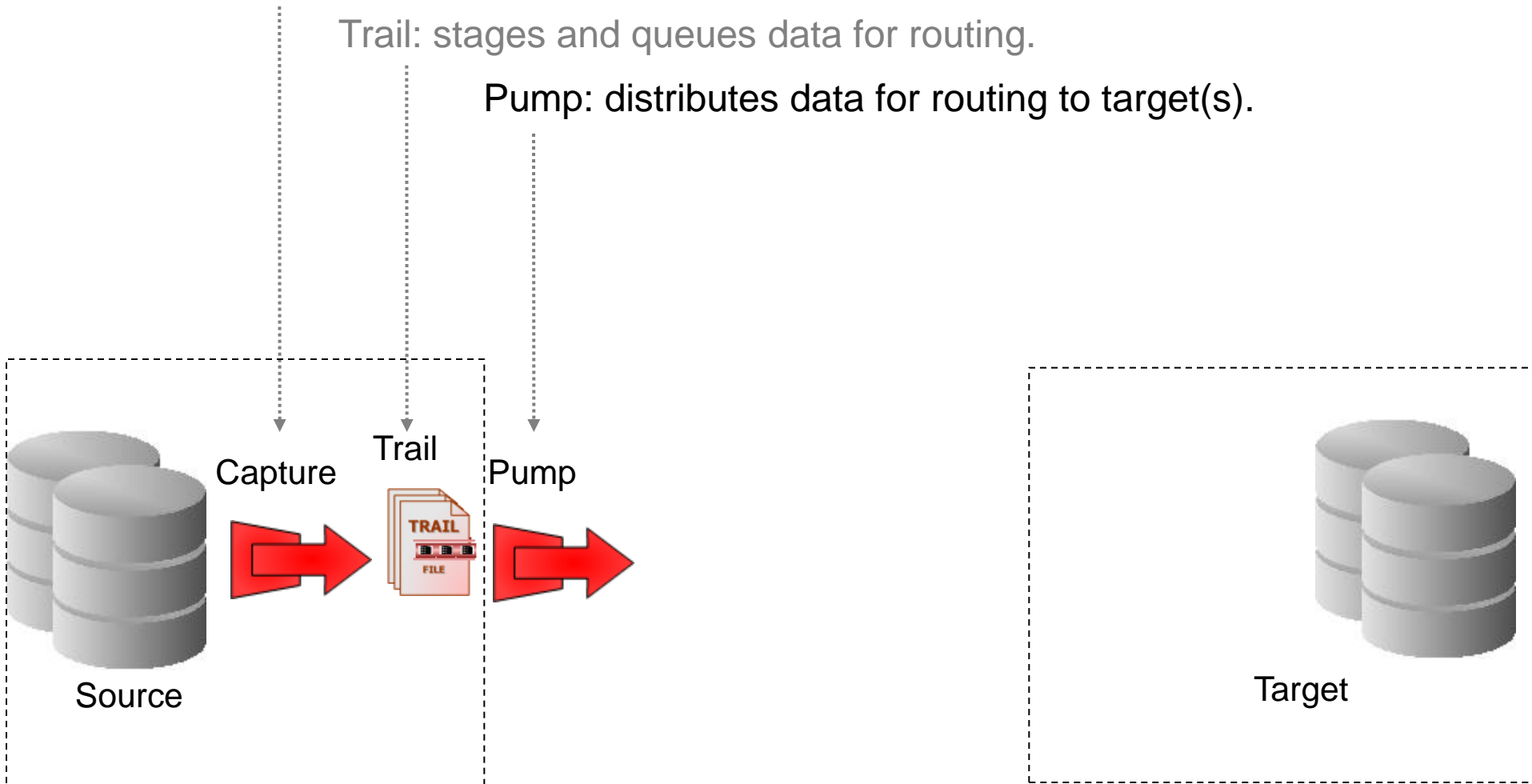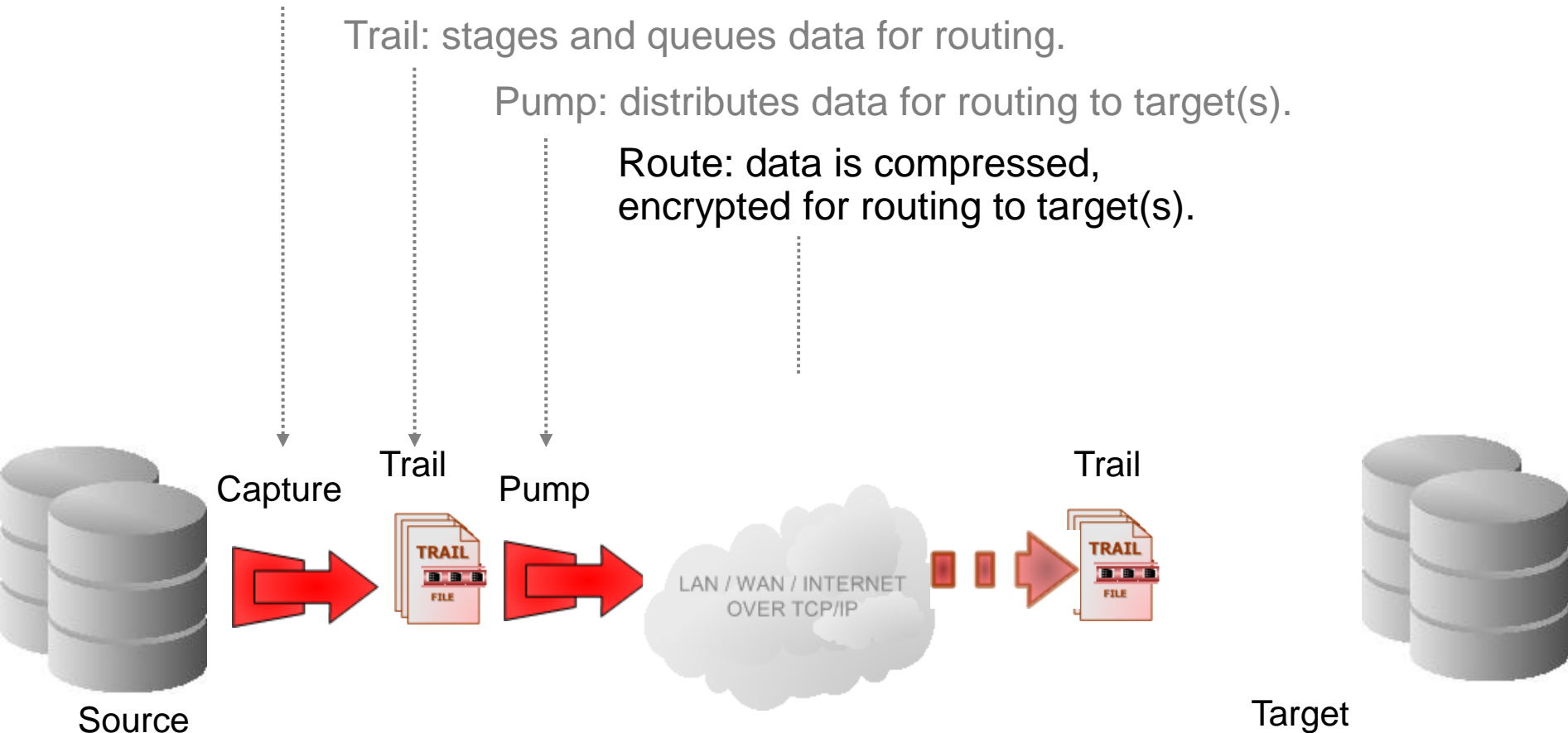
Capture

Source
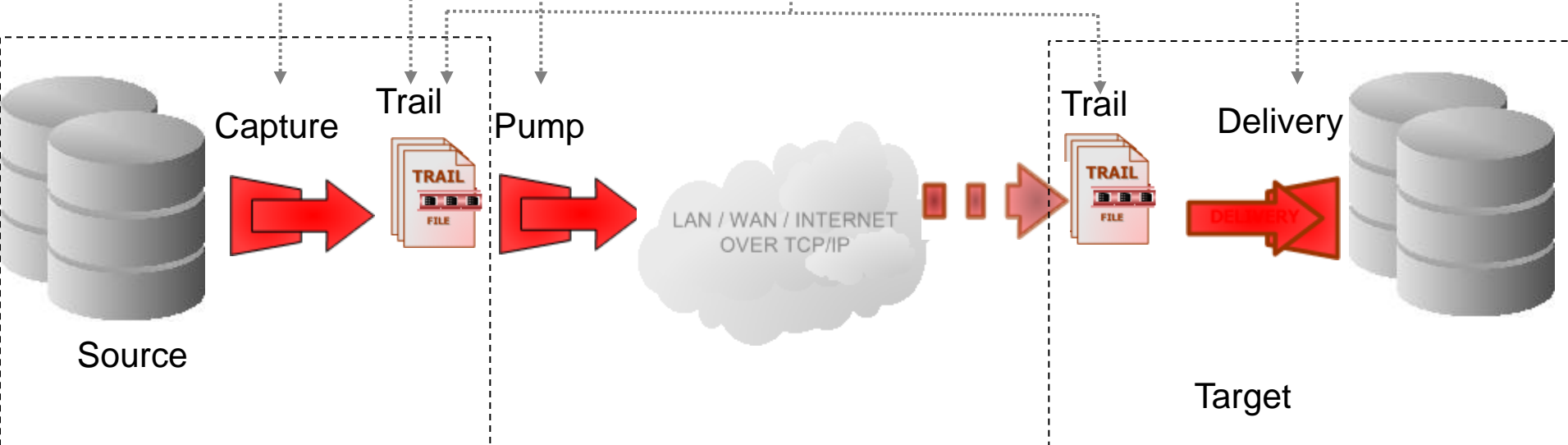
Target

How Goldengate Works

Capture: committed transactions are captured (and can be filtered) as they occur by reading the transaction logs.

Trail: stages and queues data for routing.

Capture

Trail

TRAIL
FILE

Source

Target

How Goldengate Works

Capture: committed transactions are captured (and can be filtered) as they occur by reading the transaction logs.

Trail: stages and queues data for routing.

Pump: distributes data for routing to target(s).

Capture   Trail   Pump

TRAIL

FILE

Source

Target

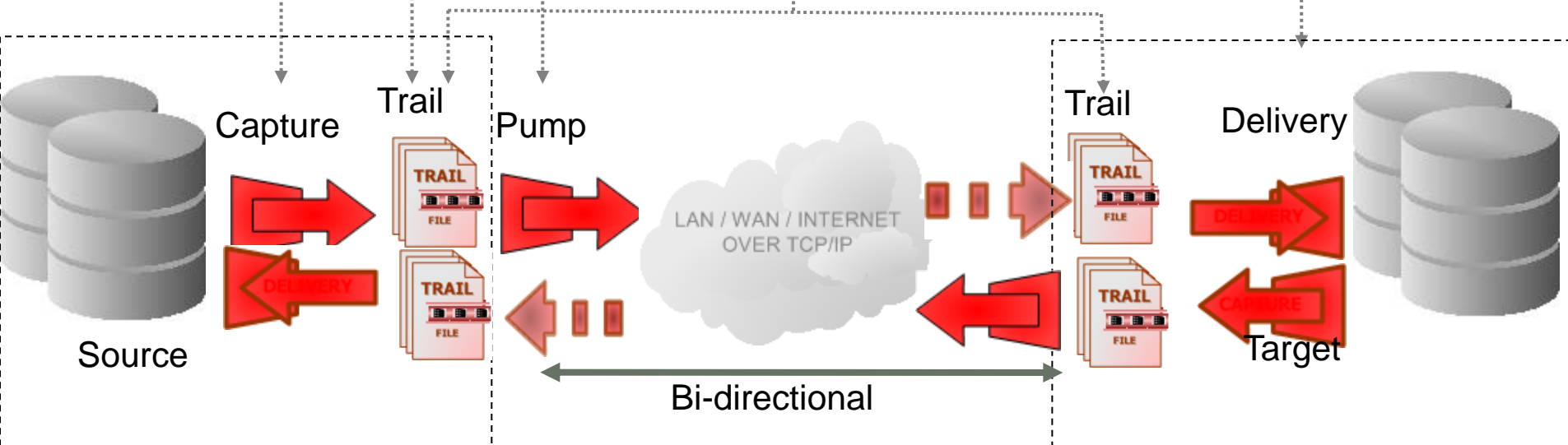ORACLE

How Goldengate Works

Capture: committed transactions are captured (and can be filtered) as they occur by reading the <u>transaction logs</u>.

Trail: stages and queues data for routing.

Pump: distributes data for routing to target(s).

Route: data is compressed, encrypted for routing to target(s).

Trail
Capture
Pump

TRAIL
FILE

LAN / WAN / INTERNET
OVER TCP/IP

Trail

TRAIL
FILE

Source

Target

ORACLE

How Goldengate Works

Capture: committed transactions are captured (and can be filtered) as they occur by reading the <u>transaction logs</u>.

Trail: stages and queues data for routing.

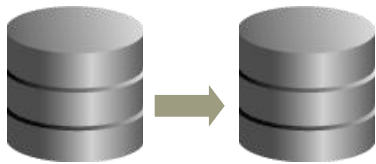Pump: distributes data for routing to target(s).

Route: data is compressed, encrypted for routing to target(s).

Delivery: applies data with transaction integrity, transforming the data as required.


Source

Capture

Trail

Pump

LAN / WAN / INTERNET OVER TCP/IP

Trail

Delivery

Target

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How Goldengate Works

Capture: committed transactions are captured (and can be filtered) as they occur by reading the transaction logs.

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Capture

Trail

Pump

Trail

Delivery

TRAIL

FILE

TRAIL

FILE

DELIVERY

CAPTURE

DELIVERY

TRAIL

FILE

TRAIL

FILE

LAN / WAN / INTERNET
OVER TCP/IP

Source

Target

Bi-directional

Goldenengate Topologies

Unidirectional
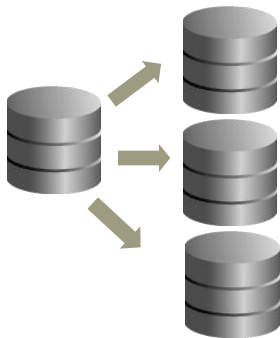Query Offloading
Zero-Downtime Migration
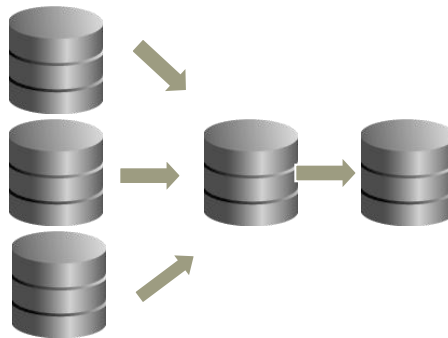
Bi-Directional
Hot Standby or
Active-Active for HA
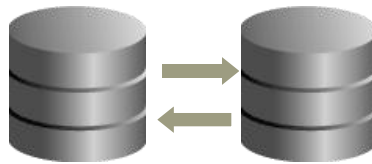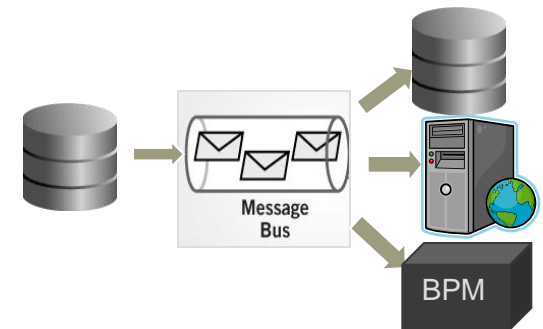
Peer-to-Peer
Load Balancing,
Multi-Master
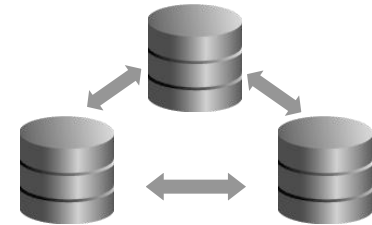
Broadcast
Data Distribution

**Integration/Consolidation**
Data Warehouse

Data Distribution
via Messaging

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Oracle Integrations: DB Firewall
Available Now

- Network-based protection against
    - Unauthorized access
    - SQL injection
    - Privilege, role cloaking or escalation
    - Others
- Blocking, Logging, Reporting, console-based management
- Accurate platform specific grammar-based detection
- Oracle, MySQL 5.0, 5.1, 5.5, other non-Oracle databases
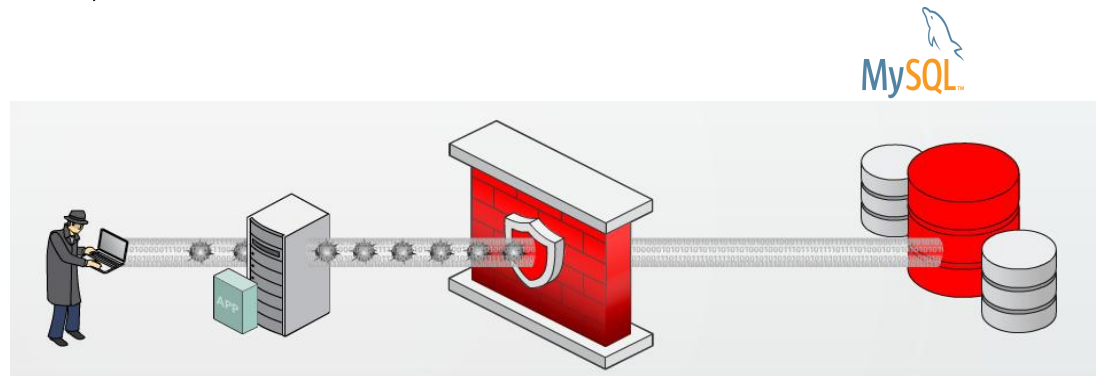
How to Catch Anomalous SQL with Accuracy, Performance, and Scale?

```
SELECT * from stock where catalog-no = 'PHE8131' and location = 1
```
✅

```
SELECT * from stock where catalog-no = ''--' and location = 1
```
🚫

```
SELECT * from stock where catalog-no = '' having 1=1 -- ' and location = 1
```
🚫

```
SELECT * from stock where catalog-no = '' order by 4--' and location = 1
```
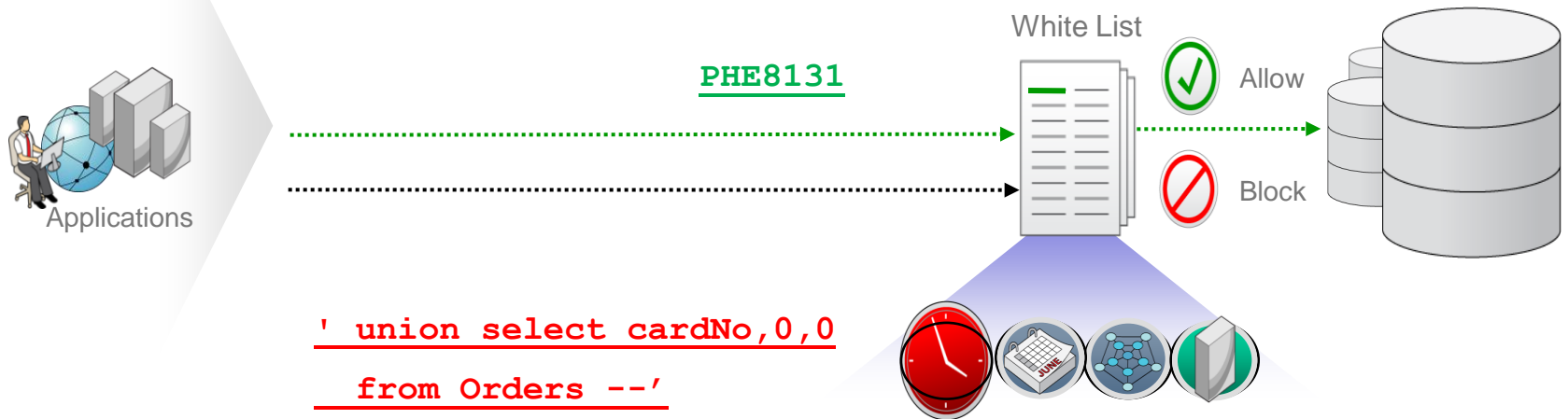🚫

```
SELECT * from stock where catalog-no = '' union select cardNo,customerId,0
from Orders where name = 'John Smith'--' and location = 1
```
🚫

```
SELECT * from stock where catalog-no = '' union select min(cardNo),1,0 from
Orders where cardNo > '0'--' and location = 1
```
🚫

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Oracle Database Firewall Positive Security Model

White List

PHE8131

Allow

Block

Applications

' union select cardNo,0,0
    from Orders --'

- "Allowed" behavior can be defined for any user or application
- Automated whitelist generation for any application
- Many factors to define policy (e.g. network, application, etc)
- Out-of-policy Database network interactions instantly blocked
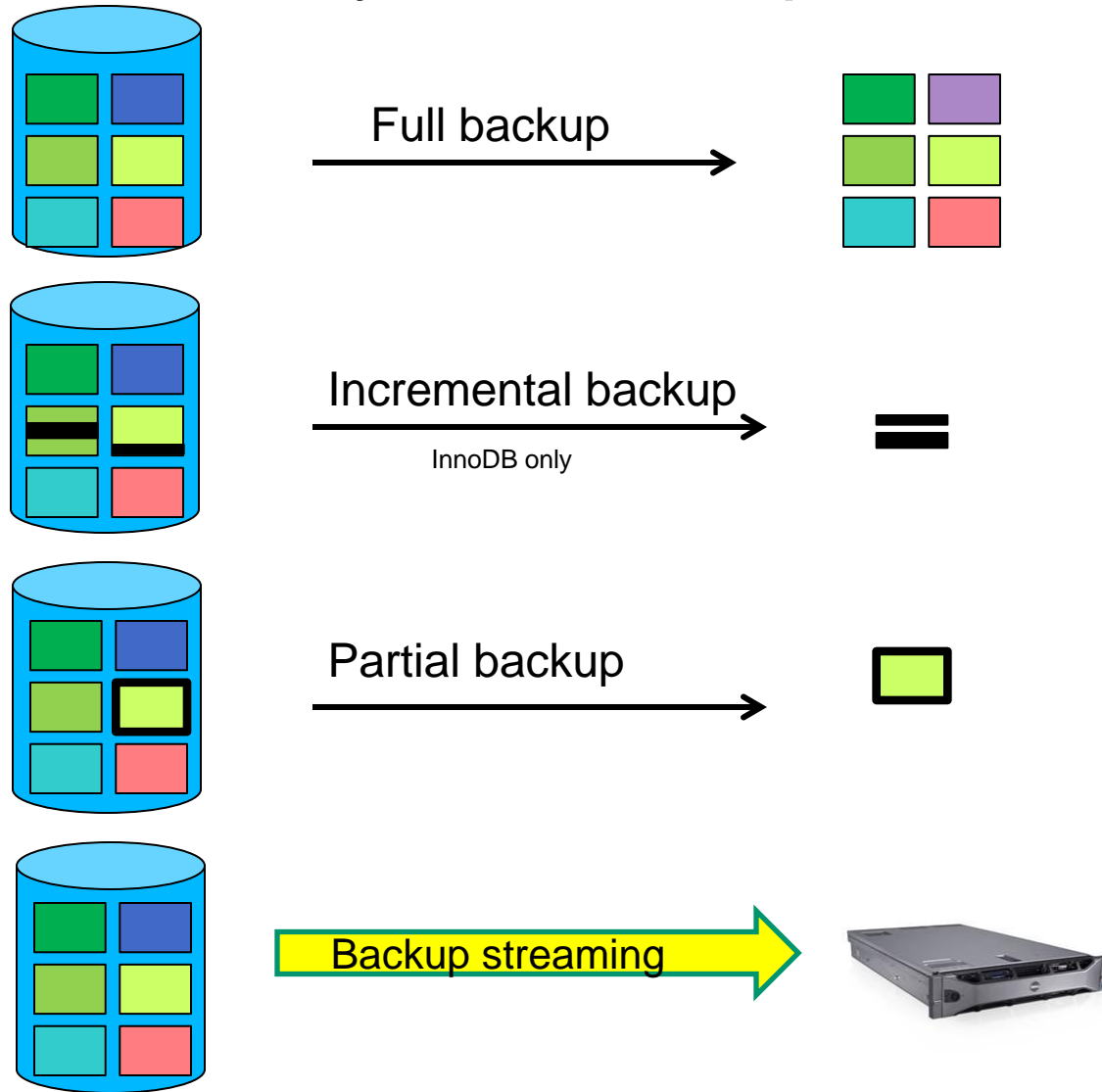
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Secure Backup
Available Now

- MySQL Enterprise Backup images to tape (like RMAN)
- Via SBT interface (standard for MMS)
- Encryption, policy-based management, vault rotation
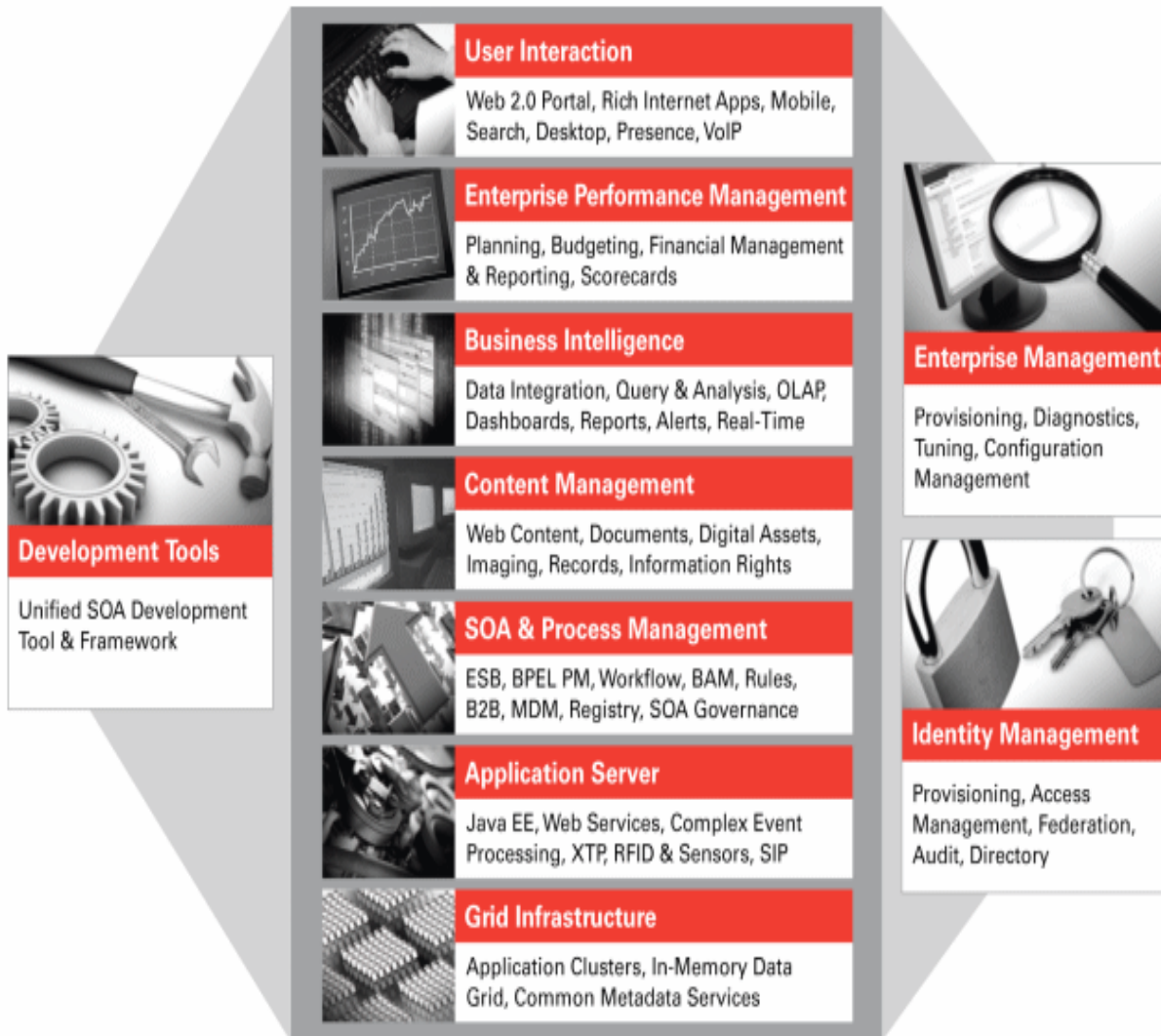- Common management for Oracle, MySQL backups

```
mysqlbackup
    --port=3306
    --protocol=tcp
    --user=root
    --password
    --backup-image=sbt:backup-shoeprod-
    2011-10-02
    --backup-dir=/backup backup-to-image
```

Oracle
Secure Backup

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Based on MySQL Enterprise Backup

Full backup

Incremental backup
InnoDB only

Partial backup

Backup streaming

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Oracle Fusion MiddleWare (FMW)

Oracle Certifications: FMW

Available Now

- WebLogic Server
- Database Adapter for Oracle SOA Suite **
- Oracle Business Process Management **
- Oracle Virtual Directory
- Oracle Data Integrator
- Oracle Enterprise Performance Management **
- Oracle Identity Analytics
- Open SSO STS, Open SSO Fedlet

All via MySQL 5.x JDBC driver

** 11.1.1.6 MySQL as a Metadata Repository option (planned)

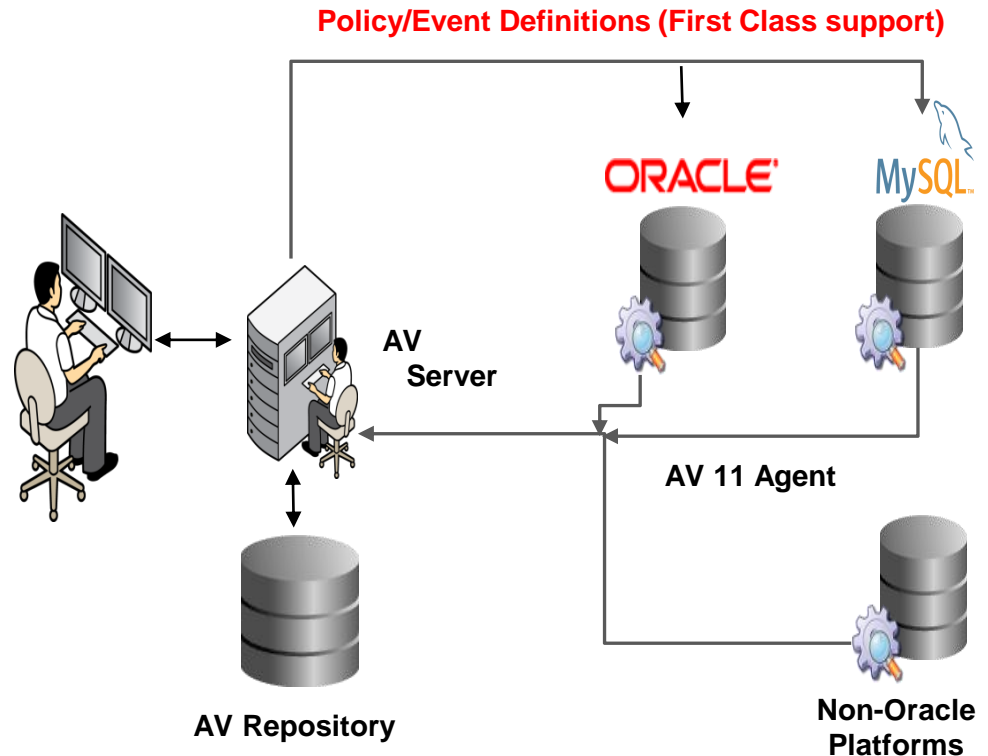# Oracle Certifications: FMW
Planned

- WebCenter Suite
- Enterprise Content Management
- Oracle Business Intelligence Suite
- Via MySQL 5.x JDBC driver
- MySQL as a Metadata Repository option

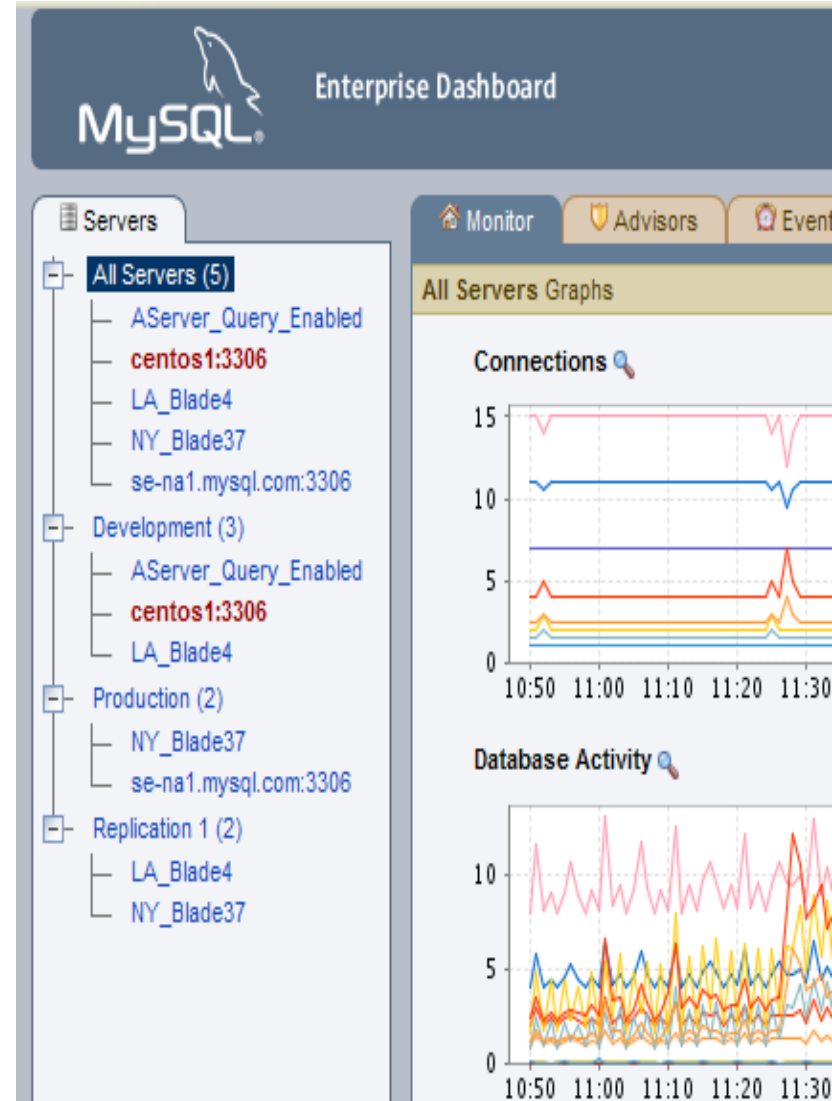# Oracle Integrations: Audit Vault
Planned

- MySQL 5.5 audit stream
- Collects, consolidates audit data for all Oracle, MySQL servers
- Reporting, analysis, threat detection
- Centralized management, monitoring, compliance for Oracle, MySQL applications

Policy/Event Definitions (First Class support)

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My**SQL**

AV Server

AV 11 Agent

AV Repository

Non-Oracle Platforms

Oracle Audit Vault 11

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MySQL Enterprise Monitor

- Global view of MySQL environment

- Automated, rules-based monitoring and alerts (SMTP, SNMP enabled)

- Query capture, monitoring, analysis and tuning, correlated with Monitor graphs

- Visual monitoring of "hot" applications and servers

- Replication Monitor with auto-discovery of master-slave topologies

- Integrated with MySQL Support

MySQL and MOS
Available Now
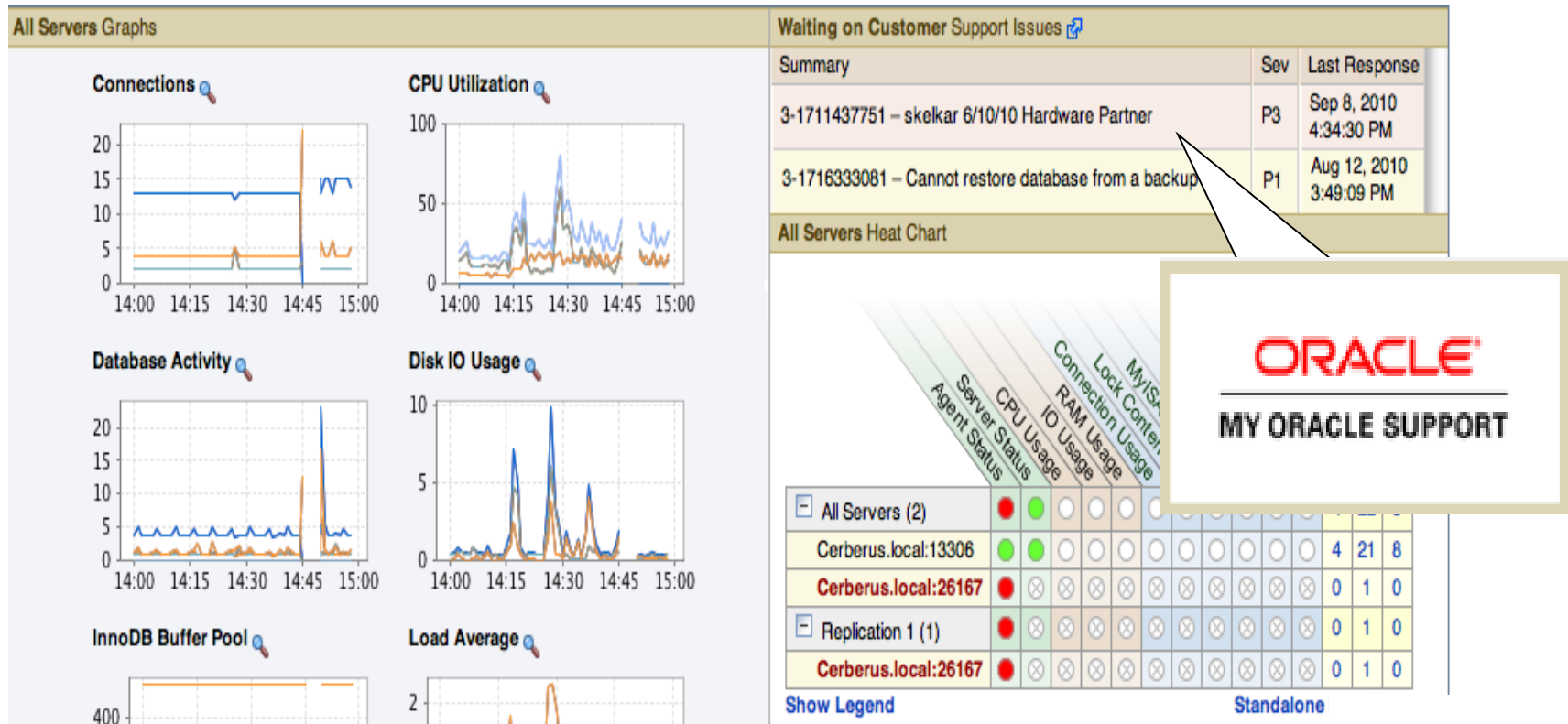
MySQL Enterprise Monitor
- Collect MySQL diagnostics and upload to MySQL Support
- Track MOS SRs from Enterprise Dashboard
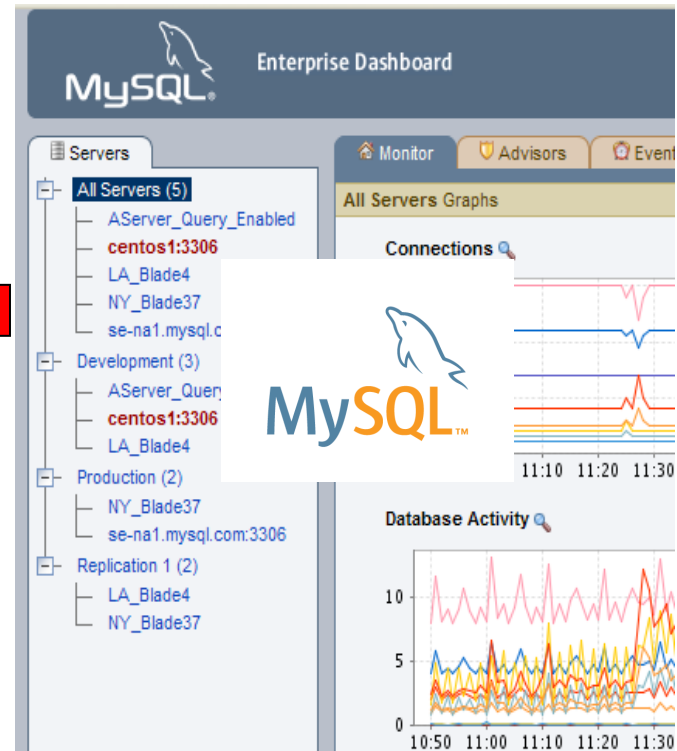
Oracle Integrations: OEM
Planned

Oracle Enterprise Manager

Heterogeneous
Environments

MySQL
Monitoring
Data via
Grid
Control
plugin

MySQL Only
Environments

MySQL and Oracle VM
Template for MySQL
Available Now

Fastest, simplest & most reliable way to deploy virtualized, cloud-ready MySQL instances, certified for production use

- Rapid **DEPLOYMENT**

- Increased **RELIABILITY**

- Higher **AVAILABILITY**

- Lower **COST**

Oracle VM Server Pool

Oracle VM Servers
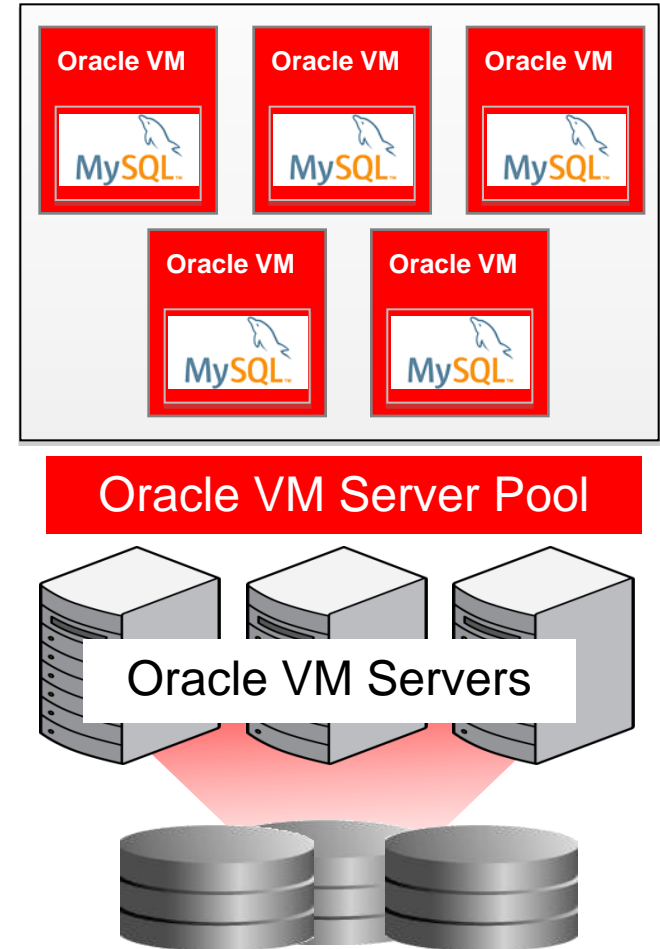
MySQL and Oracle VM
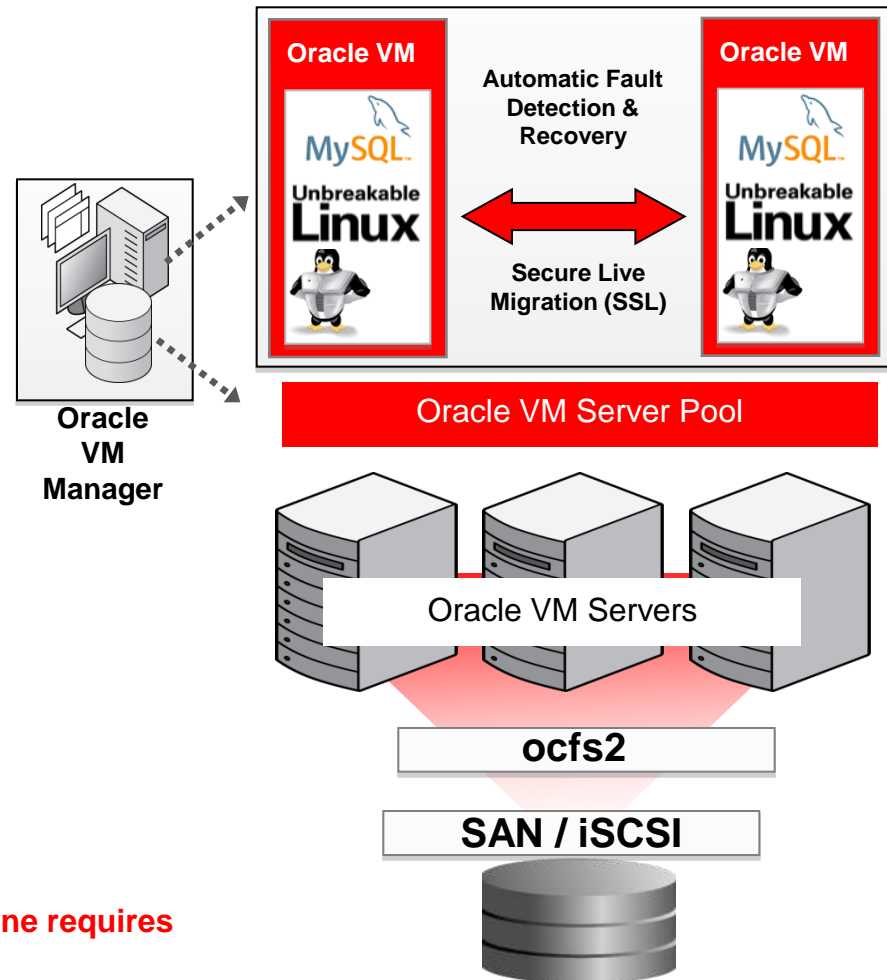
Template Components

- Oracle Linux with the Unbreakable Enterprise Kernel

- Oracle VM

- Oracle VM Manager

- Oracle Cluster File System 2 (OCFS2)

- MySQL Database (Enterprise Edition)

Pre-Installed & Pre-Configured

Full Integration & QA Testing

Single Point of Support**

** **Technical support for Oracle Linux and Oracle Virtual Machine requires**

Unbreakable Linux Network subscription.

Oracle VM Manager

Oracle VM

Oracle VM

Automatic Fault Detection & Recovery

Secure Live Migration (SSL)

Oracle VM Server Pool

Oracle VM Servers

ocfs2

SAN / iSCSI

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MySQL Enterprise HA: Oracle VM
Template for MySQL
Available Now

- Template runs on x86_64 platform only
  - Based on Paravirtualized stack (not hardware virtualized)

- Downloaded from eDelivery

- Imported into existing Oracle VM installation

- MySQL instance can be customized using standard MySQL configuration commands
  - Can be saved as a new Golden Image

Additional Resources

- mysql.com
    - MySQL Products and Editions
    - TCO calculator
    - White Papers
    - Customer use cases and success stories
- dev.mysql.com
    - Downloads
    - Documentation
    - Forums
    - PlanetMySQL
- eDelivery.oracle.com
    - Download and evaluate all MySQL products

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MySQL Tech Tours

MySQL Tech Tour Event - Santa Clara, CA

- Thursday, February 9, 2012

MySQL Tech Tour Event - El Segundo, CA

- Wednesday, February 8, 2012

Register : **mysql.com news and events tab**

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Thanks for attending!

lynn.ferrante@oracle.com