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## **Cloud Computing and DBaaS**



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# Oracle

The world's most complete, open, and integrated business software and hardware systems

<b>Type</b>	Public (NASDAQ: ORCL)
<b>Industry</b>	Computer software, Hardware
<b>Founded</b>	California, USA (1977)
<b>Founder(s)</b>	Larry Ellison, Bob Miner, Ed Oates
<b>Headquarters</b>	500 Oracle Parkway, Redwood City, California, United States
<b>Area served</b>	Worldwide (145 countries)
<b>Employees</b>	115,000 staffs



# Complete. Open. Integrated. Leader.



- Database
- Data Warehousing
- Database Share on Linux
- Embedded Database
- Business Intelligence Applications
- Enterprise Performance Management
- System, Hardware, Storage
- Middleware
- Application Server
- Identity Management
- Customer Relationship Management
- Human Capital Management
- Supply Chain Management
- Retail
- Financial Services
- Banking
- Public Sector
- Communications
- Professional Services



# Agenda

- Cloud Computing and DBaaS
- Database as a Service
- Group Brainstorm Workshop
- Summary

# Cloud Computing and DBaaS



# NIST Definition of Cloud Computing



Cloud computing is a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

This cloud model promotes availability and is composed of:

## 5 Essential Characteristics

- On-demand self-service
- Resource pooling
- Rapid elasticity
- Measured service
- Broad network access

## 3 Service Models

- SaaS
- PaaS
- IaaS

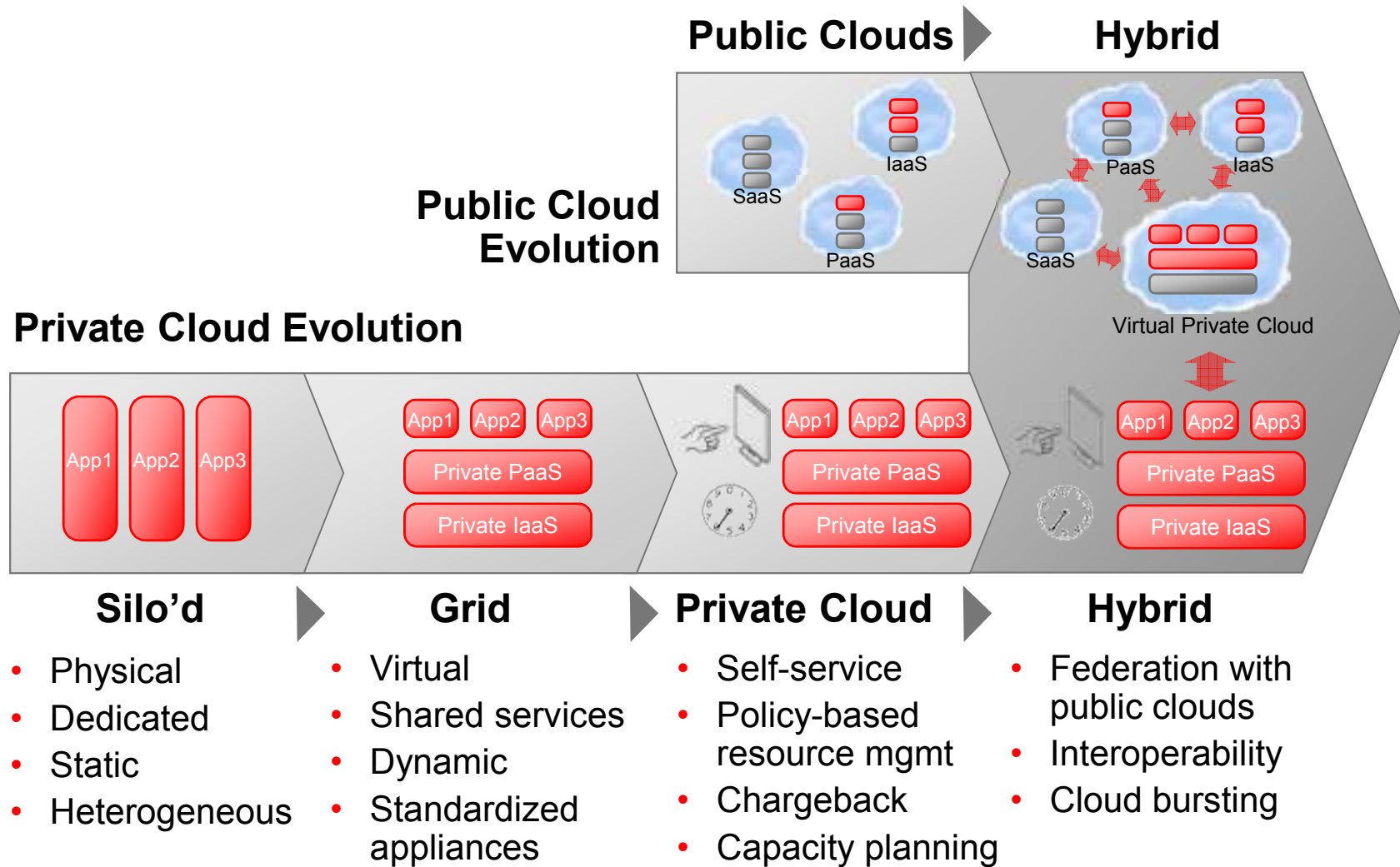
## 4 Deployment Models

- Public Cloud
- Private Cloud
- Community Cloud
- Hybrid Cloud



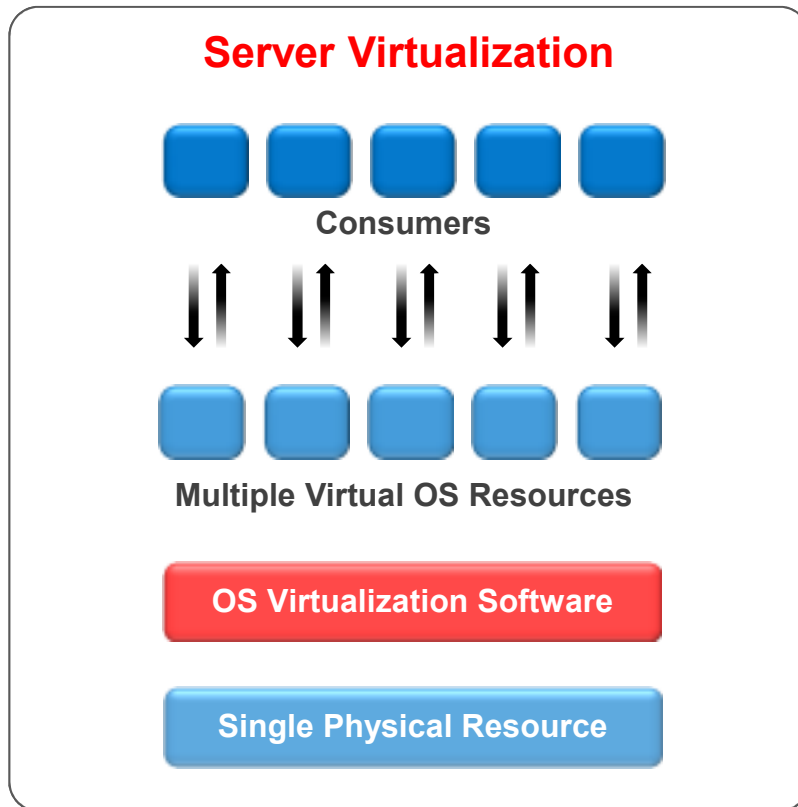
# Datacenter Evolution

## From Consolidation to Private Cloud

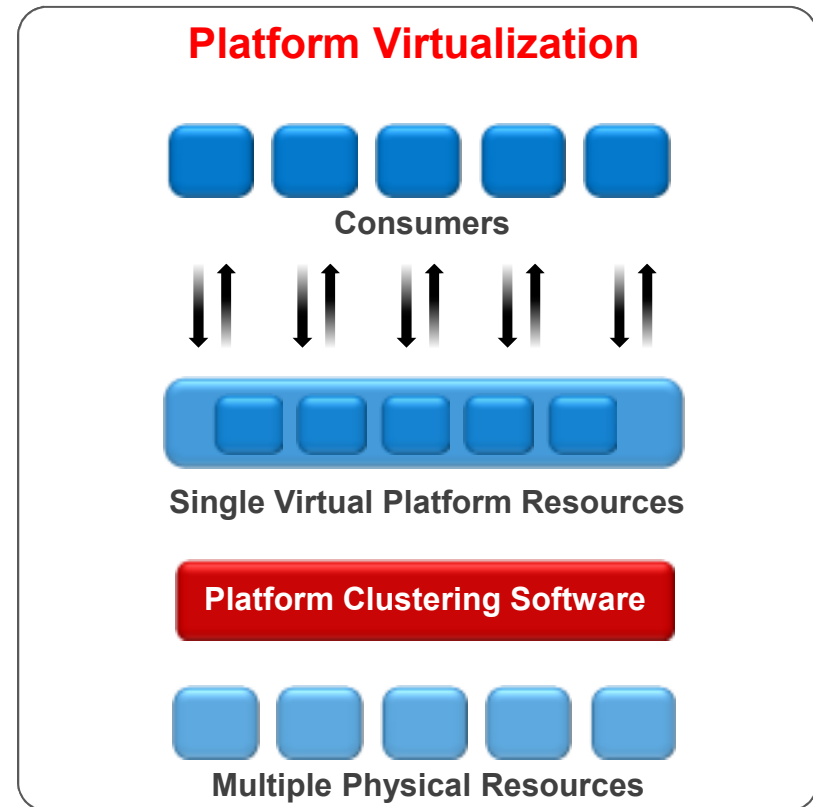


# Server Virtualization and Platform Virtualization

Cloud is NOT just only “Server Virtualization”

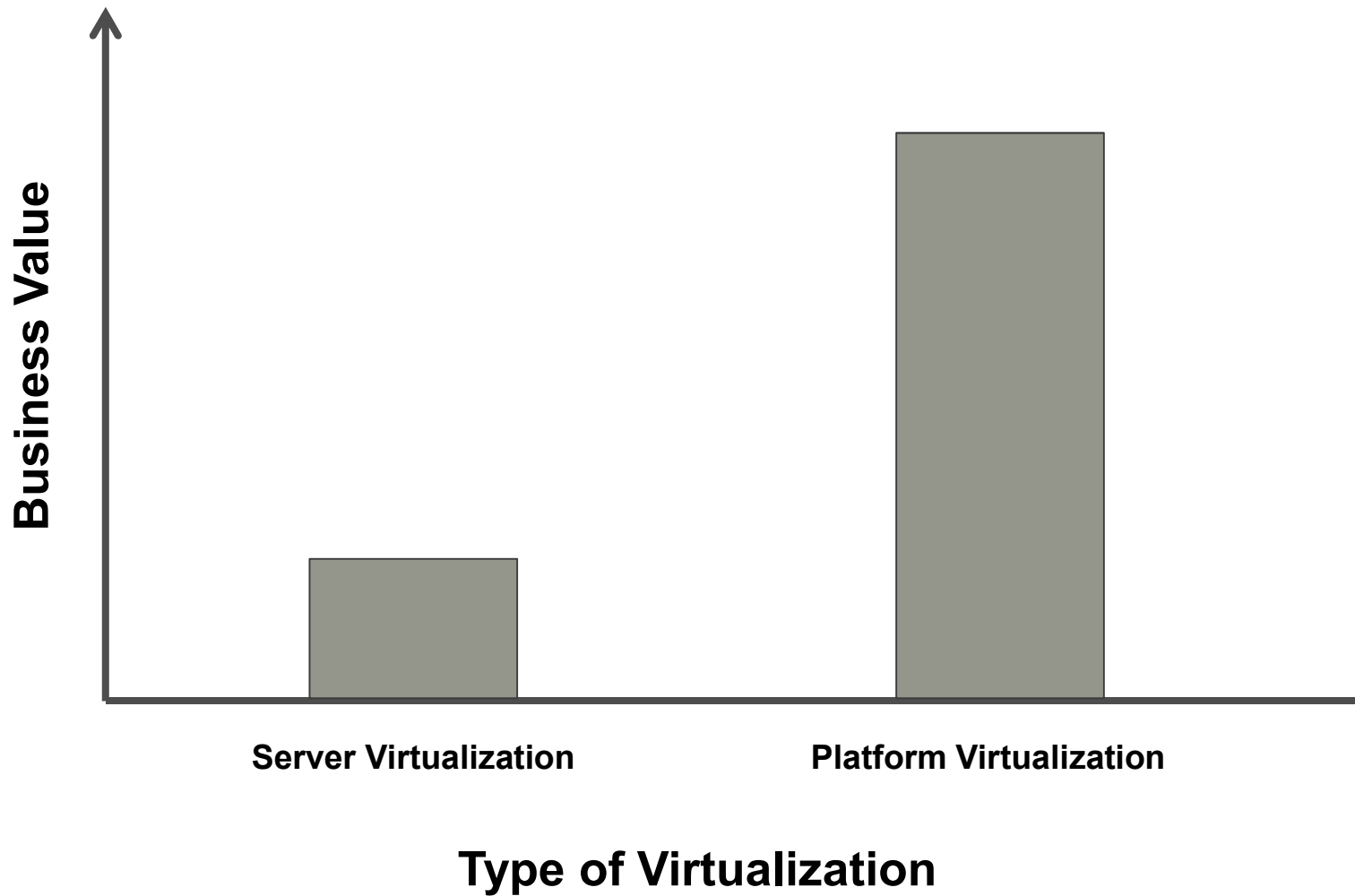


Make one physical resource look like many  
Scale Up then Migration approach



Make many physical resource look like one  
Transparent Scale Out approach

# Server Virtualization and Platform Virtualization





# Server Virtualization

## Infrastructure as a Service

### Pros:-

- Ease of System Migration
- Good for Small or Uncertain of Business Requirements

### Cons:-

- Low Business Value
- Not for DB processing
- Not for IO intensive load
- Not for Critical Application
- Scale Up overhead
- Enterprise Information System still in Silos, Actually!
- Almost the same Operation of business overhead



# Software as a Services

## Pros:-

- **Cost Effective for small start up company**
- **Quick start your Business Applications**

## Cons:-

- **Difficult to migrate back to my data center when required**
- **Mostly use proprietary software and its own security model**
- **Customer concerns on data privacy**
- **Customer concern on behavior tracking**
- **Lock-in vendor**



# Platform Virtualization

## Platform as a Service

### Pros:-

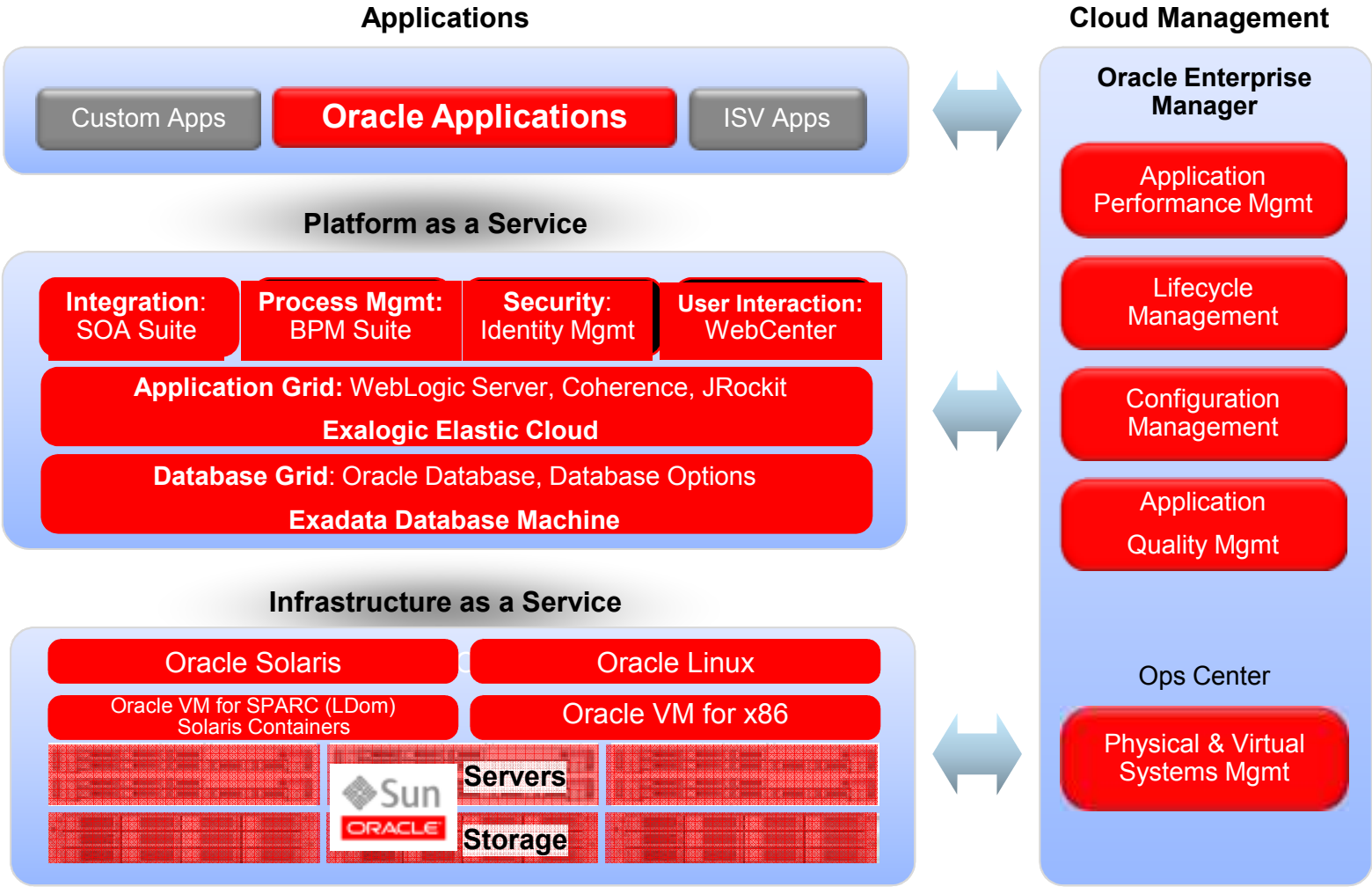
- Most ready for Business Application deployment rather than Infrastructure as a Service (IaaS)
- Secure for Enterprise when compare to SaaS
- Simplify IT operation (OS , storage and network)
- Real-time business
- Prevent buying over size of the initial server

### Cons:-

- Require Migration Process
- Only larger vendor can provide the PaaS solution



# Oracle Cloud Solutions



# Oracle Cloud Management Capabilities

## Cloud Management Capabilities

Self-Service Provisioning



Metering and Chargeback



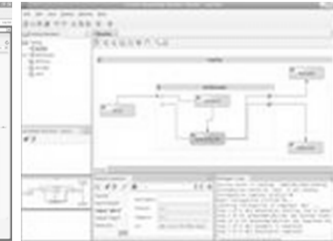
Policy-Driven Resource Mgmt



Capacity Planning

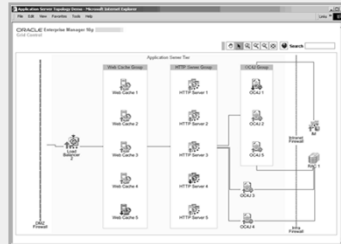


Assembly Packaging



## Foundation Capabilities for Managing Datacenters

Configuration and Compliance



Full Apps to Disk Management

Lifecycle Management



Application Performance Management



Application Quality Management





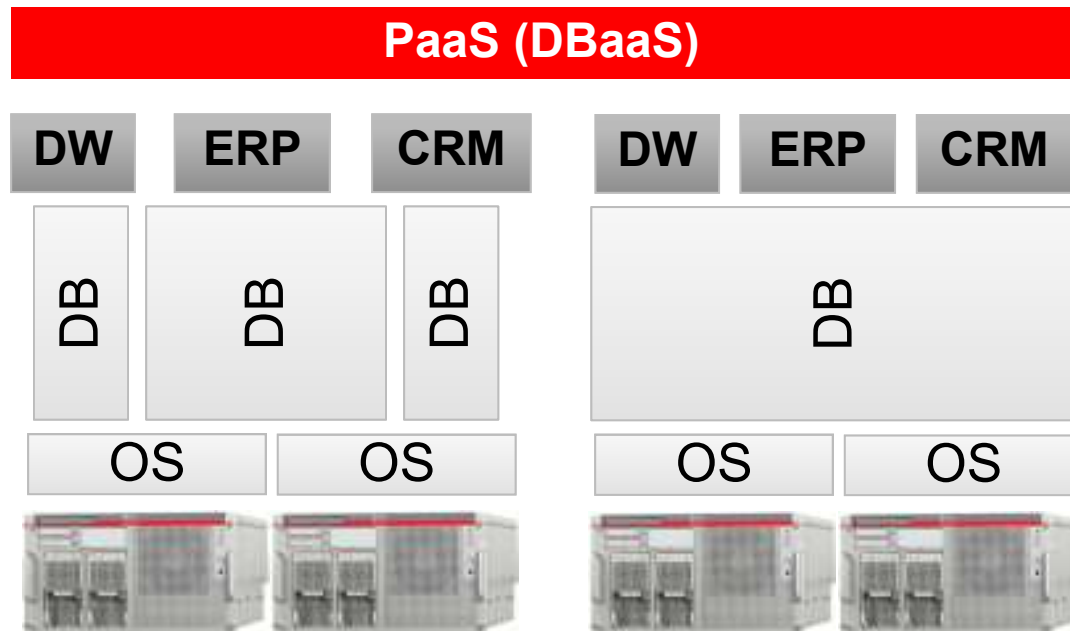
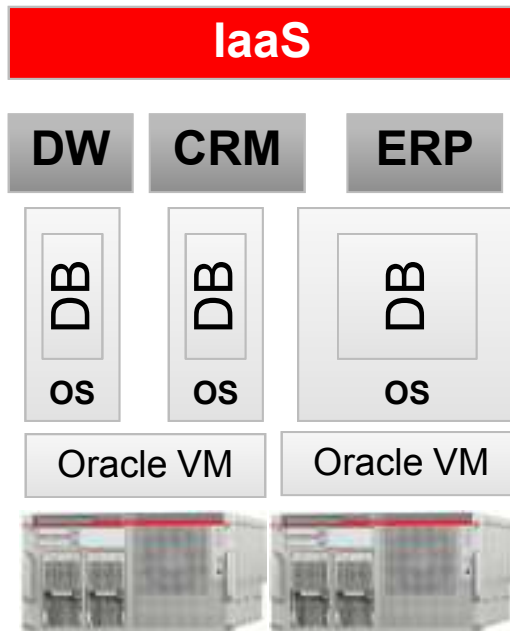


# Database as a Service



# Database Consolidation Approaches

Three Options Using Oracle Database 11g



## Server Virtualization

Deploy in dedicated VMs

Server virtualization

## Database

Share server pool

Real Application Clusters

## Schema

Share database instances

Real Application Clusters

# Engineered Systems | Dawn of a New Era



# Oracle DB as a Service (DBaaS)

Exadata serves as farm for databases

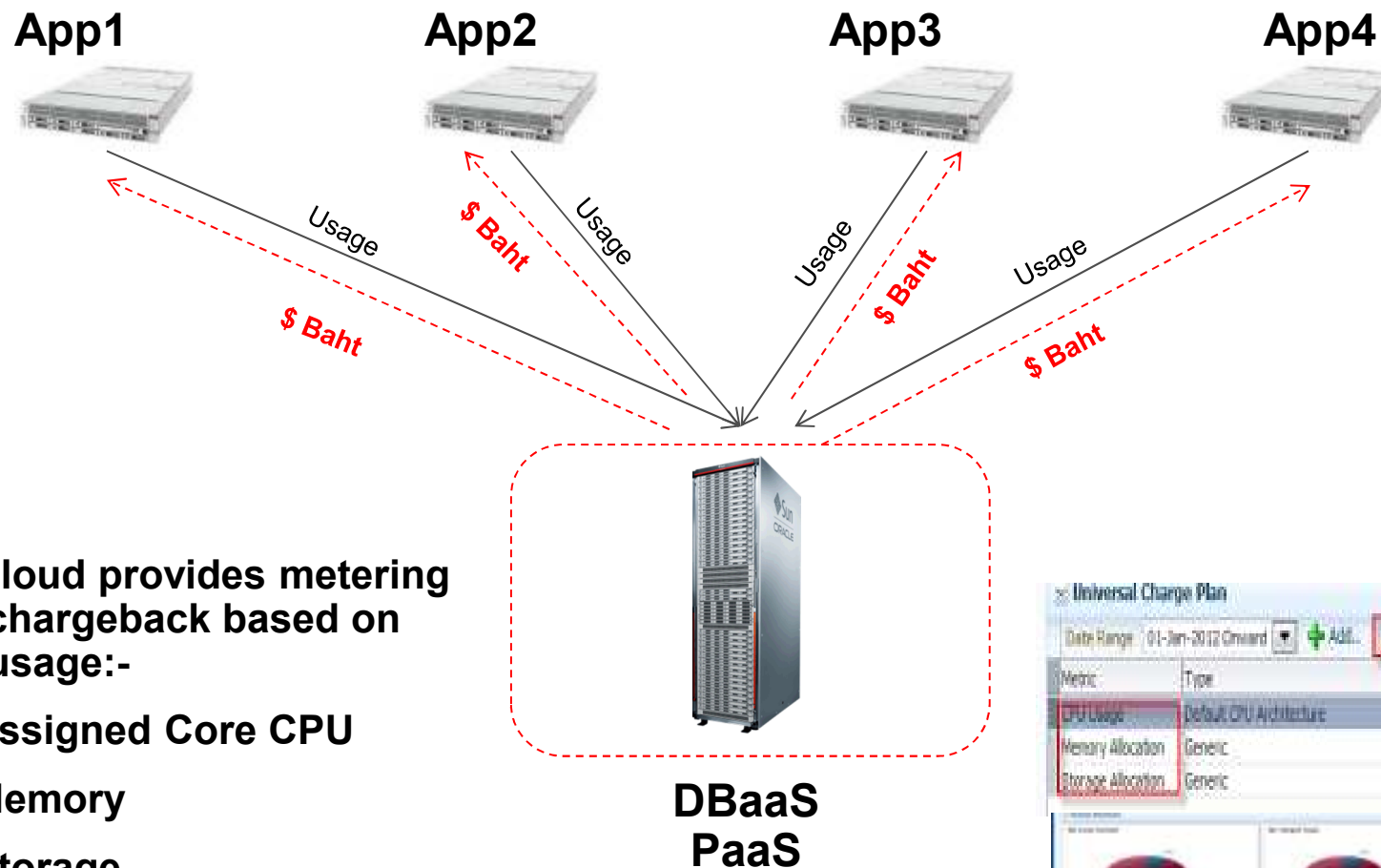


**Best for both public and private cloud**



[Click for DataSheet](#)

# DBaaS - Metering and Charge Back



DB Cloud provides metering and chargeback based on real usage:-

- Assigned Core CPU
- Memory
- Storage
- Transaction Access

The screenshot shows the 'Universal Charge Plan' interface. It includes a table with the following data:

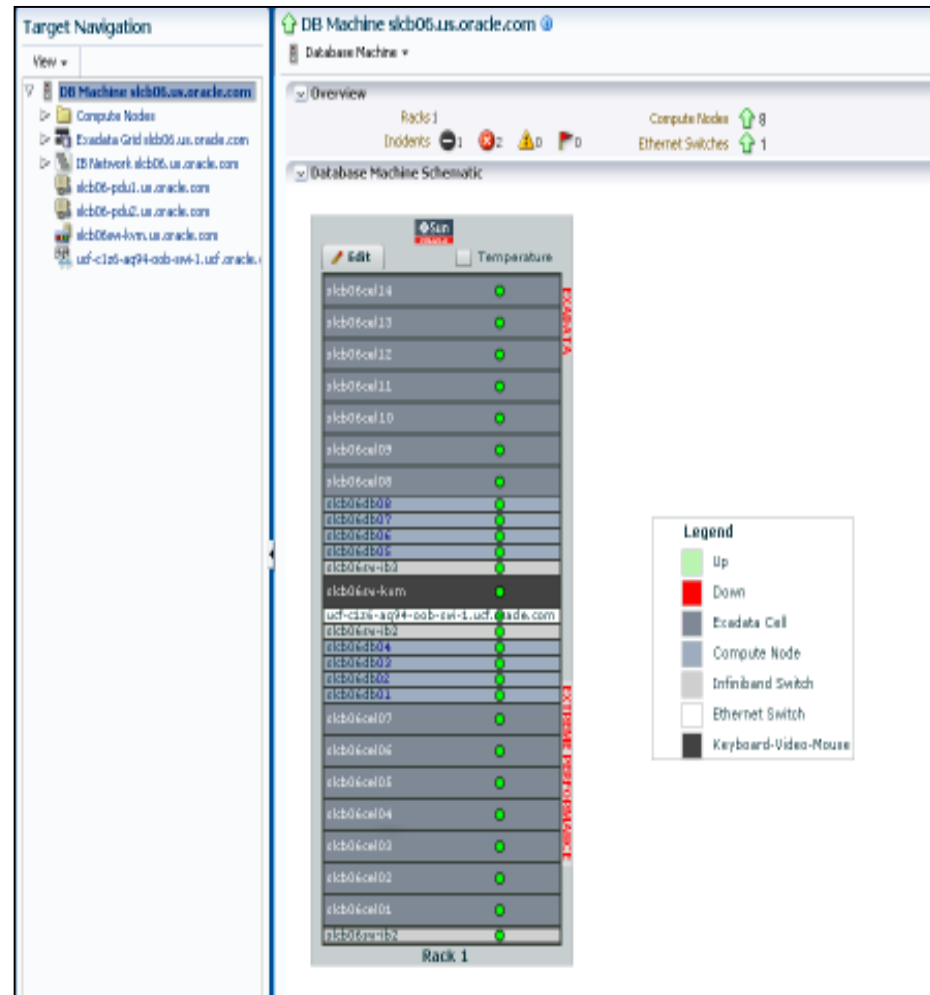
Metric	Type	Rate (€) Per Unit	Per Time Period
CPU Usage	Default CPU Architecture	100 CPU	Day
Memory Allocation	Generic	10 GB	Day
Storage Allocation	Generic	1 GB	Day

Below the table, there are three pie charts showing usage distribution for different metrics.

# Oracle Enterprise Manager for Exadata Management

## Integrated View of Hardware and Software

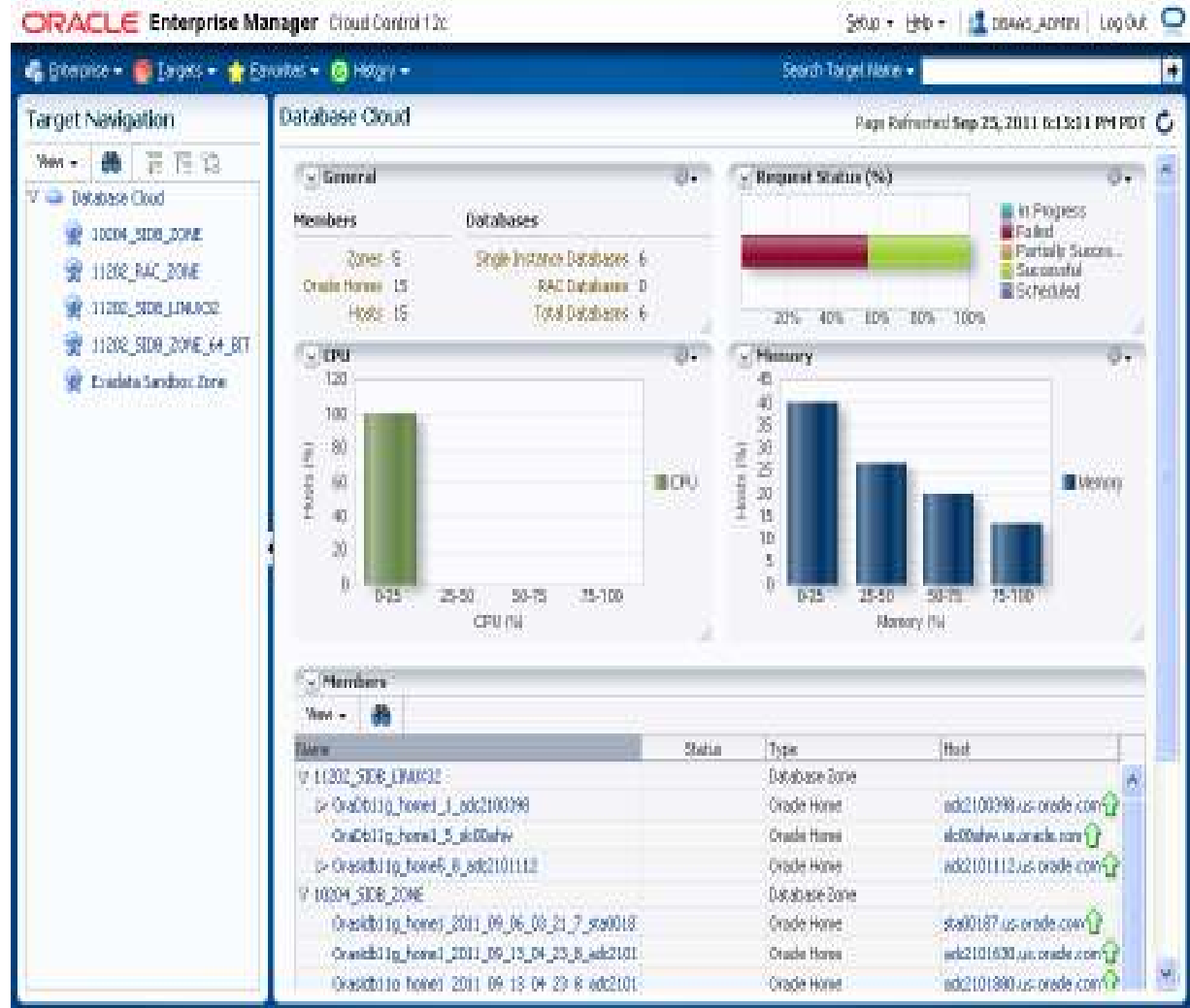
- **Hardware view**
  - Schematic of cells, compute nodes and switches
  - Hardware components alerts
- **Software/system view**
  - Performance, availability, usage by databases, services, clusters
  - Software alerts db, cluster, ASM
  - Topology view of DB systems/clusters
- **Configuration view**
  - Version summary of all components along with patch recommendations



# Cloud Resource and Request Monitoring

Ongoing monitoring of resources and requests

- Manage Cloud Zones and underlying resources ( Server Pools, VMs, databases)
  - Track resource flux, tenants, policy violations, etc
  - Drill down into individual resources for deeper monitoring
- Monitor requests and failure rates and identify potential bottlenecks to remediate



# On-demand self-service

## PROVISIONING A DATABASE USING SELF SERVICE PORTAL

- Database Self Service Portal Dashboard : Home

The screenshot displays the Oracle Database Cloud Self Service Portal dashboard. The main interface includes a navigation bar with 'Home', 'Chargeback', and 'My Preferences' tabs. The 'Home' tab is active, showing a 'Notifications' section with 'Databases Due to Expire in Next 7 Days' (0), a 'Your Usage' section with 'Databases: 0', 'Memory: 0 GB', and 'Storage: 0 GB', and a 'My Databases' section with a 'Request Database...' button and a table with columns 'Service Name', 'Type', 'Status', 'Zone Name', 'Start Date', and 'End'. Below this is a 'My Requests' section with a 'Request Name', 'Status', and 'Creation Date' table. A 'Select a Service Template' dialog box is overlaid on the right, showing a table of service templates. The first row is highlighted with a red box:

Procedure Name	Description
Tiny 11.2.0.1 Single Instance Database	DBEE 11.2.0.1, Single Instance, 256MB RAM, 1CPU, OEL 6.1
Medium 11.2.0.1 Single Instance Database	DBEE 11.2.0.1, Single Instance, 400 RAM, 4CPU, OEL 6.1
Small 11.2.0.1 Single Instance Database	DBEE 11.2.0.1, Single Instance, 1GB RAM, 2CPU, OEL 6.1

The 'Select' button in the dialog box is also highlighted with a red box.



# Self-service Provisioning

- Out-of-Box, Self-Service Portal
  - Part of the base product
  - no additional setup required
- Rich service catalog:
  - VM Templates, Assemblies
  - Database service
  - Java applications
- Full Operational Control
  - Start/Stop Services, Request additional resources, Backup/Restore
  - Basic resource monitoring
  - Chargeback information
  - Quota monitoring
- Programmatic Access using APIs
  - RESTful APIs and CLI (Submitted to DMTF)

The screenshot displays the Oracle Database Cloud Self-Service Portal. The interface includes a navigation bar with 'Home', 'Chargeback', and 'My Preferences' tabs. A 'Notifications' section indicates 'Databases Due to Expire in Next 7 Days: 2'. The 'Your Usage' section shows 'Databases: 4' with a progress bar, 'Memory: 3.42 GB' with a progress bar, and 'Storage: 1.72 GB' with a progress bar. The 'My Databases' section features a table with columns for Service Name, Type, Status, Zone Name, Start Date, and End Date. The 'My Requests' section includes a table with columns for Request Name, Status, Creation Date, Start Date, and End Date. The Oracle logo is visible in the top left corner, and the page is refreshed on Sep 25, 2011 5:33:57 PM PDT.

Service Name	Type	Status	Zone Name	Start Date	End Date
06353bac.adc2101112.us.oracle.com	Database Instance	↑	11202_SIDB_LIM0032	9/22/2011	10/7/2011
08479444.adc2101112.us.oracle.com	Database Instance	↑	11202_SIDB_LIM0032	9/22/2011	10/7/2011
06681ea5.adc2101112.us.oracle.com	Database Instance	↑	11202_SIDB_LIM0032	9/14/2011	9/28/2011
0669d1af.sta00138.us.oracle.com	Database Instance	↑	11202_SIDB_ZONE_64_BIT	9/13/2011	9/30/2011

Request Name	Status	Creation Date	Start Date	End Date
JDOE - Tue Sep 13 18:21:36 PDT 2011	Success	9/13/2011	9/13/2011	9/30/2011
JDOE - Wed Sep 14 12:00:00 PDT 2011	Success	9/14/2011	9/14/2011	9/28/2011
JDOE - Thu Sep 22 15:07:27 PDT 2011	Success	9/22/2011	9/22/2011	10/7/2011
JDOE - Thu Sep 22 15:05:00 PDT 2011	Success	9/22/2011	9/22/2011	10/7/2011

# Measured service : Chargeback

- Click Charge Plans Tabs
- Select CPU and click Edit
- Select Memory and click Edit
- Select Storage and click Edit

**Chargeback**

Home **Charge Plans** Cost Centers Targets Reports

Universal Charge Plan

Date Range 01-Jan-2012 Onward + Add.. **Edit..** Remove.. Currency B

Metric	Type	Rate (B)	Per Unit	Per Time Period
<b>CPU Usage</b>	Default CPU Architecture	100	CPU	Day
<b>Memory Allocation</b>	Generic	10	GB	Day
<b>Storage Allocation</b>	Generic	1	GB	Day

Extended Charge Plans

Charge Plan Sample Extended Charge Plan Create.. Edit.. Remove..

Target Type	Condition	Shared
Oracle VM Guest	Default	
Oracle VM Guest	Machine Size='Large'	
Oracle VM Guest	Machine Size='Medium'	
Oracle VM Guest	Machine Size='Small'	



**New Cost Center**

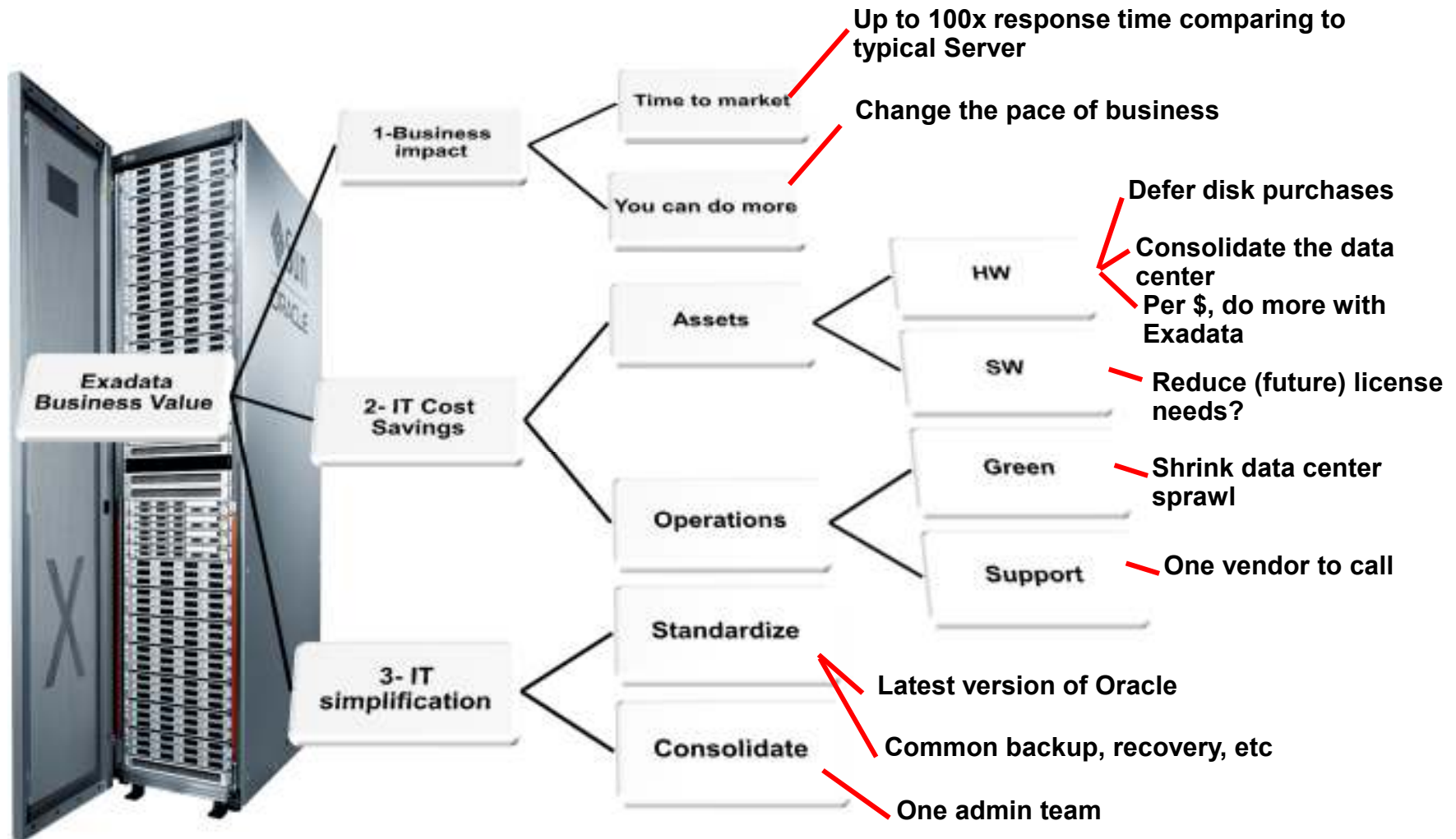
\* Cost Center ORG\_1\_C

\* Display Name ORG\_1\_C

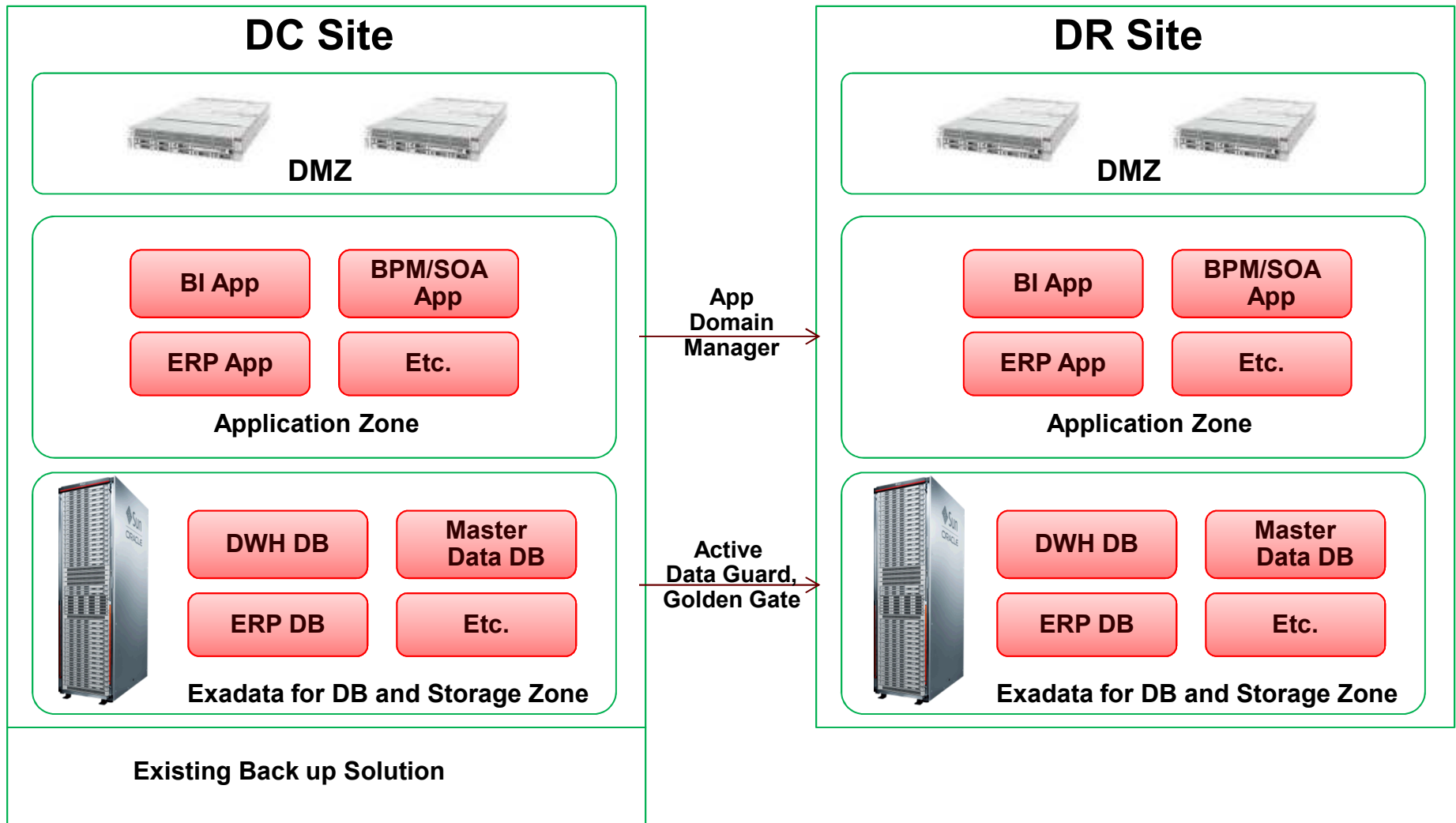
Level  Top Level (Root)  Member of.. ORG\_1\_A

- ▼ ORG\_1
  - ▶ **ORG\_1\_A**
  - ▶ ORG\_1\_B
  - ▶ ORG\_2
  - ▶ ORG\_3

# The Business Value of Exadata



# Platform as a Service for Consolidation

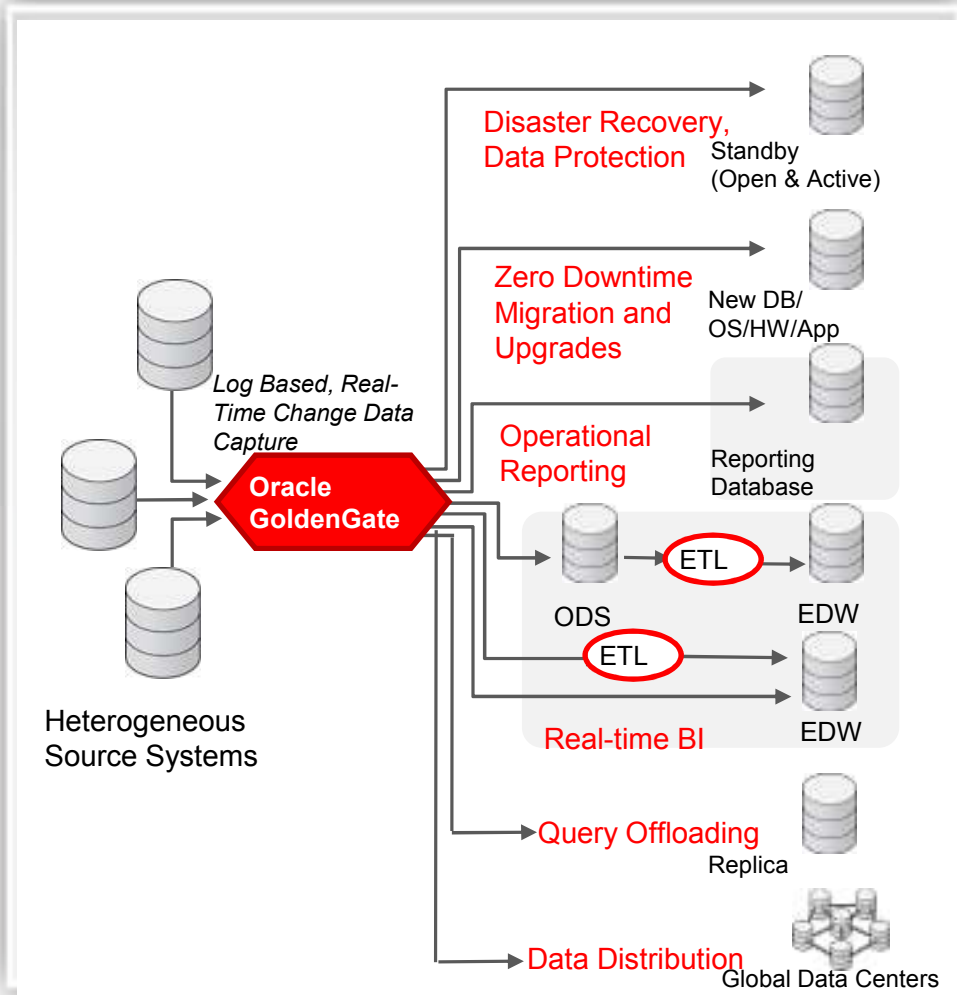


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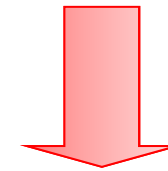
AppDomain Manager is subject to the required Application Server Software, Exact name will be provided in the detailed proposal. Active Data Guard and Golden Gate can be complementary in the integration mechanism.

# Oracle GoldenGate Use Cases

Enterprise-wide Solution for Real Time Data Needs



- Standardize on **Single Technology** for Multiple Needs
- Highly Flexible
- Fast Deployments

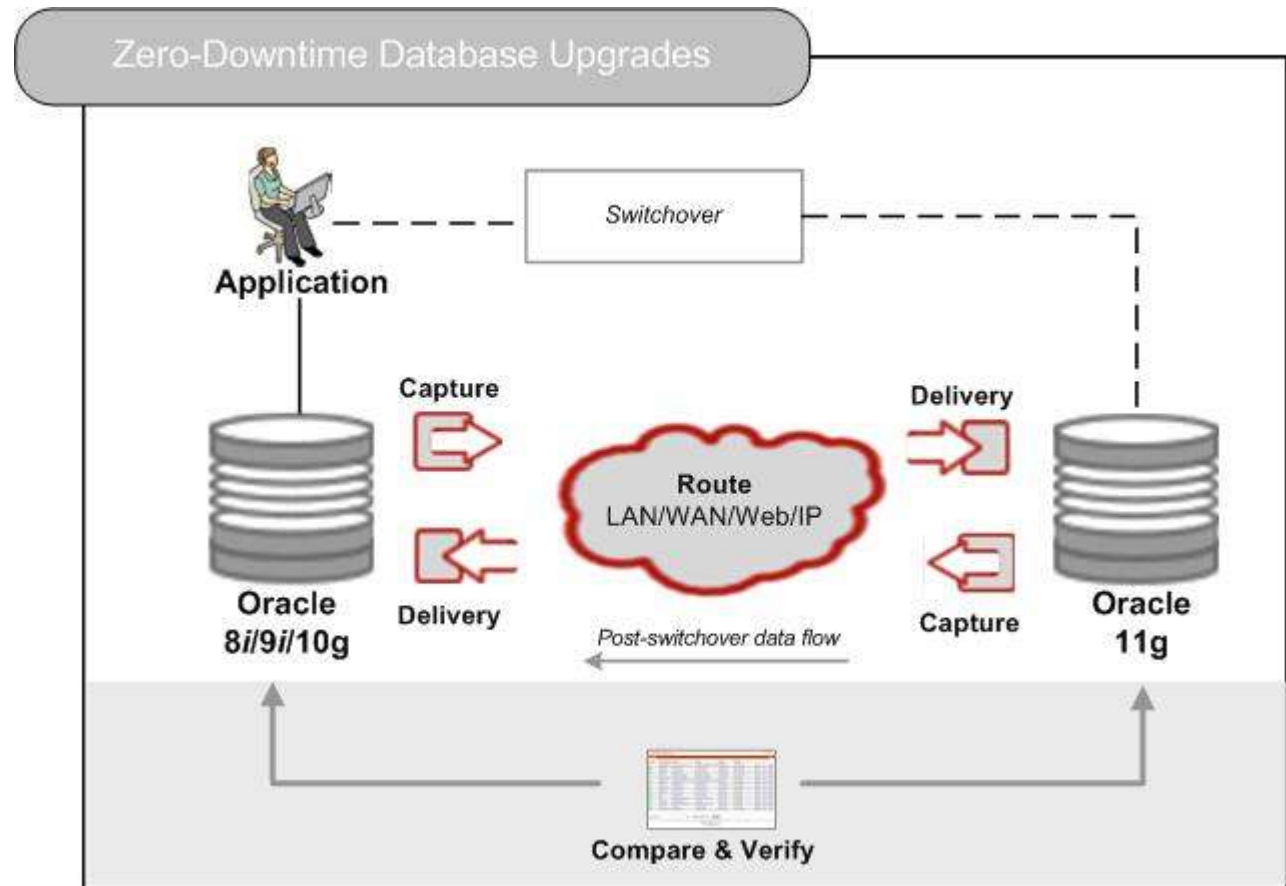


- Lower TCO & Improved ROI

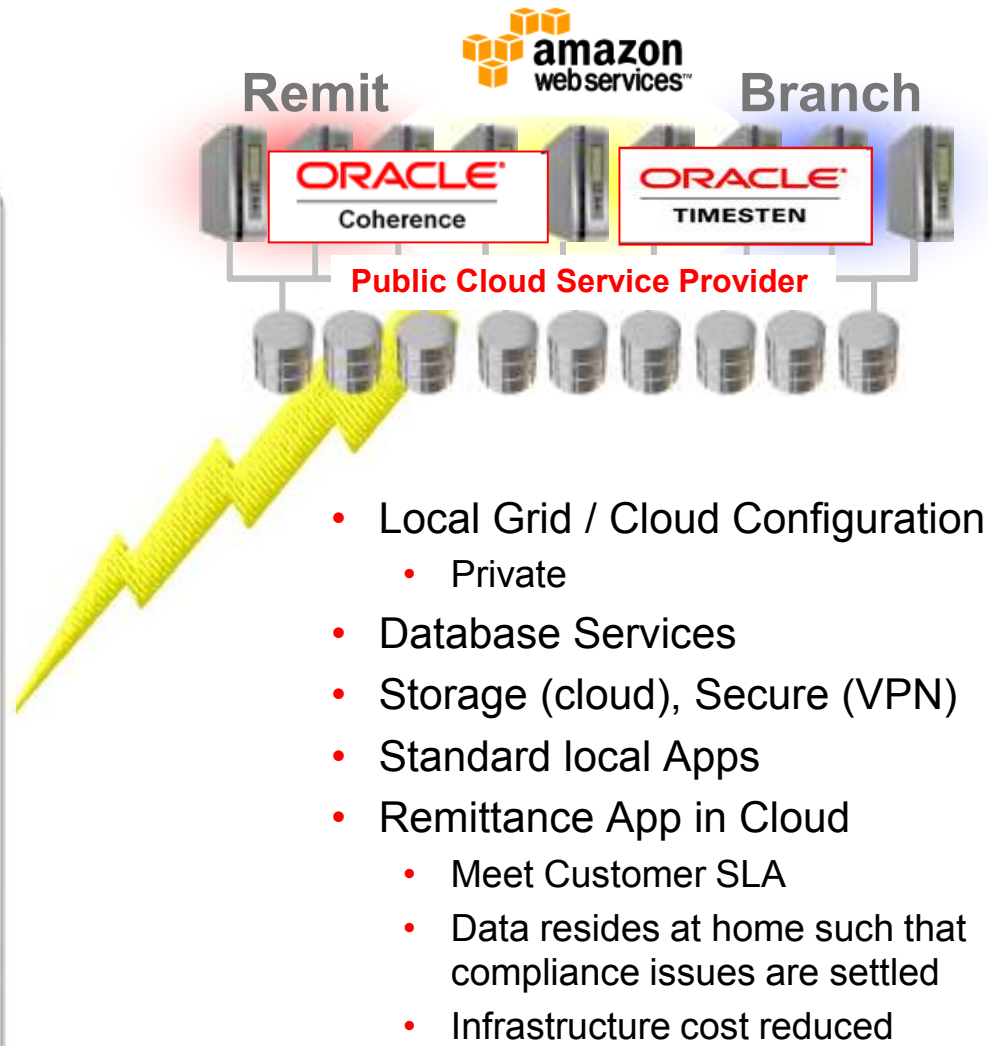
# Oracle GoldenGate for Oracle Database

## Eliminate Downtime During Oracle Database Upgrades

- Zero database downtime for upgrades from 8i, 9i, 10g to 11g
- Leverage new features of Oracle Database 11g without impacting business operations
- Minimize risks with failback option

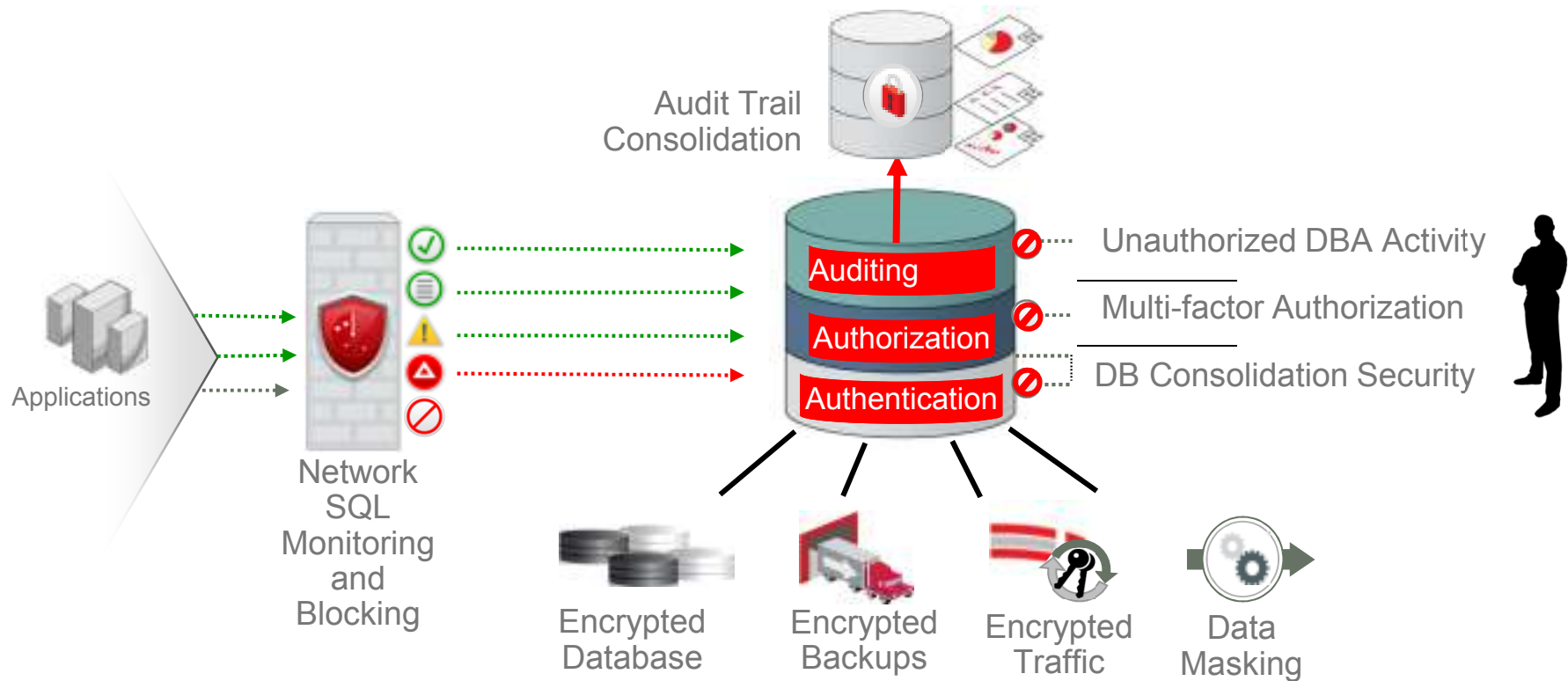


# Public / Private Example





# Database Security for Cloud Environments





# Turkcell: DW and DB Consolidation



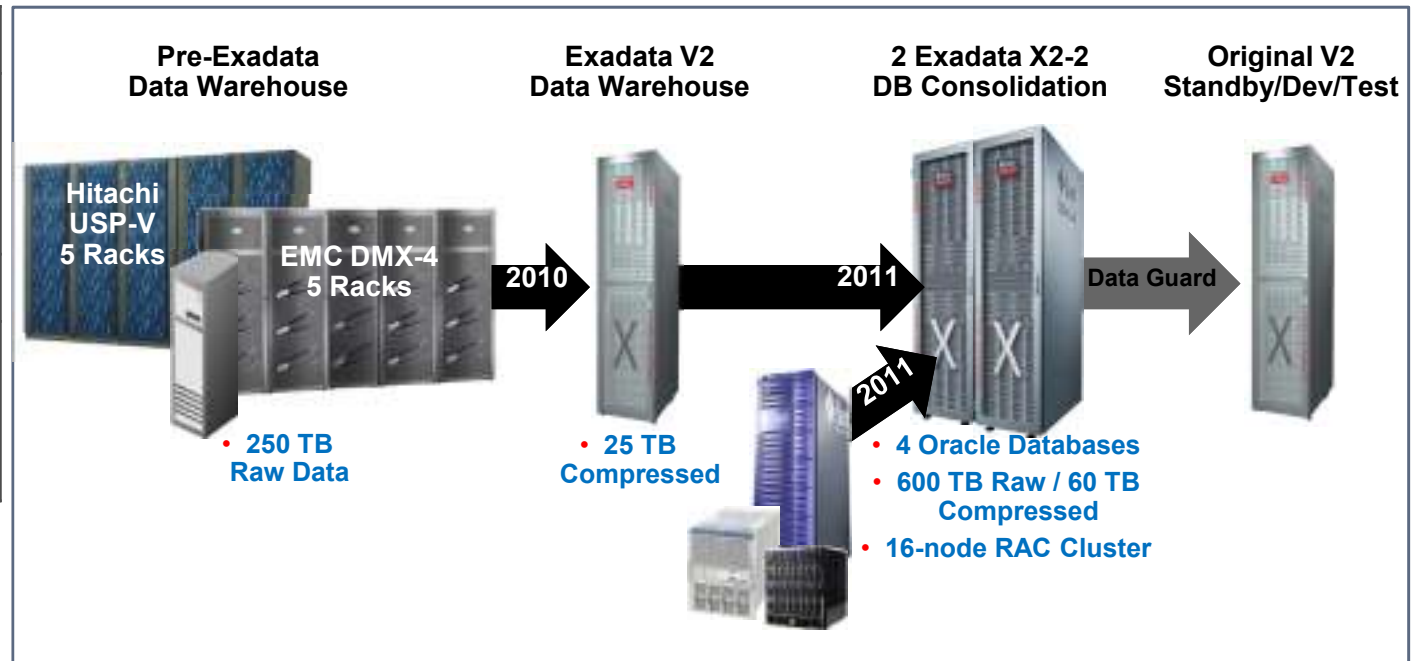
Benefits	Faster Reports	Storage Savings	Reduced Admin	Data Center Cost Savings
<p><i>"In a word, Oracle Exadata is fantastic. Almost no report takes more than 10 minutes to run, versus hours before. It sounds unreal, but it's real."</i></p> <p>- Power User, Finance Department, Turkcell</p>	<p><b>10X</b></p> <p>27 min to 3 min (avg for 50k rpt)</p>	<p><b>540 TB</b></p> <p>600 TB to 60 TB</p>	<p><b>20%</b></p>	<p><b>80% Less Power</b> <b>30 m² Less Space</b></p>

## Business Objectives

- Speed up BI
- Lean, green data center
- Prepare for big data growth

## Solution

- 2010: Replace 11 racks with 1 full-rack Exadata V2 for DW
- 2011: Add 2 full-rack Exadata X2-2s for DB consolidation





# Apple

## *The Scalability and Performance with Oracle DB Cloud*



### COMPANY OVERVIEW

- Apple Inc., together with subsidiaries, designs, manufactures, and markets personal computers, mobile communication and media devices, and portable digital music players, as well as sells related software, services, peripherals, networking solutions, and third-party digital content and applications worldwide.
- Industry: Technology
- Employees: 46,600
- Revenue: \$75B (2010)

### CHALLENGES / OPPORTUNITIES

- Improve database scalability
- Provide platform for future product integration & growth
- Migration had to be completed with extremely aggressive timeline after Exadata System delivery into the apple Data Center

### SOLUTIONS

- Planning and Architecture Services
- Migration Execution and Stabilization to Oracle Exadata
- Program Management to enable aggressive timeline

### RESULTS

- **Migration of 20+ TB of data completed**
- **Exadata Operational Database within one month of delivery**

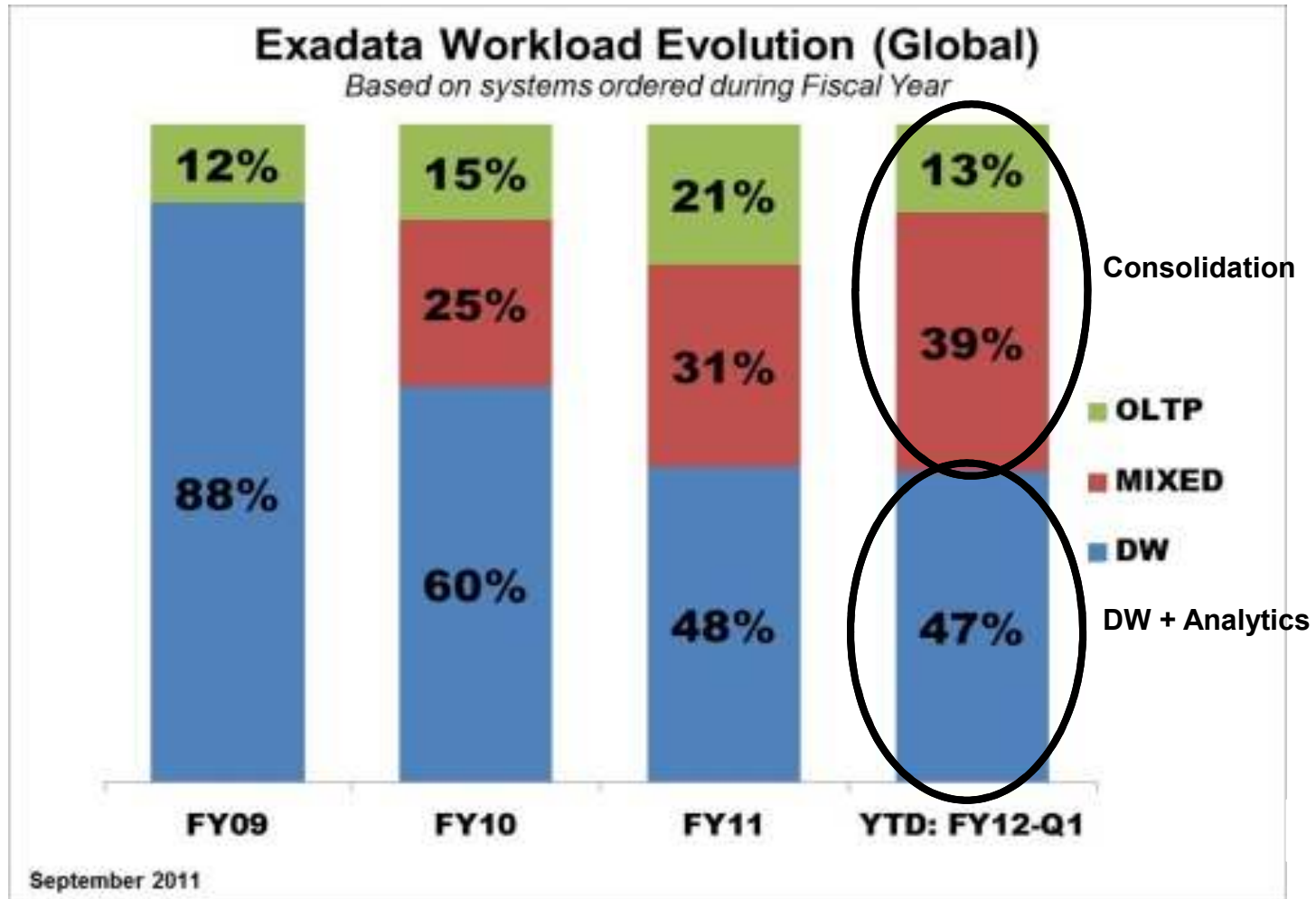


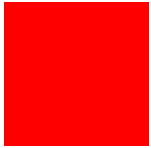
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# The Best Brands Choose Exadata



# DB Consolidation Trends





# Group Brainstorm Workshop



# Enterprise Data Platform

No.	Data	Structure	Unstructure	Remarks
1	App Data	Y	Y	
2	Master Data	Y	Y	
3	Data Warehouse	Y		
4	Data Mart	Y		
5	Operational Data Store	Y	Y	
6	Online Integration Data (Staging) and Batch Exchange data (Staging)	Y	Y	Separate External from Internal



# Group Workshop Delivery

- **Team Name and Team Member Name**
- **Current Situation, Business Problem**
- **Why DBaaS**
- **How to Apply DBaaS**
  - **What are the impacted applications?**
  - **No. of Users for each application**
  - **What kind of Data**
  - **Consolidated DB with resource assignment**
    - **DB Zone Design**
    - **DB User Quota for Self Service Design**
    - **Metering and Charge Back Design**
  - **Migration Process and Timeframe**
- **Obstacle and Path to Solve อุปสรรคและแนวทางแก้ไข**

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