

Cloud Storage in a PaaS World

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Cloud Storage runs “Apps”

- ❑ Just like a Platform runs Applications, there are many Applications that need to run in Cloud Storage
 - ❑ Backup/Restore, Archive, Retention, De-Dup, Compression, Encryption
 - ❑ BUT: these are applications (aka data services) launched and managed by the cloud provider
- ❑ Cloud Providers need to be able to create a bill that reflects which data services were run against each customer's data

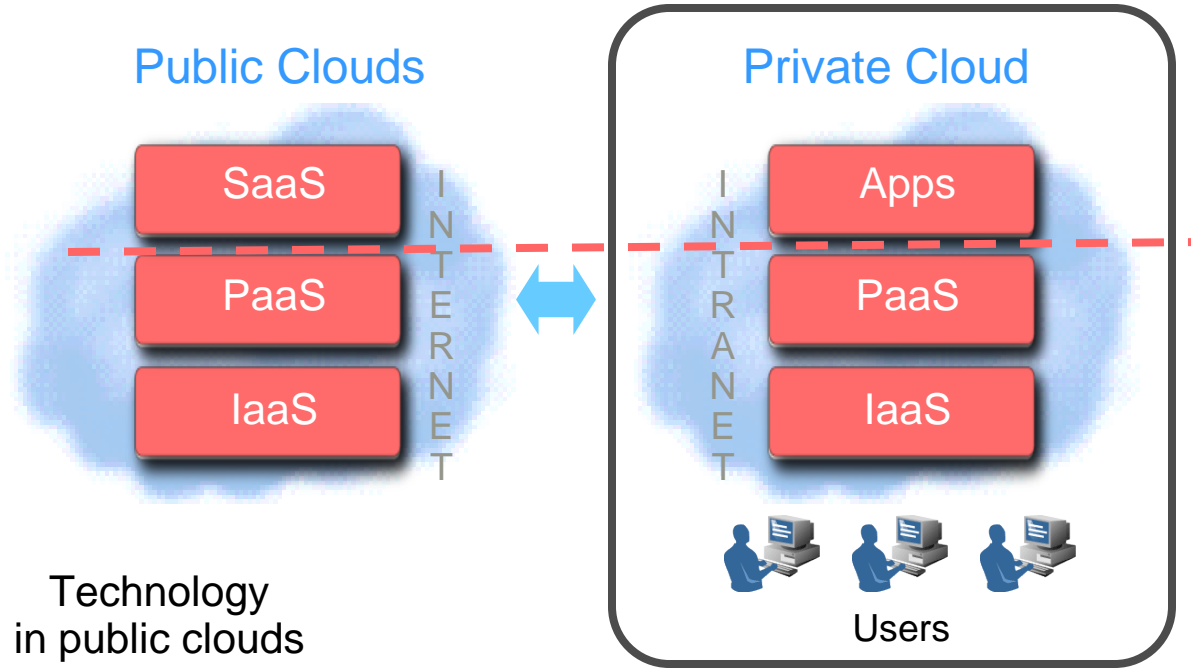
- ❑ Instead of launching cloud-storage-based data services directly, the cloud user sets the “*data requirements*” for each set of data
 - ❑ Expressed through metadata
 - ❑ Provider bills for the data services that are therefore run against the data so marked
- ❑ Different “classifications” of data can thus receive different “treatments”
 - ❑ Provider’s bill reflects this, drives the cloud user to better Data Classification (to optimize bill)

- ❑ Management Software and Automation will thus play an increasing role in the new Cloud based world
 - ❑ Marshaling and Orchestrating storage and networking devices plus data services software to meet the data requirements
 - ❑ Simplifying the setup and administration of those resources into pools that are drawn on by the cloud user
- ❑ Look for vendors that understand this and are moving their product lines in this direction

Customer Choice

Cloud Services

Run on private shared platform
or public SaaS model



Technology
in public clouds

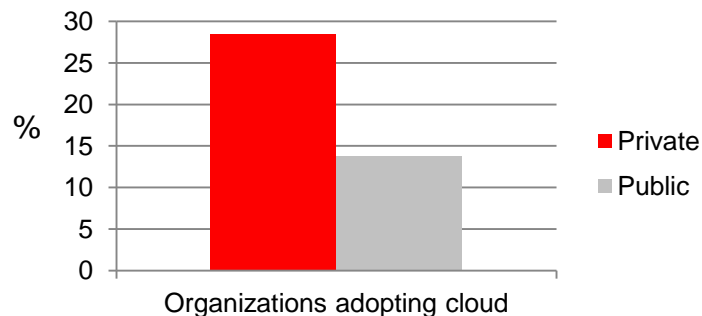
Private Cloud
Platform

- Enterprise deployment option
- Power 3rd party public clouds

Private Clouds Are Gaining Momentum

2010 Survey* of Independent Oracle User Group Members

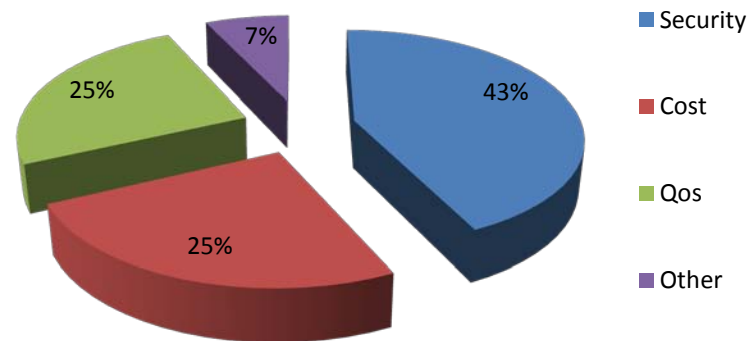
Private vs Public Cloud Adoption



Benefits of Private Cloud Computing



Concerns Over Public Cloud



* Preliminary findings from the IOUG ResearchWire member study on Cloud Computing, conducted in August-September 2010.

Cloud Management Capabilities

Cloud Management Capabilities

Self-Service Provisioning



Metering and Chargeback



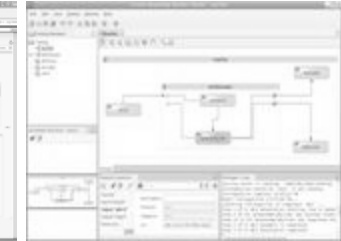
Policy-Driven Resource Mgmt



Capacity Planning

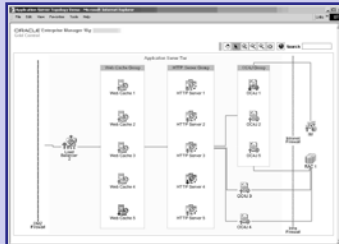


Assembly Packaging



Foundation Capabilities for Managing Datacenters

Configuration and Compliance



Lifecycle Management



Application Performance Management



Application Quality Management



Full Apps to Disk Management

Comprehensive Cloud Lifecycle Management

- Setup, Deploy, Monitor, Patch, Policy-Driven Scale In/Out, Retire

Broad and Complete Enterprise Services

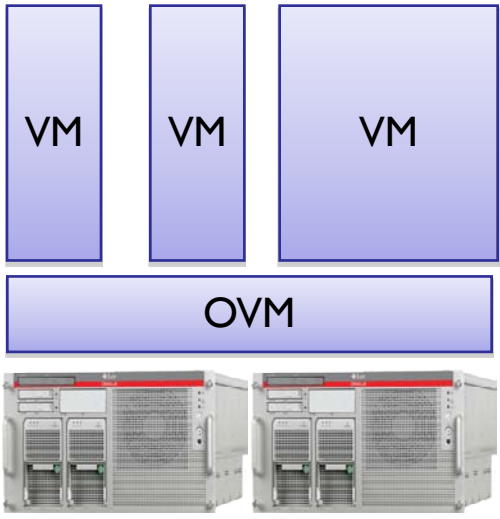
- Choice of IaaS, DaaS, PaaS from single Self-Service interface
- Choice of physical and virtual environments (x86, Sparc)

Business-Driven, Application-Aware

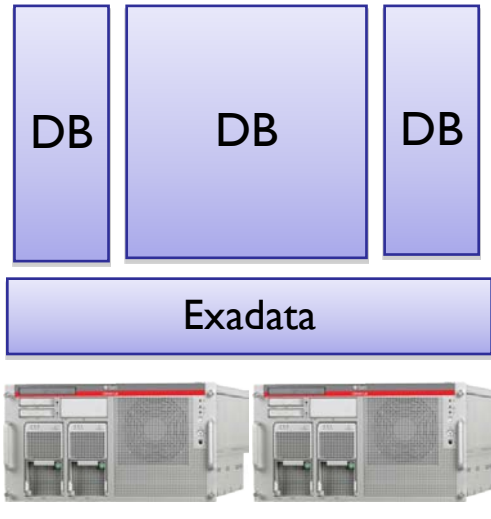
- Business-Driven Application Management
- Integrated Application-to-Disk Management

Complete Enterprise Services

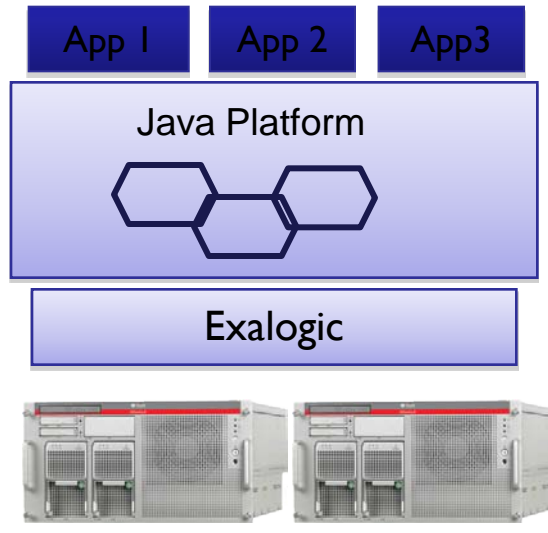
Self-Service Application



Infrastructure-as-a-Service (IaaS)



Data(base)-as-a-Service (DBaaS)



Platform-as-a-Service (PaaS)

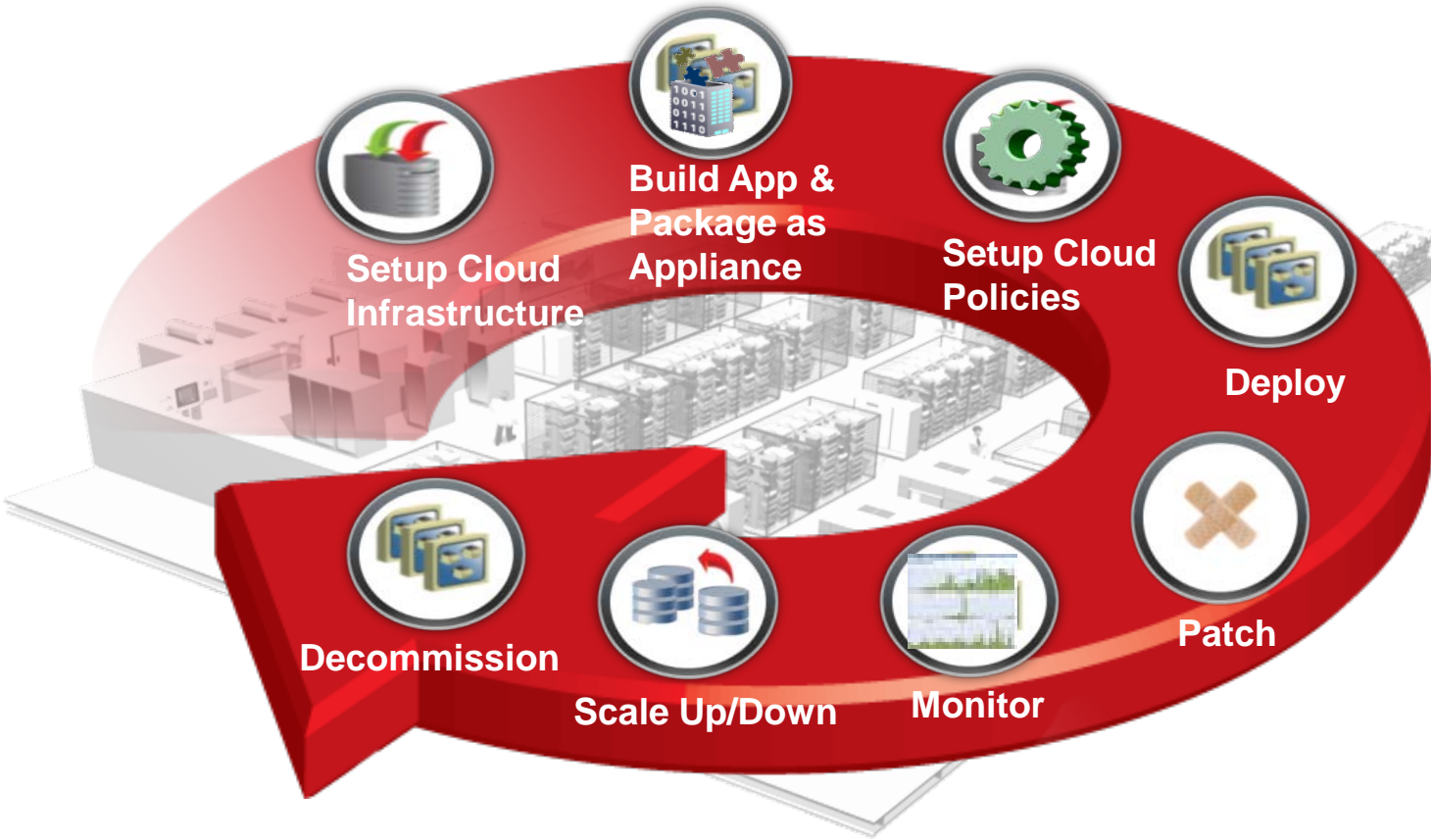




- ❑ CernerWorks is a remote hosting division of Cerner, providing turnkey healthcare IT solutions to hundreds of US-based hospitals
- ❑ CernerWork's Skybox Services is centrally managed by Oracle Enterprise Manager (EM)
- ❑ All of the DB targets are centrally managed in EM; EM exposes only the db instances to the DBAs employed at their respective hospital
- ❑ **Challenges**
Cerner had to meet rigorous security and compliance standards set for their healthcare industry
- ❑ **Business Value**
Reduction of Capex by \$9.5M, improve IT performance and Increase DBA efficiency to support 12% client growth, no new staff

Complete Cloud Lifecycle Management

Oracle Enterprise Manager





Cloud Administrator

- 1 Provision Bare metal Hypervisor
- 2 Configure Storage Arrays and network (VLAN)
- 3 Create Server Pools
- 4 Define Zones based on functional and operational boundaries
- 5 Configure Software Library



Self Service Administrator

- 1 Define allowable VM sizes
- 2 Assign quotas to Users and Roles
- 3 Define access boundaries (map roles to zones)
- 4 Setup Chargeback Plans
- 5 Make software available for deployment by Self-Service users



Cloud Administrator

- 1 Provision Servers and Storage
- 2 Provision Database Software on single instance servers or RAC
- 3 Create database server pools
- 4 Define Zones based on functional and operational boundaries
- 5 Configure Software Library

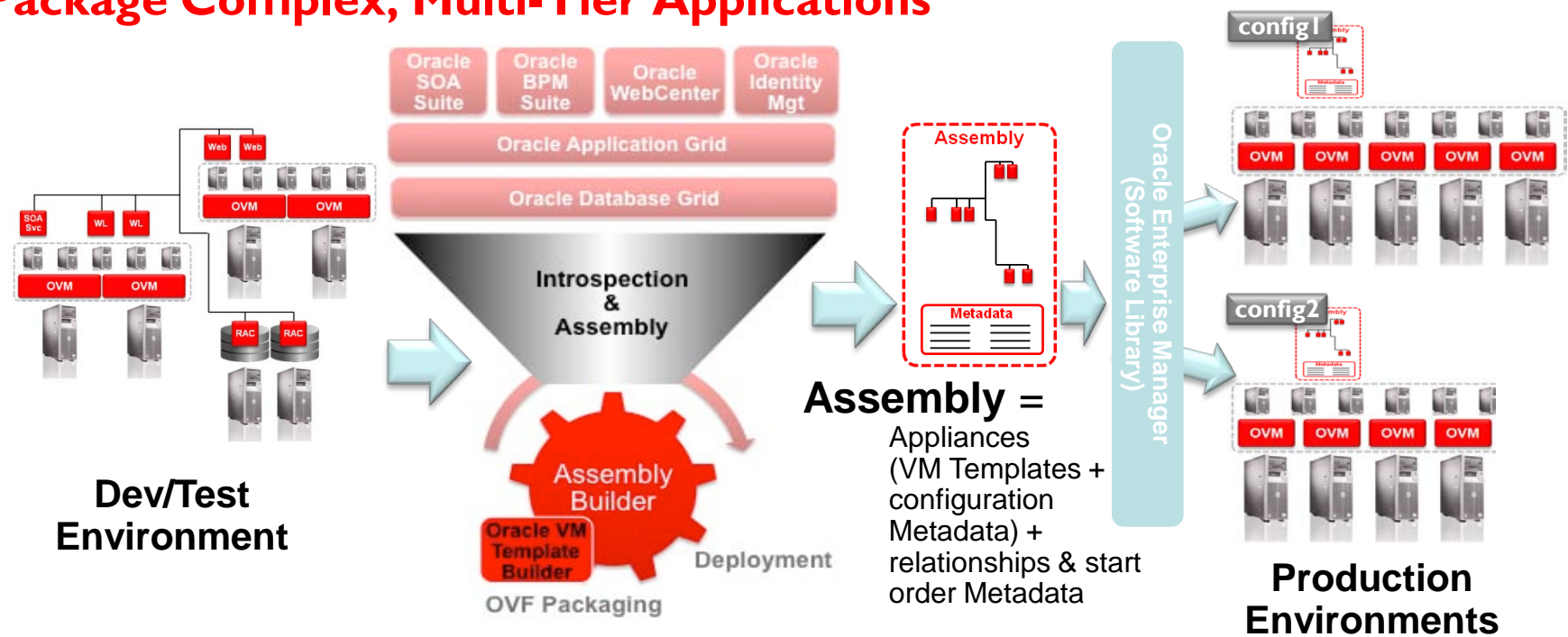


Self Service Administrator

- 1 Define Deployment Procedures for Database Provisioning
- 2 Assign quotas to Users and Roles
- 3 Define access boundaries (map roles to zones)
- 4 Setup Chargeback Plans and maintenance levels
- 5 Define a service in Service Catalog for deployment by Self-Service users

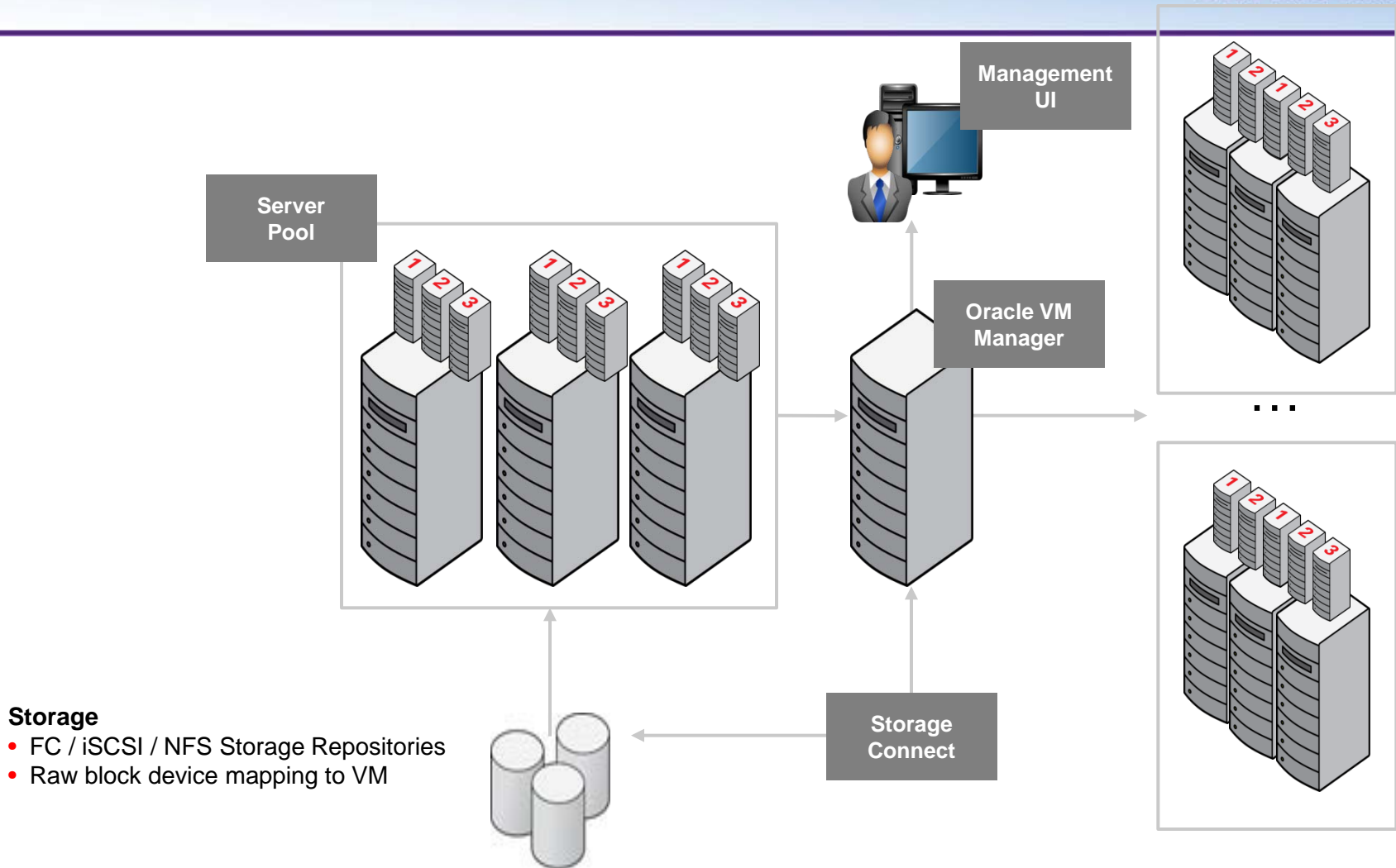
Oracle Virtual Assembly Builder

Package Complex, Multi-Tier Applications



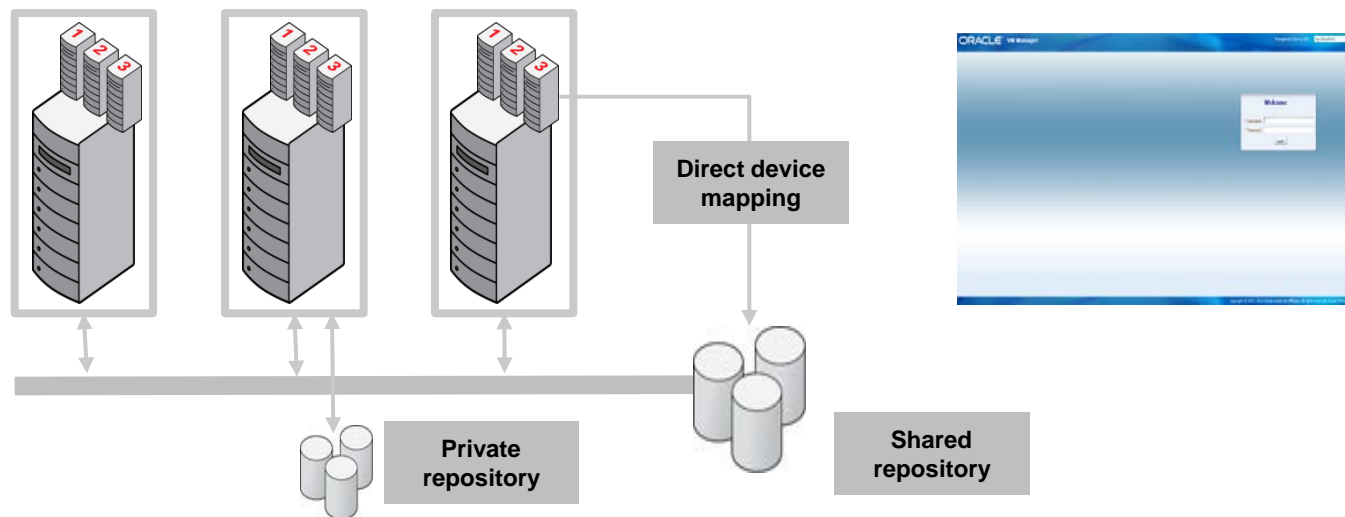
- **Package** up complex structure from dev/test and reconstitute in production
- **Minimize setup time and risk** of hard-to-debug configuration errors
- **Easily replicate** in production with minor variations
- Each production instance has **well-contained configuration** parameters for flexibility

Oracle VM 3.0 Architecture



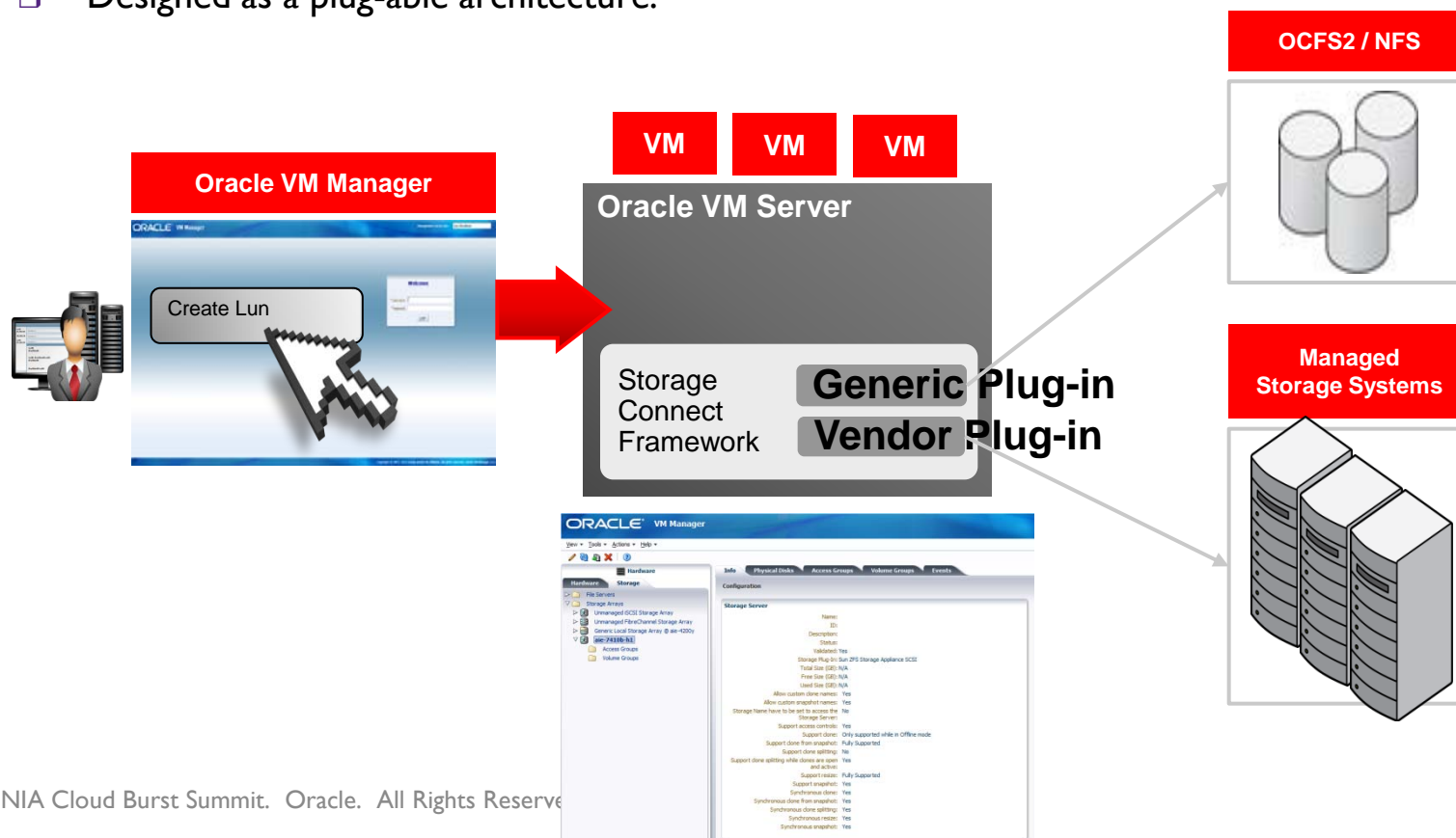
Oracle VM 3.0 Storage

- ❑ Support for iSCSI, FC and NFS
- ❑ Flexible configuration options:
 - ❑ VMs and pools can use storage from multiple sources simultaneously.
 - ❑ Repositories can be shared between multiple clusters
 - ❑ VMs can use raw devices directly
- ❑ All options are configurable from the UI



Oracle Storage Connect (OSC)

- ❑ Built as a generic Linux framework
- ❑ Allows the user to manage storage arrays from Oracle VM Manager
- ❑ Uses advanced features available from the storage arrays
- ❑ Allows the user more control over the storage provisioning process
- ❑ Designed as a plug-able architecture:



Storage Connect Partners:



NetApp™

HITACHI
DATA SYSTEMS

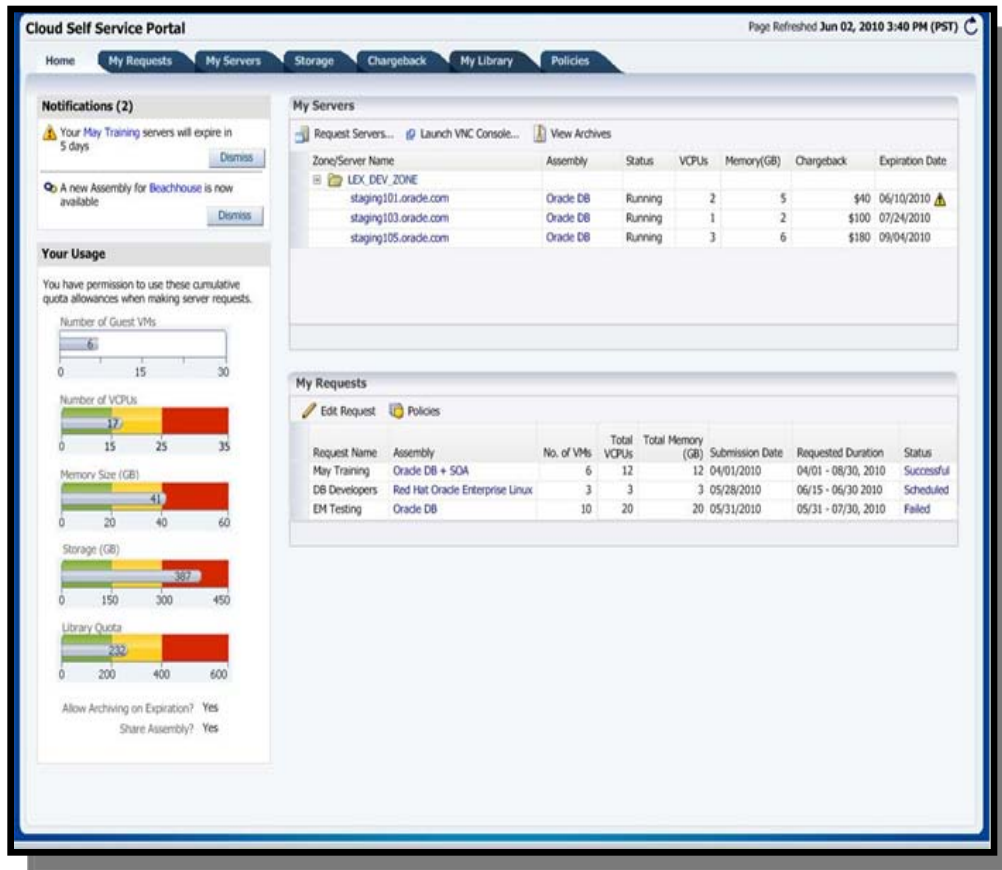


EMC²
where information lives

FUJITSU

pillar
DATA SYSTEMS

Self-service Provisioning



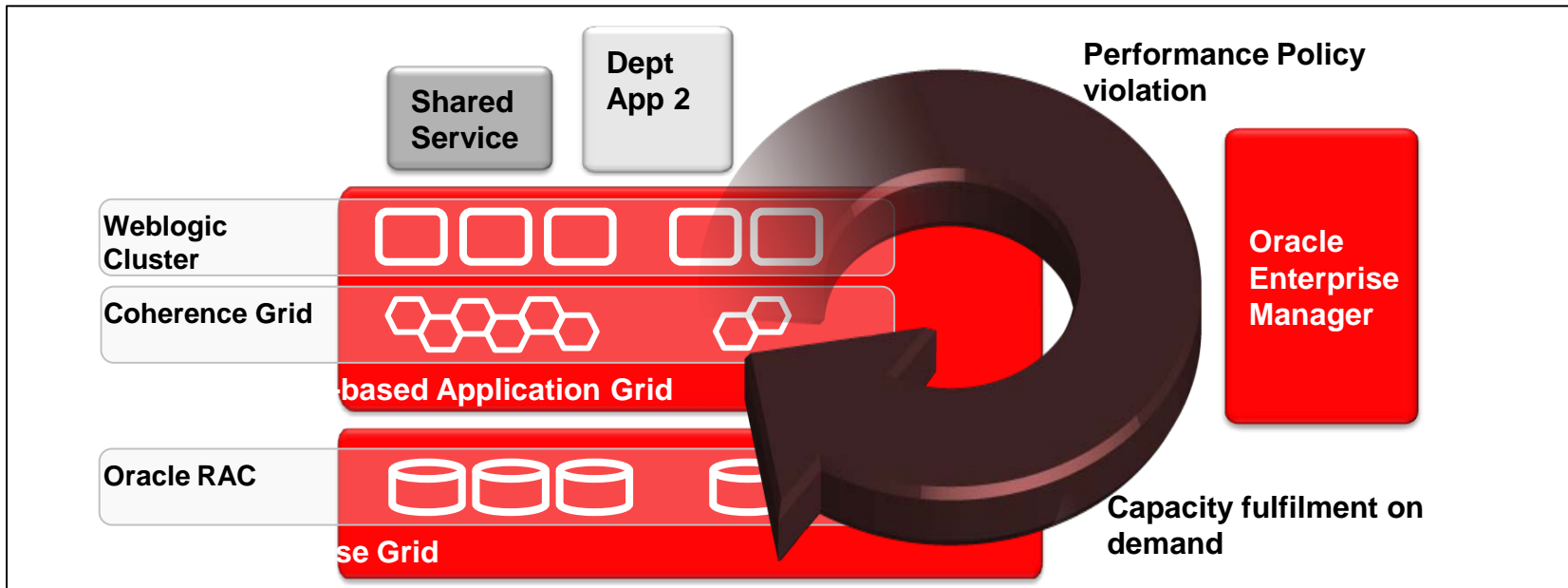
The screenshot displays the 'Cloud Self Service Portal' interface. It features a navigation bar with tabs for Home, My Requests, My Servers, Storage, Chargeback, My Library, and Policies. The main content area is divided into several sections:

- Notifications (2):** Includes a warning that 'Your May Training servers will expire in 5 days' and a message that 'A new Assembly for Boachhouse is now available'.
- Your Usage:** Shows four progress bars for 'Number of Guest VMs' (6/30), 'Number of VCPUs' (17/35), 'Memory Size (GB)' (41/60), and 'Storage (GB)' (387/450). It also includes 'Library Quota' (230/600) and checkboxes for 'Allow Archiving on Expiration?' and 'Share Assembly?'.
- My Servers:** A table listing servers with columns for Zone/Server Name, Assembly, Status, VCPUs, Memory(GB), Chargeback, and Expiration Date.
- My Requests:** A table listing requests with columns for Request Name, Assembly, No. of VMs, Total VCPUs, Total Memory (GB), Submission Date, Requested Duration, and Status.

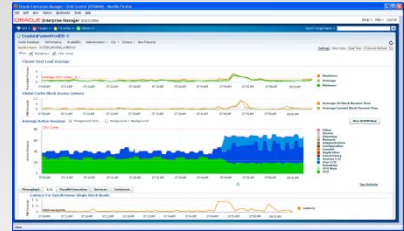
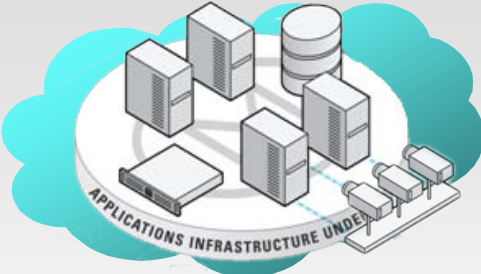
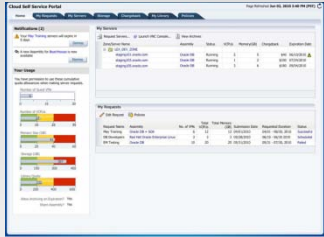
- ❑ Out-of-box console ; no additional set up required
- ❑ Rich service catalog:
 - Oracle VM Templates
 - Complete Assemblies
 - Database service
 - Java applications
 -
- ❑ Additional capabilities include
 - ❑ Basic resource monitoring
 - ❑ Chargeback information
 - ❑ Quota monitoring
- ❑ Cloud APIs – submitted to DMTF
 - ❑ RESTful APIs ideal for Cloud integrators

Policy based Resource Management

- Dynamically allocate resources based on pre-defined policies
 - Scale out and scale back actions to support Capacity On Demand
- There are two policy categories:
 - Schedule based
 - Invoke actions based on schedules. Example: Quiesce VMs on weekends
 - Performance based
 - Invoke actions based on performance (metrics) of targets
 - Example: Add a RAC node if the load node exceeds 90%



Complete Test Lifecycle Automation



Self Service Lab Management

Automatic Provisioning of Test Hardware, Software and Data

Integrated Performance Diagnostic



Define and Run Test Suits

- Faster Testing**
- Reduced Manual Effort**
- Quick Defect Discovery and Resolution**



Test Metering and Chargeback

- 2600 physical servers,
- 6000 VMs, 4 IT Admins
- 3500 developers
- 80% utilization 7x24



Submit
Notifications

Self-Service Application



DevOps - User: susan.wu

Hosts Reserve Organization Permissions Quotas Log

Current Backorders

Place in Backorder Queue	Image	Date Requested	Actions
28	Oracle Linux v4.0 (32-bit)	2011-06-15 10:55:40.711679	Cancel

1 backorder.

Reservations

Request new reservation

You have a MSDN license — Windows image options enabled

Reservation Type:

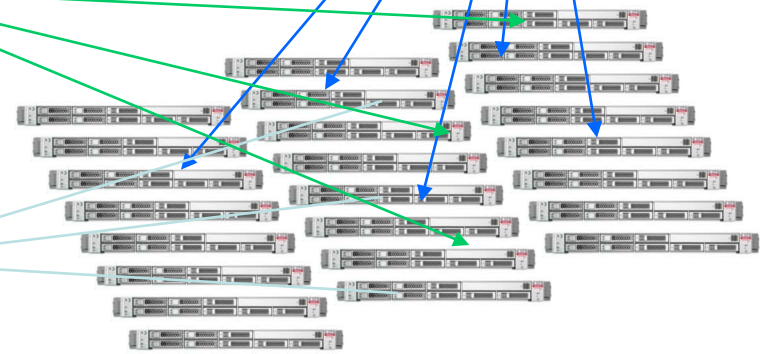
You are at your limit and unable to request more until you release some of yo



Metadata / Label Servers



Results

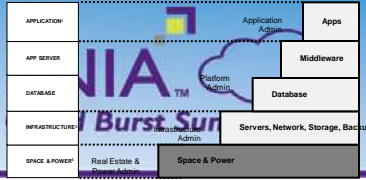


Hosts



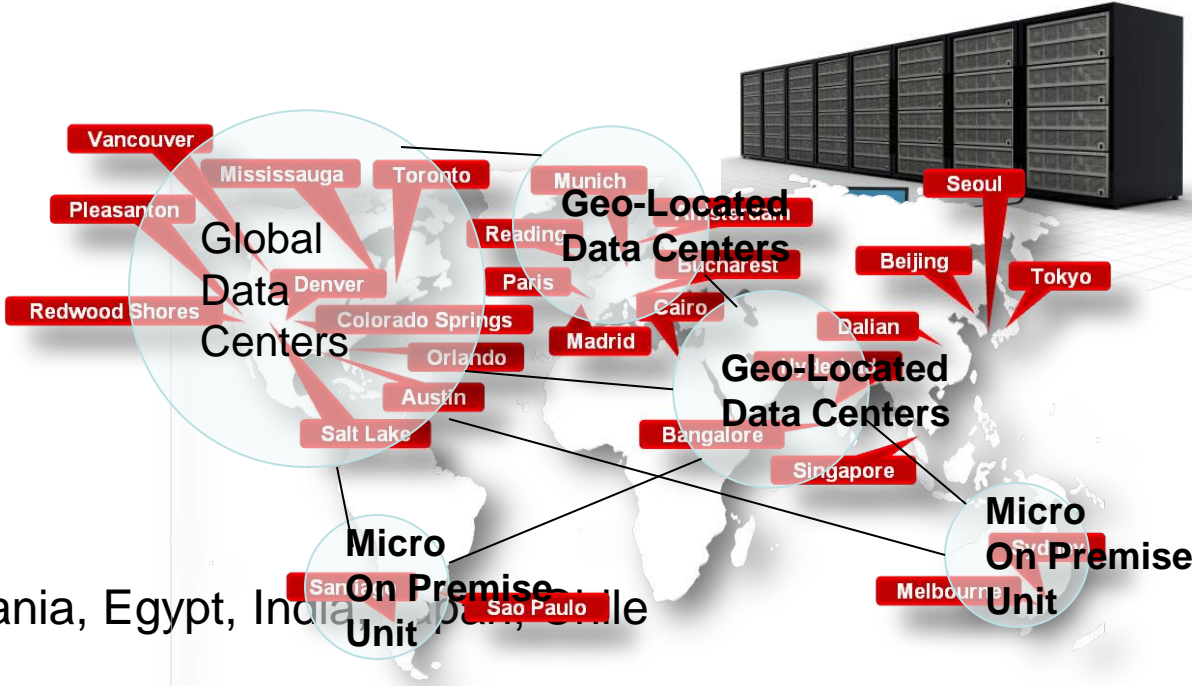
Insight Into Oracle Use Cases

Various Type of Requirements



Inter Connected Data Centers

- ▲ Global Data Centers
 - Austin, TX
 - Colorado Springs, CO
 - Sandy, UT
- ▲ Geo-Located Data Centers
- ▲ Micro On Premise Unit

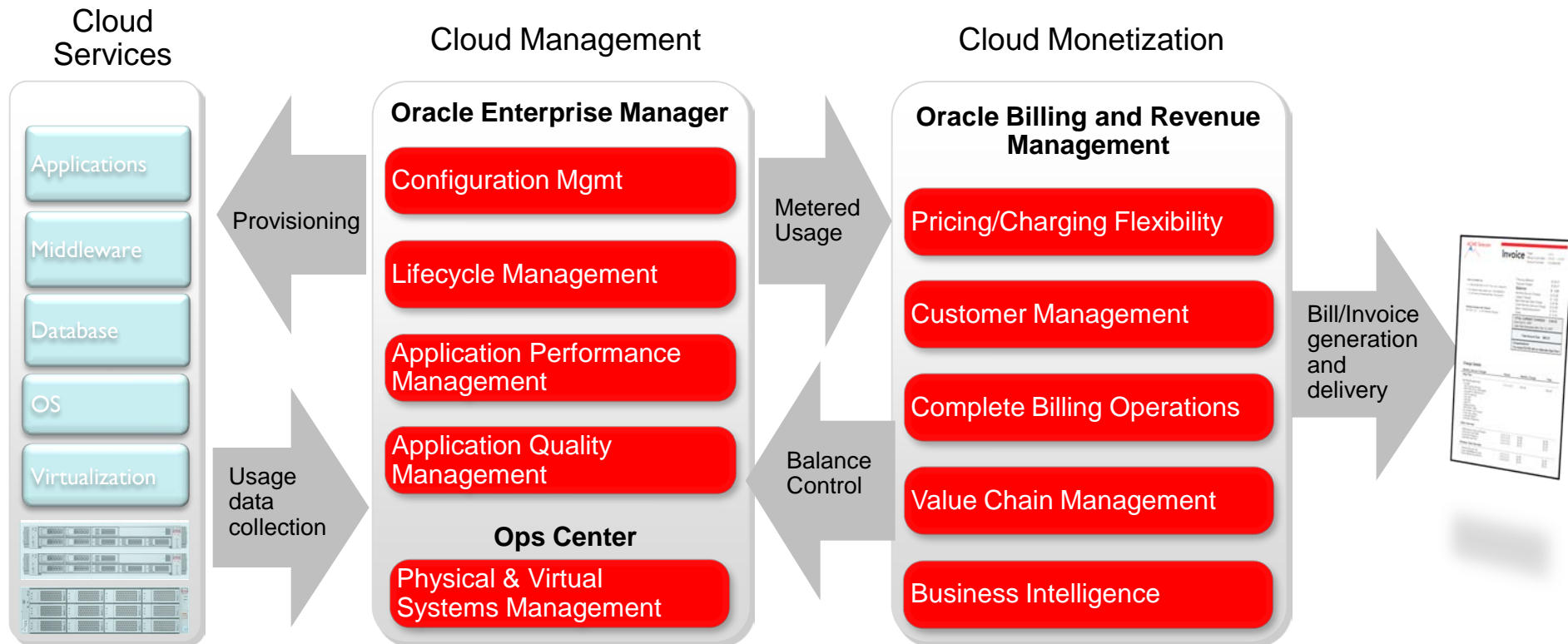


Still Globally Operated

- ▲ USA, Czech Republic, Romania, Egypt, India, Sao Paulo, Melbourne

Chargeback & Metering

Enterprise Manager + Billing and Revenue Management



Chargeback Metrics

- Flexibility to create Charge Plans based on Fixed, Configuration and Usage
- Service based metric tracking for schema based multi-tenancy

Target	Type	Configuration or Metrics
Database	Fixed	–
	Configuration	Version, edition, RAC nodes, licensed sessions, options, features
	Usage	DB time, CPU time, SQL executes, user transactions, disk reads/writes
Application Server	Fixed	–
	Configuration	Clustered, version, options
	Usage	Active sessions, active requests,
Host or VM	Fixed	–
	Configuration	CPU, allocated memory, disk size
	Usage	CPU utilization, memory usage, disk utilization,



Oracle Enterprise Manager 11g Resource Center

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