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## **Private Cloud with Fusion Middleware**

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# What is Cloud Computing?



## National Institute of Standards & Technology Definition

*“Cloud computing is a model for enabling convenient, on demand network access to a shared pool of configurable computing resources that can be rapidly provisioned and released with minimal management effort or service provider interaction.”*

### 5 Essential Characteristics

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

### 4 Deployment Models

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

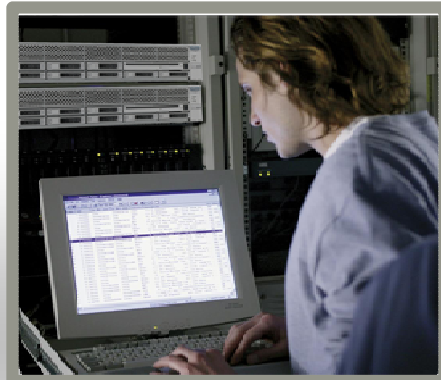
### 3 Service Models

- **SaaS**  
Software as a Service
- **PaaS**  
Platform as a Service
- **IaaS**  
Infrastructure as a Service

# Oracle Virtualization

## Industry's Most Complete Product Line

### SERVER VIRTUALIZATION



- Oracle VM Server for x86
- Oracle VM Server for SPARC (LDoms)
- Oracle Solaris Containers
- Dynamic Domains

### DESKTOP VIRTUALIZATION




- Oracle Virtual Desktop Infrastructure
- Sun Ray Clients
- Oracle Secure Global Desktop
- Oracle VM VirtualBox

The Full Application Stack...



...Delivered End-to-End.

# What's New in Oracle VM 3.0

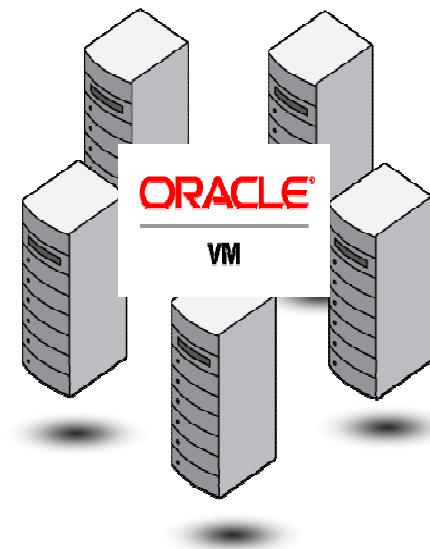


- **Significantly Enhanced Oracle VM Manager**
- **Dynamic, policy-based management and automation**
- **Centralized, automated network and storage configuration**
- **Improved ease of use**
- **Continued focus on very high performance and scalability**

# Oracle VM Server 3.0

## Server Performance & Scalability

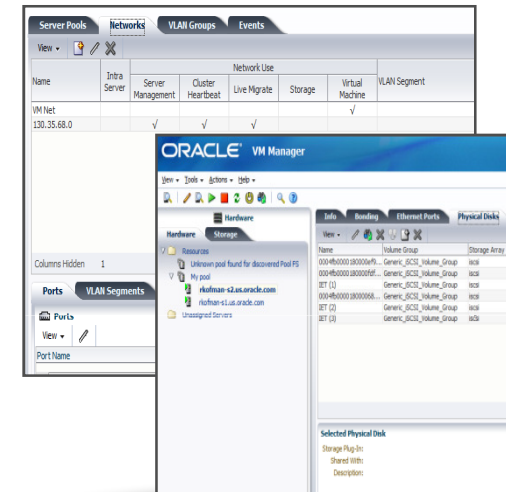
- Support for Linux, Solaris, and Microsoft Windows on x86 servers
- Support for PV- and hardware virtualized (HVM) virtual machines
- Up to 128 vCPUs per guest
  - 4X VMware vSphere5
  - Up to 160 physical CPUs per server tested
- Up to 1TB memory per guest tested
  - Up to 2TB physical per server tested



# Oracle VM Manager 3.0

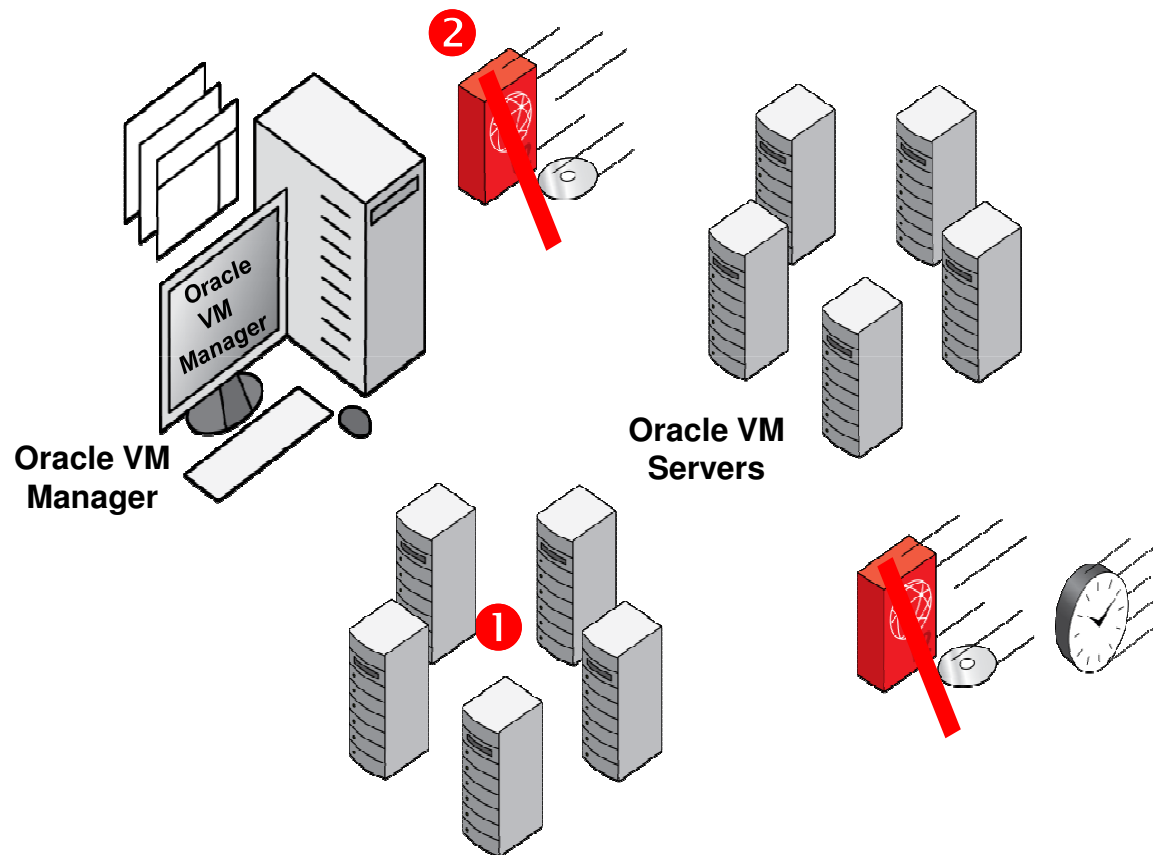
## Scalability to Support Your Entire Datacenter

- Manage hundreds or thousands of VMs centrally
- Centralized management server
  - Web browser-based: No client required
  - Enterprise-grade scalability included
    - WebLogic Server application server
    - Oracle Database
- Comprehensive
  - Advanced virtualization management included



# Simple Install of Server and Manager

Up and Running Fast

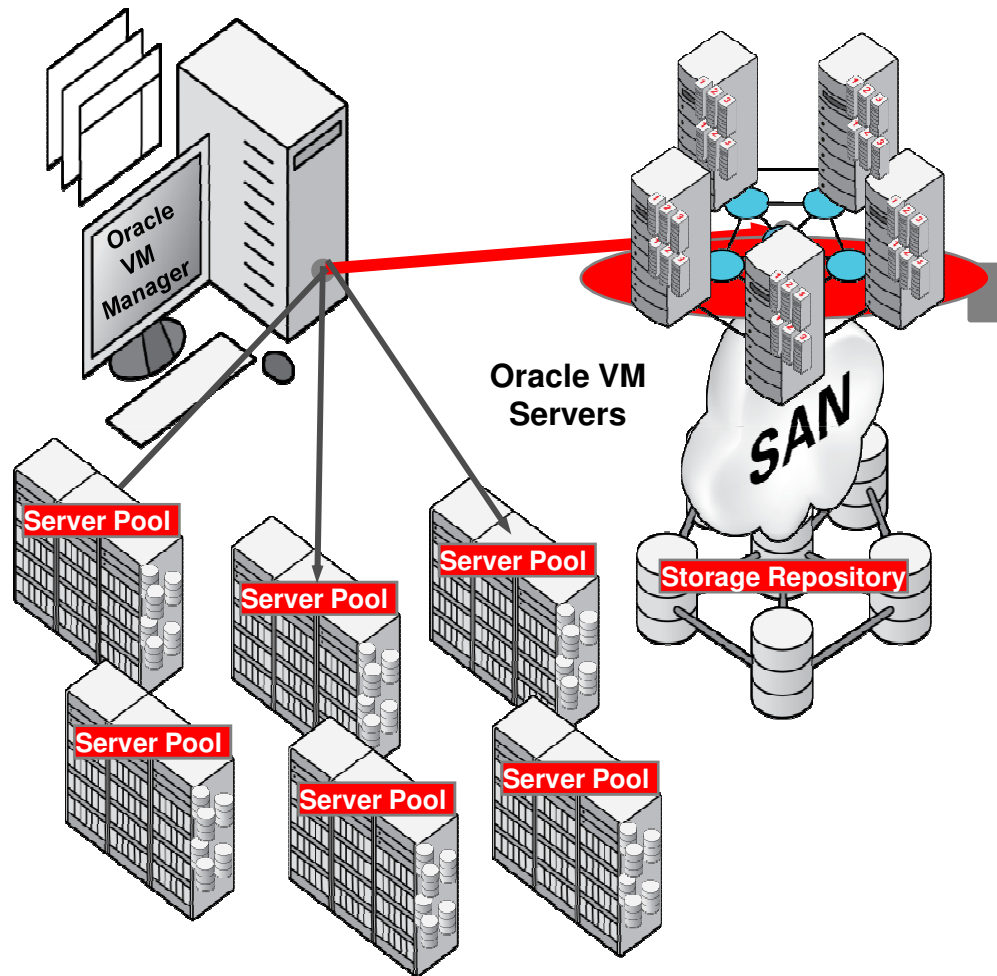


- Oracle VM Manager installation
- Oracle VM Server installation
- **NEW!** Automatically discover Oracle VM servers



# Server Pools, Networking, and Storage Centrally

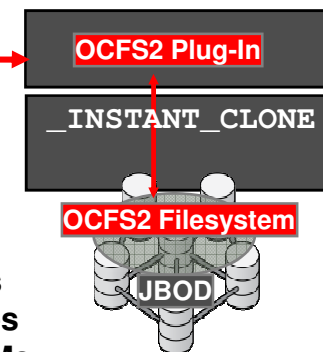
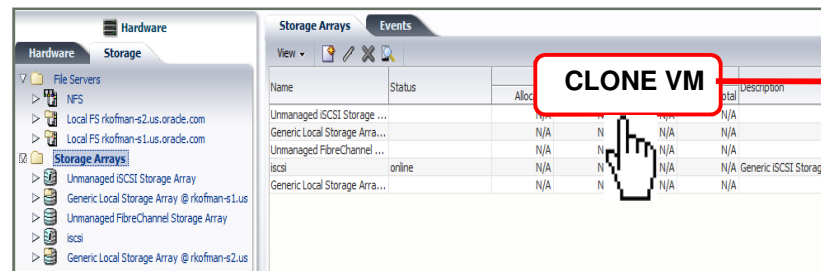
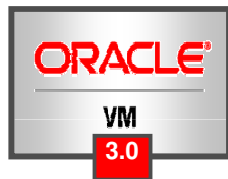
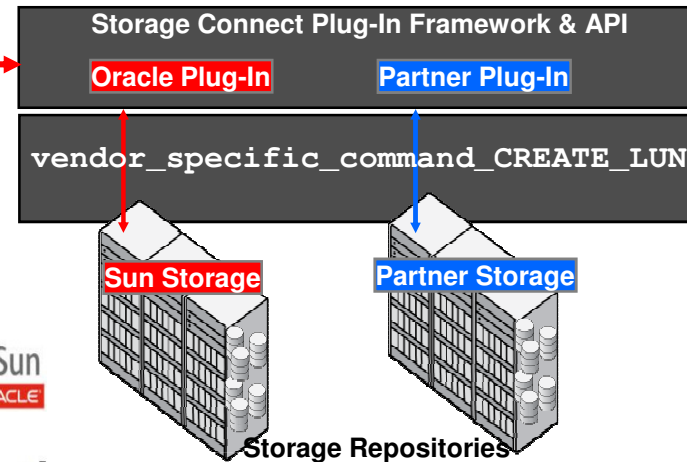
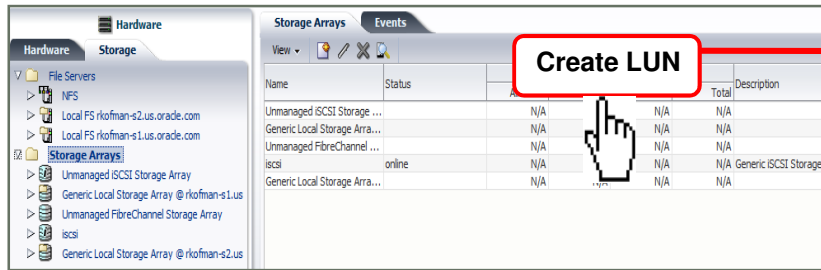
All from the Manager GUI...



- **NEW!** Policy-based Server Pool Management
- Guest VM creation and management
- Linux, Solaris, and Windows
- **NEW!** Server network configuration
- **NEW!** Storage Connect storage management

# Storage Connect

## Advanced Storage Operations



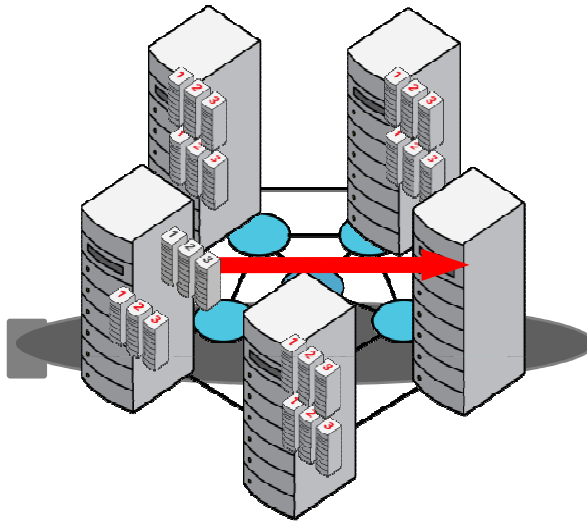
### Storage Connect Plug-Ins for Management...

- Oracle and 3<sup>rd</sup> party storage...from the Manager UI

### More than just provisioning...

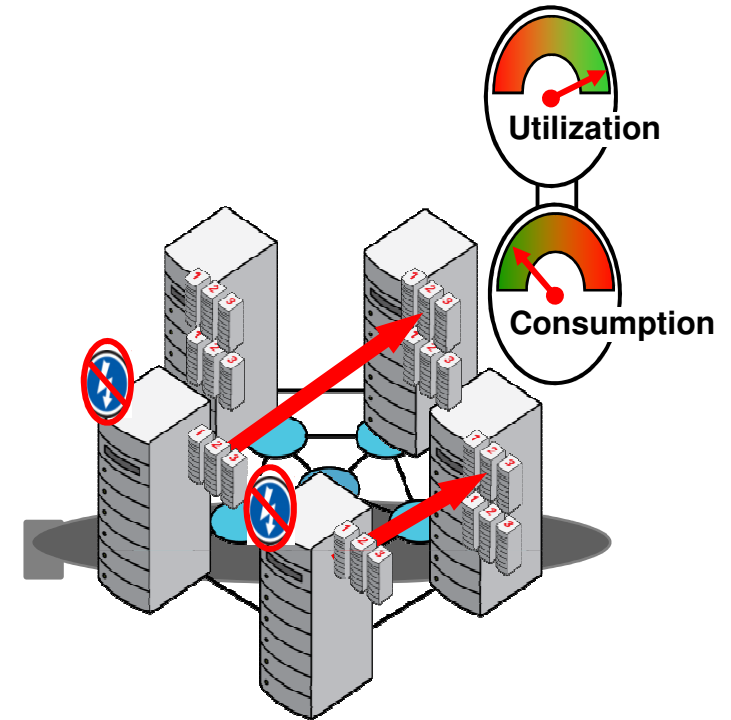
- Create LUNs or Volumes
- Expand LUNs or Volumes
- Associate, share with VMs

# Advanced Policy Management of VMs



## **NEW!** Dynamic Resource Scheduling (DRS)

- Live Migrate VMs based on server load
- Dynamically managed quality of service



## **NEW!** Dynamic Power Management (DPM)

- Automatically power-off under-utilized servers

## H.A. Auto-restart

- Automatically restart VMs on failed servers



# Oracle VM Templates

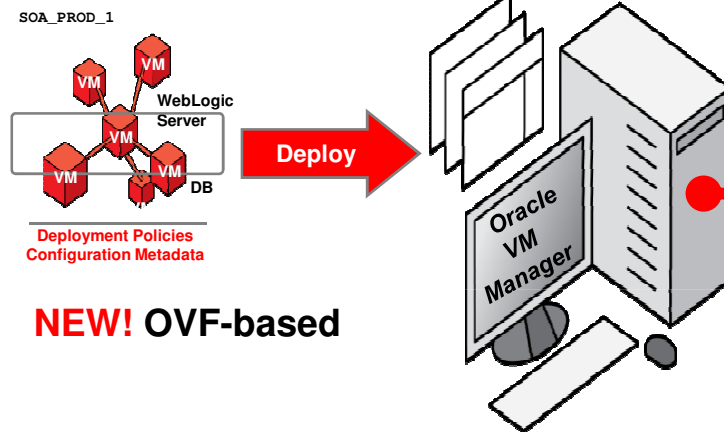
Rapid Deployment; 90+ Templates Available

- Pre-built, pre-configured, production-ready VM
- Apps, Databases, Middleware, OS
- Database 11g, WebLogic Server 11g, Siebel CRM, Enterprise Manager 11g, More...

# Support for Application Templates & Assemblies

Oracle VM Assembly:

Production Environment SOA\_PROD\_1

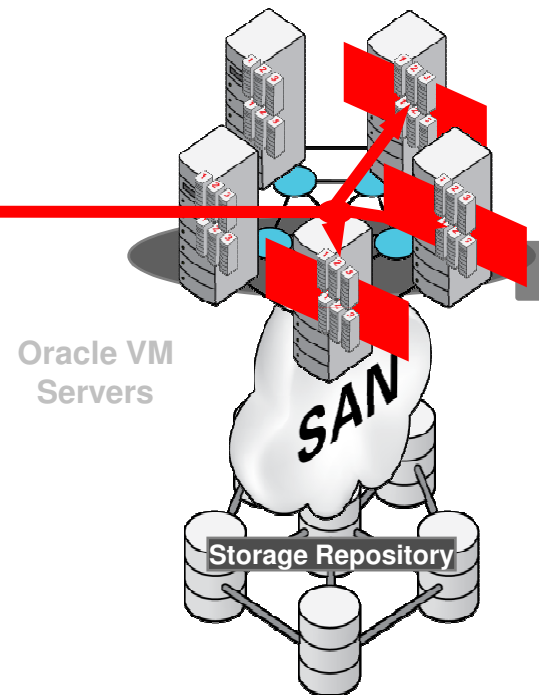


**NEW!** OVF-based

- Deploy Assembly into Oracle VM Manager as 'Golden Image'
- **NEW!** Guest VM API
- Direct integration between guest software and virtualization layer

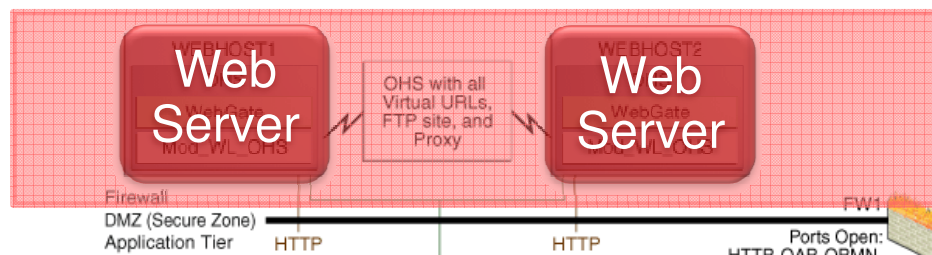
Deployed:

Production Environment SOA\_PROD\_1



# Typical Deployment Topology for Oracle SOA Suite

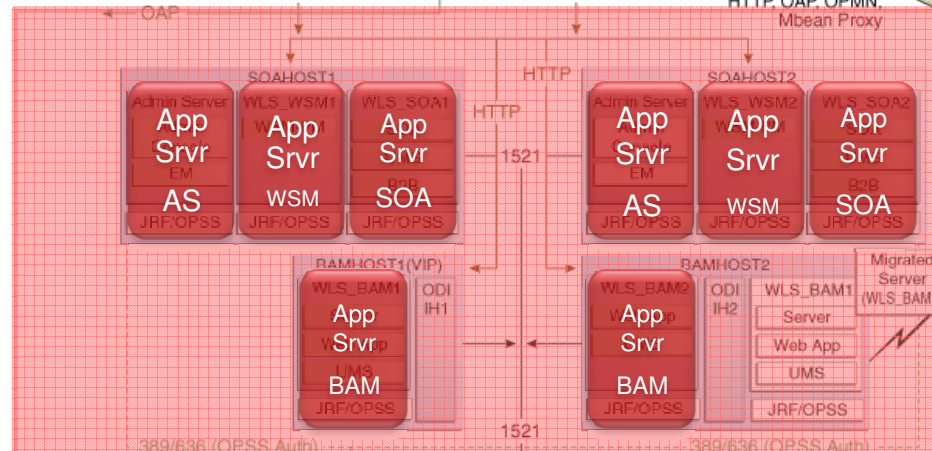
Web Tier



2 nodes

+

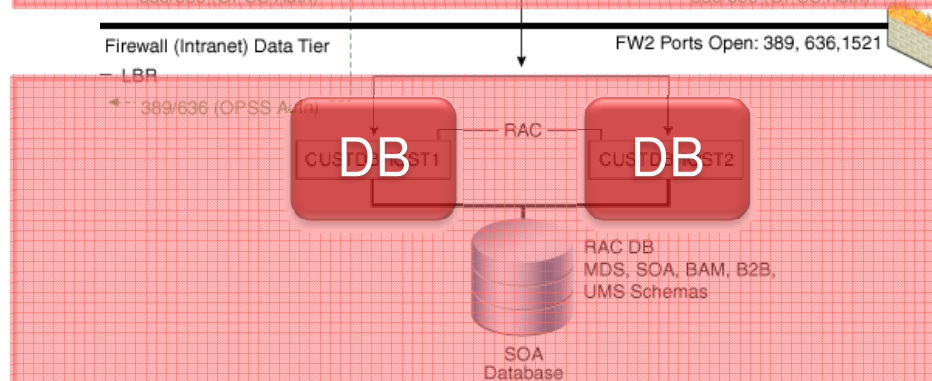
Application Tier



8 nodes

+

Data Tier



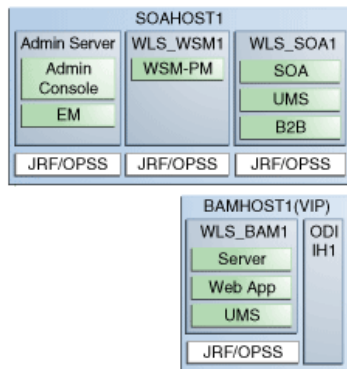
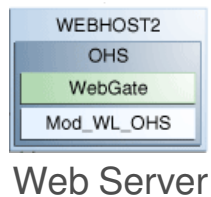
2 nodes

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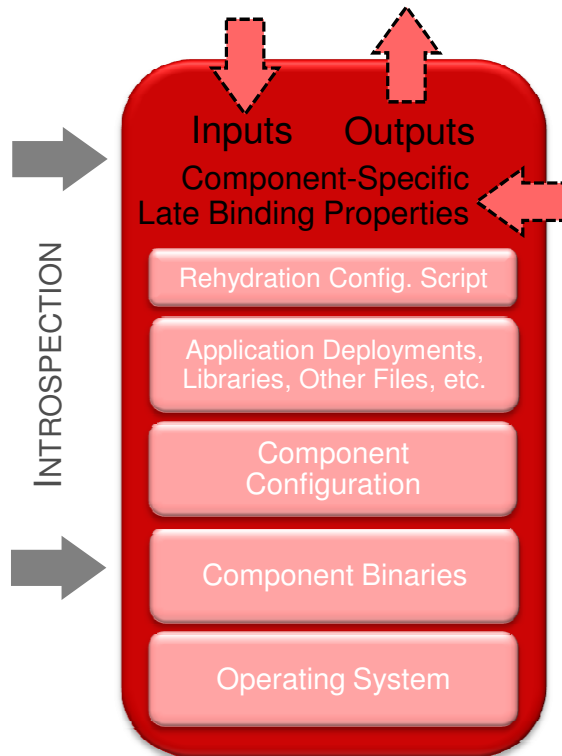
12 nodes

# STANDARDIZE: Appliances

## Reference Installation

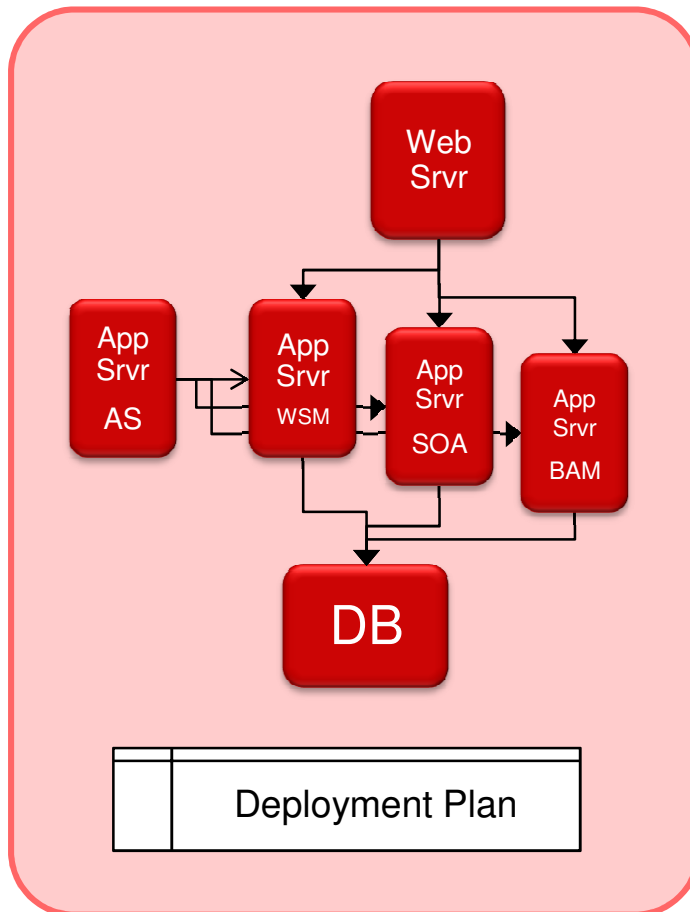


## Appliances



- Application-aware P2V
- Self-contained virtual disk images with all s/w to run single instance of a single component
- Customize base OS distrib.
- Component configuration and libraries from reference system captured during introspection
- Configurable properties set at deployment time
- Automatically packaged for target virtual platform

# TEMPLATIZE: Assemblies



- Blueprint describing complete multi-tier application topology
- Collection of all interrelated appliances
- Start-order dependencies
- Allow connection to external resources from appliances (e.g. DB, LDAP server, mail server, web services endpoints, etc.)
- Customize deployment properties for all appliances using Deployment Plan
- Treated as a single deployment unit

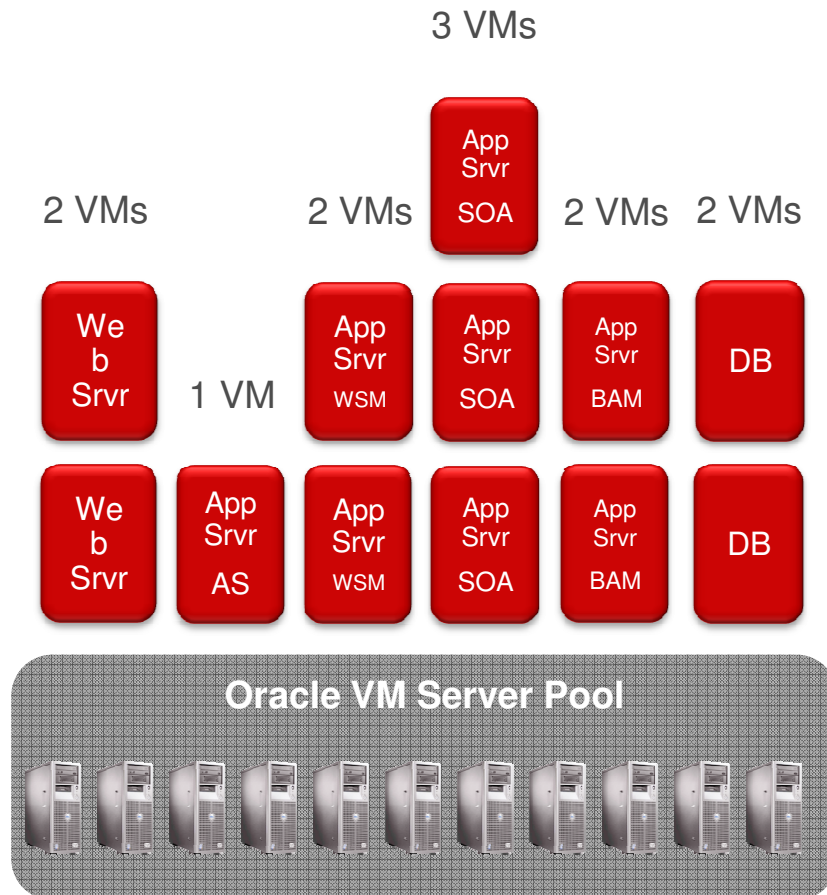


# TEMPLATIZE: Deployment Plans

	<p>Appliances</p> <ul style="list-style-type: none"> <li>• Scaling             <ul style="list-style-type: none"> <li>• Min, Max, Initial</li> </ul> </li> <li>• VM Properties             <ul style="list-style-type: none"> <li>• CPU, Memory</li> </ul> </li> <li>• Component Properties             <ul style="list-style-type: none"> <li>• JDBC, etc.</li> </ul> </li> <li>• Networking Properties             <ul style="list-style-type: none"> <li>• IP address</li> </ul> </li> <li>• User Properties             <ul style="list-style-type: none"> <li>• Login, Passwords</li> </ul> </li> </ul>

- Overrides for configurable properties for all appliances
- Multiple deployment plans for same assembly
- Use CLI commands to script assembly deployment with different deployment plans

# AUTOMATE: Orchestrated Deployment

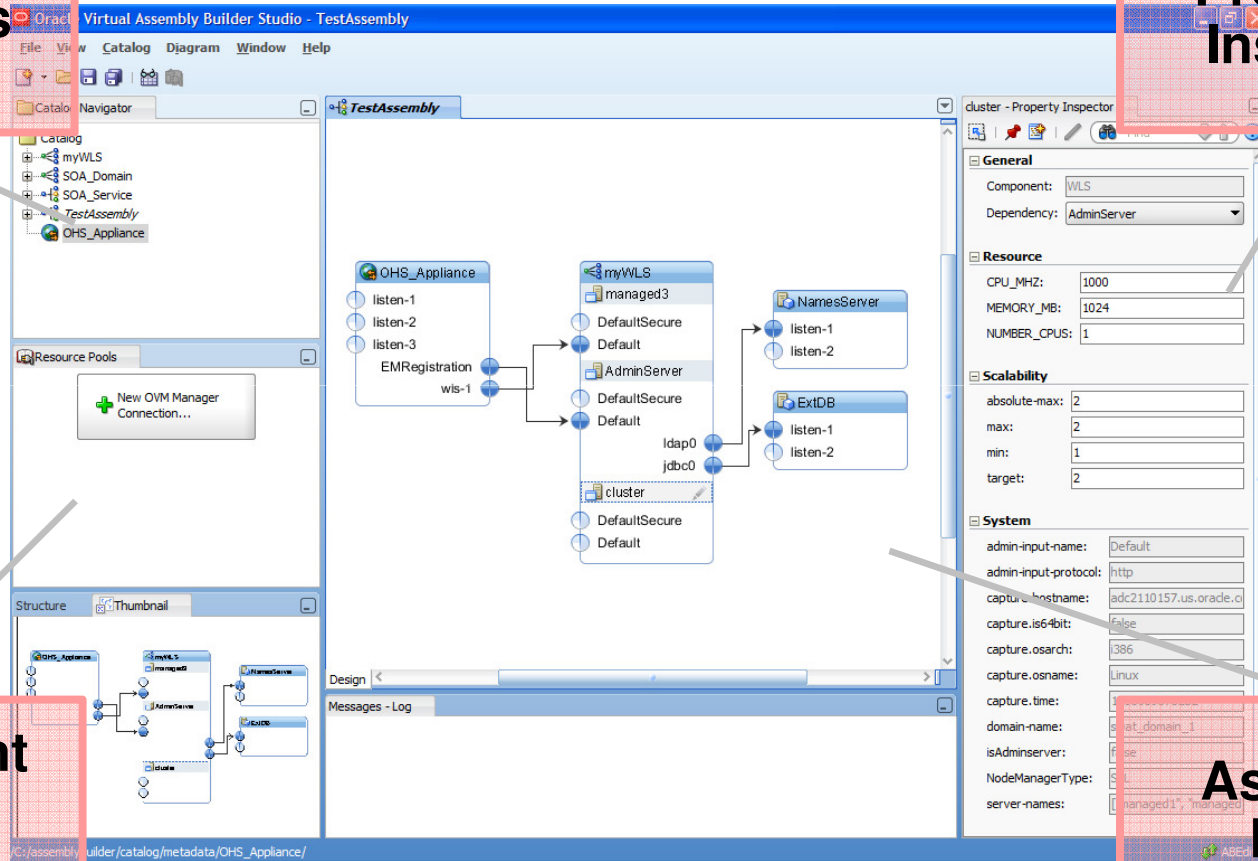


- Deploy and configure collection all VM instances within assembly with single command
  - Start specified number of instances for all appliances
  - Establish defined relationships between appliances
- VM lifecycle
  - Stage → Prepare → Start
- Software lifecycle within each VM
  - Use properties from Deployment Plan
  - Start OS → Configure OS → Configure networking
  - Start component → Configure component
  - Apply properties picked up from other appliances
  - Listen for component-specific “ready metric”

# Oracle Virtual Assembly Builder Studio

**Assemblies,  
Appliances  
Catalog**

**Properties  
Inspector**



**Deployment  
Resource  
Pools**

**Assembly  
Editor**

# Self-Service Access



- Infrastructure-as-a-Service (IaaS)
  - x86 and SPARC
- Platform-as-a-Service (PaaS)
  - Database (DBaaS), Java,.....
  - Physical and virtual environment support
- Out-of-box Portal and APIs

The screenshot displays the Oracle Cloud Self-Service Portal interface. It includes a navigation menu at the top with options like Home, My Requests, My Servers, Storage, Chargeback, My Library, Policies, and My Preferences. The main content area is divided into several sections:

- Notifications:** Servers Due to Expire in Next 7 Days: 0; Software Published in Last 7 Days: 7; New SalesOrderApp assembly Available.
- Your Usage:** You have permission to use these cumulative quota allowances when making server and storage requests. It includes four progress bars for Servers (5), CPUs (6), Memory (6 GB), and Local Storage (94.19 GB).
- Servers Expiring Soon:** A table listing servers with columns for Server Name, Status, Virtual Data Center, Operating System, and Server Size.
- Latest Requests:** A table listing recent requests with columns for Name, Status, Submission Date, Start Date, End Date, and Type.

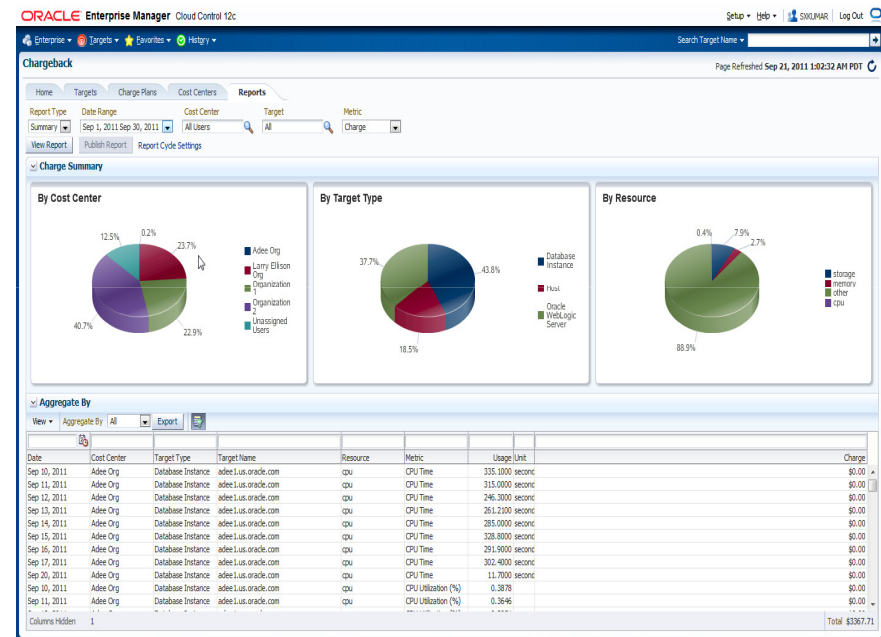
Server Name	Status	Virtual Data Center	Operating System	Server Size
mySite/myWfs/AdminServer:mySite_0	↑	EastCoast	None	Custom
mySite/myWfs/Cluster-0_vm0:mySite_0	↑	EastCoast	None	Custom
mySite/myWfs/Cluster-0_vm0:mySite	↑	EastCoast	None	Custom
mySite/myWfs/AdminServer:mySite	↑	EastCoast	None	Custom
OELS.5.32Bit_server	↑	EastCoast	None	Custom

Name	Status	Submission Date	Start Date	End Date	Type
JOHNSMITH - Mon Sep 19 Successful	Successful	Sep 19, 2011	Sep 19, 2011		Assembly Deployment
JOHNSMITH - Fri Sep 16 1 Successful	Successful	Sep 16, 2011	Sep 17, 2011		Template Deployment
JOHNSMITH - Fri Sep 16 1 Successful	Successful	Sep 16, 2011	Sep 17, 2011		Assembly Deployment
JOHNSMITH - Fri Sep 16 C Successful	Successful	Sep 16, 2011	Sep 16, 2011		Template Deployment
JOHNSMITH - Thu Sep 15 Successful	Successful	Sep 15, 2011	Sep 16, 2011		Assembly Deployment

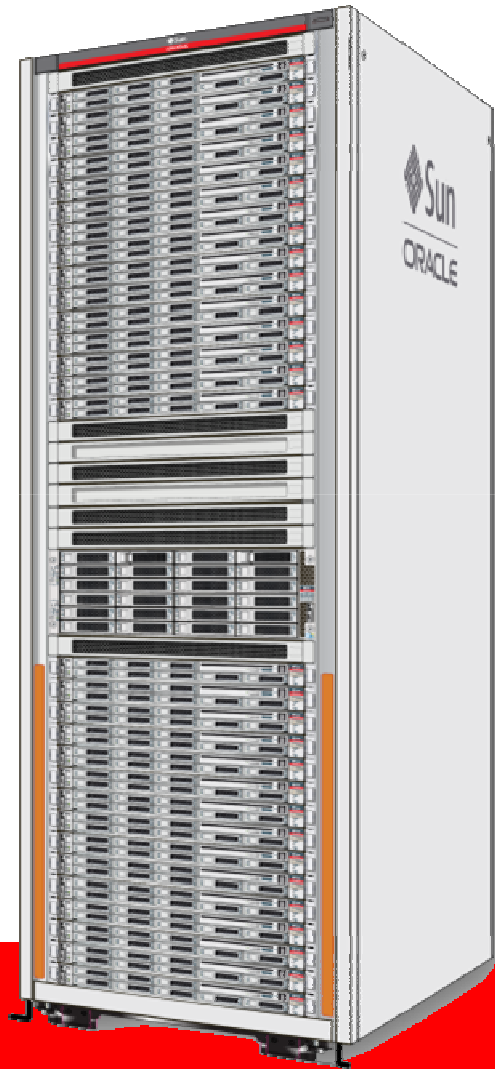
# Meter, Charge and Optimize Cloud Services



- Application-to-Disk resource metering
- Chargeback/Showback
- Oracle Billing and Revenue Management (BRM) Integration
- Optimize performance, capacity, QoS, costs...



## Middleware Machine - ExaLogic



- **Extreme Performance**

- Extensible InfiniBand fabric for the entire middleware stack
- Integrated high-performance software 7 load balancer

- **Plug and Play**

- Oracle Fusion Middleware certification and OOTB optimized tuning and component integration
- Native Exadata integration via IB and GridLink for Exadata

- **Mainframe Quality of Service**

- Redundancy and fault tolerance at every level
- Comprehensive OA&M integration
- Factory assembled and tested

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## Summary

- Server virtualization provides flexibility and resource efficiency... but it's not enough
- Improve operations efficiency by creating standardized building blocks for application components
- Create a repeatable process for configuring and deploying complete application infrastructure
- Automate the process

