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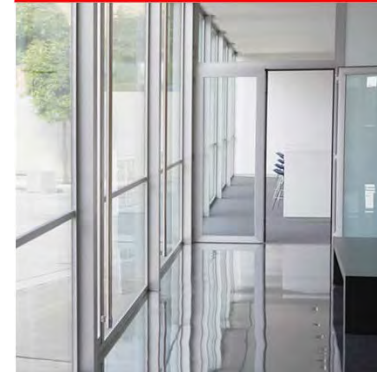
Virtualization and Cloud Deployments of Oracle E-Business Suite

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Program Agenda

- **Why Clouds Matter to You**
- Oracle Cloud and Virtualization Technology
- E-Business Suite Cloud Capabilities
- Your Cloud Action Plan



Why Clouds Matter to You

- Improve hardware utilization
- Speed-up provisioning
- Energize end-user satisfaction
- Increase IT productivity

- Or take the benefits as savings...

Hardware (Mis)Utilization

Problem Identification

- Business workloads have diverse and variable characteristics
- Need to size resources for spikes
 - Thursday-night spikes
 - Quarter-close spikes
 - Worst-case scenarios
- Spike synchronization unknown
- Resulting Problem: Low hardware utilization rates

Hardware (Mis)Utilization

Problem: Low hardware utilization rates

- Solution: Elastic capacity through virtualization
- Use physical hardware for virtual machines only when the resources are needed
 - Add 40 middle tiers for 4 hours on Thursdays
 - Recognize and respond to unexpected spikes in minutes
- Utilization of hardware: from 20-30% to 60-70%

Top Use Cases for Virtualized Environments

1. SI's implementation / development environments

- Pre-configured starter environments to jump start implementations
- Usage profile: 12 hours/day from US, 12 hours/day from India
- Desired availability: immediate
- Length of usage: months

2. Short-term disposable test environment

- Desired availability: within 1 week
- Length of usage: 6-10 weeks

Top Use Cases for Virtualized Environments

3. Proof-of-concept environments

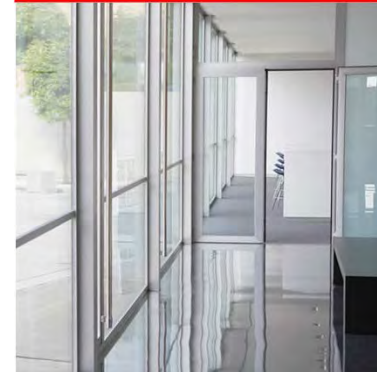
- Desired availability: within 1 hour
- Length of usage: 2 days – 2 weeks

4. Backup and Disaster Recovery

- Off-site or in cloud
- Usage profile: daily (or more frequent) backup of whole machine
- Desired availability: immediate
- Length of usage: days – weeks – months

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Why the Virtualization Choice Matters

It's Increasingly About Application Knowledge

- The goal is not “virtualization” itself
- Virtualization must enable the entire stack to be..
 - Easier to **DEPLOY**
 - Easier to **MANAGE**
 - Easier to **SUPPORT**
- Doing this well means VMs can no longer be “black-boxes” to the virtualization and management
 - Integration of application & virtualization becoming critical to derive maximum efficiency

Application Aware Virtualization

Full Stack Data Center Virtualization



- Most comprehensive
- Fully tested with applications
- Designed for full stack deployments
- Integrated, full stack management
- Integrated support
- Beyond consolidation ... complete

Oracle VM Server Virtualization Products

- Virtualization solution for both Oracle and non-Oracle applications
- The only server virtualization software supported and certified for all Oracle software



Free to download
Enterprise-quality support
Real-world deployment testing
Risk-free virtualization

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Virtualization and Storage

Economies of Virtualization

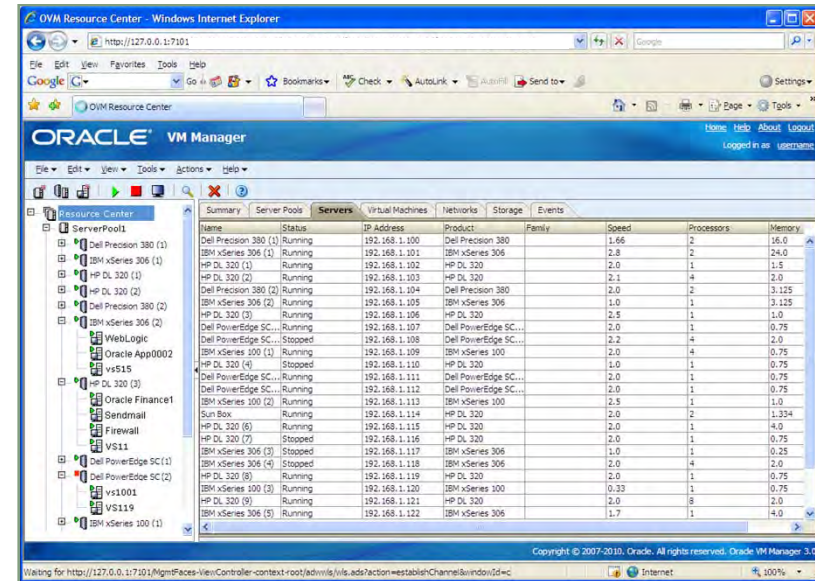
- Unused VM's CPU, memory, network are free
- Storage costs, whether used or not
- Minimize unused storage costs
 - Most virtual environments are highly similar
- Use shared storage for binaries
- Use file systems with block-level normalization for dbf's
 - For example, ZFS does not duplicate identical blocks

Oracle VM Manager

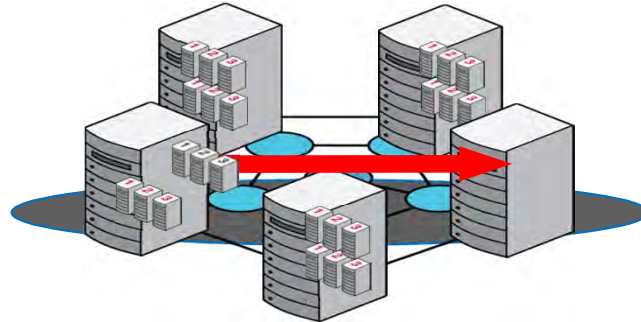
Virtualization Management: Included

- **Oracle VM Manager**

- Centralized, web browser-based console
- Advanced virtualization management for x86/x64 environments including
 - VM Live Migration
 - HA / auto-restart
 - Load balancing...
- Available stand-alone or as an integrated Enterprise Manager Pack

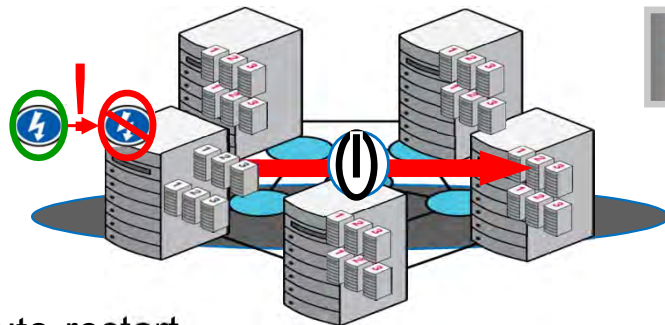


NEW! Advanced Policy Management of VMs



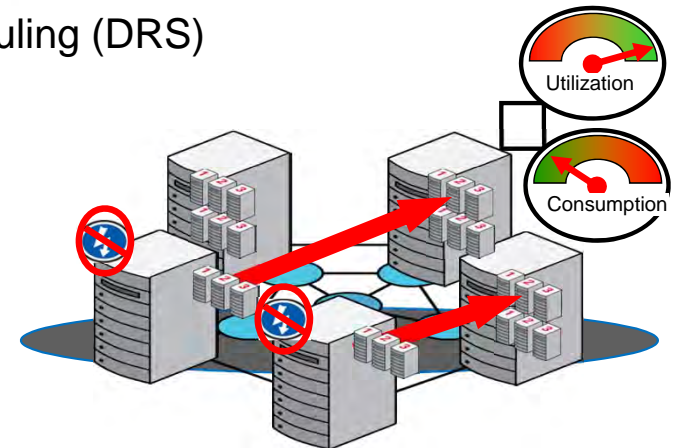
NEW! Dynamic Resource Scheduling (DRS)

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



H.A. Auto-restart

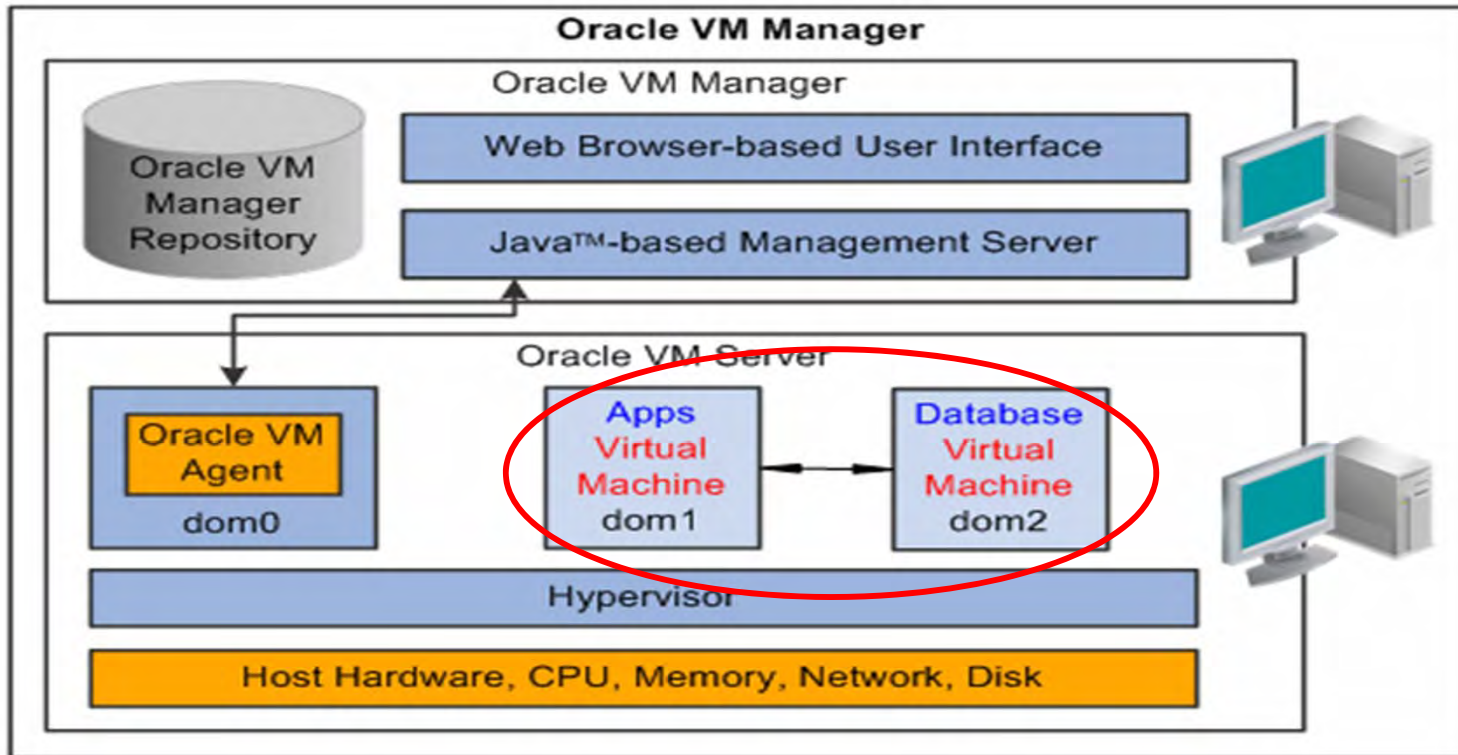
- Automatically restart VM(s) on Server- or VM failure
- True clusterware logic for reliable failure detection
- Triggers even if Oracle VM Manager is unavailable



NEW! Dynamic Power Management (DPM)

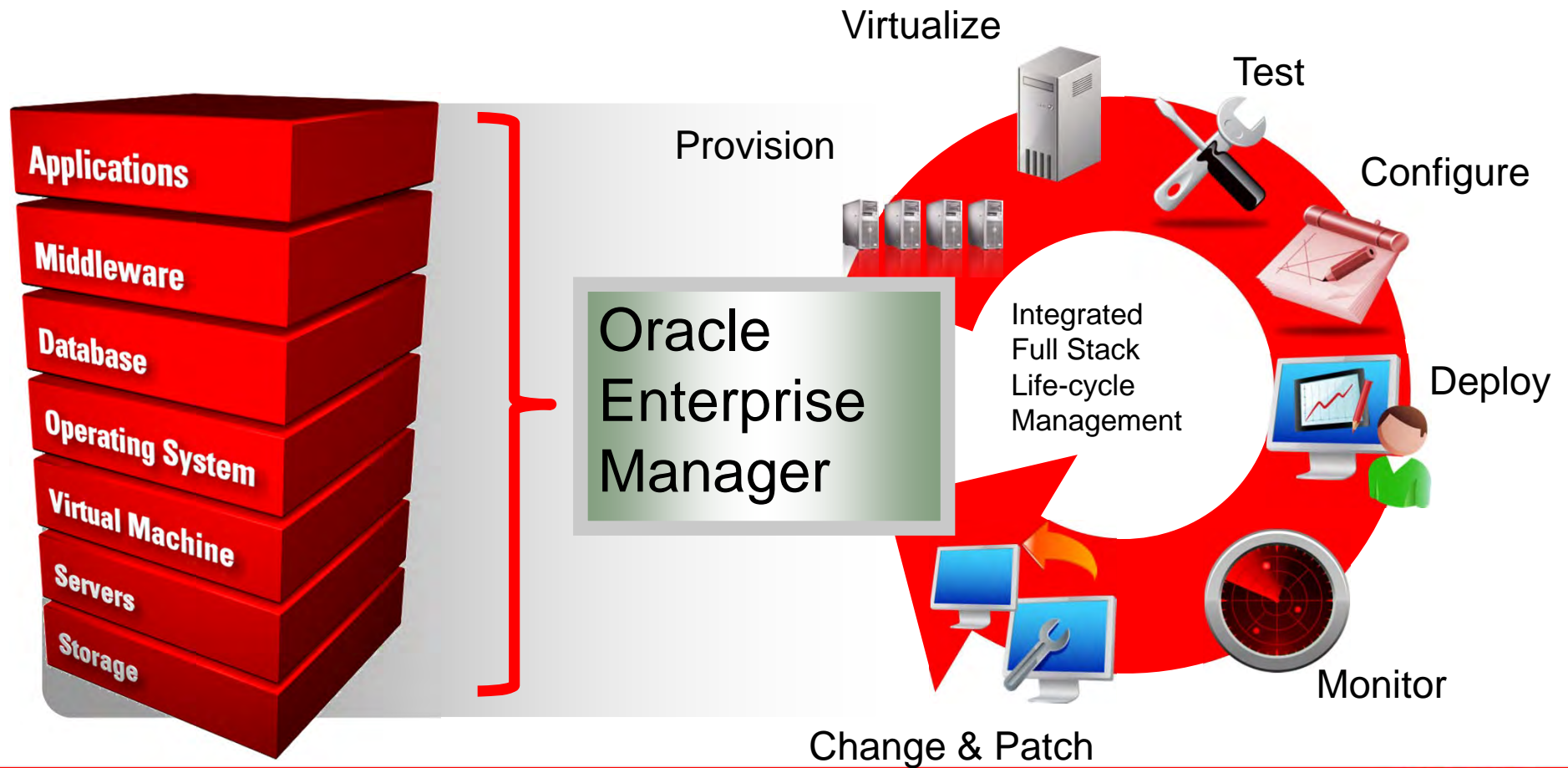
- Automatically power-off under-utilized servers
- Consolidate VMs onto fewest servers
- Reverse the process when load increases

E-Business Suite Virtualization Templates



Sample Oracle VM architecture with deployed E-Business Suite templates

Full Stack Management



Enterprise Manager 12c Cloud Capabilities

- Full stack is being managed
- Holistic provisioning of whole system
 - OS
 - Technology: database, middleware
 - Applications
 - Multiple VM's
- Resource usage monitoring and chargeback
- Elastic resource management

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Select E-Business Suite Cloud Capabilities

- E-Business Suite Oracle VM Templates
- Release12 Sparse Middle Tier Oracle VM Template
- Virtualization Kit
- Elastic Software Architecture
- Capacity Redistribution
- High Availability and Disaster Recovery

E-Business Suite Virtualization Templates

Self-contained EBS 12 system in two Oracle VM images

- EBS 12.1.3 Prod or Vision Database tier (OEL 5 + 11.2 DB)
- EBS 12.1.3 Application Server tier (OEL 5)
- 32-bit and 64-bit

- Other Published Templates
 - EBS 12.1.1 Vision Demo Database tier (OEL5.3, 11.1.0.7 DB)
 - EBS 12.1.1 Application Server tier (OEL 5.3)

Certified Operating Systems

Linux x86 32-bit

- 11.5.10 CU2 with 11i.ATG_PF.H.RUP5 ([Patch 5473858](#)) or later
- 12.0.2 (RUP2) or later (including 12.1)

Linux 64-bit – Oracle Enterprise Linux 4 on x86-64

- 12.0.3 or later (including 12.1)

Linux 64-bit – Oracle Enterprise Linux 5 on x86-64

- 12.0.4 or later (including 12.1)

Windows Server 2003 (32-bit) with PV driver v1.0.8 or higher

- 12.0.4 or later (including 12.1)

See Notes [465915.1](#) / [464754.1](#)

Release 12 Sparse Templates

- Sparse R12.x Mid-Tier Template
 - Compact: template <2GB, VM only 8GB on disk
 - Re-uses an existing shared file system
 - Works with any R12 code level
 - Minimizes number of templates in library
 - Expands existing physical or virtual environments
 - Creates hybrid physical/virtual environments
 - Clones existing mid-tiers with minimal overhead

Oracle VM E-Business Suite Virtualization Kit

- Create an Oracle VM template from your existing E-Business Suite instance
- Create new E-Business Suite instances using the Oracle VM template
- How? Use Virtualization Kit scripts to:
 - Bootstrap individual virtual machines, such as network setup
 - Initialize an E-Business Suite node configuration, such as instance name
 - Integrate E-Business Suite software running across different virtual machines

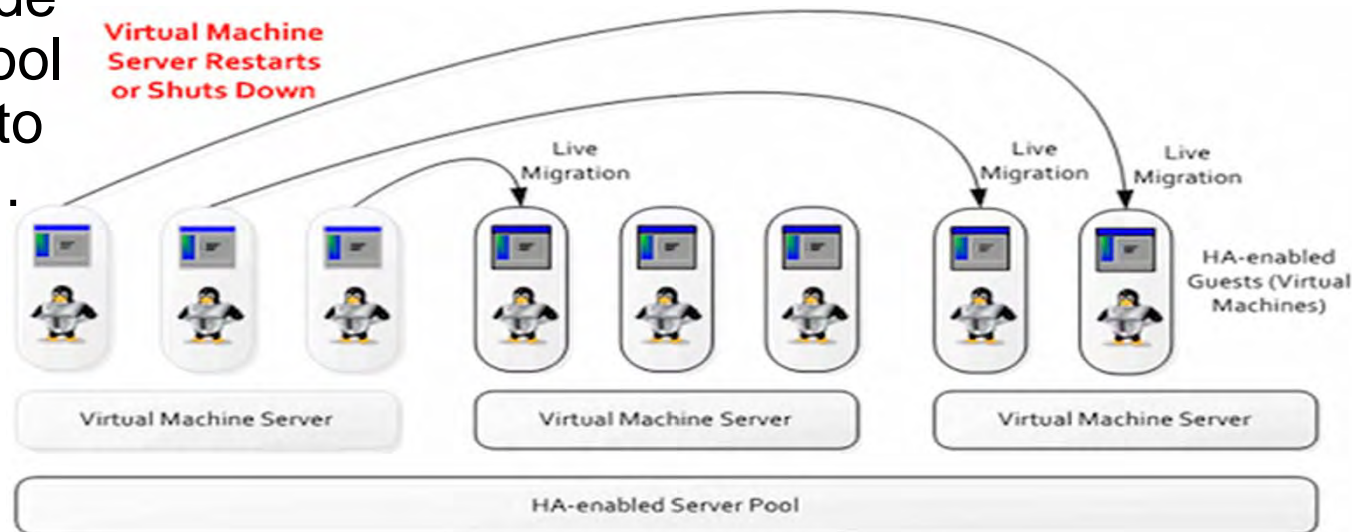
Elastic Software Architecture

- Elastic = instance scale adjustments in real time
- Recognize resource bottlenecks
 - Default extendable rules
- Add resources to starved parts of the system
 - More JVM's, more Forms middle tiers, more batch nodes
- Consume the extra resources
 - Oracle E-Business Suite software architecture capability

Capacity Redistribution

Live migration of application tier between nodes!

- Conventional application tier failures
logout all users on a failed node
- End-user sessions
on one virtual node
in a VM server pool
can be migrated to
a different node...
transparently



HA with Virtualization & DR with the Cloud

- On demand, transparent re-provisioning
- Bringing amazing HA features to everyday hardware
 - Live Migration of Oracle VM virtual machines
 - Covers all processes: database, app/web server, CP
 - Covers all nodes: no sacrifices due to expense
- Re-provisioning to off-site target location
 - Copy running VM's to DR site
 - If some data loss is acceptable, focus on machine instead of data

E-Business Suite Cloud Capabilities

More

- Performance
- Security
- Ecosystem Integration
- Private and Public Clouds
- Provisioning, Usage Chargeback
- Exalogic Elastic Cloud

E-Business Suite on Oracle VM Performance

- Partnered with IBM on performance benchmark
- Tested EBS 12.1.2 on Oracle VM 2.2
- Ran batch and online workloads on Oracle VM and standalone / on bare hardware
 - Payroll batch load
 - Select online transactions (AR, INV, FA, GL)

E-Business Suite on Oracle VM Performance

Great Results

- Response time and duration of runs essentially the same
- Negligible CPU overhead, minimal memory requirement
 - Maximum spikes of **2% to 3%** of 1 shared CPU core
 - 0.5 GB of memory dedicated to OVS
- Similar to results observed with JDE on Oracle VM by IBM/Oracle

Security for Oracle VM Templates

- Centralized OS hardening
 - JEOS
 - Configurations
- Preserve best security practices
 - Across the stack
 - Centralized implementation and management
- Optimal use of security resources
 - In depth focus on templates instead of reviewing individual machines

Ecosystem Integration

- Capture all ecosystem VM's
- Existing advanced configurations for automated reintegration of E-Business Suite and its ecosystem
- Future: E-Business Suite assemblies with external ecosystems

Fast Self-Service Provisioning

- First time boot and configuration of Virtual Machines for an two node environment takes 30 minutes
- “Warmed up” VM’s turn-on in 2-3 minutes
- Simple provisioning apps administer and automate the provisioning approval workflow
- Oracle Private Cloud in Oracle Enterprise Manager 12c

Chargeback in Clouds

- Goal: efficient and prioritized usage of resources
- Enabled by clear accounting of hardware usage
 - Physical resource groups, e.g. this hw serves this pool
 - Resource allocation groups, e.g. this pool serves this org
 - Internal chargeback for actual usage, e.g. these projects used the resources

Oracle Exalogic Elastic Cloud



Performance, reliability, and simplicity

- Java EE Performance improved up to 10x
- Foundation for Mission Critical Cloud
- Easy-to-own Engineered System

Certified with E-Business Suite

- Eliminate the need for multiple Applications tiers

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Your Cloud Action Plan

Seven Easy Steps to Unlock Cloud Savings

1. Setup Oracle Virtual Server
2. Experiment with delivered 12.1.3 templates
3. “Templatize” your E-Business Suite instance
4. Refine your template
5. Add virtual nodes to your dev / test instances
6. Experiment with cloud provisioning and chargeback
7. Move your production instance into your cloud

Private Clouds Extract More Value

From Existing Computing Resources

- IT Departments can
 - Get **more virtual hardware** out of your hardware
 - Free up administrators' **time**
 - Enjoy more **budget flexibility**
- End users can
 - Get environment requests fulfilled **faster**
 - Use **more** environments
 - Enjoy **simpler** provisioning tools

When to Use Public Clouds

- If you lack available internal resources, but want to explore immediately
- Largest obstacles to public cloud usage
 - Security approvals
 - Time to transfer sanitized database
 - Institutional comfort
- Amazon's Virtual Private Cloud will allow for your virtual machine to migrate from internal to external hardware

Full Oracle Software Stack Certified and Supported on Oracle VM within Amazon EC2

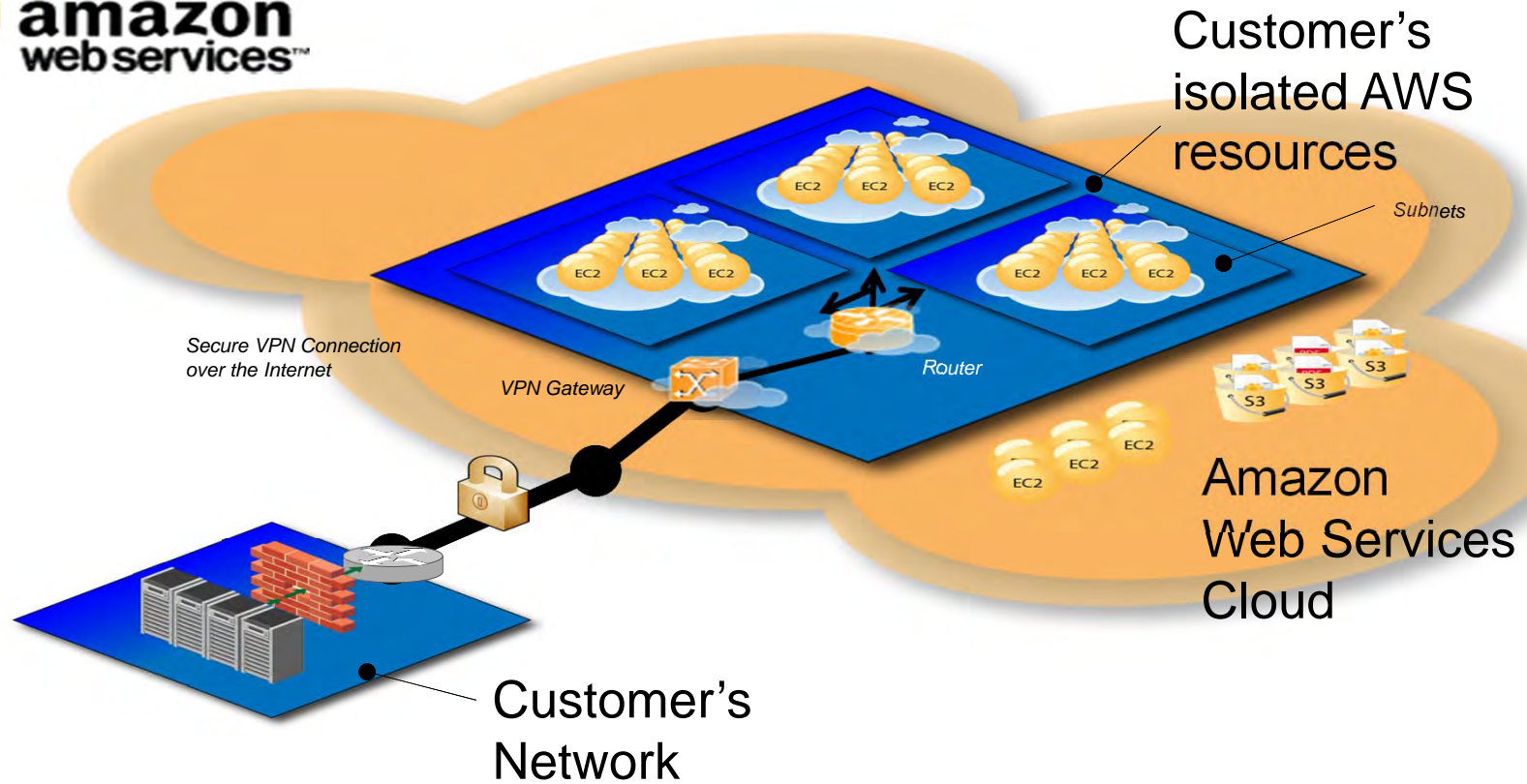


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supported

- Amazon EC2 supports Oracle VM
- Fully certified and supported: Oracle Database, Oracle Fusion Middleware, Oracle Applications
- Oracle license portability
- Oracle Unbreakable Linux support and Amazon Premium Support
- Amazon Machine Images (AMIs) based on Oracle VM Templates

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Amazon Virtual Private Cloud



Using Oracle VM Templates with AWS EC2 Environments Backed with Oracle VM

- Support and licensing almost identical
 - Oracle products deployed on Oracle VM
 - On-premise: customers' physical hardware
 - AWS EC2-on-OracleVM: Amazon's physical hardware
 - Main differences:
 - Rapid provisioning and operational costing of AWS
 - Products licensed on processor based metrics might require hard partitioning
 - See cloud licensing policy document for details and exceptions

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Q&A

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Hardware and Software

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Engineered to Work Together

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