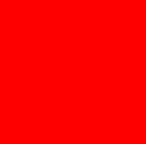





ORACLE®

Virtualization Management Strategy

Wim Coekaerts
Senior Vice President Virtualization and Linux engineering



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 Strategy

ORACLE®
VIRTUALIZATION

Hardware and Software

ORACLE®

Engineered to Work Together

Overview

- Oracle VM product family
- Oracle VM for SPARC roadmap
- Oracle VM Management
- Full stack Management
- Compelling Benefits



Industry's Most Complete Virtualization Portfolio

STORAGE VIRTUALIZATION



- Exadata
- ASM
- Storage Connect
- Open Storage

SERVER VIRTUALIZATION



- Oracle VM Server for x86
- Oracle VM Server for SPARC
- Solaris Containers
- Dynamic Domains

DESKTOP VIRTUALIZATION



- Sun Ray thin client
- Oracle Virtual Desktop Infrastructure
- Oracle Secure Global Desktop
- Oracle VM VirtualBox

Overview of Oracle VM product family

- Oracle VM Virtualbox
- Oracle VM server for x86
- Oracle VM server for SPARC (formerly called LDOM)
- Oracle VM Manager



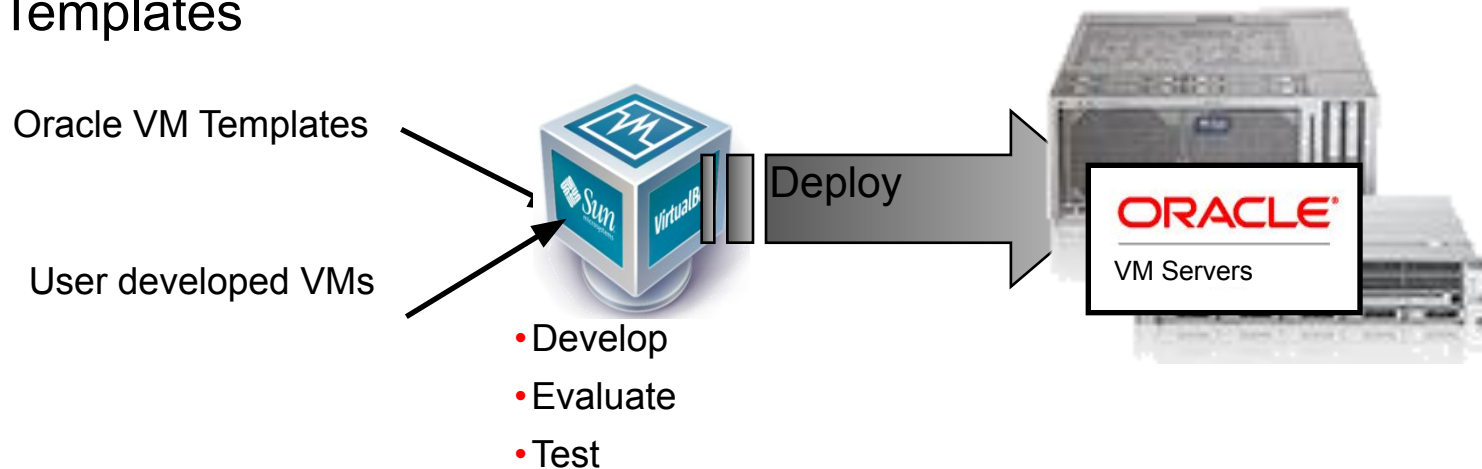
Oracle VM VirtualBox

Workstation

- Support for x86/x64 hardware
- Support for Solaris, Linux, Windows, Mac OS hosts and guests

Roadmap:

- Oracle VM x86 / x64 Server and VirtualBox workstation VM interoperability
- Oracle VM VirtualBox workstations to support running Oracle VM Templates



Oracle VM Server Virtualization

- High performance 86 and SPARC (CMT) virtualization
- Virtualization solution for both Oracle and non-Oracle applications
- The only server virtualization software supported and certified for all Oracle software across both platforms

ORACLE®

VM

Oracle VM Server Virtualization

Platform Choice & Flexibility

Solaris

Oracle VM Server for SPARC

SPARC (CMT) Hardware

- Evolution of Solaris Logical Domains; Integration with Oracle VM family
- Highly efficient hypervisor for Sun Chip Multithreading (CMT) servers
- Multiple, independent Solaris OS instances

Solaris

Linux

Windows

Oracle VM Server for x86

x86 Hardware

- High performance hypervisor for x86/x64 architecture
- Supported guests: Linux, Windows, Solaris

Solaris Server Virtualization

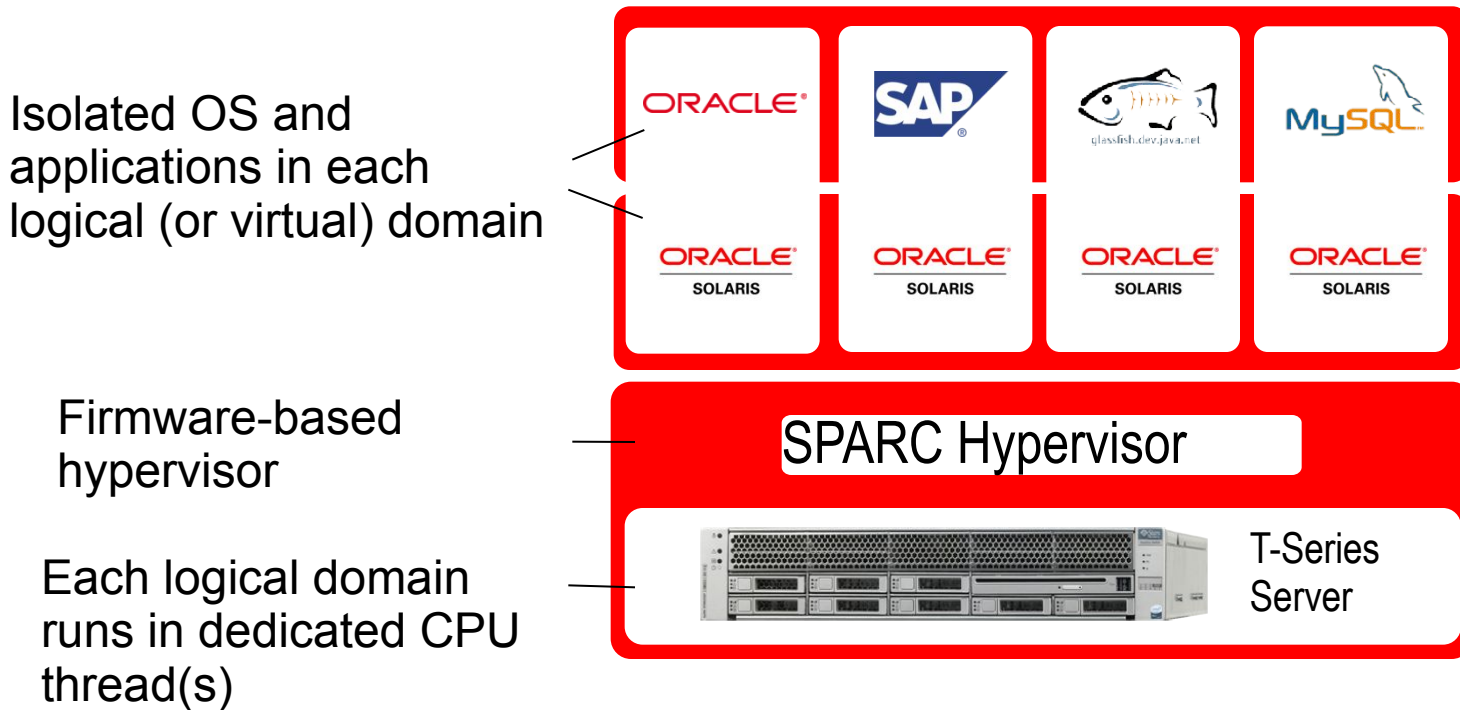
Complete Portfolio Meets Broad Enterprise Demands

- Oracle Solaris Containers
- Available for all Solaris – x86/x64, SPARC CMT, M-Series
 - Native, bare metal performance
 - High SMP scalability
 - Consolidate older Solaris versions

- Dynamic Domains
- Available for M-Series
 - Highest isolation – dedicated hardware
 - Bare metal level performance & high SMP scalability
 - No software single point of failure
 - Run multiple OS versions on the same system

Oracle VM Server for SPARC

The Virtualization Platform combining the best of Oracle Solaris and SPARC for Your Enterprise Server Workloads




Optimized for SPARC / Oracle Solaris



Oracle VM Server for SPARC

For T-Series Servers

- Create up to 128 independent logical domains isolated via hardware/firmware
 - Optimize with Oracle Solaris ZFS, DTrace, Predictive Self Healing and Solaris Containers
 - Dynamically re-configure computing resources to meet business demands
 - Utilize redundant virtual networks and disks to create more highly available domains
 - Perform domain migration from system to system quickly with very little latency
- 

Oracle VM Server for SPARC 2.0 (Sep 2010)

Advanced Virtualization For SPARC T3 Servers

- T2, T2+, T3 processor support
- Renamed LDOM to Oracle VM server for SPARC
- PCIe Direct I/O
 - **Native throughput for guest domains**
- Dynamic memory reconfiguration
 - **Grow and shrink domains as required**
- Throttle CPUs and memory based on utilization
 - **Reduce power consumption**

Set system power limit

- **Automatically reduce power state for system resources if the limit is reached**

Oracle VM for SPARC roadmap

- Focus on enhancing the hypervisor features
 - Use the latest SPARC T-series features
 - Live migration of domain
 - SRIOV
- Integration of Oracle VM for SPARC into Oracle VM Management
 - Integrate Oracle VM for x86 agents into Solaris control domain
 - Provide same generic virtualization features
 - Integrate Oracle VM Storage Connect

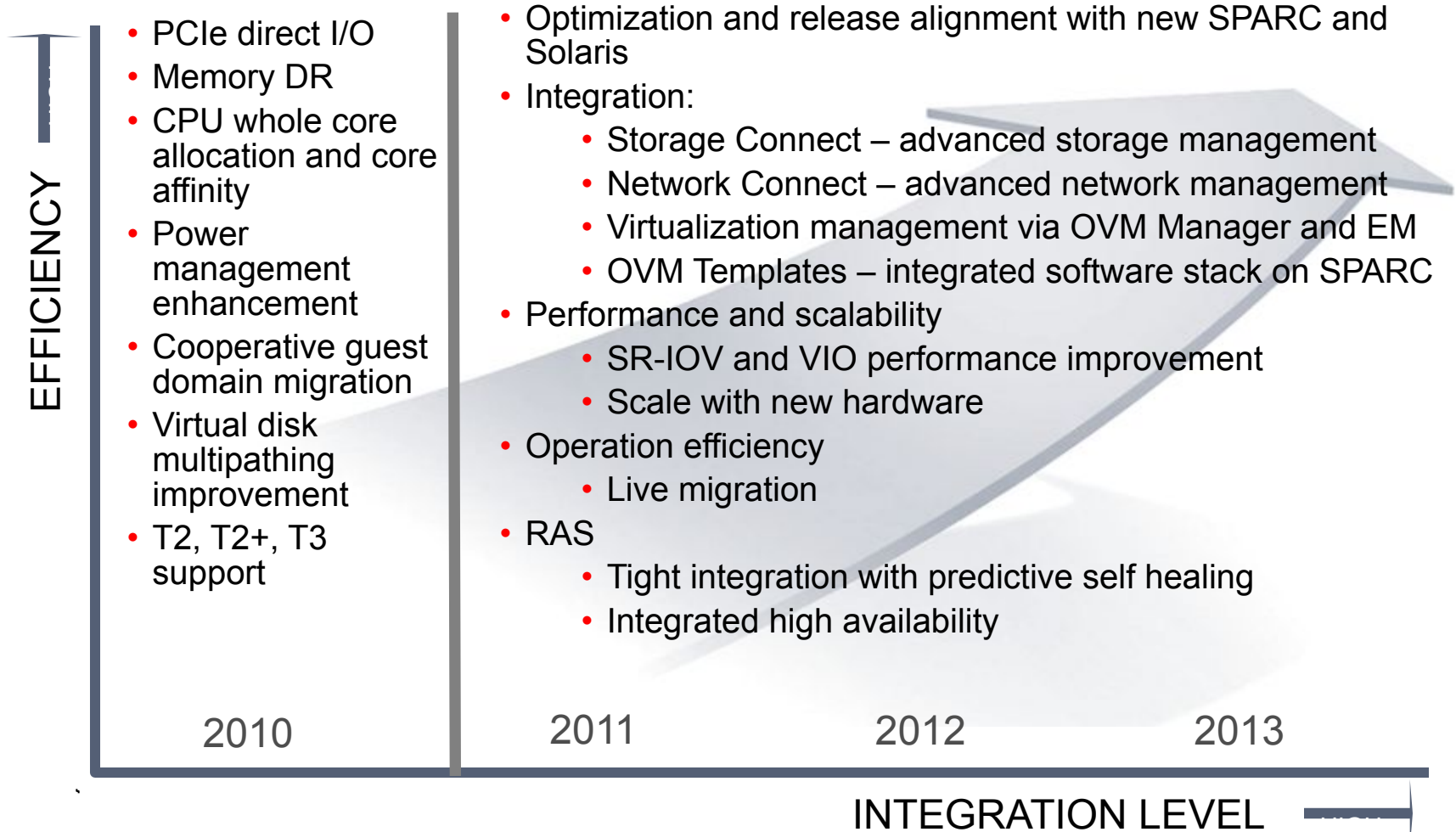
Oracle VM for SPARC roadmap

. Feature direction

- . Dynamic resource management enhancements
- . Affinity binding enhancements
- . P2V enhancements
- . Support for new features in future processors
- . Cross CPU migration
- . New virtual disk driver stack
- . Dynamic / rebootable Io domains

Oracle VM Server for SPARC

Integration into Oracle VM Family

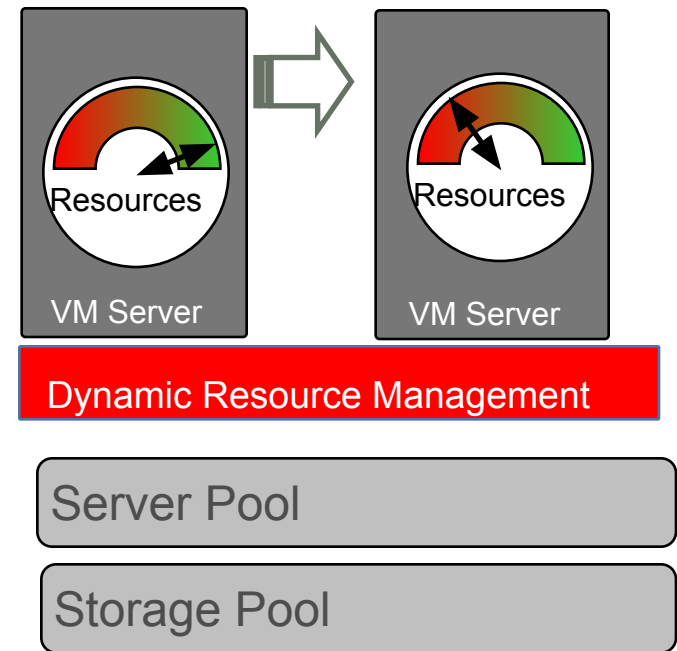


Oracle VM Management

- Integration of Virtual Iron technology
- Dynamic resource management (DRM)
- Dynamic server power management (DPM)
- Rich set of APIs to control the system
- Dynamic web based management console (based on fusion middleware/adf11)
- Centralized storage management (Storage Connect)

Policy-Based Resource Automation

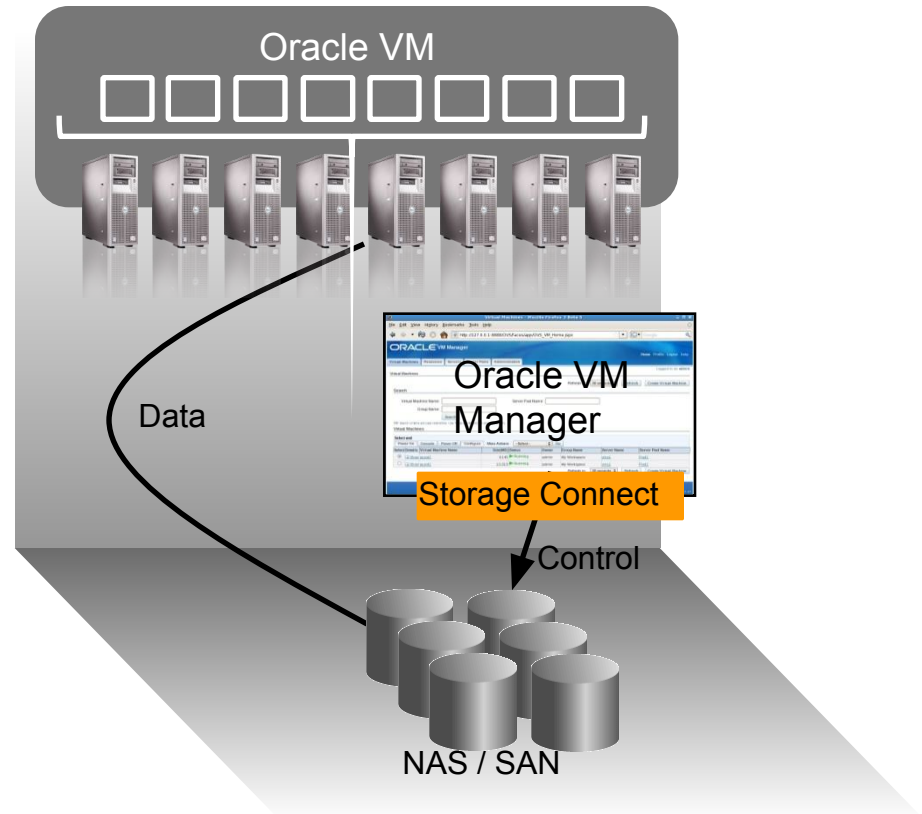
- Distributed resource scheduling (DRS) for capacity management
 - **Real-time monitoring of server utilization**
 - **Policy-based automation to rebalance Server Pool**
 - **Migrate load away from heavily loaded servers**
 - **Automatically powering up capacity as needed**
- Distributed Power Management (DPM) to optimize server pool for minimal power consumption
- Benefits:
 - **Lower operating costs per server**
 - **Increase admin:server ratios dramatically**
 - **Improve SLAs via “instant” problem detection and remediation**
 - **Higher resource utilization**



Oracle VM Storage Connect Framework

Integrated Server and Storage Management

- Integrated virtualization and storage management for Sun and 3rd party storage via a common interface
- Storage provisioning and discovery API for Oracle VM 3.0
- Leverage all the resources and functionality of existing storage systems in the Oracle VM environment.
- Reduce cost and complexity in virtual and cloud environments.

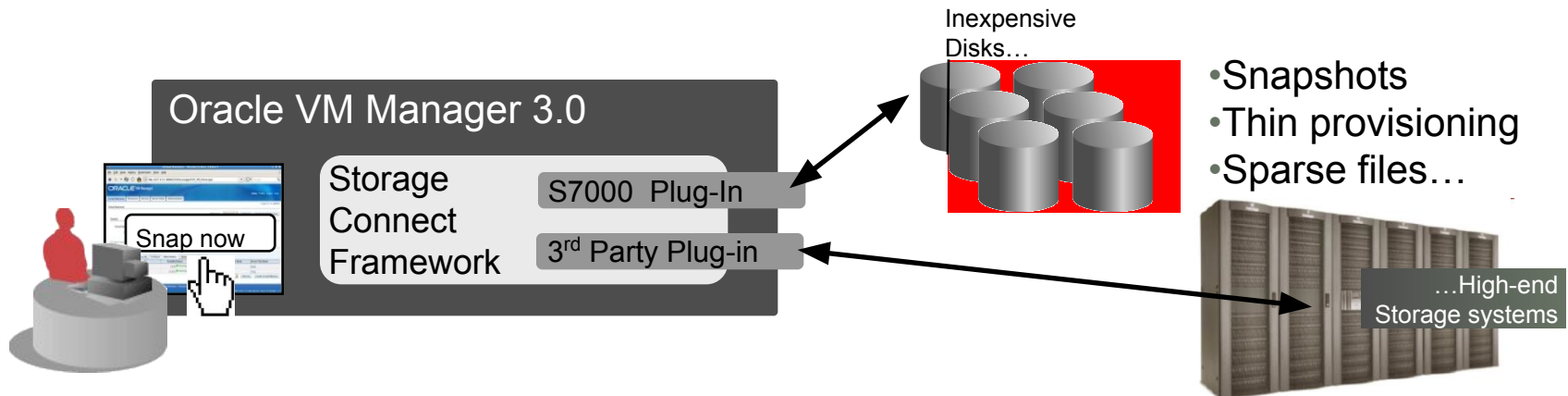


More choice for users, an open ecosystem for partners

Storage Management: Enabling Better Choices

Oracle VM Storage Connect Architecture

- Manage all types of storage from Manager (NFS, OCFS2, iSCSI, FC/SAN, S7000)
- Use advanced storage features of S7000 or directly leverage 3rd party storage system capabilities
- Allows use of advanced “intelligent” devices or more basic, lower-cost devices
- Storage management updates independent of Oracle VM release schedule

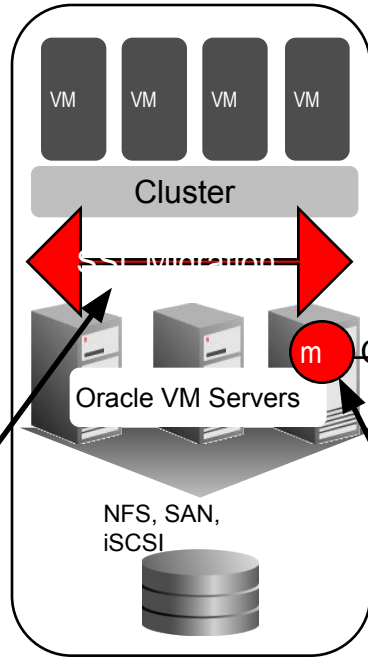


ORACLE

Oracle VM Manager

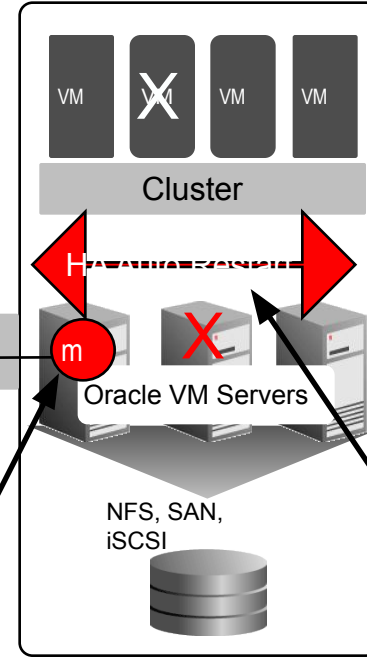
Advanced Functionality Included

Live Migration



- Planned Events:
- E.g. maintenance or upgrades
 - Secure Live Migration
 - Zero interruption

HA / Auto-restart



- Unplanned Events
- E.g. Server or VM failure
 - HA Auto-restart in pool
 - No manual intervention

Pool Masters assure
Secure Migration or
HA restarts complete
in the event of a
Manager outage



Browser



Clustered Manager



XE, SE, EE, or RAC
Database

Oracle VM Templates

Rapid Application Deployment

ORACLE E-Delivery

Download from Oracle

- Pre-built, pre-configured VM
- Complete app, middleware, DB installation
- Complete Siebel CRM 11g, Enterprise Manager



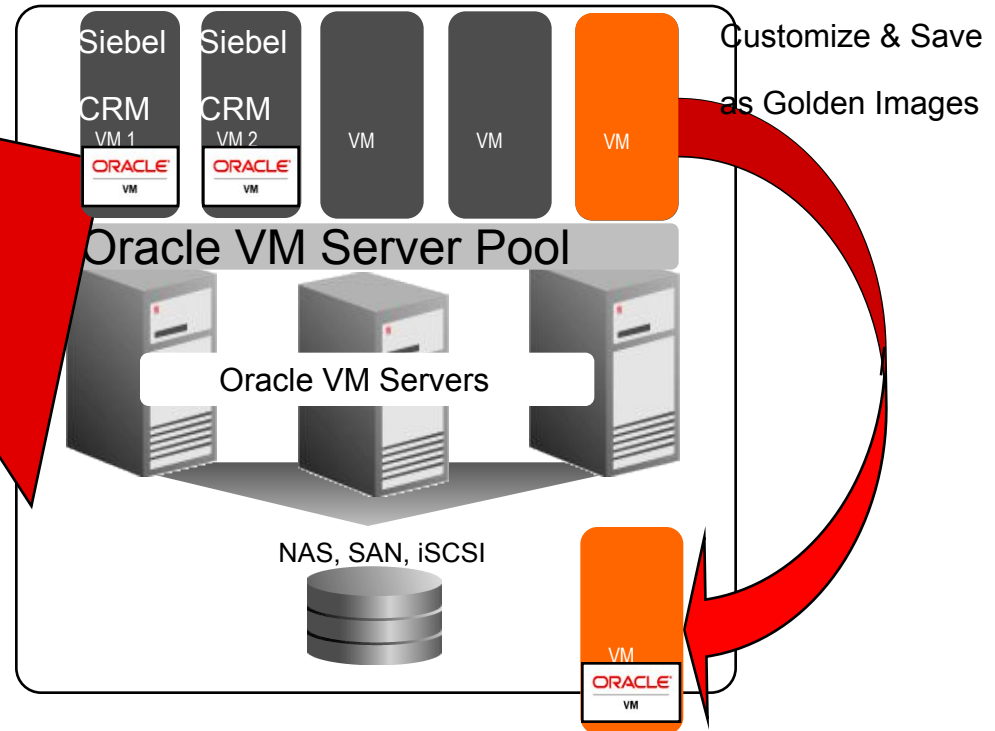
Enterprise Manager

Import via
Oracle VM
Manager



Start-Up in
Oracle VM Pool

Save days or weeks in installation and configuration time

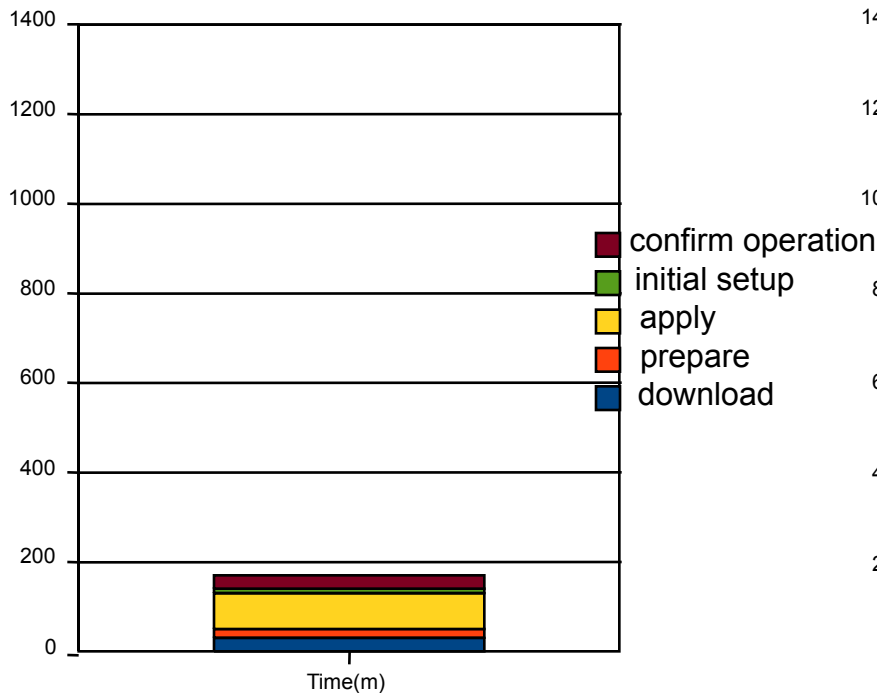


Oracle VM Templates Save Time

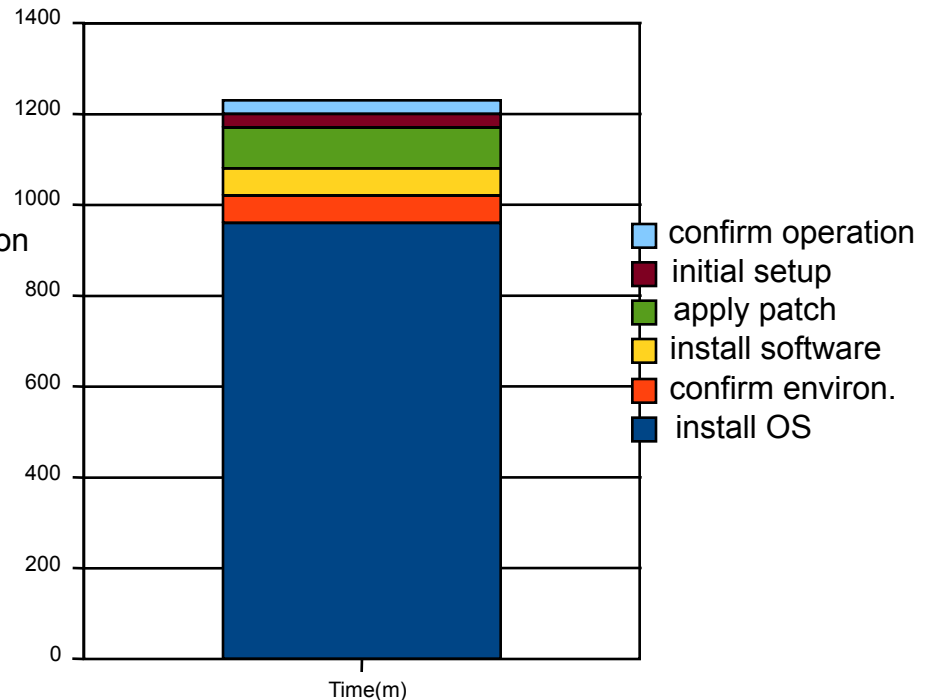
Templates enable the set up of applications within Oracle VM partitions by using scripts that pre-set many of the necessary settings to run within a virtualized environment.

- Implementation time for using Oracle VM Templates
 - ✓ **Required only 1/6 of the usual time required for set up a major reduction in man hours.**

Using Oracle Enterprise Manager Templates



Using normal physical environment



Oracle Virtual Assembly Builder

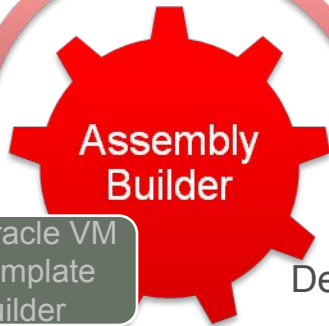
Package Multi-Tier Applications

Oracle SOA Suite Oracle BPM Suite Oracle WebCenter Oracle Identity Mgt

Oracle WebLogic Suite-based Application Grid

Oracle Database

Introspection & Assembly



Oracle VM Template Builder

OVF Packaging

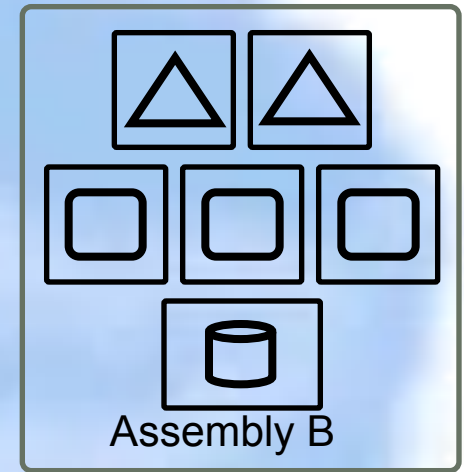
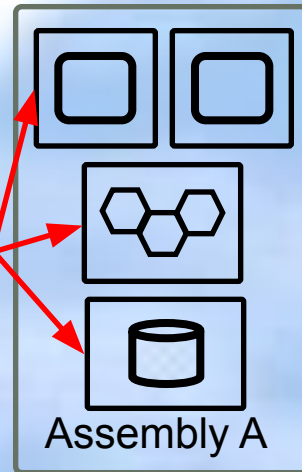
Deployment

Enterprise Manager
Oracle VM Manager

Application A

Application B

Virtualized Software Appliances

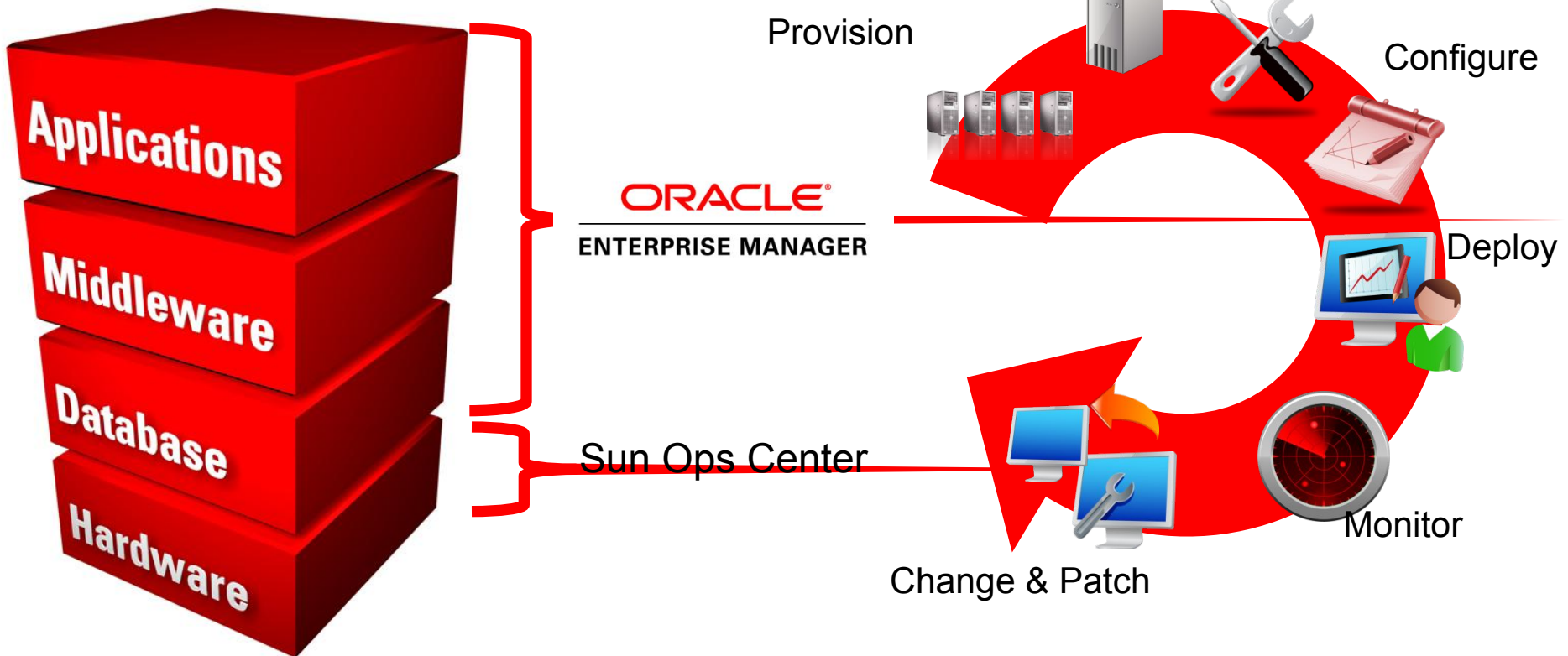


Oracle VM Server



Comprehensive Full-Stack Management

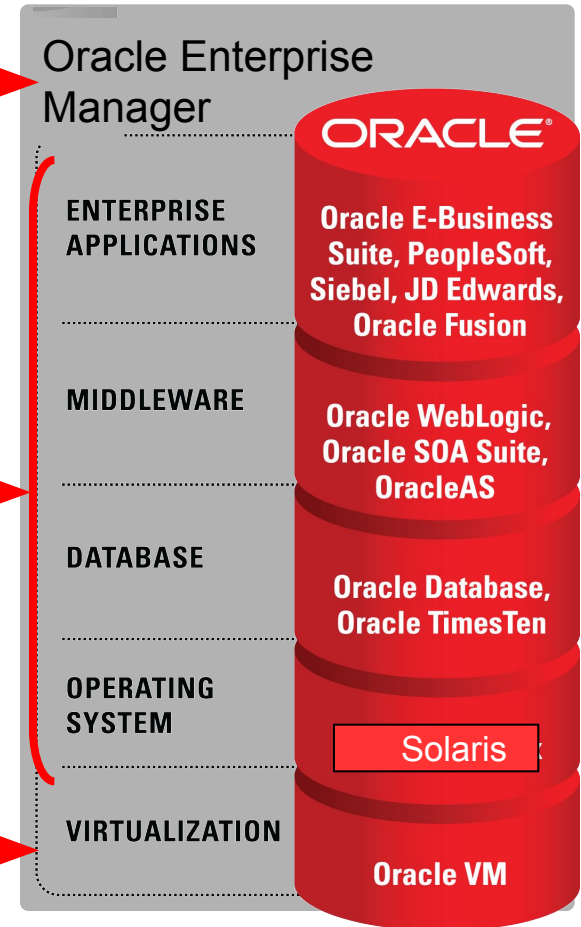
Applications to Disk



A Superior High Availability Environment

Earlier Warning, Better Context, Minimized Impact

- Earlier Warning: Enterprise Manager
 - **Monitors & detects application issues to address *before* they become problems**
 - **Avoid HA events, minimized impact**
- Better Context: Guest Clustering
 - **Application-aware response**
 - **Middleware clustering**
 - **Real Application Clusters**
 - **Oracle HA Clusterware**
- Virtualization Layer-HA
 - **Only HA available from virtualization products: not application aware**
 - **Simple, reliable, automated restart after complete VM failure**



Oracle: 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

Taking you beyond consolidation...

Oracle provides the most **COMPLETE** solution

More Information

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<http://blogs.oracle.com/virtualization>

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