Session Agenda

- Oracle's Server and Virtualization Management

- Ops Center Feature Preview
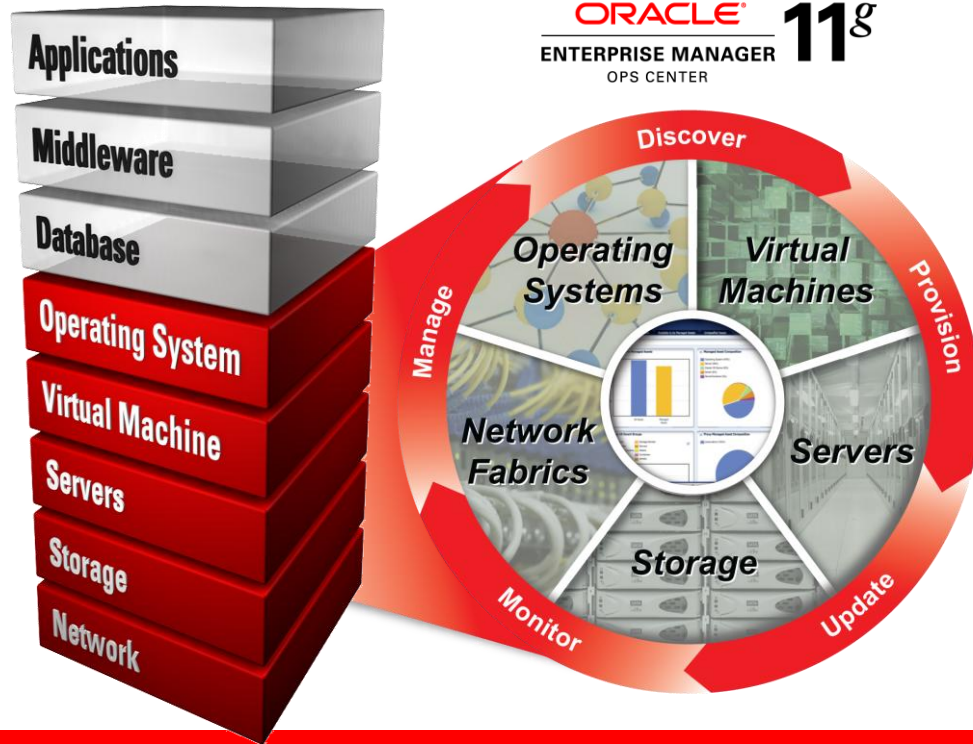
- Demonstration

Hardware and Software
Engineered to Work Together

- Performance

- Availability

- Security

- Management

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Enterprise Manager Ops Center

Converged Hardware Management for Sun Environements

Integrated Infrastructure Management

+

Integrated Application-to-Disk Management

+

Integrated Lifecycle Management

+

Integrated Systems Management & Support

Industry Leading Infrastructure Management

Oracle: Single tool at no additional cost
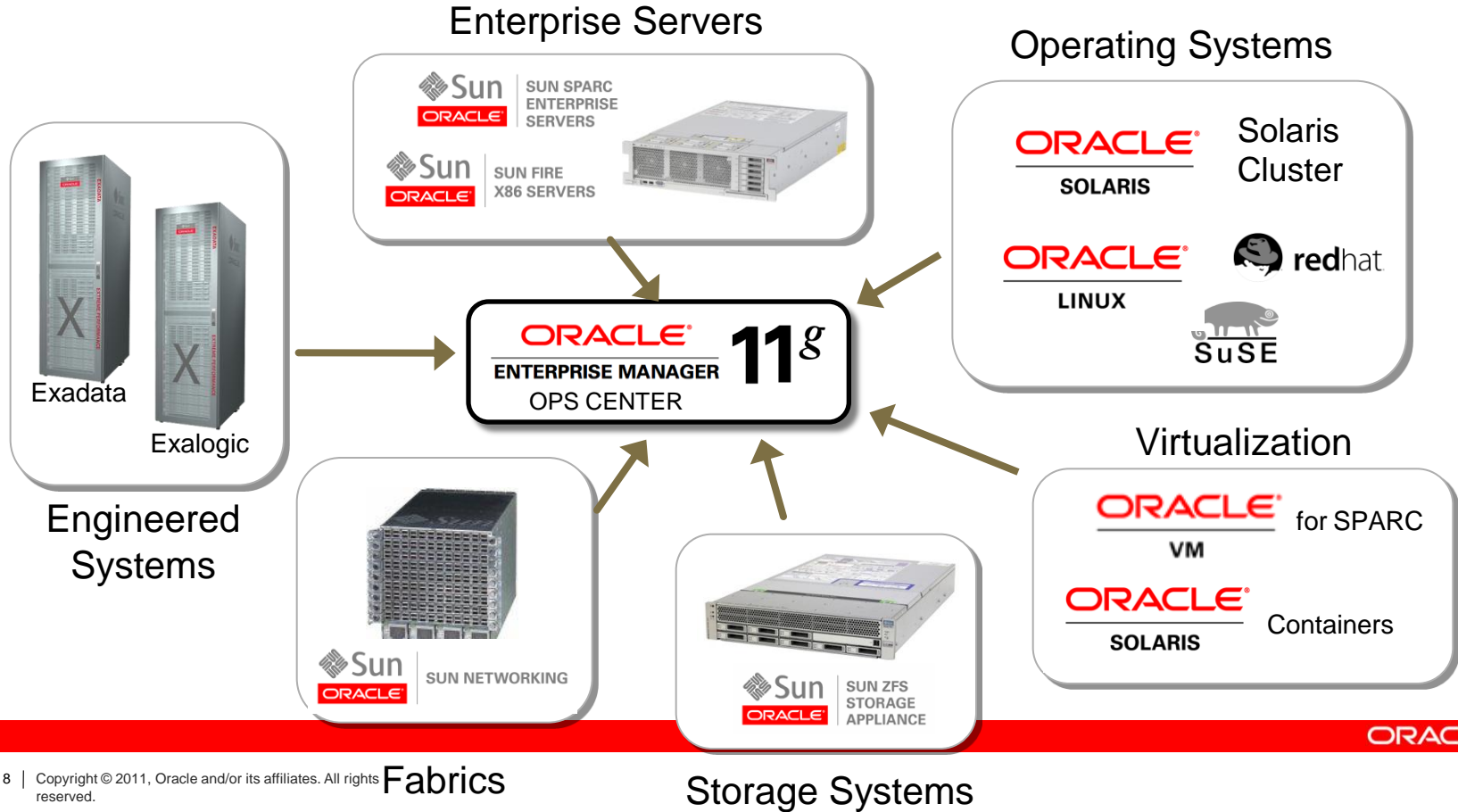Everyone else: Multiple tools at additional high cost

Hardware vendor	Physical Server Management	Virtualization Management
Oracle-Sun	Single product (Enterprise Manager Ops Center) Included at **no additional cost***	
IBM	Additional license cost for IBM Director Per node license for advanced Service Processor features	Additional license cost for VMware Virtual Center/Microsoft System Center/VMControl (for PowerVM, LPARs)
HP	Additional license cost for Insight Manager Per node license for advanced Service Processor features	Additional license cost for VMware Virtual Center/Microsoft System Center
Dell	Additional license cost for Dell Open Manage Per node license for advanced Service Processor features	Additional license cost for VMware Virtual Center/Microsoft System Center
VMware	Additional license cost for vendor–specific server and storage management	Additional license cost for VMware Virtual Center
Microsoft	Additional license cost for vendor-specific server and storage management	Additional license cost for Microsoft System Center

* With Systems support (October 2011)
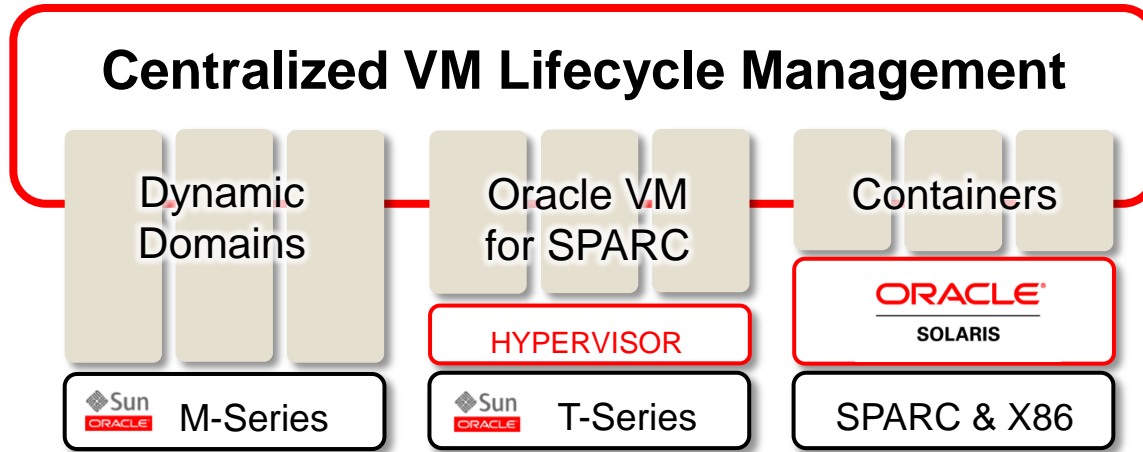
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Ops Center Today

Manage All Your Infrastructure In One Place

Enterprise Servers

Sun | SUN SPARC ENTERPRISE SERVERS

Sun | SUN FIRE X86 SERVERS

Operating Systems

ORACLE SOLARIS — Solaris Cluster

ORACLE LINUX — redhat

SuSE

Engineered Systems

Exadata

Exalogic

ORACLE ENTERPRISE MANAGER 11^g OPS CENTER

Virtualization

ORACLE VM — for SPARC

ORACLE SOLARIS — Containers

Sun | SUN NETWORKING

Sun | SUN ZFS STORAGE APPLIANCE

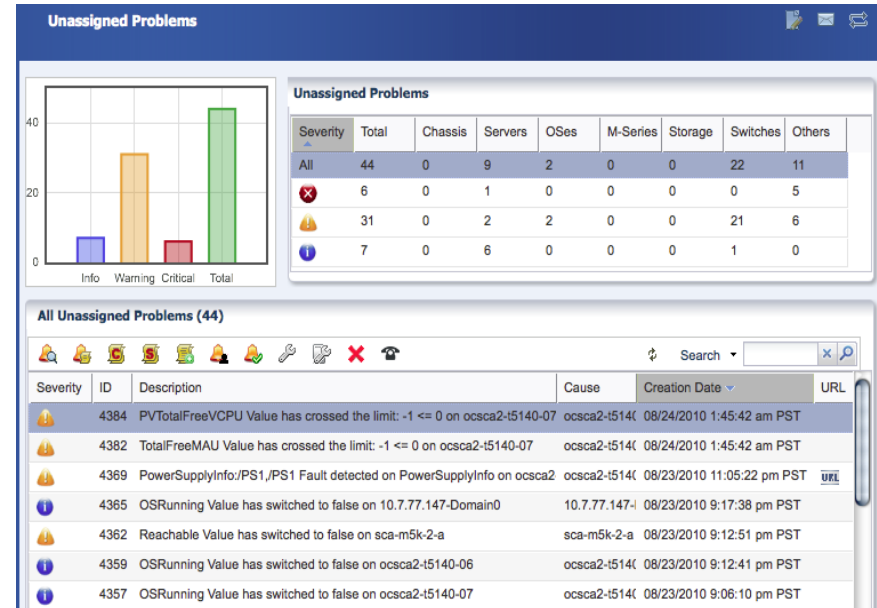Fabrics

Storage Systems

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Centralized VM Management

- Centralized interface for VM lifecycle management
- Manage M-Series hard-partitions, OVM-SPARC and Solaris Containers from one place
- Complete management of Virtual Storage and Networks

Centralized VM Lifecycle Management

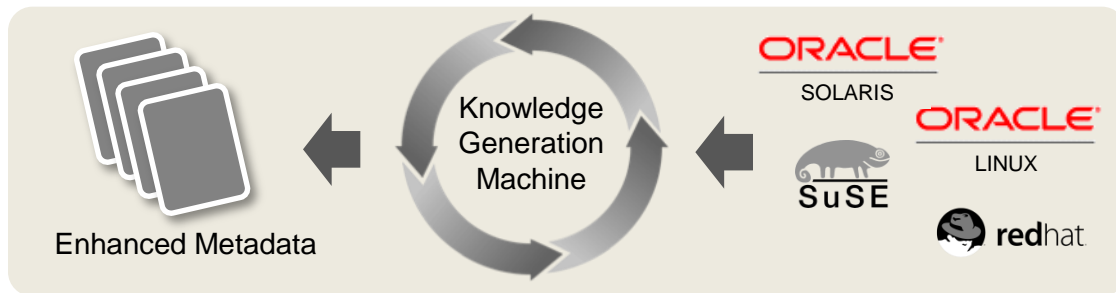| Dynamic Domains	Oracle VM for SPARC	Containers
	HYPERVISOR	**ORACLE®** SOLARIS
Sun ORACLE M-Series	Sun ORACLE T-Series	SPARC & X86

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# Centralized Alarm Management

- Monitor across all assets
- Centralized active alarm management
- Deep server monitoring
    - Component level
    - Static & dynamics attributes (serial no., sensor, etc.)
- Correlate cluster failures with individual nodes

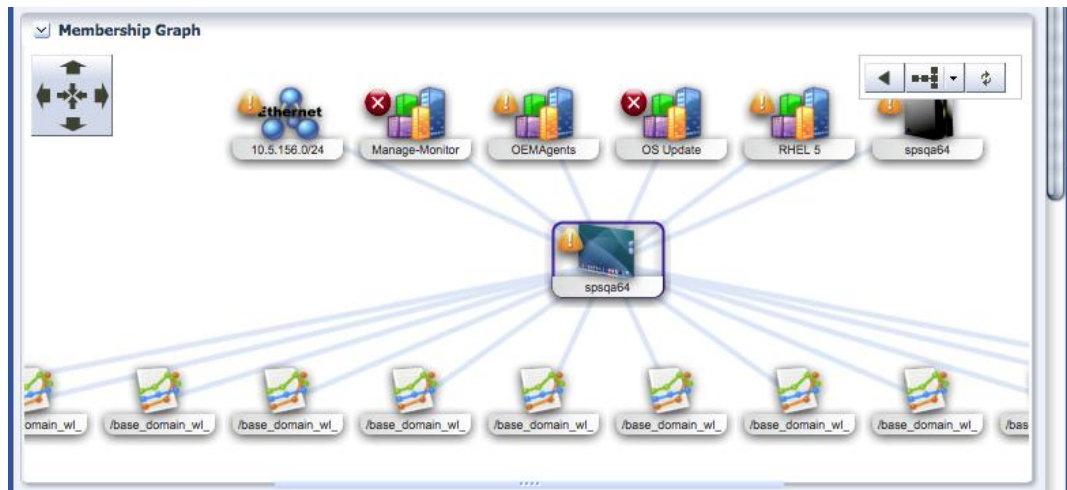ORACLE

Intelligent Configuration Management

Knowledge Generation Machine

Enhanced Metadata

ORACLE
SOLARIS

ORACLE
LINUX

SuSE

redhat

Actions

Operate

- Create Change History Report
- Create Baseline Report
- Create Profile Report
- Create Recomended Software Configuration Report
- Create Incident Report
- Create Host Compliance Report
- Create CVE Report
- Create Windows Host Compliance Report
- Create Windows Incident Compliance Report

- Simulation & rollback capability
- New Solaris Cluster patching
- Comprehensive compliance reporting
  - Track and audit change history
  - Audit patch & configuration compliance
- Configuration profiles

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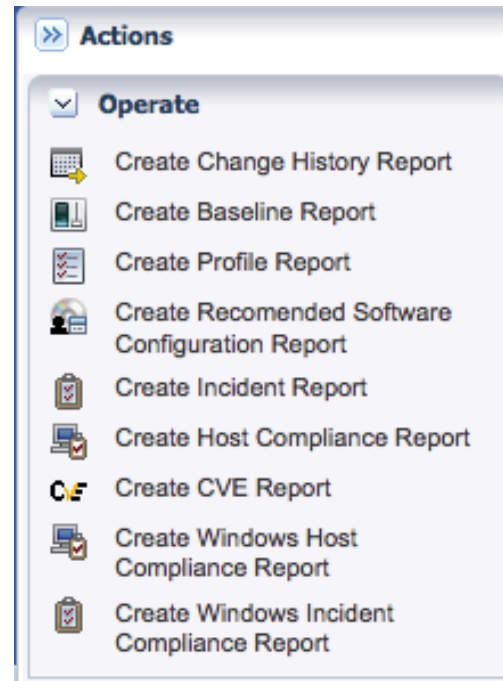
App Visibility for Sys Admins

- In-context views of database, middleware and application components

- Views of application-level alarms and alerts

- Full-stack visibility

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Infrastructre Awareness for Apps Admins

- Enable easier full-stack debugging

- Hardware and deep-OS-level configuration and status

- Virtualization-awareness for OVM-SPARC and Solaris Containers
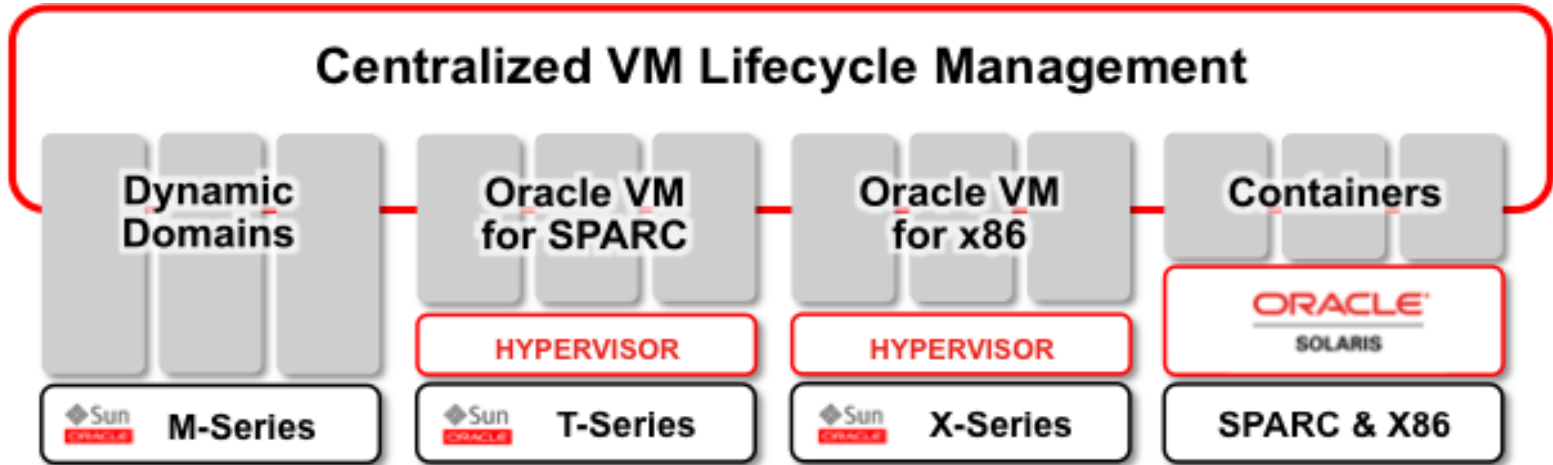
Ops Center Tomorrow 12.1

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Enterprise Manager Ops Center

The management solution for _all_ Oracle virtualization

- Centralized interface for VM lifecycle management

- Manage M-Series hard-partitions, OVM, and Solaris Containers from one place

- Complete management of Virtual Storage and Networks

Centralized VM Lifecycle Management

Dynamic Domains	Oracle VM for SPARC	Oracle VM for x86	Containers
	HYPERVISOR	HYPERVISOR	ORACLE SOLARIS
Sun M-Series	Sun T-Series	Sun X-Series	SPARC & X86

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Adoption of Existing Environments
Now Supported!

- Solaris Zones that Ops Center did not create are now modeled and full features enabled during discovery in conjunction with a extensibility framework for advance storage mgmt and migration

- OVM SPARC VMs that Ops Center did not create are now modeled and most features enabled with the exception of pools, migration, and storage mgmt

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Auto-HA for Zones
With Ops Center Server Pools

- Automatically restart non-global zones on another server in server pool after global zone fails
- Server pool guarantees same networking and storage connectivity and provides a resource boundary
- Restart zones in priority order
- Helps resolve any resource contention
- Avoid split brain scenario
- Failover triggered only when global zone and all non-global zone agents and IPs are unreachable
- Old server powered off via service processor
- New global zone pings IPs before bringing up zone
- New global zone checks for heartbeat on NFS storage
- On next boot of old GZ, zpool init fails and agent cleans up

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Ops Center and Solaris 11
Ready for the Cloud

AI/Manifests/Distro Constructor Capture the relationship between software and services and capture in a repeatable object or definition

IPS Increase level of change management enables a higher degree of software volatility with a small amount of risk

SMF Insight into service awareness over just process awareness.
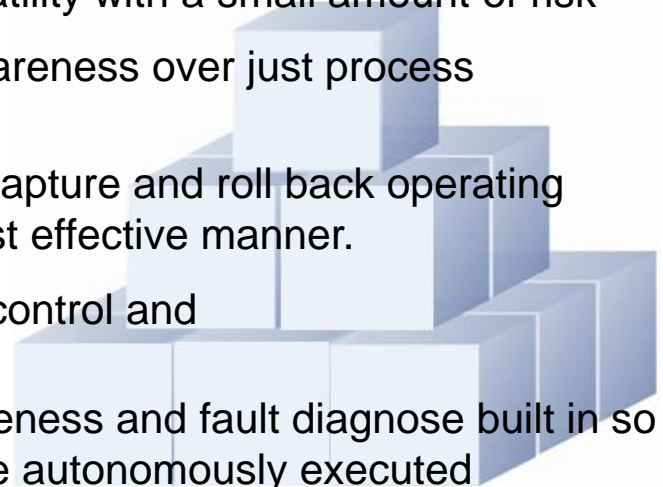
BE/ZFS Most effective way to capture and roll back operating building blocks in a cost effective manner.

**NIC V12N** Higher degree of flow control and hardware level

Dtrace/FMA Higher degree of awareness and fault diagnose built in so that more policy can be autonomously executed

Solaris 11 Software Management

- New Support for Image Packaging System
- Enhanced Interaction with Alternate Boot Environments
- New Support for Automated Installer
- Improved Software Profiler
- Better Dependency Handling
- Increased Vendor Provider Patch Bundles

SYSTEM INSTALLATION AND CONFIGURATION
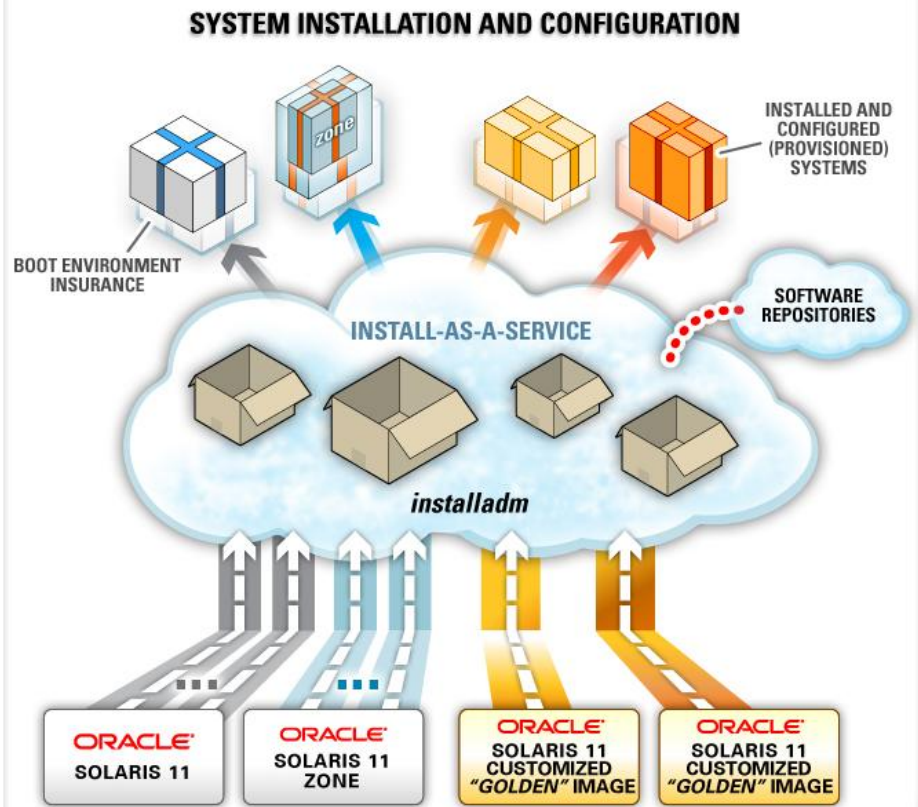
Solaris 11 Network Virtualization

- Automatically Leverages NIC Level Virtualization with Zones

- Exposes Throughput and Priority Control over Pipes

- Allows for Virtualized Workload that needs a dedicated TCP/IP Stack while sharing the same kernal
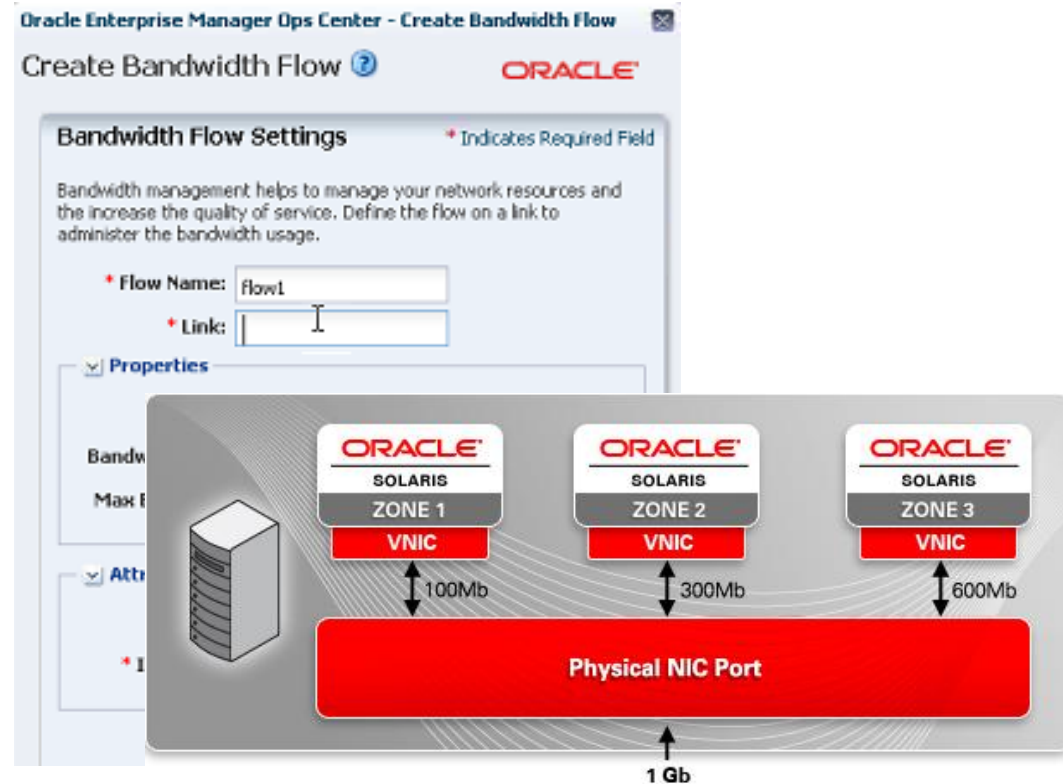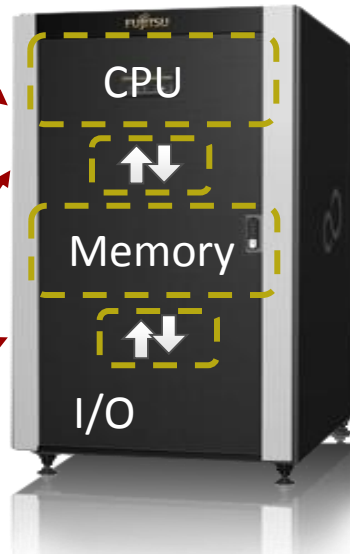
Ops Center Host Level Hardware Awareness

HW Coverage Doesn't Stop at the Service Processor

- Highest Disk Fault Coverage
  - Integration with Disk Firmware
  - Integration with HBA card

- Highest Level of ECC and MEM events
  - Integration with FMA and SMF
 - New Overall FRU Health Coverage

CPU

Memory

I/O

B1/C0/D0	2048MB DD…	2147483648	Samsung	511-1615
B1/C1/D0	2048MB DD…	2147483648	Samsung	511-1615
B2/C0/D0	2048MB DD…	2147483648	Samsung	511-1615
B2/C1/D0	2048MB DD…	2147483648	Samsung	511-1615
B3/C0/D0	2048MB DD…	2147483648	Samsung	511-1615
B3/C1/D0	2			

B2/C1/D0: A temperature sensor has reported that its value has gone above an upper non-critical threshold setting or below a lower non-critical threshold setting. The sunHwTrapThresholdType object indicates whether the threshold was an upper or lower.: System Ident on xvmdev-l4-t3-1-04-sp.us.oracle.com
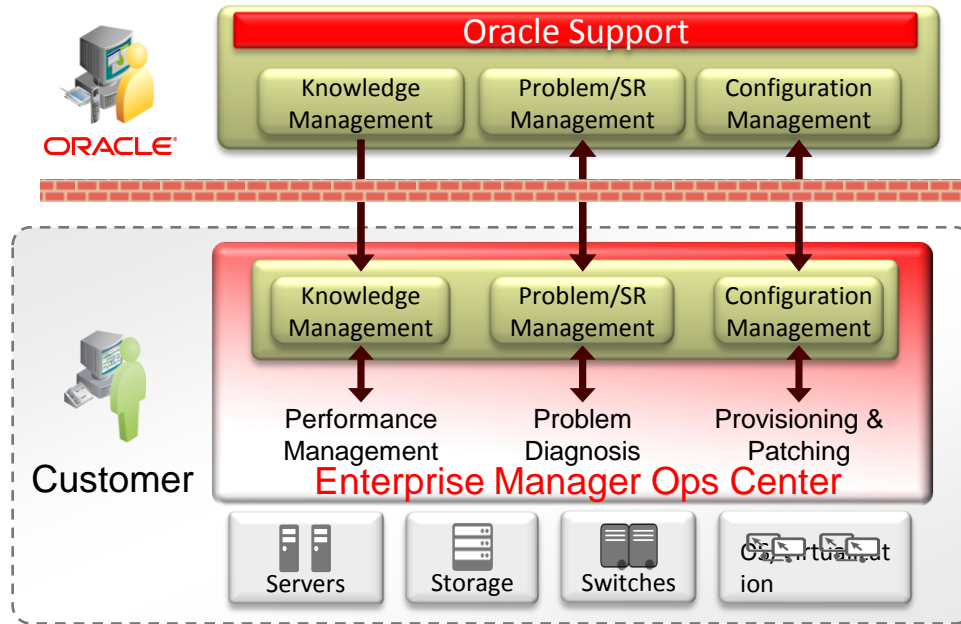
Sensors

Error detection across server HW enables swift and exact treatment → *Unplanned downtime reduced !*

OS Analytics

- Massive Increase in Monitored Attributes

- Autonomous/Smart Thresholding

- Link Processes to Business Services

- Both System and Process Level Historical Trending

- Zone Aware

- Agentless
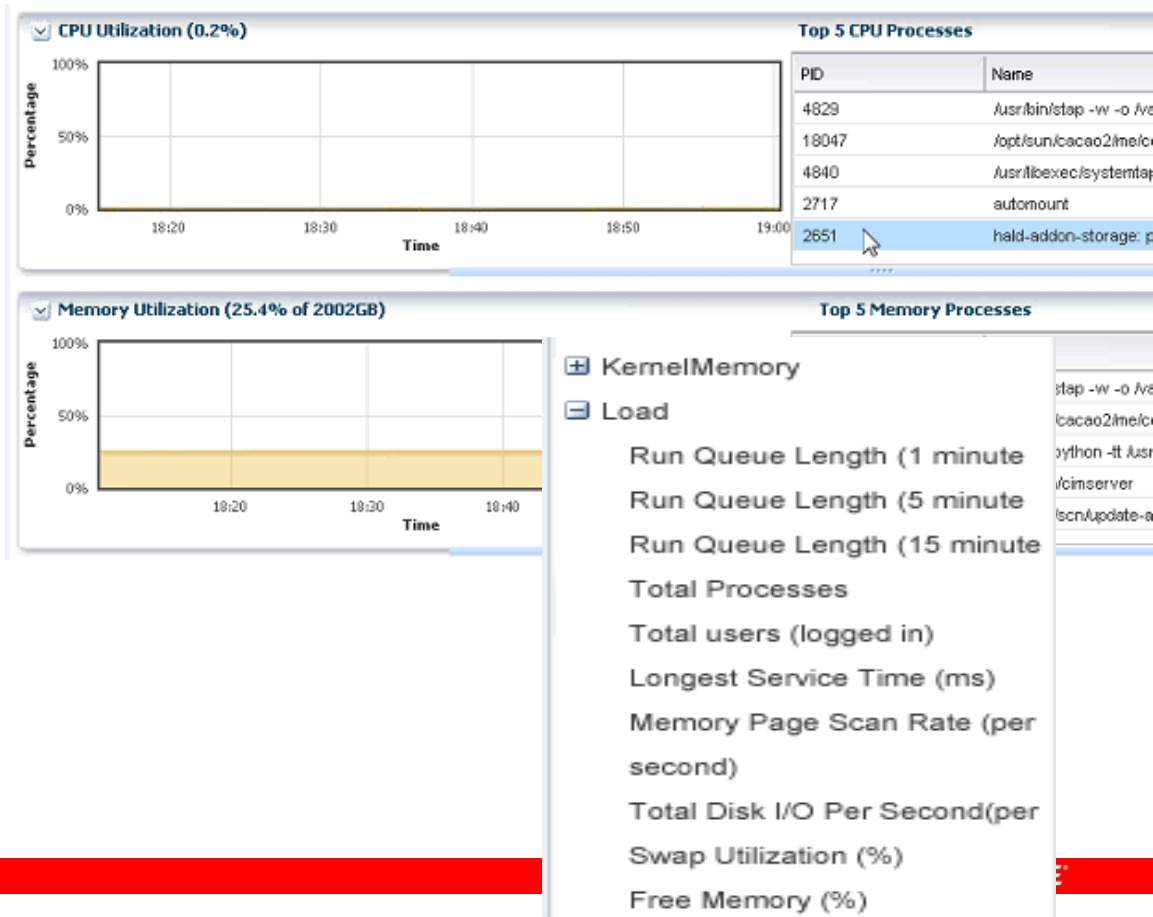
Full Telemetry to My Oracle Support

- Full "Automated Service Request" (ASR) Management
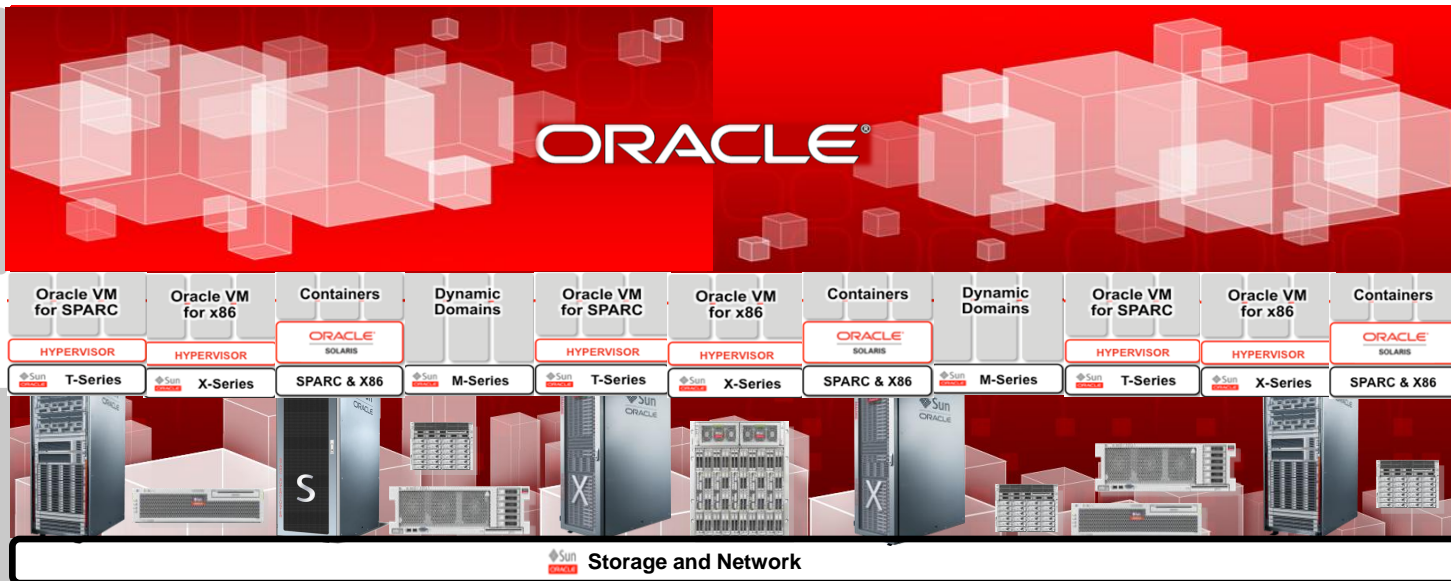- Integration with Oracle Configuration Manager (OCM)

Enterprise Manager Ops Center
Converged Hardware Management Accelerates Cloud Deployments

EM12c Application Control
EM12c Self Service Apps
Storage Blocks
Elastic IP
IaaS API Exposure Level
Unix and Linux Coverage

Resource Aggregation
Heterogeneous Virtualization
Complex Deployment Plans

Low Level Server Orchestration
Next Generation Fabric Intelligence
Intel, AMD, SPARC64, SPARC CMT, T4
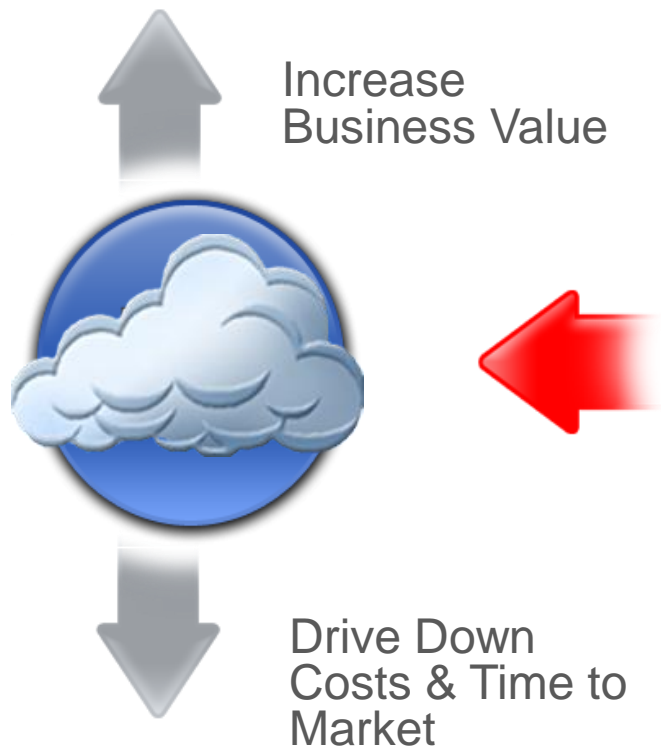**IB, 10GBE, IPoIB, EoIB, FC, iSCSI**
ZFS, OFS, NFS-HA, CIFS

Oracle VM for SPARC	Oracle VM for x86	Containers	Dynamic Domains	Oracle VM for SPARC	Oracle VM for x86	Containers	Dynamic Domains	Oracle VM for SPARC	Oracle VM for x86	Containers
HYPERVISOR	HYPERVISOR	ORACLE SOLARIS		HYPERVISOR	HYPERVISOR	ORACLE SOLARIS		HYPERVISOR	HYPERVISOR	ORACLE SOLARIS
T-Series	X-Series	SPARC & X86	M-Series	T-Series	X-Series	SPARC & X86	M-Series	T-Series	X-Series	SPARC & X86

Storage and Network

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Built-in Infrastructure as a Service
Ops Center IaaS for SPARC&Intel

Increase
Business Value

Drive Down
Costs & Time to
Market

Network

Storage

Server Pool

Users

vDC Management

- vDCs
  - MyCloud
    - Networks
      - 10.131.128.0/20
      - 192.168.10.0/24
      - private1
      - pub1
    - Storage
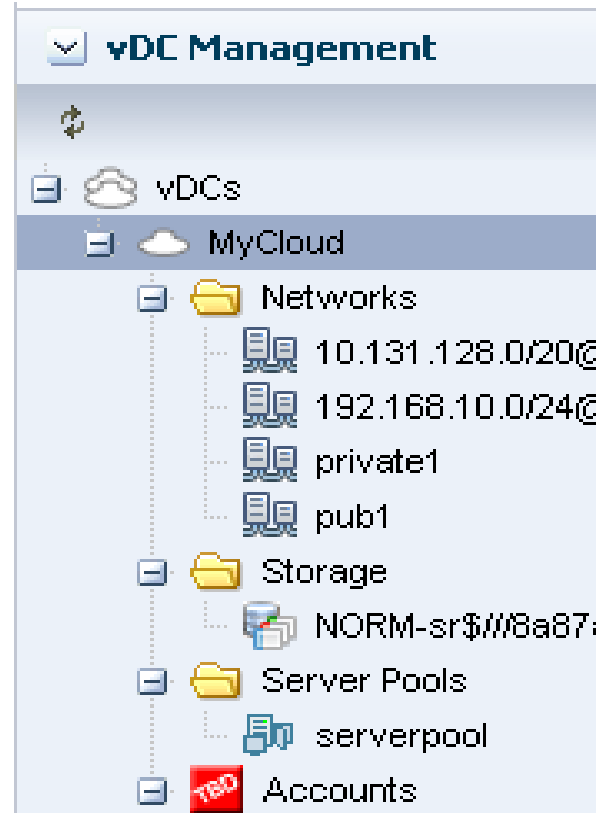   - NORM-sr$///8a87
    - Server Pools
   - serverpool
    - Accounts

Easy Control for IaaS

- The IaaS API will offer functionality in a key set of areas that map to the core of the EC2-***like*** API
    - Template Management
    - Instance Management
    - Elastic Block Store-style storage management
    - Security Groups-like constructs
    - Key Pair Management for VM access control
    - Tag Management for per VM meta data
- Simple user portal, CLI and Web Services interfaces
- Integration with Oracle Assembly Builder Deployer

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Enterprise Manager
Self Service Provisioning

- 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
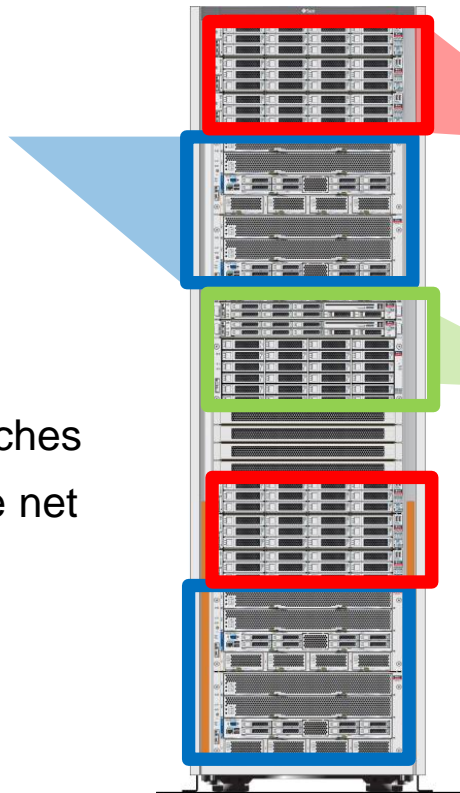 - Backup VM/Database/Start/Stop etc.

- Cloud APIs

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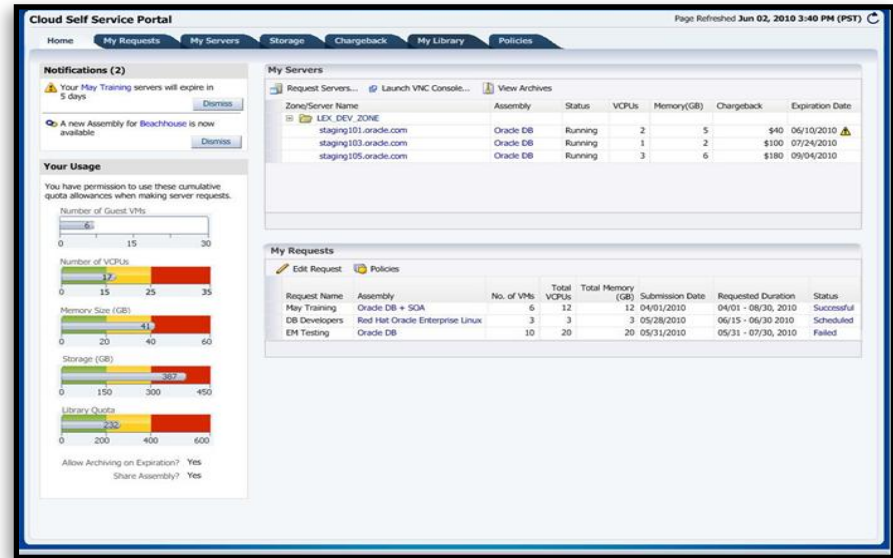
SPARC Supercluster Architecture

Storage Grid
- 3 or 6 storage cells

Nodes
- 2 or 4 compute nodes

Shared Storage
- ZFS storage appliance with dual controllers

InfiniBand Network
- Redundant 40Gb/s switches
- Unified server & storage net

Software
- Oracle Solaris 11 and Solaris 10
- Solaris Cluster

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Ops Center Simplifies Engineered Systems
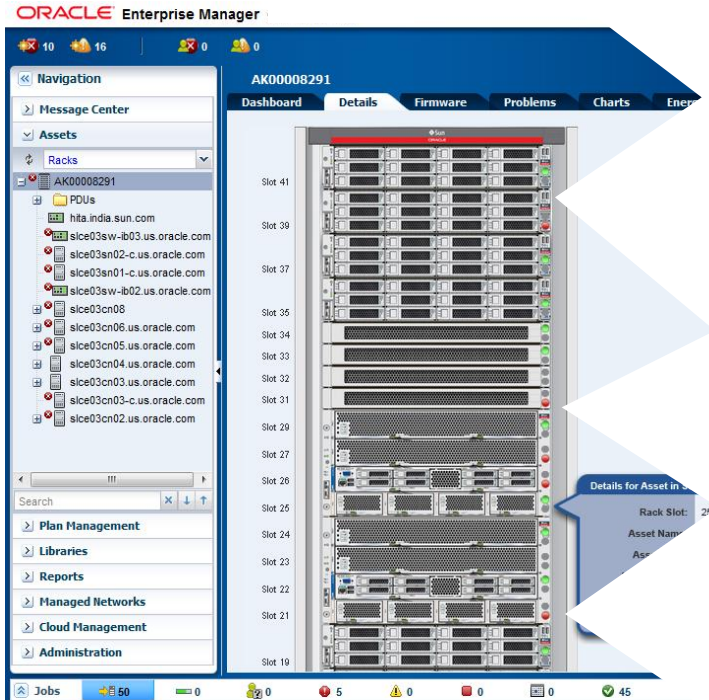
- Unified management of Servers, Storage, and Network Fabric

- Simplified management of virtual infrastructure for easy application consolidation

- Instant Network and Storage provisioning

- Automated update of all firmware and software components

- Direct connection to Oracle knowledge-base speeds problem resolution

Engineered Systems
Unique Value for Oracle Engineered Systems

Exadata
- Enhanced ASR
- Increased Hardware Fault Awareness
- Improve Storage Cell Monitoring
- Service Processor and HBA Management
- OL/Solaris 11 OS Analytics and Software Mgmt
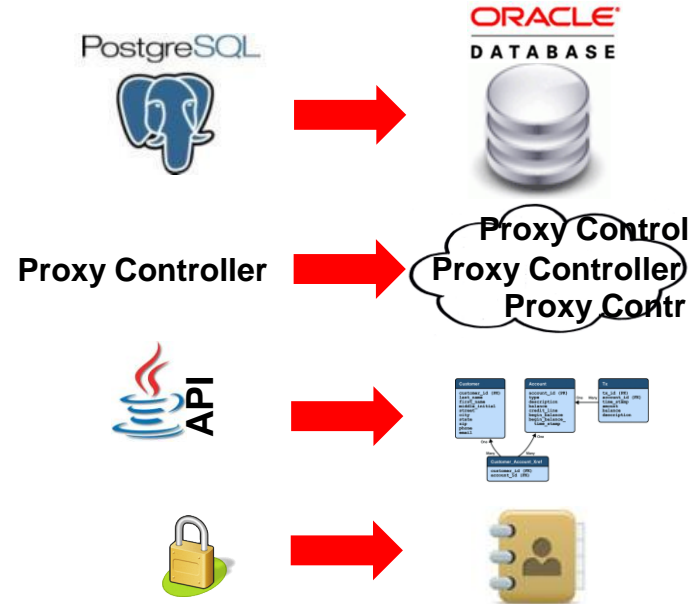- Infiniband Monitoring

SuperCluster
- New Rack View Topology
- Solaris 11 Life Cycle Control
- Performance Analytics
- Infiniband Active Management
- OVM-SPARC Management
- Solaris Cluster Monitoring
- ZFSSA Active Management
- Storage Cell Monitoring
- Enhanced ASR
- Deepest Possible Fault Vision

Exalogic
- Ops Center is Built into the Rack
- Engineered Together w/ OVM, OVAB, Exabus
- New Rack View Topology
- OL/Solaris 11 OS OS Analytics and Software Mgmt
- Increased Awareness of Exalogic Life Cycle
- Active Infiniband Management
- IaaS API Exposure and Cloud Management Console
- ZFSSA Active Management

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Better Architecture
Ops Center Enhances Core Components

- Local or Remote Database Support
- Proxy HA and Adaptive Load Balancing
- Public Schema for Persistent Data
- Shared Backbone with EMCC
- HA Enterprise Control via Clusterware
- LDAP Integration for Roles

PostgreSQL

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DATABASE

Proxy Controller

Proxy Control
Proxy Controller
Proxy Contr

API

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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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