Top Tips for Managing Application Platform as a Service

January 2015

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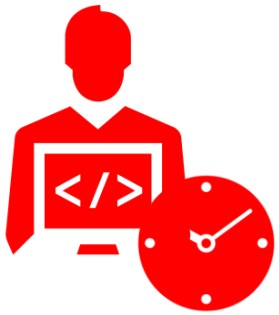
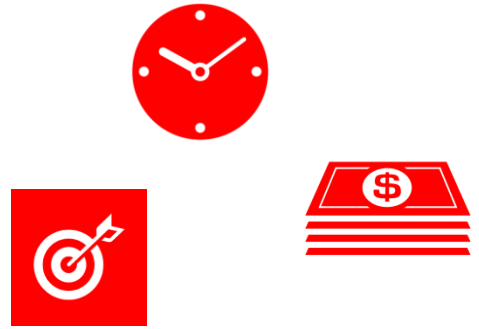
Key Management Challenges for Operations and Developers

Developers & QA



IT Operations

Business



- Slow response from IT
- Install & Config complexity
- Lack of DevOps visibility

- Crippling demand
- Complex management tasks
- High learning curve

- Lost productivity & Wasted Time
- Increased time-to-market
- Inefficient use of resources

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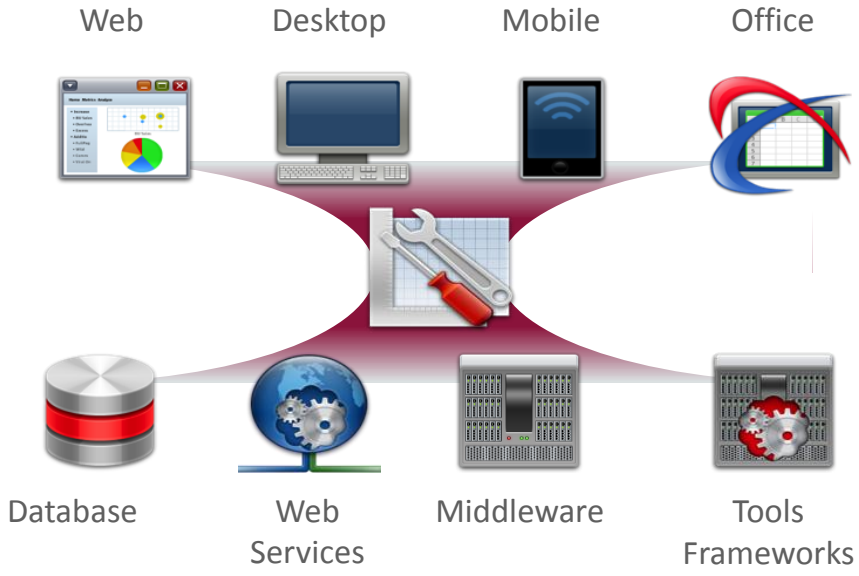
Competing Priorities at Odds

Developers Demand Flexibility

- Rapid development
- Choice of components and configurations



BUT

IT Requires Standardization

- Certified stacks and frameworks
- Known environments and patterns
- standardized security, monitoring, management

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Deploying Applications Today

Requires Additional (Homegrown) Automation

Create multiple tiers

Configure and connect multiple tiers

Create / customize scripts to "automate" process

Fine tune the installed environment

Replicate the process for build, test, deploy

Build and Deploy App!

1 to 2 weeks

1-2 days	1-5 days	1-5 days	1 day	1-2 days	Start

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Solution: Application Platform as a Service

- Application Platform as a Service provides
  - A shared, consolidated platform to provision middleware services on
  - An admin-driven & self-service model of deploying and managing applications
  - Seamless integration with other services like Database as a Service (DBaaS)
  - Ability to scale out and scale back resources
  - Metering and Chargeback based on usage of the platform and underlying infrastructure

- Application Platform as a Service needs to cater to various user personas
  - A Developer or a project owner requiring an application with/without database
  - QA requiring a full environment for testing

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Delivering Platform as a Service

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WebLogic Server Foundation for Private Cloud Operations

Standard Building Blocks that Oracle Private (and Public) Cloud Requires

WebLogic Scripting Tool (WLST) for full scripting automation

Complete administrative REST APIs for automation/monitoring

REST API

Domain Templates for Copying, Cloning, Moving Environments

Wide Adoption with DevOps Tools Hudson/Jenkins

Standards Based with Java EE 6/7 and Java SE 8

Designed for Cloud Continuous Availability – 99.999%

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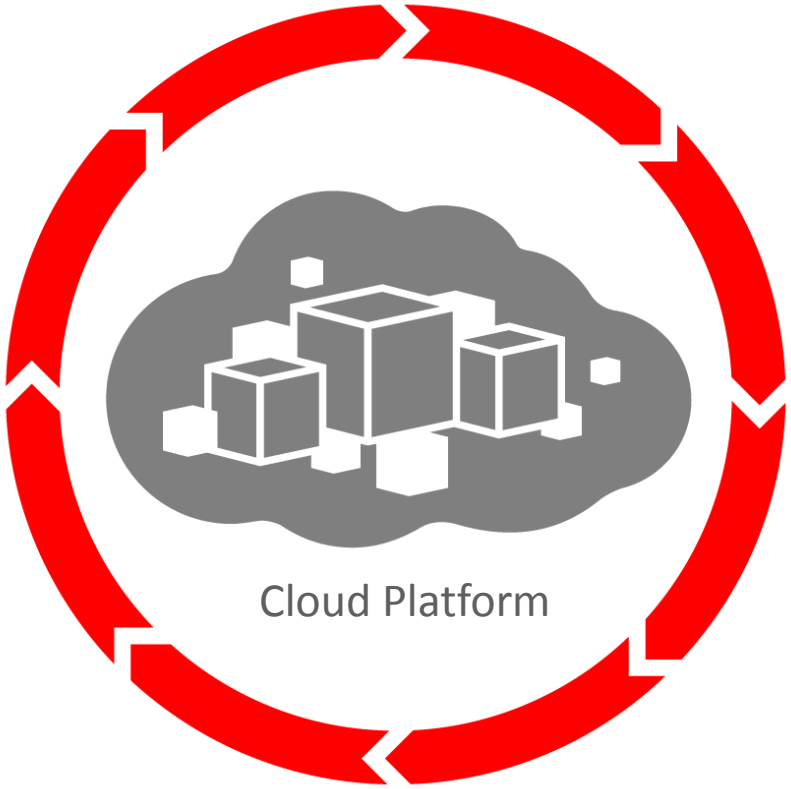
Complete Cloud Lifecycle Management

Oracle Enterprise Manager

4. Meter, Charge, Optimize

- Meter resource utilization
- Chargeback/Showback



1. Plan & Setup the Cloud

- Capacity & consolidation planning
- Asset discovery
- Setup Resource Pools
- Setup Policies

3. Manage & Monitor

- Monitoring
- Configuration management
- Full stack management

2. Enable Self-Service

- Define Service Catalog
- Enable Service Governance
- Enable integration via APIs

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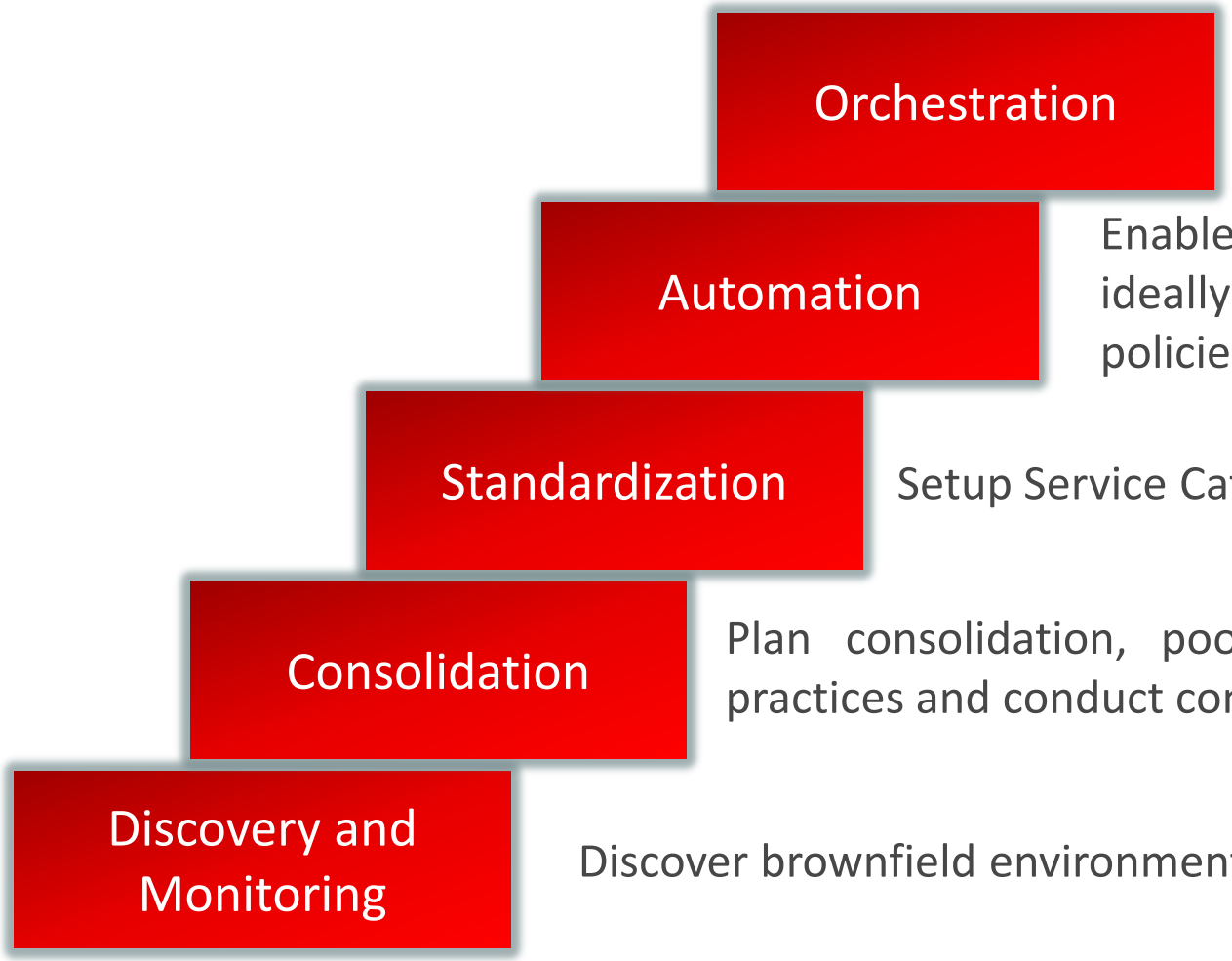
Cloud Management Maturity Progression

Enterprise Manager provides features for all levels



Use Automation APIs to integrate with Orchestration Frameworks

Enable provisioning, patching, upgrade, backup, etc ideally delivered as a Service. Define governance policies around the service

Setup Service Catalog and define Service Templates

Plan consolidation, pool the infrastructure following Oracle best practices and conduct consolidation testing with real workloads

Discover brownfield environments and bring them under monitoring

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Private PaaS Management with Oracle Enterprise Manager

Provisioning

Service Provisioning REST APIs

Service scale up and scale down

Service Governance: Access Controls, Compliance, Quota, Showback, etc

Ongoing Operations and Performance Management

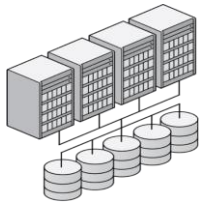
Middleware Private Cloud (APaaS & IPaaS)

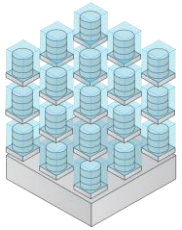
Java App

WebLogic Server

SOA /OSB

Runs on any Infrastructure : Physical, Virtual, Engineered Systems





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EM12cR4 APaaS Management: Overall Features

- ✓ Consolidation and Pooling of resources
- ✓ Automated deployment of Java App, Weblogic Container and SOA Environments
- ✓ Automated configuration of load balancers, data sources, JMS, Coherence
- ✓ Integrated Java diagnostics
- ✓ Test to Production cloning and forklifting of environments like SOA, OSB and Web Center (upcoming)
- ✓ Policy driven ability to scale up/out and scale down/back
- ✓ Automation of lifecycle operations
- ✓ Showback based on usage
- ✓ RESTFUL APIs for integrating with orchestration services and DevOps

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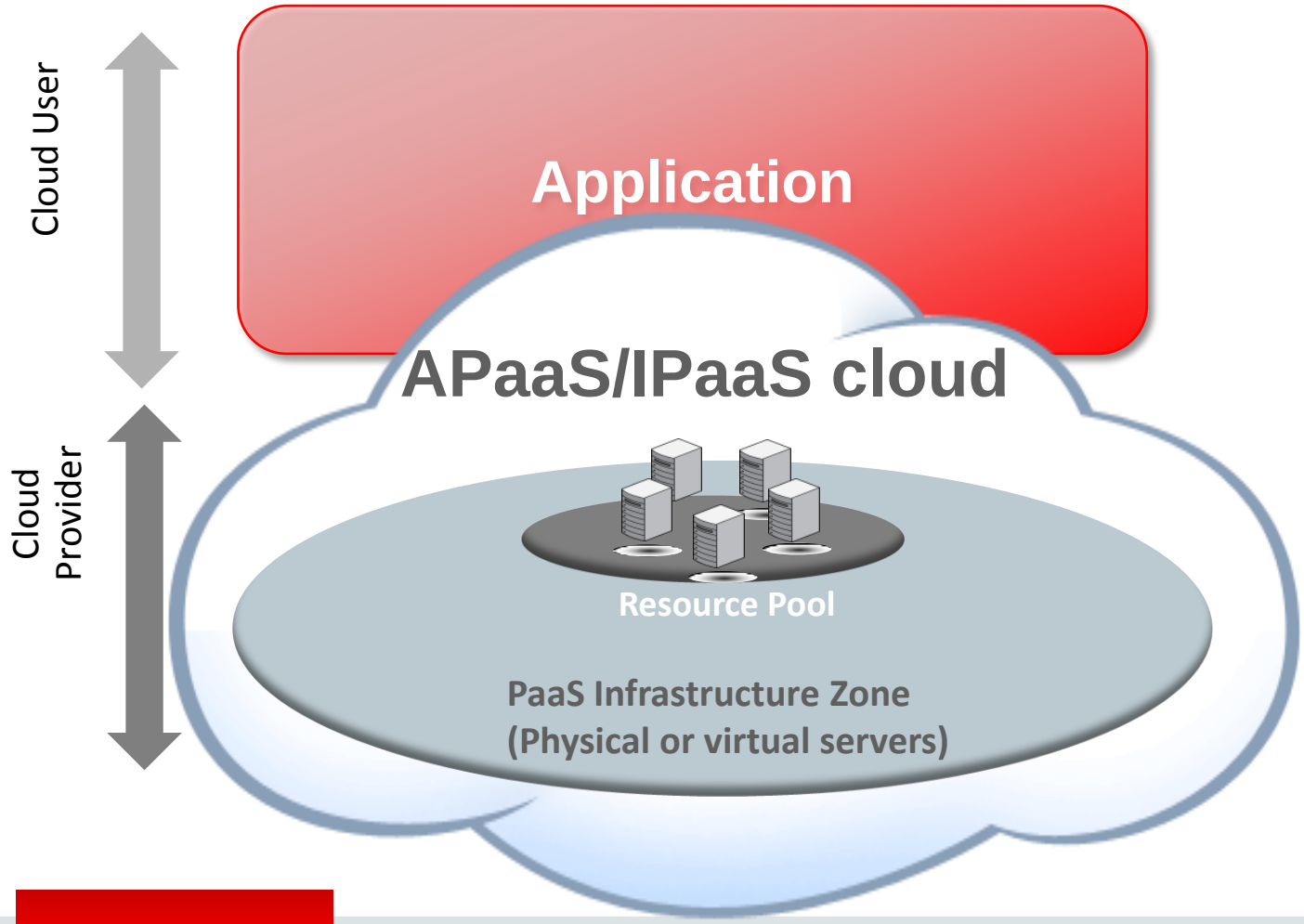
Enabling A Common Consolidated Platform for APaaS



- Infrastructure Zone: Collection of compute resources, physical or virtual
  - By geography, organization, lifecycle
- Resource pools: A collection of homogeneous Oracle Fusion Middleware Resources
- Service Templates: Standardized service definitions for users

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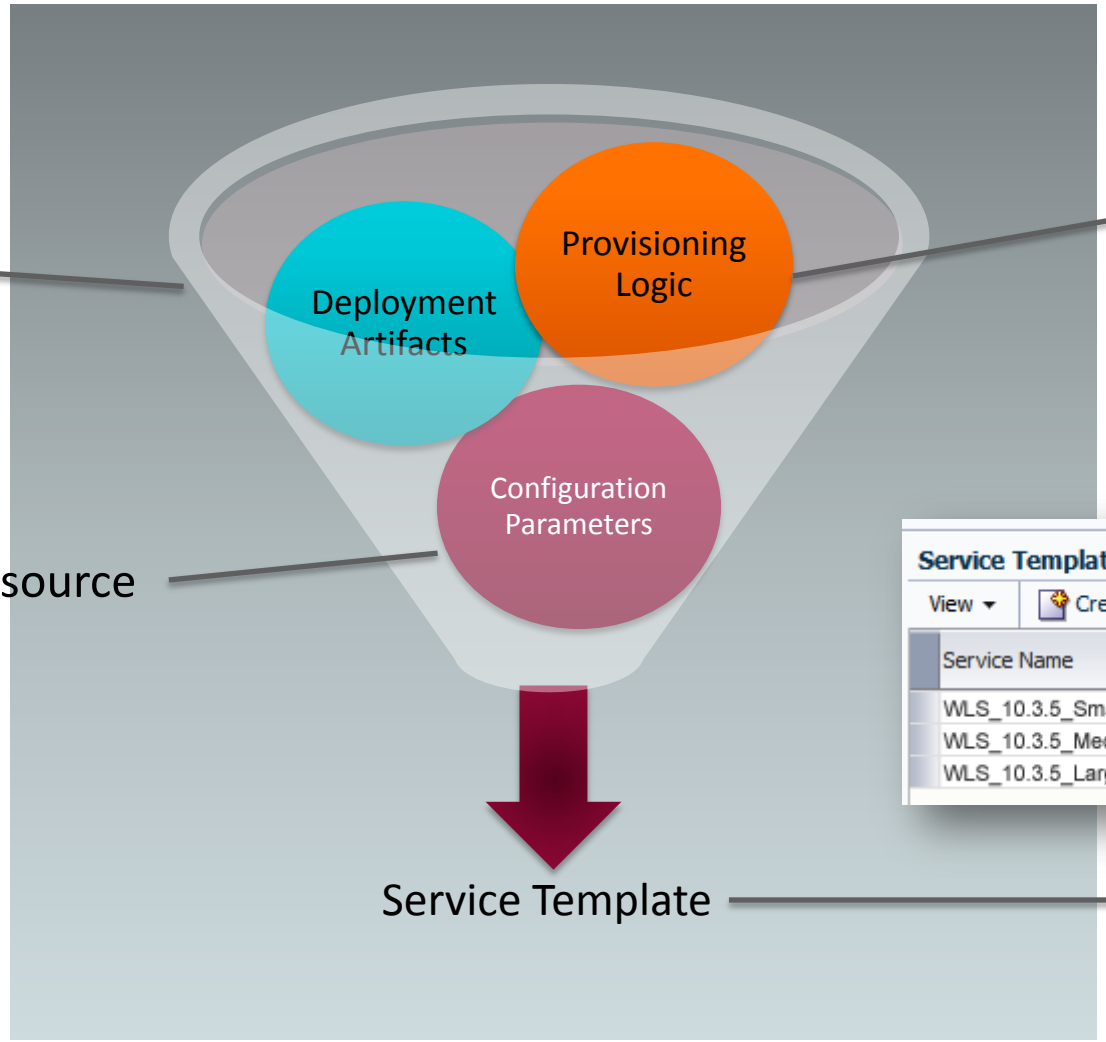
Driving Standardization through Service Templates

What bits to deploy?

How to tailor the resource instance?

How to deploy a new service instance?



EM Service Catalog

Service Templates

View | Create... | Edit | Delete

Service Name	Middleware Zones	Roles	Description
WLS_10.3.5_Small	1	2	Small heap WebLogic server (500 Mb)
WLS_10.3.5_Medium	1	1	Medium heap WebLogic server (750 Mb)
WLS_10.3.5_Large	2	2	Large heap WebLogic server (1Gb)

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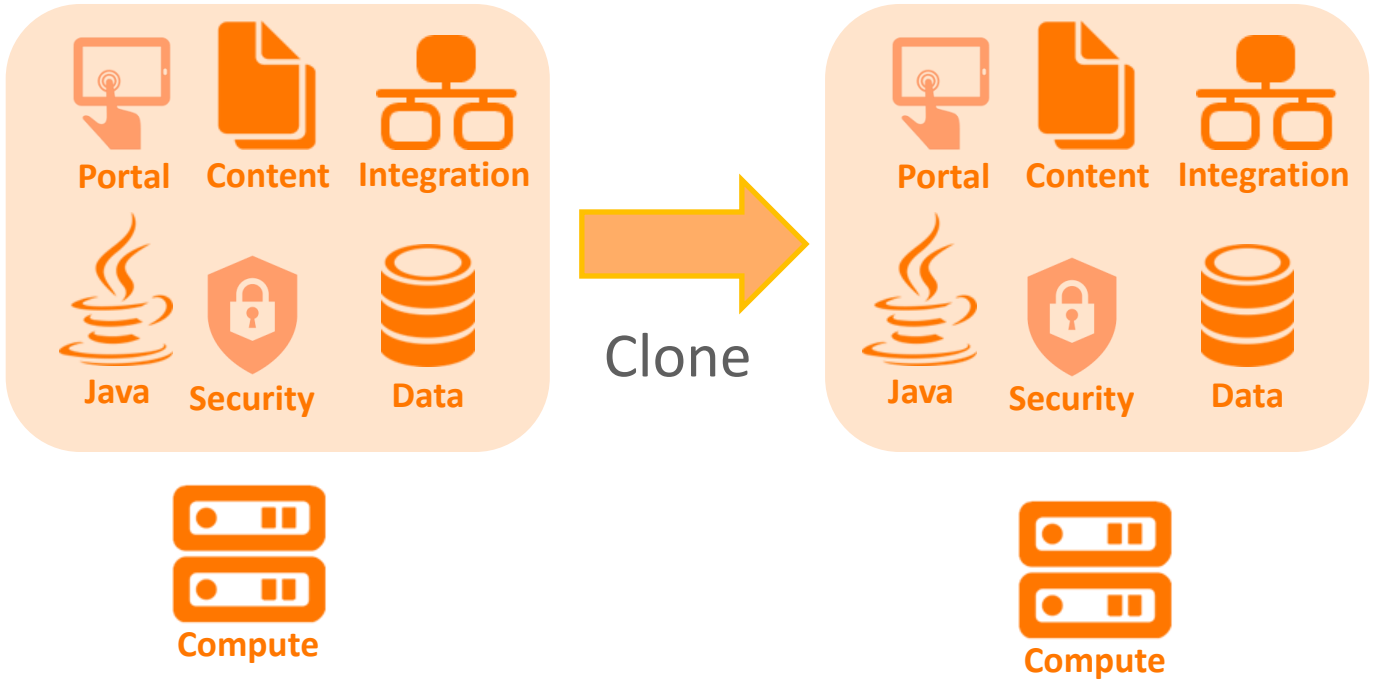
SOA, OSB and WebCenter Environment Cloning with Application Artifacts (T2P/P2T)



- Cloning of SOA platform and application artifacts like SOA/OSB domain, applications, security policies, BPEL processes, OSB Projects, DB repository, JMS/JTA/Coherence configuration
- Cloning of WebCenter platform and application artifacts like WebCenter Portal, WebCenter Content, domain, security policies
- Rewiring and reconfiguration for destination infrastructure
- Like-to-like clone multi node clustered environments
- Configuration for external components like OHS/OTD load balancing, LDAP and Search

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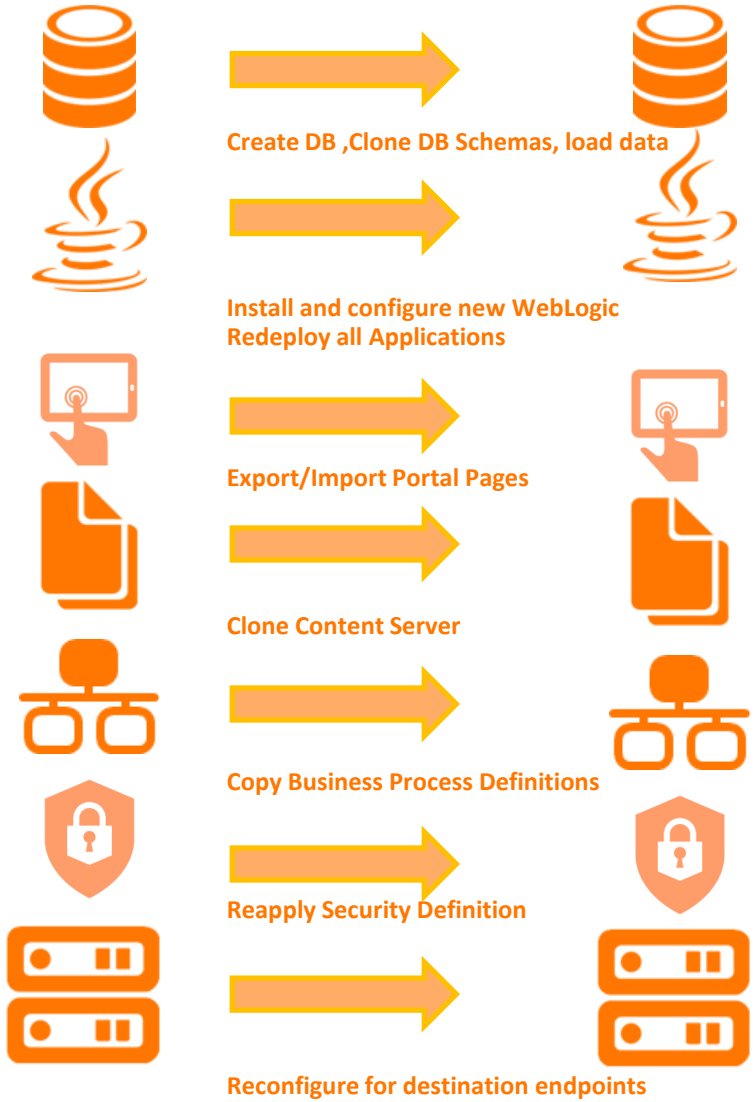
Environment Cloning with Application Artifacts - Benefits

Present Process – Manual and Time Consuming



Multiple Roles required like
DBA, AppServer Admin, SysAdmin,
Network Admin, Developer

Multi-Week Effort

End to End Automation with EM

- Execute Product Prerequisites
- Pause After Prerequisite Checks
- Pre Script Phase
- Provision Oracle Home
- Configure Web Tier
- Provision Domain
- Create Domain for Managed Servers
- Post Domain Creation Tasks
  - Oracle WebCenter Portal
    - Product Specific Post Domain Creation Tas
      - Configure WebCenter
        - slc00zto.us.oracle.com
          - Initialize Content Configuration
          - Configure Analytics
          - Configure Content Servers
          - Configure SAML for Portal
          - Restart Administration Server
          - Configure SAML for Content
        - Restart Managed Servers
- Start Node Manager
- Start Administration Server
- Post Administration Server Start Script Phase
- Start Managed Servers
- Post Server Startup Tasks
- Post Script Phase
- Register Web Tier

DevOps Enabled

Cloning in Minutes

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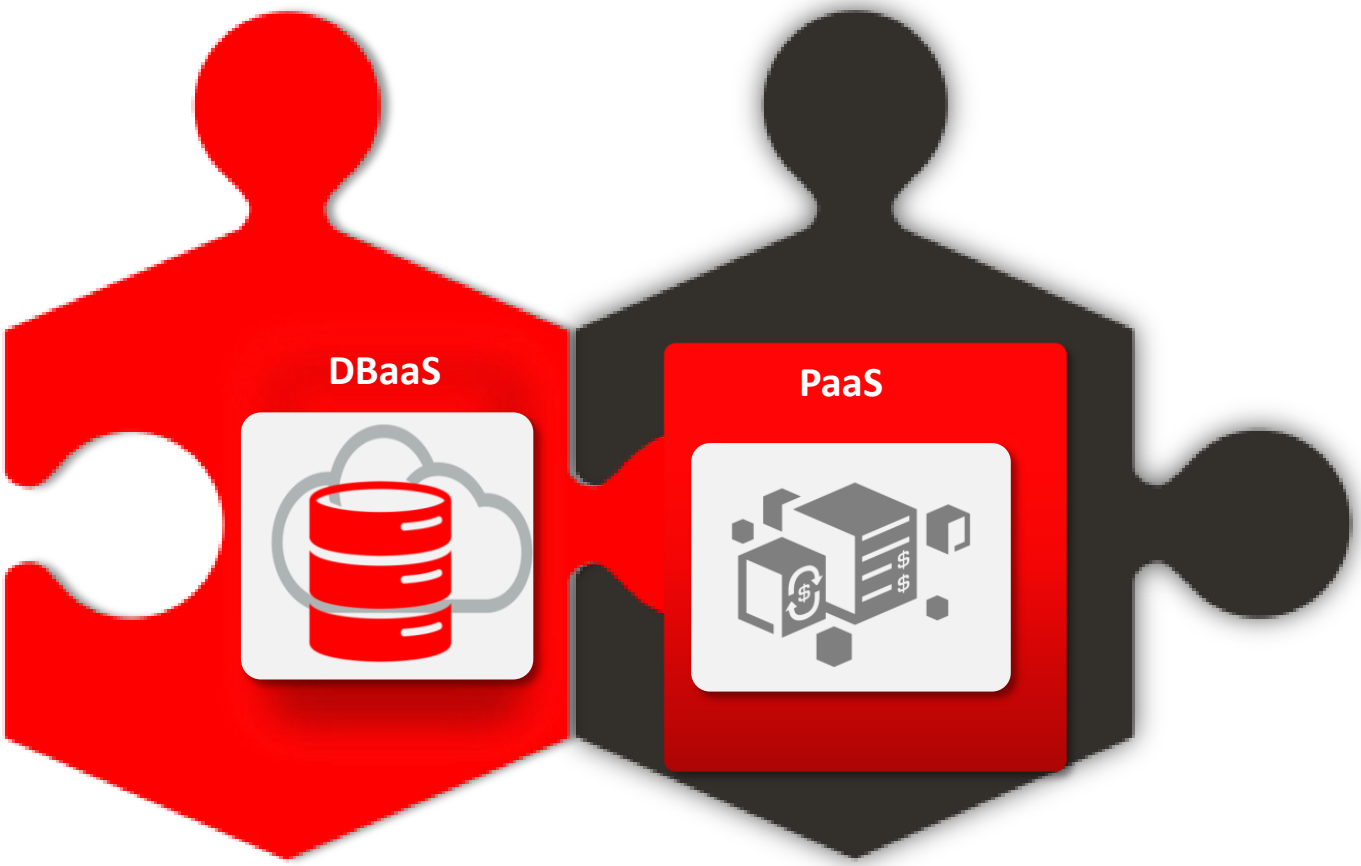
Integrated with industry leading DBaaS



- ✓Seamless integration with DBaaS for FMW database needs
- ✓Support for dedicated databases, schemas as wells as 12c multitenant
- ✓Shared, standardized database platform used as a Data Source
- ✓Single pane to monitor Database and Fusion Middleware Pools

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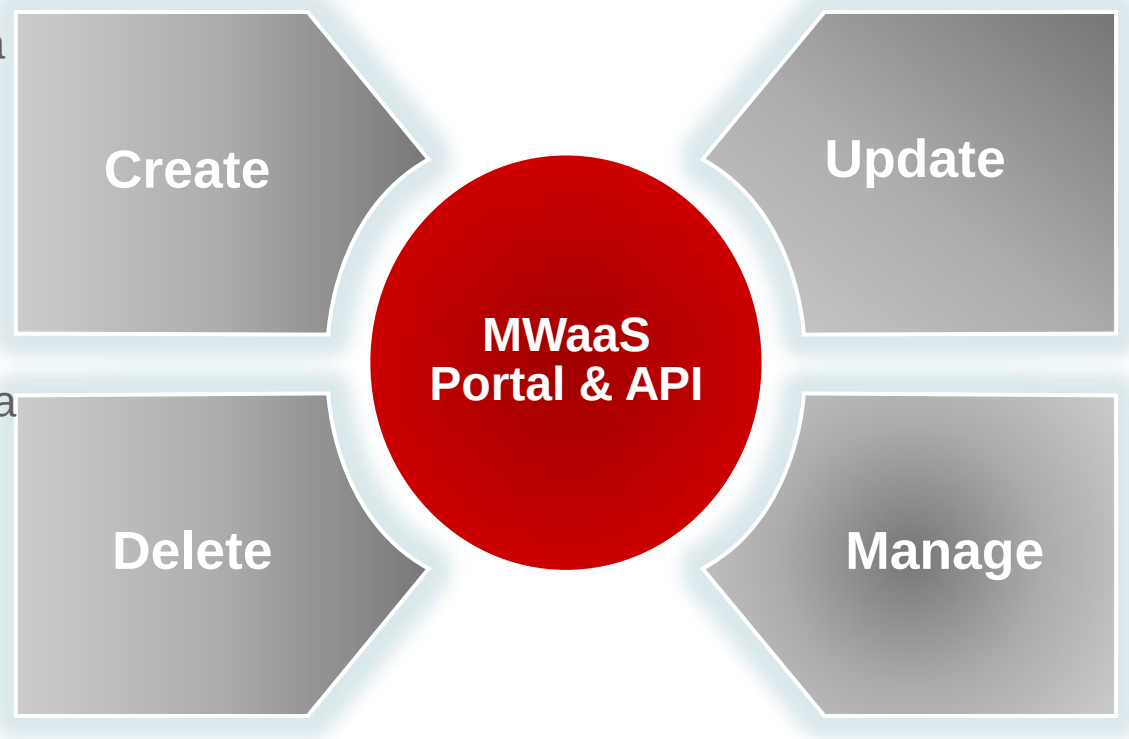
Complete APIs for Automation or Integration

- Create Zone, Pool, Quota
- Create Service Template
- Create LoadBalancer
- Create Instance



- Update Zone, Pool, Quota
- Update Pool
- Update Service Template
- Update Load Balancer

- Delete Zone, Pool, Quota
- Delete Pool
- Delete Service Template
- Delete LoadBalancer
- Delete Instance

- Service Control (start/stop)
- Deploy Application
- Create Data Sources
- Scale Up/Down
- Get Chargeback info

MWaaS Providers:
• CRUD on Zones / Pools / Service templates / Profiles / Quota / etc

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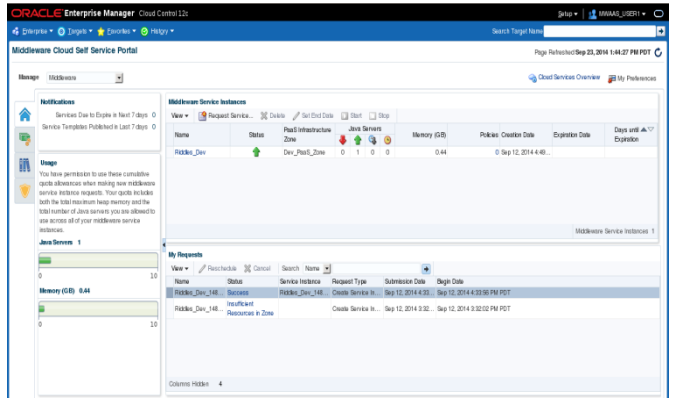
Complete REST API for Automation or Custom Portals



Out of box Self Service Portal

OR

```
//Create Service instance request
POST  em/websvcs/restful/extws/cloudservices/ssa/cfw/v2/services
Authorization: Basic c3NhX3VzZXIxOndlbGNvbWUx
Payload:
{
  "offeringId":"0731632460E41A38E0539D8DF50A9D13",
  "name":"rest_inst01","instanceName":"rest_inst01",
  "configurations": [{"name": "serviceName","value": "rest_inst01"},
                     {"name":"initialNumberOfManagedServers","value": "1"},
                     {"name": "wlsNewPassword","value": "welcome1"},
                          {"name": "wlsNewUserName","value":"weblogic"}]
}
//Response:
{
   "requests":[{"id":"1","actionName":"CREATE",

"canonicalLink":{"href":"https://slc03sey.us.oracle.com:11040/em/websvcs/restful/extws/cl
oud      services/ssa/cfw/v2/servicerequests/1"}
    }
    ]
}
```

servicenow

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FUSION MIDDLEWARE
BUSINESS PROCESS MANAGEMENT

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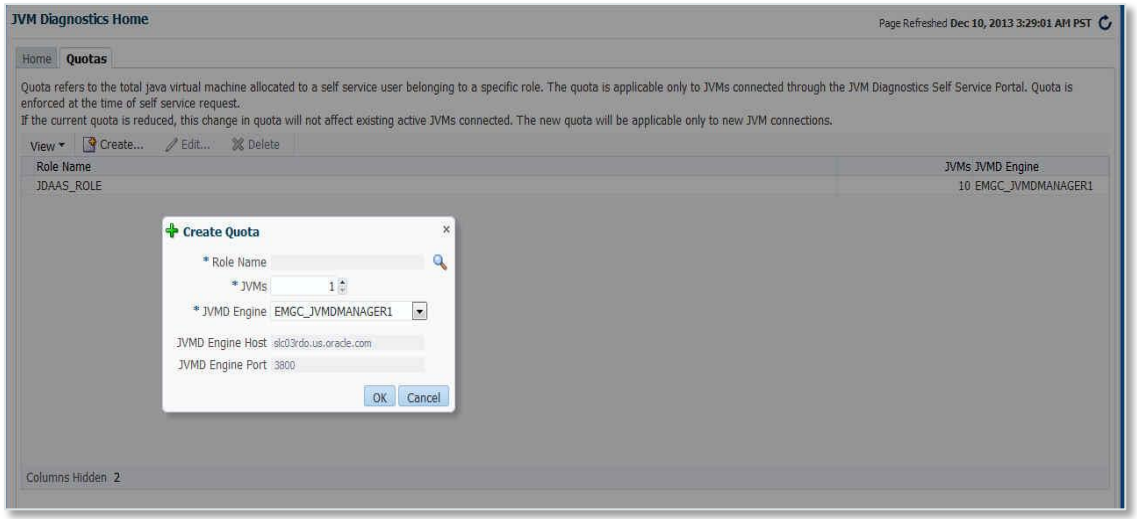
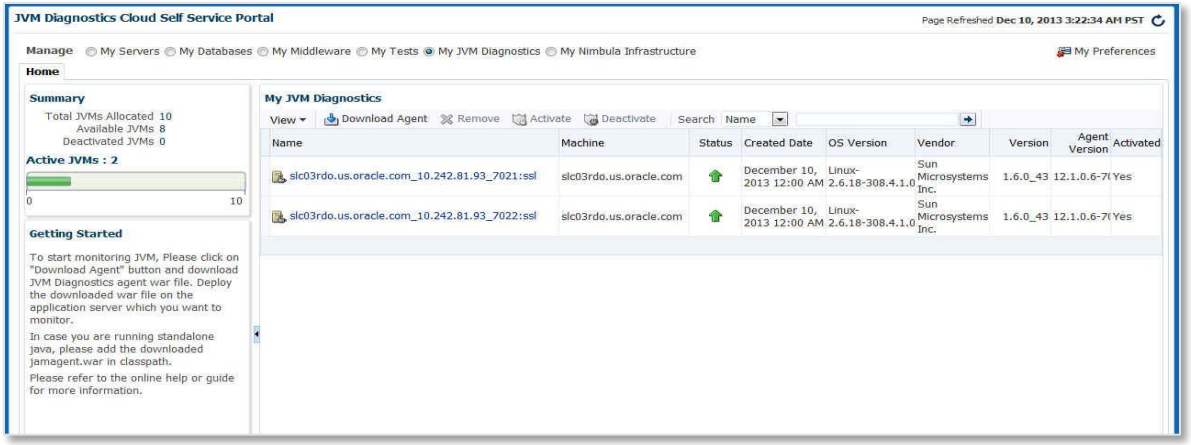
JVM Diagnostics as a Service

- Enables IT orgs to allow users to consume JVMD functionality in self-service manner and manage all their JVMs within web-based portal
- SSA users can enable JVMD on their JVMs regardless of JVMs being targets in EMCC
- To enable the cloud, all that is required is to set the Quotas
- Quotas are set to Roles and are in terms of number of monitoring JVMs
- Users use this functionality by downloading an agent from SSA and deploying it on desired JVM





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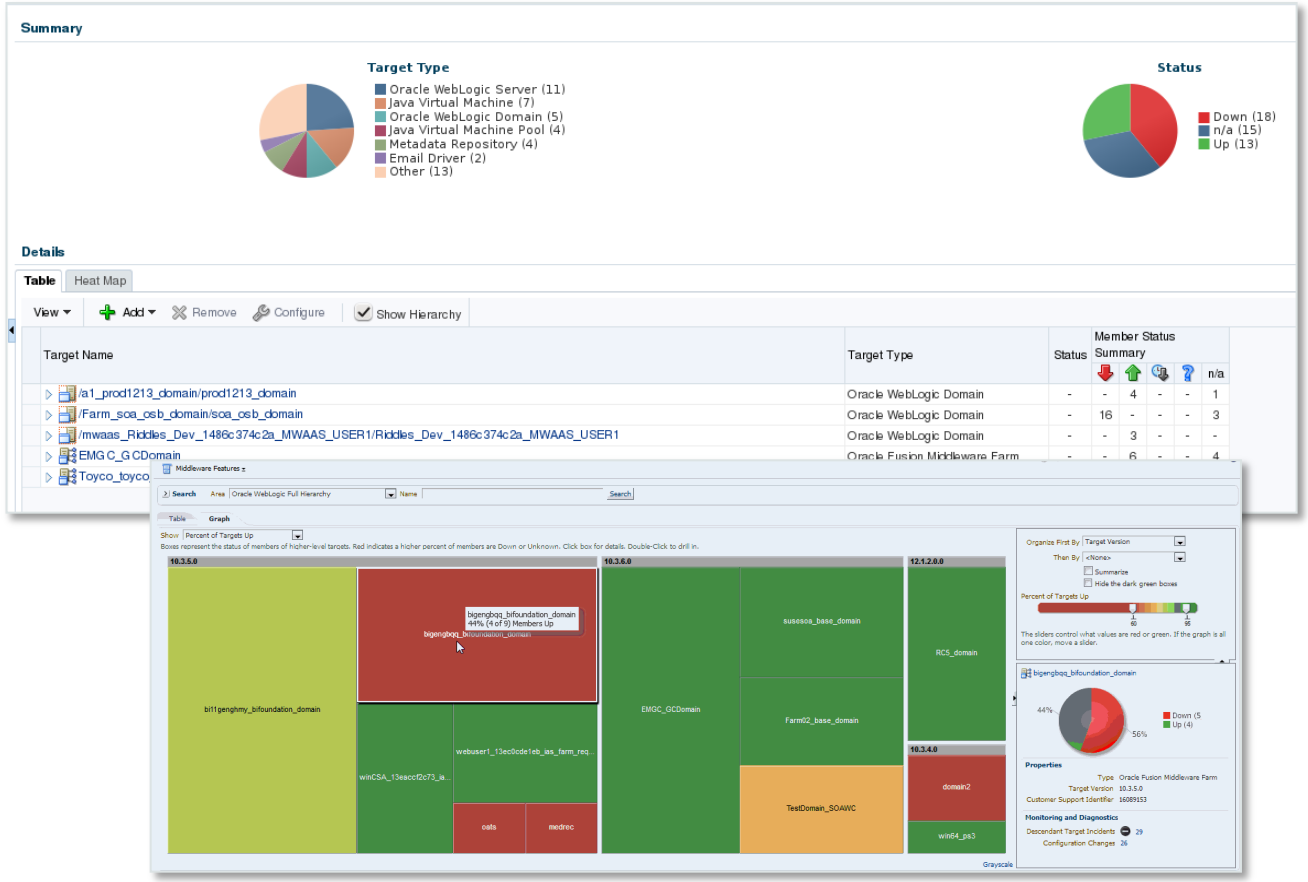
Centralized Management and Monitoring

- Manage all domains centrally
- Graphical heat maps
- Predefined metrics and metrics extensions
- Log file monitoring
- Real-time monitoring
- Historical monitoring for trending and reporting



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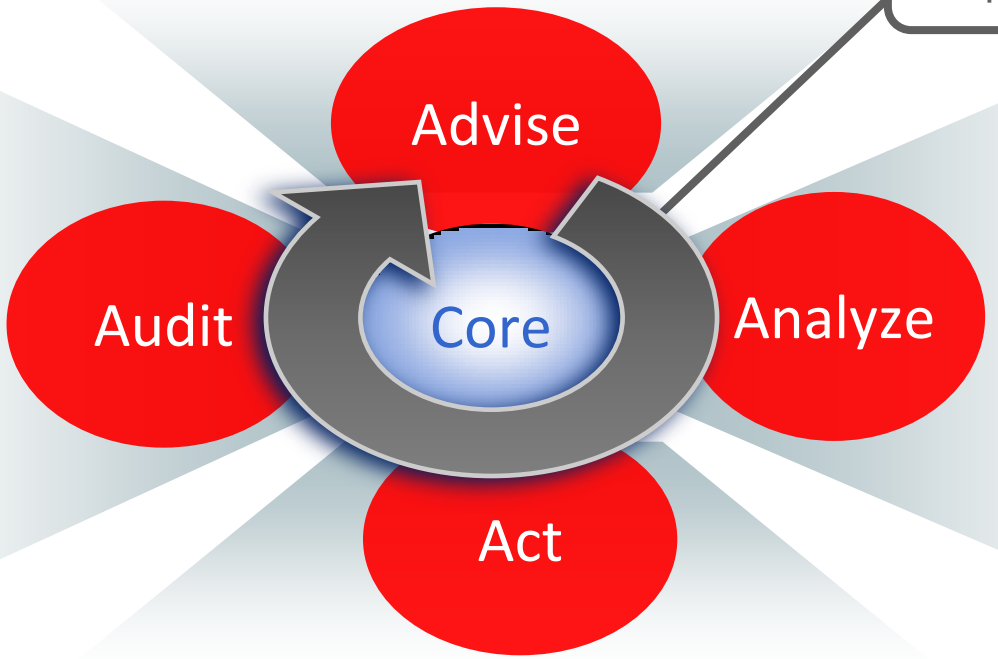
Ongoing Lifecycle Management

- Automated Discovery
- Dependencies and Relationships
- Inventory, Search
- Out-of-box collection with extensibility support

- Patch Advisories via MOS
- Upgrade Advisories from MOS
- Configuration Policy Violations



- Automatic Change Reconciliation
- Compliance Standards and Frameworks
- Reporting

- Topology guided Impact Analysis
- Config Comparison for Drift Analysis
- Patch Conflict and PreReq Analysis

- Patch
- Upgrade
- Corrective actions
- Configuration drift reconciliation

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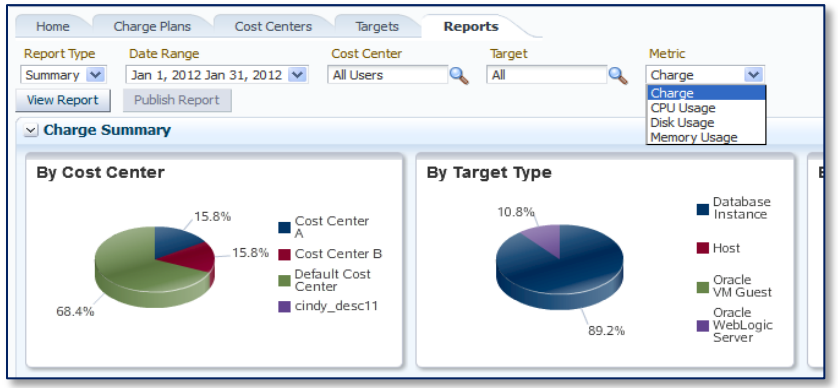
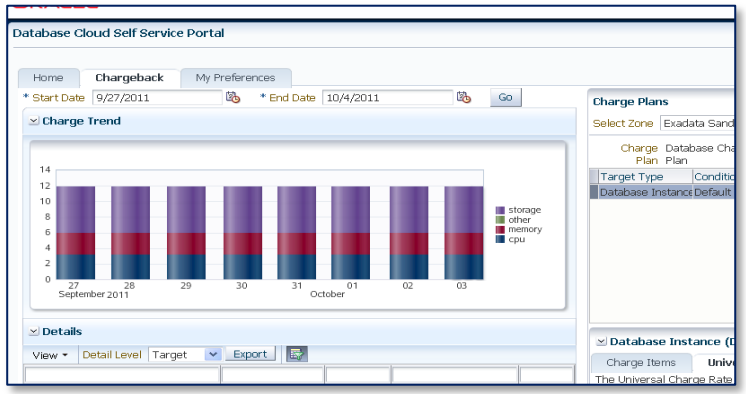
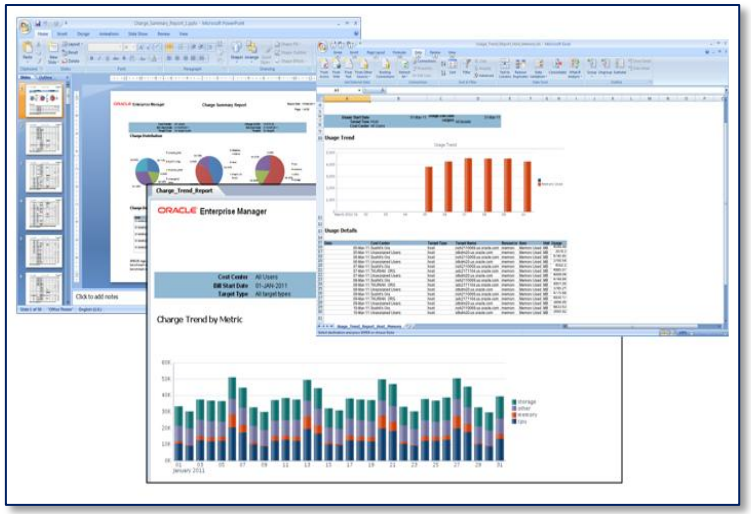
Chargeback Reporting

Tailored for different user types







Chargeback Administrator

- Rollup based on LDAP hierarchy
- Summary and Trending reports for Usage and Charge
- Drilldowns

Self-Service Portal User

- Charge Trend reports broken down by resource
- Selectable detail levels
- Charge Plan configuration

Line of Business User

- Integrate with BI Publisher
- Generate Reports in variety of formats Excel, Word, HTML, PowerPoint, PDF
- Email or FTP reports

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APaaS Metrics for Chargeback

	Immutable Instances	Mutable Instances
Configuration	Edition JVM heap Size Load balancer Cluster size Allocated memory and storage at VM/host level	Edition JVM heap Size Disk usage Load balancer Cluster size Admin privilege Allocated memory and storage at VM/host level
Usage	CPU Time CPU utilization (%) Disk IO Network bandwidth # of requests	CPU Time CPU utilization (%) Disk IO Network bandwidth # of requests

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Customer Case Studies

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Standardization: Dev, Identity, Integration, Management

Bundesagentur für Arbeit

Challenge

- Over 700 Agencies and Branches to serve 11M customers with rapidly growing IT dept.
- Challenging maintenance & production support with new requirements
- Increasingly complex environment with low efficiencies for application management and lifecycle
- Audit & governmental regulatory compliance challenges

Solution

- Standardized over 4000 WebLogic Servers in 700 domains. Adding pro-active operations for standard platform with SLA Mgt and Capacity Planning.
- Removed error prone manual deployment and update of 500 Main business Applications including a range of non-Oracle products for over 50 IT Ops Mgrs
- Identity and Access Management Consolidation for over 80,00 staff
- Primary Products: Oracle Database, WebLogic Suite, SOA Suite, EM Pack for WebLogic, EM Pack for SOA, EM 12c Cloud Control

Benefits

- Bring opportunities to the customer wherever they are.
- Define a shared platform allowing to:
  - Improve service to Employers through on time job placements
  - Rapid unemployment compensation provisioning
  - Cost reduction through economy of scale
- New Services released using the same workforce to manage and monitor

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7-Eleven Rapid Fire APaaS Delivered in Minutes

COMPANY OVERVIEW

- World's largest convenience store chain with 50,000 stores and 60M guests served daily

CHALLENGES/OPPORTUNITIES

- Focus on customer experience
- Create best digital experience for guests to drive customer loyalty, revenue
- Establish on-going relationship with customers
- Establish multiple channels for connectedness

SOLUTIONS

- Oracle SOA Suite
- Oracle WebLogic Server
- Oracle Database
- Oracle Enterprise Manager
- Oracle Exadata
- Oracle Exalogic

CUSTOMER PERSPECTIVE

"We are now able to provision new environments in under ten minutes. This includes the complete SOA Suite on Exalogic, Enterprise Manager managing both the SOA Suite, Exalogic and our Exadata databases."

***Ron Clanton*, DGE Program Manager, Information Technology**

RESULTS

- **Significantly shortened development and rollout cycles**
- **Private cloud environment provisioned in under 10 minutes instead of weeks**
- **Comprehensive reporting for IT and business visibility**

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Government Agency offers APaaS on Exalogic

COMPANY OVERVIEW

- Large government agency

CHALLENGES/OPPORTUNITIES

- Cumbersome process to deploy new applications
- Reduction in IT spending
- Increased responsibilities

SOLUTIONS

- Oracle WebLogic Server
- Oracle Enterprise Manager
- Oracle Exadata
- Oracle Exalogic

RESULTS

- Increased performance and throughput
- Self-service and capacity-on-demand reducing staffing needs
- Virtualization at WLS layer, increasing density and lowering cost

KEY TAKE AWAYS

- When positioning Exalogic & APaaS for private cloud, it is really about the combined solution of Exalogic physical, WL and APaaS. Positioning Exalogic properly and virtualizing at the app tier using WL. Providing automation, capacity-on-demand and self-service through APaaS.
- It can be key to find the pain point first, whether it's performance (latency, throughput, etc), reduction in data center costs or reduction in labor costs.

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Hardware and Software
Engineered to Work Together

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