

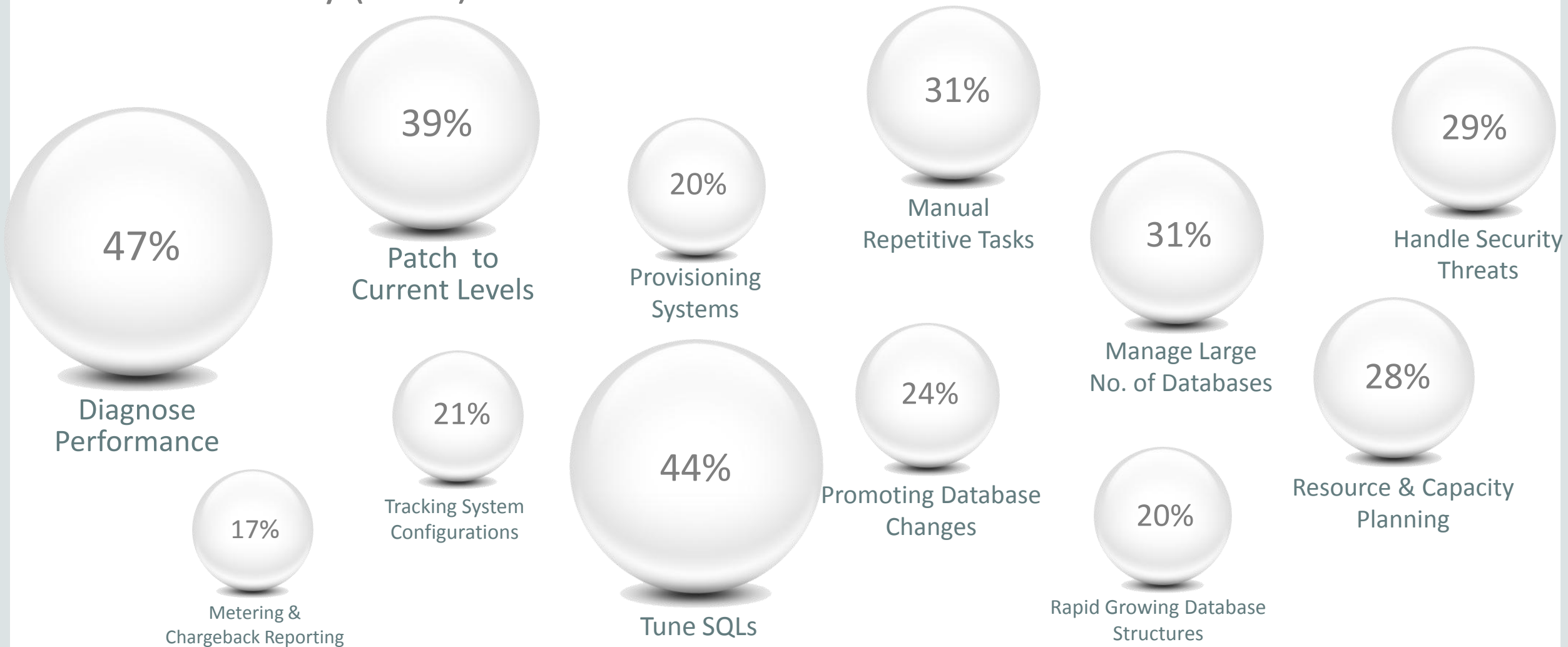
ORACLE®

Agenda

- Database Lifecycle Management: Key Drivers
- Database Lifecycle Management
 - Discovery and Initial Provisioning
 - Patching and Change Management
 - Configuration and Compliance Management
- References and Case Studies
- Summary of benefits with focus on Exadata and 12c multitenant databases

Top 12 Database Administrative Challenges

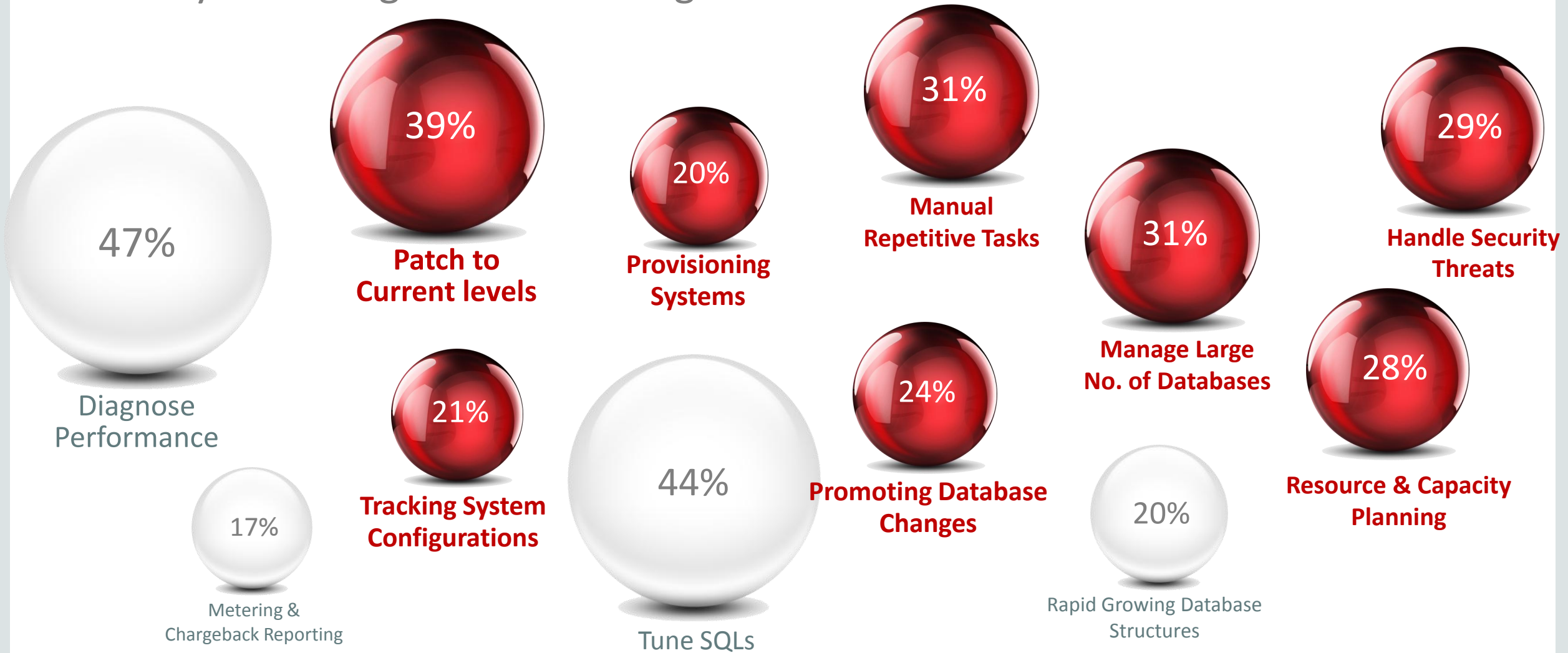
IOUG Survey (2012)



IOUG 2012 Survey - Between Big Data to Databases in Cloud

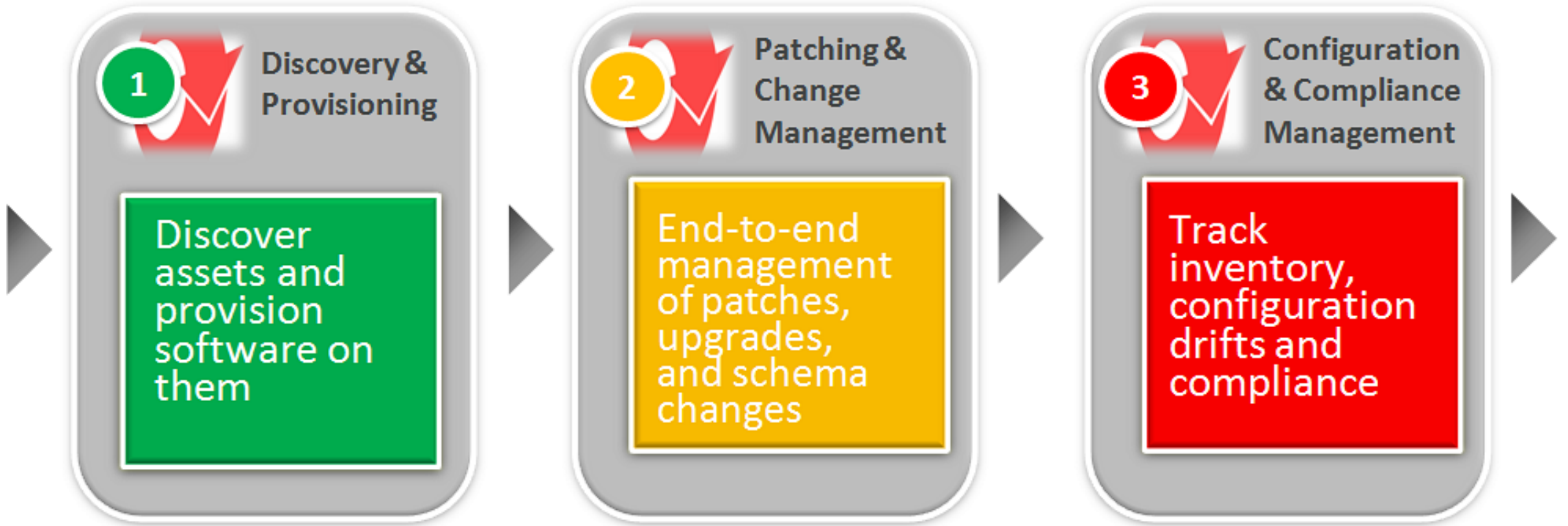
Top 12 Database Administrative Challenges

Lifecycle Management Challenges

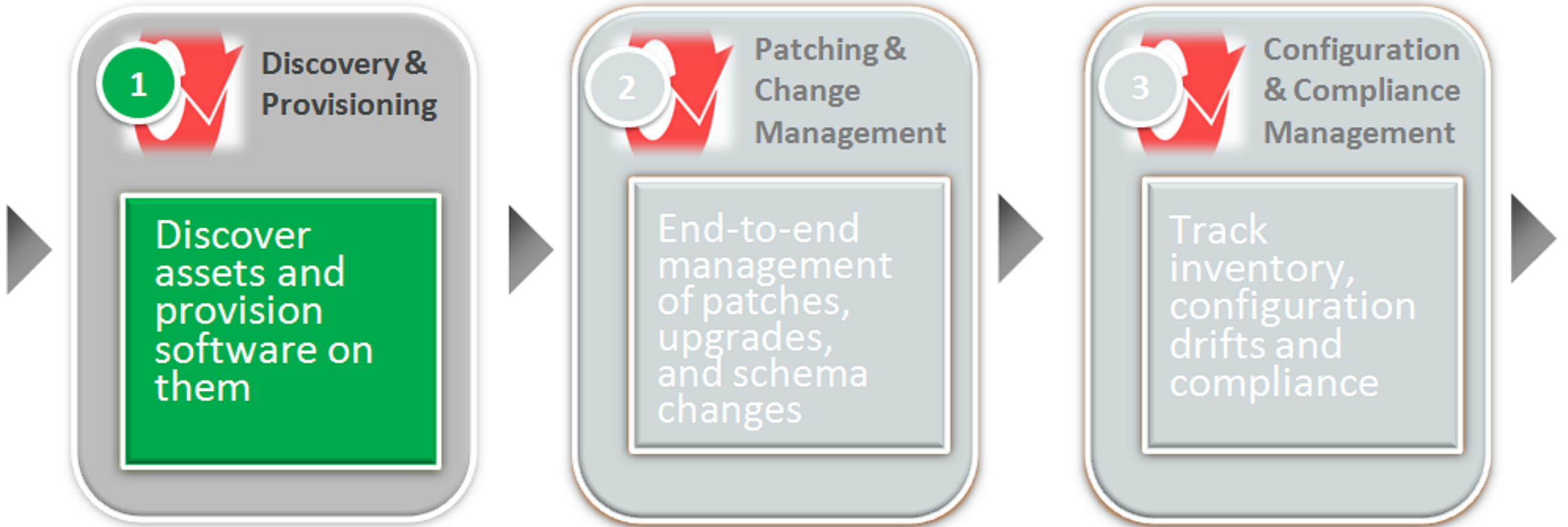


IOUG 2012 Survey - Between Big Data to Databases in Cloud

Database Lifecycle Management



Database Lifecycle Management



Automated Discovery

Know What you have

Without Enterprise Manager

Run Standalone Network Discovery Tool

Manual discovery with Host and Server names

Challenges and Problems

Cumbersome process

Risk of missing out

Enterprise Manager 12c Solutions

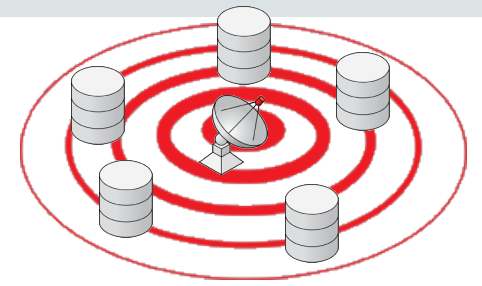


Network scan of known software and ports



Agent-based automated discovery of unmanaged targets

Two Layer Discovery



Network Discovery

- IP scanning techniques based on Nmap
- Discover unmanaged (no EM agent installed) servers and services on a port (ie TNS Listeners)
- Promote targets from “Unmanaged” to “Managed”
- Integrated workflow for agent deployment

Agent Discovery

- Automated Daily discovery
- Discovery scripts run to find Not Yet Managed (NYM) software (targets).
- Newly discovered targets in Auto Discovery Results – Non-Host Targets
- Promote targets from “Unmanaged” to “Managed”
- Install details automatically populated.

Promoting Discovered 12c Database

DB12 Container Database

Properties Install Packages Credentials Parameters Review

Configure Database Instance: Properties

* Name (Container Database) ←

Type Database Instance

* Database System

Name	Value
Oracle Home Path	<input type="text" value="/scratch/aime/app/aime/product/12"/>
Monitor Username	<input type="text" value="dbsnmp"/>
Monitor Password	<input type="password" value="*****"/>
Role	<input type="text" value="NORMAL"/>
Listener Machine Name	<input type="text" value="crmdb12.us.oracle.com"/>
Port	<input type="text" value="1521"/>
Database SID	<input type="text" value="crmdb12"/>
Preferred Connect String	<input type="text"/>

Enter the connection string that OMS should use when connecting to the target database. If blank, the OMS would automatically construct one using the host, port, SID provided above.

▼ **Pluggable Databases**

Pluggable Database Discovery Mode

DB12 Pluggable Databases

Select	Target Name	Name	Default Service Name
<input checked="" type="radio"/>	crmdb12.us.oracle.com_CRMPDB12	CRMPDB12	crmpdb12.us.oracle.com
<input type="radio"/>	crmdb12.us.oracle.com_CDBROOT	CDB\$ROOT	crmdb12.us.oracle.com

←

Step 1 of 5



Provisioning Databases

Provision test, development or production systems

Without Enterprise Manager

Manual or scripts based Installation

Silent Mode installation with
response/template files

Challenges and Problems

Long and Error Prone process

Lack of Standardization

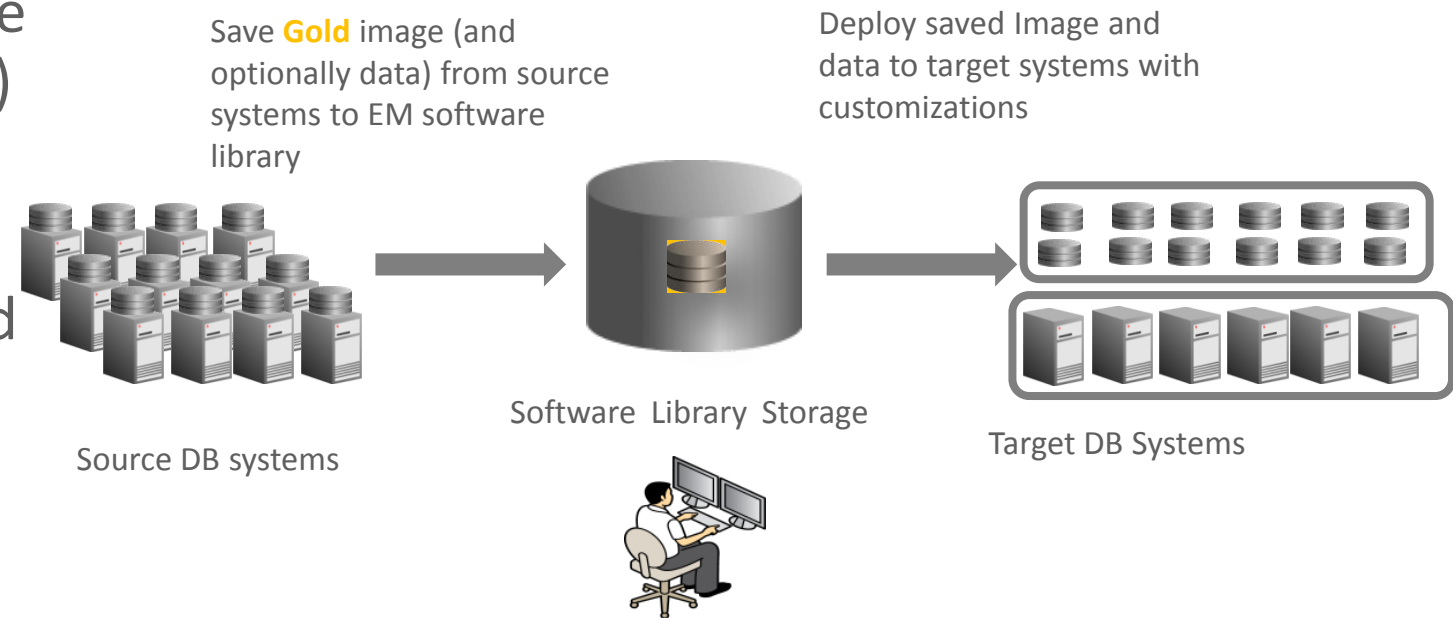
Enterprise Manager 12c Solutions

- ✓ Automated Mass Deployment
- ✓ Standardization using Provisioning Profiles
- ✓ Role and Access Separation

DB Cloning using EM12c Provisioning

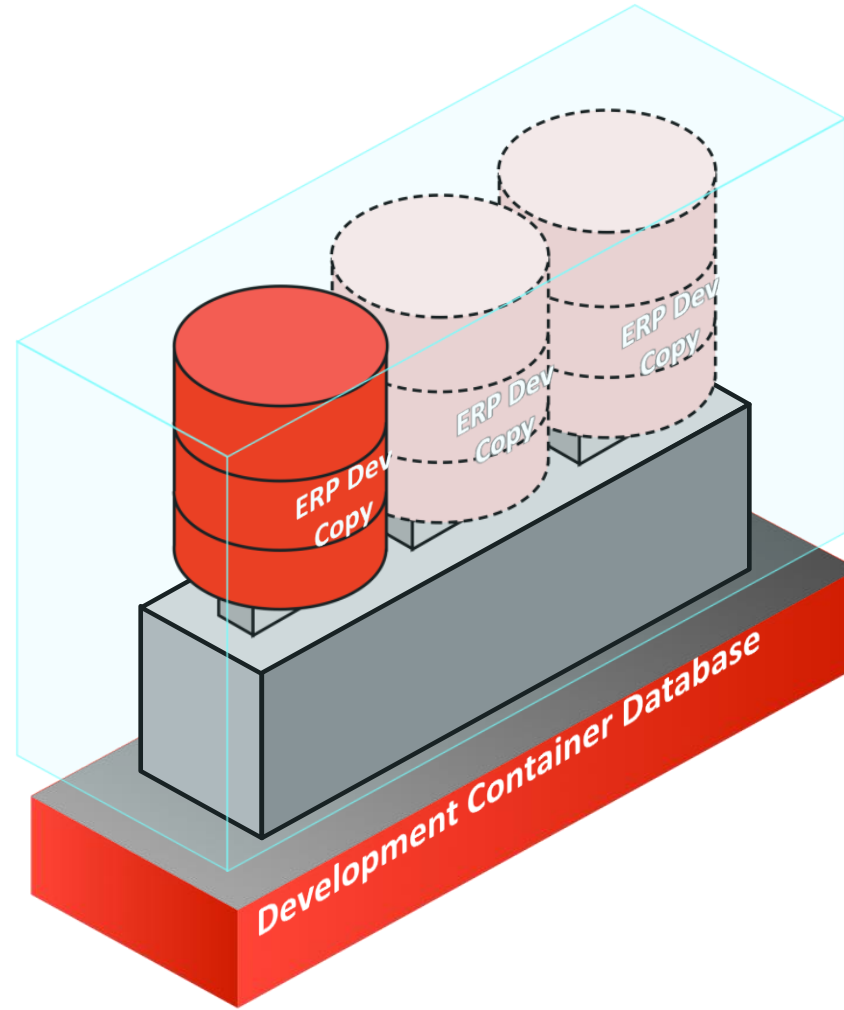
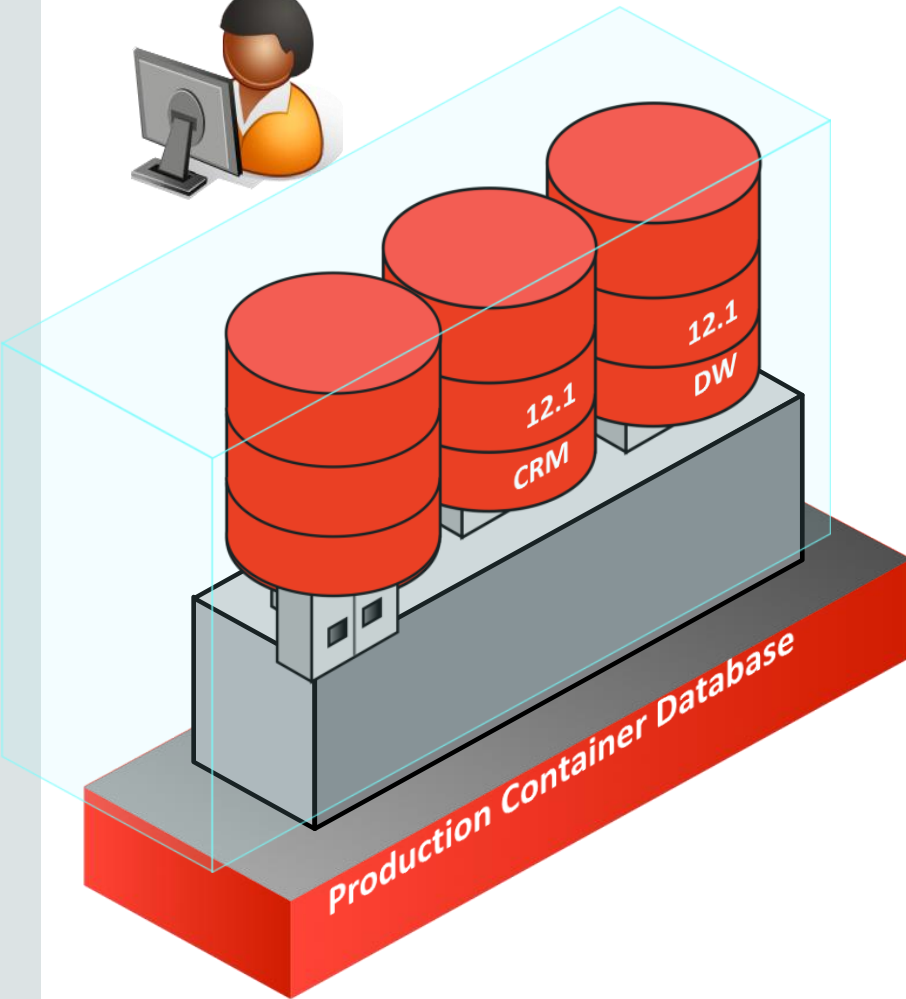
DB Provisioning

- Mass Deployment of Oracle Software (Database, Real Application Clusters)
- Supports all versions up to 12.1 including Pluggable Databases
- Gold Image cloning and standardized software deployment via *Profiles*
- *Lock down* access for controlled and error free deployments



Multitenant Database Provisioning

EM enabled fast, flexible copy and snapshot of 12c Pluggable Databases

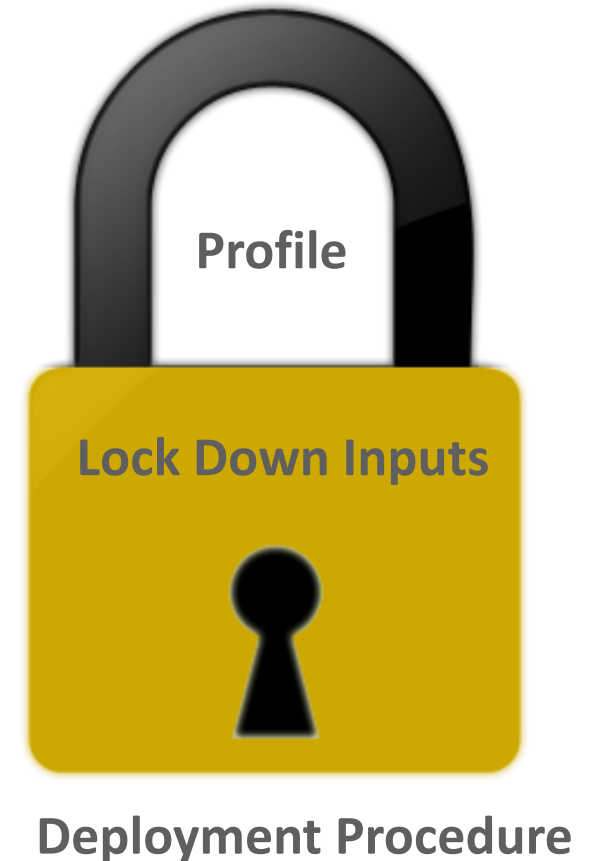


- Create CDBs with multiple PDBs
- Unplug and plug full data and application
- Useful for
 - Upgrade Testing
 - Functional Testing
 - Agile development
- Storage efficient snapshots within a container database

Standardizing Deployments

EM enabled fast, flexible copy and snapshot of 12c Pluggable Databases

- Provisioning **Profile**
 - Gold image with specific patches, configuration, etc
 - Stored and versioned in Software Library
- Clear separation of Designer and Operator roles
- **Lock Down**
 - Inputs to Deployment Procedure that cannot be edited by Operators
- Used together guarantees standard deployment of new databases



Profiles and Lockdown

ORACLE Enterprise Manager Grid Control 12g

Help

Create Database Provisioning Profile

Reference Host | Oracle Home Details | Database Details | Credentials | Profile

Step 1 of 6

Next Cancel

Reference Host

Select Host

This process will create a provisioning profile consisting of the Data input to the provisioning process at a later time.

Select the reference host:

Select Operations to include as part of Profile

- Grid Infrastructure Gold Image
- Oracle Database Gold Image
- Grid Infrastructure Configuration Properties
- Oracle Database Template

Capturing Provisioning Profiles

ORACLE Enterprise Manager Grid Control 12g

Help

Create Database

Database Version and Type | Database Template | Identification and Placement | **Storage Locations** | Initialization Parameters | Additional Configuration Options | Review

Save Back Step 4 of 7 Next Cancel

Storage Locations

Specify storage type and file locations. You can parameterize file locations using variables. View Variables

Storage Type

File System

Automatic Storage Management (ASM)

Database Files Location

Specify the location where datafiles, tempfiles, redo log files, and control files will be created.

Use Database File Locations From Template

Use Common Location For Database Files

Location:

Use Oracle Managed Files (OMF)

Recovery Files Location

Use Fast Recovery Area

Specify the location where recovery related files (archived redo logs, RMAN backups, and other related files) will be created.

Recovery Area Location:

Fast Recovery Area Size (MB):

Archive Log Settings

Enabling archive logging protects database from media failure. By default, archive logs are written to Fast Recovery area.

Enable Archiving

Locked values shown in read only mode





DATABASE DEPLOYMENT

£20.076 Billion in Revenue

93,000 Employees in 170 Countries

5,000 Databases

Case Study

FOCUS ON

Database-as-a-Service

Challenge:

- Growing application sprawl
- Application deployment was slow, complex and expensive
- Database infrastructure was “*rapidly falling into legacy*”
- GOAL: Make BT #1 for customer service and cost reduction

After Oracle Enterprise Manager:

- Consolidated databases onto private DBaaS Cloud
- IT team now manages 30% more databases with 20% fewer personnel hours
- No more wasted time: harmonized management tools, processes, and methodology
- Reduced server sprawl, increase operational efficiencies by deploying databases faster

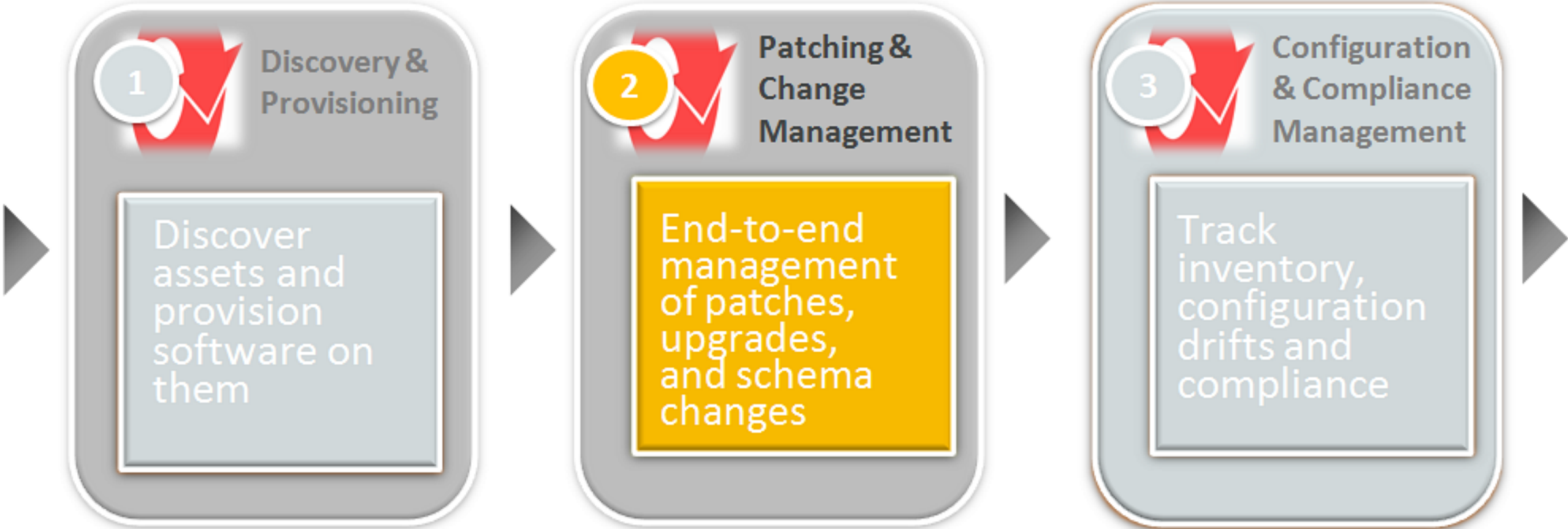


Case Study

“Spinning up a database, a process that used to take two to three weeks, now takes us only **19 minutes**, something like a **1,000%** improvement in deployment time. Accelerating deployment to this degree has brought us much closer to the customer service levels our business goals demand.”

Surren Partabh
Chief Technology Officer
BT Operations

Database Lifecycle Management



Patching

Maintaining Patch Levels

Without Enterprise Manager

Manual installation either directly or using scripts

Multiple people involved across multiple hours to cover the environment

Challenges and Problems

Predictability

Downtime Management

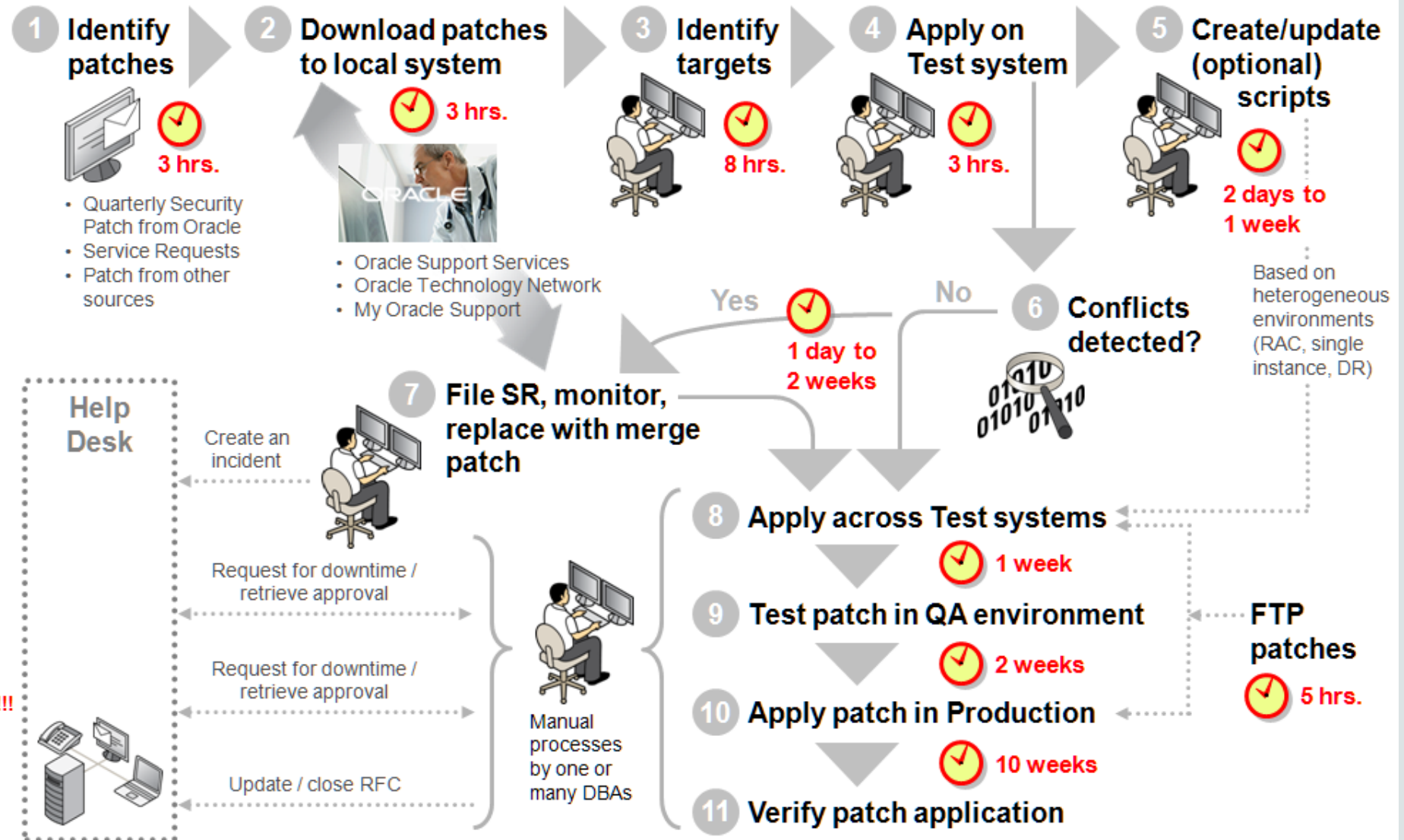
Scalability

Enterprise Manager 12c Solutions

- ✓ Automated Mass Deployment
- ✓ Minimize Downtime, identify issues with pre requisite check
- ✓ Patch Templates and Compliance Standards

Typical Database Patch Management Process

- Complex
- Manual
- Error Prone
- Time consuming



Total Rollout Effort (Per Quarter): 25 weeks!!!

Based on a large customer's experience with 1000+ databases)

Patch Management with EM 12c

- Detect and verify patching success
- Detect drift from existing gold images and rebuild them for future software rollouts
- Patch Compliance tracking and reporting
- Revert to previous version in case of regression



**Patch
Verification
& Reporting**

**Patch
Advise**

- Advise/recommend patches based on configuration
- Provides patch rating and community feedback

**Patch
Planning**

- Create Patch Plans & templates to apply multiple patches in a single downtime
- Detect conflicts and file merge requests
- Perform pre-flight dependency and impact analysis

 *New or Significantly Enhanced*

**Patch
Rollout**

- Support Rolling patches for RAC, Pluggable Databases
- Support out-of-place patching/upgrade for single instance databases
- Support patching Exadata Database Cluster Stack
- Support Group based patching
- Push button Patching by “Operators”

ORACLE
ENTERPRISE MANAGER **12^c**

Patch Recommendations

- Connected to My Oracle Support
 - **Online Mode**
 - Directly accessible within Enterprise Manger
 - Complete integration with My Oracle Support
- Support for disconnected datacenters
 - **Offline Mode**
 - No connectivity to My Oracle Support
- Proactive patch recommendations for Oracle recommended patches (including CPU,PSU..)
 - Downloads Metadata from My Oracle Support and computes for the targets within Cloud control
- Rich Information about patches like bugs fixed, associated KM articles, number of downloads, trends

The screenshot displays the Oracle Enterprise Manager Cloud Control 12c interface. The top navigation bar includes 'Enterprise', 'Targets', 'Favorites', and 'History'. The main content area is titled 'My Oracle Support' and 'Patch Recommendations'. A table lists several patches, with patch 12419331 selected. Below the table, detailed information for patch 12419331 is shown, including its last updated date, size, product, release, patch target, support level, classification, and patch tag. A 'Bugs Resolved by This Patch' section lists several bug IDs and their descriptions. On the right, a 'Platform' section shows 'Linux x86-64' and 'Release' '11.2.0.2.0'. Below this is a 'Downloads 1556' section with a bar chart titled 'Number of Downloads by Week' showing download trends over time.

Patch	Classification	Description	In P...	Target	Type	Oracle Home	Host	Detected
12419258	Security	CPUJUL2011 DATABASE 10.2.0.5		aug08.us.oracle.com	Database In...	/scratch/aim/DB1...	staic04.us.oracle.com	Today
12419321	Security	CPUJUL2011 DATABASE 11.2.0.2		ems2747_adcgbo09	Database In...	/slot/ems2747/orac...	adcgbo09.us.oracle.com	Today
12419331	Other Reco...	DATABASE PSU 11.2.0.2.3 (INCLUDES...		ems2747_adcgbo09	Database In...	/slot/ems2747/orac...	adcgbo09.us.oracle.com	Today
12419392	Other Reco...	DATABASE PSU 10.2.0.5	1 Patch selected				staic04.us.oracle.com	Today

Patch 12419331: DATABASE PSU 11.2.0.2.3 (INCLUDES CPUJUL2011)

Last Updated Jul 18, 2011 (3+ weeks ago) **Size** 13.7 MB

Product	Oracle Database Family	Support Level	Software
Release	Oracle 11.2.0.2.0	Classification	Other Recommendations
Patch Target	ems2747_adcgbo09	Patch Tag	All Database

Bugs Resolved by This Patch

- 10013431 LX64: DATABASE OPEN HANGS AT END OF DBCA CREATEDB, ORA-32701
- 10018789 DBMV2-BIGBH:SPIN IN KGLLOCK CAUSED DB HUNG AND HIGH LIBRARY CACHE LOCK
- 10019218 ASM DROPPED DISKS BEFORE DISK_REPAIR_TIME EXPIRED
- 10022980 DISK NOT EXPELLED WHEN COMPACT DISABLED
- 10040531 ORA-600 [KFRHTADD01] TRYING TO MOUNT RECO DISKGROUP
- 10040921 HUNG DATABASE WORKLOAD AND BACKGROUNDS AFTER INDUCING WRITE ERRORS...
- 10052141 EXADATA DATABASE CRASH WITH ORA-7445 [WORDCOPY_BWD_DEST_ALIGNED] A...
- 10052956 ORA-7445 [KTDQ()+176]
- 10053725 TS11.2.0.3V3 - TRC - K2GUPDATEGLOBALPREPARECOUNT

Platform Linux x86-64
Release 11.2.0.2.0

[Read Me](#) [Download](#) [Add to Plan](#)

Downloads 1556 [View Trends](#)

Number of Downloads by Week

Simplified Patching Process

- **Step 1:** Select Patches and Targets
- **Step 2:** Choose options for Deployment
(*Deployment Procedures are auto picked)
 - (In-Place, Out-of-Place, Rolling, Non-Rolling)
- **Step 3:** Run Validations – Comprehensive Analysis for Patch conflicts and Target level sanity
- **Step 4:** Review -> Prepare-> Deploy
 - Prepare the system for patching ahead of Downtime.
 - For cases like Out of the Place patching, Clone the Oracle Home and Patch the cloned Oracle Homes ahead of downtime.

Patches & Updates > Welcome, generic Last refreshed 1 minute ago

Create Plan Wizard - Shru_CRSPSU

Step 5: Review & Deploy

Plan is deployable

Deployment Successful!
The patches in this plan do not conflict with the software in your environment. The plan has been successfully deployed.
Track the Progress [here](#)
Re-Analyze
Plan last validated 2 days ago

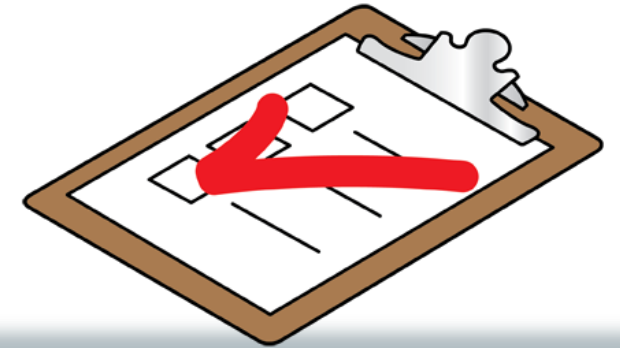
Name ENG_G_ROLLOUT_PLAN
Planned Deployment Date Not Set [Edit Date](#)

1 General Information
2 Patches
3 Deployment Options
4 Validation
5 Review & Deploy

Next Deploy

Predictable Patching with Pre-flight Checks

- Comprehensive real time sanity and conflict checks prior to patch deployment
- Patch conflict checking:
 - Among patches within the patch plan
 - Between patches in plan and current inventory
- Optional post check pause saves valuable maintenance window time by performing checks ahead of time



- ✓ Target availability
- ✓ OPatch and OUI checks
- ✓ Inventory Sanity
 - Locks, Access
- ✓ System space
- ✓ Cluster verification - cluvfy, srvctl Config
- ✓ sqlplus access
- ✓ Patch Conflicts
- ✓ ...

Out-of-Place Patching

- **Minimum Downtime**

- Database remains available while patch applied to cloned home.

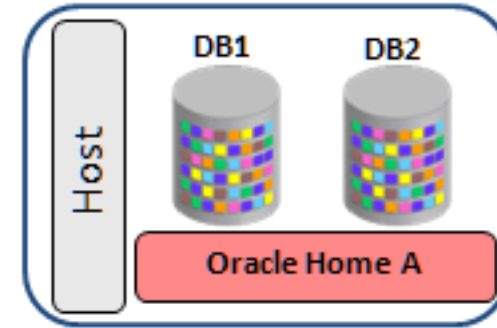
- **Rapid Recovery**

- Switchback to original Oracle Home in case of issue

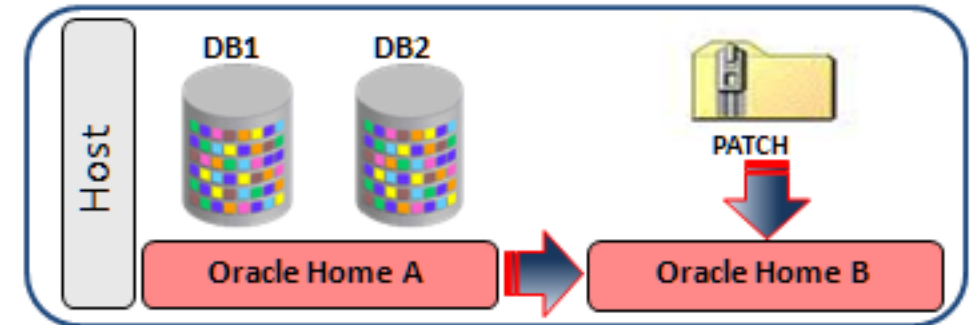
- **Complete Support**

- Single Instance
- RAC Clusters
- Includes Data Guard configurations

1 Multiple Databases running from an Oracle Home



2 > Clone Oracle Home
> Patch Cloned Oracle Home
No Downtime

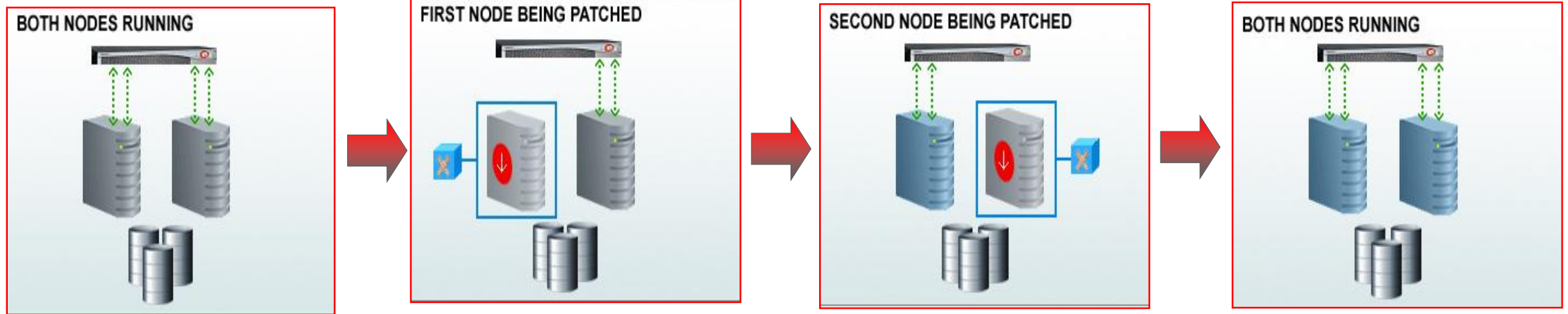


3a Switch instances to newly cloned Oracle Home



3b Apply SQLs (as needed) to the instances

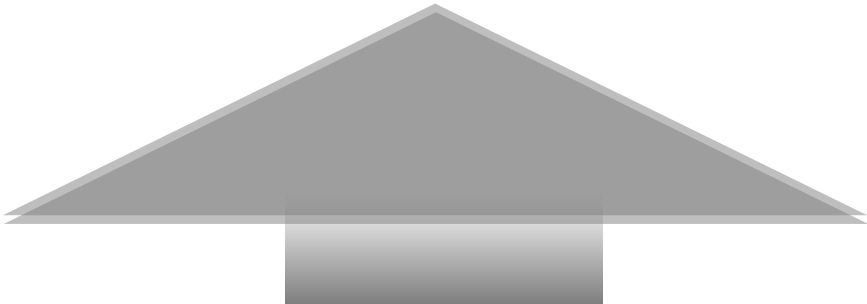
Rolling Real Application Cluster patching



- Zero Downtime Rolling Patch Orchestration across RACs
- Patch support Grid Infrastructure (or Clusterware) Bundles, applying the patch to both GI and RAC OH one node at a time or on all nodes simultaneously
- Supports patching for Clusterware or GI, ASM, and Pluggable Databases
- Supports version 10.2.0.x and onwards (*includes DB12c*)

Mass Automated Database Upgrades

Automation in scale



Oracle Data Guard

- Upgrade Standalone, RAC, and Data guard (Primary-Standby) Databases from older versions to higher versions (supports DB12c)
- RAC Database Upgrades:
 - Full stack upgrade covering Grid Infrastructure and RAC DBs
 - Flexibly upgrade to suit the operational and testing needs (GI only, Few RAC DBs or All RAC DBs)
 - Minimize downtime by upgrading software and Database separately
 - Comprehensive pre-requisite checks including RAC checks, cluster verify (CVU) checks, can be updated directly from MOS
 - Integrated back up and restore policies
- Rolling Upgrade using Transient logical standby for Data Guard based Primary and Standby Databases
 - Support upgrading multiple standby environments

Change Management

Applying Database Schema Changes from Dev to Prod

Without Enterprise Manager

Use SQL Scripts

Manual operation to validate and propagate changes

Challenges and Problems

Manual

Lack of Preview

Scalability

Enterprise Manager 12c Solutions

✔ Data Comparison and Baselining

✔ Validate and Propagate Planned Changes

Schema and Data Comparison

Baselines :

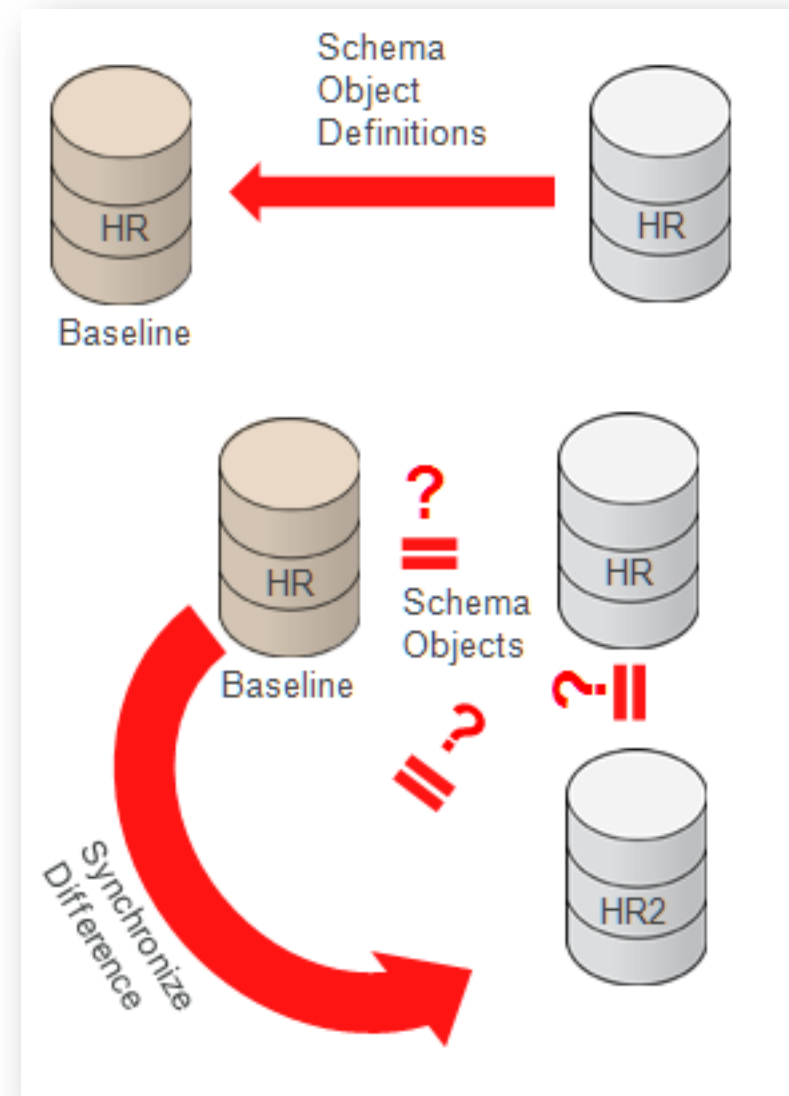
- Capture database and schema definitions
- Baseline Versioning
- History of changes

Comparison

- Baseline with database
- Database with database
- Schema with schema
- Data Comparison

Automated Propagation

- Propagate desired changes – Change Plans



Propagate Planned Changes

- Validate planned changes to identify conflicts or previously applied changes.
- Preview and edit validated changes before applying.
- Generate SQL script of final set of validated changes.
- Apply validated planned changes

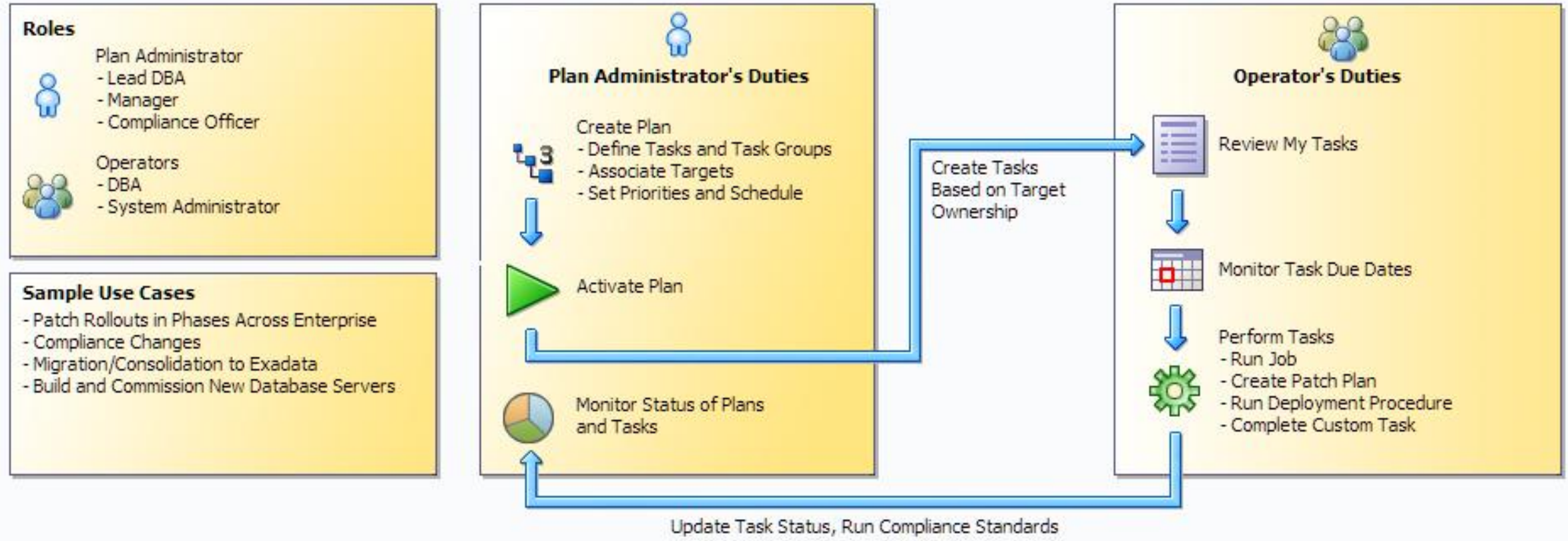
The screenshot shows the Oracle SQL Developer interface with the 'Diff wizard - Step 1 of 3' dialog box open. The dialog is titled 'Source/destination' and shows the following settings:

- Source Connection: hr@db11gr1
- Destination Connection: hr01@db11gr1
- Diff Objects:
 - Toggle All
 - Tables
 - Views
 - Indexes
 - Package Spec
 - Package Body
 - Procedure
 - Functions
 - Triggers
 - Types
 - Sequence
 - Materialized View
 - Materialized View Logs
 - Synonym
 - Database Link
- Proceed to summary.

The 'Next >' button is highlighted, indicating the user is ready to proceed to the next step of the wizard.

Change Activity Planner

Track Long Running Processes

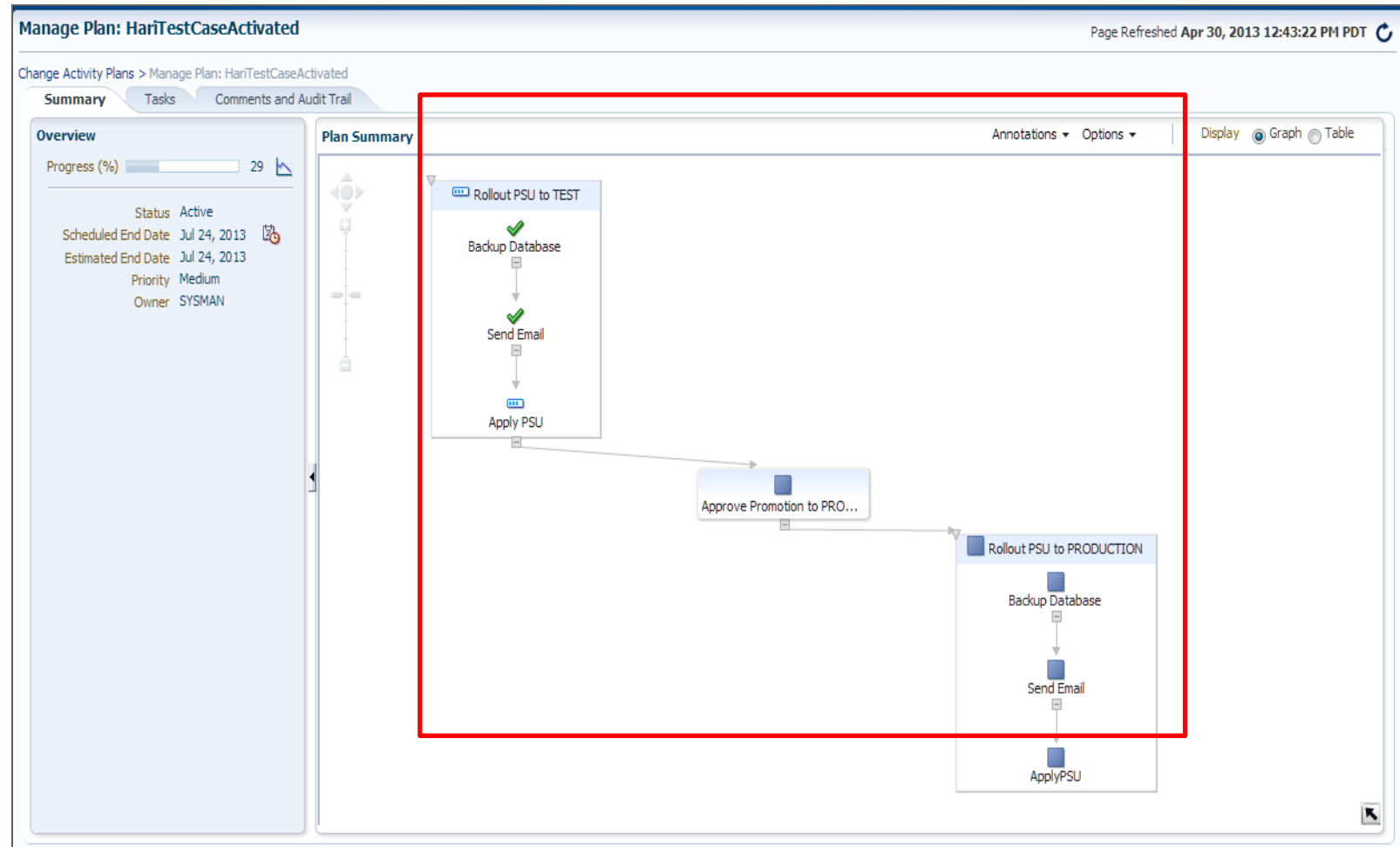


- Plan, Monitor, Act and Track in Real Time – Processes running over long periods of time and involves multiple people or teams
- Leverages the configuration management data to find accurate state of activities

Change Activity Plans- Define Process flows

Create - Tasks, Tasks Groups with dependency & sequencing

- Create Change Activity Plan with Tasks Groups and Tasks
- Define dependencies, sequencing, e.g: Do it in Test/QA env then move it to Production post approvals.
- Orchestrate from EM (Jobs, Patch plans, DPs..) or outside EM
- Associate targets – Groups, LOBs, query based on Configuration attributes while creating tasks
- Automatic task assignments based on target ownership
- Flexible scheduling allows you to define start time and the effective duration of the plan

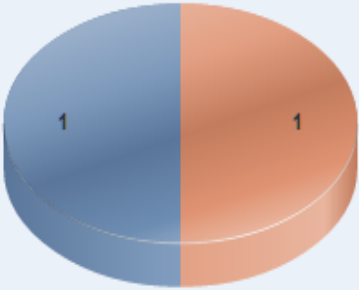


Change Activity Plans: Separation of views...

Manager's View

- Monitor status across all plans, quickly identify plans that need attention
- Track individual plans and their tasks
- Handle assignments and ownership changes
- Track Progress
- Generate Reports for Management Reporting

Status of Plans



Legend: Active (orange), Definition in Progress (blue)

Name	Status	Scheduled End Date	Progress (%)	Requires Attention	Priority
AprPSURollout_CoreBank_LOB	Definition in Progress	1 Week After Activation	Not Active		Medium
HarTestCaseActivated	Active	Jul 24, 2013	29		Medium

Rows Selected: 1 | Columns Hidden: 10

Plan: AprPSURollout_CoreBank_LOB

General | Comments and Audit Trail

Target Type: Database Instance | Status: Definition in Progress
Priority: Medium | Scheduled End Date: 1 Week After Activation
Owner: SYSMAN
Created On: Apr 24, 2013 12:27:04 PM
Last Updated: Apr 30, 2013 12:43:01 PM
Description:

Views

Show All

Overdue	0
Due within One Week	0
With Unassigned Tasks	0
With Overdue Tasks	0
All Active	1

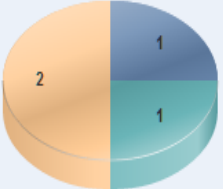
Change Activity Plans: Separation of views

DBA's View

- Identify and Manage all tasks posted
- Quickly get to top tasks, tasks that need attention
- Allows acknowledgement and other human flows
- Complete action for standards tasks like patching, compliance rollouts, etc.. From within EM.
- Add Comments and review Audit trail

My Tasks Page Refreshed Apr 30, 2013 1:04:19 PM PDT

Status of Tasks



■ Unacknowledged ■ In Progress
■ Completed

Tasks

Status is one of

Actions View Acknowledge Change Owner Cancel Task

Requires Attention	Name	Target Name	Waiting	Status	Scheduled End Date	Plan Name
	Apply PSU	Oemrep_Database		In Progress	Jul 24, 2013	HariTestCaseActivated
	Approve Promotion to PRODUCTION			Unacknowledged	Jul 24, 2013	HariTestCaseActivated

Rows Selected 1 Columns Hidden 7 Total Rows 2

Task: Apply PSU

General Comments and Audit Trail

Plan Name HariTestCaseActivated (SYSMAN)
Target Oemrep_Database (Database Instance)
Description Use patch template RolloutPSU to create and deploy a patch plan.
Patch Plan RolloutPSU.2 (New)
Depends On Send Email (Completed)

Owner SYSMAN
Status In Progress
Scheduled Start Date Apr 24, 2013 12:28:16 PM
* Scheduled End Date Jul 24, 2013 4:59:00 PM
Last Updated Apr 24, 2013 12:30:41 PM

i This task is automatically marked completed once it is verified as successfully performed.

Views

Show All

Overdue 0
Due within One Week 0
Unacknowledged 1
All Active 2



Case Study

PATCH MANAGEMENT

\$11.5 Billion in Net License Revenue

66,000 Employees

2,004 Managed Targets

FOCUS ON

Patch Management,
Security and Compliance

Challenge:

- Mandatory corporate and industry regulations meant strict auditing requirements
- Patching was manual and resource intensive
- Needed to patch 1,200 production and non-production databases every quarter

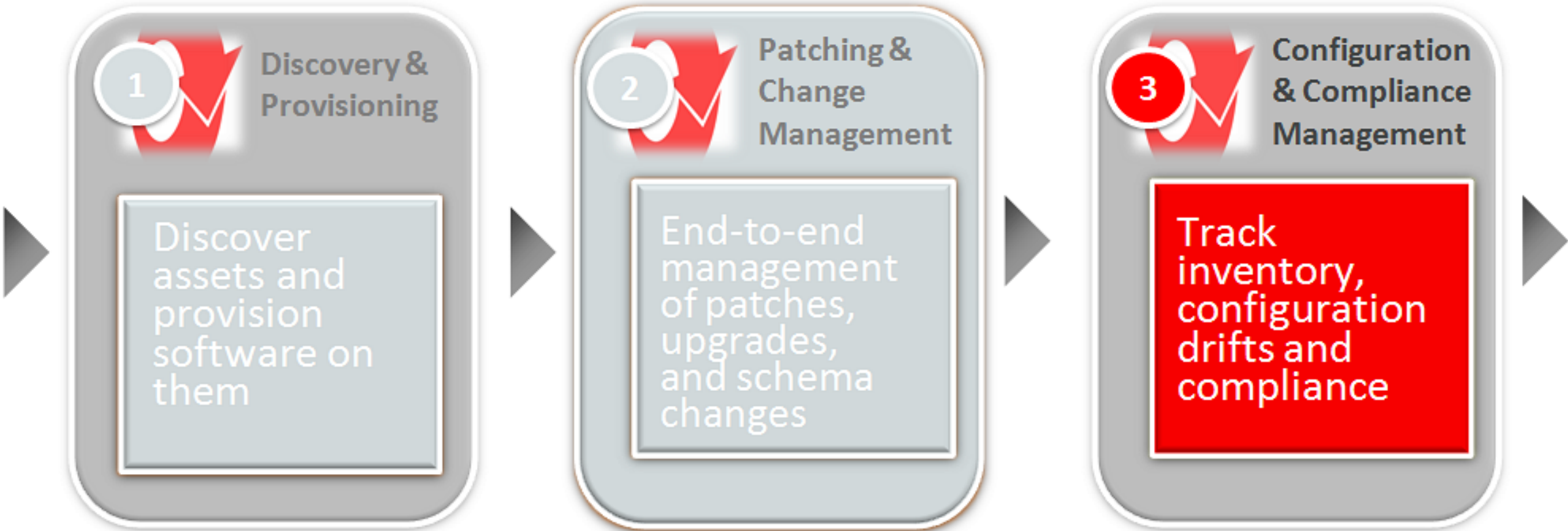
After Oracle Enterprise Manager:

- Leverage the comprehensive integration between My Oracle Support and Enterprise Manager for end-to-end patch automation and provisioning
- Increased admin productivity by removing manual error-prone tasks
- Adherence to security and compliance requirements

BENEFITS

- Cut DBA patching efforts from **3,600 hours** down to **540 hours**
- Using EM, Cisco lowered their downtime for maintenance by **50%**
- Reduced human error and incidents during patching and upgrades
- Systems are now highly scalable and automated
- Saved over **\$200K** per year in IT operational costs with patching automation

Database Lifecycle Management



Configuration Management

Ensure Consistent Configurations

Without Enterprise Manager

Maintain the details in a spread sheet

Manually compare configurations by uploading into a database

Challenges and Problems

Time Consuming

Totally Reactive

Scalability

Enterprise Manager 12c Solutions

- ✓ Identify and Track Assets
- ✓ Compare Assets and Configurations
- ✓ Track and Remediate Drifts

Blueprint Driven Collection Configuration Collection and Extensibility

- Rich collection of target specific information for Database, Fusion Apps, Middleware, etc
 - Downloadable updated blueprints
 - Collected information uploaded to My Oracle Support to aid problem resolution
- Allow customers to augment configuration data collected by EM
 - UI driven definition utilizing rich set of out-of-box parsers
 - All configuration management features (search, history, etc) available for custom configuration collections

The screenshot displays the Oracle Enterprise Manager Cloud Control 12c interface. The top navigation bar includes 'Enterprise', 'Targets', 'Favorites', and 'History'. The main content area shows the configuration for a target named 'crmdb12.us.oracle.com (Container Database)'. A tree view on the left lists configuration categories like 'Instance Information', 'Tablespaces', and 'Users'. The 'Latest Configuration' section shows a table of configuration properties:

Property Name	Property Value
Line of Business	Online Store
Customer Support Identifier	16089153
Location	SF

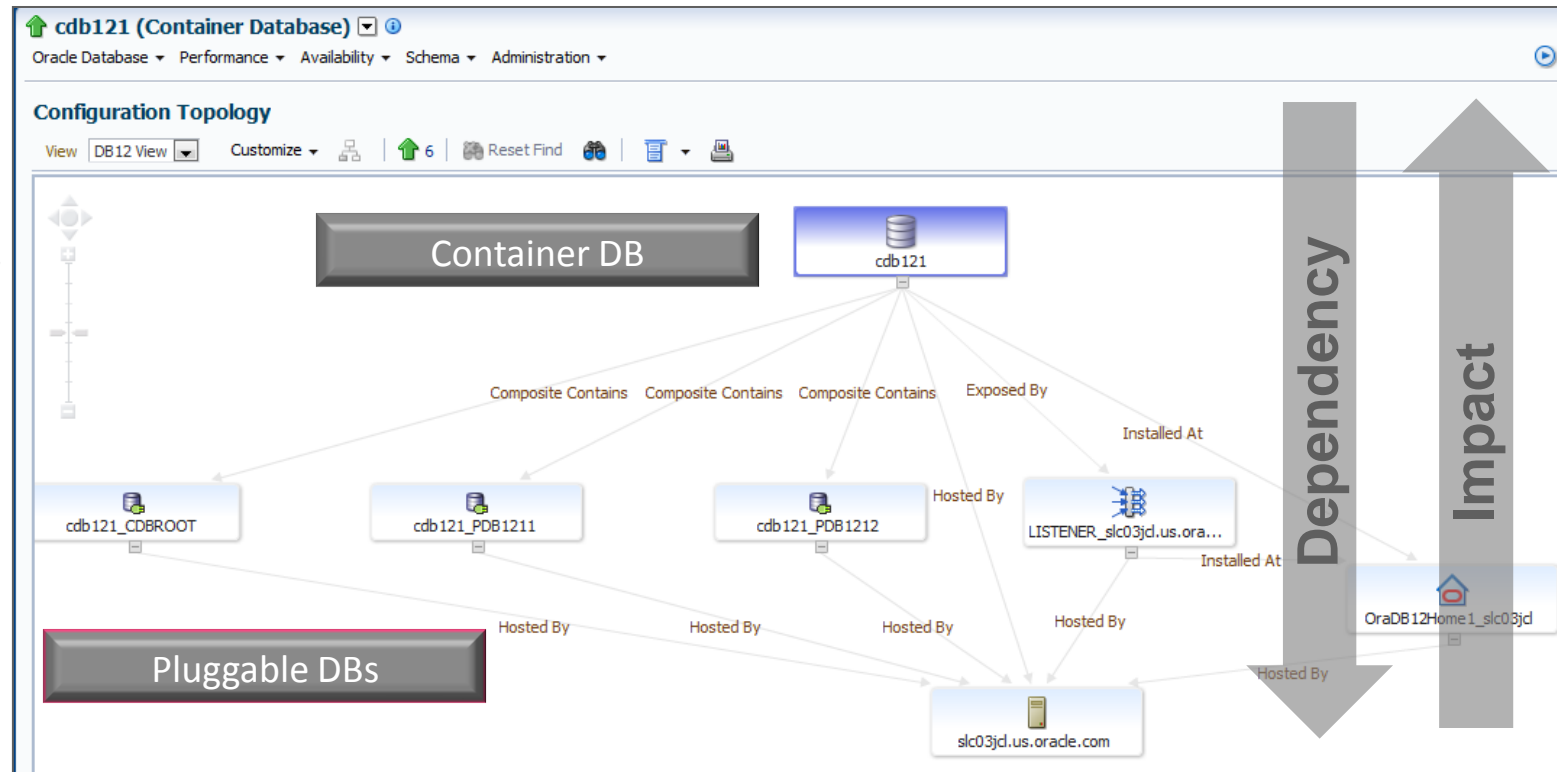
Below this, a 'Create Custom Configuration' dialog is open. It includes fields for 'Name' (Custom Application Configuration), 'Description', and 'Target Type' (Custom Application). The 'Files & Commands' section shows a table of files to be collected:

Type	File/Command	Alias	Parser
File	asadminenv.conf	asadminenv.conf	Java Properties Parser
File	asenv.conf	asenv.conf	Java Properties Parser

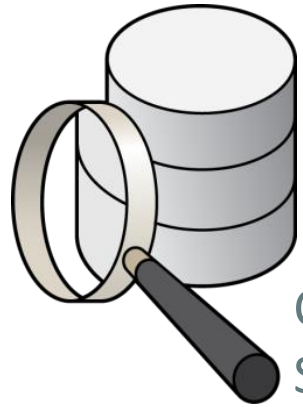
Topology Viewer

Map Database 12c's Container and Pluggable Databases

- Visualize component relationships and dependencies like:
 - Hosted by
 - Installed at (Oracle Home)
 - Composite Contains (CDB -> PDB)
- Key Use Cases:
 - Dependency Analysis
 - Impact Analysis
- Customize view to match specific needs
- Add manual relationships



Adhoc Configuration Reporting



Configuration Search



Integrated BI Publisher

- Powerful adhoc search based on configuration values, target properties, relationships, e.g:
 - Find all databases with `sga_target` greater than 5GB and hosting E-Business Suite on Exadata
- Search queries based on Mgmt\$ Views can be used from BI Publisher for reporting to non-EM users
- Saved Searches can be accessed and leveraged from EMCLI, e.g:
`emcli get_targets -config_search="Databases on Exadata" -target_name="exa%"`

Asset Tracking

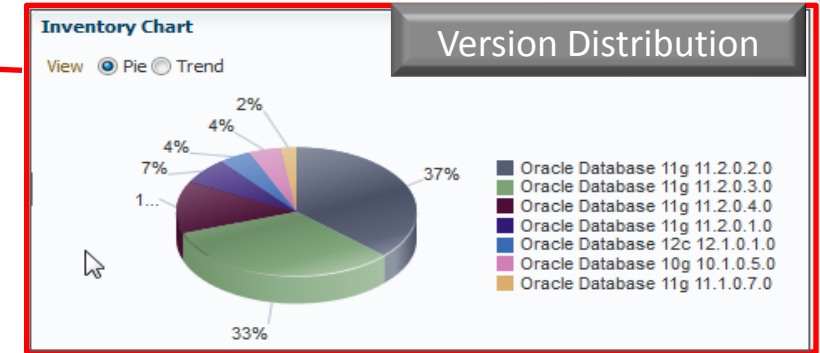
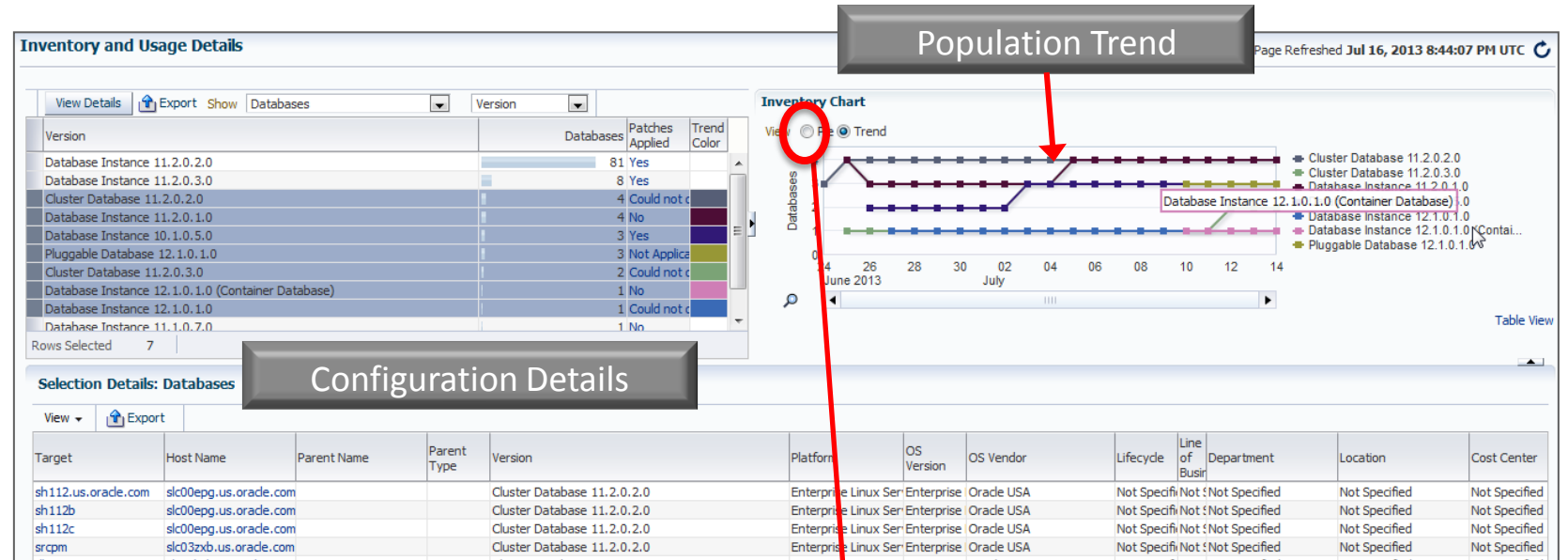
Inventory Reporting and Trending

- Display distribution of:

- Operating Systems
- Databases
- Middleware
- Fusion Applications

- Trend report

- Growth of assets
- Indicates possible sprawl
- Supporting upgrade and migrations



Configuration Drift Management

Finding 'needle' in the hay stack

- 1-1 and 1-n comparison across Dev, test, Prod, DR environments
- Comparison of entire stack, e.g: Exadata database machine (database, grid infrastructure, compute node, storage)
- Comparison Templates to control what's compared and how
- Automatic drift detection and notification

System Compare Result

Result for job CONFIGURATION COMPARISON JOB FRI JUN 24 08:05:32 PDT 2011.

Compare Job >

Comparison Details

Template: No Template

First Configuration: DB Machine sclcg.us.oracle.com (Oracle Exadata Database Machine) Collected: 2011-06-16 07:22:51 (Latest Configuration)

Second Configuration: DB Machine sclcg.us.oracle.com (Oracle Exadata Database Machine) Collected: 2011-06-10 07:22:51 (Latest Configuration)

Job Details

The following table displays the comparison result of the individual configuration comparisons of the system and its members. Click on the links in the result selected row.

Target Type	Result	First Target	Second Target
Oracle Exadata Database Machine	Different	DB Machine sclcg.us.oracle.com	DB Machine sclcg.us.oracle.com
Cisco Switch	Different	sclcgsw-ib1.us.oracle.com	sclcgsw-ib1.us.oracle.com
KVM	Same	sclcgsw-kvm.us.oracle.com	sclcgsw-kvm.us.oracle.com
Host	Same	sclcgdb01.us.oracle.com	sclcgdb01.us.oracle.com
Oracle Infiniband Network	Same	IB Network sclcg.us.oracle.com	IB Network sclcg.us.oracle.com
PDU	Same	sclcg-pdua.us.oracle.com	sclcg-pdua.us.oracle.com
Oracle ILOM Server	Same	sclcgdb01-c.us.oracle.com	sclcgdb01-c.us.oracle.com
Host	Same	sclcgdb02.us.oracle.com	sclcgdb02.us.oracle.com
Oracle ILOM Server	Same	sclcgdb02-c.us.oracle.com	sclcgdb02-c.us.oracle.com
Oracle Exadata Storage Server Grid	Same	Exadata Grid sclcg.us.oracle.com	Exadata Grid sclcg.us.oracle.com
PDU	Same	sclcg-pdub.us.oracle.com	sclcg-pdub.us.oracle.com

Comparison Details

Template: Custom Database Instance Template (Modified: Jun 5, 2013 12:35:51 AM)

First Configuration: db12.us.oracle.com_db121 (Database Instance) Collected: Jun 4, 2013 2:00:36 AM (Latest Configuration)

Second Configuration: cdbzlin_cdbzlin1 (Database Instance) Collected: Jun 4, 2013 11:34:39 AM (Latest Configuration)

Job Details

Show Differences Only Show Ignored

Target Properties

Instance Information

Initialization Parameters

System Global Area

Tablespaces

Datafiles

Control files

Redologs

Rollback Segments

Users

Database Options

Feature Usage

Filter Results: Remove Filter

Result	Property Name	Property Value	Second Configuration
Different	Platform	First Configuration: x86_64	s390x
Same	Database Name	db12	cdbzlin
Same	Listener Machine Name	sclc00eph-v.us.oracle.com	strka30-vip.us.oracle.com
Same	Oracle Home Path	/u01/app/aime/product/12.1.0/dbhome_1	/scratch/base0524/base/product/12.1.0/dbhome_1
Same	Port	1521	1521
Same	Database SID	db121	cdbzlin1
Same	Version	12.1.0.1.0	12.1.0.1.0
Same	Metric Scope	RACINST	RACINST

Compliance Management

Ensure all the Databases are compliant

Without Enterprise Manager

Lengthy manual audits of configuration, repeated each audit period

Challenges and Problems

High Cost

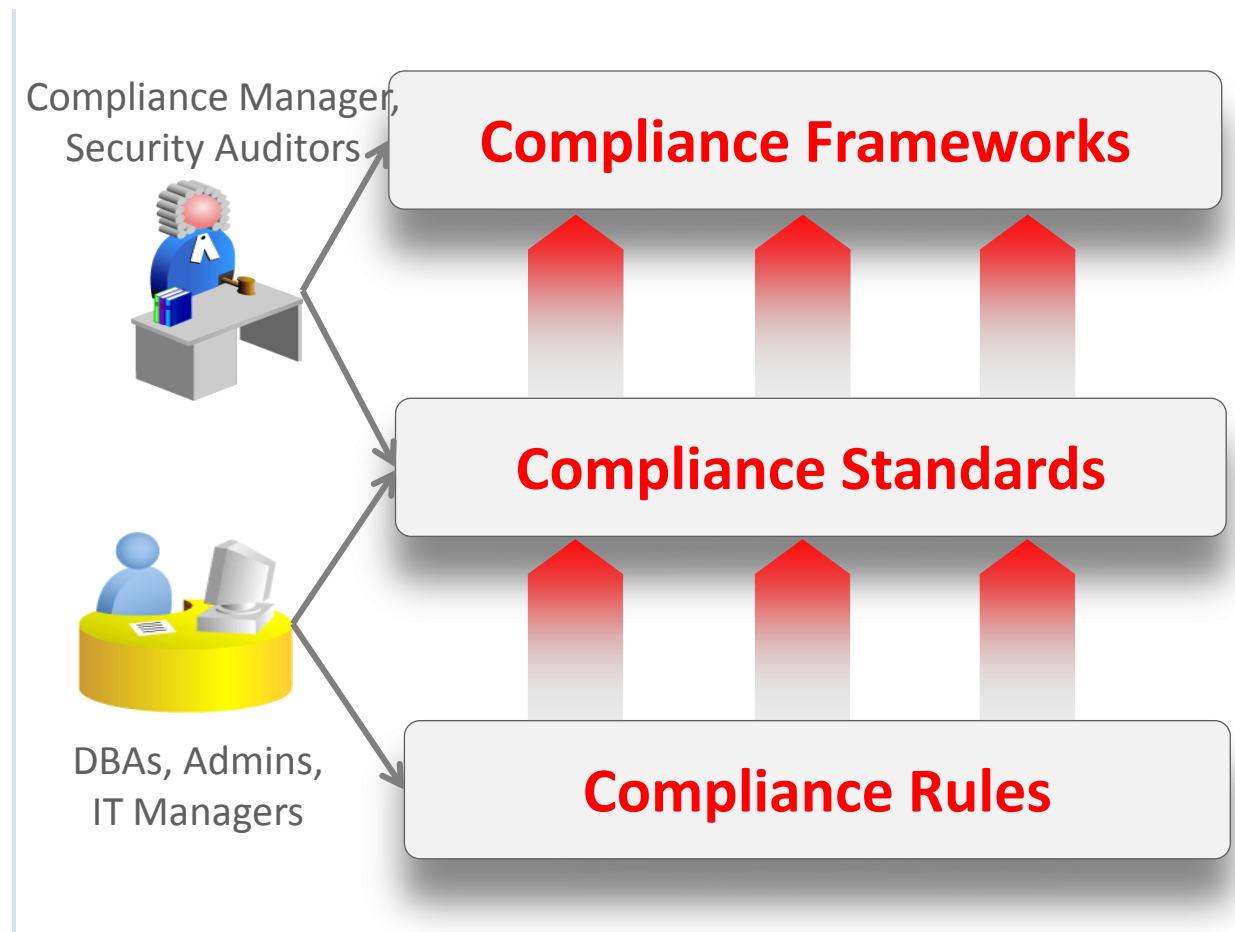
High Risk

Enterprise Manager 12c Solutions

- ✓ Out of the Box Compliance Library
- ✓ Monitor and Manage Compliance
- ✓ Adhere to Compliance and Generate Reports

Compliance Framework – Reusable Hierarchy

- Compliance **Framework**
 - Collection of Compliance Standards
 - Compliance Standards can be of different Target Types
 - Map Configuration Standards to real-world structure of Compliance Frameworks (PCI, COBIT, HIPAA, CIS, etc)
- Compliance **Standard**
 - Collection of Compliance Rules
 - Specific to Single Target Type
- Compliance **Rule**
 - Discreet Check or Test
 - Specific to Target Type
 - Results in Violation



Compliance Framework – Reusable Hierarchy

Compliance Dashboard Page Refreshed Sep 5, 2012 7:54:25 AM PDT

Compliance Framework Summary

Framework: Corporate Database Compliance Framework

Database Configuration Stan... Database Security Standards

Current Compliance Score: Lowest Score in Last Week:

Least Compliant Generic Systems

View Trends

Generic System Name	Standard Evaluations	Violations	Average Compliance Score (%)
No data to display			

Compliance Summary

Compliance Frameworks **Compliance Standards**

View Trends

Name	Target Evaluations	Violations	Average Compliance Score (%)
Security Recommendations For Oracle Products	6 0 11 14 0 0	82	
Basic Security Configuration For Oracle Database	0 1 3 15 27 3	93	
Configuration Best Practices for Oracle Database	0 0 4 0 8 4	93	
Basic Security Configuration For Oracle Listener	0 0 4 1 0 0	96	
All WLS v11 rules	0 0 1 7 11 10	99	

Most Recently Discovered Unmanaged Hosts

Host Name	IP Address	Discovered Time	Operating System
polaris.us.oracle.com	10.141.162.3	Mar 19, 2012 3:16:21 PM GMT-07:00	Linux
ipha1.us.oracle.com	10.141.160.192	Mar 19, 2012 3:09:27 PM GMT-07:00	Linux
ajgonzal-linux.us.oracle	10.141.160.52	Mar 19, 2012 2:45:14 PM GMT-07:00	Linux

[Click here to see more discovered unmanaged hosts...](#)

Least Compliant Targets

View Trends

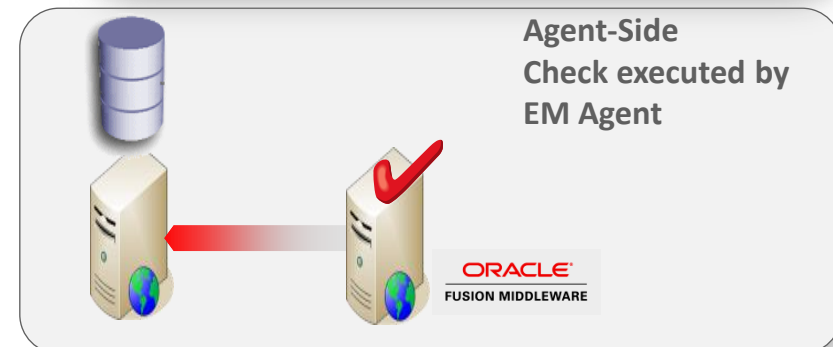
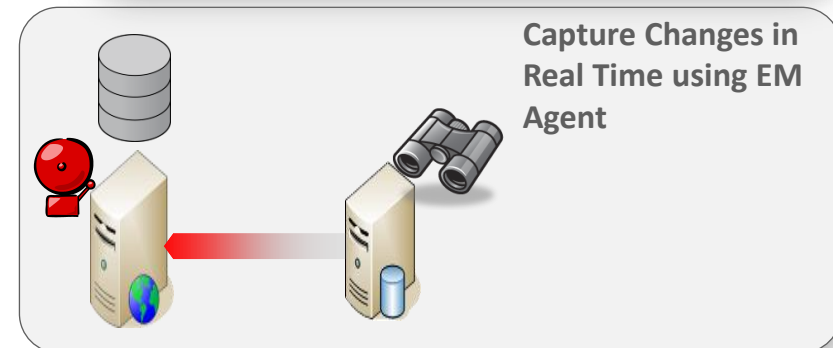
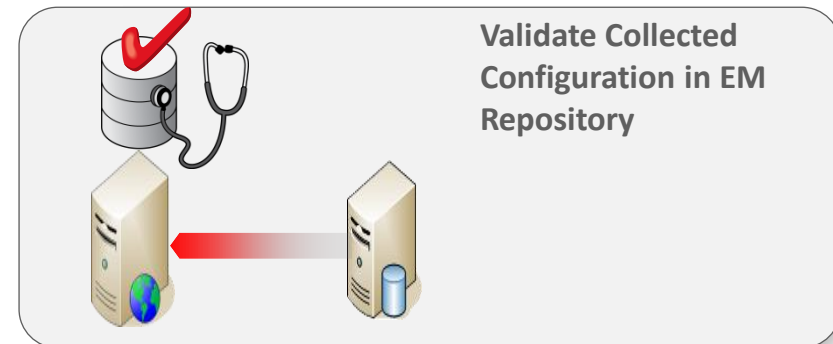
Target Name	Target Type	Standard Evaluations	Violations	Average Compliance Score (%)
slc01nqr.us.oracle.coi	Host	1 0 0	4 0 0	51
jathreya-linux.us.ora	Host	1 0 0	4 0 0	51
adc6160241.us.oracle	Host	1 0 0	2 0 0	51
adc2110619.us.oracle	Host	1 0 0	1 0 0	51
adc2100398.us.oracle	Host	1 0 0	1 0 0	51

Gauges - Current and Lowest in Last Week
Target and Violations Details per Standard

Newly Discovered Unmanaged hosts may be risk
Least Compliant Target shows where to start

Compliance Validation – Multiple Options

- Repository Rule
 - Evaluated against repository data
 - Validated when target configuration changes
- Real-time Rule
 - Detection of real time activities (file actions, schema actions, process actions)
 - Detection of “unauthorized” changes through automated correlation against Change Management
- Agent-Side Rule
 - Tight Integration with Configuration Extensions
 - Validation logic only returns violations
 - Recommended for custom compliance
- Weblogic Server Signature Rule
 - Deprecated



Oracle Provided DB Compliance Content

Compliance Standards

– Pluggable Database (NEW)

- Storage Best Practices for Pluggable Database
- Configuration Best Practices for Pluggable Database
- Basic Security Configuration for Pluggable Database

– Single Instance Database Instance (and RAC Instance)

- DISA Security Technical Implementation Guide (STIG) V1.8
- Certification for Oracle Database
- Storage Best Practices for Oracle Database
- Configuration Best Practices for Oracle Database
- Basic Security Configuration for Oracle Database
- High Security Configuration for Oracle Database
- Patchable Configuration for Oracle Database
- Storage Best Practices for Oracle Database
- Support Policy for Oracle Database

– Cluster Database

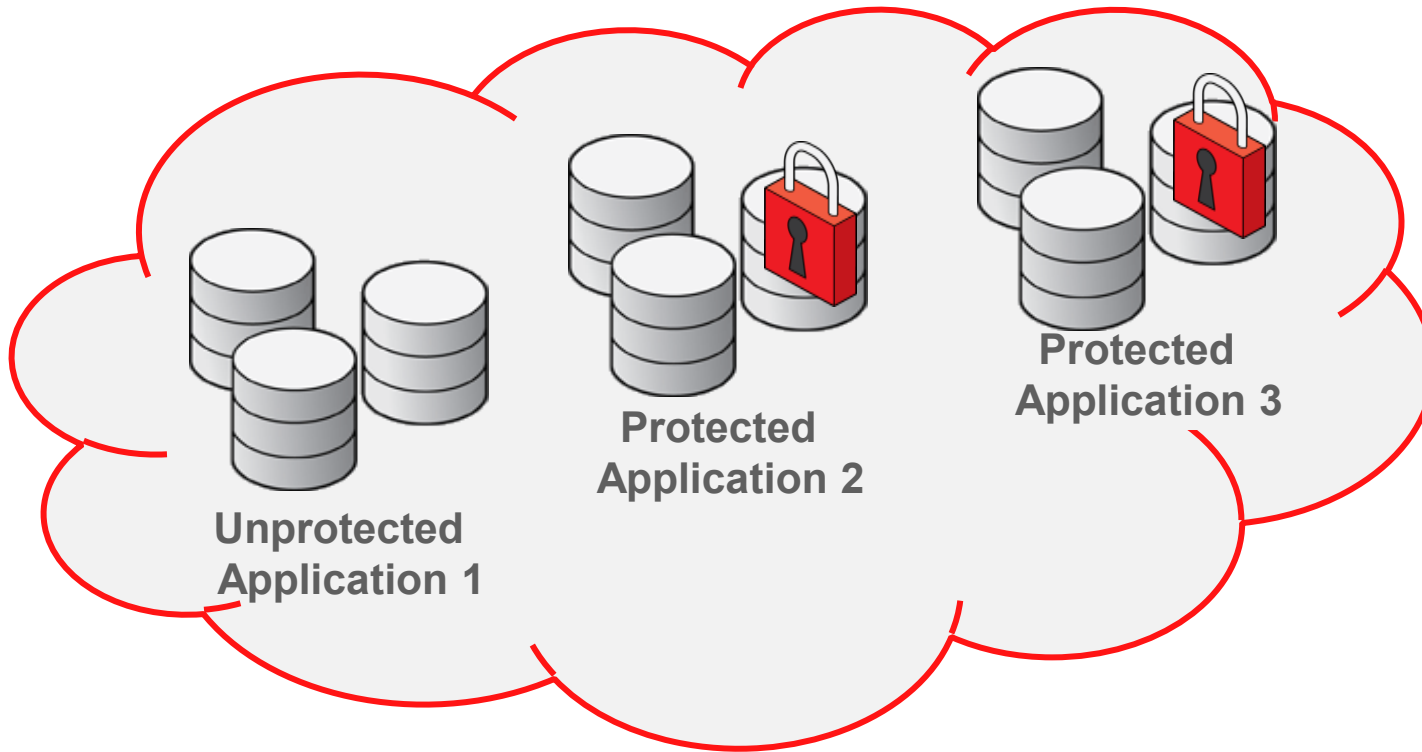
- DISA Security Technical Implementation Guide (STIG) V1.8
- Basic Security Configuration for Oracle Cluster Database Instance
- High Security Configuration for Oracle Cluster Database Instance
- Certification for RAC Database
- Configuration Best Practices for Oracle RAC Database
- Patchable Configuration for RAC Database
- Storage Best Practices for Oracle RAC Database
- Support Policy for RAC Database

– Listener

- Basic Security Configuration for Oracle Listener
- High Security Configuration for Oracle Listener

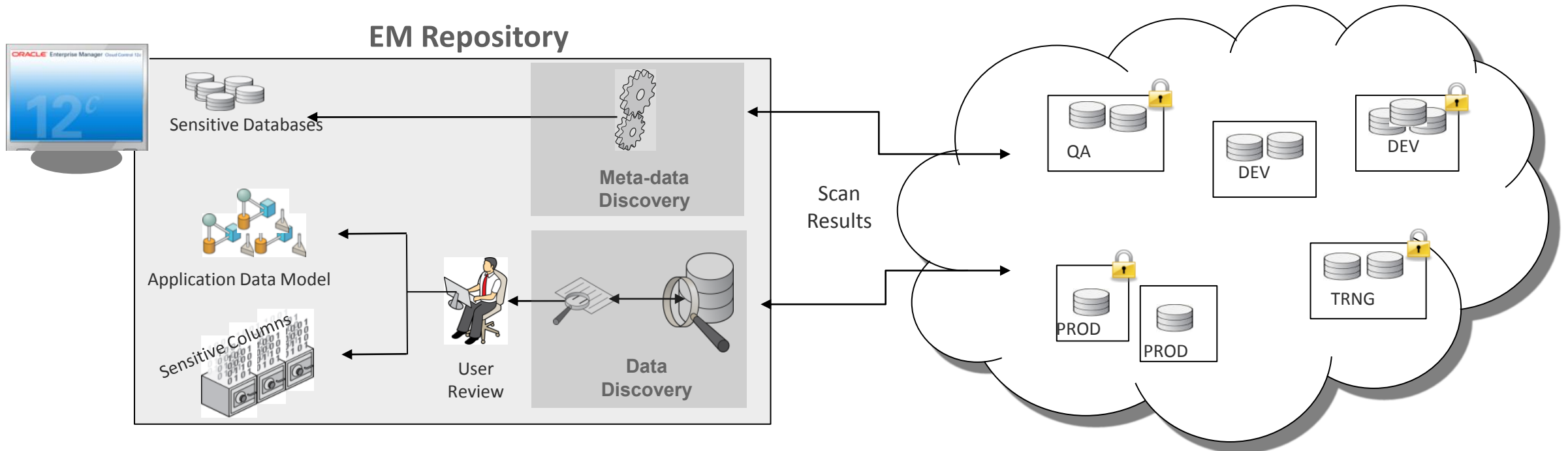
400+ Individual Compliance Rules

Data Governance and Compliance Challenges



- Data centers have thousands of databases containing sensitive data which may be unprotected
- Enterprises lack enterprise-wide tools to scan databases
- Limited visibility into compliance status (encryption, masking, database vault) of sensitive data
- Hard to remediate non-compliance

Enterprise Data Governance

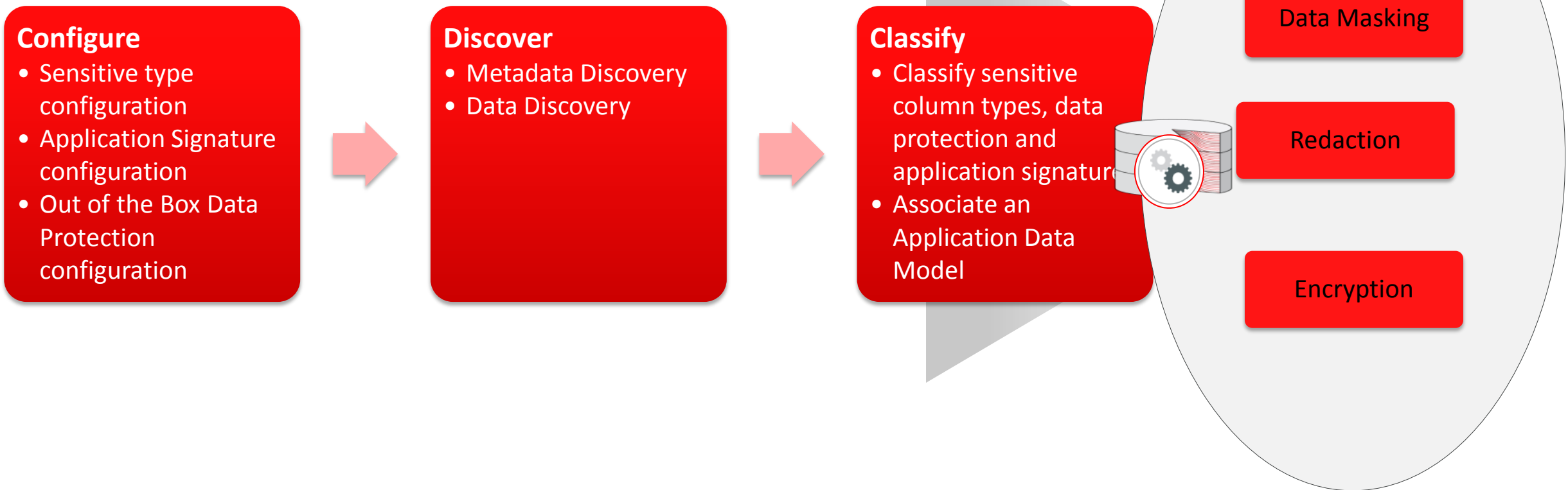


Enterprise Data Governance allows you to discover, scan and identify databases that may contain sensitive data automatically across your enterprise

- **Shallow Scan** – Meta data discovery
- **Deep Scan** – Sensitive data discovery

Enterprise Data Governance

Configure, Discover, Classify → Protection





CONFIGURATION MANAGEMENT

\$14 Billion in Revenue

40 Oracle E-Business Suite Instances

800 Oracle Databases

1,400 Applications

Case Study

FOCUS ON

Configuration Consistency

Challenge:

- Consolidate 14 global datacenters to 4
- Understand configurations and track software deployments globally
- Consolidate patch reporting and eliminate manual tasks

After Oracle Enterprise Manager:

- Comprehensive tracking & understanding for all configuration changes
- Gold standard configuration established
- Automatic weekly checking for “drift” against all datacenters
- Automatic changes detection and history

BENEFITS

- Reduced IT Operations overhead by 10%
- Eliminated manual scripts and reports for monitoring
- One view to manage total environment
- Reduced migration time of new features by 30%
- Reduced unplanned outages by 10%

Benefits of Lifecycle Management Complements Exadata's Value Proposition

- **Consolidation**
 - Automated Discovery
 - Asset and inventory tracking
 - Complete visualization of stack topology
- **Standardization and Compliance**
 - Ongoing Drift tracking across the stack
 - Exadata specific Compliance evaluation
- **Efficiency & Automation**
 - Ongoing Database Provisioning
 - Patch Automation

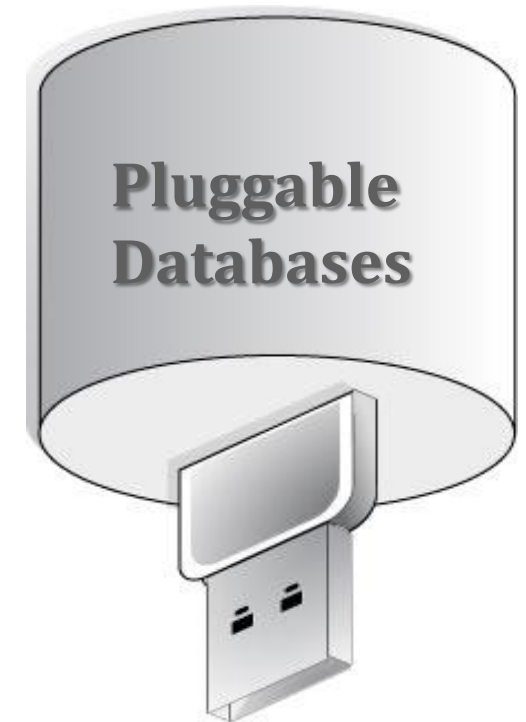


Benefits of Lifecycle Management

Maximizes benefits of multitenant databases

- **Consolidation**
 - Automated Discovery
 - Migration from non-PDB to PDB
 - Complete visualization of CDB-PDB relationships
- **Standardization and Compliance**
 - Managing PDB sprawl
 - Ongoing Compliance evaluation for CDB and PDBs
- **Efficiency & Automation**
 - Ongoing Database Provisioning and Cloning
 - Patch Automation

ORACLE[®] 12^c
ENTERPRISE MANAGER



Oracle DB Lifecycle Management Solution

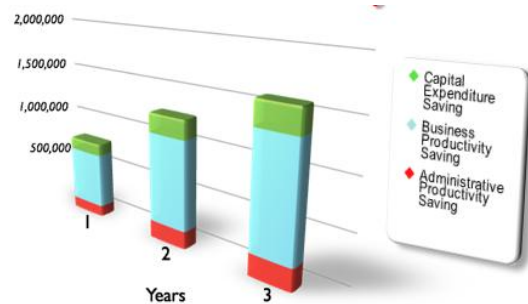


Complete Lifecycle Management

- Provisioning & Cloning
- Patch Automation
- Upgrades
- Configuration Management
- Compliance Management
- Change Management

Proven, Faster ROI

140% ROI over 3 years



Forrester Total Economic Impact Survey

Cloud Foundation

Enabler of Private Database Cloud

Questions



Resources

Lifecycle Management on OTN

The screenshot shows the Oracle OTN website interface. At the top, the Oracle logo is on the left, and the user is logged in as 'Aarti' with options for 'Account', 'Sign Out', 'Help', and 'Select Country/Region'. Below the header is a navigation menu with categories: PRODUCTS, SOLUTIONS, DOWNLOADS, STORE, SUPPORT, TRAINING, PARTNERS, and AI. The main content area is divided into columns. The first column has a 'Spotlight' section for 'Oracle OpenWorld Keynotes' and a 'DOWNLOAD NOW' button for 'ORACLE 12^c DATABASE'. The second column lists 'Oracle Cloud' products, including 'Applications', 'Database', and 'Java'. The 'Database' section includes 'Lifecycle Management', which is highlighted with a red box. The third column lists 'Middleware' products, including 'Enterprise Management' and 'Lifecycle Management', also highlighted with a red box. The fourth column lists 'Engine' products, including 'Server' and 'Storage'.



<http://tinyurl.com/em12lcm>

ORACLE®