

## Safe harbor statement

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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, timing, and pricing of any features or functionality described for Oracle's products may change and remains at the sole discretion of Oracle Corporation.



# Consolidate, Migrate and Analyse Databases with Confidence using Enterprise Manager

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**Akshay Sangaonkar**

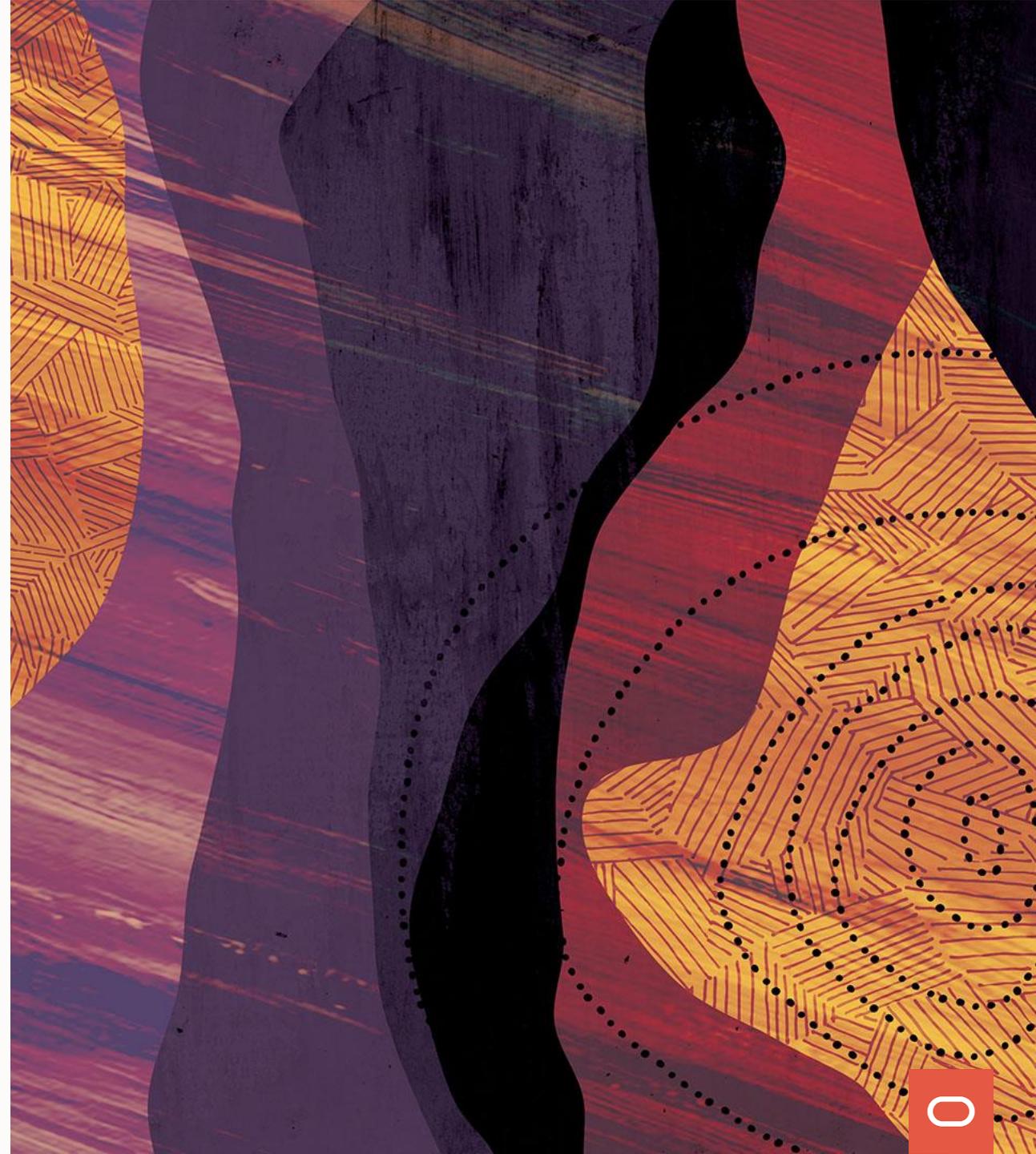
Enterprise Manager Product Management

# Agenda

- 1 Why Migrate to Oracle Cloud?
- 2 Enterprise Manager for Oracle Cloud
- 3 Enterprise Manager Migration Workbench
- 4 Demo
- 5 PDB Lifecycle Management and Hybrid PDBaaS

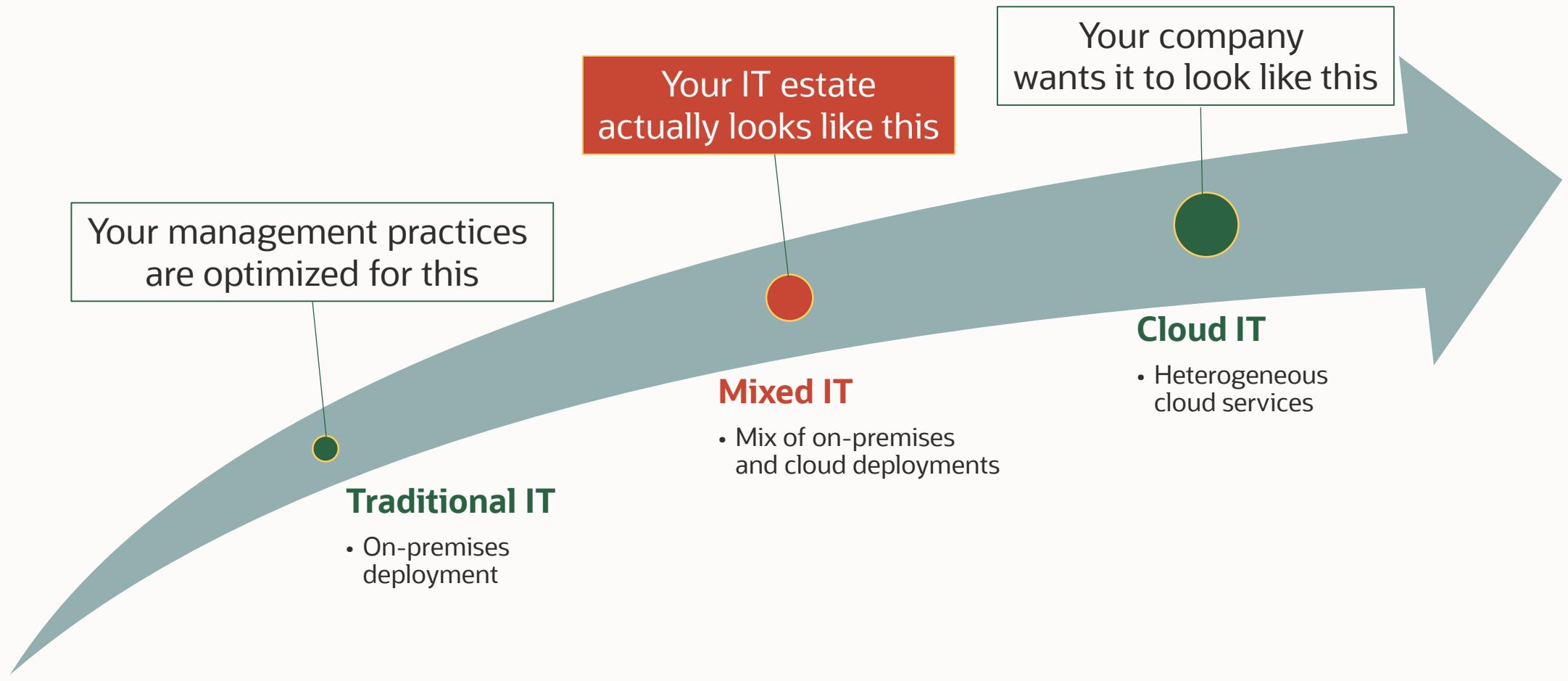
# Why Migrate to Oracle Cloud?

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# Enterprise Cloud Journey Progressing Faster Than Your Systems Management Maturity

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# Enterprise Manager for Oracle Cloud

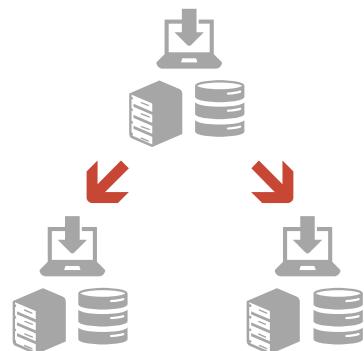
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# Enterprise Manager for Oracle Cloud

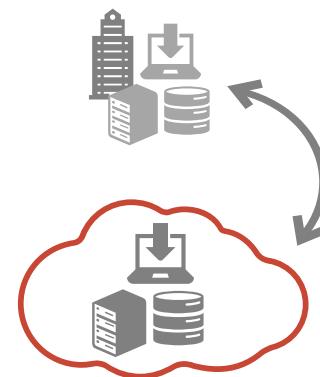
Single tool to Provision, Migrate, Monitor, Manage, Diagnose and Analyze

## RAPID PROVISIONING



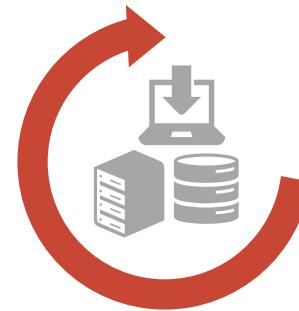
Quick Provisioning on Private or Public Cloud

## Migration Tools



Migrate DB workloads with zero re-tooling and zero downtime

## CENTRALIZED MANAGEMENT



Easily upgrade and centrally Manage databases

## CLOUD INTEGRATION



Integration with Object Store, Autonomous or non-Autonomous DBs

## COMMON ARCHITECTURE, STANDARDS AND PRODUCTS

# Migrate to Cloud using Enterprise Manager

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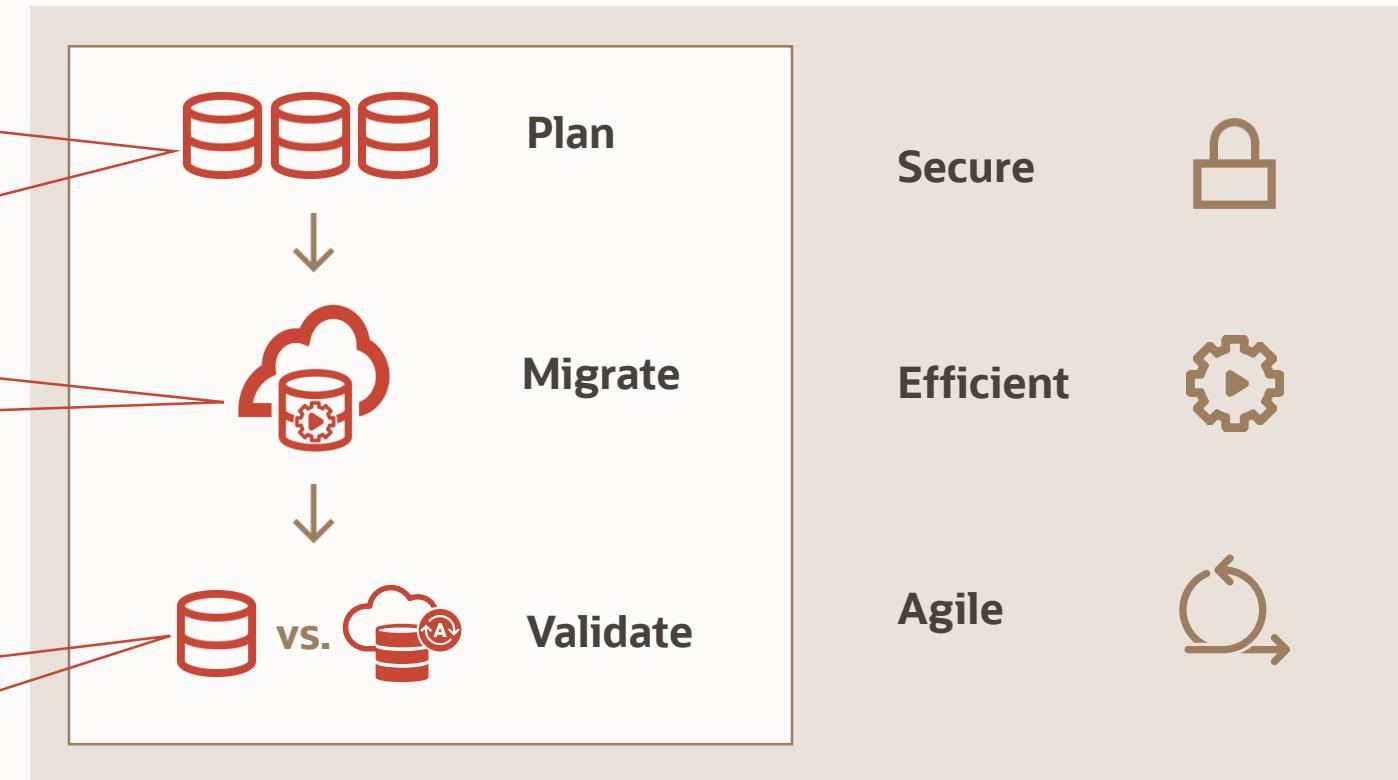
# Today's Database Migration Needs

What databases can I consolidate?

What dependencies do I need to account for in my migration plans?

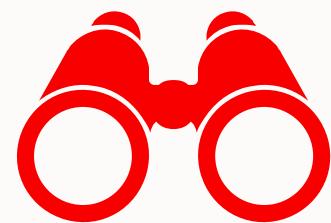
What mechanism should I use to perform the migration, and how do I use it?

How does my new environment compare against my old environment?



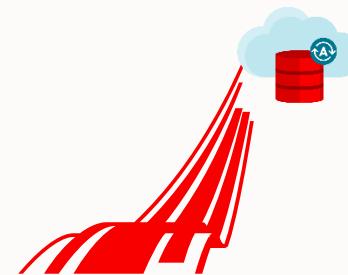
# Migration using EM

PLAN



Consolidation  
Estimation,  
Dependency Analysis

MIGRATE



Datapump, RMAN, ADG,  
TTS, Zero-Downtime

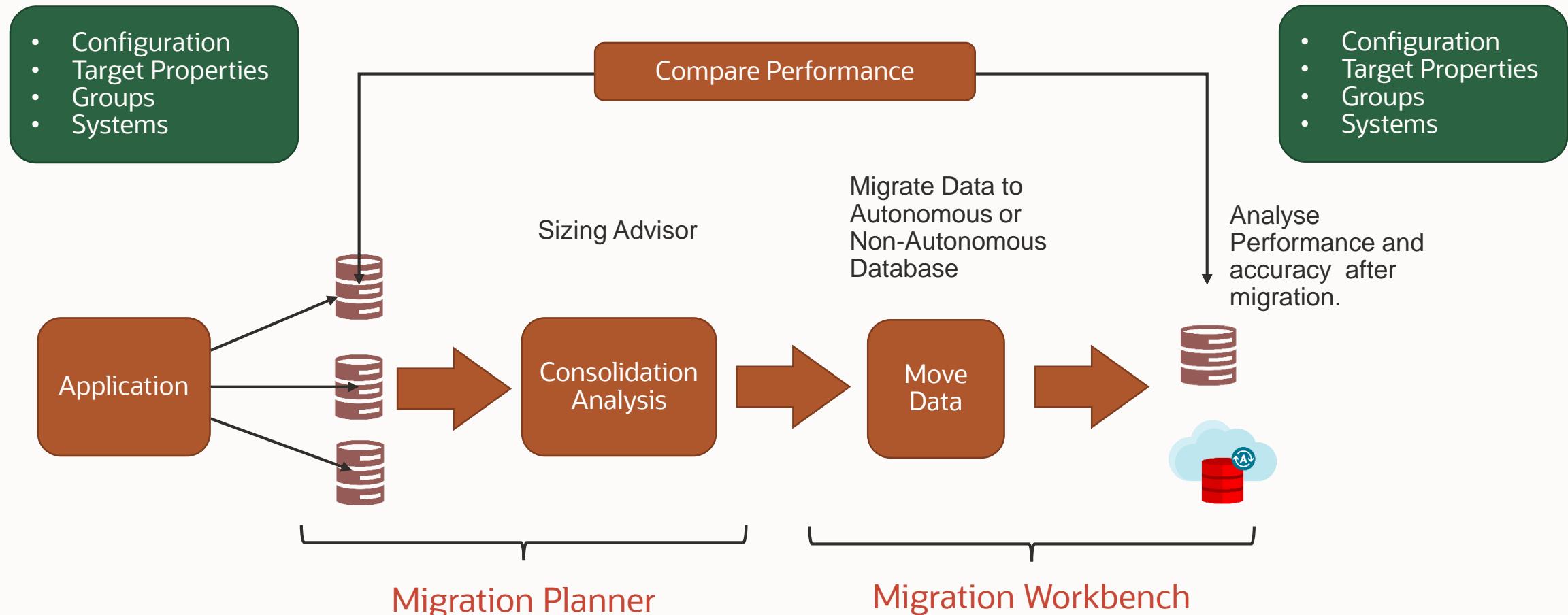
ANALYZE



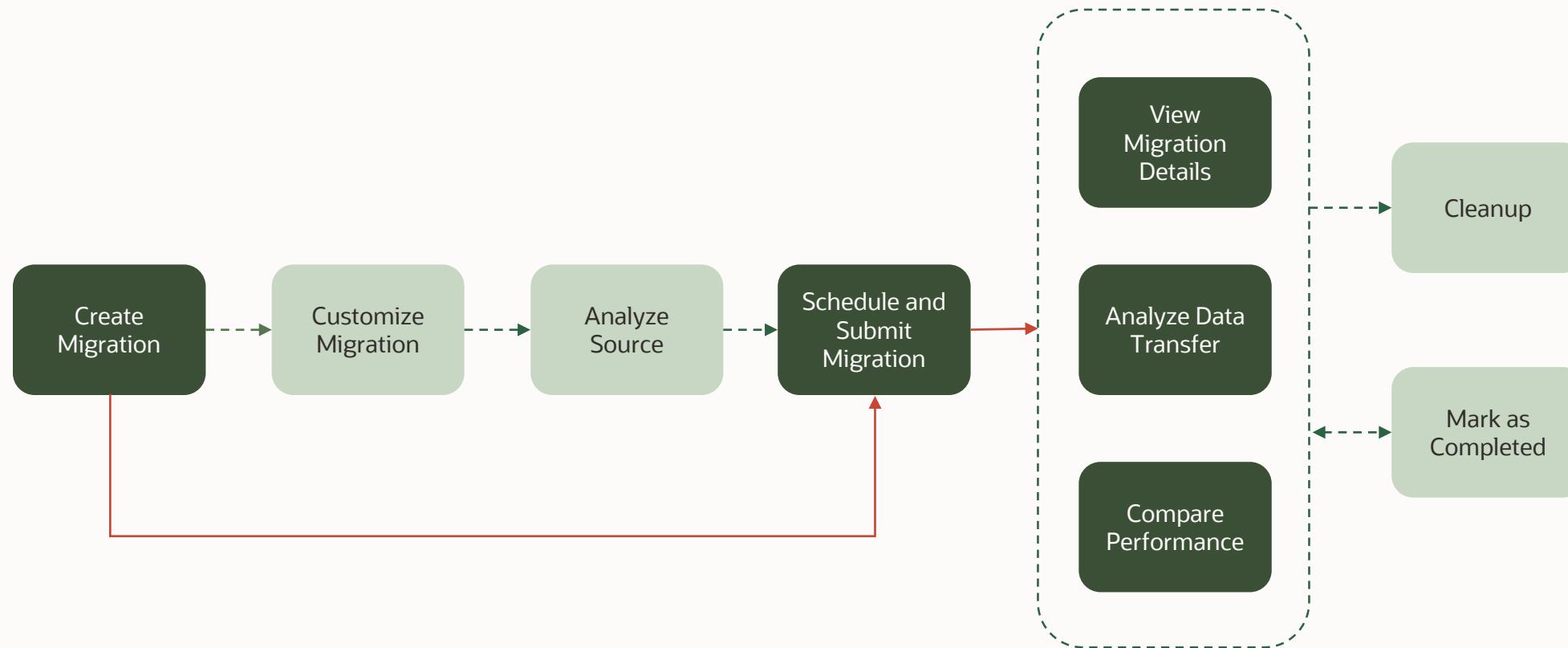
Schema Comparison,  
Performance Comparison

# Migration Workbench Preview

## Step-by-step migration process



# Complete Migration Process with Database Migration Workbench



# Enterprise Manager Migration Workbench

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Consolidate, Migrate  
and Analyse



# Database Migration Workbench

## Launchpad for Guided Migration

Plan

- Single workbench that integrates all needs for migration – sizing, performance comparison.
- Track migration in real-time
- Customizable migration workflows
- Pause, Rollback or Cancel the entire workflow.

Database Migration

Page Refreshed Sep 5, 2019 8:22:11 AM PDT

Migration Activities	All in Last 7 Days	In Progress	Problems in Last 7 Days	Scheduled in Next 7 Days	Completed in Last 7 Days
4 Activities	0 Activities	1 Problems	1 Activities	2 Activities	

Create Migration

Search Attributes

Activity	Status	Source	Destination	Start	End	Elapsed Time
Migrate CRMOnPremises2 to CRMADW	Scheduled	CRM_Onpremises	CRM_OnCloud	2019-09-06T21:01:34.786	—	—
Migrate CRMOnPremises1 to CRMADW	Completed	CRM_Onpremises	CRM_OnCloud	2019-09-06T21:01:34.786	2019-09-06T21:01:34.786	0 s
Migrate HROnPremises to HRATPS	Completed	HR_Onpremises	HR_OnCloud	2019-09-06T21:01:34.786	2019-09-06T21:01:34.786	0 s
Migrate SalesOnPremises to Sales_OnCloud	Failed	Sales_Onpremises	Sales_OnCloud	2019-09-06T21:01:34.786	2019-09-06T21:01:34.786	0 s

Pause

Rollback

Cancel

View Details

View Analysis

Compare Performance

# Schema Advisor

Runs on existing schema and generates a summary of migration status including

- Objects that cannot migrate due to lockdowns or restrictions on certain data types.
- Oracle Database Options that do not apply on destination database
- Objects that will migrate with certain corrective actions
- List of automated corrective actions

**Database Migration**

Migration Activities > Schema Advisor Report

Schema Advisor Report : cdb.us.oracle.com\_PDB1

ATPD SCHEMA MIGRATION REPORT FOR EXPUSER

ADB Advisor Version	:	19.3
Instance Name	:	cdb
Database Name	:	CDB
Host Name	:	slc09esm
Database Version	:	12.1.0.2.0
Pluggable Database	:	PDB1
Schemas Analyzed	:	EXPUSER
Analyzing for	:	Autonomous Transaction Processing (Dedicated)
Report date	:	05-DEC-2019 23:20

► ATPD OBJECTS NOT MIGRATED

► ATPD OBJECTS MIGRATED WITH CHANGES

► ATPD MIGRATION ADDITIONAL INFO

# Database Migration landscape

Unified experience for all migration scenarios

Migrate

**Database Migration**

Create Migration Activity

Name Activity  
Migrate SalesOnPremises Database to Autonomous Database Warehouse

Select Source Database Type  
   

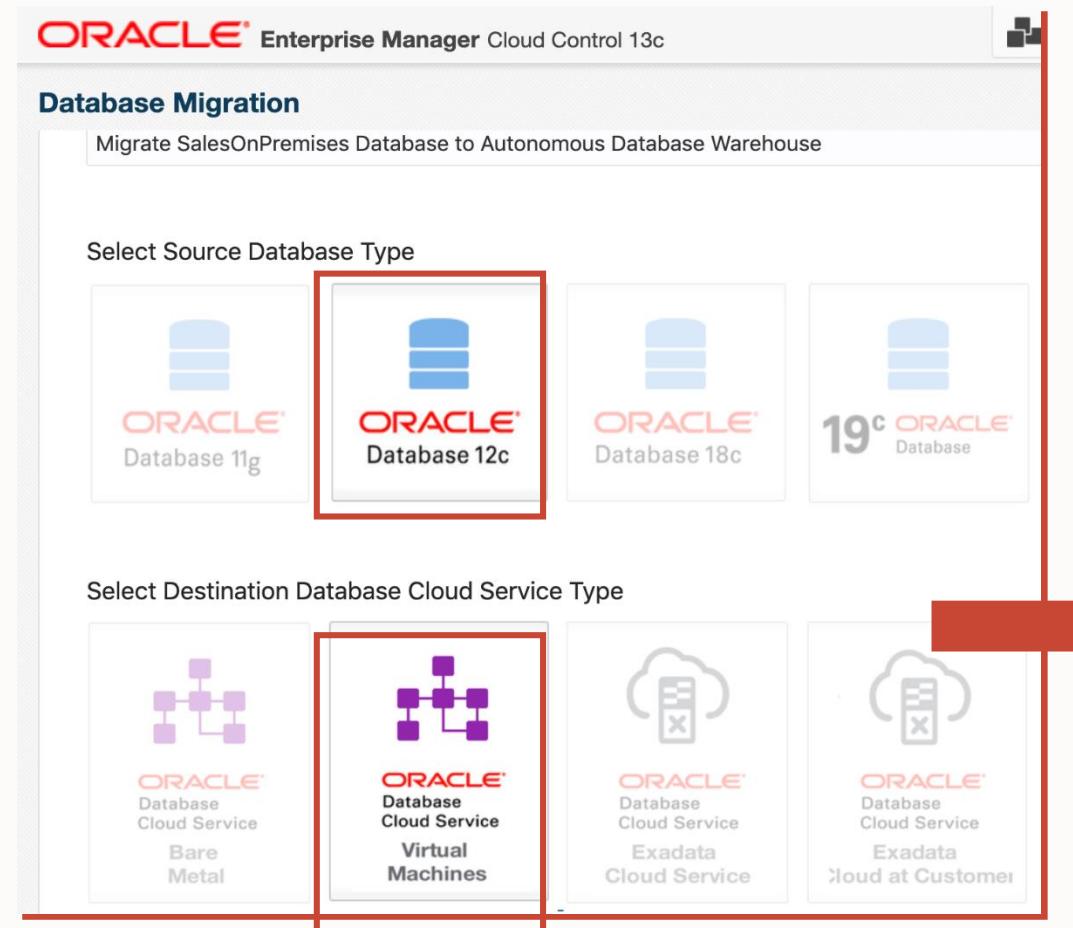
Select Destination Database Cloud Service Type  
    

-  Autonomous Databases  
*Datapump*
-  Exadata Cloud at Customer  
*Datapump, RMAN, nZDT*
-  Exadata Cloud Service  
*Datapump, RMAN, nZDT*
-  Databases running on VM and BM  
*Datapump, RMAN, nZDT, continuous refresh*
-  Databases running on OCI Compute  
*Datapump, RMAN, nZDT, continuous refresh*
-  Compute within own datacenter  
*Datapump, RMAN, nZDT, continuous refresh*

# Migration Options for all configurations

Automatic recommendations for applicable migration methods

Migrate



ORACLE Enterprise Manager Cloud Control 13c

### Database Migration

Migrate SalesOnPremises Database to Autonomous Database Warehouse

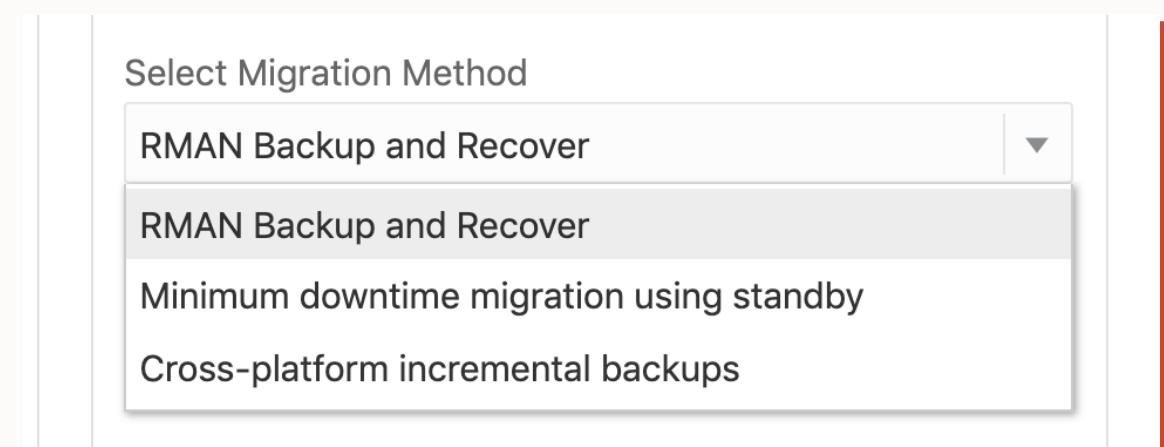
Select Source Database Type

- ORACLE Database 11g
- ORACLE Database 12c**
- ORACLE Database 18c
- 19c ORACLE Database

Select Destination Database Cloud Service Type

- ORACLE Database Cloud Service Bare Metal
- ORACLE Database Cloud Service Virtual Machines**
- ORACLE Database Cloud Service Exadata Cloud Service
- ORACLE Database Cloud Service Exadata Cloud at Customer

- Single workbench integrating all migration methods.
- Automatic recommendations for suitable migration methods.



### Select Migration Method

RMAN Backup and Recover

RMAN Backup and Recover

Minimum downtime migration using standby

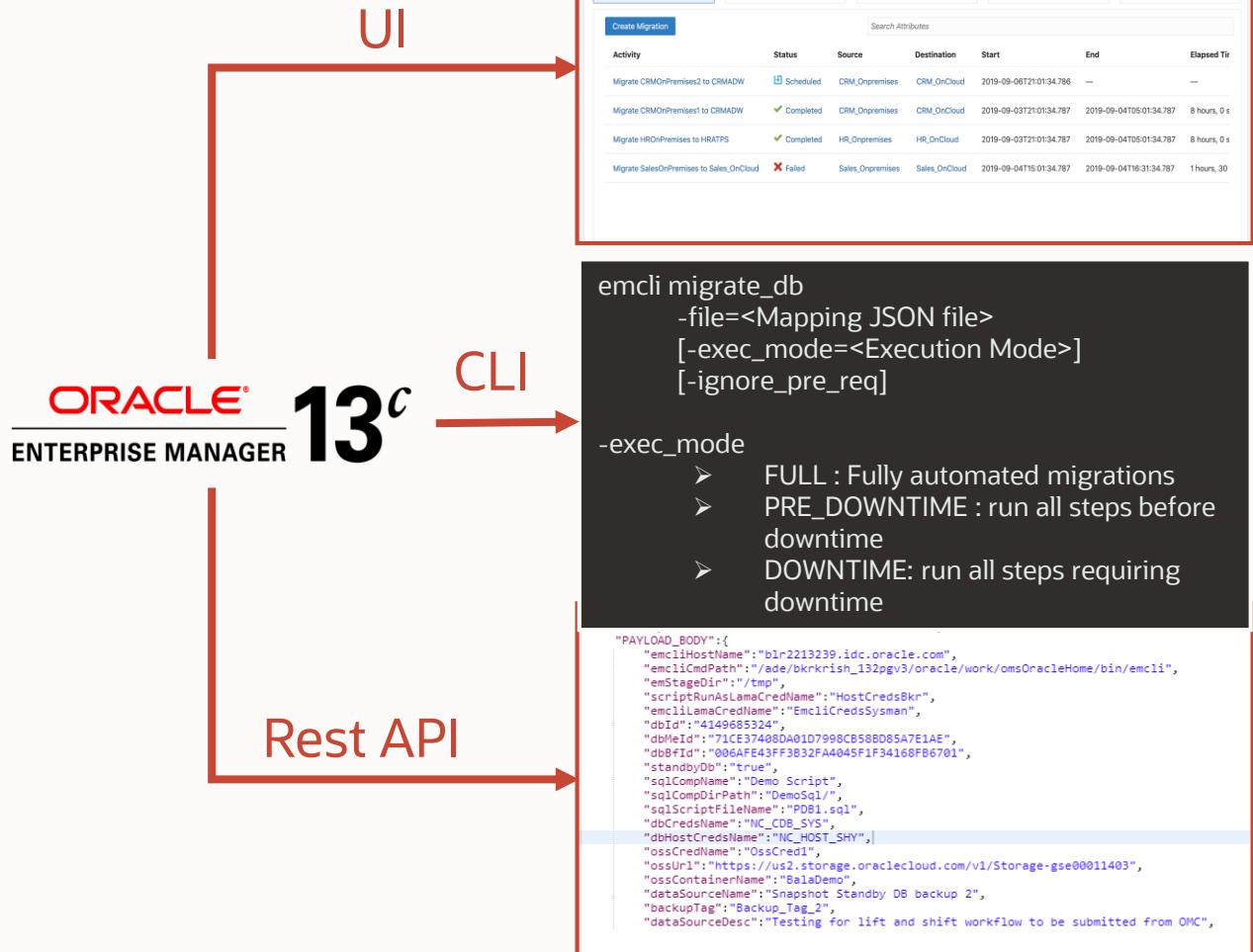
Cross-platform incremental backups

# Database Migration Workbench

Choice of tools

Migrate

- Functionality available via
  - User Interface
  - Command Line Interface
  - Rest API
- Complete control of DevOps
- Integrate with Enterprise Automation Standards



# Minimum Downtime Migration

## Online Migration to Minimize Downtime of Source Database

Migrate

- Minimizes downtime of source Database
- Online Migration using **Oracle Data Guard Standby**
- Best practices for MAA
- Create a standby database on Oracle Cloud
- Only downtime required during switch-over from primary to standby
- Options to run manual or fully automated migration using **EMCLI**

*emcli migrate\_db*

*-file=<Mapping JSON file>*

*[-exec\_mode=<Execution Mode>]*

*[-ignore\_pre\_req]*

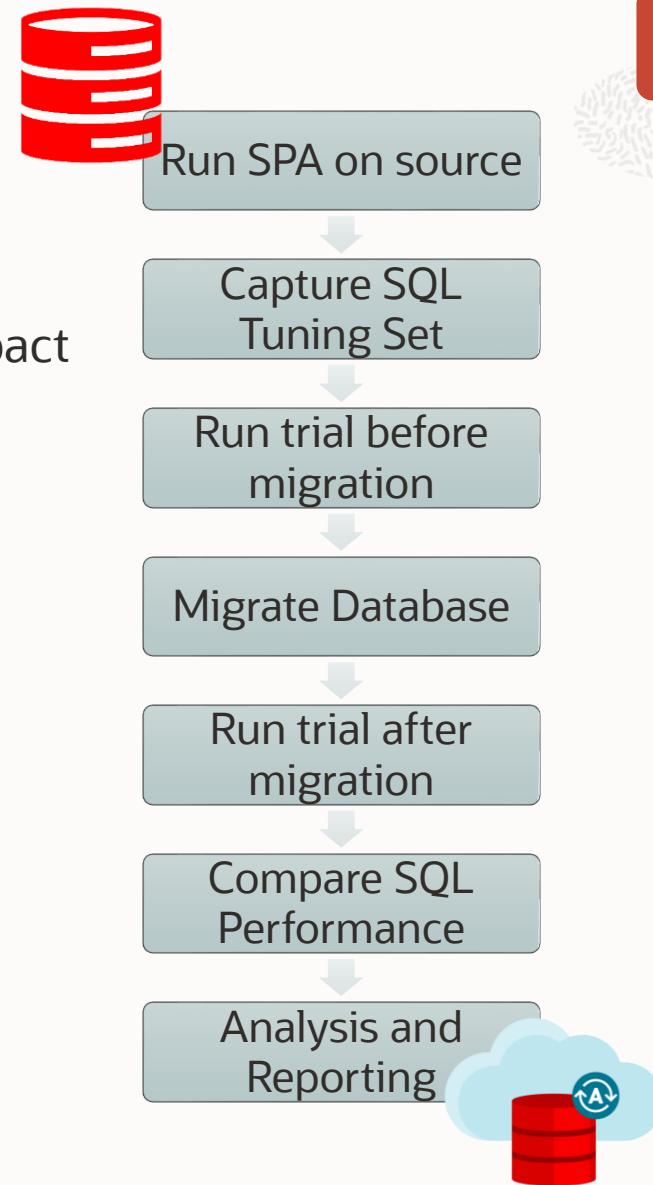
*-exec\_mode*

- **FULL** : Fully automated migrations
- **PRE\_DOWNTIME** : run all steps before downtime
- **DOWNTIME**: run all steps requiring downtime

# Performance Comparison

Comparison using SQL Performance Analyzer

- Compare SQL performance before and after migration
- Based on historic transactional data analyze potential impact on application
- Comparison based on
  - Elapsed Time
  - CPU Time
  - User I/O Time
  - Buffer Gets
  - Physical I/O
  - Optimizer Cost
  - I/O Interconnect Bytes



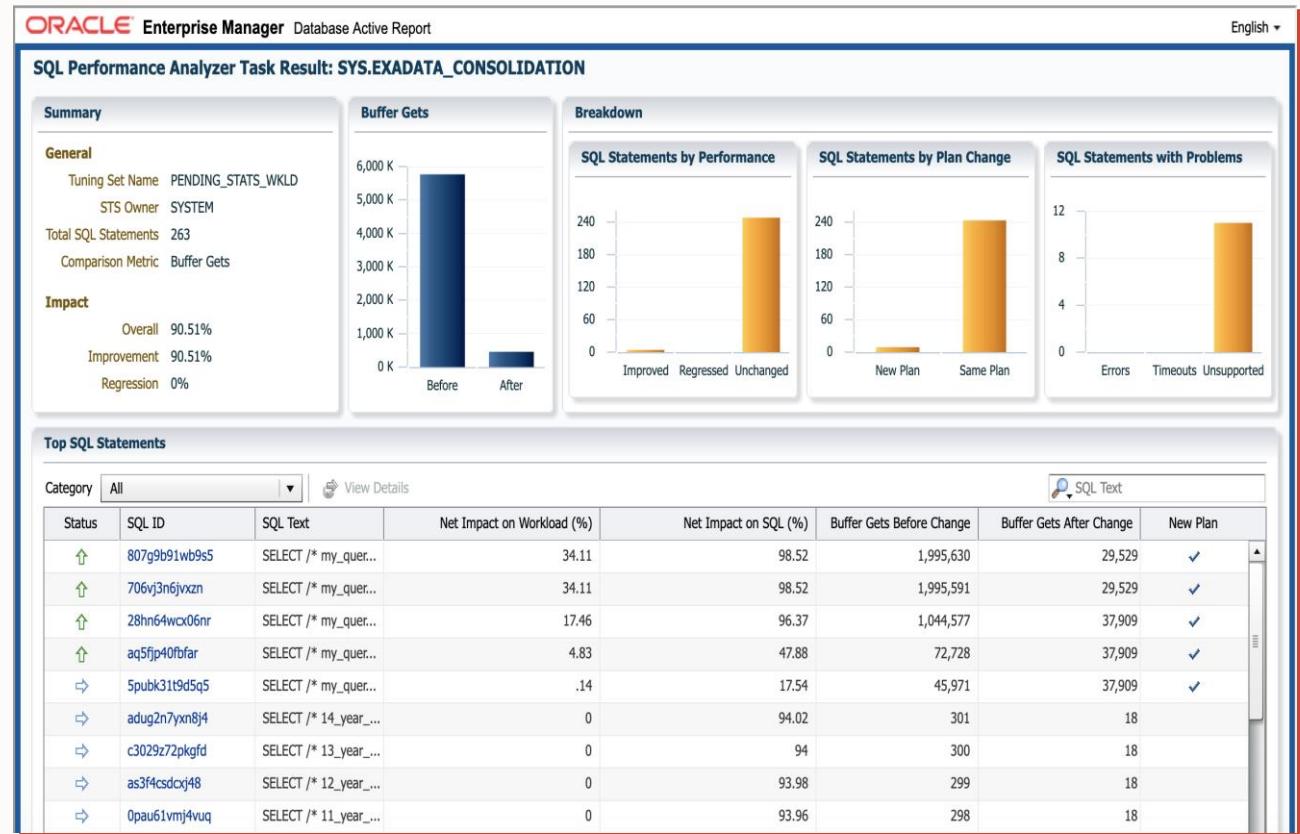
Analyze

# Performance Comparison

Simple and flexible

Analyze

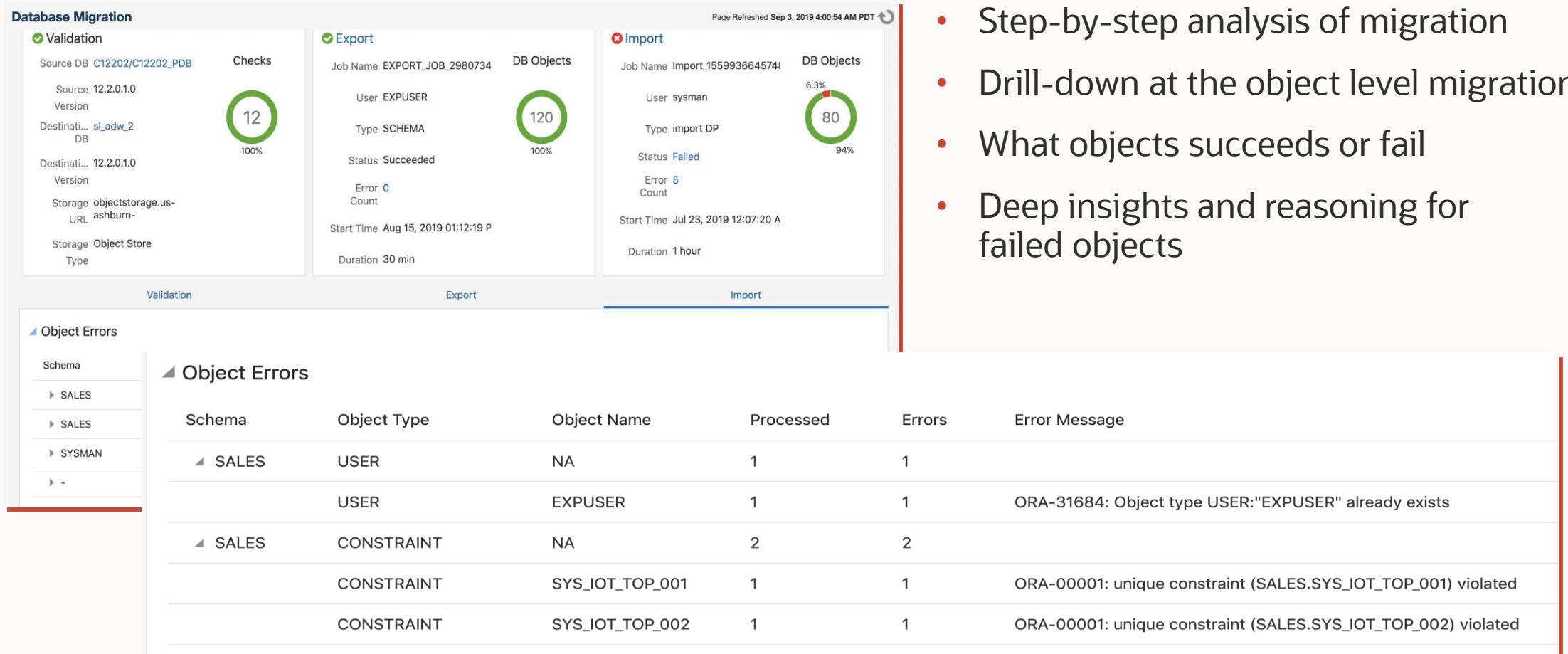
- DevOps
  - Out-of-Box Solution
  - No preparation required
  - Simple and automatic.
- Production
  - User need to enable STS before start of migration
  - This STS used to compare performance after migration
  - Accurate and flexible.



# Analyze migration workflow

## Identify and Remediate failures efficiently

Analyze



The screenshot shows the Oracle Database Migration Assistant interface. At the top, there are three cards: 'Validation' (12 checks, 100%), 'Export' (120 DB Objects, 100%, succeeded), and 'Import' (80 DB Objects, 94%, failed with 5 errors). Below these are tabs for 'Validation', 'Export', and 'Import' (selected). The 'Import' tab shows a table of object errors:

Schema	Object Type	Object Name	Processed	Errors	Error Message
SALES	USER	NA	1	1	ORA-31684: Object type USER:"EXPUSER" already exists
	USER	EXPUSER	1	1	
SALES	CONSTRAINT	NA	2	2	ORA-00001: unique constraint (SALES.SYS_IOT_TOP_001) violated
	CONSTRAINT	SYS_IOT_TOP_001	1	1	
	CONSTRAINT	SYS_IOT_TOP_002	1	1	

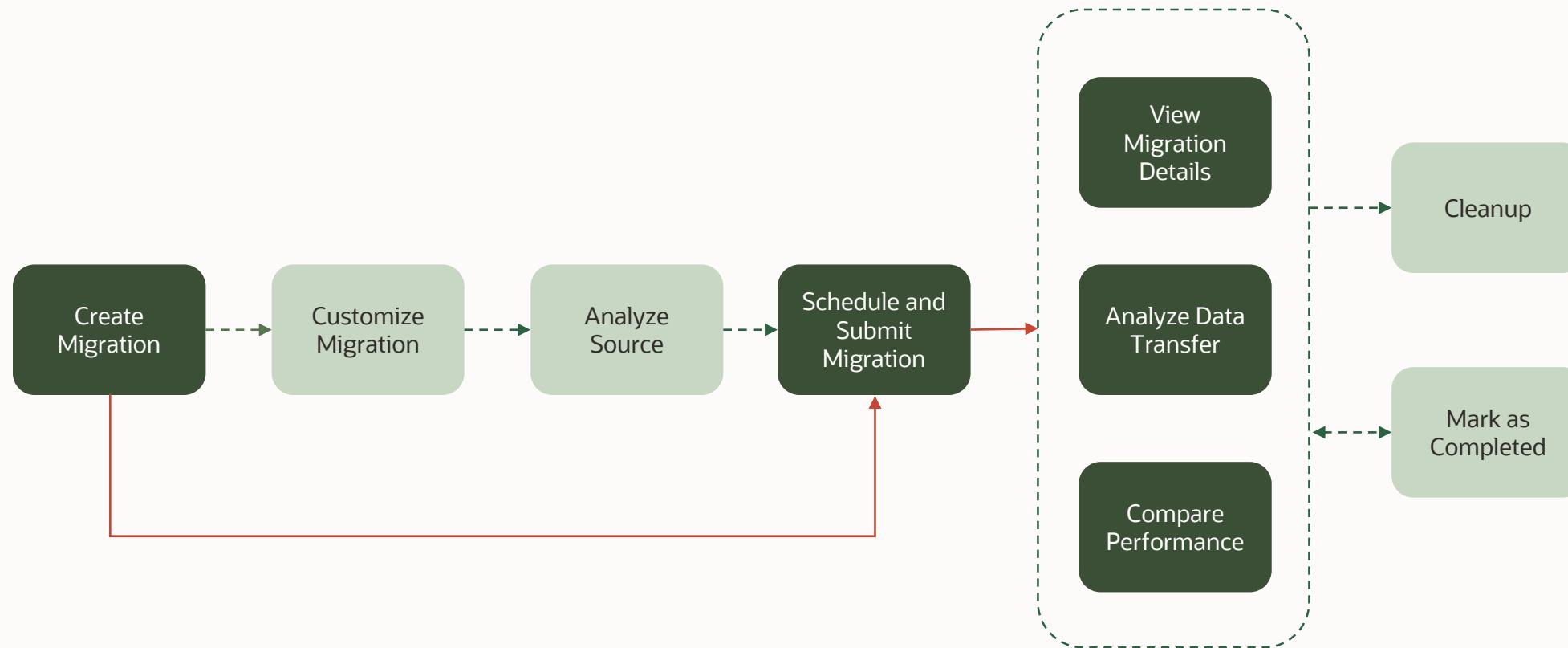
## Demo

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Migrate to Autonomous  
Database using Enterprise  
Manager



# Complete Migration Process with Database Migration Workbench



## Hybrid PDB as a Service

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On-premises and OCI provisioning

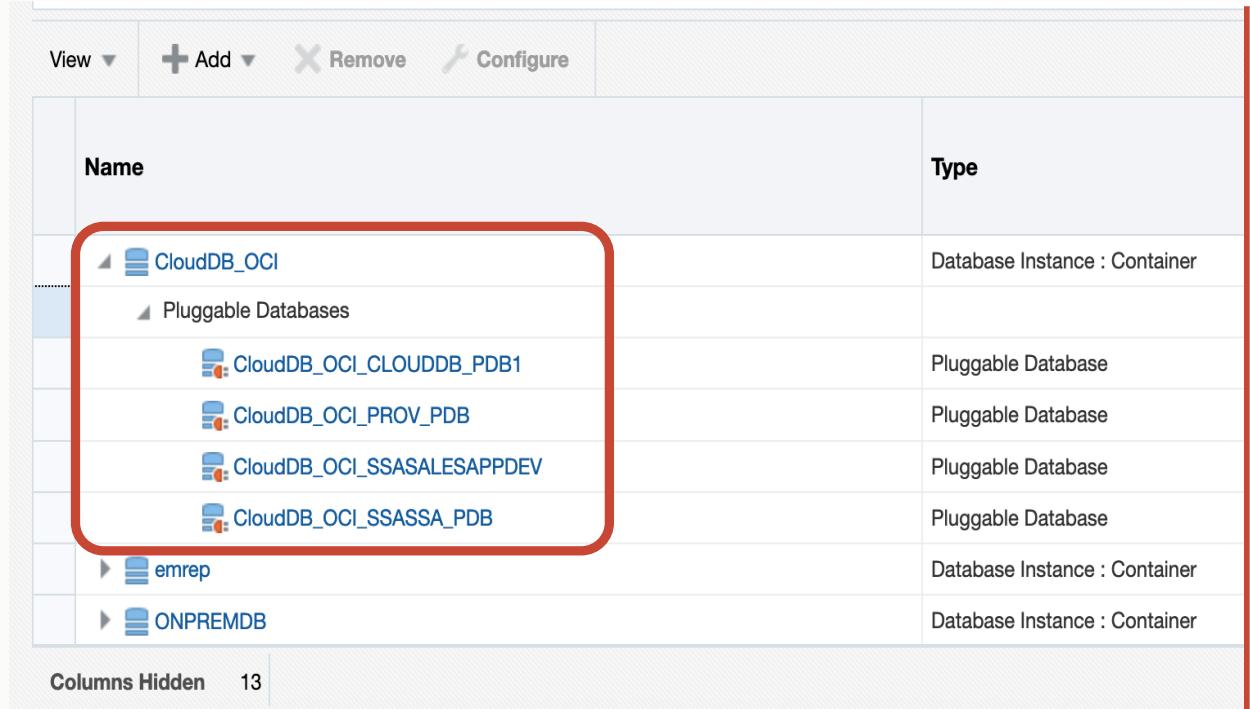
Simple Unified User Experience



# EM for Oracle Cloud (OCI) Database Cloud Service (DBCS)

## Manage Databases running in OCI DBCS

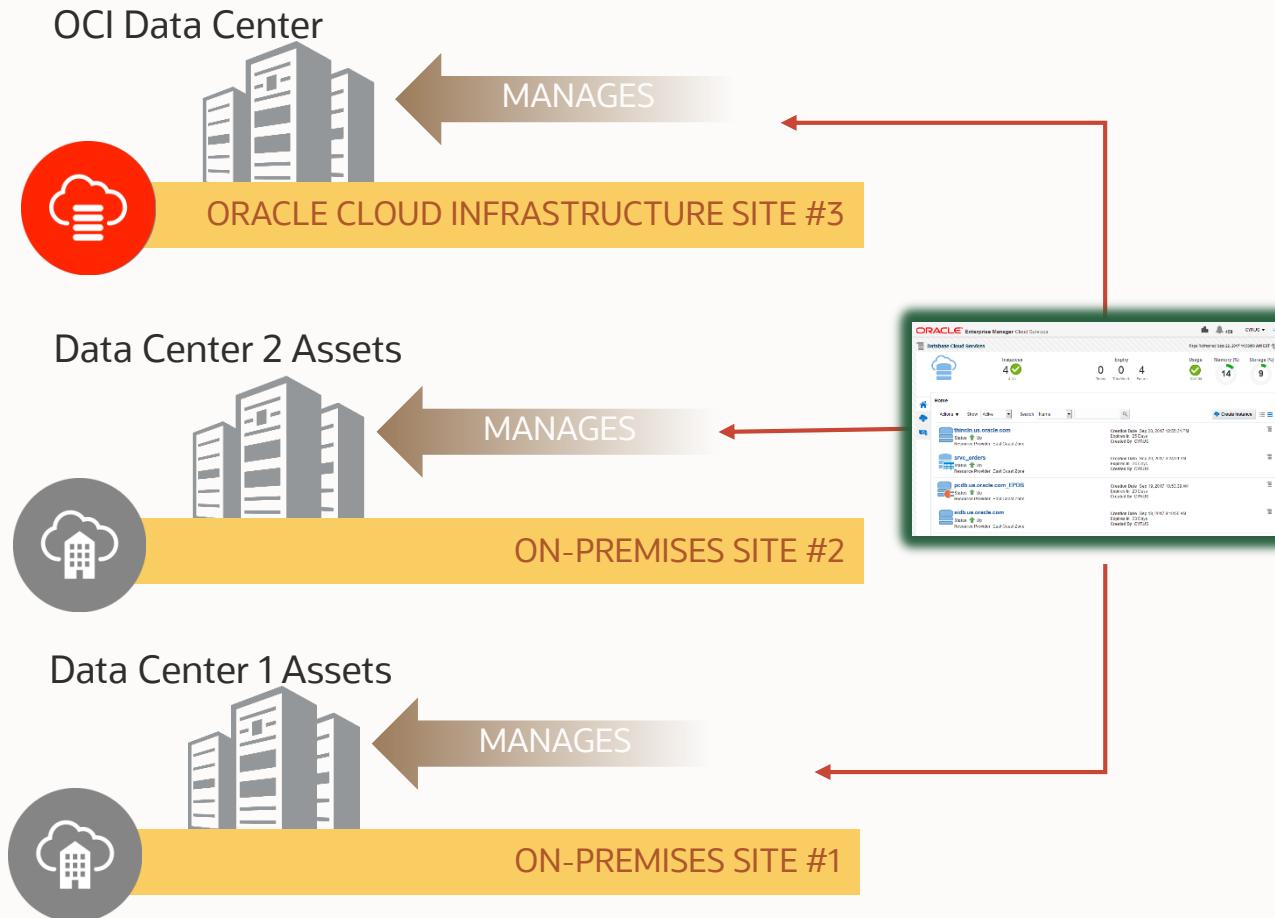
- On-premises EM or Marketplace EM
- Discover DBCS running on VM/BM
  - Deploy EM agent on host where OCI DB System is running
  - Discover CDB within DB System in EM
  - Requires OCI Connectivity
- Use DBLM and CMP features to manage pluggable databases.



Name	Type
CloudDB_OCI	Database Instance : Container
Pluggable Databases	
CloudDB_OCI_CLOUDDB_PDB1	Pluggable Database
CloudDB_OCI_PROV_PDB	Pluggable Database
CloudDB_OCI_SSASALESAPPDEV	Pluggable Database
CloudDB_OCI_SSASSA_PDB	Pluggable Database
emrep	Database Instance : Container
ONPREMDB	Database Instance : Container

OCI Database Discovered in EM

# Self Service : Provision and Manage Database Assets



- Provision and manage **on-premises** assets with Enterprise Manager 13c
- Extended database management for **OCI-based** assets, with Enterprise Manager 13c Release Update 4 and above
- **Manage your entire Oracle Database fleet at scale, with less effort**
- **Same user experience, regardless of platform**

# Self Service

## Simple, Unified Provisioning for Onpremise and OCI Data Center

**Service Offerings**

- Finance PDB on On-Prem**  
This template creates a empty PDB for the Finance Business Unit running in on-premise infrastructure [Select](#)
- Sales PDB on OCI DBCS**  
This template creates a empty PDB for the Sales Business Unit on OCI VM DB System [Select](#)

**ORACLE® Enterprise Manager Cloud Control 13c**

**Database Cloud Self Service Portal**

**Create Pluggable Database**

**Pluggable Database Configuration**

Service Template: Sales PDB On OCI DBCS [Select](#)

\* PDB Name: SalesAppDev

\* Database Service Name: SalesAppDev\_Service

\* Size: Small(CPU-1 cores, Memory-1 GB, Sessions-10 units, Storage-5 GB)

**Pluggable Database Administrator Account**

\* Administrator Name: PDBADMIN

\* Password: .....  
\* Confirm Password: .....

**Tablespaces**

Please enter the name of the tablespace to be created as part of this request.

Tablespace Name:

**Instance Details**

\* Request Name: SYSMAN - Wed Jun 10 2020 12:28:37 GMT

\* Zone: PaaS\_PDB\_Zone [Select](#)

**Properties**

Name	Value
Optional	

**Instance Duration**

If Start Date is set to "Immediately", the timezone "Greenwich Mean Time (GMT 0:00)" will be used for End Date.

Start:  Immediately  Later (UTC+0:00) Coordinated U

Duration:  Indefinitely  Until

**Submit** **Cancel**

Provisioning PDB on OCI DBCS on VM

**Service Offerings**

- Finance PDB on On-Prem**  
This template creates a empty PDB for the Finance Business Unit running in on-premise infrastructure [Select](#)
- Sales PDB on OCI DBCS**  
This template creates a empty PDB for the Sales Business Unit on OCI VM DB System [Select](#)

**ORACLE® Enterprise Manager Cloud Control 13c**

**Database Cloud Self Service Portal**

**Create Pluggable Database**

**Pluggable Database Configuration**

Service Template: Finance PDB on On-Prem [Select](#)

\* PDB Name: FinanceDevPDB

\* Database Service Name: FinanceDevPDB\_Service

\* Size: Small(CPU-1 cores, Memory-1 GB, Sessions-10 units, Storage-5 GB)

**Pluggable Database Administrator Account**

\* Administrator Name: PDBADMIN

\* Password: .....  
\* Confirm Password: .....

**Tablespaces**

Please enter the name of the tablespace to be created as part of this request.

Tablespace Name: pdb\_tbs1

**Instance Details**

\* Request Name: SYSMAN - Wed Jun 10 2020 14:00:33 GMT

\* Zone: OnPrem\_PDB\_Zone [Select](#)

**Properties**

Name	Value
Optional	

**Instance Duration**

If Start Date is set to "Immediately", the timezone "Greenwich Mean Time (GMT 0:00)" will be used for End Date.

Start:  Immediately  Later (UTC+0:00) Coordinated U

Duration:  Indefinitely  Until

**Submit** **Cancel**

Provisioning PDB in Onpremise Data Center

# Migrating and Managing Databases in Hybrid Cloud : Summary

## Migrating Databases

- IaaS Flavors
  - Provisioning
    - Gold image based provisioning
    - PDB (empty/with data) provisioning
  - Cloning/Migration
    - Database links based cloning
    - Backup and Recovery
    - Data pump export/import
    - Transportable Tablespaces (cross-platform)
  - Migrate non-CDB to PDB
- PaaS (Autonomous Database) **GA in RU7**
  - Migration Workbench
    - Data pump

## Managing Databases in Cloud

- IaaS Flavors
  - Complete Database LCM (Provisioning, Patching, Config/Compliance)
- PaaS (DBCS on VM/BM)
  - Multitenant Management
    - Provision
    - Clone / Refreshable Clone
    - Unplug/Plug
    - Relocate
    - Delete
  - Unified Self Service Portal to manage PDB's in on-premises and OCI data center



# The world of Hybrid Management

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**Björn Bolltoft**

Product Management  
Oracle Product Development

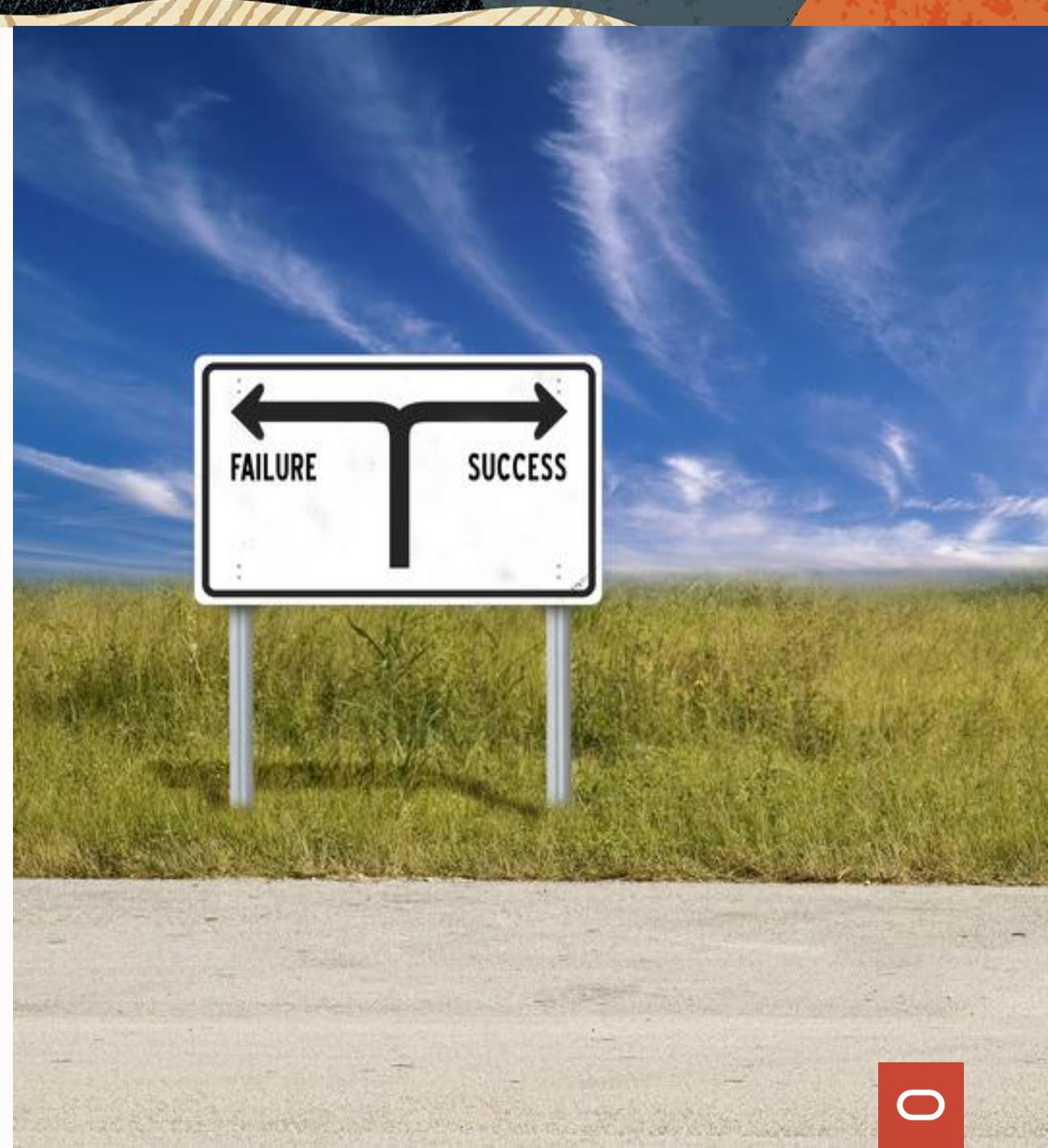
# Agenda

- 1 Database Migration Planner
- 2 Manage Databases in Cloud
- 3 Enterprise Manager Chargeback & Metering

# Database Migration and Consolidation: Considerations

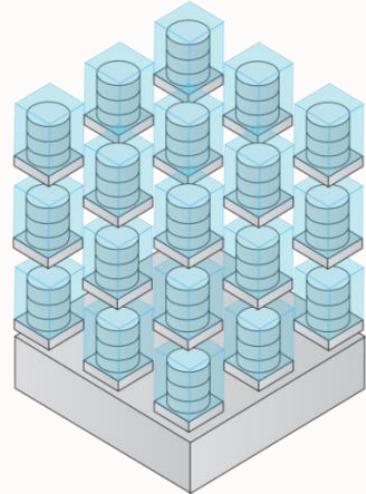
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- What database migration/consolidation strategy to use?
- Can workloads co-exist together for the chosen strategy, what conflicts exist?
- Can the system handle peak workloads while maintaining performance?
- How to perform migration with reduced downtime?
- How to test the chosen consolidation strategy to minimize risk?



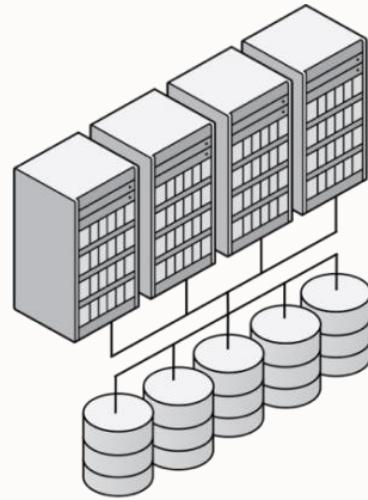
## Consolidation Alternatives

# Virtual Machines



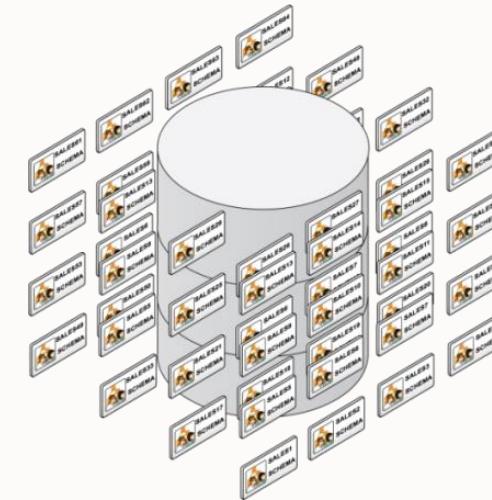
## Share servers

## Dedicated DBs



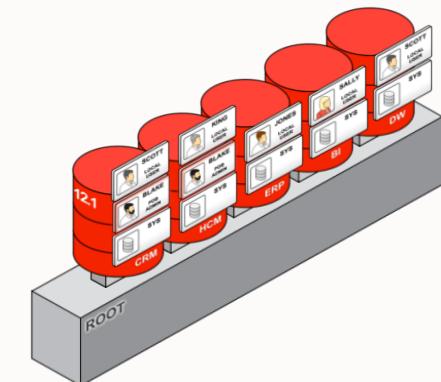
# Share servers and OS

## Dedicated Schema(s)



## Share servers, OS and database

# Pluggable DBs

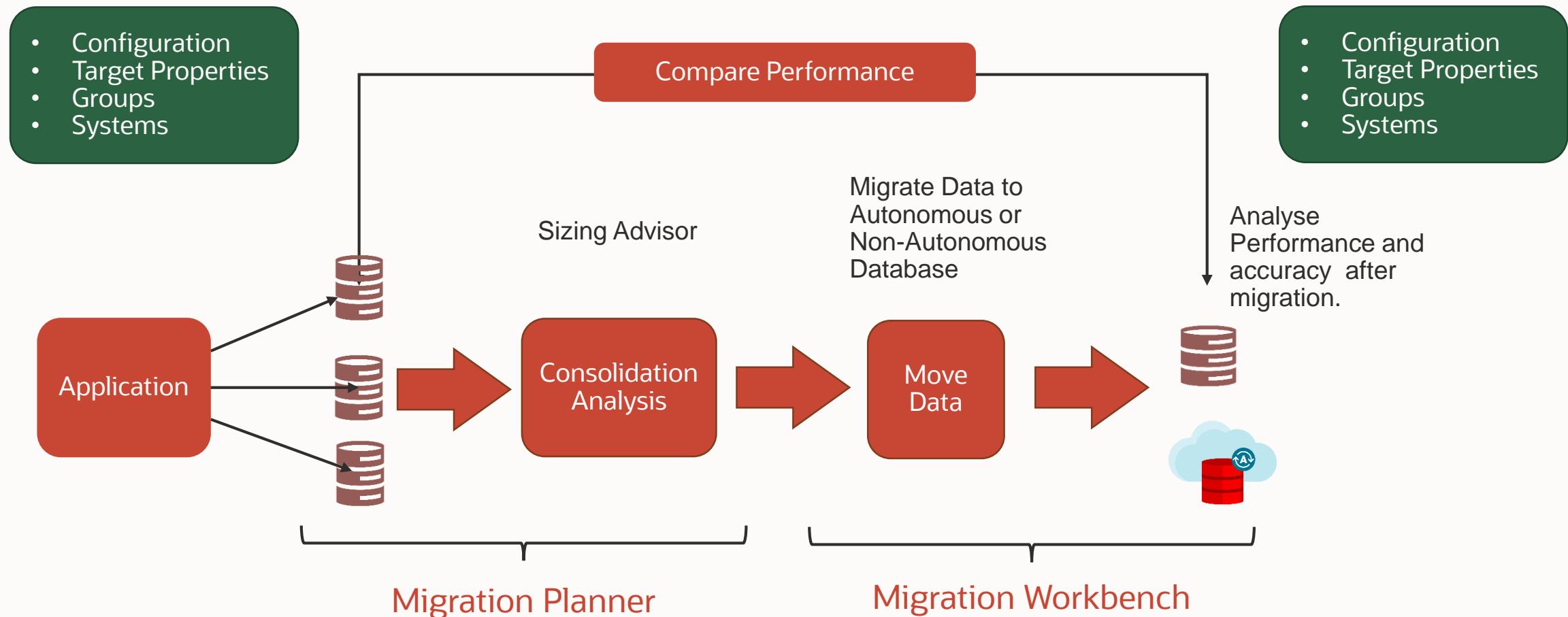


## Share servers, OS and database

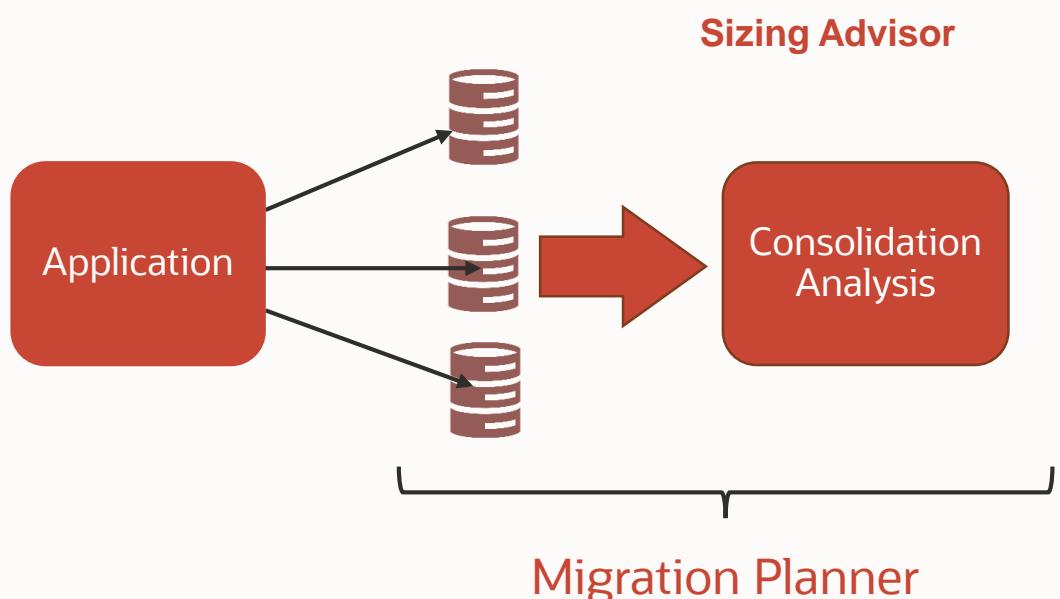
## **Increasing Consolidation**

# Migration Planner and Migration Workbench

## Step-by-step migration process



# Database Migration Planner



Comprehensive analytic solution for planning database migrations and consolidation

Provides a risk-free and accurate approach to consolidation by eliminating guess work, human errors

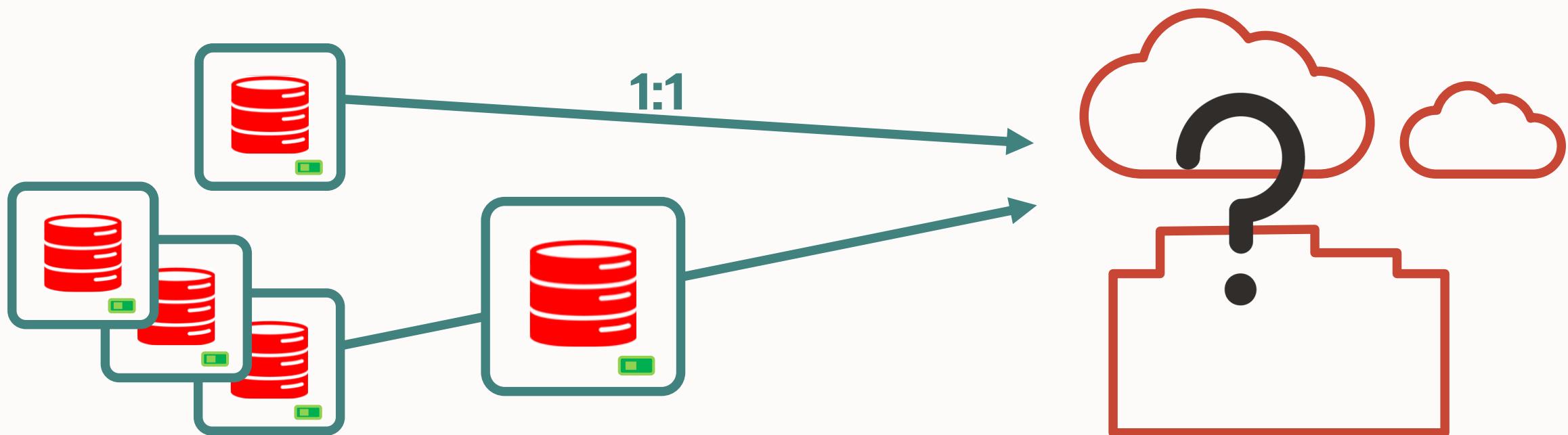
- Analysis based on historical workload (DB, Host metrics)
- Automation in all phases of consolidation from planning to deployment

Provides a flexible approach for various customer scenarios

- 10.2 DB versions and higher support
- Oracle Private Cloud, **Oracle Compute Cloud shapes (OC3-7, OC1M-OC5M)** or Exadata
- Support for workload capacity / cloud shape planning for single or consolidated databases

# Analyze Cloud Capacity / Cloud Shape Required

The DB Migration Planner can be used when consolidating multiple databases or to analyze if one or multiple databases can be moved to the cloud and what cloud shape that is required to meet the required capacity



# Database Consolidation Workbench

## End-to-end Consolidation Solution

### Plan

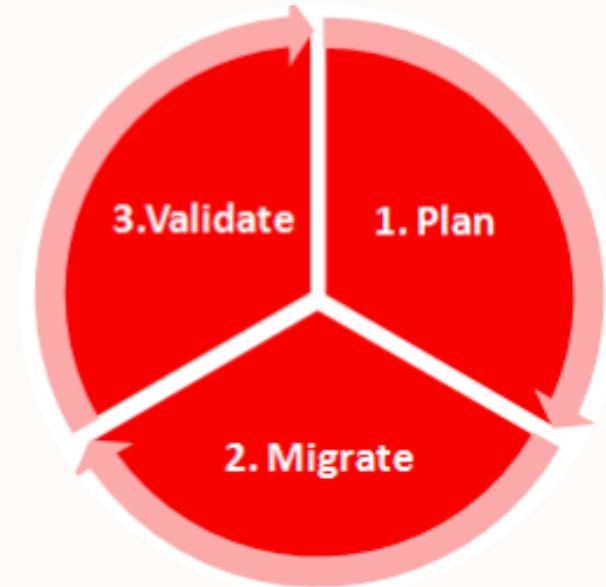
- Gives consolidation advice by identifying candidate databases for the designated consolidation platform using AWR data

### Migrate

- Implements consolidation plan by migrating databases to new consolidation platform Migration Workbench

### Validate

- Validates consolidation plan with Real Application Testing (RAT) by running test workloads on consolidated databases and concurrency tests with Database Replay



# Database Migration Planner

## Key Features and Planning Advice

Estimates resource utilization under various consolidation scenarios

- Ultra Conservative (peak maximum) → Aggressive (average)

Supported consolidation modes

- Database-to-Database (Multitenant) consolidation
- Database-to-Server (Server, e.g. Exadata) consolidation
- Oracle Public Cloud consolidation

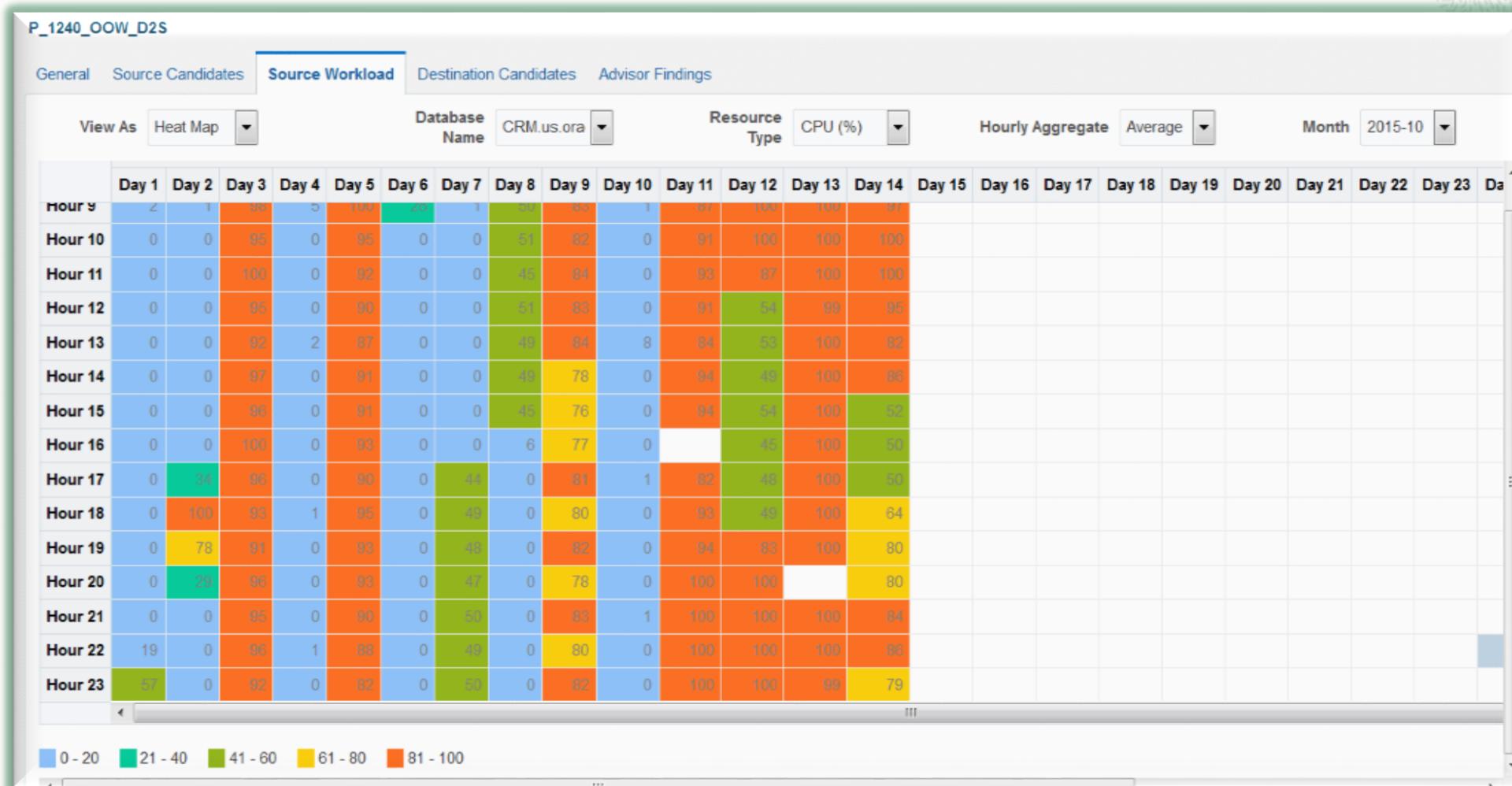
Consolidation optimization advice

- Identifies conflicts based on workload characteristics, Exadata suitability
- Storage/Platform advice: impact of compression on I/O & storage, impact of I/O offloading & Flash Cache



# Database Migration Planner Heatmap

1. Plan



# Migration Planner – Screen Shot demo

ORACLE® Enterprise Manager Cloud Control 13c

Enterprise Targets Favorites History Setup SYSMAN

Database Consolidation Workbench

Page Refreshed Oct 16, 2020 6:38:15 AM PDT

Actions View Create Project Create Scenario Re-run Scenario Implement Scenario Report Delete Detach

Project (Scenario) Type Status Sources Destination Ratio Mapping Co (%) Violations Exclusions Schema Conflicts Advisor Findings Creation Date (UTC) Description

**OW\_DEMO** D2S Collecting over maximum 9 0 5 9/5/2019 9:16 PM

Scenario\_X7-2\_Compression Custom Analysis completed 8 3 3.7 Auto... 2 6 11/20/2019 7:06 AM Consolidate to X7-2 eighth rack with Flash disk and estim...

Scenario\_X7-2\_Compressed\_Estimates Custom Analysis completed 9 4 3.3 Auto... 2 17 11/19/2019 12:30 ... Consolidate to phantom Exadata X7-2 eighth rack specify...

Scenario\_X7-2\_HalfRack Custom Analysis completed 9 2 6.5 Auto... 1 27 11/19/2019 4:51 AM

Scenario\_OCI\_BM Custom Analysis completed 9 2 6.5 Auto... 20 11/19/2019 4:43 AM

Project\_1420

General Source Candidates Source Workload Destination Candidates Advisor Findings

**Source Candidates**

Hide

If the value in column "Estimated Compression Ratio" is "Not Available," then compression estimates may not be available for the target. If you want to estimate compressed storage requirements, submit this job on such targets to run compression advice and collect estimates before creating scenarios: Deploy Database Consolidation Workbench Packages. It may take up to 24 hours after the compression advice is run for metrics to upload the data into Enterprise Manager for scenario analysis. (The upload can be checked using the Last Upload field for Compression Advice metric from the All Metrics page of the database target.) Also, when planning consolidation to Exadata, to estimate the impact of Exadata storage cells on the I/O requirement of the source databases, run Exadata Simulation from SPA using a tuning set which is representative of each database's workload before creating scenarios.

View Source Candidates 4 Source Candidates with Usage Data Collected 1 Start Date 8/18/2019 End Date 10/16/2020

Database Name	CPU Capacity (SPEC metric)	CPU Utilization (%)	Memory Capacity (GB)	Memory Utilization (%)	Allocated Storage (GB)	Used Storage (GB)	Estimated Compression Ratio	Estimated Workload Type	I/O Usage (Requests/Second)	I/O Usage (MB/Second)	Database Version	Operating System
dbm01	5632.0 (Estimated)	1	8061.76	5	569.30	84.78	1.33 - 16.34	OLTP	108.80	1.60	12.1.0.2.0	
exadb1	5632.0 (Estimated)	1	8061.76	13	1900.53	1816.89	1 - 146.64	Insufficient ...	1247390.40	9795.20	12.1.0.2.0	
exadb2	5632.0 (Estimated)	1	8061.76	16	615.91	585.05	1 - 146.64	Insufficient ...	76019.20	67227.20	12.1.0.2.0	
s193.us.oracle.com	151.0 (Estimated)	1	14.09	23	26.36	16.76	Not Available	Insufficient ...	1053.40	501.90	19.0.0.0.0	Oracle Linux Server release 7.4

# Migration Planner – Screen Shot demo

ORACLE Enterprise Manager Cloud Control 13c

Enterprise Targets Favorites History Setup SYSMAN

Database Consolidation Workbench

Page Refreshed Oct 16, 2020 6:38:15 AM PDT

Actions View Create Project Create Scenario Re-run Scenario Implement Scenario Report Delete

1. Plan

Project (Scenario)	Type	Status	Sources	Destination	Ratio	Mapping	Co (%)	Viola	Exclusions	Schema Conflicts	Advisor Findings	Creation Date (UTC)	Description
OW_DEMO	D2S	Collecting over maximum	9	0							5	9/5/2019 9:16 PM	
Scenario_X7-2_Compression	Custom	Analysis completed	8	3	3.7	Auto...	green	green	yellow 2		6	11/20/2019 7:06 AM	Consolidate to X7-2 eighth rack with Flash disk and estim...
Scenario_X7-2_Compressed_Estimates	Custom	Analysis completed	9	4	3.3	Auto...	green	green	yellow 2		17	11/19/2019 12:30 ...	Consolidate to phantom Exadata X7-2 eighth rack specify...
Scenario_X7-2_HalfRack	Custom	Analysis completed	9	2	6.5	Auto...	green	green	yellow 1		27	11/19/2019 4:51 AM	
Scenario_OCI_BM	Custom	Analysis completed	9	2	6.5	Auto...	green	green	green		20	11/19/2019 4:43 AM	

Scenario\_X7-2\_Compression (OW\_DEMO)

General Sources Destinations Ratio Mapping Storage Confidence Violations Exclusions Advisor Findings

View Start Date 5/31/2019 End Date 11/20/2019

Destination Server	CPU Capacity (SPEC metric)	CPU Utilization (%)	Memory (GB)	Memory Utilization (%)
DB_MACHINE				
RACK_001.NODE	1070.0 (Estimated)	74.8	384.00	86.6
RACK_001.NODE	1070.0 (Estimated)	72.5	384.00	76.8
RACK_002.NODE	1070.0 (Estimated)	20.9	384.00	4.0

[https://den00yov.us.oracle.com:7804/em/faces/cat-cpa-cpaHome?cpa\\_ctx\\_type=db#](https://den00yov.us.oracle.com:7804/em/faces/cat-cpa-cpaHome?cpa_ctx_type=db#)

# Migration Planner – Screen Shot demo

ORACLE Enterprise Manager Cloud Control 13c

Enterprise Targets Favorites History Setup SYSMAN

Database Consolidation Workbench

Page Refreshed Oct 16, 2020 6:38:15 AM PDT

1. Plan

Project (Scenario)	Type	Status	Sources	Destination	Ratio	Mapping	Co (%)	Violations	Exclusions	Schema Conflicts	Advisor Findings	Creation Date (UTC)	Description
▲ OOW_DEMO	D2S	Collecting over maximum	9	0							5	9/5/2019 9:16 PM	
Scenario_X7-2_Compression	Custom	Analysis completed	8	3	3.7	Auto...	2	2			6	11/20/2019 7:06 AM	Consolidate to X7-2 eighth rack with Flash disk and estim...
Scenario_X7-2_Compressed_Estimates	Custom	Analysis completed	9	4	3.3	Auto...	2	2			17	11/19/2019 12:30 ...	Consolidate to phantom Exadata X7-2 eighth rack specify...
Scenario_X7-2_HalfRack	Custom	Analysis completed	9	2	6.5	Auto...	1	1			27	11/19/2019 4:51 AM	
Scenario_OCI_BM	Custom	Analysis completed	9	2	6.5	Auto...	2	2			20	11/19/2019 4:43 AM	

Scenario\_X7-2\_Compression (OOW\_DEMO)

General Sources Destinations **Ratio** Mapping Storage Confidence Violations Exclusions Advisor Findings

View Databases to be Consolidated 8 Target Servers 3 Consolidation Ratio 3.7

Destination Server	Source Databases	Source Database
DB_MACHINE		
RACK_0001.NODE_01	5	BB19PROD.us.oracle.com EMREP.us.oracle.com exadb2 dbm02 dbm01
RACK_0001.NODE_02	5	
RACK_0002.NODE_01	1	BB12.us.oracle.com

# Migration Planner – Screen Shot demo

ORACLE® Enterprise Manager Cloud Control 13c

Database Consolidation Workbench

Page Refreshed Oct 16, 2020 6:38:15 AM PDT

1. Plan

Actions ▾ View ▾ Create Project Create Scenario Re-run Scenario Implement Scenario Report Delete Detach

Project (Scenario) Type Status Sources Destination Ratio Mapping Co (%) Violations Exclusions Schema Conflicts Advisor Findings Creation Date (UTC) Description

▲ OOW\_DEMO D2S Collecting over maximum 9 0 5 9/5/2019 9:16 PM

Scenario\_X7-2\_Compression Custom Analysis completed 8 3 3.7 Auto... 2 6 11/20/2019 7:06 AM Consolidate to X7-2 eighth rack with Flash disk and estim...

Scenario\_X7-2\_Compressed\_Estimates Custom Analysis completed 9 4 3.3 Auto... 2 17 11/19/2019 12:30 ... Consolidate to phantom Exadata X7-2 eighth rack specify...

Scenario\_X7-2\_HalfRack Custom Analysis completed 9 2 6.5 Auto... 1 27 11/19/2019 4:51 AM

Scenario\_OCI\_BM Custom Analysis completed 9 2 6.5 Auto... 20 11/19/2019 4:43 AM

Scenario\_X7-2\_Compression (OOW\_DEMO)

General Sources Destinations Ratio Mapping Storage Confidence Violations Exclusions Advisor Findings

View As Heat Map Destination Server All Resource Type All Month 2019-11

Total Data Points Evaluated 1111 Data Points Meeting Requirements 1032 Data Points Not Meeting Requirements 79 (⚠) Confidence (%) 93

Hourly (UTC) Resource Utilization (%)

	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18	Day 19	Day 20	Day 21	Day 22	Day 23	Day 24	Day 25	Day 26	Day 27	Day 28	Day 29	Day 30
Hour 0	23	22	22	22	22	22	22	19	23	25	25	25	41	33	32	33	⚠	⚠										
Hour 1	23	22	22	22	22	22	22	19	23	23	25	25	41	33	33	32	⚠	⚠										
Hour 2	23	22	22	22	22	22	22	19	23	25	25	25	40	33	32	32	⚠	⚠										
Hour 3	23	22	22	22	22	22	22	19	23	25	25	25	37	33	32	32	⚠	⚠										
Hour 4	23	22	22	22	22	22	22	19	23	25	25	25	35	33	32	32	⚠	⚠										
Hour 5	23	22	22	22	22	22	22	19	23	25	25	25	36	33	32	32	⚠	⚠										
Hour 6	23	22	22	22	22	22	21	19	23	25	25	25	35	33	32	32	⚠											
Hour 7		22	22	22	22	22	22	19	19	23	25	25	25	35	32	32	32	⚠										
Hour 8	23	22	22	22	22	22	19	24	25	25	25	25	36	32	32	40	⚠											
Hour 9	23	22	22	22	22	22	19	23	25	25	25	25	35	32	32	47	⚠											

# Migration Planner – Screen Shot demo

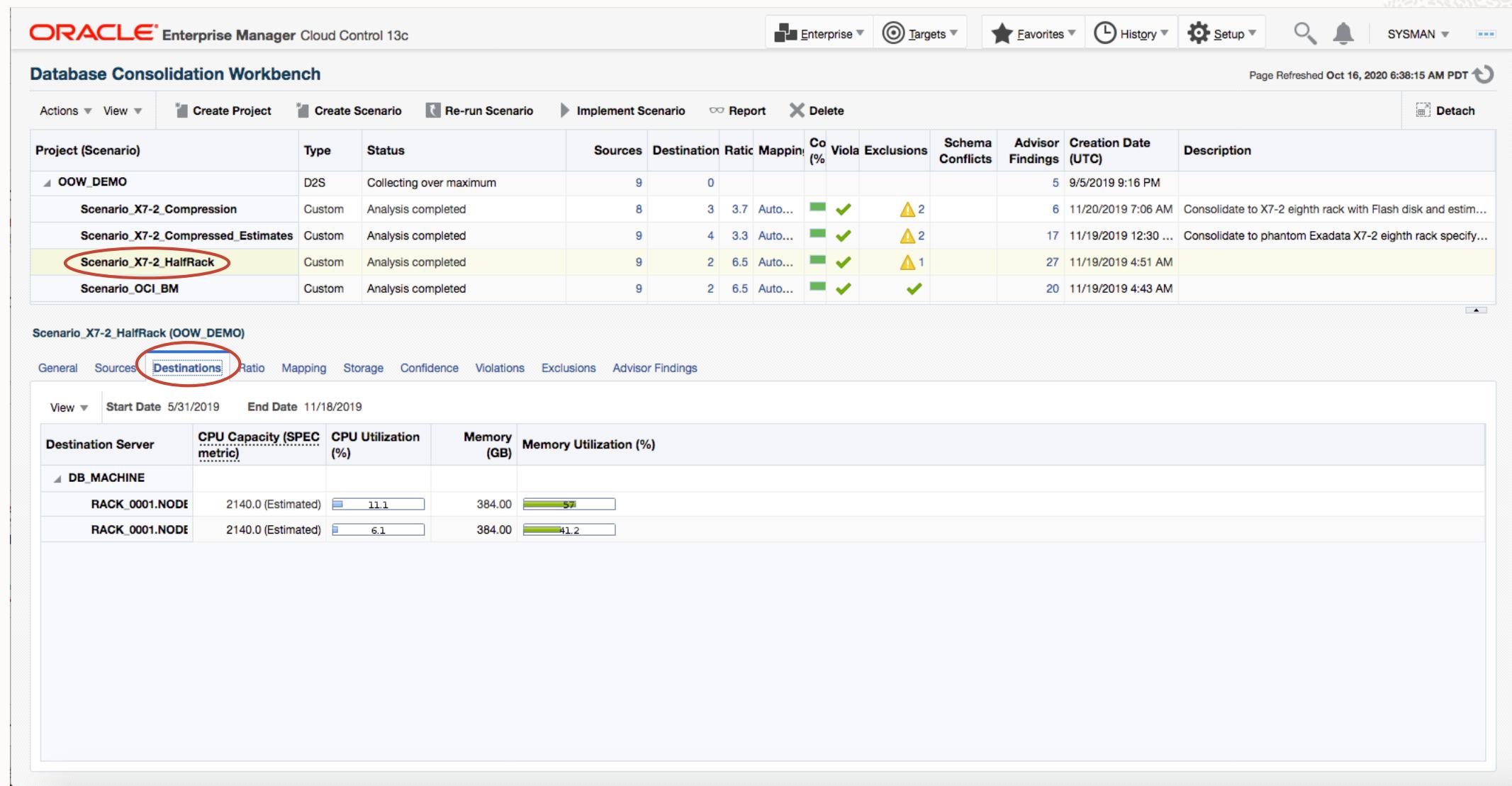
1. Plan

Project (Scenario)	Type	Status	Sources	Destination	Ratio	Mapping	Co (%)	Violations	Exclusions	Schema Conflicts	Advisor Findings	Creation Date (UTC)	Description
▲ OOW_DEMO	D2S	Collecting over maximum	9	0							5	9/5/2019 9:16 PM	
Scenario_X7-2_Compression	Custom	Analysis completed	8	3	3.7	Auto...	2	2			6	11/20/2019 7:06 AM	Consolidate to X7-2 eighth rack with Flash disk and estim...
Scenario_X7-2_Compressed_Estimates	Custom	Analysis completed	9	4	3.3	Auto...	2	2			17	11/19/2019 12:30 ...	Consolidate to phantom Exadata X7-2 eighth rack specify...
Scenario_X7-2_HalfRack	Custom	Analysis completed	9	2	6.5	Auto...	1	1			27	11/19/2019 4:51 AM	
Scenario_OCI_BM	Custom	Analysis completed	9	2	6.5	Auto...	1	1			20	11/19/2019 4:43 AM	

Scenario\_X7-2\_Compression (OOW\_DEMO)

General	Sources	Destinations	Ratio	Mapping	Storage	Confidence	Violations	Exclusions	Advisor Findings
View	Show Severities	Warning							
Target Name	Target Type	Rule	Severity	Finding					
BB12.us.oracle.com	Database Instance	Buffer Cache Hit Ratio	⚠	The Buffer Cache Hit Ratio for this source database is 96.18%. This may require tuning SQL and/or buffer cache to eliminate excessive I/O load prior to consolidation planning.					
BB12Pus.oracle.c...	Database Instance	Log File Write Time	⚠	The average wait time for the log file sync event for this source database is 21.79ms. This indicates excessive time to write redo information to redo log files on disk possibly due to slow disk...					
BB19PROD.us.ora...	Database Instance	Log File Write Time	⚠	The average wait time for the log file sync event for this source database is 17.42ms. This indicates excessive time to write redo information to redo log files on disk possibly due to slow disk...					
dbm02	Cluster Database	DB File Read Time	⚠	The average wait time for the db file sequential read event for this source database is 15.18ms. This may be indicative of poorly tuned SQL or slow I/O subsystem. Investigation of SQL state...					
exadb2	Cluster Database	Log File Write Time	⚠	The average wait time for the log file sync event for this source database is 12ms. This indicates excessive time to write redo information to redo log files on disk possibly due to slow disks th...					
exadb2	Cluster Database	CPU-Bound	⚠	Detected potentially CPU-bound source database with average active session count of 114.81 that exceeds its core count. Consider tuning this database to eliminate any CPU bottleneck pri...					

# Migration Planner – Screen Shot demo



1. Plan

ORACLE Enterprise Manager Cloud Control 13c

Database Consolidation Workbench

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Actions ▾ View ▾ Create Project Create Scenario Re-run Scenario Implement Scenario Report Delete Detach

Project (Scenario)	Type	Status	Sources	Destination	Ratio	Mapping	Conf.	Viol.	Exclusions	Schema Conflicts	Advisor Findings	Creation Date (UTC)	Description
▲ OOW_DEMO	D2S	Collecting over maximum	9	0							5	9/5/2019 9:16 PM	
Scenario_X7-2_Compression	Custom	Analysis completed	8	3	3.7	Auto...	■	✓	⚠ 2		6	11/20/2019 7:06 AM	Consolidate to X7-2 eighth rack with Flash disk and estim...
Scenario_X7-2_Compressed_Estimates	Custom	Analysis completed	9	4	3.3	Auto...	■	✓	⚠ 2		17	11/19/2019 12:30 ...	Consolidate to phantom Exadata X7-2 eighth rack specify...
Scenario_X7-2_HalfRack	Custom	Analysis completed	9	2	6.5	Auto...	■	✓	⚠ 1		27	11/19/2019 4:51 AM	
Scenario_OCI_BM	Custom	Analysis completed	9	2	6.5	Auto...	■	✓	✓		20	11/19/2019 4:43 AM	

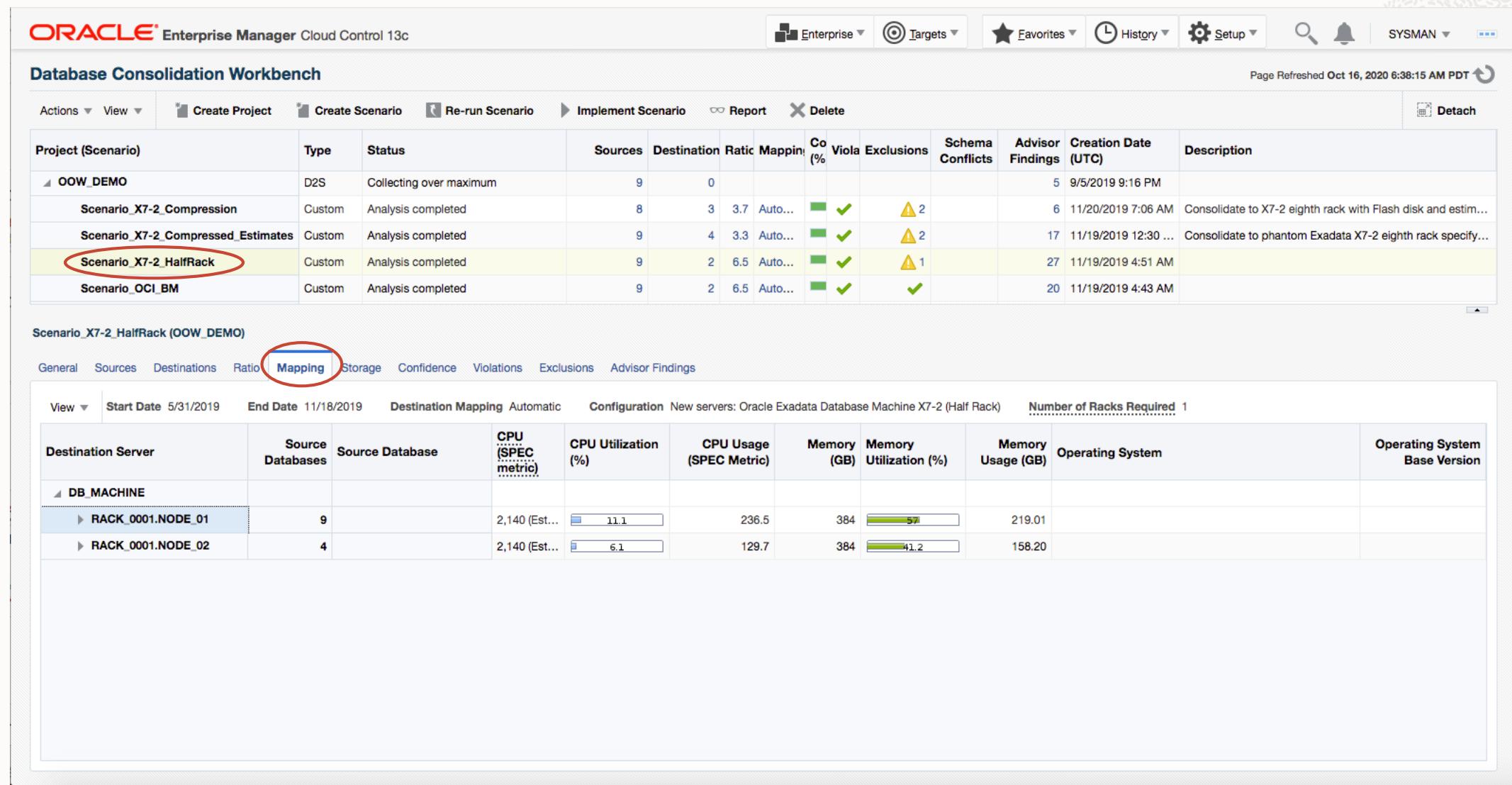
Scenario\_X7-2\_HalfRack (OOW\_DEMO)

General Sources Destinations Ratio Mapping Storage Confidence Violations Exclusions Advisor Findings

View ▾ Start Date 5/31/2019 End Date 11/18/2019

Destination Server	CPU Capacity (SPEC metric)	CPU Utilization (%)	Memory (GB)	Memory Utilization (%)
▲ DB_MACHINE				
RACK_0001.NODE1	2140.0 (Estimated)	11.1	384.00	57
RACK_0001.NODE2	2140.0 (Estimated)	6.1	384.00	41.2

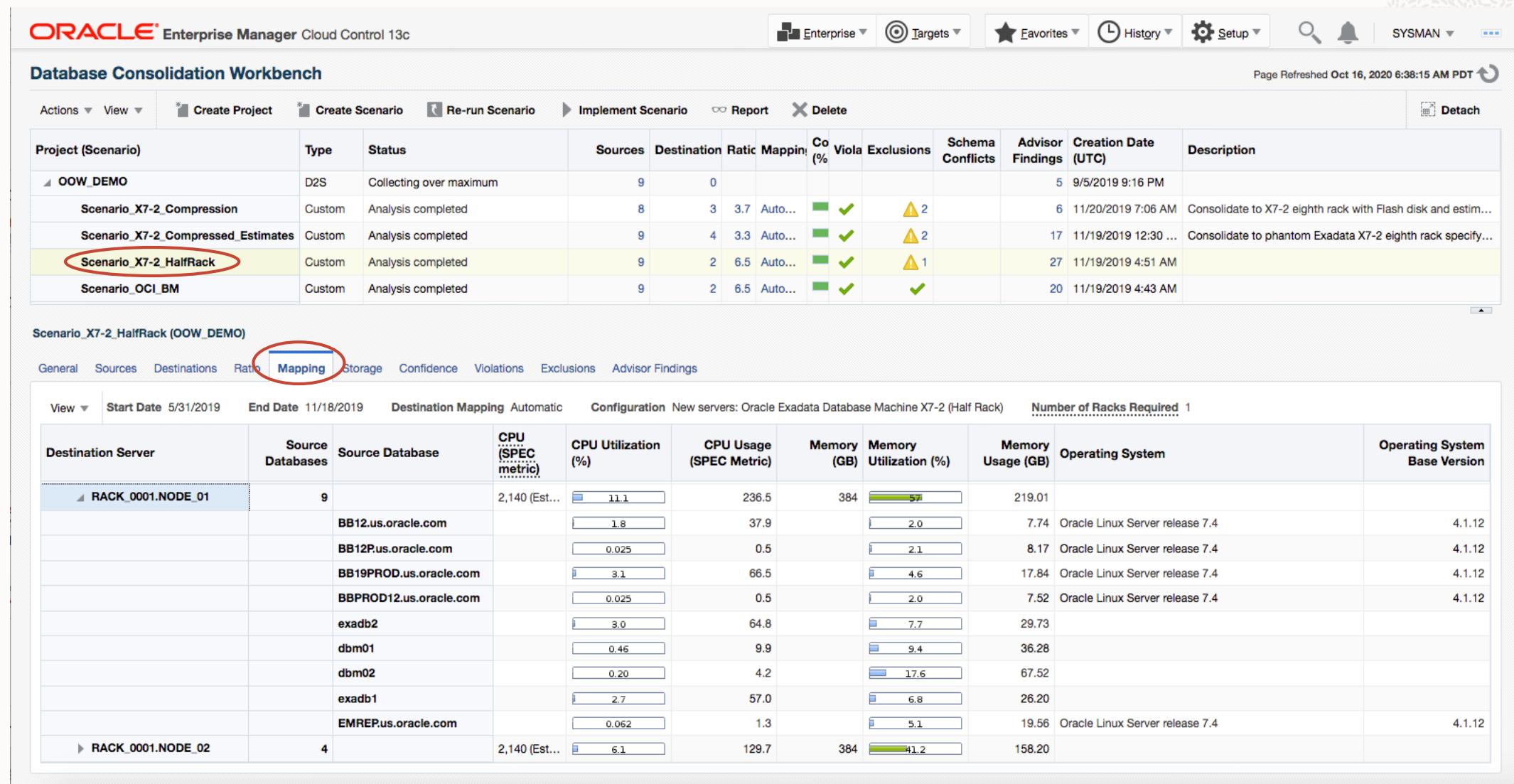
# Migration Planner – Screen Shot demo



## 1. Plan

# Migration Planner – Screen Shot demo

1. Plan



ORACLE® Enterprise Manager Cloud Control 13c

Database Consolidation Workbench

Page Refreshed Oct 16, 2020 6:38:15 AM PDT

Actions ▾ View ▾ Create Project Create Scenario Re-run Scenario Implement Scenario Report Delete Detach

Project (Scenario) Type Status Sources Destination Ratio Mapping Co (%) Violations Exclusions Schema Conflicts Advisor Findings Creation Date (UTC) Description

Project (Scenario)	Type	Status	Sources	Destination	Ratio	Mapping	Co (%)	Violations	Exclusions	Schema Conflicts	Advisor Findings	Creation Date (UTC)	Description	
OOB_DEMO	D2S	Collecting over maximum	9	0								5	9/5/2019 9:16 PM	
Scenario_X7-2_Compression	Custom	Analysis completed	8	3	3.7	Auto...	0	✓	⚠ 2			6	11/20/2019 7:06 AM	Consolidate to X7-2 eighth rack with Flash disk and estim...
Scenario_X7-2_Compressed_Estimates	Custom	Analysis completed	9	4	3.3	Auto...	0	✓	⚠ 2			17	11/19/2019 12:30 ...	Consolidate to phantom Exadata X7-2 eighth rack specify...
Scenario_X7-2_HalfRack	Custom	Analysis completed	9	2	6.5	Auto...	0	✓	⚠ 1			27	11/19/2019 4:51 AM	
Scenario_OCI_BM	Custom	Analysis completed	9	2	6.5	Auto...	0	✓	✓			20	11/19/2019 4:43 AM	

Scenario\_X7-2\_HalfRack (OOB\_DEMO)

General Sources Destinations Ratio **Mapping** Storage Confidence Violations Exclusions Advisor Findings

View ▾ Start Date 5/31/2019 End Date 11/18/2019 Destination Mapping Automatic Configuration New servers: Oracle Exadata Database Machine X7-2 (Half Rack) Number of Racks Required 1

Destination Server	Source Databases	Source Database	CPU (SPEC metric)	CPU Utilization (%)	CPU Usage (SPEC Metric)	Memory (GB)	Memory Utilization (%)	Memory Usage (GB)	Operating System	Operating System Base Version
RACK_0001.NODE_01	9	BB12.us.oracle.com	2,140 (Est... 11.1	236.5	384 57	219.01				
		BB12P.us.oracle.com		1.8	37.9	2.0	7.74	Oracle Linux Server release 7.4	4.1.12	
		BB19PROD.us.oracle.com		0.025	0.5	2.1	8.17	Oracle Linux Server release 7.4	4.1.12	
		BBPROD12.us.oracle.com		3.1	66.5	4.6	17.84	Oracle Linux Server release 7.4	4.1.12	
		exadb2		0.025	0.5	2.0	7.52	Oracle Linux Server release 7.4	4.1.12	
		dbm01		3.0	64.8	7.7	29.73			
		dbm02		0.46	9.9	9.4	36.28			
		exadb1		0.20	4.2	17.6	67.52			
		EMREP.us.oracle.com		2.7	57.0	6.8	26.20			
RACK_0001.NODE_02	4	BB12.us.oracle.com	2,140 (Est... 6.1	129.7	384 41.2	158.20				

# Migration Planner – Screen Shot demo

ORACLE Enterprise Manager Cloud Control 13c

Enterprise Targets Favorites History Setup SYSMAN

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1. Plan

### Database Consolidation Workbench

Actions View Create Project Create Scenario Re-run Scenario Implement Scenario Report Delete Detach

Project (Scenario)	Type	Status	Sources	Destination	Ratio	Mapping	Co (%)	Violations	Exclusions	Schema Conflicts	Advisor Findings	Creation Date (UTC)	Description
OOB_DEMO	D2S	Collecting over maximum	9	0							5	9/5/2019 9:16 PM	
Scenario_X7-2_Compression	Custom	Analysis completed	8	3	3.7	Auto...	green	green	yellow	2	6	11/20/2019 7:06 AM	Consolidate to X7-2 eighth rack with Flash disk and estim...
Scenario_X7-2_Compressed_Estimates	Custom	Analysis completed	9	4	3.3	Auto...	green	green	yellow	2	17	11/19/2019 12:30 ...	Consolidate to phantom Exadata X7-2 eighth rack specify...
Scenario_X7-2_HalfRack	Custom	Analysis completed	9	2	6.5	Auto...	green	green	yellow	1	27	11/19/2019 4:51 AM	
Scenario_OCI_BM	Custom	Analysis completed	9	2	6.5	Auto...	green	green	green		20	11/19/2019 4:43 AM	

#### Scenario\_X7-2\_HalfRack (OOB\_DEMO)

General Sources Destinations Ratio Mapping Storage Confidence Violations Exclusions Advisor Findings

View Exclusions 1 Shared Storage Unit Oracle Exadata Storage Server X7-2 with Extreme Flash Disks Total Number of Storage Units Required 3 ASM Redundancy Normal Compression Specification

Source Database	Space (GB)	Workload Type	IOPS (Requests/Second) (Estimated)	I/O Bandwidth (MB/Second) (Estimated)
All Source Databases Including Headroom	2059.91		204357.11	7737.72
BB12.us.oracle.com	96.35	OLTP	3030.01	309.83
BB12P.us.oracle.com	6.98	OLTP	52.96	0.42
BB19PROD.us.oracle.com	20.19		92.01	26.59
BBPROD12.us.oracle.com	3.06	OLTP	10.43	0.15
EMREP.us.oracle.com	20.85	OLTP	29.72	0.36
dbm01	85.03	Mixed	59.28	27.29
dbm02	7.01		20.35	0.30
exadb1	1211.92	OLTP	174329.39	1607.24
exadb2	196.54	OLTP	6297.22	4991.78

[https://den00yov.us.oracle.com:7804/em/faces/cat-cpa-cpaHome?cpa\\_ctx\\_type=db#](https://den00yov.us.oracle.com:7804/em/faces/cat-cpa-cpaHome?cpa_ctx_type=db#)

# Migration Planner – Screen Shot demo

ORACLE® Enterprise Manager Cloud Control 13c

Database Consolidation Workbench

Page Refreshed Oct 16, 2020 6:38:15 AM PDT

1. Plan

Actions ▾ View ▾ Create Project Create Scenario Re-run Scenario Implement Scenario Report Delete Detach

Project (Scenario)	Type	Status	Sources	Destination	Ratio	Mapping	Co (%)	Violations	Exclusions	Schema Conflicts	Advisor Findings	Creation Date (UTC)	Description
OOB_DEMO	D2S	Collecting over maximum	9	0							5	9/5/2019 9:16 PM	
Scenario_X7-2_Compression	Custom	Analysis completed	8	3	3.7	Auto...	2	✓	⚠ 2		6	11/20/2019 7:06 AM	Consolidate to X7-2 eighth rack with Flash disk and estim...
Scenario_X7-2_Compressed_Estimates	Custom	Analysis completed	9	4	3.3	Auto...	2	✓	⚠ 2		17	11/19/2019 12:30 ...	Consolidate to phantom Exadata X7-2 eighth rack specify...
Scenario_X7-2_HalfRack	Custom	Analysis completed	9	2	6.5	Auto...	1	✓	⚠ 1		27	11/19/2019 4:51 AM	
Scenario_OCI_BM	Custom	Analysis completed	9	2	6.5	Auto...	✓	✓			20	11/19/2019 4:43 AM	

Scenario\_X7-2\_HalfRack (OOB\_DEMO)

General Sources Destinations Ratio Mapping Storage Confidence Violations Exclusions Advisor Findings

View As Heat Map Destination Server All Resource Type CPU (%) Month 2019-11

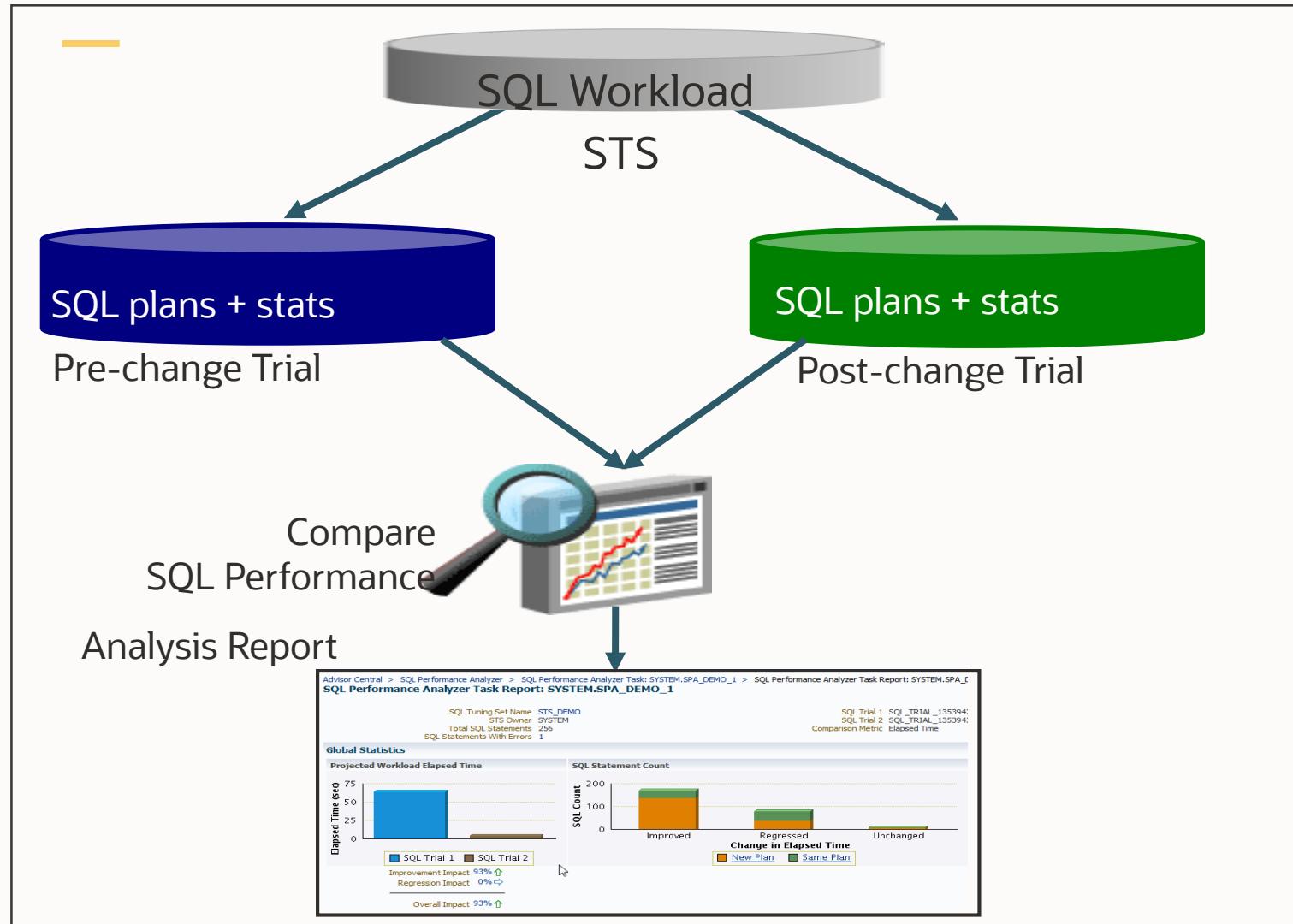
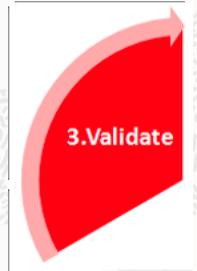
Total Data Points Evaluated 839 Data Points Meeting Requirements 839 Data Points Not Meeting Requirements 0 Confidence (%) 100

Hourly (UTC) Resource Utilization (%)

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18	Day 19	Day 20	Day 21	Day 22	Day 23	Day 24	Day 25	Day 26	Day 27	Day 28
Hour 0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	6	35	25	25										
Hour 1	0	0	1	1	0	0	0	0	0	1	1	0	0	0	7	35	26	25										
Hour 2	0	0	1	0	1	0	0	0	0	1	1	1	0	0	6	35	25	25										
Hour 3	0	0	1	1	1	0	0	0	0	1	1	1	0	0	7	35	25	25										
Hour 4	0	0	0	1	1	0	0	0	0	0	1	1	0	0	6	35	25	25										
Hour 5	0	0	0	1	1	0	0	0	0	0	1	1	0	0	7	35	25	25										
Hour 6	0	0	0	1	0	1	0	1	1	0	1	1	1	1	7	26	25	25										
Hour 7	0	0	0	1	1	1	0	0	0	0	1	1	1	0	7	25	25	25										
Hour 8	0	0	0	0	1	1	0	0	0	0	0	1	1	0	6	25	25	33										
Hour 9	0	0	0	0	1	1	0	0	0	0	0	1	1	0	7	25	25	34										

# Database Migration Planner

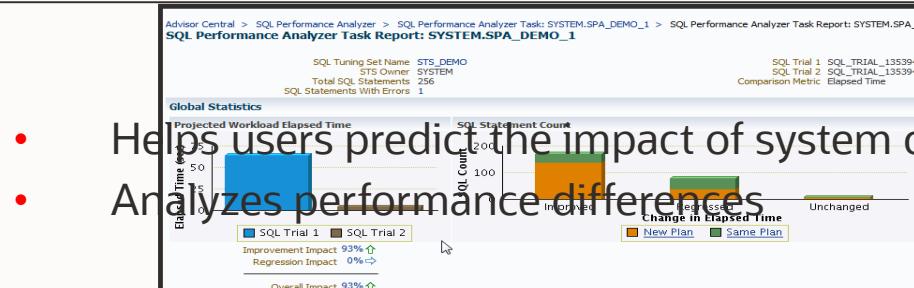
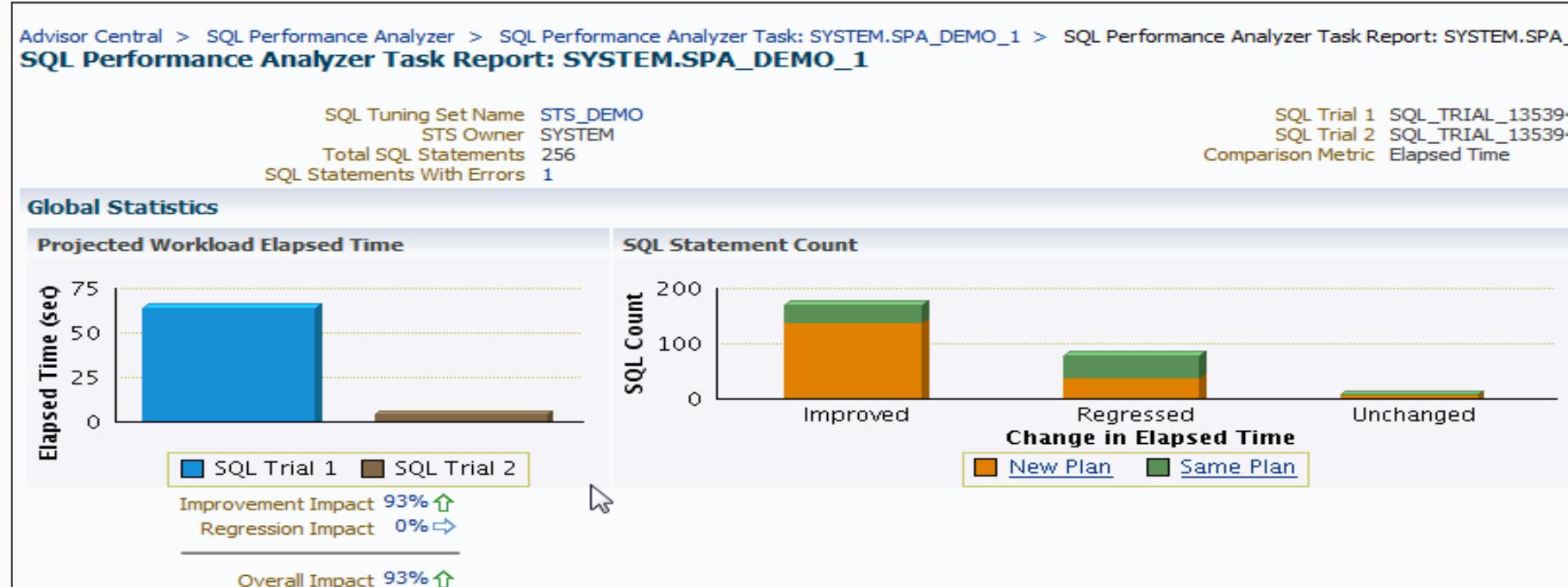
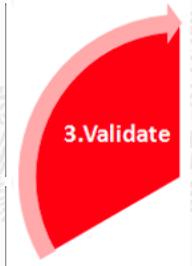
## Validating



- Helps users predict the impact of system changes on SQL workload response time
- Analyzes performance differences
- Offers fine-grained performance analysis on individual SQL

# Database Migration Planner

## Validating

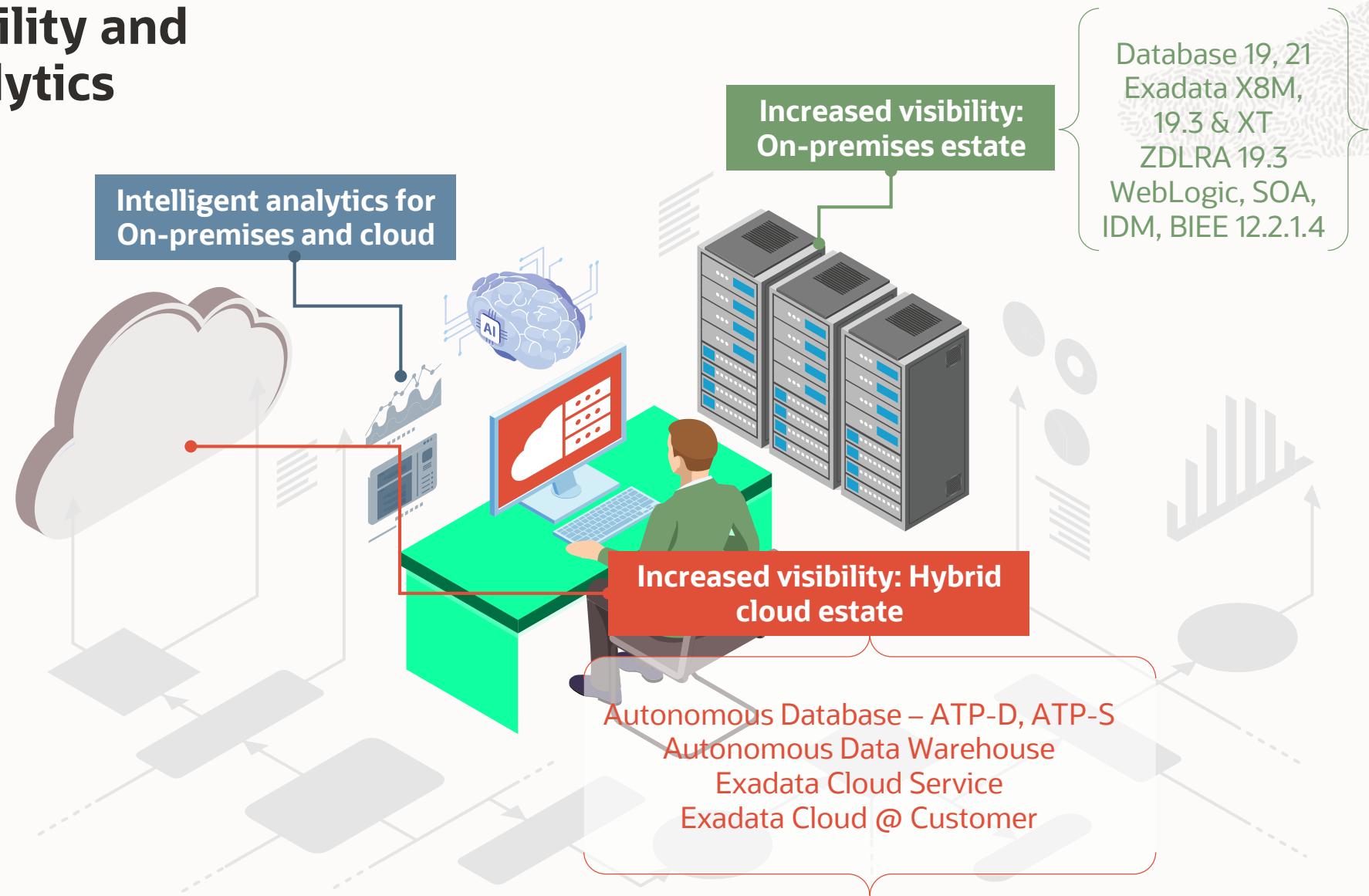


- Helps users predict the impact of system changes on SQL workload response time
- Analyzes performance differences

# Agenda

- 1 Database Migration Planner
- 2 Manage Databases in Cloud
- 3 Enterprise Manager Chargeback & Metering

# Increased Visibility and Intelligent Analytics



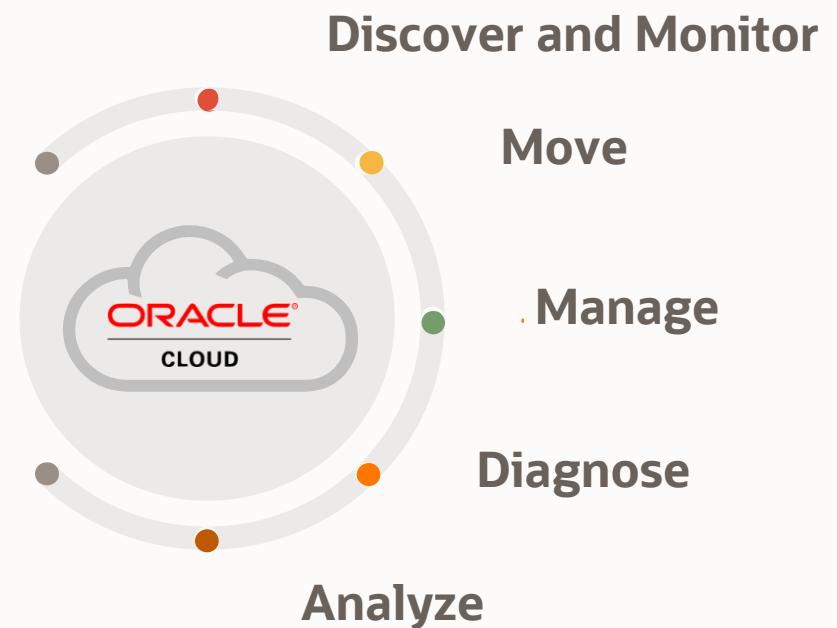
# Seamless, Fleet-Wide Management of Autonomous and Cloud Databases

## Adopt the cloud with confidence

- **New cloud-aware target types** for Autonomous and cloud DBs including Exadata Cloud
- **Enterprise-wide fleet dashboard** for finding “hot spots”

## Optimize customer-managed components

- **Monitor** and **Respond** to performance and configuration related alerts
- **Manage** users, schema, roles, space, etc.
- **Diagnose and improve** application-level SQL logic
- **Lifecycle operations** like service instantiation, termination, scale-up/down etc., orchestrated via cloud-native APIs



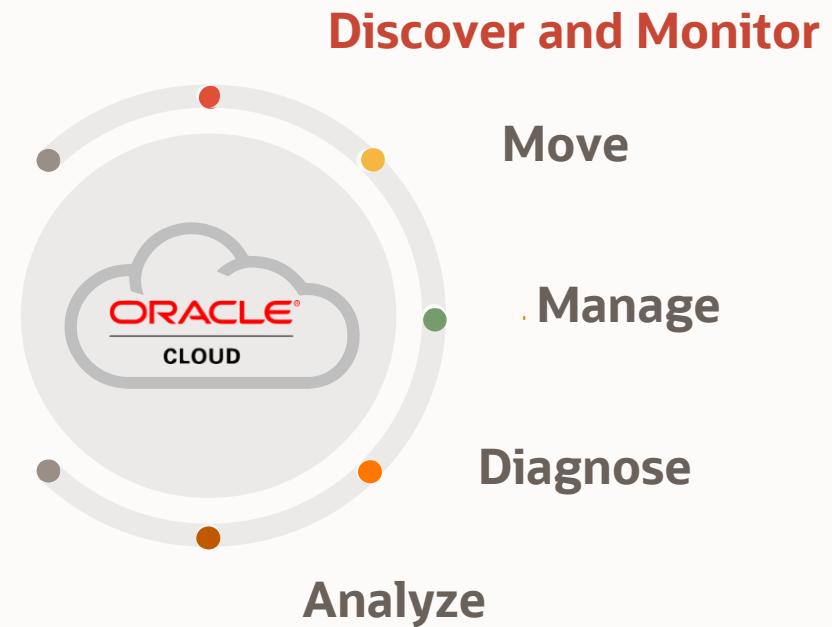
## ADB Dedicated and Shared

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Management with EM

# Discovering Autonomous Databases

- Autonomous databases are treated as non-host targets and discovered manually using declarative process
- The EM agent that monitors the status, health, and performance of the ADB targets would run on a remote host (On-premises or OCI)
- Post discovery, EM agents start monitoring Autonomous DB and display a comprehensive set of metrics



- EM 13.3 PG supports ATP-D
- EM 13.4 RU4 adds support for ADB-S, ADW-D, ADB-D Cloud at Customer

# Discover Autonomous Database targets

---

## User Experience

- ADB admin creates the database from OCI console and downloads the credentials wallet
- Installs EM on OCI Marketplace or configure On-premises EM to talk to OCI
- Logs into EM user and does a manual discovery via UI or emcli
- User inputs ADB wallet file, ADB monitoring user credential (unlocks it if needed), ADB admin credentials for active management.
- All connections would be via TCP over VPN or Fast connect.
- ADB databases are discovered and ready to be monitored via EM

# Discover Autonomous Database targets

## User Experience

Autonomous Database » Autonomous Database Details

em-atp

ATP

AVAILABLE

General Information

Database Name: ematpd

Workload Type: Transactional

Compartment: atpdprev

OCID: ...zbrasra [Show OCID](#)

Created: Sat, 22 Jun 2019

CPU Core Count: 1

Storage (TB): 1

Database Version: 19.0.0.0.0

Lifecycle State: Available

Resources

Backups

Backups are automatically created

[Create Manual Backup](#)

Name

Automatic Backup

Database Connection

DB CONNECTION  APPLICATION CONNECTION

You will need the client credentials and connection information to connect to your database. The client credentials include the wallet, which is required for all types of connections.

Download Client Credentials (Wallet)

To download your client credentials, click Download, and supply a password for the wallet.

[Download](#)

Connection Strings

Use the following connection strings or TNS names for your connections. See the [documentation](#) for details. Oracle recommends using TLS connections to connect to your Autonomous Database.

TNS Name <a href="#">i</a>	Connection String <a href="#">i</a>
ematpd_tp	...ME=EMATPD_tp.atp.oraclecloud.com)) <a href="#">Show</a> <a href="#">Copy</a>
ematpd_medium	...MATPD_medium.atp.oraclecloud.com)) <a href="#">Show</a> <a href="#">Copy</a>
ematpd_tpurgent	...TPD_tpurgent.atp.oraclecloud.com)) <a href="#">Show</a> <a href="#">Copy</a>
ematpd_low	...E=EMATPD_low.atp.oraclecloud.com)) <a href="#">Show</a> <a href="#">Copy</a>
ematpd_high	...=EMATPD_high.atp.oraclecloud.com)) <a href="#">Show</a> <a href="#">Copy</a>
ematpd_tp_tls	...ME=EMATPD_tp.atp.oraclecloud.com)) <a href="#">Show</a> <a href="#">Copy</a>
ematpd_medium_tls	...MATPD_medium.atp.oraclecloud.com)) <a href="#">Show</a> <a href="#">Copy</a>
ematpd_tpurgent_tls	...TPD_tpurgent.atp.oraclecloud.com)) <a href="#">Show</a> <a href="#">Copy</a>
ematpd_low_tls	...E=EMATPD_low.atp.oraclecloud.com)) <a href="#">Show</a> <a href="#">Copy</a>
ematpd_high_tls	...=EMATPD_high.atp.oraclecloud.com)) <a href="#">Show</a> <a href="#">Copy</a>

Showing 10 Item(s)

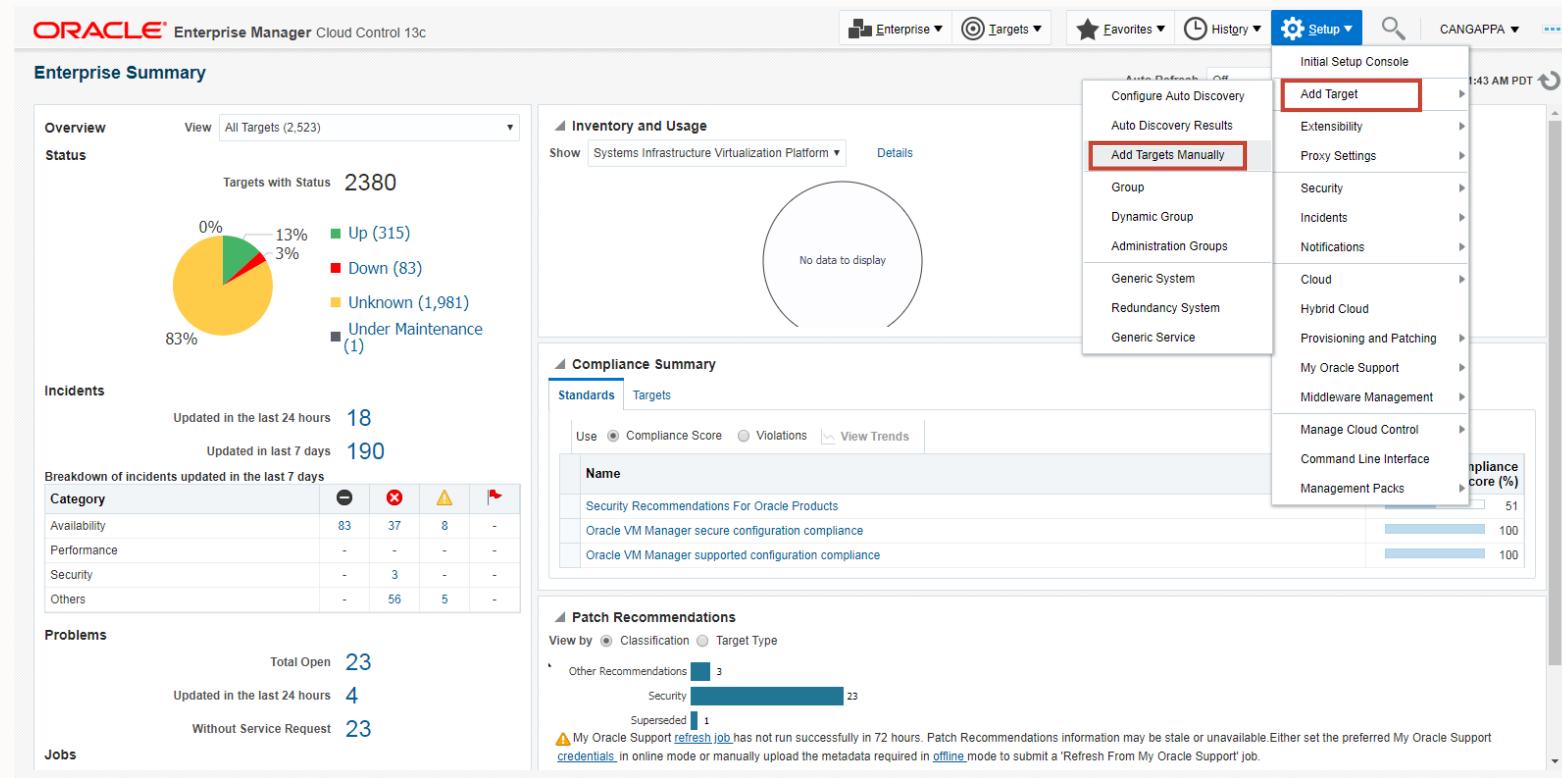
Ended

Fri, 12 Jul 2019 06:54:11 GMT

ADB Admin: Downloads the wallet from OCI console, unlocks and reset the password for adbsnmp user

# Discover Autonomous Database targets

## User Experience

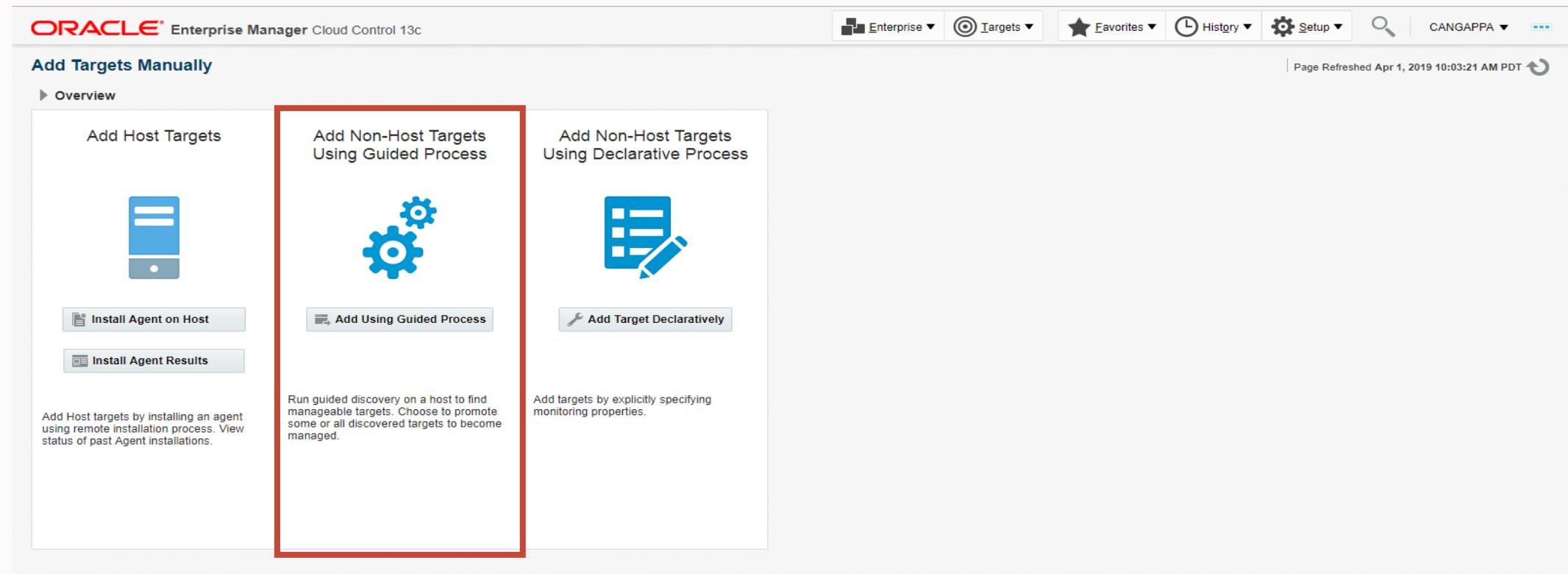


The screenshot shows the Oracle Enterprise Manager Cloud Control 13c interface. The main menu bar includes 'Enterprise', 'Targets', 'Favorites', 'History', 'Setup', and 'CANGAPPA'. The 'Setup' menu is open, showing options like 'Initial Setup Console', 'Configure Auto Discovery', 'Auto Discovery Results', 'Add Targets Manually', 'Extensibility', 'Proxy Settings', 'Group', 'Dynamic Group', 'Administration Groups', 'Generic System', 'Redundancy System', 'Generic Service', 'Cloud', 'Hybrid Cloud', 'Provisioning and Patching', 'My Oracle Support', 'Middleware Management', 'Manage Cloud Control', 'Command Line Interface', and 'Management Packs'. The 'Add Targets Manually' option is highlighted with a red box. The 'Initial Setup Console' section shows a 'No data to display' message. The 'Enterprise Summary' section includes a pie chart of target status: 83% Unknown (1,981), 13% Up (315), 3% Down (83), and 0% Under Maintenance (1). It also displays incident and problem counts, and a breakdown of incidents updated in the last 7 days by category. The 'Patch Recommendations' section shows a chart for 'Other Recommendations' with 3 items, and a note about a failed refresh job.

ADB Admin: Logs into EM, does a manual discovery via UI or emcli

# Discover Autonomous Database targets

## User Experience

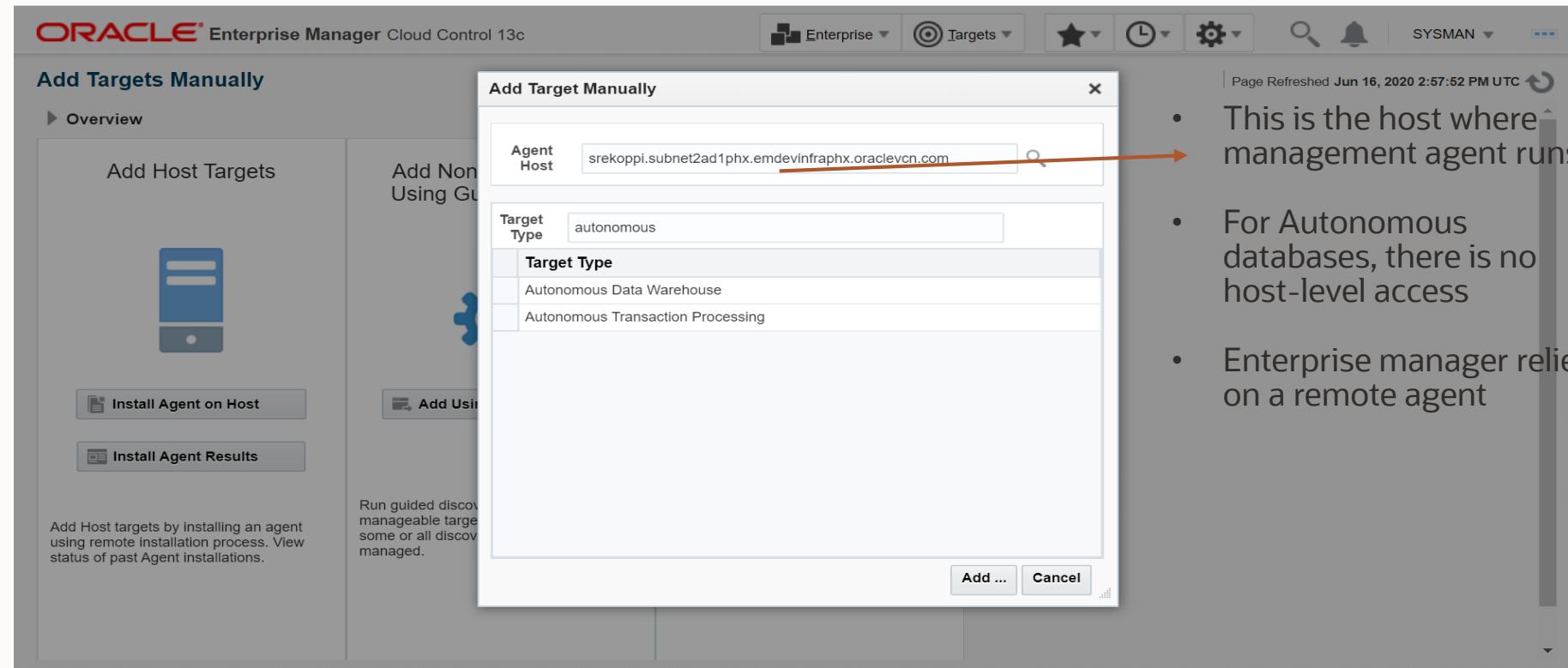


The screenshot shows the Oracle Enterprise Manager Cloud Control 13c interface. The top navigation bar includes links for Enterprise, Targets, Favorites, History, Setup, and a search bar. The user is logged in as CANGAPPA. The main content area is titled 'Add Targets Manually' and has a sub-section titled 'Overview'. It displays three options: 'Add Host Targets' (with icons for 'Install Agent on Host' and 'Install Agent Results'), 'Add Non-Host Targets Using Guided Process' (with a 'Add Using Guided Process' button and a description of running guided discovery on a host), and 'Add Non-Host Targets Using Declarative Process' (with a 'Add Target Declaratively' button and a description of explicitly specifying monitoring properties). A red box highlights the 'Add Non-Host Targets Using Guided Process' section.

ADB Admin: Adds ATP-D as a non host target

# Discover Autonomous Database targets

## User Experience



The screenshot shows the Oracle Enterprise Manager Cloud Control 13c interface. The main window is titled 'Add Targets Manually' and has a sub-section 'Add Non Host Targets'. A modal window titled 'Add Target Manually' is open, showing the 'Agent Host' field with the value 'srekoppi.subnet2ad1phx.emdevinfraphx.oraclevcn.com'. The 'Target Type' field is set to 'autonomous', with two sub-options: 'Autonomous Data Warehouse' and 'Autonomous Transaction Processing'. The 'Autonomous Transaction Processing' option is selected. The modal has 'Add ...' and 'Cancel' buttons at the bottom. The background of the main window shows a 'Run guided discovery' message and two buttons: 'Install Agent on Host' and 'Install Agent Results'. The top navigation bar includes 'Enterprise', 'Targets', 'SYSMAN', and other standard navigation icons.

- This is the host where management agent runs
- For Autonomous databases, there is no host-level access
- Enterprise manager relies on a remote agent

ADB Admin: Adds ATP as a non host target

# Discover Autonomous Database targets

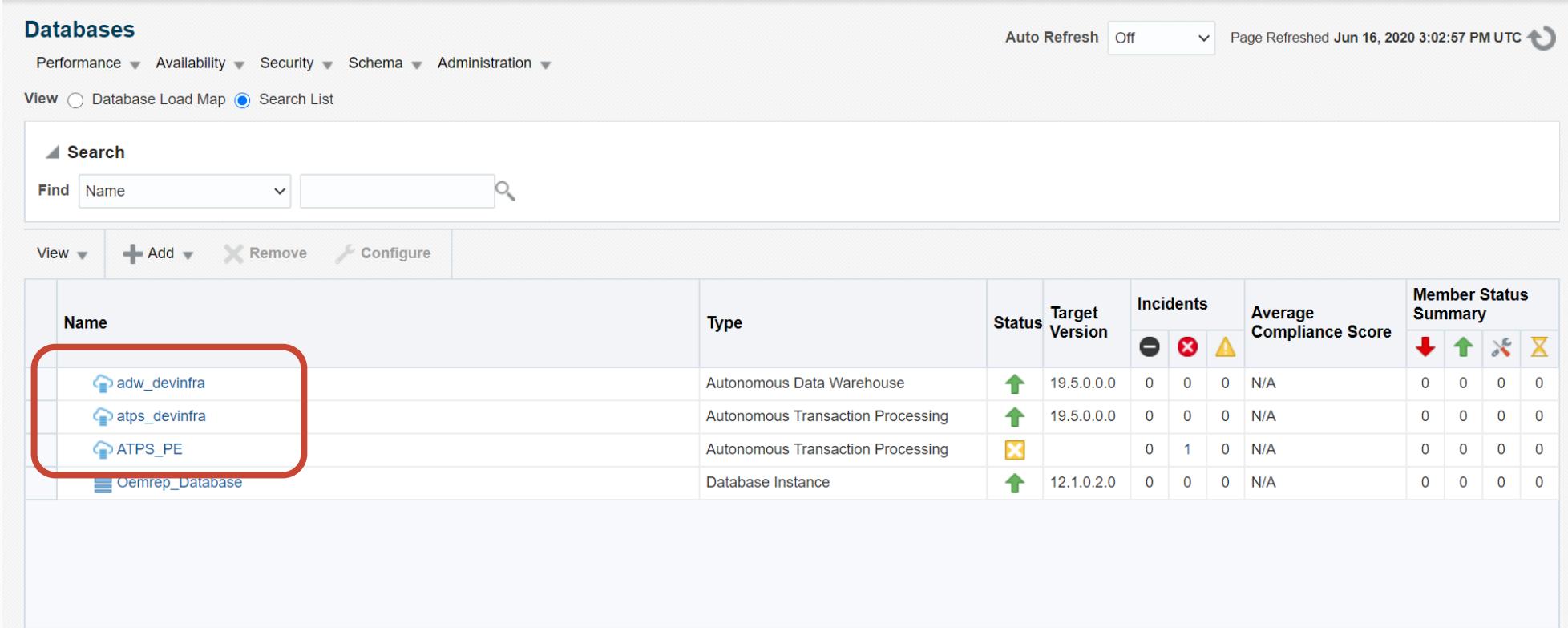
## REST and EMCLI

```
https://<em_url>:<em_port>/em/websvcs/restful  
/emws/oracle.sysman.db/v0/discovery/add_cloud  
_db_target  
{  
  "target_name": "adw_rest",  
  "target_type": "oracle_cloud_atp",  
  "agent_host": "adbhost",  
  "credentials": "UserName:adbsnmp;password:<password>",  
  "zip_file_location": "/net/den01nrx/scratch/tekrishn/atpd/htxadw/tenant1.tenant.zi  
p",  
  "service_name": "adwp_low",  
  "wallet_password": "<password>"  
  "is_dedicated": "true"  
}
```

```
./emcli login -username=adbuser -  
password=<password>  
emcli add_cloud_db_target -  
credentials="UserName:adbsnmp;password:<password>" -  
agent_host="adbhost" -  
target_name="demo_emcli" -  
target_type="oracle_cloud_atp" -  
zip_file_location="/net/den01nrx/scratch/tekrishn/at  
pd/htxadw/tenant1.tenant.zip" -  
service_name="adwp_low" -  
wallet_password="Welcome_123" -  
is_dedicated="true"
```

# Discover Autonomous Database targets

## User Experience



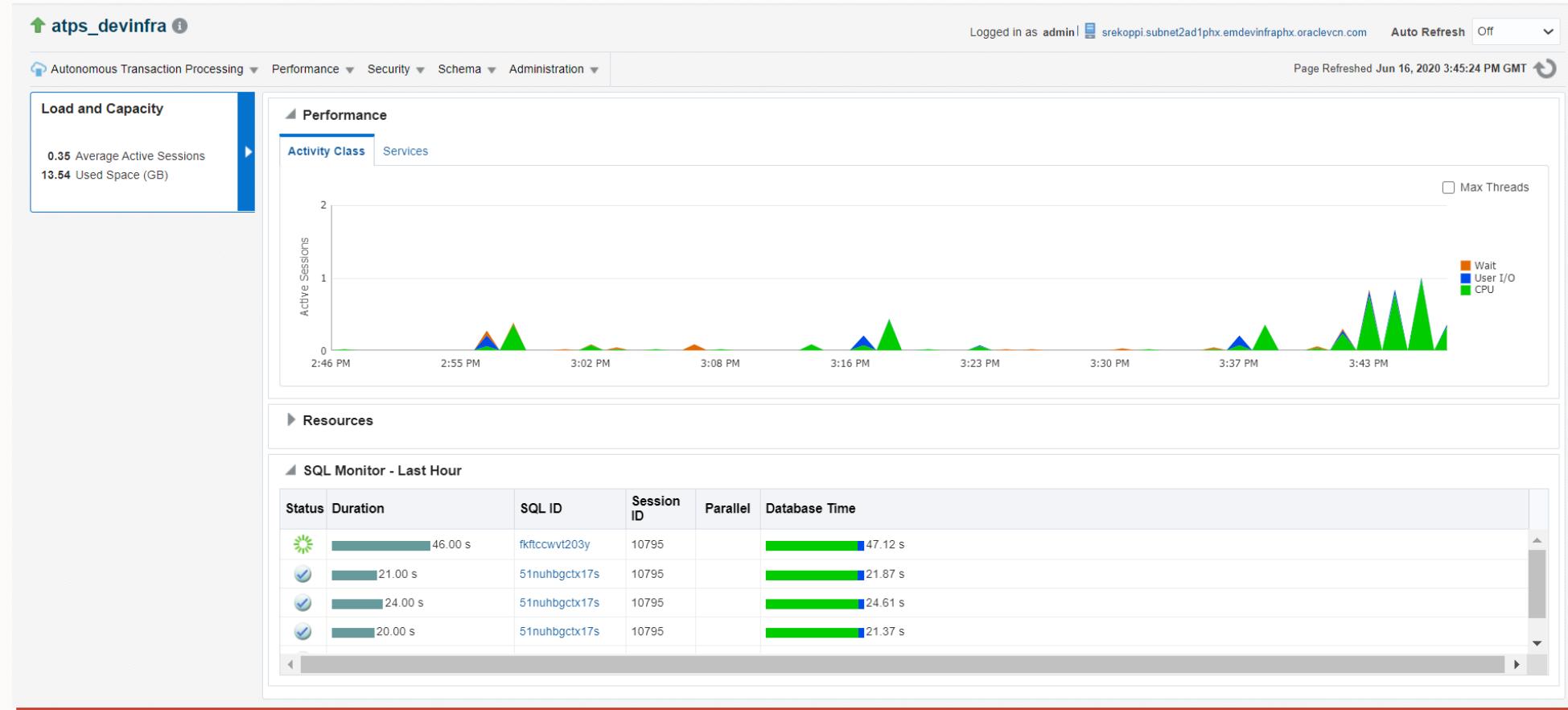
The screenshot shows the Oracle Enterprise Manager (EM) interface for managing databases. The top navigation bar includes 'Databases', 'Performance', 'Availability', 'Security', 'Schema', 'Administration', 'Auto Refresh (Off)', and a timestamp 'Page Refreshed Jun 16, 2020 3:02:57 PM UTC'. Below the navigation is a search bar with 'Find Name' and a search icon. The main content area is titled 'Databases' and displays a table of discovered targets:

Name	Type	Status	Target Version	Incidents			Average Compliance Score	Member Status Summary			
adw_devinfra	Autonomous Data Warehouse		19.5.0.0.0	0	0	0	N/A	0	0	0	0
atps_devinfra	Autonomous Transaction Processing		19.5.0.0.0	0	0	0	N/A	0	0	0	0
ATPS_PE	Autonomous Transaction Processing			0	1	0	N/A	0	0	0	0
Oemrep_Database	Database Instance		12.1.0.2.0	0	0	0	N/A	0	0	0	0

A red box highlights the first three rows (adw\_devinfra, atps\_devinfra, and ATPS\_PE). The 'adw\_devinfra' row is also highlighted with a red background.

ADB databases are discovered and ready to be monitored via EM

# ADB Home Page in EM



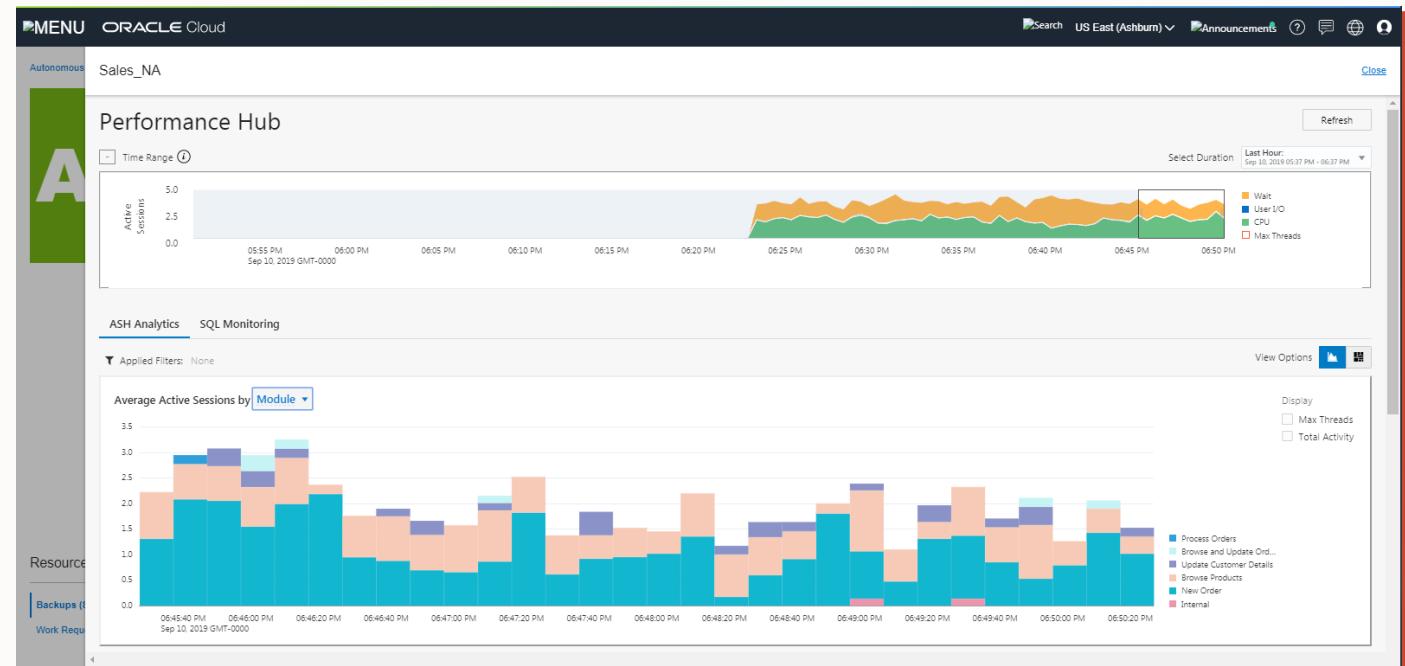
## ADB Dedicated and Shared

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Management In OCI Console

# Performance Hub

- Integrated system-wide and session-specific views of database activity
  - ASH Analytics
  - Real-Time SQL Monitoring
  - SQL Details
  - Workload Profile
  - Blocking Sessions
  - Guided problem resolution
  - Analyze transient performance problems with the application that are short-lived



# Agenda

- 1 Database Migration Planner
- 2 Manage Databases in Cloud
- 3 Enterprise Manager Chargeback & Metering

# Why Use Metering and Chargeback?

- Increasing adoption of consolidation platforms such as Exadata  
Need to meter the resources used by each application
  - Used to measure the business value of I.T. investments
- Cloud computing / self-service
  - Need to meter resources consumed by self-service cloud users
  - Chargeback allows cloud users to take control of their I.T. Costs



# Enterprise Manager Chargeback

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- An out-of-the-box, integrated solution for Metering and Chargeback of Enterprise Manager targets
- Based on target metric and configuration data collected by Enterprise Manager
- Provides I.T. providers and consumers with reports showing usage and charge information
- Open integration with external applications such as billing engines

# Chargeback Setup

## Create Charge Plans

- Define Charge Items and Set Rates

## Define Cost Center Hierarchy

- Used for charge assignment and reporting rollup/drilldown

## Add Targets to Chargeback

- Turns on data gathering for selected targets

## Assign Charge Plans/Cost Centers to Targets\*

- Determines how charges are calculated and who they should be assigned to
- \* Automatic assignments for Self-Service Targets

# Target Charge Plan/Cost Center Assignment



- Charge Plan and Cost Center assignment determines:
  - Plan used in charge calculations
  - Cost Center the charge is allocated to
- Assignment to composite targets propagates to members
- Automatic assignment for self-service Oracle VM Zone and PaaS Infrastructure Zone targets
  - Charge Plan inherited from Zone
  - Cost Center set as Self-Service user

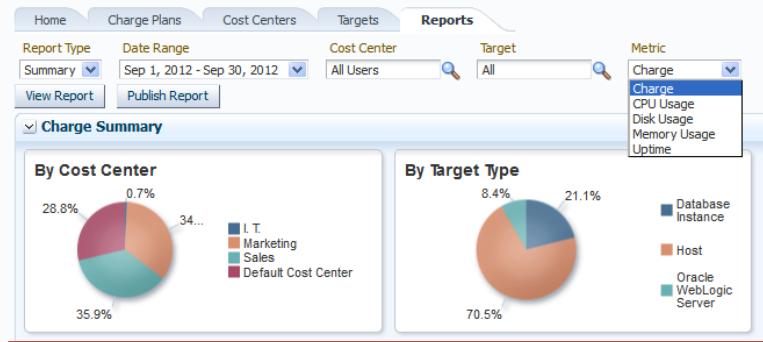
# Chargeback Summary and Trending Reports

- Summary Reports
  - Show charge and resource utilization data summarized for specified period
  - Drill-down by Cost Center, Target Type, Resource
- Trending Reports
  - Show charge and utilization trend over specified period
  - Useful for I.T. resource planning

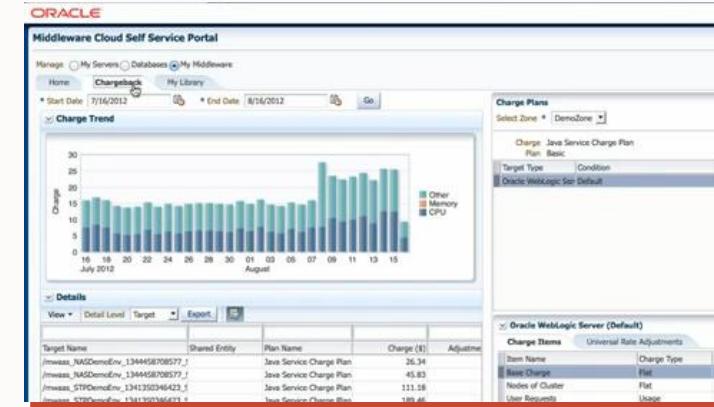


# Chargeback Reporting Interfaces

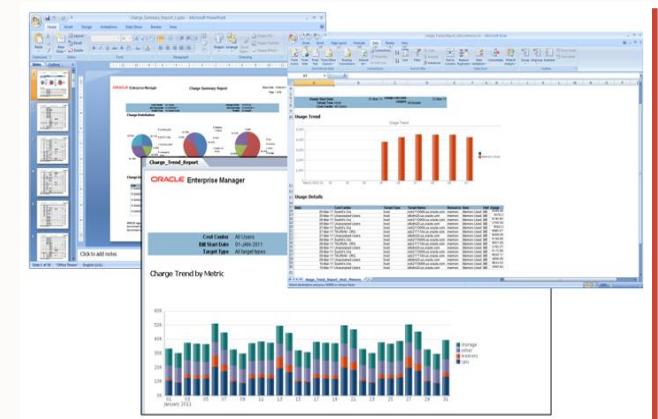
## Chargeback Administrator



## Self-Service Portal User



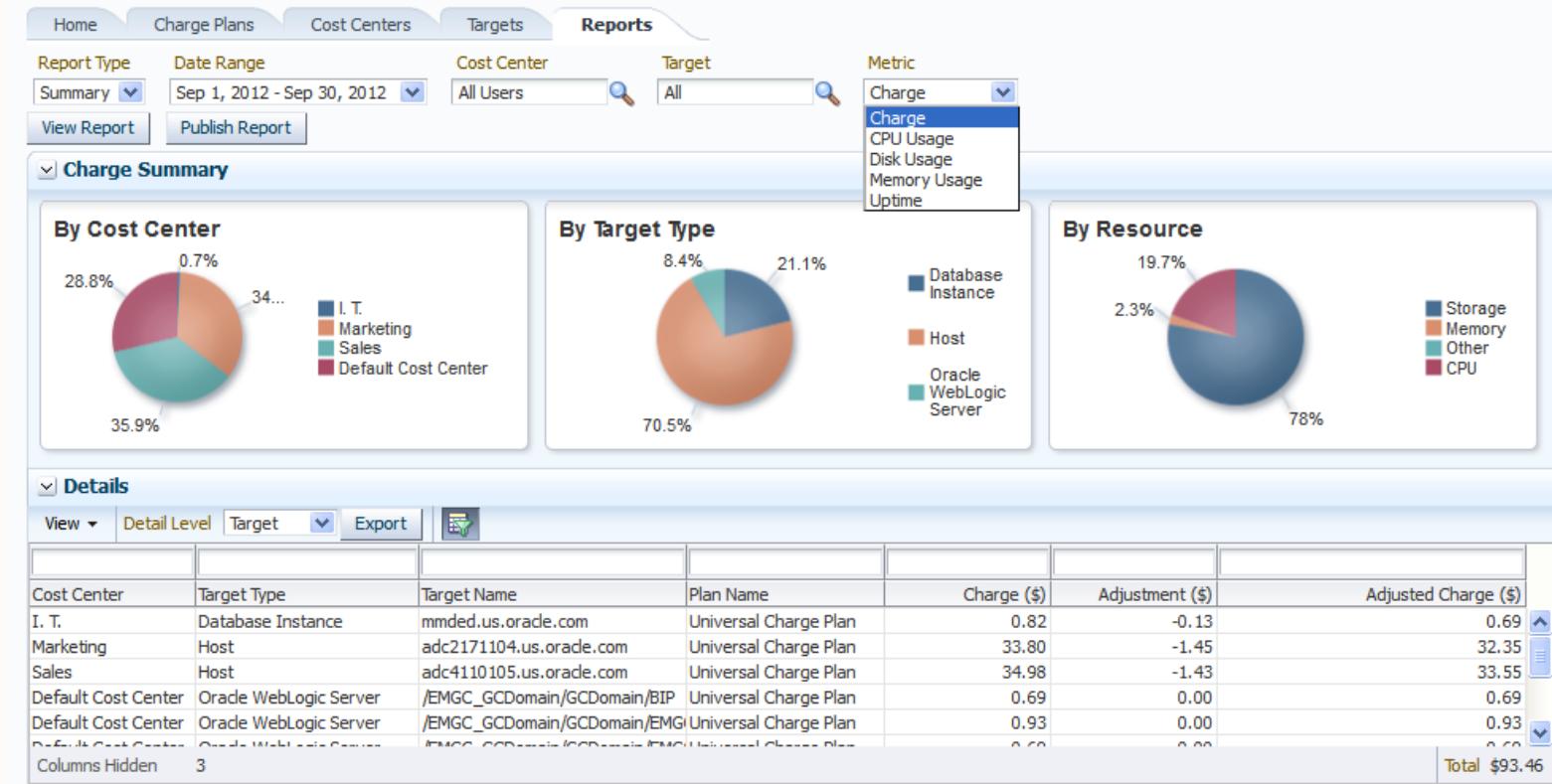
## Line of Business User



- Charge reports are available from a variety of different interfaces
  - Chargeback Application
  - Self-Service Portal
  - BI Publisher

# Chargeback Administrator Reports

- Summary and Trending reports for Usage and Charge
- Drilldowns
- Detail view with selectable detail levels
- Export data to Excel



# Integrated Cloud Applications & Platform Services



Thank you

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