

ORACLE

# Enhancements in Oracle Database monitoring

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# Safe harbor statement

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# Agenda



Monitoring using Oracle Service names

Continuous monitoring of relocated Pluggable Databases (PDBs)

Password rotation for Oracle and ASM Databases

Simplified database fleet monitoring using Remote Agent

Enhanced Autonomous Database discovery

Raft-based Globally Distributed Databases (Sharded Databases)

# Monitoring using Oracle Service names

## Database Services

- Logical representation of the Oracle Database to its users
- Can have 1 or more services in a database
- DBAs can control resource allocation to Database Services

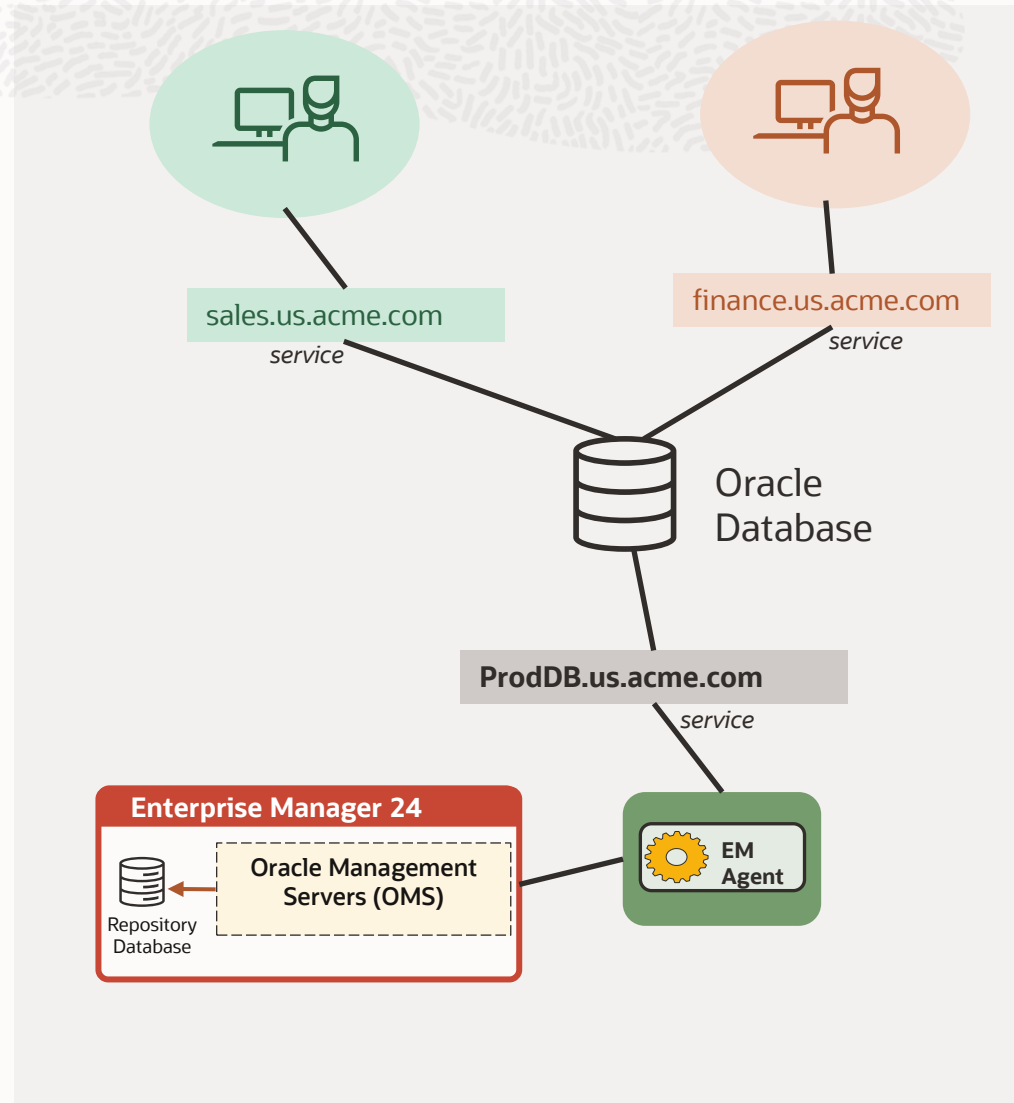
EM will support Oracle Service names for discovery and monitoring

- Enables logical way to connect to RAC database
- Supported for *all* discovery options: UI, EMCLI, REST APIs
- Supported for Single Instance and RAC Databases, Container DBs (CDBs) and Pluggable Databases (PDBs)\*

Enables use of features that require database Service name connectivity (e.g., Database Service Firewall)

Control database resources used for monitoring

\*Service names already supported for PDBs in EM13.5



# Setting up monitoring using Oracle Service Names

## Discovery/ Monitoring Configuration

- Specify Service Name (in addition to SID)
- RAC Database Service Name
  - Auto-applies to all RAC instances
- Service Name for each PDB should be unique to the PDB\*

## Can reconfigure already discovered database to use Service Names

- Edit Monitoring Configuration, specify Service Name

## Order of precedence for different database connectivity options

- 1<sup>st</sup>: Preferred Connect String (OMS/Agent)
- 2<sup>nd</sup>: Service Name
- 3<sup>rd</sup>: SID

\*Service names already supported for PDBs in EM13.5

## RAC Database monitoring configuration

ORACLE Enterprise Manager 24

Configure Cluster Database: Properties

General

Follow guidelines to Create/Update Database monitoring user and return to continue.

Target Name racp0607  
Target Type Cluster Database  
Database System racp0607\_sys  
SCAN Name phx  
SCAN Port 1521  
Group(s)

View Test Connection

Name	Value
Monitoring Username	dbsnmp
Monitoring Password	*****
Role	Normal
Oracle home path	/u01/cuser/21c/obase/dbhome_1
Cluster Name	racp0607
Service Name	racp0607
Preferred Connect String	Enter the connection string that the OMS should use when connecting to the target database. If blank, the OMS will construct one using the Listener Machine Name, Port and Database SID provided above.

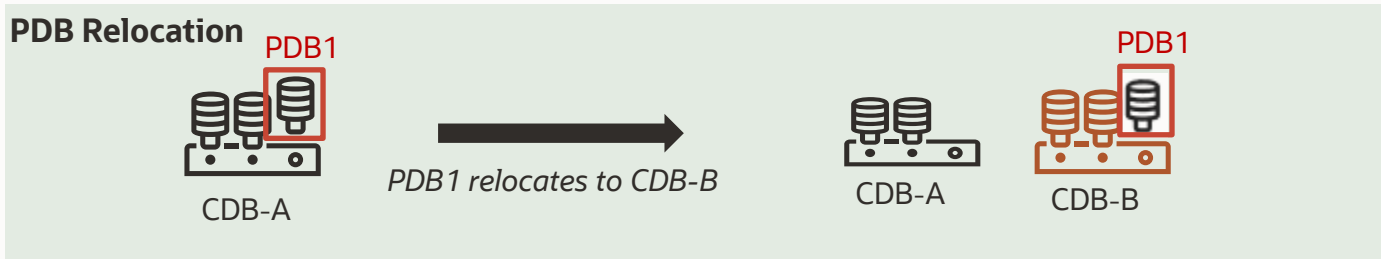
Tip Service Name is used to establish cluster database connection. It should be one of the service names the cluster database registers with the listeners.

Instances

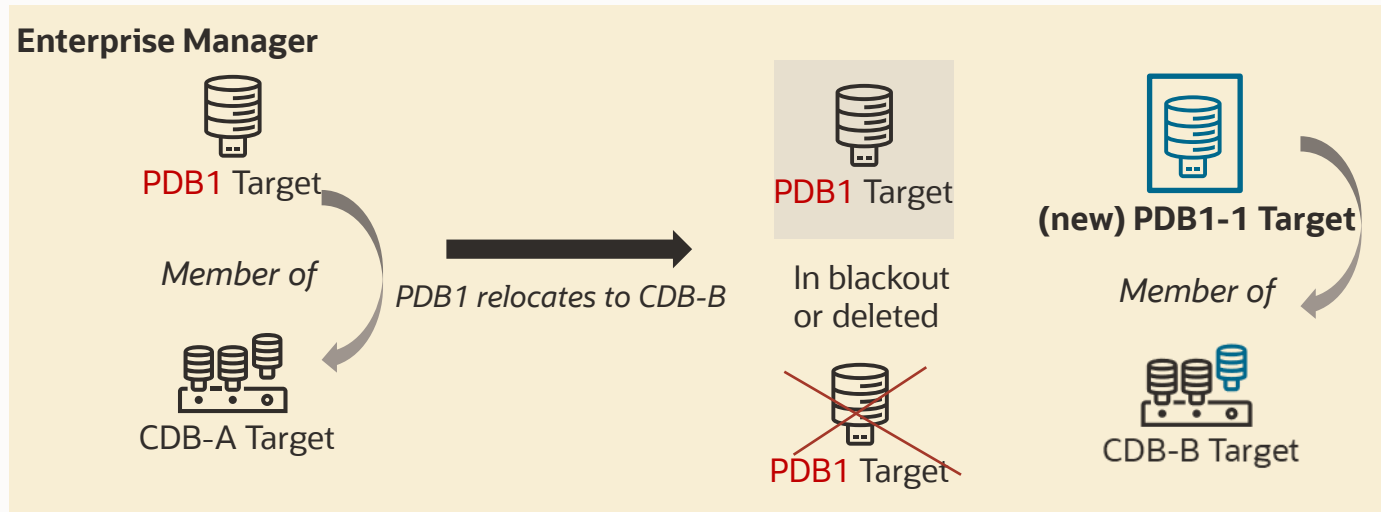
Target Name	Host	Listener Machine Name	Port	SID	Service Name
racp0607_racp06072	phx	phx	1521	racp06072	racp0607
racp0607_racp06073	phx	phx	1521	racp06073	racp0607



# Monitoring of relocated Pluggable Databases (PDBs)



Existing behavior (prior to enhancement)

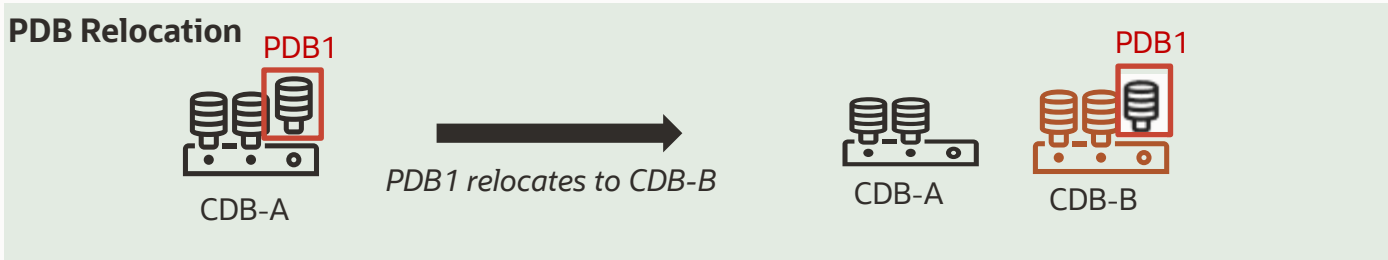


No monitoring continuity:

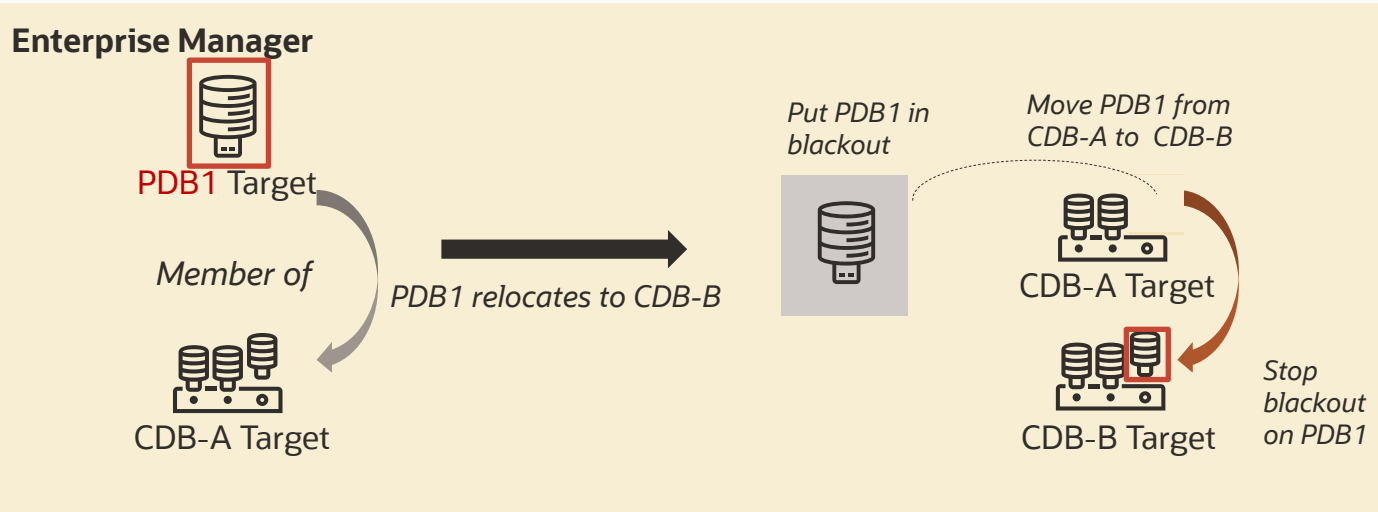
- All history (metrics, jobs, incidents, etc.) with original PDB target are gone
- Re-implement monitoring on new target
  - Add to appropriate group(s)
  - Define metric settings, metric extensions, corrective actions
  - Set Administrator privileges on target
  - Add to Incident rules
  - etc.



# Enhanced: Continuous monitoring of relocated PDBs



*Enhanced behavior*



## PDB Relocation procedure

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Provisioning

Procedure Activity > Relocate\_PDB\_...

**Procedure Activity: Relocate\_PDB\_SYSMAN\_24\_10\_04\_11\_1852029**

Run Relocate\_PDB\_... Scheduled 04-Oct-2024 11:18:56 UTC Elapsed Time 5 minutes, 23 seconds

Procedure Relocate Pluggable Database Start Date 04-Oct-2024 11:18:56 UTC Execution Id 23A3BCDFC4966534E063560F48644D79

Owner ... Last Updated 04-Oct-2024 11:24:19 UTC

Status Succeeded Completed Date 04-Oct-2024 11:24:19 UTC

**Procedure Steps**

Select	Name	Status
<input type="checkbox"/>	Initialize	✓
<input type="checkbox"/>	Check Plug Compatibility	✓
<input type="checkbox"/>	Prepare for Upgrade	⚙️
<input checked="" type="checkbox"/>	Blackout PDB Target	✓
<input type="checkbox"/>	Pre-process	✓
<input type="checkbox"/>	Backup Source PDB	⚙️
<input type="checkbox"/>	Unplug Source PDB	⚙️
<input type="checkbox"/>	Transfer Data	⚙️
<input type="checkbox"/>	Create Parameter File for Custom Scripts	⚙️
<input type="checkbox"/>	Execute Pre-relocation Custom Script	⚙️
<input type="checkbox"/>	Perform Relocation	✓

**Blackout PDB Target**

Type Computational Start Date 04-Oct-2024 11:19:52 UTC

Elapsed Time 1 minutes, 13 seconds Completed Date 04-Oct-2024 11:21:05 UTC

**Step: Evaluate expression (Succeeded)**

Start Date 2024.10.04 11:19:54

Completed Date 2024.10.04 11:20:57

Target Name: orclcdb\_a...PDB3

Blackout Operation: CREATE

Procedure Name: RELOCATE\_PDB\_NORMAL

Procedure Description: Relocating PDB from one CDB to another in normal availability mode

Blacking out the target: 'orclcdb\_a...PDB3'

Blackout GUID: D1CB85128353E1860C78966768318156

Step: Blackout PDB Target has been executed successfully.

You can track the individual steps that move the PDB target to a different CDB target with potentially new agent



## Enhanced: Continuous monitoring of relocated PDBs - 2

### Monitoring Continuity for PDB targets

- DBAs can easily relocate PDBs to different CDBs with PDB monitoring and history intact
- PDB target can be relocated to other CDBs...
  - Without any loss of any history (metrics, jobs, incidents, etc.)
  - Keeping its monitoring settings
    - If needed, relevant monitoring artifacts transferred to new agent
  - Without the need to change target access privileges



# Changing Oracle Database password

## Two job types to change the database password

- Change the Password for the *Database Monitoring User*
- Change the Password for a *Database User*

**New Password:** *specified or auto-generated* based on existing or 'reference password'

- Use 'reference password' for new password policy, e.g., new policy increases minimum characters, special characters

## Job changes the password:

In EM: agent credentials, preferred credentials, named credentials

In target database, including standby database\*

- Uses Data Guard Automatic Password synchronization

\*Oracle Database 12.2 or higher auto-propagates password from primary to standby, except on Far Sync or Snapshot Standby

## Use as:

Periodic job against a group of databases

Corrective Action when password near expiration

- Metric: *Monitoring User Expiry*

## Customer blog and video:

<https://blogs.oracle.com/observability/post/more-secure-and-efficient-changing-dbsnmp-password-using-automation>

Enterprise Manager, Platform

### More secure and efficient: Changing DBSNMP password using automation

October 19, 2023 | 8 minute read



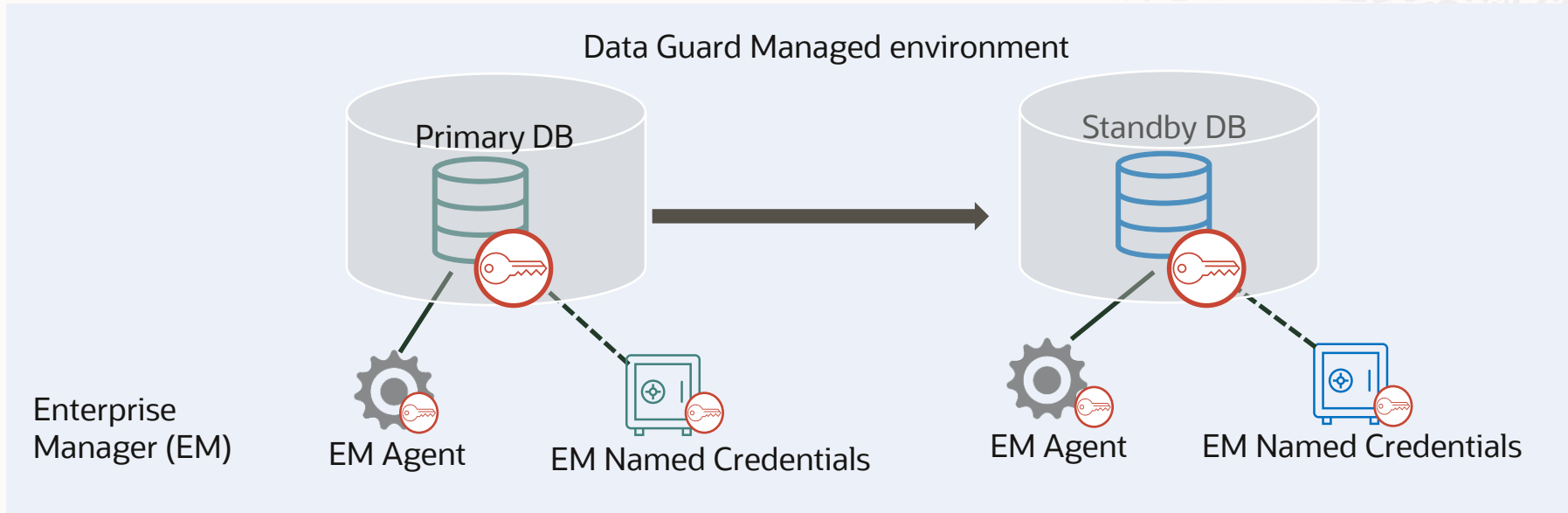
Olga Pogostkina  
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Lead DBA, Global Technology Services, AT&T

AT&T is one of the world's largest telecommunications providers where delivering the highest levels of service is as important as the privacy and security of our customer's information. Our DBA team at AT&T is responsible for supporting our high service levels, which we do by monitoring and managing around 11,400 Oracle databases that host our mission-critical applications. We use Oracle Enterprise Manager (EM) to monitor our large fleet of Oracle databases. Along with managing performance and availability, a critical responsibility is to comply with AT&T's security requirements. For example, one security requirement is to change the EM monitoring account password, which, for purposes of this blog, we assume is DBSNMP, on a regular basis.

# Changing Passwords on Primary and Standby databases



What the Change Password job does:

- Puts primary and standby databases in **blackout**
- **Generates new password** and **updates** password in **primary** database
- **Updates EM** agent's monitoring credentials and named credentials
- **In parallel, password in standby is updated** using the *Data Guard Automatic Password synchronization* feature
- **Blackouts stopped** on primary and standby databases

# Changing Oracle ASM password

## Job type to change the Oracle ASM password

- Change the Password for the *ASM Monitoring User*

## New Password

- *Specified or auto-generated* based on existing or 'reference password'
- Use 'reference password' for new password policy, e.g., new policy increases minimum characters, special characters

## Job changes the password

- In ASM Instance and Cluster ASM
- In EM: Agent credentials, Preferred Credentials, Named Credentials

## Run job against

- ASM Instance, Cluster ASM or group targets

The screenshot shows the Oracle Enterprise Manager interface for configuring a job. The job title is "Create 'Change the Password for the ASM Monitoring User' Job". The "Parameters" tab is selected, showing the following configuration:

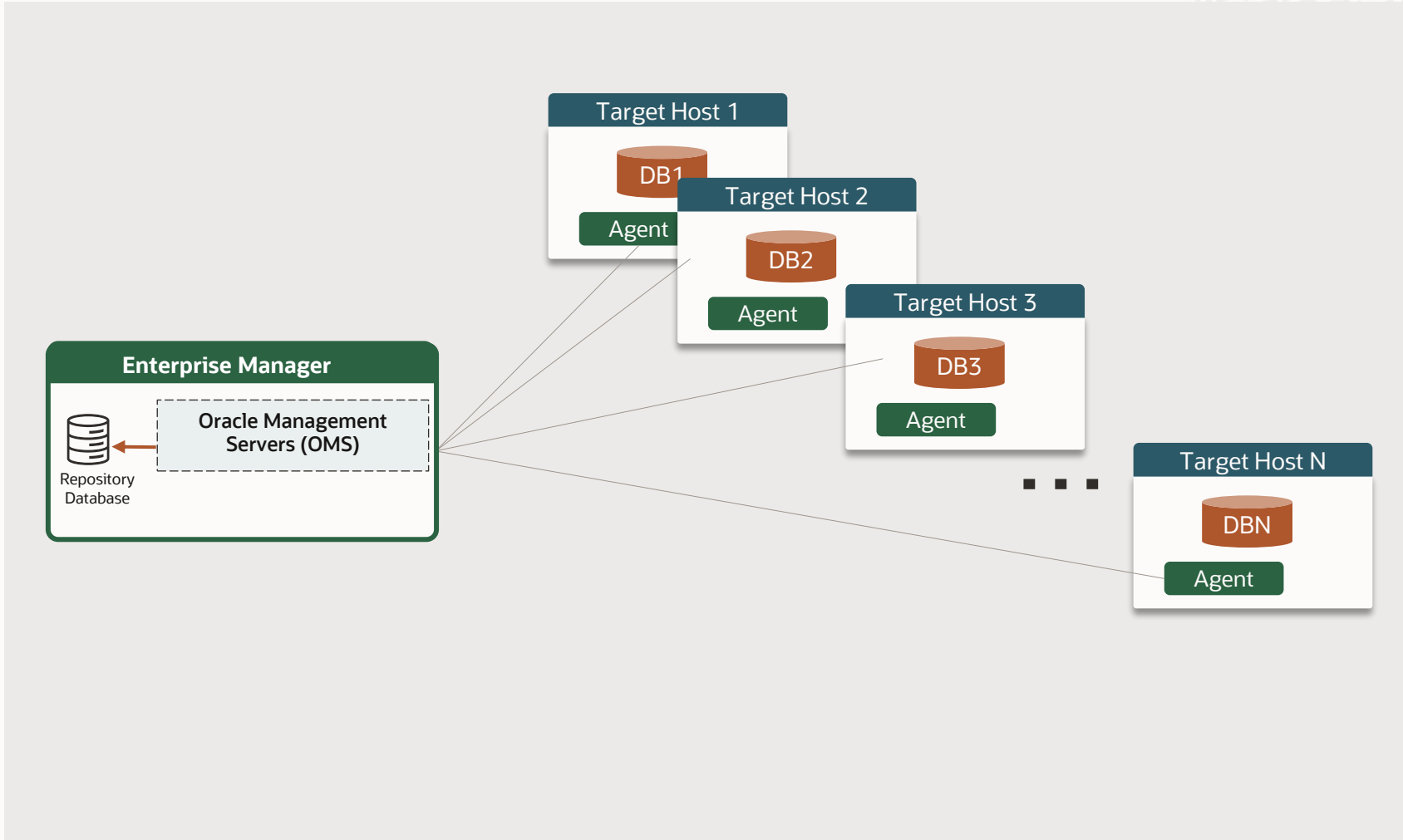
- Auto-Generate New Password:** A dropdown menu is open, showing options: "Yes (Based on Current Password)", "Yes (Based on Reference Password)", and "No". The "Yes (Based on Reference Password)" option is selected.
- Reference Password if Auto-Generated:** A text input field containing "Yes (Based on Reference Password)".
- Confirm Reference Password:** A text input field containing a series of dots, indicating a masked password.
- New Password:** A text input field.
- Confirm New Password:** A text input field.

Buttons for "Cancel", "Save to Library", and "Submit" are visible at the bottom right of the configuration area.



# Monitoring your fleet of databases

Current deployment model: One agent per database host



To monitor a new database:

1. Deploy agent to each database host
  - Host is auto-discovered
2. Discover the database and its related targets

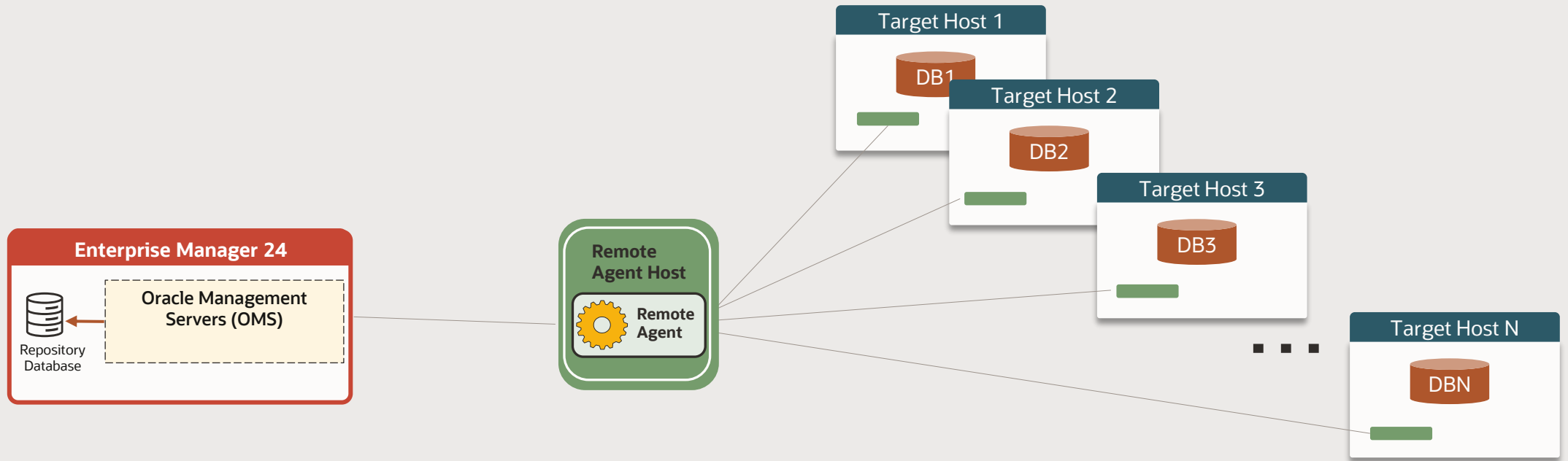
When new agent update is available:

- Upgrade all agents across all database hosts



# Monitoring your fleet of databases

Simplified model: One EM 24 Remote Agent for many hosts and databases



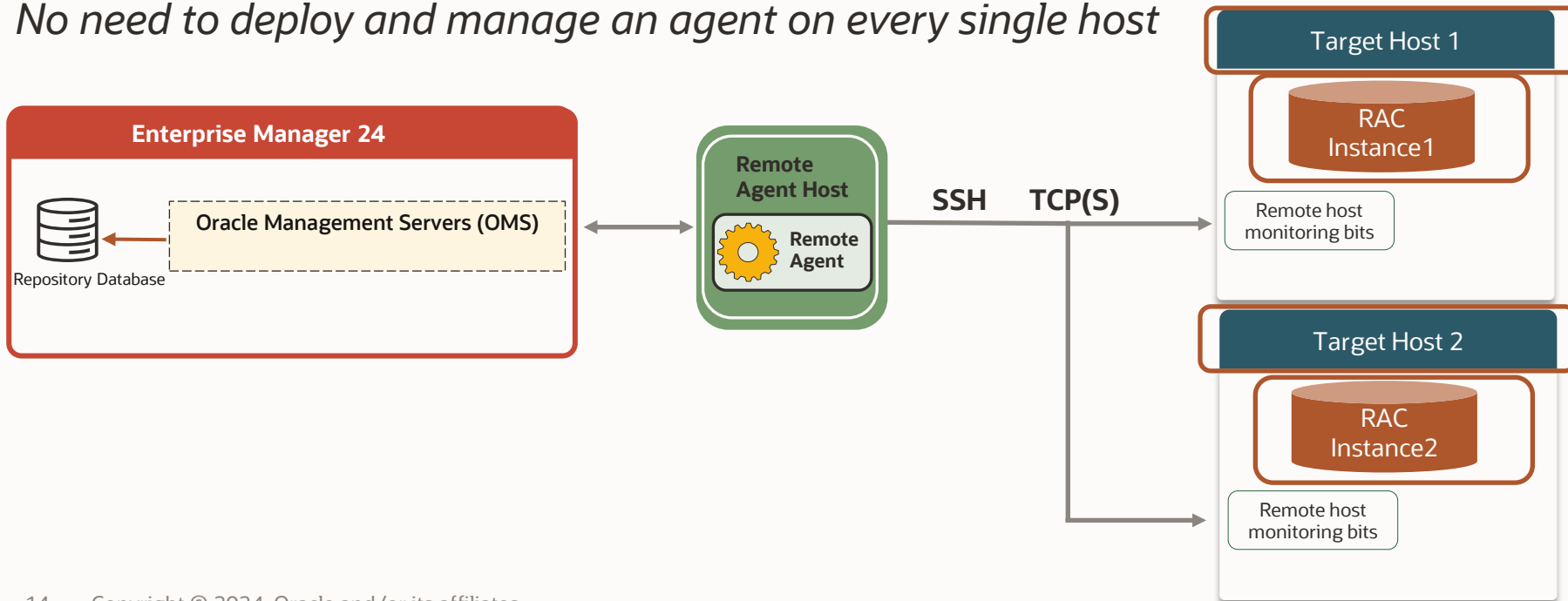
# Monitoring your fleet of databases

Simplified model: Use smaller set of Remote Agents

Remote discovery and monitoring of Oracle Database and its related targets using the Remote Agent

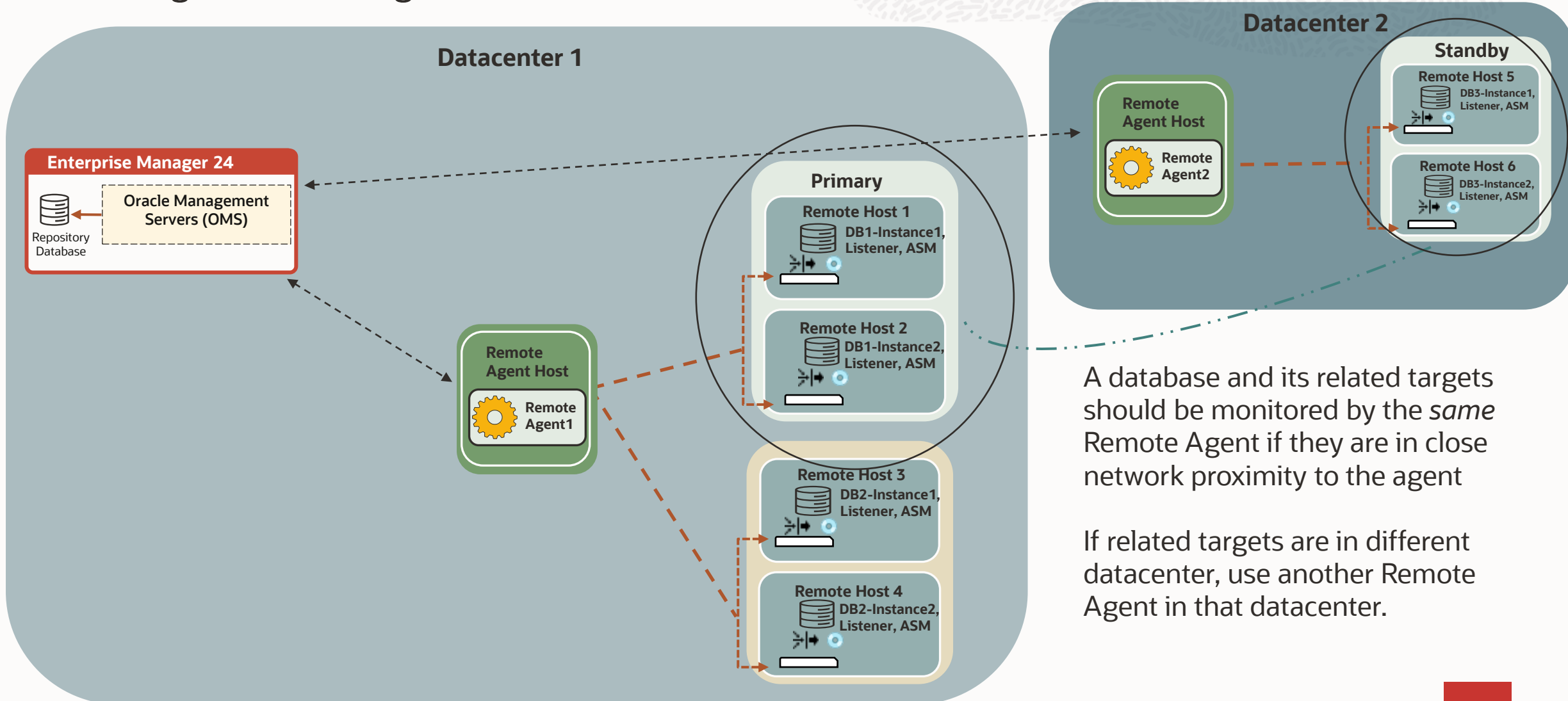
1. Install and configure the **Remote Agent** and its **host**
2. Add **hosts** of your database targets to the Remote Agent
3. Discover the **database** and its related targets in the *same way* as you would using local agent
4. To add new database targets, repeat from Step2

*No need to deploy and manage an agent on every single host*



# Monitoring your fleet of databases

## Choosing the remote agent



A database and its related targets should be monitored by the *same* Remote Agent if they are in close network proximity to the agent

If related targets are in different datacenter, use another Remote Agent in that datacenter.



# Supported database target types with Remote Agent

These target types will work with the Remote Agent for remote monitoring, performance diagnostics, jobs, management operations (e.g., backup, Data Guard failover/switchover, etc.).

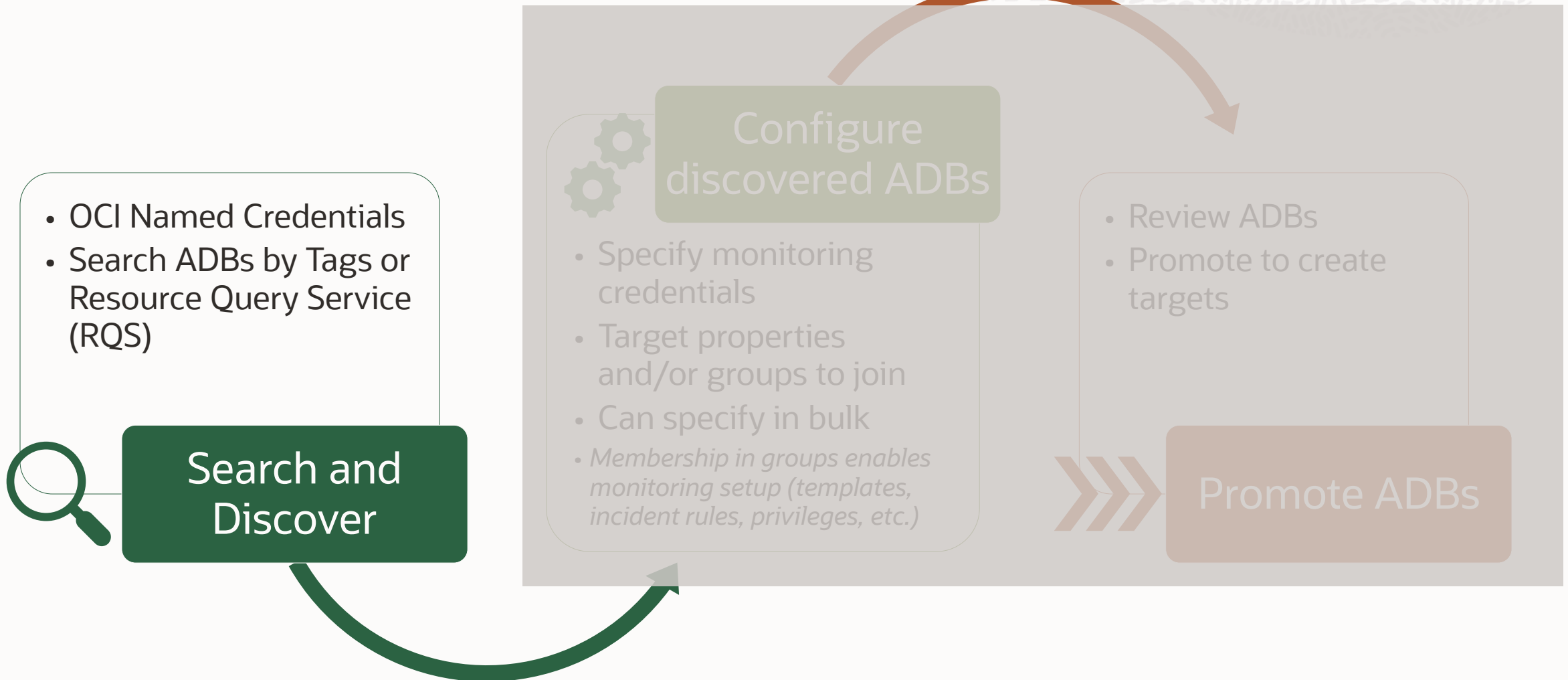
- Host\* (host)
- Listener (oracle\_listener)
- Database Instance (oracle\_database)
- Pluggable Database (oracle\_pdb)
- Oracle Database Service (oracle\_dbsvc)
- Cluster (cluster)
- Cluster (RAC) Database (rac\_database)
- Oracle High Availability Service (has)
- Cluster ASM (osm\_cluster)
- ASM (Automatic Storage Management) (osm\_instance)
- ASM IO Server (osm\_ioserver)
- ASM Proxy (osm\_proxy)
- Oracle Autonomous Data Warehouse (oracle\_cloud\_adw)
- Oracle Autonomous Transaction Processing (oracle\_cloud\_atp)
- Oracle Connection Manager (oracle\_cman)
- Far Sync Instance (oracle\_farsync)
- Global Data Services (gds\_cloud)
- Global Service Manager (gds\_gsm)
- Global Data Services Pool (gds\_pool)
- Shard Director (gds\_shard\_director)
- Sharded Database (gds\_sharded\_database)
- Shardgroup (gds\_shardgroup)
- Shardspace (gds\_shardspace)

\* LinuxX64 (initial phase)

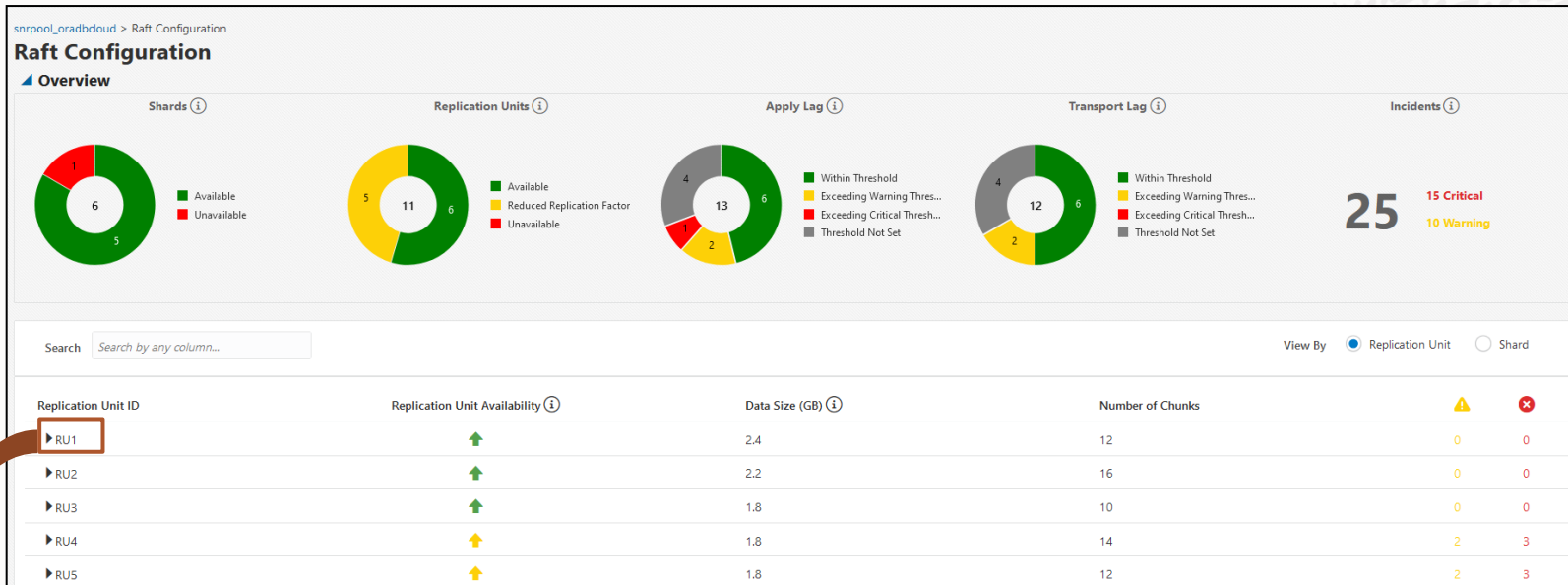


# Enhanced Discovery of Autonomous Databases (ADB)

Interactive, guided discovery enabling bulk addition of databases



# Monitoring Raft-based Globally Distributed Databases (Sharded Databases)



- **Overview of Raft configuration:** Shards and its Replication Units
- **Availability status** of Shards and Replication Units (RU)
- **Apply Lag** between RU Leaders and its Followers
- **Open Incidents**

Search

View By  Replication Unit  Shard

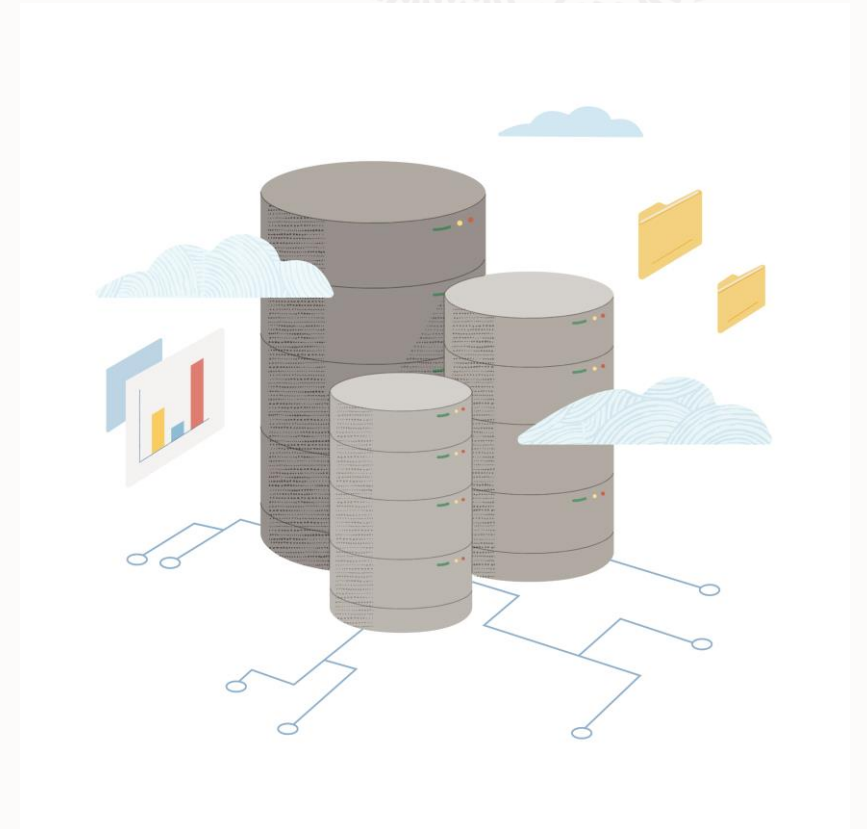
Replication Unit ID	Replication Unit Availability	Data Size (GB)	Number of Chunks	Warning	Critical		
RU1	↑	2.4	12	0	0		
<b>Shard ID</b>	<b>Shard Name</b>	<b>Shard Availability</b>	<b>Role</b>	<b>Transport Lag</b>	<b>Apply Lag</b>	<b>Warning</b>	<b>Critical</b>
11	Shard11	↑	Leader	-	-	0	0
1	Shard1	↑	Follower	00:00:01.3	00:00:01.4	0	0
21	Shard21	↑	Follower	00:00:01.3	00:00:02.0	0	0
RU2	↑	2.2	16	0	0		
RU3	↑	1.8	10	0	0		



# Enterprise Manager database monitoring

Enterprise Manager continues to enhance database monitoring features

- Makes DBA tasks more efficient
- Meets customer requirements
- Supports new database technologies and features



# Q&A

## Learn More

Web: [oracle.com/enterprisemanager](https://oracle.com/enterprisemanager)

Videos: [youtube.com/OracleEnterpriseMgr](https://youtube.com/OracleEnterpriseMgr)

Blogs:  
<https://blogs.oracle.com/observability/category/oem-enterprise-manager>

Docs: <http://docs.oracle.com/en/enterprise-manager>

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