ORACLE

Patch and Upgrade Oracle Databases with Enterprise Manager's Fleet Maintenance

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Agenda

1. Challenges with Software Maintenance aka Patching and Upgrade
2. Solution : Fleet Maintenance using Enterprise Manager
3. Our Customers

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Business Challenges

1 Applications face business and security risks

2 Longer downtimes for applications leading to revenue losses

3 Spiraling maintenance costs

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Challenges with Typical Patch Management Process

Complex, time consuming and multiple stakeholder dependency

High Downtime

Lack of standardization makes patching success unpredictable

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Database Software maintenance is critical to security of business, data and applications.

Patching, an essential part of DB operations.

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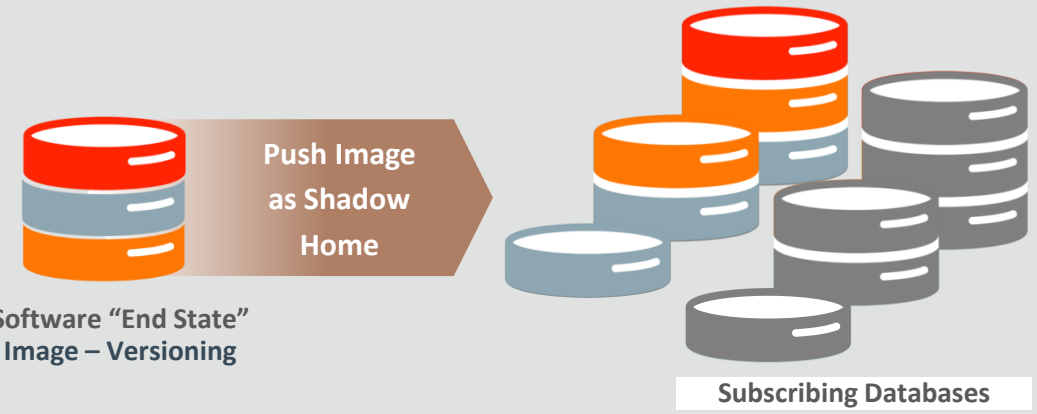
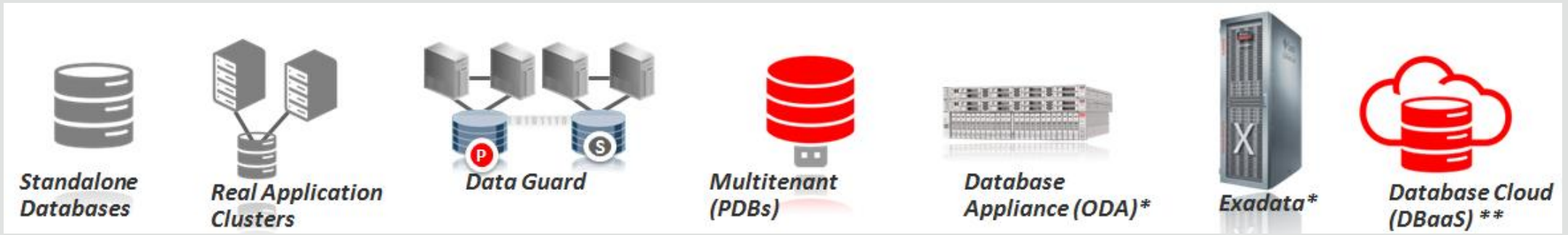
Fleet Maintenance using Enterprise Manager

- ✓ Minimal Downtime
- ✓ Patch and Upgrade
- ✓ Enterprise Scale
- ✓ Automated and cyclic



- ✓ Centralized Operations
- ✓ Schedule, fix, retry
- ✓ Flexible and extensible
- ✓ Self Service Maintenance



*Only GI/Clusterware/Database Targets
*Enterprise Manager DBaaS

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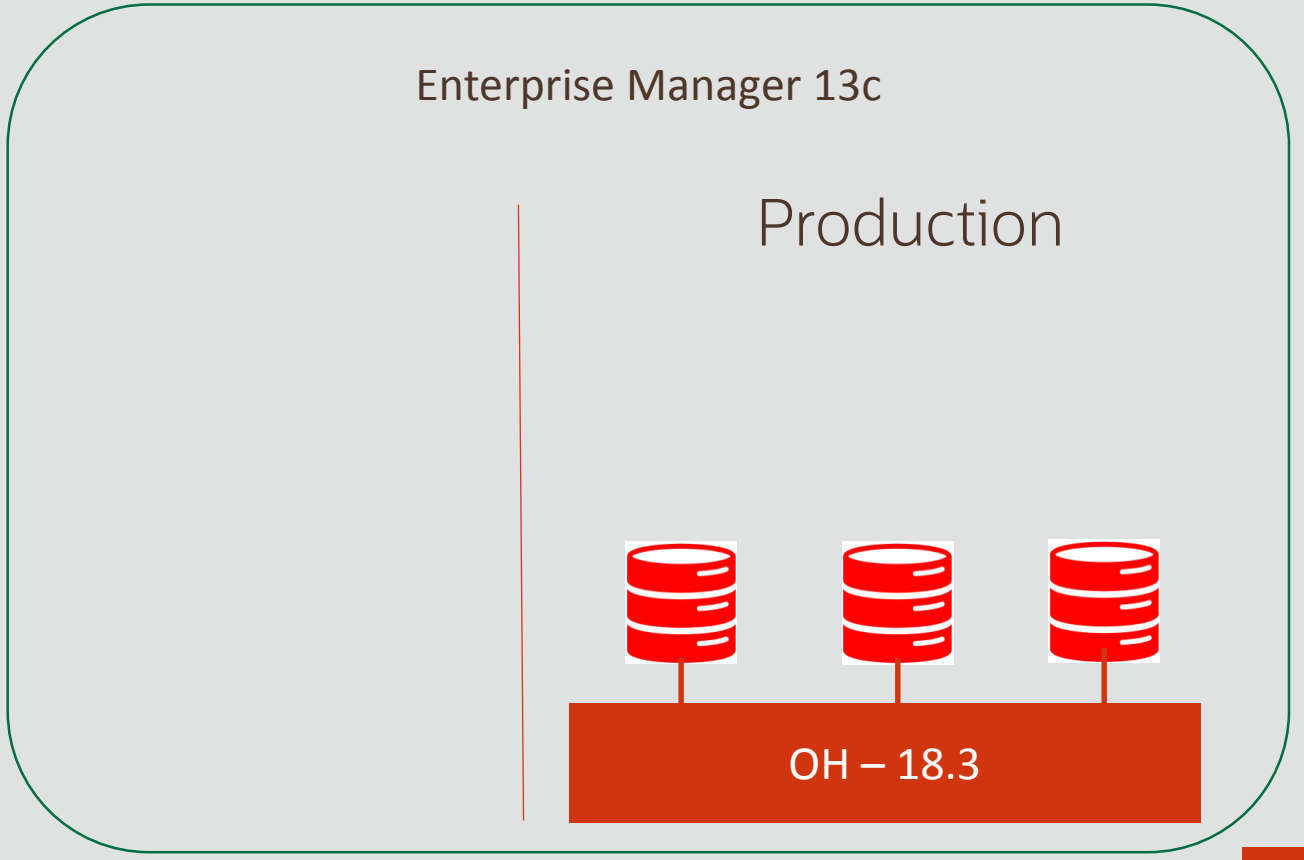
Database Fleet Maintenance – Process

Patching Cycle 1 Goal: Patch Production 18.3 DBs to 18.6



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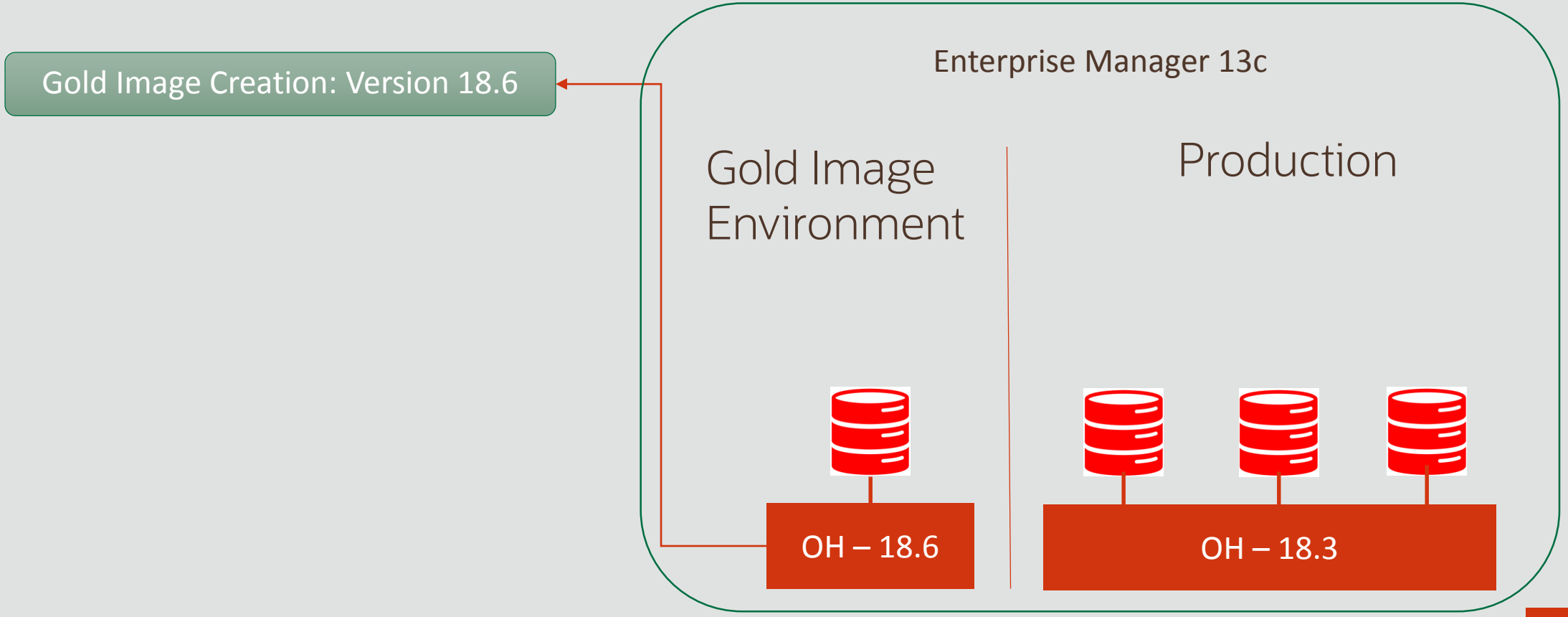

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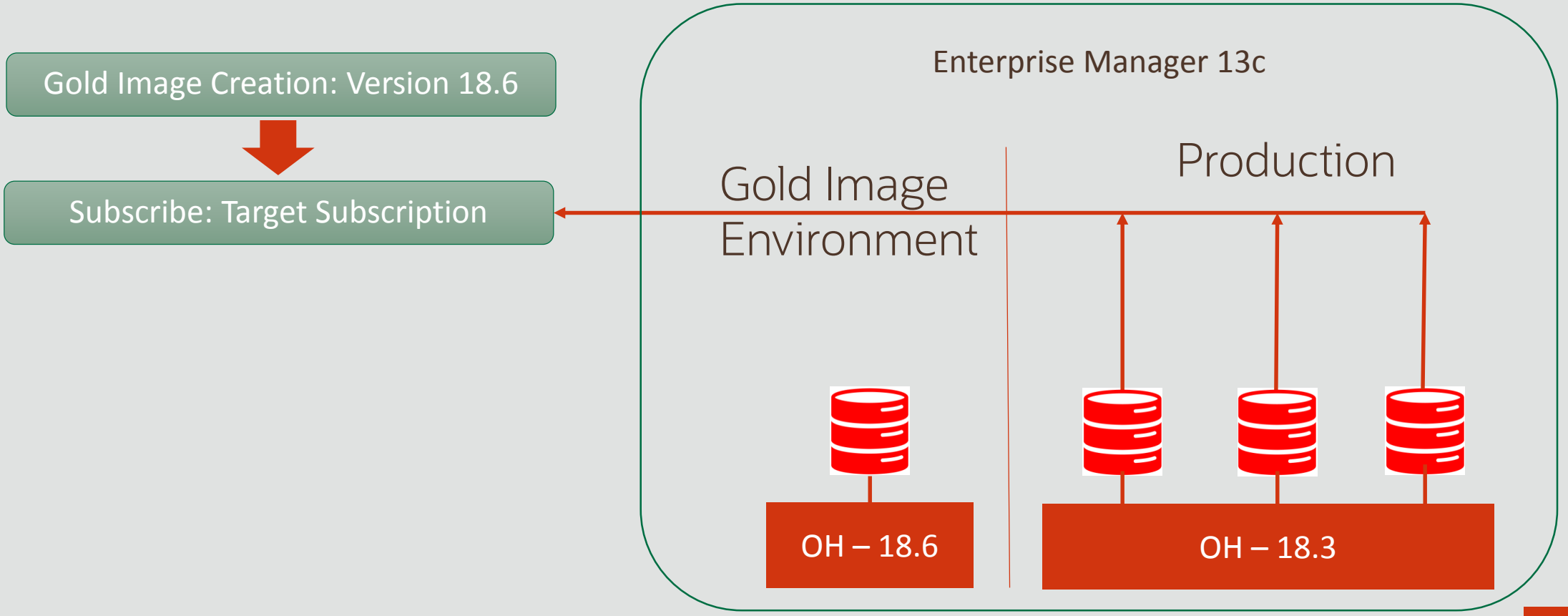

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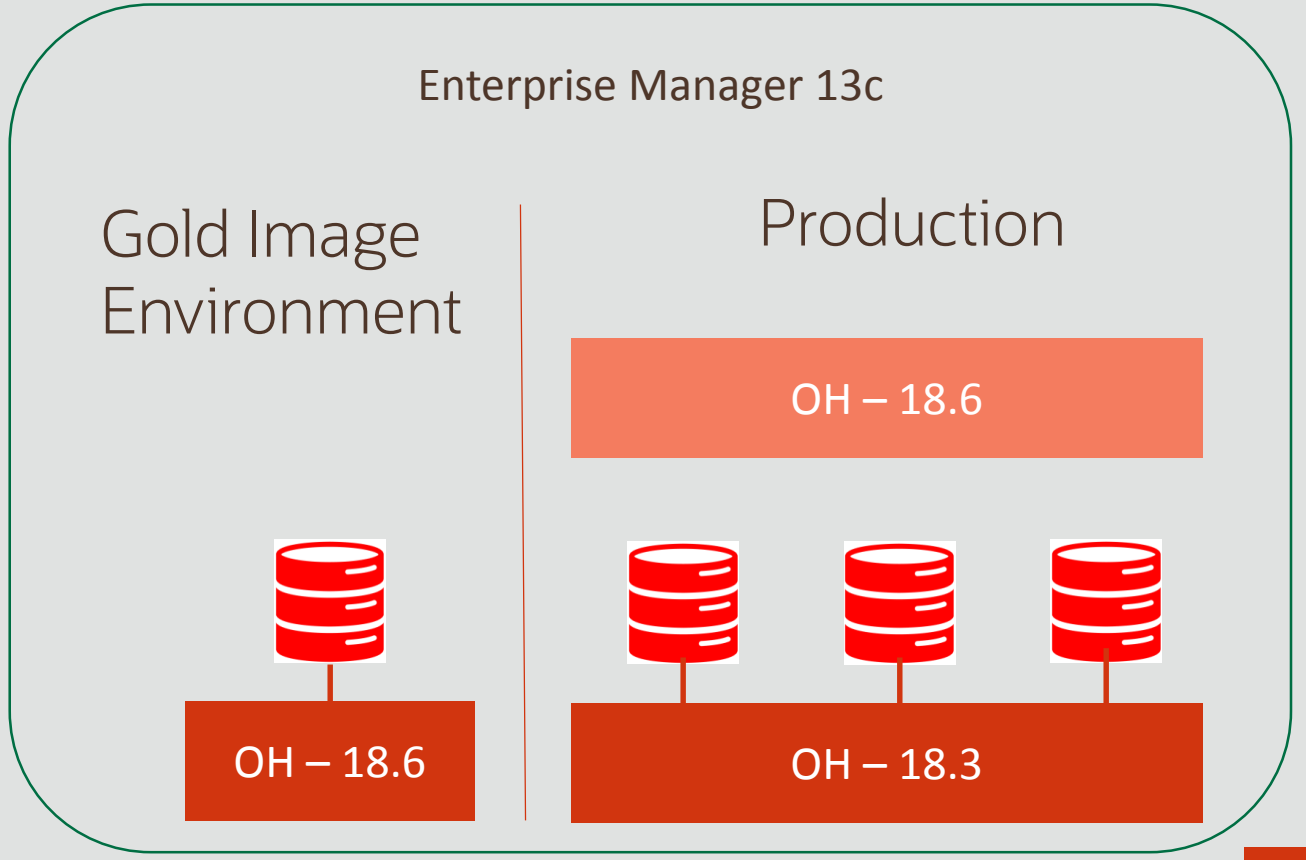
Patching Cycle 1 Goal: Patch Production 18.3 DBs to 18.6

Gold Image Creation: Version 18.6

Subscribe: Target Subscription

Deploy: Software Deployment



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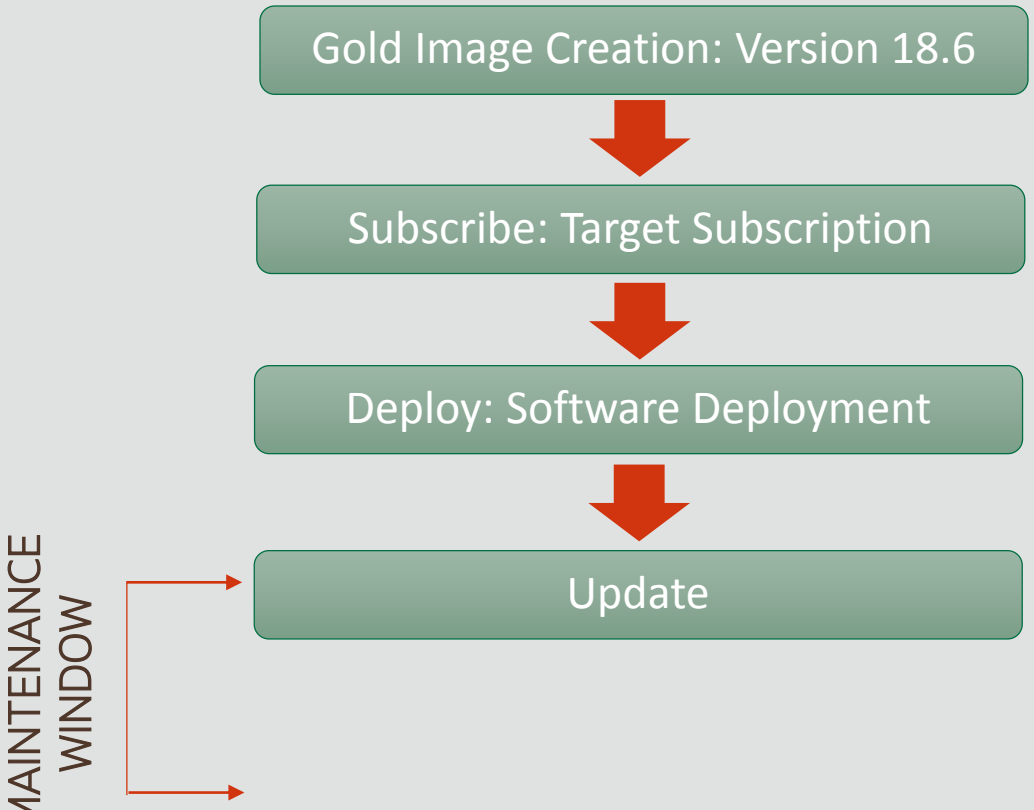

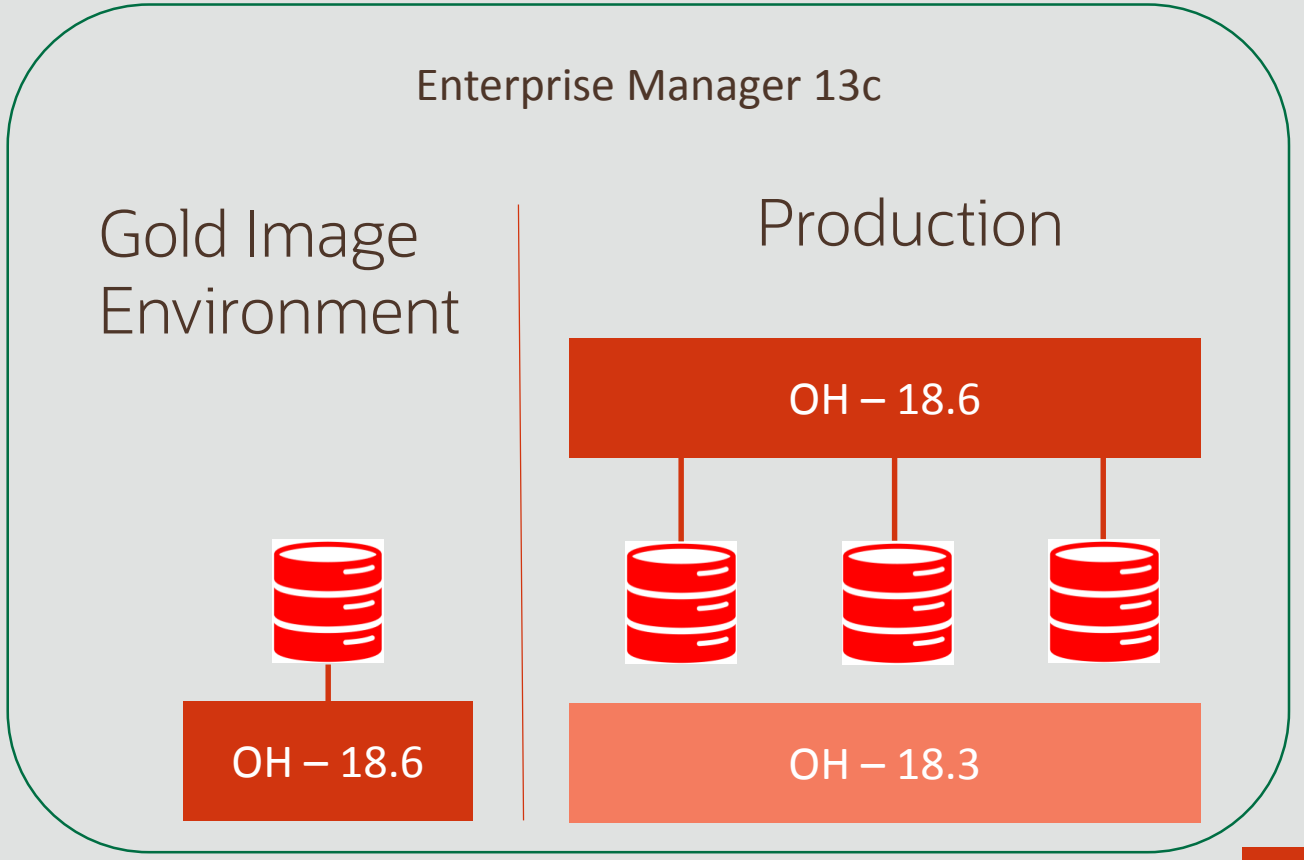

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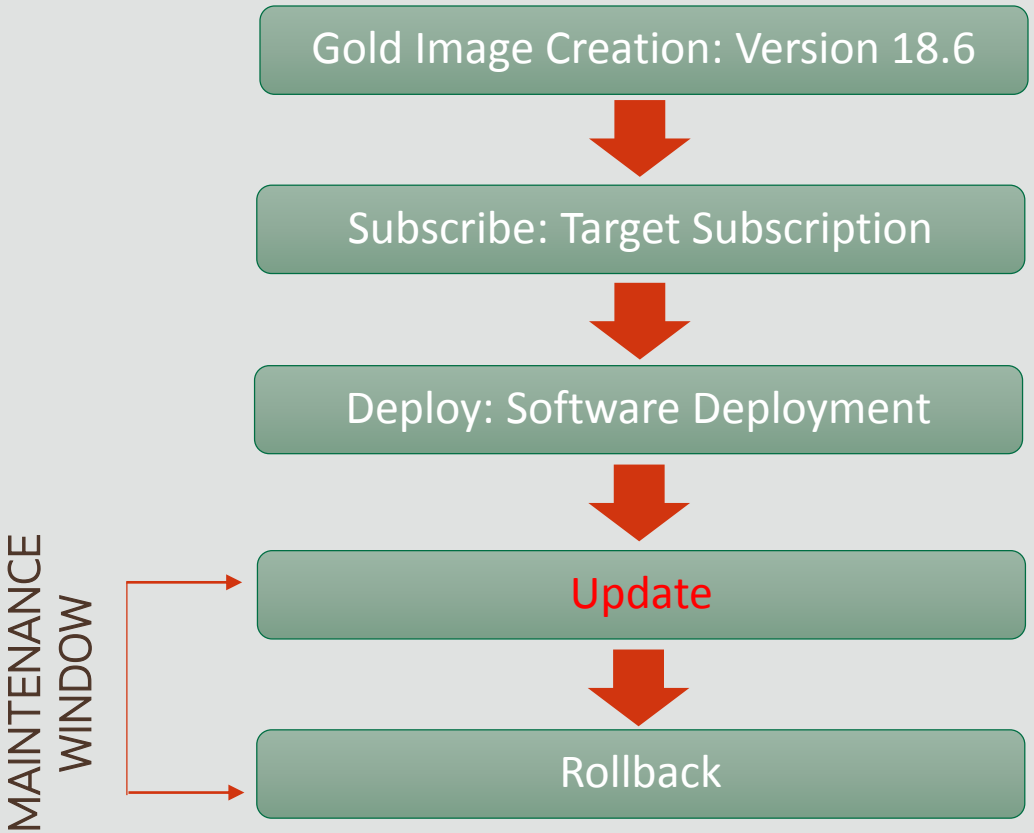

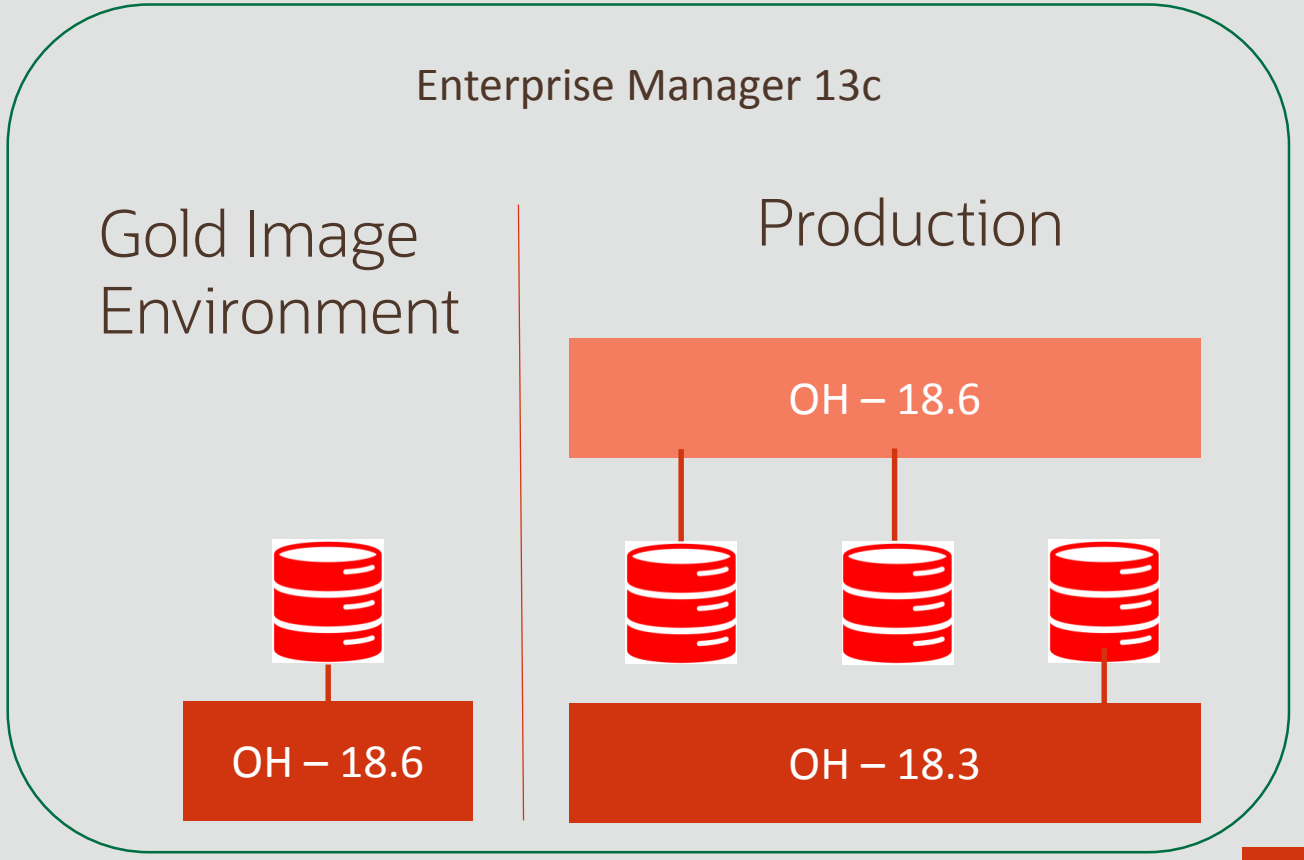

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Database Fleet Maintenance – Process

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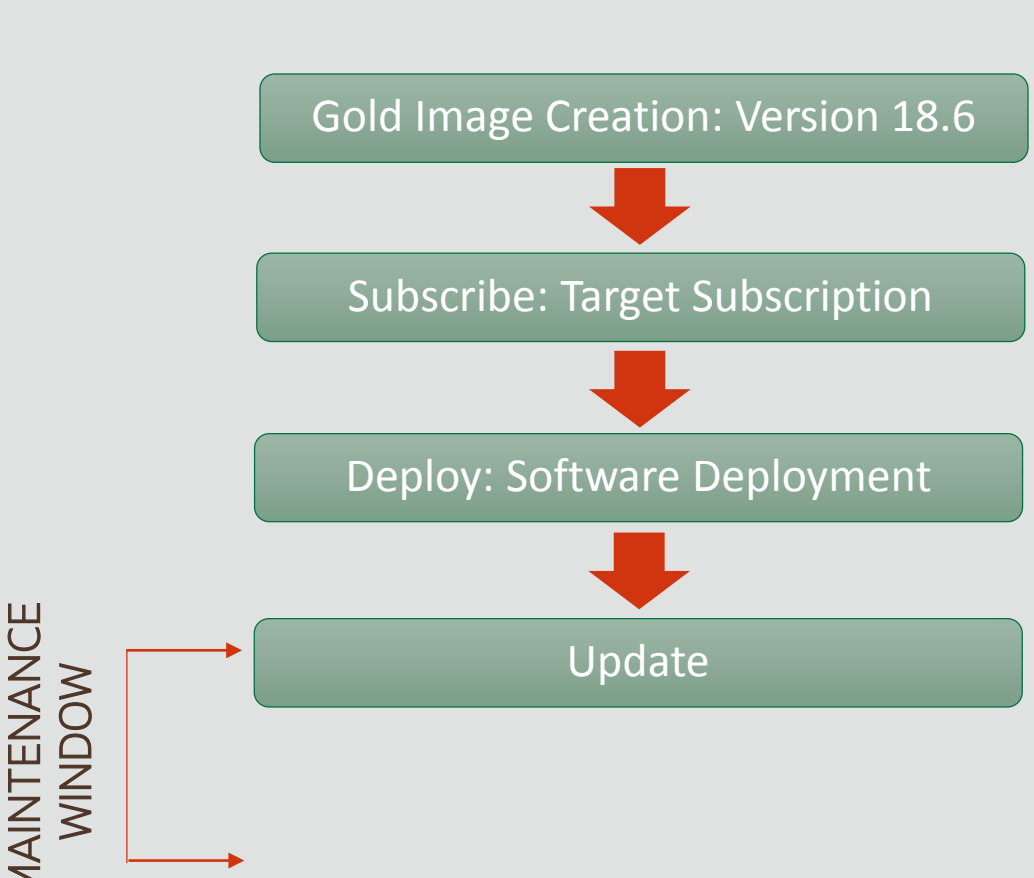

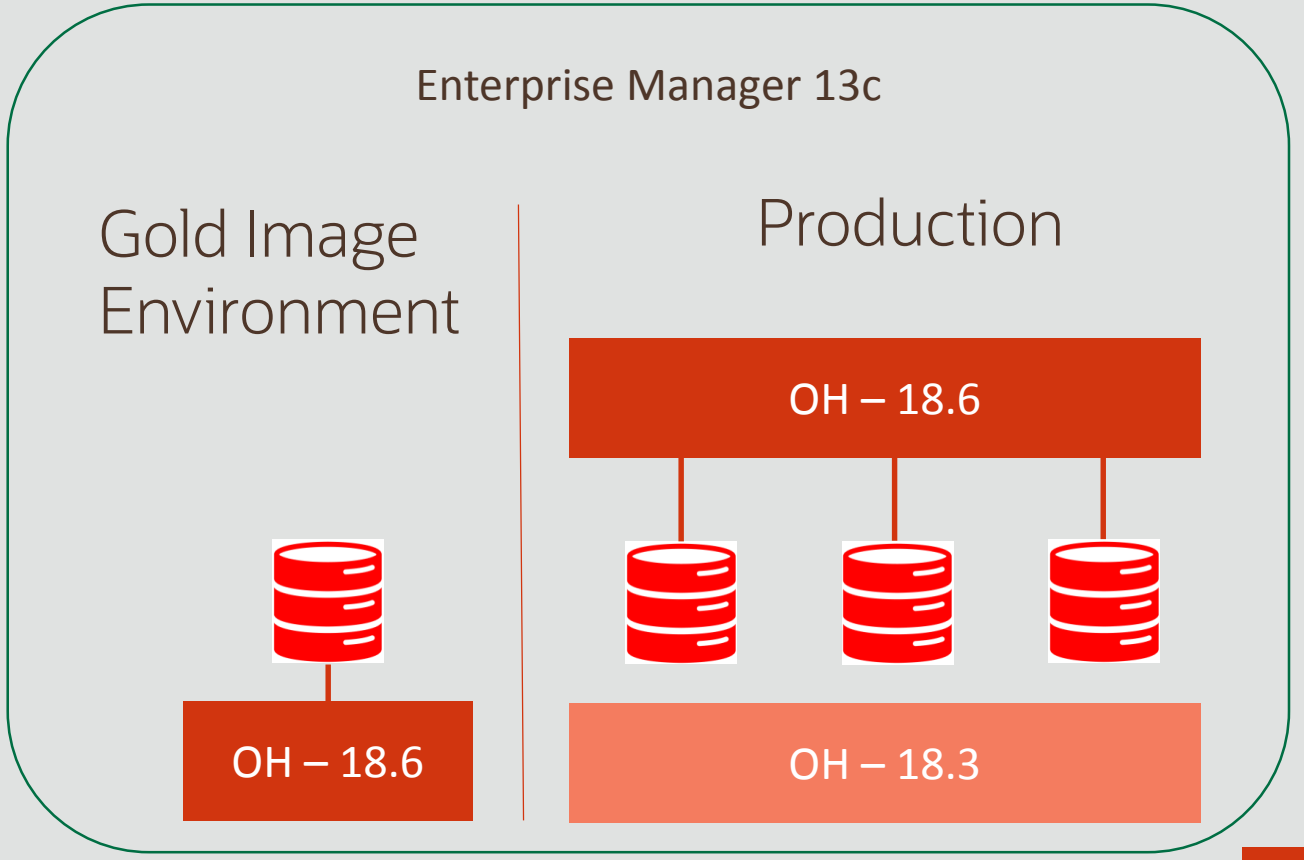

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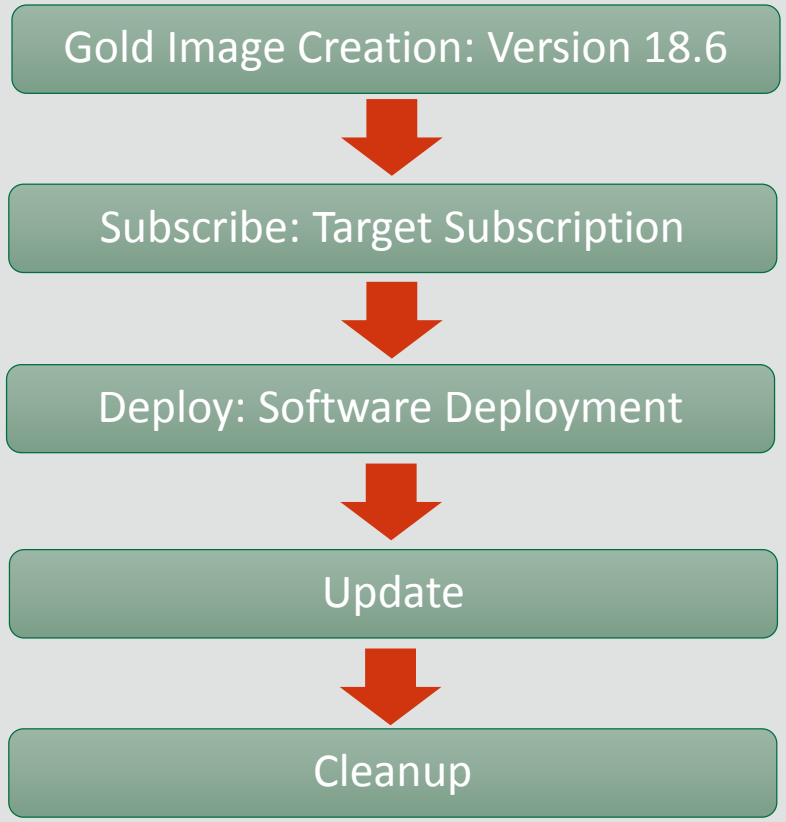

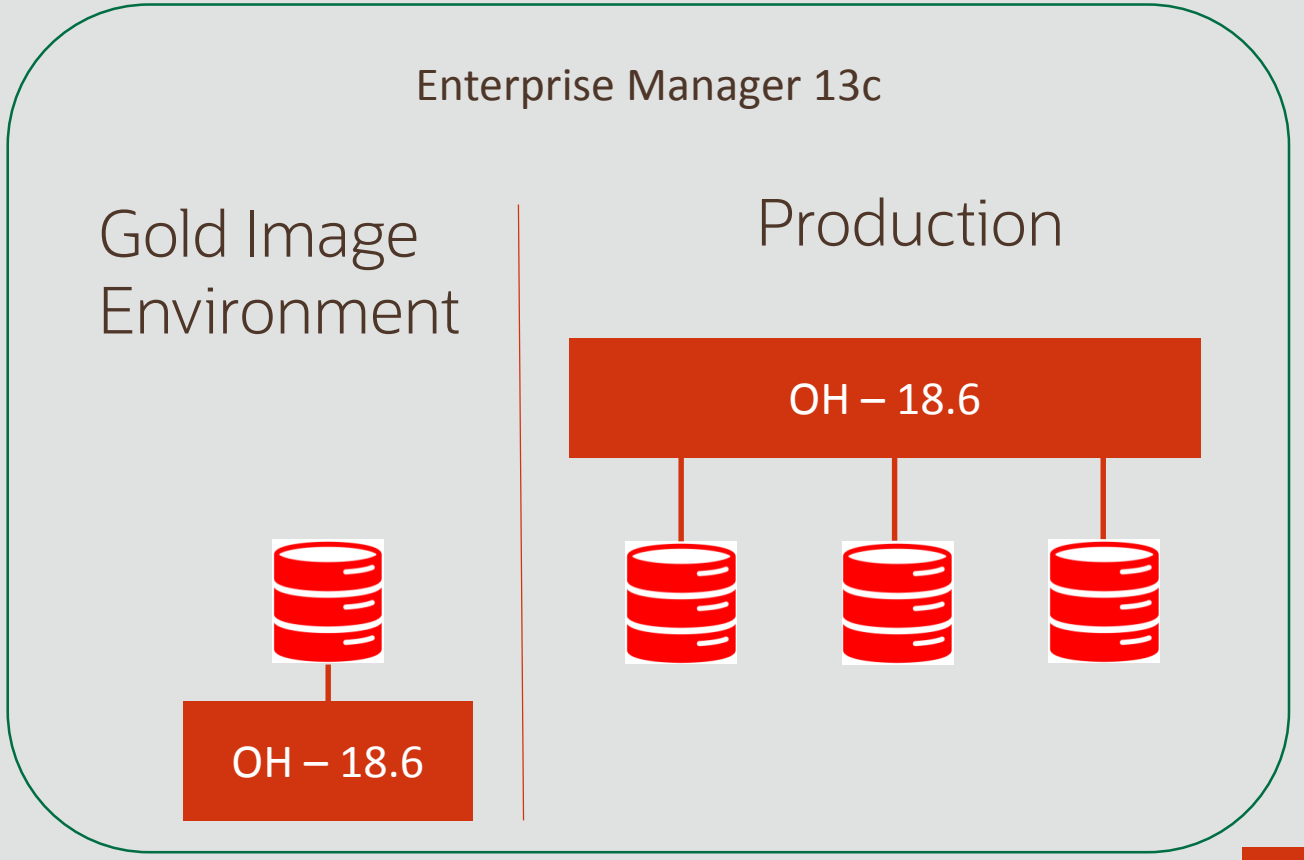

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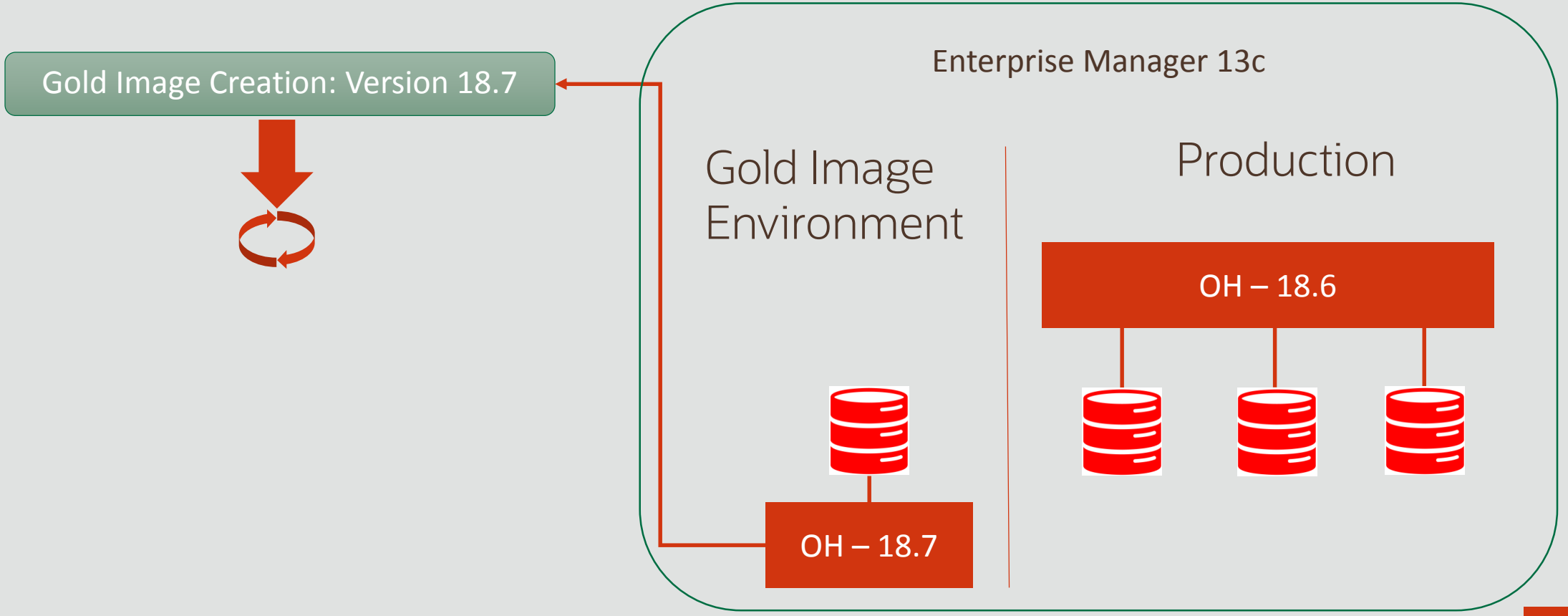
Database Fleet Maintenance – Process

Patching Cycle 2 Goal: Patch Production 18.6 DBs to 18.7



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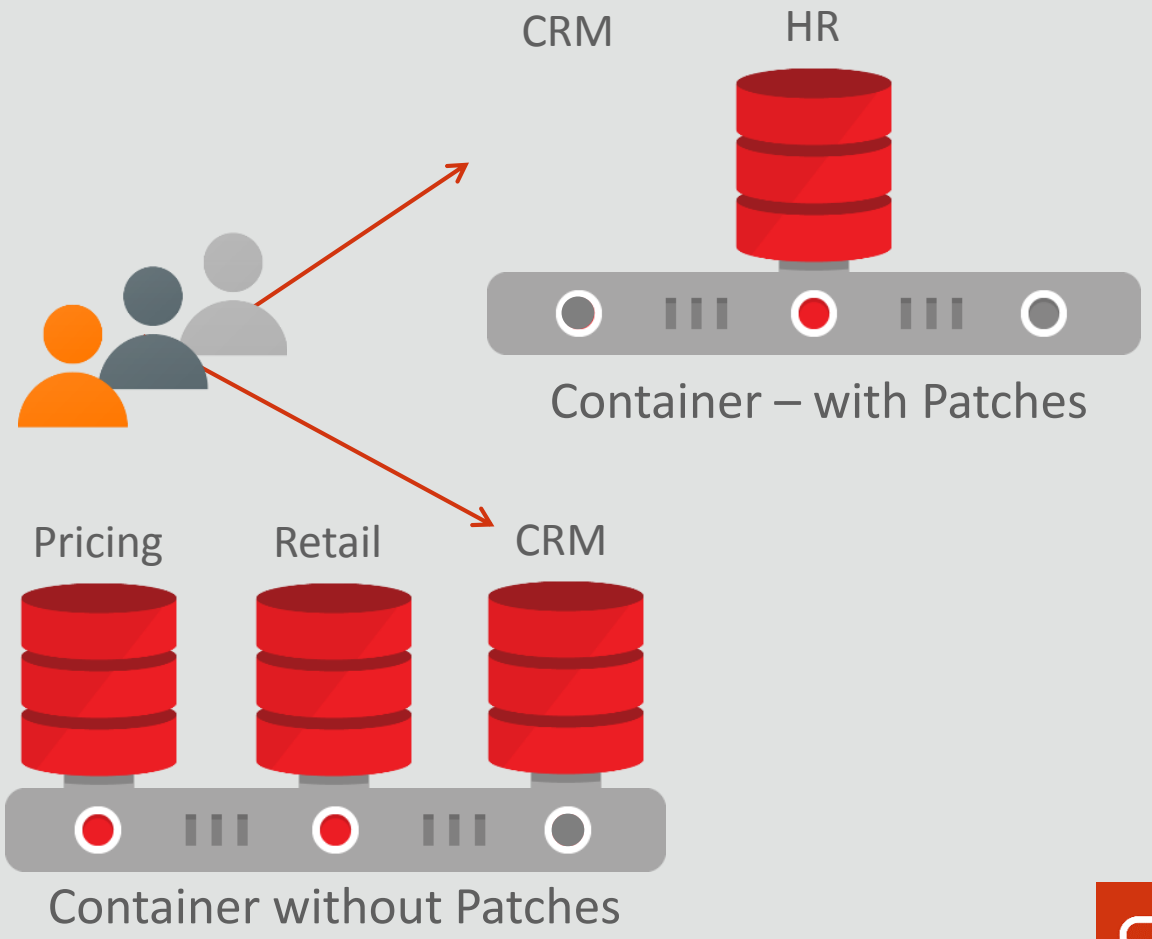
Database Fleet Maintenance for Multitenant

- **Solution for Containers**
  - Switches existing CDB to the new OH
  - All PDBs patched in one operation
- **Solution for PDBs**
  - Each PDB patched individually
  - PDB patched by relocating to a CDB created on patched home.



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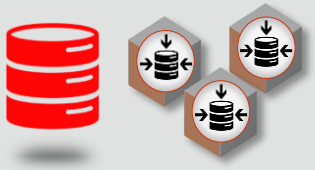
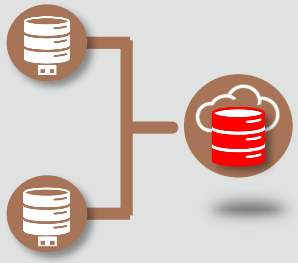
Oracle Database as a Service

Fully functional Database with any Data on any infrastructure

ORACLE ENTERPRISE MANAGER



Dedicated Database



Pluggable Database

Self Service Application Users

Service

CLOUD FRAMEWORK

ACCESSIBILE

EFFICIENT

ELASTIC

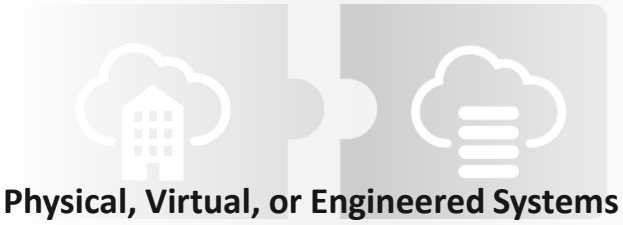
CONSOLIDATED

REST API

Integration

API integration with 3rd party tools , change requests, dev workflows

Infrastructure



Physical, Virtual, or Engineered Systems

Self Service Application Administrator

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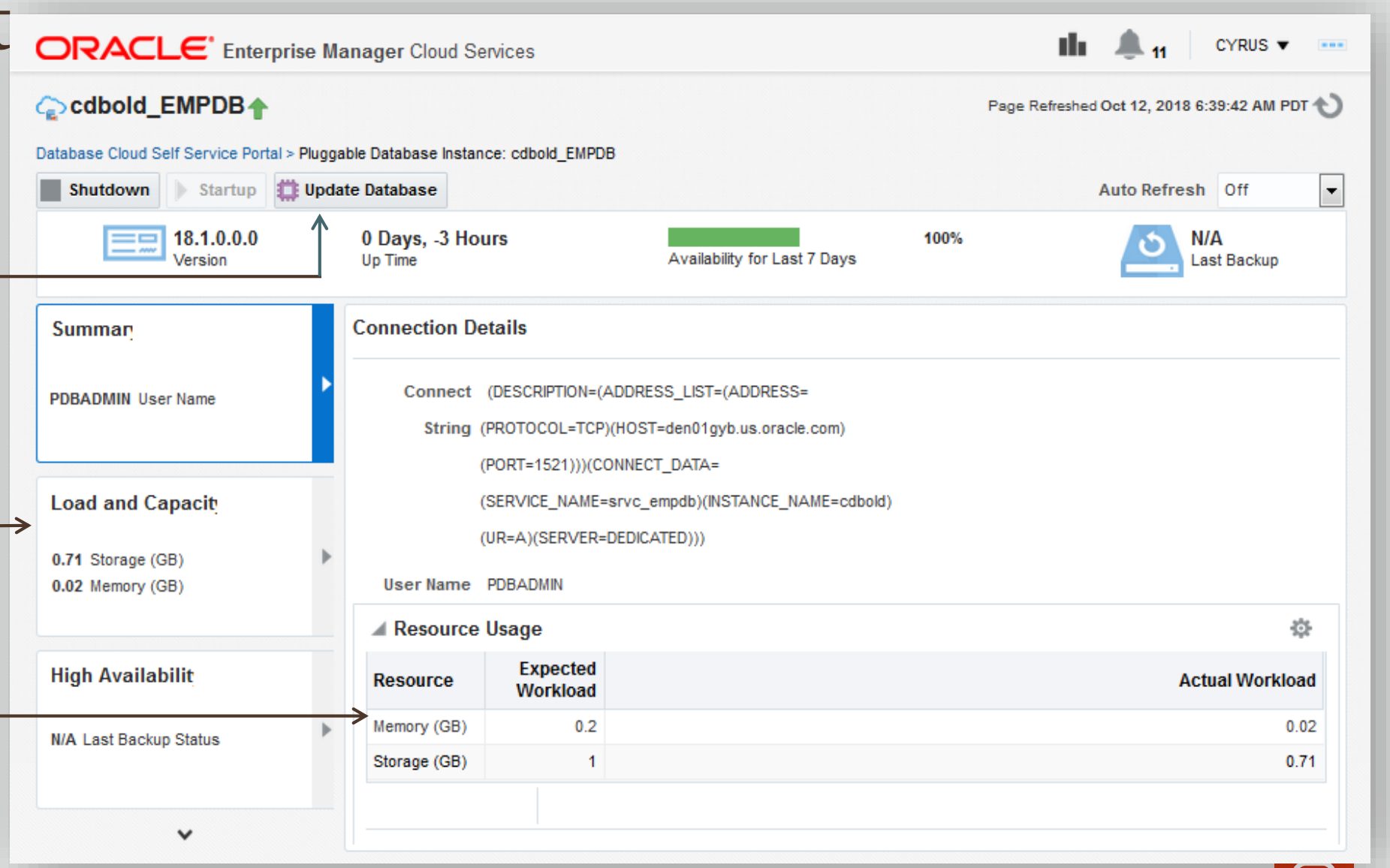
EM Self Service Portal – PDB Monitoring and Management



Patching

Performance Monitoring

Resource Usage

Extensibility and Customization

End to End Automation with Pre-Post Scripts – DB Plug-in 13.3.2

Automate pre-post patching maintenance operations

Operations: DEPLOY | UPDATE | ROLLBACK|CLEANUP

```
emcli db_software_maintenance -performOperation -name="Deploy 12.2 Home” -
purpose=”UPDATE_DB" -target_type=oracle_database -target_list="DB122" -
normal_credential="ORACLE:SYSMAN" -privilege_credential="ORACLE_ROOT:SYSMAN" -
input_file="data:/scratch/input_updatedb.prop"

$ cat updatedb.prop

CUSTOM_PRE_SCRIPTS_URN=oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:no
ne:74A730047930C5FDE053DF0FC40A3E69:0.1

CUSTOM_POST_SCRIPTS_URN=oracle:defaultService:em:provisioning:1:cmp:COMP_Directives:n
one:74A730047935C5FDE053DF0FC40A3E69:0.1
```

*Supported with 13.2.2 latest OMS Plug-in Bundle Patch

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Our Customers

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Oracle Systems Management

COMCAST

Fleet-wide Database Automation

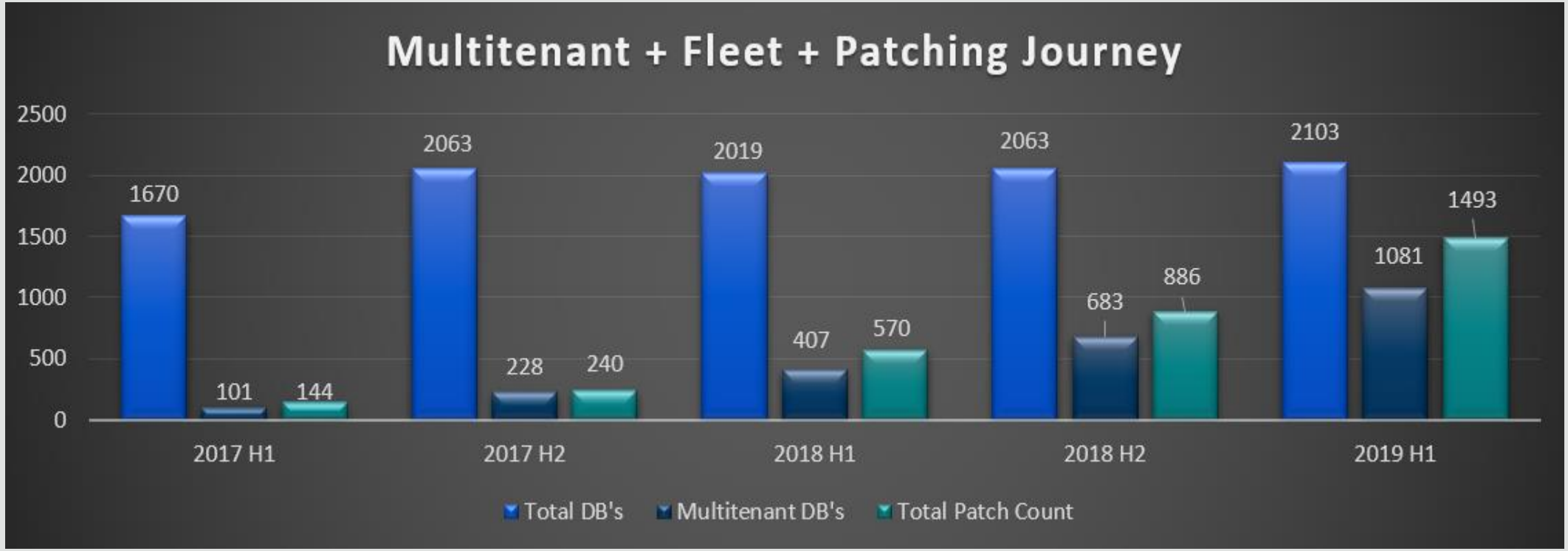
- On-demand database provisioning
- On-demand database patching
- Standardization for compliance

Solution: Enterprise Manager

Minutes	**2100**	**Reduced**
Down from 2-3 months for provisioning	Databases patched automatically	Database maintenance downtime

ORACLE

Multitenant + Fleet + Patching Journey



How Multitenant + Fleet makes maintenance easy?

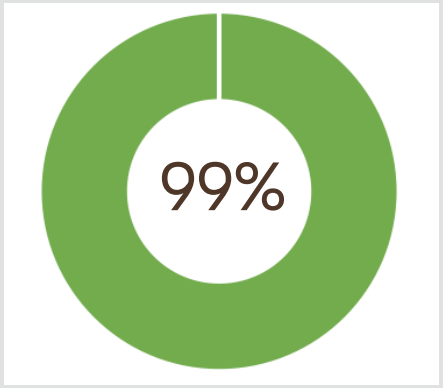
- Centralized Image Creation & Patch Deployment & Switch procedure
- Dev/QA/INT env's with one container per 100 PDB's, so one switch, technically patches 100 db's in < 90 mins
- HA multitenant 3 Node RAC clusters provides 100% availability even during patching
- Self service option available for Application teams who want to choose their own patching window.

Nationwide

2019 Patching Results > **99% Success Rate** > **2 “Part-Time” DBAs** > **Increase Patch Frequency**

~350
Clusters

~3350
Databases



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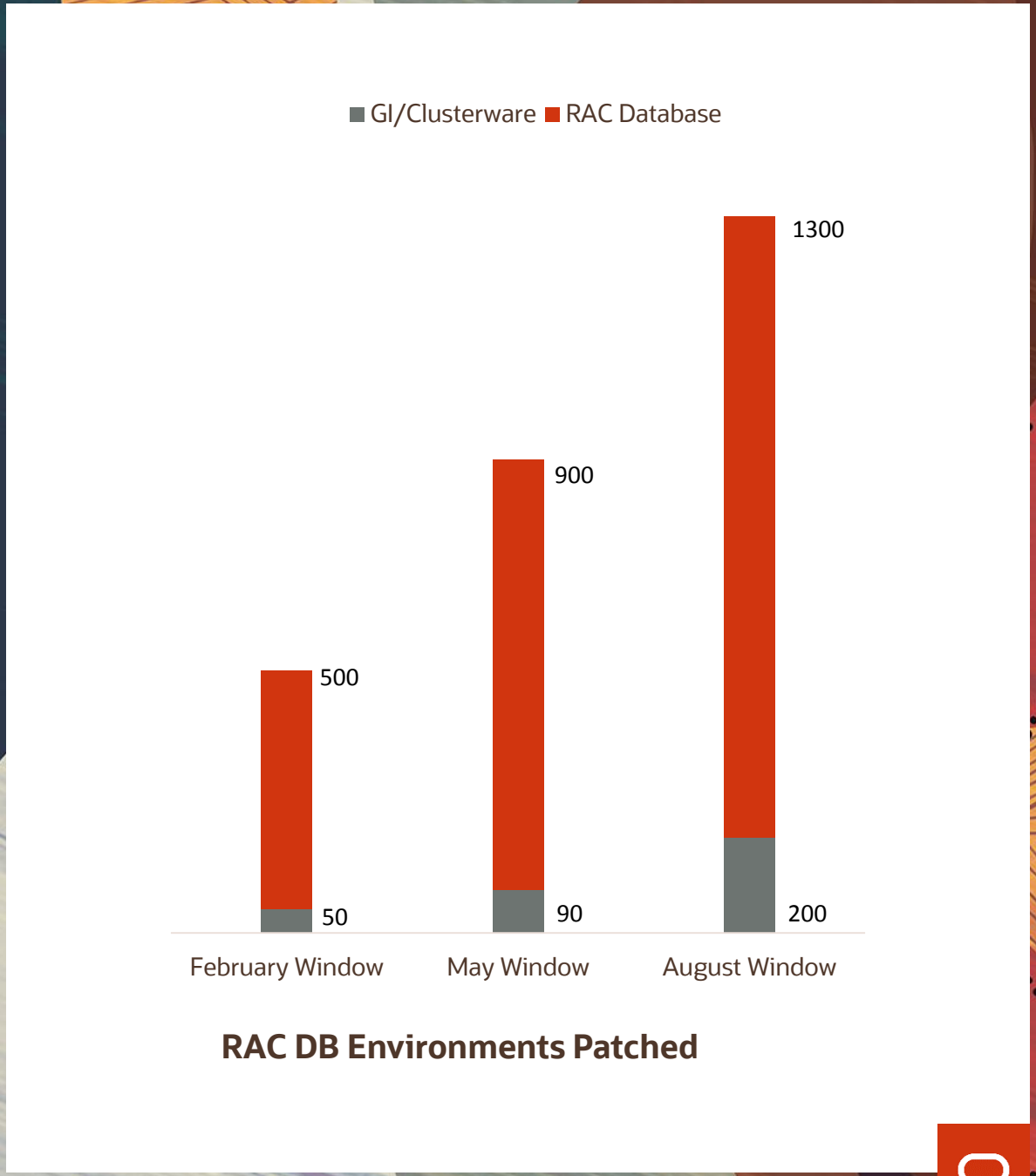
Large Automobile Conglomerate

1. Two Week POC in September 2018
2. First production patching in December 2018
3. 1500 DBs patched in Aug 2019 production patching window



*Approximate numbers

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FedEx

Results from first production patching cycle:

600 SIHA
200 RAC Clusters
580 Standalone DBs

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Our Guiding Principles

1 Continuous Evolution

2 Focus on Quality and Usability

3 Ease of Onboarding

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References

- Enterprise Manager Page on O.com
- Enterprise Manager Fleet Maintenance Page on OTN
- Lifecycle Management Guide
- Master Note for Database Patching Using Fleet Maintenance. (Doc ID 2435251.1)
- OEM Advisor Webcast Schedule and Recordings (Doc ID 1456167.1)
- Enterprise Manager Blog

Thank You

Product Management Team

Oracle Enterprise Manager
Database Lifecycle Management &
Cloud Management Pack

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