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# Upgrade Fearlessly to Oracle Database 12c

[CON7926]

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WORLD

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SAN FRANCISCO, CA

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October 4, 2017

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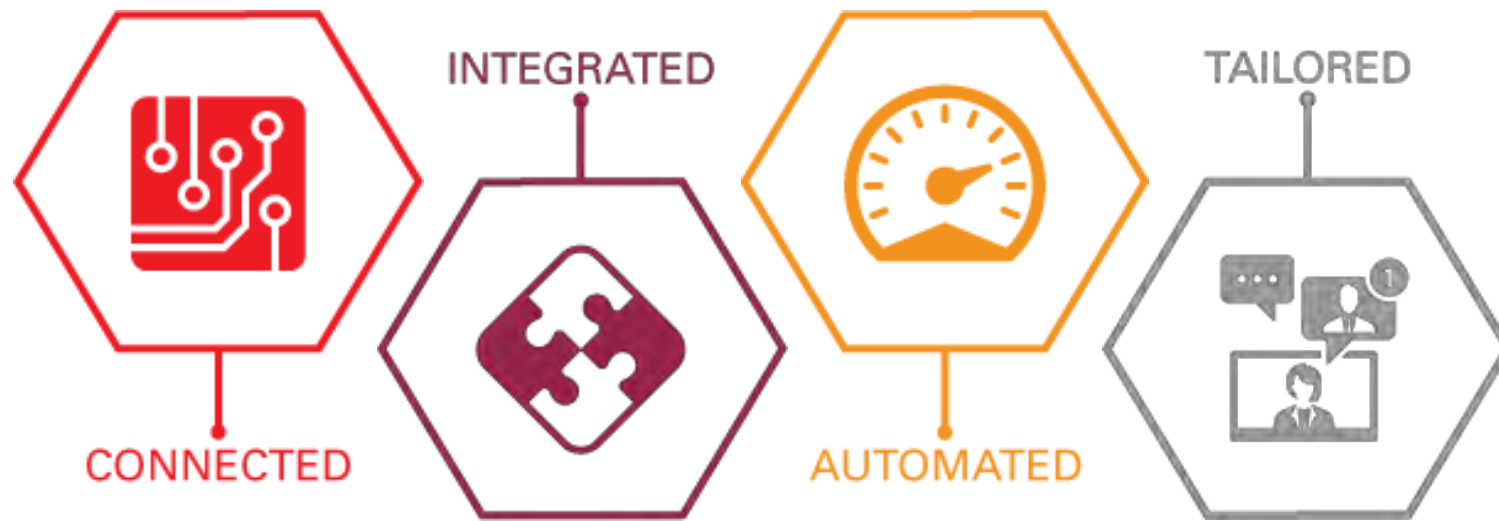
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# Safe Harbor Statement

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# Services to Drive Your Journey

*From Every Starting Point to Every Destination*



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# Agenda

- 1 Major Reasons to Upgrade to Oracle Database 12c
- 2 Oracle Upgrade Assurance for Oracle Database
- 3 Enabling 12c with ACS

# Oracle Database 12c

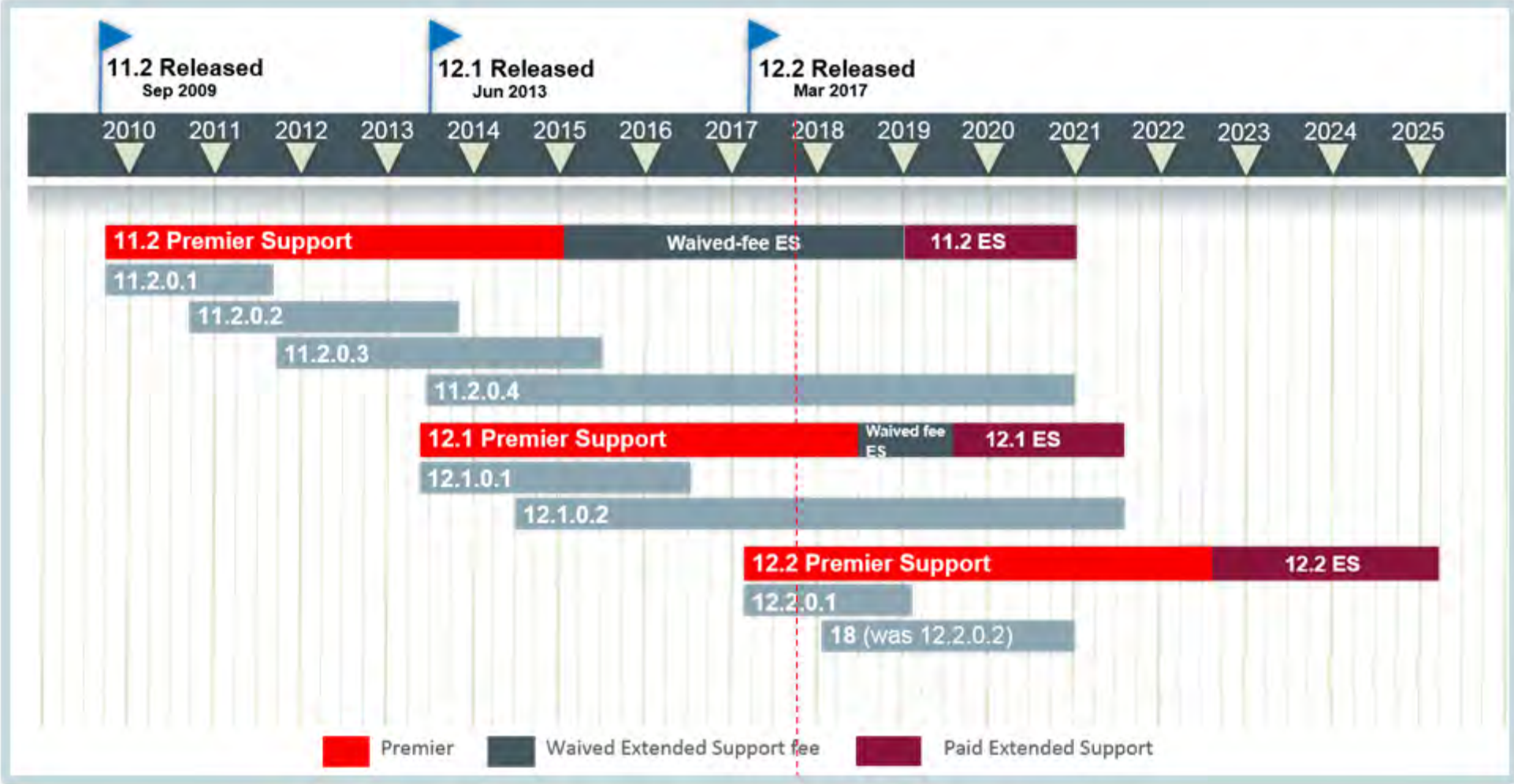
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- **Efficient Database Management**  
Oracle Database 12c **new features improve** your database management
- **Cloud Transformation**  
Oracle Database 12c **architecture enables Cloud transformation** of your database
- **Lifecycle Management**  
Oracle Database 12c **enables supportability** of your environment

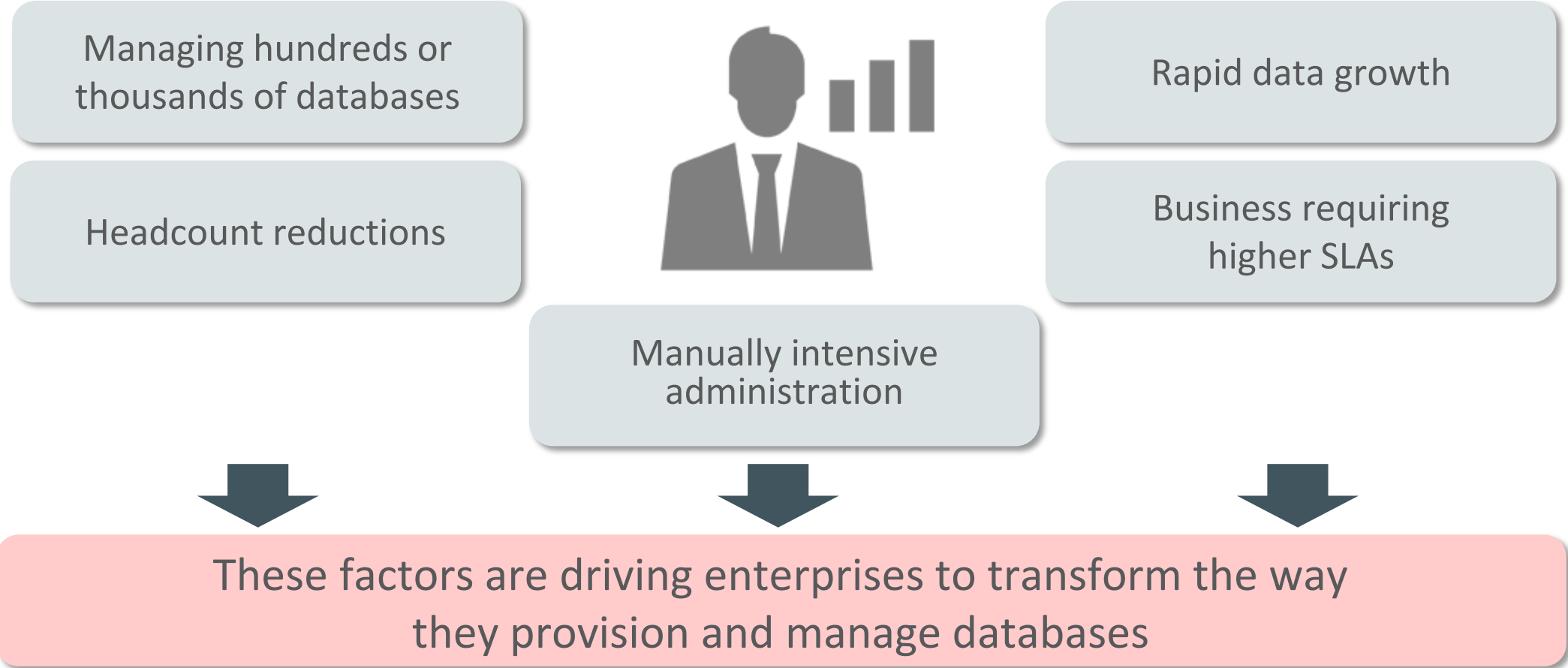
# Oracle Database Supportability Matrix



- Error correction for 11.2 and above

# Efficient Database Management

## The Challenge - High Cost, Lack of Agility, Long Lead Time to Production



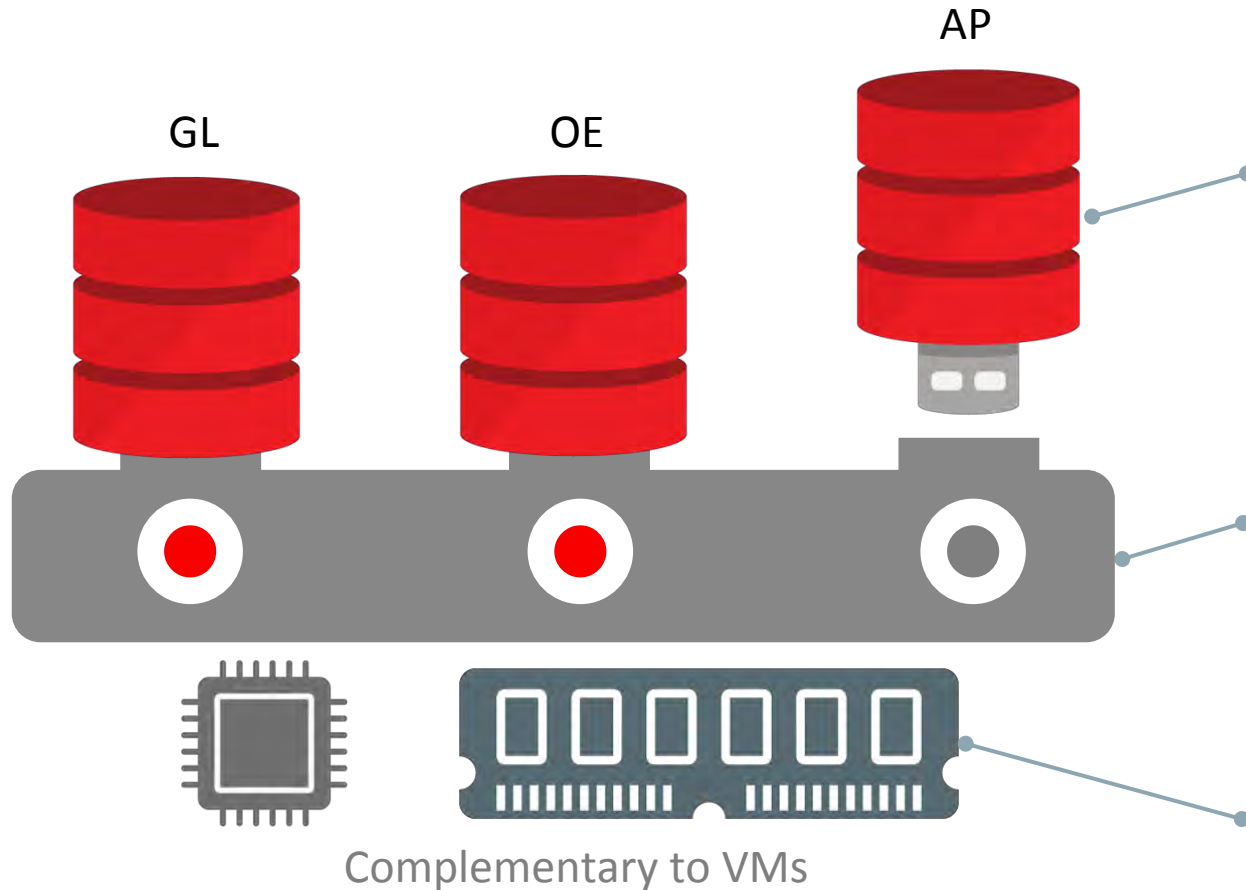


# Advantages of Multitenant Architecture

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**Reduced CapEx and OpEx, Increased Agility, Easy to Adopt and Use**



Self-contained PDB for each application

- Applications run unchanged
- Rapid provisioning (via clones)
- Portability (via pluggability)

Common operations performed at CDB level

- Manage many as one (upgrade, HA, backup)
- Granular control when appropriate

Shared memory and background processes

- More applications per server

# Oracle Database In-Memory

## Real-Time Analytics



Enable Real-Time  
Business Decisions

## Accelerate Mixed Workload



Run analytics on  
Operational Systems

## Risk-Free



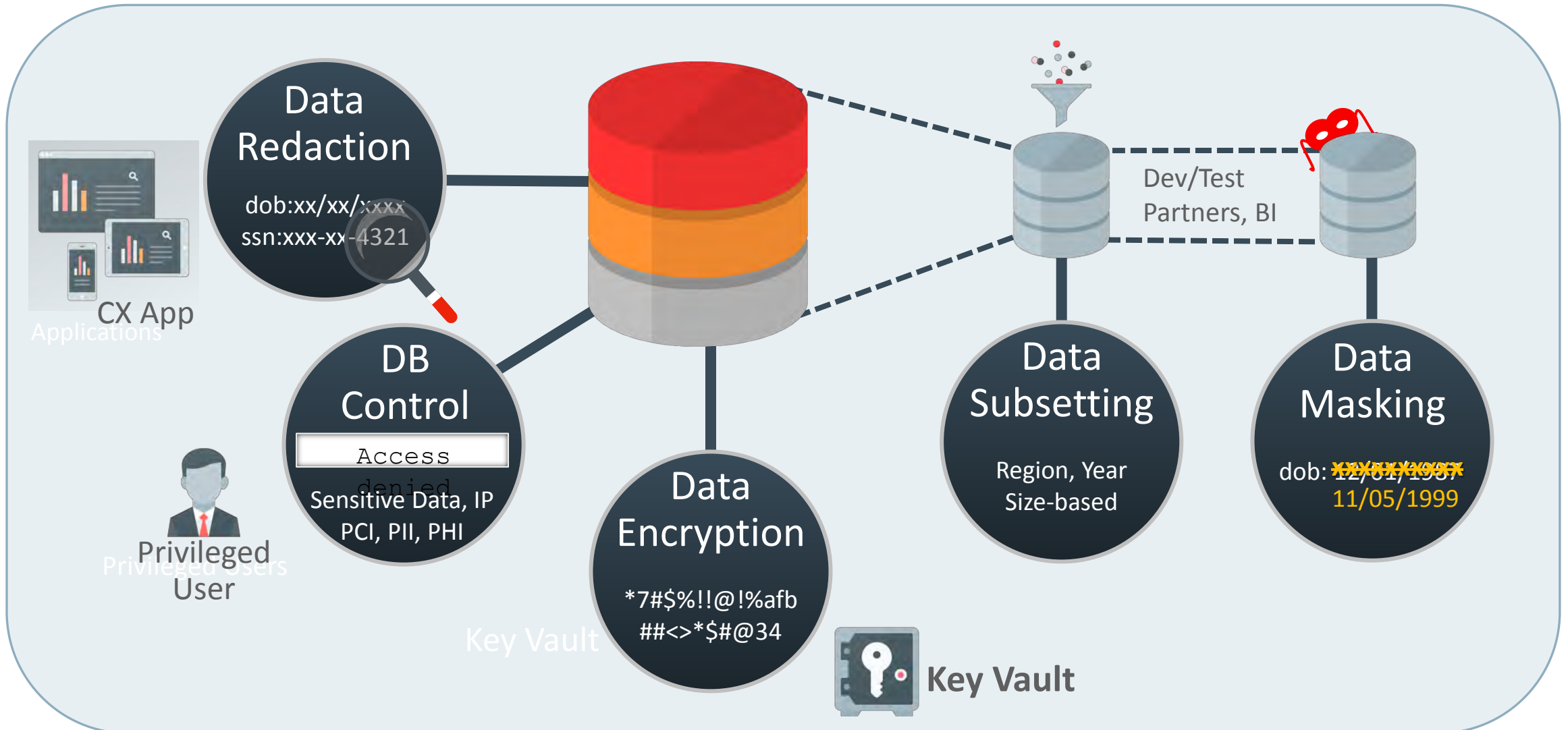
Proven Scale-Out,  
Availability, Security

## Trivial to Implement



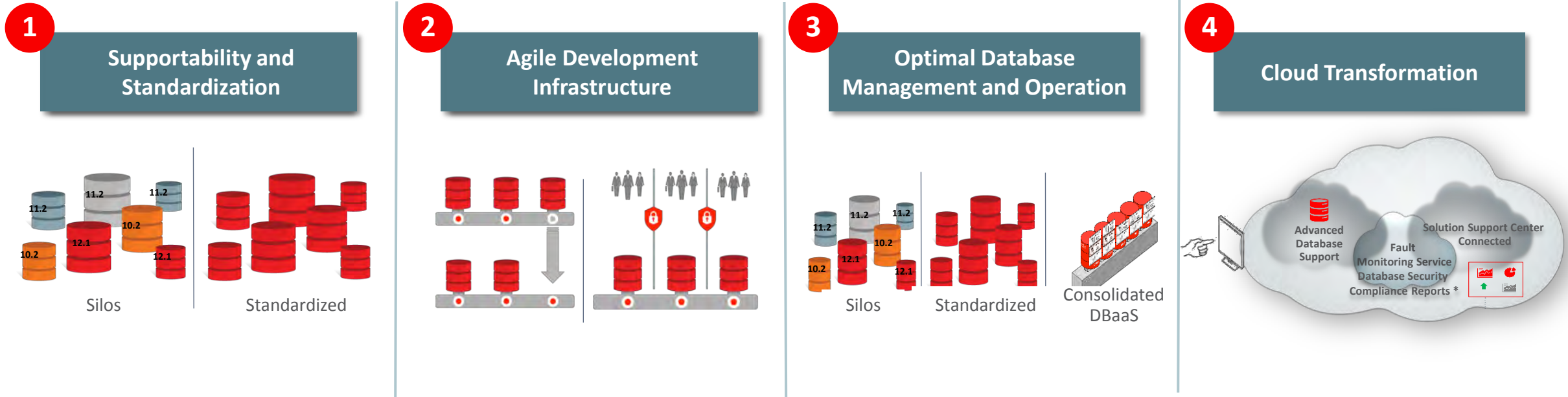
No Application Changes  
Not Limited by Memory

# Prevent Damage to Databases from Attacks



# Safe Oracle Database 12c Transformation

## Improving Efficiency and Agility in 4 Phases



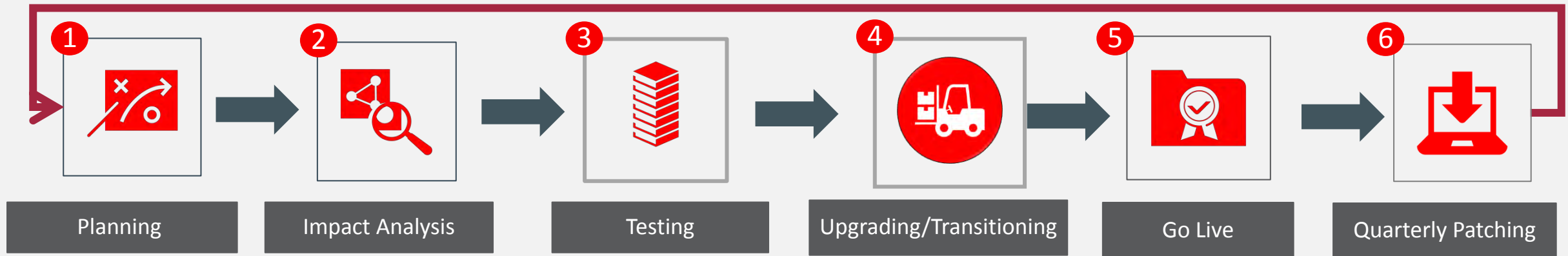
Secure Data and Database Environment – Efficient Database Operation – Excellent Mission Critical Support

# Program Agenda

- 1 Major Reasons to Upgrade to Oracle Database 12c
- 2 Oracle Upgrade Assurance for Oracle Database
- 3 Enabling 12c with ACS

# Upgrade/Transition Strategies

## Advanced Customer Support Recommended Methodology



- **Step-by-Step Strategy**

- In pieces over time
- Risk mitigating

- **Big-Bang Strategy**

- All in one downtime window
- Sometimes necessary due to dependencies

- **Least Critical First**

- Learn more with every step

- **Most Critical First**

- Learn about almost all from the beginning

# Oracle Upgrade Assurance Service

## Expert Upgrade Preparation for Your Most Critical Databases



### Service Features

- Upgrade preparation of Oracle Database 10gR2 or higher to Oracle Database 12c
- Planning
- Impact analysis
- Testing
  - Real-time status in portal
  - Automated testing using real production workload
  - SQL Performance Unit Test
- Detailed Upgrade Analysis Report
- Service governance
- Fixed scope, fixed price packages

### Benefits and Value

- Detailed understanding of impact on your most critical databases
- Detection and mitigation of hidden risk
- Reports on current vs. future performance
- Production Upgrade Readiness

# Oracle Upgrade Assurance for Oracle Database

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Safe, automated transition to 12c; Easy to consume / easy to contract

## Upgrade Planning



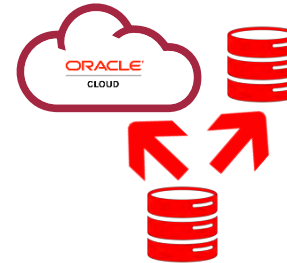
- Automated Database Configuration Review
- Automated Application Discovery
- Recommend Upgrade Approach

## Impact Analysis



- Automated Patch Review
- Baseline Performance Data Collection
- Application Certification
- Test Plan Review

## 12c Upgrade Test



- 12c Test Upgrade – on premise or in Oracle Cloud
- Automated Testing using real production workload
- SQL Performance Unit Test
- Up to 2 iterations included with base service

## Report and Handover



- Overall Scorecard
- Pass/fail/warnings for each area
- Drill down detail on Database Performance
- Drill down on SQL Performance

Ready for Production Upgrade

Technical Account Management - Service Governance

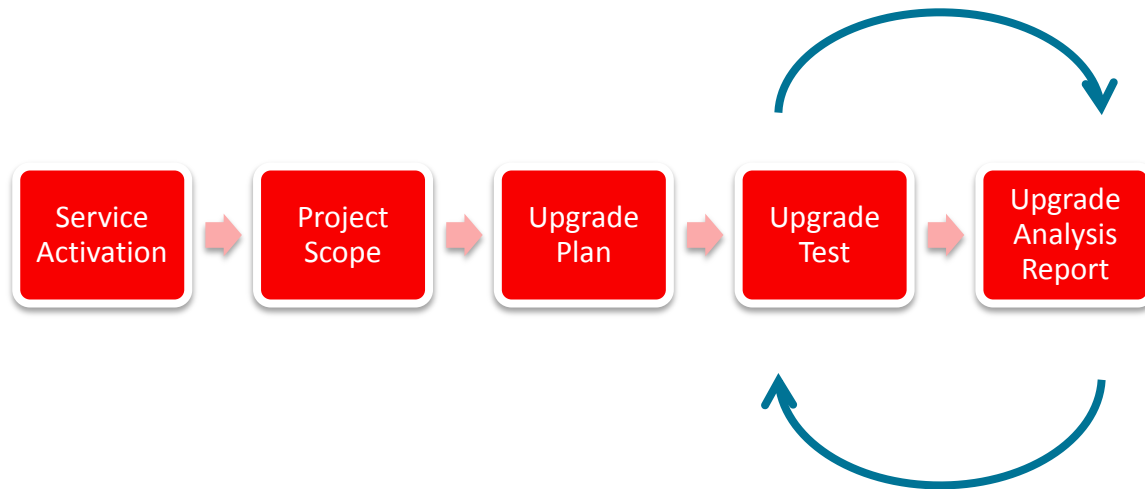


# Service Process



# Oracle Upgrade Assurance for Oracle Database

## Testing Iterations



- Database Complexity drives testing iterations
  - Quantitative and qualitative measures

Complexity	Low	Medium	High
Test Iterations	2	4	6

# Project Scope and Upgrade Plan

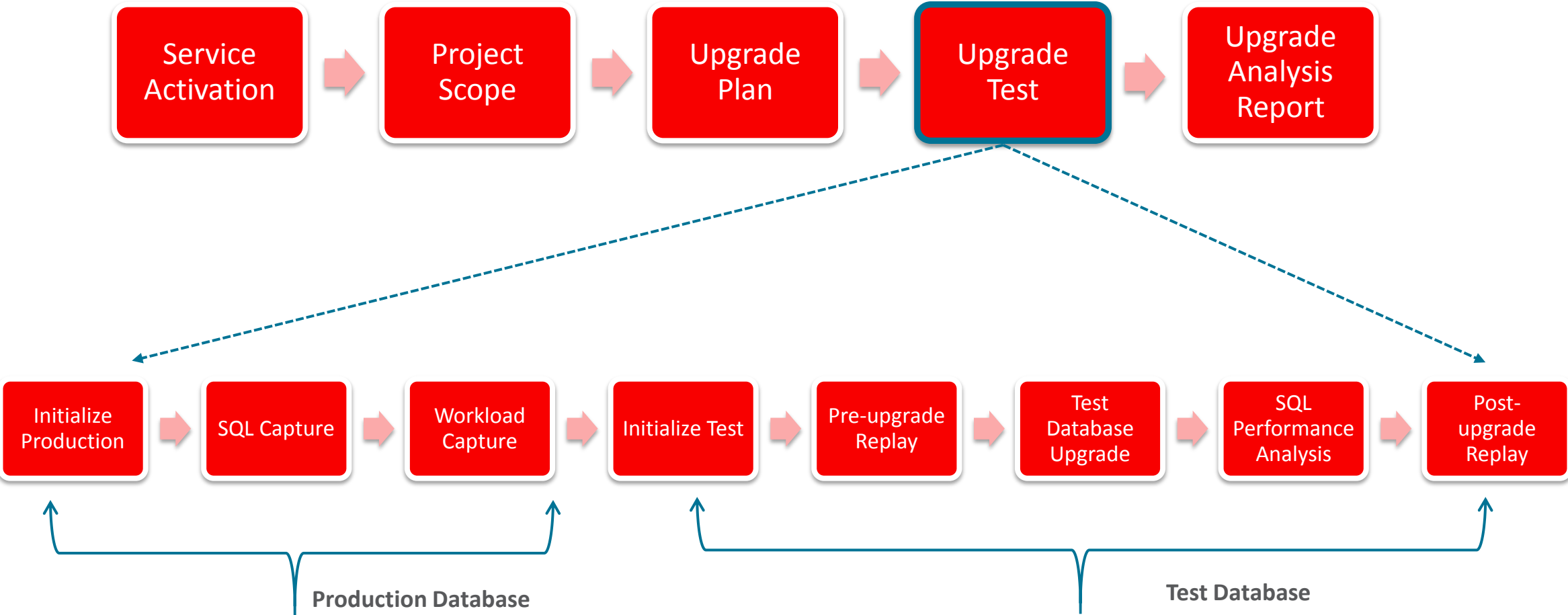
- Project Scope

- Wizard-driven tool to collect required information
  - Selection of hosts for test database and replay client
  - Target database version
  - Capture start time and duration
  - Host and database credentials
  - Backup/restore methodology
- Information is used to generate a test plan

- Upgrade Plan

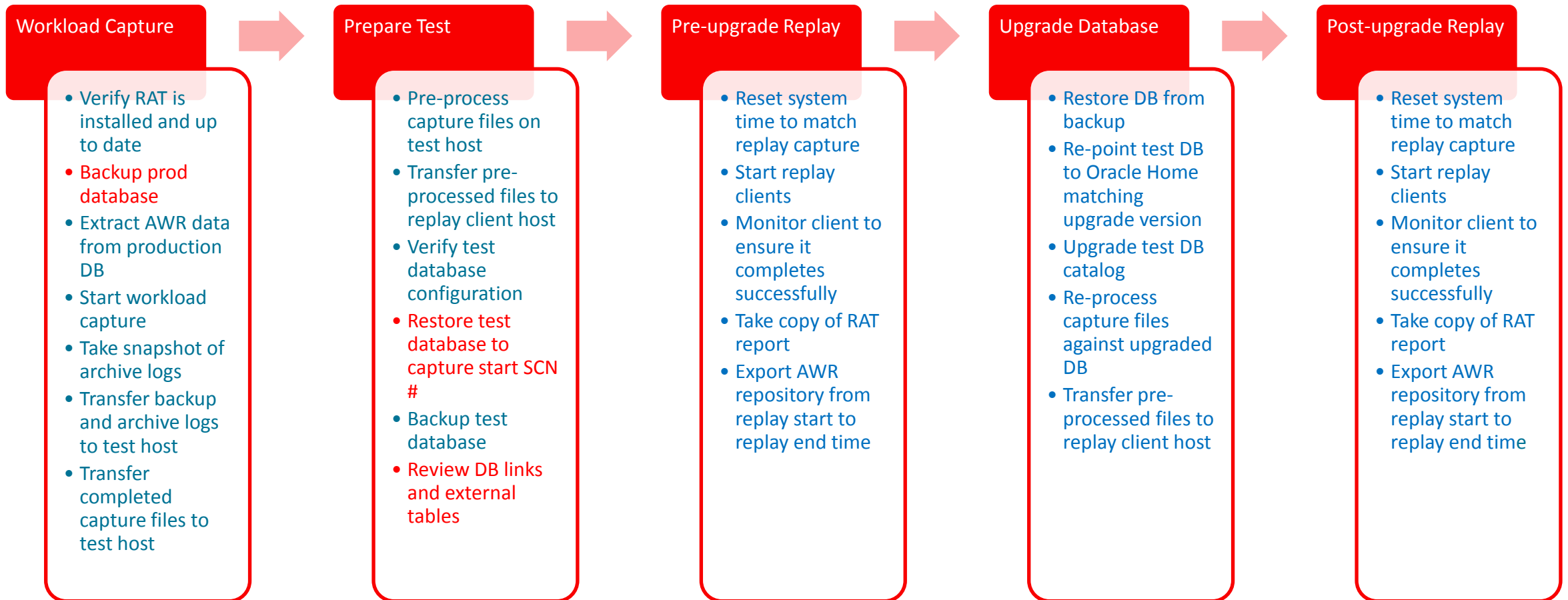
- Customized step-by-step plan for how the testing will be executed
- Includes
  - Executive summary
  - Pre-flight check (questionnaire)
  - Database details
  - Patching information
  - Application summary

# Upgrade Test



# Upgrade Test

## Detail View




Automated Step




Manual Step


# Test Execution Phase


 **Production**


---

 **Initialise Production**


---


 **SQL Capture**


 **Capture Start**  
On 20/09/2017 at 08:55:00

 **Capture End**  
20/09/2017 at 09:35:29

---

 **Workload Capture**

 **Scheduled**  
On 20/09/2017 at 10:40:29

 **Duration**  
40 Minutes

# Test Execution

SQL

STARTED  
20/09/2017

1) Collect

Create

2) Start

Start in

## View Collect SQL Tuning Set (STS) on production Log

View subtask log details below

onStart():  
INVOKE\_SQL\_SCRIPT: SQLScript job with ID GWJob\_SQLScript\_20170920\_144343 was started for Project/Job/Step with IDs 1000010/STS/10.  
CmdLine: /var/tmp/dua/sql/dua\_cr\_sts.sql 001000006 DUA\_STS\_001000006 .

onPoll():  
INVOKE\_SQL\_SCRIPT: Job with ID GWJob\_SQLScript\_20170920\_144343 complete.  
<dua\_job\_step\_output>  
SQL\*Plus: Release 12.1.0.1.0 Production on Wed Sep 20 08:45:59 2017

Copyright (c) 1982, 2013, Oracle. All rights reserved.

SQL> SQL> Connected.  
SQL> SQL> SQL> SQL> SQL> SQL> SQL> status:COMPLETED

PL/SQL procedure successfully completed.

SQL> Disconnected from Oracle Database 12c Enterprise Edition Release 12.1.0.1.0 - 64bit Production  
With the Partitioning, OLAP, Advanced Analytics and Real Application Testing options  
</dua\_job\_step\_output>

Cancel

# Test Execution Phase

## Test Environment

 Start Execution

  Initialise Test Environments

  Initialise Test DB / Baseline SQL exec plans

  Pre Upgrade Replay

  Test Database Upgrade

  SQL Performance Analysis

  Post Upgrade Replay



# Test Execution

SQL Performance Analysis

STARTED  
21/09/2017

DURATION  
N/A

1) Create SQL Tuning Task

Create SQL Tuning Task

2) Execute SQL Tuning Task

Execute SQL Tuning Task



## View SQL Performance Analysis Report

View report details below

### General Information

#### Task Information:

Task Name : DUA\_SPA\_001000006\_POST  
Task Owner : SYS  
Description :

#### Workload Information:

SQL Tuning Set Name : DUA\_STS\_001000006  
SQL Tuning Set Owner : SYS  
Total SQL Statement Count : 493

#### Execution Information:

Execution Name : EXEC\_14059  
Execution Type : TEST EXECUTE  
Description :  
Scope : COMPREHENSIVE  
Status : COMPLETED  
Number of Unsupported SQL : 33

Started : 09/20/2017 22:42:22  
Last Updated : 09/20/2017 22:42:39  
Global Time Limit : UNLIMITED  
Per-SQL Time Limit : UNUSED  
Number of Errors : 10

### Report Summary

#### Top 100 SQL Sorted by elapsed\_time desc

object_id	sql_id	Executions	Parse time(s)	Elapsed time(s)	CPU time(s)	Buffer gets
144	<a href="#">4awbu7qdtbhxb</a>	2	.006265	.071979	.048888	0
399	<a href="#">ctivga0vf5md1</a>	433	.03584	.063436	.063222	1833
45	<a href="#">196mqnmxqxp1</a>	9	.009207	.061216	.060666	0
186	<a href="#">5wvnrj5t3676</a>	9	.004007	.051327	.051333	0
37	<a href="#">13nxddv87kv5q</a>	2	.001154	.046767	.046	0
257	<a href="#">84zqd7a3ap5ud</a>	2	.000304	.046202	.046222	0
110	<a href="#">360qziu916m57</a>	2	.000841	.018105	.017888	0

# Upgrade Analysis Report

The screenshot shows the Oracle Database Upgrade Assurance Analysis Executive Summary report. The interface includes a navigation menu on the left with sections for 'Details', 'Comparison Reports - SQL Tuning Set', and 'Workload Capture / Replay Analysis'. The 'Capture Pre-Upgrade vs. Post-Upgrade' link is highlighted with a red box. The main content area displays the 'Executive Summary' with a large 'O' icon and text describing the service's functionality and findings.

**Database Upgrade Assurance Analysis**  
Executive Summary

Menu Filter

Executive Summary  
Recommendations

Details

SQL Tuning Task ▾  
Pre-Upgrade SQL Tuning Task Report  
Post-Upgrade SQL Tuning Task Report  
SQL Performance Impact Analyzer Report

Comparison Reports - SQL Tuning Set ▾  
Capture vs. Pre-Upgrade  
Capture vs. Post-Upgrade  
**Capture Pre-Upgrade vs. Post-Upgrade**

Workload Capture / Replay Analysis ▾  
Database Capture Report  
Pre-Upgrade Replay Report  
Post-Upgrade Replay Report

**Executive Summary**

Oracle Database Upgrade Assurance service offers you an opportunity to confirm the functionality of your database after an upgrade. This is enhanced with an ability to perform SQL capture and replay over a longer period.

Findings and recommendations from analysis of these reports is provided here highlighting any potential issues. The Review Plan during the service provides an assessment of the existing production system to show performance before and after the upgrade version. Applications installed can be tracked. The provided test systems are checked to ensure they are working. The replay demonstrates the improvement in performance on the upgraded system using a production workload. The replay reports illustrate any functional regressions or if application errors are introduced. The

- A detailed report comparing the results from pre and post upgrade replays
- Provides an overall go/no go recommendation for upgrade
- Provides information on:
  - Transaction errors
  - Data divergence
  - Overall execution time
  - Key business transaction performance

# Upgrade Analysis Report - Details



## Capture Pre-Upgrade vs. Post-Upgrade

### General Information

#### Task Information:

**Task Name** : TASK\_17004  
**Task Owner** : SYS  
**Description** :

#### Workload Information:

**SQL Tuning Set Name** : DUA\_WL\_001000002\_c\_3150840  
**SQL Tuning Set Owner** : SYS  
**Total SQL Statement Count** : 198

#### Execution Information:

**Execution Name** : EXEC\_17294  
**Execution Type** : COMPARE PERFORMANCE  
**Description** :  
**Scope** : COMPREHENSIVE  
**Status** : COMPLETED

**Started** : 07/05/2017 10:16:44  
**Last Updated** : 07/05/2017 10:16:45  
**Global Time Limit** : UNLIMITED  
**Per-SQL Time Limit** : UNUSED  
**Number of Errors** : 0



# Upgrade Analysis Report - Details

## Report Details

### SQL Details:

Object ID : 70

SQL ID : 3jbbqy22fhg60

SQL Text : SELECT inst.INST\_ID, inst.INSTANCE\_NAME, inst.HOST\_NAME, aud.value,adr.value FROM GV\$INSTANCE inst, (SELECT inst\_id,VALUE from GV\$PARAMETER WHERE NAME='audit\_file\_dest') aud , (SELECT INST\_ID,VALUE from GV\$DIAG\_INFO WHERE NAME='ADR Home') adr where inst.inst\_id = aud.inst\_id and inst.inst\_id = adr.inst\_id

### SQL Execution Statistics (average):

Stat Name	Impact on Workload	Value Before	Value After	Impact on SQL
elapsed_time	25.29%	.447832	.141539	68.39%
cpu_time	7.02%	.070778	.007	90.11%
buffer_gets	0%	0	11	-16076.47%
cost	0%	1	1	0%
reads	0%	0	0	0%
writes	0%	0	0	0%
rows		1	1	
executions		500	2	
plan_count		1	1	
schema_name		SYS	SYS	

**Note: time statistics are displayed in seconds**

### Findings (1):

1. | The performance of this SQL has improved.

# Upgrade Analysis Report - Details

## Execution Plans Before Change:

Plan Hash Value : 1597572810

Id	Operation	Name	Rows	Bytes	Cost	Time
0	SELECT STATEMENT				1	
1	MERGE JOIN CARTESIAN		1	2511	0	
2	MERGE JOIN CARTESIAN		1	2511	0	
3	HASH JOIN		1	2477	0	
4	HASH JOIN		1	443	0	
5	HASH JOIN		1	138	0	
6	FIXED TABLE FULL	X\$KSPPI	1	81	0	
7	FIXED TABLE FULL	X\$KSUXSINST	100	5700	0	
8	FIXED TABLE FULL	X\$DIAG_INFO	1	305	0	
9	FIXED TABLE FULL	X\$KSPPCV	100	203400	0	
10	BUFFER SORT		1	34	0	
11	FIXED TABLE FULL	X\$KVIT	1	34	0	
12	BUFFER SORT		100		0	
13	FIXED TABLE FULL	X\$QUIESCE	100		0	

## Execution Plans After Change:

Plan Hash Value : 1597572810

Id	Operation	Name	Rows	Bytes	Cost	Time
0	SELECT STATEMENT				1	
1	MERGE JOIN CARTESIAN		1	2511	0	
2	MERGE JOIN CARTESIAN		1	2511	0	
3	HASH JOIN		1	2477	0	
4	HASH JOIN		1	443	0	
5	HASH JOIN		1	138	0	
6	FIXED TABLE FULL	X\$KSPPI	1	81	0	
7	FIXED TABLE FULL	X\$KSUXSINST	100	5700	0	
8	FIXED TABLE FULL	X\$DIAG_INFO	1	305	0	
9	FIXED TABLE FULL	X\$KSPPCV	100	203400	0	
10	BUFFER SORT		1	34	0	
11	FIXED TABLE FULL	X\$KVIT	1	34	0	
12	BUFFER SORT		100		0	
13	FIXED TABLE FULL	X\$QUIESCE	100		0	

# Upgrade Analysis Report - Details

Menu Filter

Executive Summary  
Recommendations

---

Details

- SQL Tuning Task ▼
  - Pre-Upgrade SQL Tuning Task Report
  - Post-Upgrade SQL Tuning Task Report
  - SQL Performance Impact Analyzer Report
- Comparison Reports - SQL Tuning Set ▼
  - Capture vs. Pre-Upgrade
  - Capture vs. Post-Upgrade
  - Capture Pre-Upgrade vs. Post-Upgrade
- Workload Capture / Replay Analysis ▼
  - Database Capture Report
  - Pre-Upgrade Replay Report
  - Post-Upgrade Replay Report
- Workload Capture / Replay Reports ▼
  - Capture vs. Pre-Upgrade Replay (Period)
  - Capture vs. Post-Upgrade Replay

## (+) Top Objects

This section reports the top objects by wait time.

**End of Report.** SQL> spool off

---

## Recommendations (1)

	Category	Impact	Severity	
<span>▼</span> <b>Pre-Upgrade Actions</b> All Instances	Appendix-AWR_Details	Medium	Info	
<b>Description</b> It is suggested that the upgrade should not commence until a further run is done with the following issues resolved -				
<ul style="list-style-type: none"><li>• Patch for bug 16283282 should be applied to the 12.2 home as suggested in MOS note 123323.1.</li><li>• Reason for data divergence in non critical SQL with ID ab5644433 is determined.</li></ul>				

# Upgrade Analysis Report



## Database Upgrade Assurance Analysis

Recommendations

Export

Customize

Menu Filter

Executive Summary

Recommendations

Details

SQL Tuning Task

Pre-Upgrade SQL Tuning Task Report

Post-Upgrade SQL Tuning Task Report

SQL Performance Impact Analyzer Report

Comparison Reports - SQL Tuning Set

Capture vs. Pre-Upgrade



## Recommendations

Recommendations (1)

Filter

All Categories

Pre-Upgrade Actions  
All Instances

Category  
Appendix-AWR\_Details

Impact  
Medium

Severity  
Info



### Description

It is suggested that the upgrade should not commence until a further run is done with the following issues resolved -

- Patch for bug 16283282 should be applied to the 12.2 home as suggested in MOS note 123323.1.
- Reason for data divergence in non critical SQL with ID ab5644433 is determined.

# Program Agenda

- 1 Major Reasons to Upgrade to Oracle Database 12c
- 2 Oracle Upgrade Assurance for Oracle Database
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# ACS Services for Oracle Database 12c

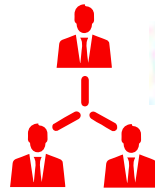
- **Enablers** of Oracle Database 12c DB Management Benefits
  - Oracle 12c Upgrade Assurance
  - Oracle Database Upgrade Support
  - OracleLifecycle Support Services
    - Oracle Consolidation Planning
    - Oracle Load Testing and Analysis
    - Oracle Transition Service
    - Oracle Performance Tuning and Benchmarking Service
  - Oracle Private Cloud Database Provisioning and Readiness Support
- **Expanding** the Database Management Benefits
  - Oracle Advanced Database Support
  - Oracle Advanced Monitoring and Resolution
  - Oracle Solution Support Center – Connected
  - Oracle Lifecycle Support Services
  - Oracle Market-Driven Support for Oracle Database 10g
  - Oracle Transition Service to Oracle Cloud
- **Securing** the Database Landscape
  - Oracle Security Review and Recommendations
  - Oracle Software Installation for Oracle Database Security Products
    - Advanced security option (TDE and data redaction)
    - Database vault
    - Label security
    - Data masking and sub setting
    - Key vault
  - Oracle Software Installation for Oracle Security Products
    - Audit Vault / Database Firewall

# Why Choose ACS for Oracle Database 12c?



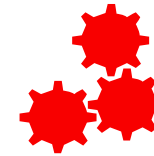
## ORACLE® Experience

- Transitioned 1000s of databases and platforms
- 10+ years monitoring mission-critical systems
- Strong vertical expertise
- Deep application-to-disk skills



## ORACLE® People

- 2500+ engineers accessible from anywhere
- Direct access to experts in Oracle Development
- Technical Account Managers covering the entire IT lifecycle



## ORACLE® Tools

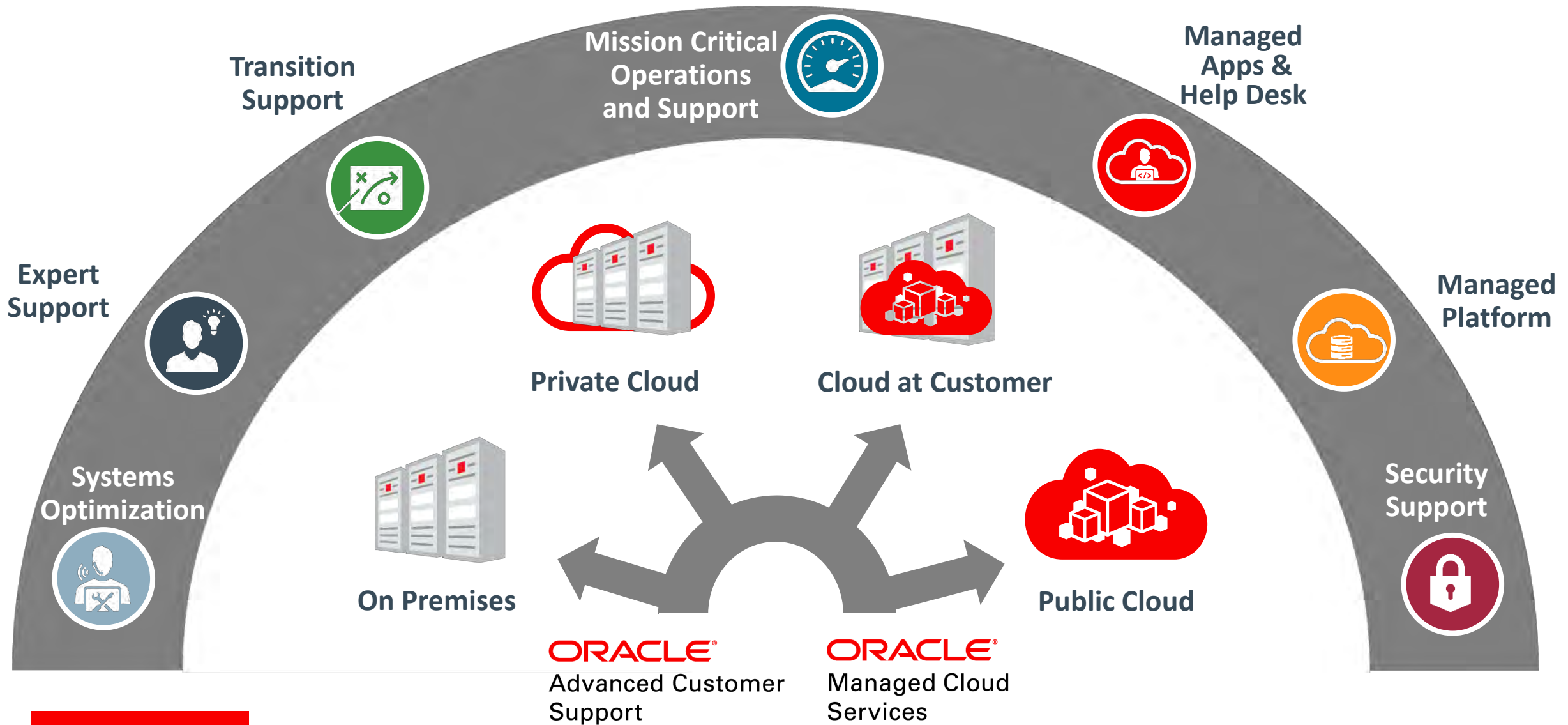
- Exclusive mechanism for Service Request prioritization
- Established platform for remote service delivery
- Knowledge base with thousands of best practices accessible to ACS engineers

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# It's Time to Upgrade!

# Lifecycle Services For All Deployment Models



Nenad Rozic  
Senior Director, Product Management and  
Strategy

Marc Mascaro  
Senior Principal Product Manager

Moderator: Pat Cisco, Senior Director, Sales





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[oracle.com/acs](https://oracle.com/acs)  
[oracle.com/mcs](https://oracle.com/mcs)

# Integrated Cloud

## Applications & Platform Services

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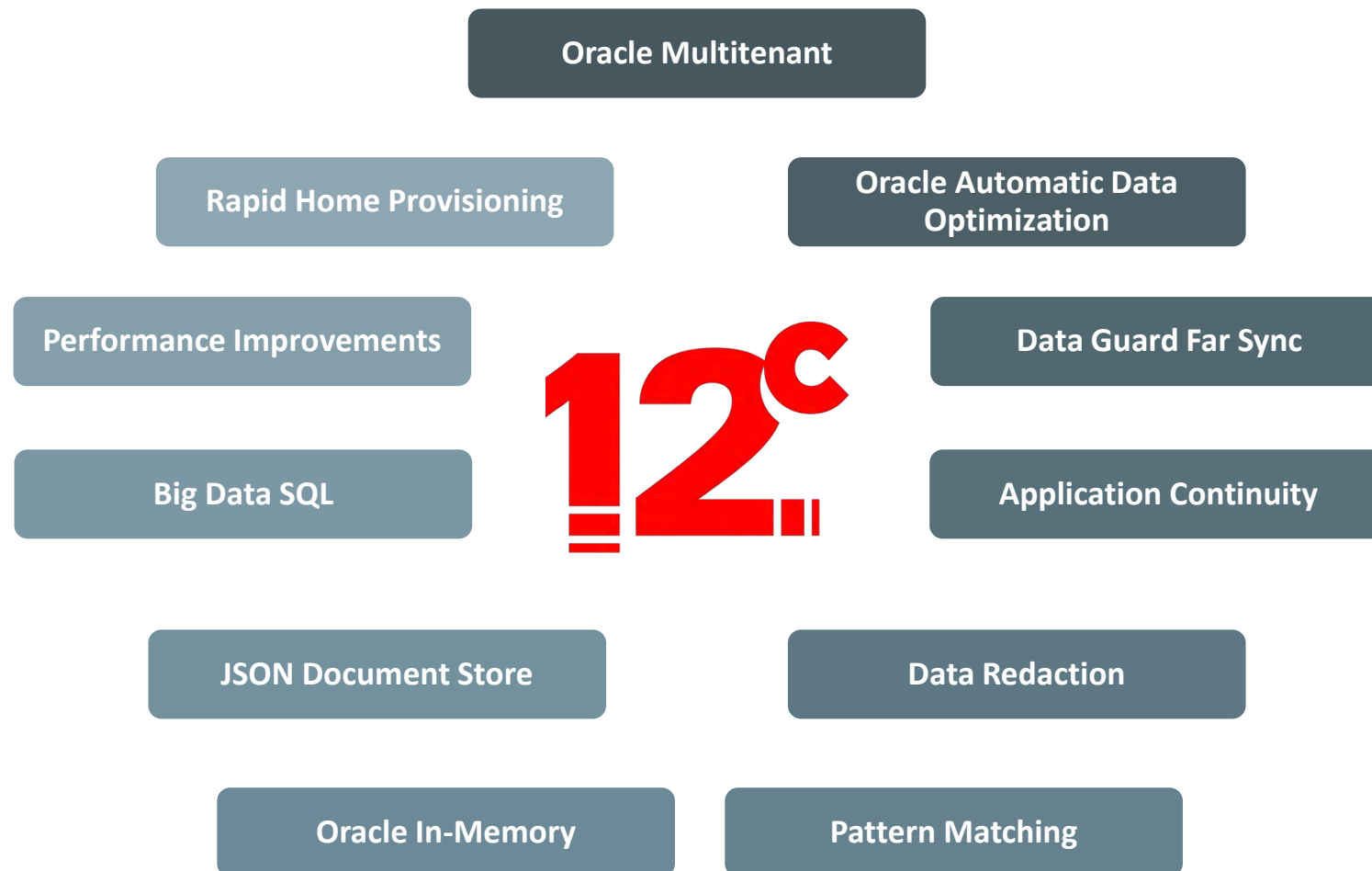


# Appendix



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# Oracle Database 12c Features



# Oracle Database Security Controls

## Preventive

Encryption and Redaction

Masking and Subsetting

Privileged User Controls

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## Detective

Activity Monitoring

Database Firewall

Auditing and Reporting

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## Administrative

Key Management

Privilege and  
Data Discovery

Configuration  
Management

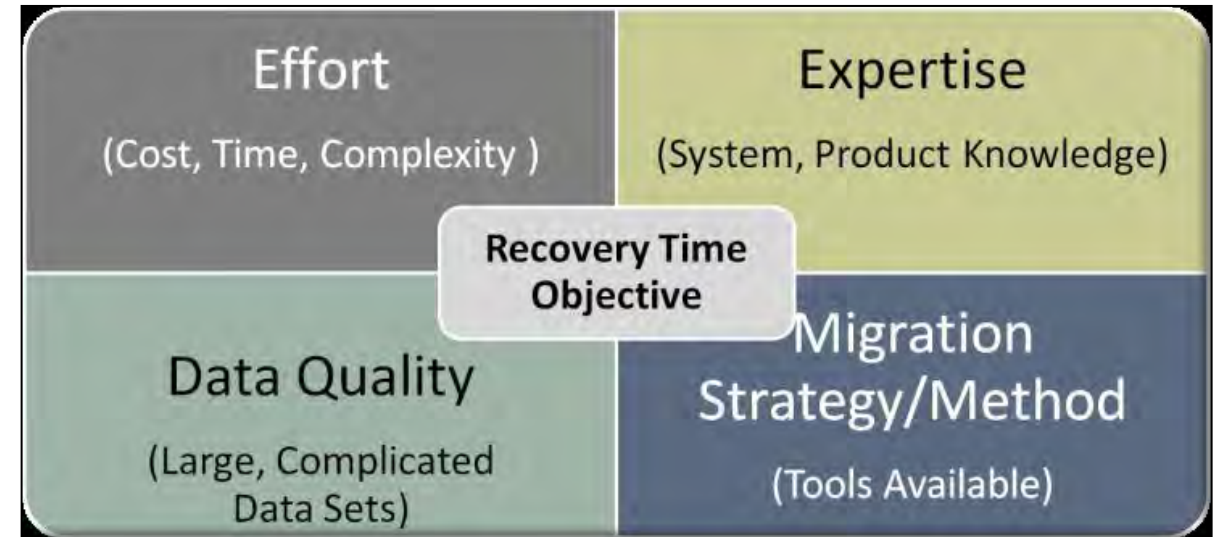
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# Evaluating Transition Options

## Key Criteria and Constraints

- Data volume (and index volume)
- Acceptable length of system outage
- Network bandwidth (one or two GbE or 10GbE connections, fully dedicated)
- Storage for data staging as necessary
- Contingency fallback plan in case of transition failure or post-transition problems
- DBA's skilled and experienced to sufficient level for transition technique employed
- Source system O/S and version
- Source system database version
- Data type, character sets, and other miscellaneous considerations



# Overview Transition Methods

<b>Transition Method /Criteria</b>	<b>Complexity</b> <i># steps, expertise, manual involvement</i>	<b>Skill Level</b> <i>Experience, comfort level</i>	<b>Outage Window</b> <i>RTO acceptable to business</i>	<b>Selectivity</b> <i>Data Set Selection</i>	<b>Transition Flexibility</b> <i>Consolidation, Object Configuration</i>	<b>Extra Storage</b> <i>Requiring additional Storage</i>	<b>Pre-Transition Work</b> <i>Preparing &amp; executing the Transition</i>	<b>Post-Transition Work</b> <i>Completion, Configuration</i>
<b>Transportable Tablespaces</b>	Medium	Medium	Medium	Low	Low	Yes	Medium	Low
<b>Transportable Databases</b>	Medium	Medium	Medium	Low	Low	Yes	Medium	Low
<b>Data Pump (Exp(imp))</b>	Low	Low	Long	Medium	Medium	Yes	Medium	Medium
<b>Recovery Manager</b>	Medium	Medium	Short	Low	Medium	No	Low	Low
<b>Procedural</b>	High	Medium	Long	High	High	No	High	High
<b>ACS Transition Manager</b>	<b>Low</b>	Low	<b>Short</b>	High	High	No	<b>Low</b>	<b>Low</b>

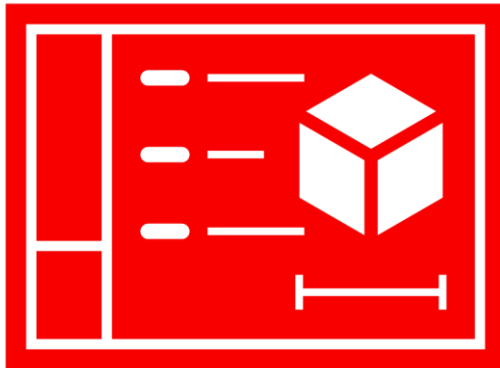
# Oracle Upgrade Assurance for Oracle Database

## Database Complexity Factors

Identification Factors	Low	Medium	High	Importance /Weight	Source
Database Size	< 10 TB	10-to-25 TB	25 TB+	1	v\$ dictionary views
SQL*Net (in bytes) from client statistics	< 2 GB per hour	2-4 GB per hour	> 4 GB per hour	1	AWR
Redo generated	< 2 GB per hour	2-4 GB per hour	> 4 GB per hour	3	AWR
I/O profile	< 8 GB per hour	8-15 GB per hour	> 15 GB per hour	3	AWR
SQL plan length	< 50 lines	50-to-100 lines	> 100 lines	2	v\$ dictionary views
Distinct SQLs	< 10k	10to-25k	> 25k	3	v\$ dictionary views
SQL versions/CCs count	< 3	3-to-5	> 5	2	v\$ dictionary views
Distinct PHV per SQL	1	2-to-3	> 3	1	v\$ dictionary views
Prevalent underscore parameters/fix controls	< 2	2-to-5	> 5	1	v\$ dictionary views
Optimizer and/or diagnostic fix / parameters	< 2	2-to-5	> 5	1	v\$ dictionary views
Number of one-off patches	< 5	5-to-10	> 10	1	customer input
Duration of workload	< 2 hours	2-to-4 hours	4-to-8 hours	3	customer input
RAC and ASM based	No	Yes	Yes	3	v\$ dictionary views
DG / OGG / Replication configuration	No	Yes	Yes	2	v\$ dictionary views
Advanced Analytics Function usage	No	No	Yes	2	customer input
Filtered workload	Yes	No	No	1	customer input
Workload folding / time shifting	No	Yes	Yes	3	customer input
Tool generated SQL (e.g., EBS, Hibernate)	No	Yes	Yes	2	customer input
Test upgrade identical to production	Yes	No	No	3	customer input
Performance stable / SLA achieved	Yes	Yes	No	3	customer input

# Modernization and Upgrade Roadmap

## Tailored Plan to Safely and Efficiently Move to an Optimized Database Solution



### Service Features

- End-to-end service management
- Evaluation of existing infrastructure, desired architecture, boundaries
- Analysis of potential solution scenarios, determination of approach to achieve project goals
- Customer specific modernization roadmap with suggested upgrades, changes, and services, taking into account existing infrastructure,
- Oracle Advanced Customer Support experts deliver onsite or remotely in close cooperation with you

### Benefits and Value

- Identify the impact of your upgrade project in complex database environments
- Choose the right path to reach your project goals quickly and efficiently
- Ensure business continuity and minimize risk during the process
- Accelerate adoption of Oracle Database 12c, and of Oracle Cloud

# Oracle Consolidation Planning Service

## Analysis of business goals and constraints, and transition planning



### Service Features

- Analysis of business and technical compatibility of critical database systems
- Helps to model the most optimal database deployment scenarios including workloads (+20 days) and configuration
- Actionable recommendations and easy –to-read reports

### Benefits and Value

- Ability to identify technical or operational constraints that involve significant effort and risk
- Helps customers optimally sequence their transition projects
- Builds multiple scenarios/models with known risks, benefits and actionable recommendations



# Oracle Upgrade Support for Oracle Database

## Comprehensive Upgrade Packages for a Fast and Safe Upgrade to Oracle Database 12c



### Service Features

- End-to-end service management
- Upgrade planning
- Impact analysis
- Test upgrade deployment
- Production upgrade deployment
- Hand-over of production ready Oracle Database 12c

### Benefits and Value

- Safe and comprehensive upgrade to Oracle Database 12c
- Fast access to new features and functions
- Gains in operational efficiency

# Oracle Transition Service

## Oracle Databases, Java, Oracle Applications<sup>1</sup>, VM Workloads



### Service Features

- Transition from Oracle Database 9i and 10g to 11g or 12c, and from 11g to 12c
- Transition of any Java Enterprise Edition (JEE) compliant archive deployments
- Transition of selected Oracle Applications<sup>1</sup>
- Transition of VMware or Kernel-based Virtual Machine (KVM) workloads

### Benefits and Value

- Expert transition planning
- Seamless transition to on premises and to Oracle Cloud
- Optimal transition with as little downtime as possible
- Safe transition through resilience features and testing

<sup>1</sup>As of June 2017, includes Oracle E-Business Suite and Oracle PeopleSoft