Oracle Database Performance and Tuning Essentials 2015
Exam Study Guide

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Objective & Audience

Objective
Help you prepare to take the Oracle Database Performance and Tuning Essentials (1Z1-417) exam by providing topic areas and resources that you can use in your preparation.

Targeted Audience

- Database Administrator
- Technical Consultant
- IT Specialist
- Those with strong knowledge, foundation and expertise in implementing Oracle Databases
- Have participated in Oracle Database12c implementations and/or Oracle Database 11g implementations

Up-to-date training and field experience recommended
Exam Topic Matter

Topic Coverage Overview

The Oracle Database Performance and Tuning Essentials 2015 exam covers topic areas such as:

Oracle Database Performance and Tuning solution
- Oracle Performance Tuning Method
- Strategy, roadmap
- Overview of associated product technology
- Confirming appropriate solution to implement
- Product area features and functions
- Architecture
- Solution implementation, installation, configuration
- Database performance management, best practices
- Database performance tuning, best practices
- Database performance testing, best practices
- Use cases, scenarios

Applicable product technology subject areas include:

Oracle Database Enterprise Edition
- Single tenant or multitenant
- Core performance diagnostic infrastructure, AWR, ADDM, ASH
- Database Express Performance Hub
- Oracle Diagnostic Pack for Oracle Databases
- Oracle Tuning Pack for Oracle Databases

Oracle Real Application Testing
Oracle Real User Experience Insight
Oracle Application Testing
Integration with Oracle Enterprise Manager 12c
Exam Objectives

Exam objectives are defined by learner or practitioner level of knowledge:

- **Learner-level**: questions require the candidate to recall information to determine the correct answer.

  Example: Define the term network.

- **Practitioner-level**: questions require the candidate to derive the correct answer from the application of their knowledge, which can only be attained by extensive experience with the product.

  Example: The client requests xyz functionality, would you recommend a, b or c?
Training Options

For exam topic matter, alternative training options have been identified that are available at Oracle. The training options are divided into three categories:

- **Boot Camps**
  Boot Camps are designed as a "jump start" training to enhance your skills by providing role-based training on industry-leading Oracle solutions and services. The boot camps are built as concise, intensive, and real-time training to give partners a competitive advantage as they prepare to build powerful solutions for their own customer base. Partners can choose to attend these boot camps in class or in a live virtual class format to maximize the effectiveness and the time allocated to training.

- **Instructor-Led Training (delivered by Oracle University)**
  Partners can take any publicly-scheduled Oracle University courses at steep discounts. Benefit from hands on experience to gain real working skill and work toward Oracle certifications.

- **Online Training**
  Oracle Partners are entitled free access to the Oracle Knowledge Center (OUKC), a vast library of recorded product courses. New courses are regularly added to the library, providing partners with the latest information and training to master new products or to increase proficiency on the new releases.
Examples of Training Resources

- Oracle Learning Library: Online Oracle By Example Tutorials
  - Manage Database Performance with the Performance Hub
  - Monitoring Real-Time Database Operations
  - Monitoring Performance Using EM Express
  - Oracle Database 12c Monitoring and Tuning the Database
  - Use Active Session History (ASH) Analytics
  - Diagnosing and Resolving Performance Problems Using ADDM
  - Compare Period ADDM
  - Use Real-Time ADDM
  - Improving RAC Database Tuning with ADDM for RAC
  - Global ADDM Analysis in a RAC
  - Creating AWR Baselines
  - Use the AWR System Moving Window
  - Oracle Real User Experience Insight Best Practices
  - Using Database Replay to Perform Performance Testing
  - Using SQL Performance Analyzer to Test Upgrade Performance
  - Combining SQL Access Advisor and SQL Performance Analyzer
  - Using SQL Access Advisor to Recommend Materialized Views and Indexes
  - Using Automatic SQL Tuning
  - Using SQL Plan Management for Consistent Performance
  - Controlling Execution Plan Evolution Using SQL Plan Management
  - Assessing Impact of Change on Workload Using SQL Performance Analyzer
  - Result Cache
  - Using Deferred Optimizer Statistics
  - Oracle Application Testing Suite: New Features and Enhancements Training Series
Examples of Training Resources

• Oracle Documentation, Whitepapers
  – Oracle Database 2 Day DBA 12c E17643-11
  – Oracle Database 2 Day + Performance Tuning Guide 12c E17635-10
  – Oracle Database Performance Tuning Guide 12c E15857-15
  – Oracle Database SQL Tuning Guide 12c E15858-15
  – SQL Plan Management with Oracle Database 12c
  – Oracle Database Testing Guide 12c E20852-16
  – Best Practices for Gathering Optimizer Statistics with Oracle Database 12c
  – Optimizer with Oracle Database 12c

• Oracle Database 12c Essentials Exam (1Z1-497)
• Oracle Enterprise Manager 12c Essentials (1Z0-457)
• OPN Enablement 2.0 Bootcamps
• Oracle Database: SQL and PL/SQL Fundamentals (OU fee based courses)
• Oracle Database 12c: Administration Workshop (OU fee based courses)
• Oracle Application Testing Suite: Essentials (OU fee based courses)
Sample Questions

For the Oracle Database Performance and Tuning solution exam, you will be asked a variety of questions consisting of single or multiple choice questions. Below are examples.

Sample Questions

• You are validating an implementation of Automatic Database Diagnostics Monitor (ADDM). Identify two configurable parameters for ADDM.
  A. AWR_SNAPSHOT_TIME_DELAY
  B. ADDM_SNAPSHOT_TIME_DELAY
  C. CONTROL_MANAGEMENT_PACK_ACCESS
  D. AWR_REPORT_TIMESET
  E. STATISTICS_LEVEL

• You find a manually added index is not used and Optimizer has determined execution of a full table scan was faster. What is your next step?
  A. Rebuild the index and include a WHERE predicate for all columns
  B. Add a Hint
  C. Increase the value of the OPTIMIZER_INDEX_COST_ADJ parameter
  D. Drop the unneeded index

• Which statement about Database Replay is incorrect?
  A. Capture an existing workload to validate capacity planning or what-if scenarios
  B. Test a change without duplicating an entire infrastructure
  C. Complete application knowledge and coding of test scripts is a prerequisite to use
  D. Duplicate a target schema then run multiple replays of the same workload against it

• Oracle Database 12c has just been deployed and a DBA said they were unable to access Database Control. Which one would be an appropriate next action?
  A. Have them redo the entire Oracle Database 12c installation
  B. Run the standalone Database Control Installer to reinstall it separately
  C. Open https://<hostname>:/<port>/em, see if a login page is displayed, then confirm that login can be accomplished successfully with valid database credentials
  D. It’s a known bug; ORACLE_HOME was corrupted and needs be reset to default
Topic Area 1: Product / Solution Overview

Objectives

- Oracle's solution for database performance and tuning
- Strategy, product history and the future public road map
- Differentiate & exploit Oracle Database Performance and Tuning
- What it takes to get started with Oracle Database Performance and Tuning

Level

Learner

Training Resources

- Oracle Database Performance Method
- Oracle Database Knowledge Zone
- Oracle Database 12c Presales Specialist
- Oracle Database Performance and Tuning 2015 Presales Specialist
- Oracle Database 2 Day DBA 12c E17643-11
- Oracle Database 12c: Administration Workshop (OU fee based course)
# Topic Area 2: Positioning of Solution

## Objectives

<table>
<thead>
<tr>
<th>Objective</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Position and match Oracle technology to database performance needs</td>
<td>Practitioner</td>
</tr>
<tr>
<td>Describe Oracle product technology addressing customer requirements</td>
<td>Learner</td>
</tr>
<tr>
<td>Describe key positioning for Oracle Database Performance and Tuning</td>
<td>Learner</td>
</tr>
<tr>
<td>Describe Oracle Database Performance and Tuning solution benefits</td>
<td>Learner</td>
</tr>
</tbody>
</table>

## Training Resources

- [Oracle Database Knowledge Zone](https://www.oracle.com)
- [Oracle Database 12c Sales Specialist](https://www.oracle.com)
- [Oracle Database Performance and Tuning 2015 Sales Specialist](https://www.oracle.com)
- [Oracle Database Product Family (Oracle.com)](https://www.oracle.com)
### Topic Area 3:
Product Area Features and Functions for Technical Individuals

#### Objectives

<table>
<thead>
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<th>Objective</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oracle Database Performance and Tuning product technologies</td>
<td>Learner</td>
</tr>
<tr>
<td>Oracle Database Performance and Tuning solution capabilities</td>
<td>Learner</td>
</tr>
<tr>
<td>Key hardware &amp; software components for Oracle Database Performance</td>
<td>Learner</td>
</tr>
<tr>
<td>Describe key functionality, terminology unique to Oracle’s solution</td>
<td>Learner</td>
</tr>
<tr>
<td>Performance Tuning Method, DB Time Model, Oracle Database Performance and Diagnostic technology, Enterprise Manager Database Express</td>
<td>Learner</td>
</tr>
<tr>
<td>Identify &amp; map capabilities to customer business needs and requirements</td>
<td>Practitioner</td>
</tr>
</tbody>
</table>

#### Training Resources

- Manage Database Performance with the Performance Hub
- Monitoring Real-Time Database Operations
- Monitoring Performance Using EM Express
- Oracle Database 12c Monitoring and Tuning the Database
- Use Active Session History (ASH) Analytics
- Diagnosing and Resolving Performance Problems Using ADDM
- Compare Period ADDM
- Use Real-Time ADDM
- Improving RAC Database Tuning with ADDM for RAC
- Global ADDM Analysis in a RAC
- Creating AWR Baselines
- Use the AWR System Moving Window
- Oracle Real User Experience Insight Best Practices
- Using Database Replay to Perform Performance Testing
- Using SQL Performance Analyzer to Test Upgrade Performance
- Combining SQL Access Advisor and SQL Performance Analyzer
- Using Advisor to Recommend Materialized Views and Indexes
- Using Automatic SQL Tuning
- Using SQL Plan Management for Consistent Performance
- Controlling Execution Plan Evolution Using SQL Plan Management
- Assessing Impact of Change on Workload Using SQL Performance Analyzer
- Result Cache
- Using Deferred Optimizer Statistics
- Managing Resources with Oracle Database Resource Manager
Topic Area 4: Architecture

Objectives

- Identify types of hardware on which product technology/solution runs  
  Level: Practitioner
- Outline system requirements to architect/build an Oracle Database Performance and Tuning solution: single tenant, multitenant, or non-CDB environment  
  Level: Learner
- Describe product architecture for an Oracle Database Performance and Tuning solution: AWR, ADDM, ASH, Database Express, Real Application Testing, Real User Experience Insight, Oracle Application Testing, Enterprise Manager  
  Level: Learner
- Relate integration options/abilities for Oracle Database Performance and Tuning  
  Level: Learner

Training Resources

- Using the Oracle Performance Method,
- Oracle Database Performance Tuning Guide 12c E15857-15
- Enterprise Manager Architecture
- Oracle Database High Availability Architectures
- Administrator Database Tuning Reference: Linux, UNIX
- Administrator Database Tuning Reference: Windows
- Database Manageability and Real Application Testing
- Oracle Database Testing Guide
- Workload Management with Dynamic Database Services
- Oracle Maximum Availability Architecture
- Oracle Technology Network - Performance Tuning
- Oracle Database 12c :Courses and Workshops (OU fee based courses)
**Topic Area 5: Solution Implementation - Installation, Configuration**

**Objectives**

- Outline requirements, plan environment readiness for implementation of an Oracle Database Performance and Tuning solution  
  Practitioner
- Implement Oracle Performance and Tuning product technology including installation and configuration  
  Practitioner
- Test and validate that installation and configuration was successful  
  Practitioner

**Training Resources**

- [Oracle Database Performance Tuning Guide 12c E15857-15](#)
- Configuring a Database for Performance
- Gathering Database Statistics (AWR)
- Configuring Automatic Database Diagnostic Monitor (ADDM)
- Active Session History (ASH) Overview
- Automatic Database Performance Monitoring
- Oracle Database Testing Guide
- [Oracle Database 12c: Courses and Workshops (OU fee based courses)](#)
Topic Area 6:
Performance Diagnostics and Monitoring, Best Practices

Objectives

• Define/apply performance troubleshooting using Oracle Database capabilities including AWR, ADDM, ASH, Database Express Performance Hub

• Define/apply performance troubleshooting using additional Oracle Database Performance and Tuning solution capabilities. Real User Experience Monitoring; Application, database, middleware, network, system, storage

• Using an Oracle Database Performance and Tuning solution, view/modify parameters to configure Oracle Database Performance

• Using an Oracle Database Performance and Tuning solution, define setup, run, automate database performance reporting

Level
Practitioner

Training Resources

• Oracle Database Performance Tuning Guide 12c E15857-15
• Automatic Database Performance Monitoring
• Manage Database Performance with the Performance Hub
• Monitoring Real-Time Database Operations
• Monitoring Performance Using EM Express
• Oracle Database 12c Monitoring and Tuning the Database
• Use Active Session History (ASH) Analytics
• Diagnosing and Resolving Performance Problems Using ADDM
• Compare Period ADDM
• Use Real-Time ADDM
• Improving RAC Database Tuning with ADDM for RAC
• Global ADDM Analysis in a RAC
• Creating AWR Baselines
• Use the AWR System Moving Window
• Managing Resources with Oracle Database Resource Manager
• Diagnosing Database Performance Problems with ADDM
• Oracle Real User Experience Insight Best Practices
• Oracle Database 2 Day DBA 12c E17643-11
• Oracle Database 2 Day + Performance Tuning Guide 12c E17635-10
• Oracle Database 12c: Courses and Workshops (OU fee based courses)
Topic Area 7: Performance Tuning, Best Practices

Objectives

- Using an Oracle Database Performance and Tuning solution, analyze and tune databases utilizing SQL Tuning Advisor, SQL Access Advisor  Practitioner
- Using an Oracle Database Performance and Tuning solution, view and modify SQL to tune Oracle Database performance  Practitioner
- Using an Oracle Database Performance and Tuning solution, define, setup, and automate SQL performance tuning  Practitioner

Training Resources

- Oracle Database 12c Monitoring and Tuning the Database
- Combining SQL Access Advisor and SQL Performance Analyzer
- Using SQL Access Advisor to Recommend Materialized Views and Indexes
- Using Automatic SQL Tuning
- Using SQL Plan Management for Consistent Performance
- Controlling Execution Plan Evolution Using SQL Plan Management
- Assessing Impact of Change on Workload Using SQL Performance Analyzer
- Using Deferred Optimizer Statistics  Optimizer with Oracle Database 12c
- SQL Plan Management with Oracle Database 12c
- Best Practices for Gathering Optimizer Statistics with Oracle Database 12c
- Result Cache
- Oracle Database SQL Tuning Guide 12c_E15858-15
- Oracle Database 2 Day + Performance Tuning Guide 12c_E17635-10
- Oracle Database: SQL and PL/SQL Fundamentals (OU fee based courses)
- Oracle Database 12c: Courses and Workshops (OU fee based courses)
### Topic Area 8: Performance Testing, Best Practices

#### Objectives

| • Test database performance using an Oracle Database Performance and Tuning solution including SQL Performance Analyzer, Database Replay, Synthetic User Monitoring, Functional Testing, Load Testing and Test Management | Practitioner |
| • View, test and validate Oracle Database performance using an Oracle Database Performance and Tuning solution | Practitioner |
| • Define, setup, automate Oracle Database performance testing using an Oracle Database Performance and Tuning solution | Practitioner |

#### Training Resources

- Using SQL Performance Analyzer to Test Upgrade Performance
- Combining SQL Access Advisor and SQL Performance Analyzer
- Assessing Impact of Change on Workload Using SQL Performance Analyzer
- Using Database Replay to Perform Performance Testing
- Oracle Application Testing Suite: New Features and Enhancements Training Series
- Oracle Database Testing Guide 12c E20852-16
- Oracle Database 2 Day + Performance Tuning Guide 12c E17635-10
- Oracle Application Testing Suite: Essentials (OU fee based courses)
- Oracle Database 12c: Courses and Workshops (OU fee based courses)
Topic Area 9: Use Cases, Scenarios

Objectives

• Identify common Oracle Database Performance and Tuning use cases for: Oracle Database performance monitoring, Oracle Database performance Health Checks, maintaining Oracle Database availability, Oracle Database Performance Diagnostics and Troubleshooting, SQL Tuning
• Identify applicable Oracle product technology for a given use case
• Describe implementation scenarios and options available for an Oracle Database Performance solution

Level
Practitioner

Training Resources

– Manage Database Performance with the Performance Hub
– Monitoring Real-Time Database Operations
– Monitoring Performance Using EM Express
– Oracle Database 12c Monitoring and Tuning the Database
– Use Active Session History (ASH) Analytics
– Diagnosing and Resolving Performance Problems Using ADDM
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– Assessing Impact of Change on Workload Using SQL Performance Analyzer
– Result Cache
– Using Deferred Optimizer Statistics
– Oracle Application Testing Suite: New Features and Enhancements Training Series
Exam Registration

• **How to register for the exam?**
  You can register for all Oracle certification exams with Pearson VUE. Before a registration can be submitted, a Pearson VUE profile must be created using your Company ID. Your Company ID can be obtained by contacting your local Oracle Partner Business Center or by signing in to your OPN account. Your Company ID is located in the section on the right under "Company information".

  Please follow these instructions in order to properly set-up your Pearson VUE account for the first time.

• **Have you completed an Oracle Certification Exam in the past?**
  Due to systems enhancements, each partner who has completed an Oracle Certification Exam will need to update their Pearson VUE profile in order to receive credit and for those records to appear in the OPN Competency Center.

• **How to get full recognition as Certified Implementation Specialist?**
  To get full recognition as a Certified Implementation Specialist you need to:
  A. Update your Pearson VUE profile with your Company ID
  B. Activate your Certview Account

  Please follow these instructions and your records will be properly recorded.
SOFTWARE. HARDWARE. COMPLETE.