S4D409

ABAP Performance Tuning for SAP S/4HANA

COURSE OUTLINE

Course Version: 21
Course Duration:

SAP Copyrights, Trademarks and Disclaimers

Typographic Conventions

American English is the standard used in this handbook.

The following typographic conventions are also used.

This information is displayed in the instructor's presentation	
Demonstration	
Procedure	
Warning or Caution	
Hint	
Related or Additional Information	
Facilitated Discussion	
User interface control	*Example text*
Window title	*Example text*

Contents

Course Overview

TARGET AUDIENCE

This course is intended for the following audiences:

- Developer

UNIT 1

SAP NetWeaver Application Server (AS) ABAP Architecture

Lesson 1: Outlining the SAP NetWeaver AS ABAP Architecture

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the basic architecture of Application Server ABAP

Lesson 2: Working with ABAP Development Tools (ADT)

Lesson Objectives

After completing this lesson, you will be able to:

- Work with ABAP Development Tools

Lesson 3: Introducing the SAP HANA Studio

Lesson Objectives

After completing this lesson, you will be able to:

- Know SAP HANA studio
- Connect SAP HANA studio to an SAP HANA system
- Understand SAP HANA catalog (schemas and tables)

UNIT 2 Performance Analysis Tools

Lesson 1: Code Inspector

Lesson Objectives
After completing this lesson, you will be able to:

- Understand the reason for potential performance issues
- Search for Potential Performance Issues with Code Inspector and ABAP Test Cockpit
- Use SQL Trace (ST05) for in-depth analysis of database accesses

Lesson 2: Analyzing ABAP Code

Lesson Objectives
After completing this lesson, you will be able to:

- Use Code Inspector and ABAP Test Cockpit
- Understand the Runtime Check Monitor

Lesson 3: Analyzing SQL Usage with SQL Monitor

Lesson Objectives
After completing this lesson, you will be able to:

- Analyze SQL usage with SQL Monitor

Lesson 4: Explaining Guided Performance Analysis

Lesson Objectives
After completing this lesson, you will be able to:

- Explaining Guided Performance Analysis
- Use the Performance Tuning Worklist (SWLT)

Lesson 5: Analyzing Expensive SQL Statements

Lesson Objectives
After completing this lesson, you will be able to:

- Prepare critical SQL statements
- Record critical SQL statements
- Analyze critical SQL statements

Lesson 6: Creating a Framework for Time Measurement

Lesson Objectives

After completing this lesson, you will be able to:

- Create a framework for time measurement

Lesson 7: Analyzing ABAP Report at Runtime

Lesson Objectives

After completing this lesson, you will be able to:

- Prepare an ABAP trace
- Record an ABAP trace
- Analyze an ABAP trace

UNIT 3 Database Access

Lesson 1: Explaining HANA SQL

Lesson Objectives

After completing this lesson, you will be able to:

- Explain HANA SQL

Lesson 2: Using Database Indexes

Lesson Objectives

After completing this lesson, you will be able to:

- Describe HANA indexes

Lesson 3: Analyzing Database Indexes

Lesson Objectives

After completing this lesson, you will be able to:

- Program with database indexes
- Analyze database indexes

UNIT 4 Database Access Programming

Lesson 1: Accessing Single Database Tables

Lesson Objectives

After completing this lesson, you will be able to:

- List the statements that read data in OPEN SQL
- Optimize database read access and updates

Lesson 2: Accessing Multiple Database Tables

Lesson Objectives

After completing this lesson, you will be able to:

- Access database views
- Create ABAP Joins

Lesson 3: Understanding Enhanced Open SQL

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the motivation for enhanced Open SQL
- Use the new syntax of Open SQL
- Use new features of Open SQL in SELECT Statements

Lesson 4: Analyzing and Using A CDS View

Lesson Objectives

After completing this lesson, you will be able to:

- Read a Data Definition
- Use CDS-related Tools in ADT
- Use Open SQL to Read From a CDS View
- Describe the concept of ABAP Core Data Services

Lesson 5: Explaining Query Optimizer

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the SQL Optimizer
- Explain the Query Processing Engines
- Understand Column Search

Lesson 6: Accessing Explain Plan and Visualized Plan

Lesson Objectives

After completing this lesson, you will be able to:

- Access Explain Plan and Visualized Plan

Lesson 7: Analyzing Performance Issues

Lesson Objectives

After completing this lesson, you will be able to:

- Describe query execution and compilation
- Use dominant operator and possible key reducer
- Reproduce issue and query rewriting

Lesson 8: Working with SQL Hints

Lesson Objectives

After completing this lesson, you will be able to:

- Work with SQL Hints

Lesson 9: Performance Guidelines for ABAP on SAP HANA

Lesson Objectives

After completing this lesson, you will be able to:

- Know the performance rules and guidelines for SAP HANA

UNIT 5 Data Table Buffering

Lesson 1: Defining Buffering on Database Tables

Lesson Objectives

After completing this lesson, you will be able to:

- Identify data buffering in the memory
- Differentiate how database tables can be buffered

Lesson 2: Performing Buffering on Database Tables

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the buffer synchronization mechanism
- Describe the criteria for table buffering
- Explain when the buffer is bypassed
- Evaluate table buffering

Lesson 3: Analyzing Database Table Buffering

Lesson Objectives

After completing this lesson, you will be able to:

- Outline the tools for analyzing table buffering
- Analyze table buffer properties

Lesson 4: Analyzing the Content of the Table Buffers

Lesson Objectives

After completing this lesson, you will be able to:

- Analyze the content of the table buffers

UNIT 6 HANA SQL Processing

Lesson 1: SAP HANA Native SQL Syntax

Lesson Objectives

After completing this lesson, you will be able to:

- Know the basics of SAP HANA native SQL syntax

Lesson 2: ABAP-Managed Database Procedures

Lesson Objectives

After completing this lesson, you will be able to:

- Understand ABAP-Managed Database Procedures
- Create an ABAP-Managed Database Procedure
- Call an ABAP-Managed Database Procedure in ABAP
- Debug an ABAP-Managed Database Procedure

Lesson 3: Understanding CDS Table Functions

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the AMDP Framework
- Define CDS Table Functions
- Read Data From CDS Table Functions

UNIT 7 Data Object Buffering

Lesson 1: Creating Buffer Modules

Lesson Objectives

After completing this lesson, you will be able to:

- Use program internal buffer modules for transactional data

Lesson 2: Using Shared Memory and Shared Buffer

Lesson Objectives

After completing this lesson, you will be able to:

- Use shared memory and shared buffer

UNIT 8 Internal Tables

Lesson 1: Defining Internal Tables

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the different types of internal tables

Lesson 2: Accessing Internal Tables

Lesson Objectives

After completing this lesson, you will be able to:

- List access strategies to internal tables
- Explain scaling behavior
- Analyze nested operations and nonlinearity
- Create efficient program access

Lesson 3: Outlining Additional Topics with Internal Tables

Lesson Objectives

After completing this lesson, you will be able to:

- Use secondary keys for internal tables
- Compare work area to field symbol