

HA200

SAP HANA Installation & Operations SPS12

COURSE OUTLINE

Course Version: 12

Course Duration: 5 Day(s)

SAP Copyrights and Trademarks

© 2016 SAP SE or an SAP affiliate company. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP SE or an SAP affiliate company.

SAP and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP SE (or an SAP affiliate company) in Germany and other countries. Please see <http://global12.sap.com/corporate-en/legal/copyright/index.epx> for additional trademark information and notices.

Some software products marketed by SAP SE and its distributors contain proprietary software components of other software vendors.

National product specifications may vary.

These materials are provided by SAP SE or an SAP affiliate company for informational purposes only, without representation or warranty of any kind, and SAP SE or its affiliated companies shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP SE or SAP affiliate company products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

In particular, SAP SE or its affiliated companies have no obligation to pursue any course of business outlined in this document or any related presentation, or to develop or release any functionality mentioned therein. This document, or any related presentation, and SAP SE's or its affiliated companies' strategy and possible future developments, products, and/or platform directions and functionality are all subject to change and may be changed by SAP SE or its affiliated companies at any time for any reason without notice. The information in this document is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of their dates, and they should not be relied upon in making purchasing decisions.

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	<i>Example text</i>
Window title	<i>Example text</i>

Contents

ix Course Overview

1 Unit 1: SAP HANA Introduction

- 1 Lesson: SAP HANA - A Short Introduction
- 1 Lesson: SAP HANA Information Sources

3 Unit 2: Preparing Installation

- 3 Lesson: Sizing of SAP HANA
- 3 Lesson: Requirements

5 Unit 3: Installation

- 5 Lesson: Introduction SAP HANA Lifecycle Management Tools
- 5 Lesson: Advanced Installation Options
- 5 Lesson: SAP HANA Studio installation
- 5 Lesson: Performing a Distributed System Installation

7 Unit 4: Post Installation

- 7 Lesson: Post-Installation Steps
- 7 Lesson: Updating SAP HANA
- 7 Lesson: Revision strategy of SAP HANA

9 Unit 5: Architecture and Scenarios

- 9 Lesson: SAP HANA Memory Management and Data Persistence
- 9 Lesson: Software Packaging
- 9 Lesson: SAP HANA Roadmap and Scenarios
- 10 Lesson: Deployment Options

11 Unit 6: Admin Tools for SAP HANA

- 11 Lesson: Administration Tool Overview
- 11 Lesson: SAP HANA Studio and SAP HANA Cockpit
- 11 Lesson: SHINE - SAP HANA Interactive Education
- 11 Lesson: DBA Cockpit
- 12 Lesson: HDBSQL Command Line Tool

13 Unit 7: Operations and Troubleshooting

13	Lesson: Starting and Stopping SAP HANA
13	Lesson: Configuring SAP HANA
13	Lesson: SAP HANA Table Administration
13	Lesson: Periodic Tasks
13	Lesson: Configuring Traces
13	Lesson: Working with Diagnosis Information and Diagnosis Files
14	Lesson: SQL Console
14	Lesson: Transporting Changes

15 Unit 8: Backup and Recovery

15	Lesson: Concept of Backup and Recovery
15	Lesson: Data Area Backup
15	Lesson: Log Area Backup
15	Lesson: Additional Backup Topics
15	Lesson: Recovery
16	Lesson: Backup and Recovery using Storage Snapshot
16	Lesson: Database Copy

17 Unit 9: Security

17	Lesson: Security Overview
17	Lesson: Authentication and Authorization
17	Lesson: Encryption
17	Lesson: Auditing

19 Unit 10: Maintaining Users and Authorization

19	Lesson: User Management
19	Lesson: Types of Privileges
19	Lesson: Roles
19	Lesson: Administrative Tasks
20	Lesson: Information Sources for Administrators
20	Lesson: SAP HANA Live Authorization Assistant

21 Unit 11: High Availability and Disaster Tolerance

21	Lesson: High Availability
21	Lesson: SAP HANA Scale Out
21	Lesson: Disaster Recovery

23 Unit 12: Multitenant Database Containers

23	Lesson: Architecture and Technology
23	Lesson: Administration of Multitenant Database Containers
23	Lesson: Backup and Recovery of Multitenant Database Containers

25 Unit 13: Appendix

25	Lesson: Monitoring with SAP Solution Manager
25	Lesson: Remote Support
25	Lesson: SAP Early Watch Alert (EWA)
25	Lesson: Appendix

Course Overview

TARGET AUDIENCE

This course is intended for the following audiences:

- System Administrator

Lesson 1: SAP HANA - A Short Introduction

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the basics of SAP HANA

Lesson 2: SAP HANA Information Sources

Lesson Objectives

After completing this lesson, you will be able to:

- Find the most important information sources

Lesson 1: Sizing of SAP HANA

Lesson Objectives

After completing this lesson, you will be able to:

- Describe what needs to be taken into consideration for sizing of an SAP HANA server
- Identify where to look up sizing information depending on the SAP HANA scenario
- Use the SAP Quick Sizer for sizing an SAP HANA database server
- Describe sizing of main memory, persistence, and CPU
- Identify where to look up sizing information depending on the SAP HANA scenario
- Run the SAP Quick Sizer for sizing an SAP HANA database server

Lesson 2: Requirements

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the SAP HANA system concepts and system types
- Clarify the SAP HANA System concepts and system types
- Explain the required file system structure and directories and their recommended sizes

Lesson 1: Introduction SAP HANA Lifecycle Management Tools

Lesson Objectives

After completing this lesson, you will be able to:

- Explain SAP HANA Lifecycle Management Tools
- Explain the various installation methods
- Install SAP HANA as a single-host
- Install and configure SAP HANA Studio
- Install the SAP HANA SHINE content
- Explain a multiple-host system installation

Lesson 2: Advanced Installation Options

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the use of the command line options
- Explain the use of the configuration file
- Explain the use of the configuration file in batch mode

Lesson 3: SAP HANA Studio installation

Lesson Objectives

After completing this lesson, you will be able to:

- Install and configure SAP HANA Studio
- Understand the different installation features
- Setup an SAP HANA Studio Update site

Lesson 4: Performing a Distributed System Installation

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the preparatory steps required to install a distributed system
- Describe the steps for installing a distributed system

Lesson 1: Post-Installation Steps

Lesson Objectives

After completing this lesson, you will be able to:

- Configure connections for remote support
- Install/check HANA licenses

Lesson 2: Updating SAP HANA

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the update process as a whole
- Update dependent components

Lesson 3: Revision strategy of SAP HANA

Lesson Objectives

After completing this lesson, you will be able to:

- Understand Support Package Stack, Support Packages and SAP HANA Revisions
- Know the difference between Maintenance Revisions and Datacenter Service Points
- Explain the SAP HANA Maintenance Strategy
- Know about SAP HANA Zero Downtime Maintenance
- Explain the following terms within the framework of SAP HANA revision strategy

Lesson 1: SAP HANA Memory Management and Data Persistence

Lesson Objectives

After completing this lesson, you will be able to:

- Identify the components for memory management and persistence in the SAP HANA database architecture
- Describe the SAP HANA memory usage and allocation behavior
- Describe memory management in row store and column store
- Explain how data is persisted in data and log volumes
- Identify optimization potential with regard to memory management and persistence

Lesson 2: Software Packaging

Lesson Objectives

After completing this lesson, you will be able to:

- Talk about solution packages
- Describe the elements of the SAP HANA Platform Edition
- Name additional components that are included in SAP HANA Enterprise Edition
- Name the components that are installed by default, and those that can be activated additionally as add-ons
- Describe how content is bundled and provided with SAP HANA

Lesson 3: SAP HANA Roadmap and Scenarios

Lesson Objectives

After completing this lesson, you will be able to:

- Describe SAP HANA use cases and scenario categories
- Discuss the SAP HANA roadmap
- Look up customer stories and use cases

Lesson 4: Deployment Options

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the different deployment options for SAP HANA
- Explain SAP HANA cloud offerings
- Describe the availability and capabilities of virtualization for SAP HANA
- Describe the option for tailored data center integration
- Identify available co-deployment scenarios
- Describe which limitations exist with regard to productive usage
- Describe the new option for multitenant database containers

Lesson 1: Administration Tool Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Describe which administration tools exist for SAP HANA
- Explain what capabilities the various administration tools have and when to use them

Lesson 2: SAP HANA Studio and SAP HANA Cockpit

Lesson Objectives

After completing this lesson, you will be able to:

- Understand the basic functions of the SAP HANA studio and SAP HANA Cockpit
- Explain the concept of perspectives
- Add an SAP HANA system to an SAP HANA Studio installation
- Obtain an initial system overview in the Administration Console of the SAP HANA studio
- Monitoring dashboard

Lesson 3: SHINE - SAP HANA Interactive Education

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the purpose of the SAP HANA Interactive Education (SHINE)
- List the features provided by SHINE
- Install and configure SHINE

Lesson 4: DBA Cockpit

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the basic functions of the DBA Cockpit
- Explain how to monitor SAP HANA using DBACOCKPIT

Lesson 5: HDBSQL Command Line Tool

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the capabilities of HDBSQL
- Explain different ways of logging on to the SAP HANA database
- Describe the functionality and usage of the hdbuserstore
- Establish a connection to SAP HANA using HDBSQL and execute commands

Lesson 1: Starting and Stopping SAP HANA

Lesson Objectives

After completing this lesson, you will be able to:

- Start and stop SAP HANA using SAP HANA Studio

Lesson 2: Configuring SAP HANA

Lesson Objectives

After completing this lesson, you will be able to:

- Configure the SAP HANA studio

Lesson 3: SAP HANA Table Administration

Lesson Objectives

After completing this lesson, you will be able to:

- Decide when to use column-based and row-based storage

Lesson 4: Periodic Tasks

Lesson Objectives

After completing this lesson, you will be able to:

- Name which administrative tasks need to be performed initially, regularly, and on demand

Lesson 5: Configuring Traces

Lesson Objectives

After completing this lesson, you will be able to:

- Activate the trace function
- Check the trace files

Lesson 6: Working with Diagnosis Information and Diagnosis Files

Lesson Objectives

After completing this lesson, you will be able to:

- Open diagnosis files for analysis
- Delete/merge files
- Download files
- Collect and download diagnosis information

Lesson 7: SQL Console

Lesson Objectives

After completing this lesson, you will be able to:

- Use the SQL console successfully

Lesson 8: Transporting Changes

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the Application Lifecycle Management of SAP HANA

Lesson 1: Concept of Backup and Recovery

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the concept of backup and recovery

Lesson 2: Data Area Backup

Lesson Objectives

After completing this lesson, you will be able to:

- Perform a data area backup
- Estimate the size of a backup

Lesson 3: Log Area Backup

Lesson Objectives

After completing this lesson, you will be able to:

- Configure a log area backup

Lesson 4: Additional Backup Topics

Lesson Objectives

After completing this lesson, you will be able to:

- Use the backup catalog to get Information about backups
- Perform backups using scripts

Lesson 5: Recovery

Lesson Objectives

After completing this lesson, you will be able to:

- Perform a database recovery

Lesson 6: Backup and Recovery using Storage Snapshot

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the concept of backup and recovery using a storage snapshot

Lesson 7: Database Copy

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the scenarios for a database copy

Lesson 1: Security Overview

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the security perspective in different implementation scenarios
- Outline the security functions in SAP HANA

Lesson 2: Authentication and Authorization

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the different authentication methods

Lesson 3: Encryption

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the TLS connection encryption
- Explain the data volume encryption

Lesson 4: Auditing

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the audit logging infrastructure

Lesson 1: User Management

Lesson Objectives

After completing this lesson, you will be able to:

- Explain how to handle user management and user provisioning
- Explain the user and role concept in SAP HANA
- Explain how to maintain users' roles
- Explain how to maintain SAP HANA privileges

Lesson 2: Types of Privileges

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the authorization concept
- Explain what an Object privilege is
- Explain what a SYSTEM privilege is
- Explain what a package privilege is
- Explain what an analytic privilege is
- Explain what an application privilege is

Lesson 3: Roles

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the purpose of the predelivered roles
- Explain what a template role is
- Explain the purpose of the support role

Lesson 4: Administrative Tasks

Lesson Objectives

After completing this lesson, you will be able to:

- Deactivate a user
- Reactivate a user
- Reset a locked user
- Manage the password policy

Lesson 5: Information Sources for Administrators

Lesson Objectives

After completing this lesson, you will be able to:

- List tables and views that support the user management
- Analyze which privileges a user has been granted

Lesson 6: SAP HANA Live Authorization Assistant

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the concept of the Analytic Authorization Assistant

Lesson 1: High Availability

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the high availability scenarios for SAP HANA

Lesson 2: SAP HANA Scale Out

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the basics of SAP HANA scale out
- Describe the possibilities for configuration of a distributed system

Lesson 3: Disaster Recovery

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the scenarios for disaster recovery support

Lesson 1: Architecture and Technology

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the architecture of multitenant database containers.

Lesson 2: Administration of Multitenant Database Containers

Lesson Objectives

After completing this lesson, you will be able to:

- Distinguish between global administration tasks and administration tasks for a tenant database
- Manage and control the memory and CPU usage of a tenant database
- Describe security aspects when using multitenant database containers

Lesson 3: Backup and Recovery of Multitenant Database Containers

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the backup concept for multitenant database containers.
- Perform a backup of the system database
- Perform a backup a tenant database

Lesson 1: Monitoring with SAP Solution Manager

Lesson Objectives

After completing this lesson, you will be able to:

- Describe how SAP HANA is integrated in SAP Solution Manager

Lesson 2: Remote Support

Lesson Objectives

After completing this lesson, you will be able to:

- Establish a remote service connection for SAP HANA

Lesson 3: SAP Early Watch Alert (EWA)

Lesson Objectives

After completing this lesson, you will be able to:

- Set up an EarlyWatch Alert for SAP HANA

Lesson 4: Appendix

Lesson Objectives

After completing this lesson, you will be able to:

- Provide you with additional information