SAP **1914631 - Central Technical Note for Oracle Database 12c Release 1 (12.1)**

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Symptom

Using Oracle Database 12c Release 1 in SAP environments

In this SAP Note you find technical information about deployment of Oracle Database 12c Release 1 in SAP environments.
You should check this SAP Note regularly for updates, especially before you install a new SAP system with Oracle Database 12c Release1 or before you upgrade an existing SAP database to Oracle Database 12c Release 1.

News

Date	News
November 30, 2015	Updated recommendation regarding SAP Note 2157904
November 11, 2015	Note correction or support package from SAP Note 2157904 is mandatory even for systems without ACO
October 26, 2015	Free extended support for 11.2 prolonged until May, 2017 (1431799, 2098258)
October 22, 2015	Version 1.10 of SAP guide "Upgrade to Oracle Database 12c Release 1 (12.1): UNIX" available.
October 20, 2015	Added SAP Note 2229934 - Oracle RAC with Oracle ASM in Stretched Clusters
September 29, 2015	New SWPM 1.0 SP09 offers ILM/ADO functionality that is not yet supported for SAP.
September 29, 2015	New SWPM 1.0 SP09 supports user concept SAP Classic and Oracle Standard (SAP Note 1915323)
September 15, 2015	Oracle Global Data Services (GDS) is not supported for SAP Database Vault 12c planned for middle of Q4/2015
August 26, 2015	Default directory for BR*Tools profiles is <sapprof> (SAP Note 2087004)
August 17, 2015	User concept status update for SI/FS on Unix, see SAP Note 1915323
July 29, 2015	User Concept extension planned for SI/FS on Unix, see SAP Note 1915323
June 30, 2015	Support for Oracle Database In-Memory Option, SAP Note 2178980
June 8, 2015	Added section 'Known Issues' and SAP note 2166836
June 3, 2015	Added new SWPM section and SAP note 2175161 (SWPM MCOD)
June 2, 2015	Added SAP note 1778431 (Shared Oracle Home)
May 12, 2015	Instant Client restrictions / requirements updated
April 23, 2015	Support Package required (SAP Note 2157904)
April 23, 2015	SAP Note 1915323 added
April 20, 2015	SAP Note 2156885 added
April 15, 2015	SAP Note 2086029 (corrections to SAP Upgrade Guide) added
March 31, 2015	Oracle Database 12c Release 1 (12.1.0.2) released for SAP

Other Terms

Oracle Database 12c Release 1 (12.1.0.2)

Reason and Prerequisites

This SAP Note describes Technical Requirements for SAP on Oracle Database 12c Release 1

Solution

Oracle Database 12c Release 1 Certification Status

Oracle Database 12c Release 1 (12.1.0.2) is released and certified for SAP.

For further information about certification and integration of Oracle Database 12c Release 1 in SAP environments, see SAP Note 2133079.

References

- Oracle Database Documentation Library 12c Release 1 (12.1)
  (http://www.oracle.com/pls/db121/homepage, http://docs.oracle.com/)
- SAP Community Network 'SAP on Oracle' (http://scn.sap.com/community/oracle)

Important Changes in Release 12.1.0.2

Oracle XML Database (XML DB)

Oracle XML Database (Oracle XML DB) is now a mandatory component of Oracle Database (see Oracle Database Upgrade Guide). You cannot uninstall it, and there is no option not to include it when you create a new database. If during the upgrade, Oracle XML DB is not found, then Oracle XML DB is automatically loaded into the SYSAUX tablespace. The upgraded Oracle Database includes Oracle XML DB. As a result, the database components CATALOG, CATPROC and XDB are installed by default in your SAP Oracle database.
Reference: Oracle Database Upgrade Guide
(https://docs.oracle.com/database/121/UPGRD/release_changes.htm#UPGRD52756)

Raw Devices

Starting Oracle Database 12c, raw devices are not supported anymore (Reference: MOS 754305.1, see http://docs.oracle.com/database/121/OSTMG/whatsnew.htm)

Prerequisites for SAP

In order to run SAP on Oracle Database 12c, the following prerequisites must be met:

Category	Requirement	Details
Oracle Software	Oracle Database 12c Release 1 Software	Only Oracle Database 12c Release 1 (12.1.0.2) is supported for SAP. Release 12.1.0.1 is not supported for SAP.
Oracle Software	Oracle Database 12c Release 1 Patches	Running SAP on Oracle Database 12c Release 1 requires additional, mandatory software patches to be installed. For details, see SAP Note 1915313.
Oracle Software	Oracle Instant Client	Oracle Instant Client - Supported Versions For SAP environments, Oracle Instant Client versions 11.2.0.4 and 12.1.0.2 are supported. Free Extended Support for Instant Client version 11.2.0.4 will end after May 2017. It is therefore recommended to use Instant Client version 12.1.0.2. When you upgrade the database to 12.1.0.2, you should also upgrade the instant clients on the SAP application servers to 12.1.0.2. Additional Restriction for SAP NetWeaver AS-JAVA At the moment, for SAP products based on SAP NetWeaver 7.2x, 7.3x for AS-JAVA and AS-ABAP+JAVA (Java Stack and Double Stack) the following restrictions apply: - Oracle Instant Client version 11.2.0.4 is required for SAP installations (SWPM) of such a product, for SAP upgrades to such a product and also for SAP system copies/system migrations of such products. - In order to run the SAP system with Oracle Instant Client version 12.1.0.2 you have to apply the SAP support packages from SAP note 1777021. These support packages enable the SAP system to use the Oracle Instant Client 12.1.0.2. For detailed recommendations, see SAP Note 819829 (for Unix platforms) or SAP Note 998004 (Windows platforms).
SAP Software	SAP Products SAP Kernel Releases	SAP Kernel Release >= 7.21 EXT (for SAP products based on SAP NetWeaver) For supported SAP Products, see SAP PAM and SAP Note 2133079.
SAP Software	SAP BR*Tools	SAP BR*Tools minimum version for 12.1: BR*Tools 7.40 Patch Level 14 SAP BR*Tools configuration for 12.1: sapprof directory is default location for BR*Tools profiles (init<dbsid>.sap etc.) in 12.1 For all details see SAP Note 2087004.
		SAP Note 2157904 Apply correction or install the appropriate SAP support package from SAP Note 2157904 either before or immediately after a database upgrade to Oracle release 12c or immediatly after a new installation with Oracle release 12c, if required. Using Advanced Compression Option (ACO) in 12c without the correction or support

SAP Software	SAP Support Packages SAP Note Corrections	package installed is not supported and can result in severe issues during life cycle operations (e.g. installation of SAP support package). • **If ACO is used in the SAP database, then it is mandatory to follow SAP Note** 2157904. • **If ACO is currently not used but might be used in the future,** then it is strongly recommended to follow SAP Note 2157904 **now to prepare the system for future use of ACO.** • If it is guaranteed that ACO will never be used in the system, then applying SAP Note 2157904 **is optional.**
Configuration	Secure Storage on File System	Secure Storage on File System (SSFS) must be configured and enabled to run SAP with Oracle Database 12c.
Configuration	Oracle Software Owner (Unix/Linux)	For SAP standard installations with Oracle single instance on file system (SI/FS) on Unix platforms SAP supports the user concept 'Oracle Standard' **with software owner 'oracle' in addition to the** classic user concept 'SAP Classic' with software owner 'ora<dbsid>'. **For details and recommendations see SAP Note** 1915323. You can change the user concept from 'SAP Classic' to 'Oracle Standard' - e.g. as part of the upgrade to 12.1. - **as described in** SAP Note 1915317.
Configuration	Database Configuration	Parameter settings for Oracle Database 12c Release 1 (12.1.0.2) are documented in SAP note 1888485.

Known Issues

The following table contains SAP notes that describe solutions or workarounds for known issues with SAP on Oracle Database 12c.

Area	Reference	Details
SAP Upgrade / SUM	SAP Note 2166836	**Check this SAP Note if you use compressed tables with Oracle Database 12c before you perform an SAP Upgrade.**
Compressed tables	SAP Note 2157904	Check this SAP Note if you use compressed tables with Oracle Database 12c.

New Features and Options in Oracle Database 12c Release 1

Feature/Option	Details
Oracle Database 12c In-Memory Option	See SAP Note 2178980 **for more details.**
Oracle Database 12c Multitentant Option	Multitenant Option is currently not yet supported for SAP.
Oracle Database 12c Database Vault Option	**Database Vault option is currently not yet supported for SAP (see SAP** Notes 1355140 **and** 2133079, planned for Q4/2015).
Oracle Database 12c ILM/ADO Functionality	ILM/ADO Functionality is currently not yet supported for SAP (see parameter: heat_map **in SAP Note** 1888485). Update 29-September 2015: In SWPM 1.0 SP09 do **not** use option 'Tablespace Parameters -> Policy Tablespaces' on the 'Advanced Oracle Configuration' dialog until ILM/ADO functionality has been released for SAP. See SAP notes 2172935 and 2173485.
Oracle Exadata 12c	See SAP Note 1590515 **for more details.**
Oracle SuperCluster 12c	See SAP Note 1693680 **for more details.**
Oracle Database Appliance 12c (ODA)	Oracle Database Appliance 12c is currently not yet supported for SAP.
Oracle Database 12c Real Application Clusters (RAC)	See SAP note 527843 **for more details.**
Oracle Database 12c Global Data Services	Oracle Global Data Services (GDS) is not supported for SAP (see SAP note 105047).

Operating System Requirements for Oracle Database 12c Release 1

For operating system requirements check the Oracle Database 12c Release 1 Installation Guide for your specific platform (additional reference (MOS): Oracle Support Document 1587357.1).

Software and Patches for Oracle Database 12c Release 1

SAP Note 1915313 - Current Patch Set for Oracle Database 12c Release 1 (12.1)
SAP Note 1915316 - Database: Patches for 12.1.0.2
SAP Note 2145572 - Grid Infrastructure: Patches for 12.1.0.2
SAP Note 2145628 - Exadata / Supercluster: Patches for 12.1.0.2

Oracle Instant Client for Oracle Database 12c Release 1

SAP Note 819829 - Oracle Instant Client Installation and Configuration on Unix
SAP Note 998004 - Update the Oracle Instant Client on Windows

Software Installation of Oracle Database 12c Release 1 on Windows

Software Installation on Windows Platforms

SAP Note 1915302 - Database Software 12.1.0.2 Installation on Windows
SAP Note 1915314 - Removing Oracle Homes (Uninstalling Oracle Database Software)
SAP Note 1915299 - Troubleshooting Software Installation for 12.1.0.2

Additional SAP Notes for Windows Clusters

SAP Note 1976879 - Windows Powershell Scripts for MS Cluster Tasks for Oracle Database
SAP Note 1972760 - Oracle Fail Safe Software Compatibility Overview

Software Installation of Oracle Database 12c Release 1 on Unix

Software Installation on Unix Platforms

SAP Note 1915301 - Database Software 12.1.0.2 Installation on Unix
SAP Note 1915314 - Removing Oracle Homes (Uninstalling Oracle Database Software)
SAP Note 1915299 - Troubleshooting Software Installation for 12.1.0.2

Additional SAP Notes for Unix Platforms

SAP Note 1915323 - OS User Concept for Oracle Database 12c Release 1
SAP Note 1915317 - Migrating Software Owner to 'oracle'
SAP Note 1778431 - SAP Installations using Shared Oracle Homes
SAP Note 1696869 - Patching of Oracle Homes with Minimal Downtime
SAP Note 1521371 - Setting of ORACLE_BASE in SAP environments
SAP Note 2132322 - Troubleshooting oraenv / coraenv / dbhome
SAP Note 724713 - Parameter Settings for Oracle Solaris 10 and above

Database Parameter for Oracle Database 12c Release 1

SAP Note 1888485 - Database Parameter for 12.1.0.2
SAP note 974781 - Oracle internal maintenance jobs

SAP Installations on Oracle Database 12c Release 1 with SAP Software Provisioning Manager

SAP Software Provisioning Manager (SWPM) supports installation of SAP NetWeaver 7.X based systems with Oracle Database 12c Release 1 (see SAP Note 2133079).

SAP Notes for SWPM

SAP Note	
SAP Note 2175161	SWPM Oracle/Unix 12.1 MCOD Installation Drops Already Installed Database Without Warnings
SAP Note 1825724	SAP Software Provisioning Manager has replaced SAPINST ...
SAP Note 2172935	Installation - SAP Systems based on SAP NetWeaver 7.1 and Higher on UNIX/Windows: Oracle
SAP Note 2173485	Installation - SAP Systems Based on SAP NetWeaver 7.0 including EHPs on UNIX/Windows: Oracle

Database Upgrade to Oracle Database 12c Release 1

SAP Database Upgrade Guides

SAP Database Upgrade Guides for Oracle Database 12c can be downloaded from the SAP Service Marketplace: http://service.sap.com/instguides -> Database Upgrades -> Oracle

The following guides are available:

- "Upgrade to Oracle Database 12c Release 1 (12.1): UNIX"
- "Upgrade to Oracle Database 12c Release 1 (12.1): Windows"

Latest corrections to these guides can be found in SAP Note 2086029.

SAP Notes for the Database Upgrade

SAP Note 1915315 - Database Upgrade Scripts for 12.1.0.2
SAP Note 2064206 - Database Upgrade to 12.1.0.2 with Grid Infrastructure
SAP Note 2156885 - Troubleshooting Database Upgrade to Release 12.1.0.2

If you receive a warning during pre-upgrade checks regarding the object id limit, check the following SAP Notes:
SAP Note 2137109 - Data Object ID Limit
SAP Note 2141912 - Oracle Datapump fail with ORA-01426 numeric overflow when DB object numbers greater than 2^31

Oracle Database 12c Release 1 Troubleshooting

SAP Note	
SAP Note 1915299	Troubleshooting Software Installation for 12.1.0.2
SAP Note 2156885	Troubleshooting Database Upgrade to Release 12.1.0.2
SAP Note 2132322	Troubleshooting oraenv / coraenv / dbhome

Oracle Database 12c Release 1 and Real Application Clusters (RAC)

SAP Note	
SAP Note 527843	Oracle RAC support in the SAP environment
SAP Note 2229934	Oracle RAC with Oracle ASM in Stretched Clusters

Oracle Database 12c Release 1 on Oracle Exadata

SAP Note	
SAP Note 1590515	SAP Software and Oracle Exadata
SAP Note 1677978	Mixed GI/RDBMS Versions or Mixed SAP/Non-SAP Environments on Exadata

Other Attributes

Database System   ORACLE 12.1
ORACLE 12.2

Validity

This document is not restricted to a software component or software component version

References

This document refers to:

SAP Notes

2229934 Oracle 12c RAC with Oracle ASM in Stretched Clusters
2178980 Using Oracle Database In-Memory with SAP NetWeaver based Products
2166836 Oracle 12c: Problem during SAP upgrade with compressed tables
2157904 Oracle 12c: Conversion of compressed tables
2145628 Exadata / Supercluster: Patches for 12.1.0.2
2145572 Grid Infrastructure: Patches for 12.1.0.2
2141912 Oracle Datapump fail with ORA-01426 numeric overflow when DB object numbers greater than 2^31
2138262 Oracle Database 12c Advanced Compression for SAP Systems
2137109 Data Object ID limit
2133079 Oracle Database 12c: Integration in SAP environment
2086029 Oracle 12c: Additional Info / Corrections to Oracle 12c (12.1.0.2) Upgrade
1915316 Database: Patches for 12.1.0.2
1915313 Current Patch Set for Oracle Database 12c Release 1 (12.1)
1915302 Database Software 12.1.0.2 Installation on Windows
1915301 Database Software 12.1.0.2 Installation on Unix
1915299 Troubleshooting Software Installation for 12.1.0.2
1888485 Database Parameter for 12.1.0.2
1778431 SAP Installations using Shared Oracle Homes
1590515 SAP Software and Oracle Exadata
724713 Parameter Settings for Oracle Solaris 10 and above
527843 Oracle RAC support in the SAP environment

This document is referenced by:

SAP Notes (14)

2178980 Using Oracle Database In-Memory with SAP NetWeaver based Products
1888485 Database Parameter for 12.1.0.2
2138262 Oracle Database 12c Advanced Compression for SAP Systems
2132322 Troubleshooting oraenv / coraenv / dbhome
1972760 Oracle Fail Safe Software Compatibility Overview