



Operations Guide | PUBLIC

Software Provisioning Manager 1.0 SP46

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# **System Copy for SAP Systems Based on the Application Server Java of SAP NetWeaver 7.5, and SAP Solution Manager 7.2 SR2 Java, on UNIX**

**Target Databases: SAP ASE; SAP MaxDB; Oracle; IBM Db2 for z/OS; IBM Db2  
for Linux, UNIX, and Windows**

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# Document History

The following table provides an overview on the most important document changes.

## Note

Before you start reading, make sure you have the latest version of this system copy guide, which is available at <https://support.sap.com/sltoolset> >> [System Provisioning](#) > [Copy a System using Software Provisioning Manager](#) > [System Copy Option of Software Provisioning Manager 1.0 SP](#) > .

Version	Date	Description
5.1	2026-02-09	Updated version for Software Provisioning Manager 1.0 SP46 (SL Toolset 1.0 SP46)  HP-UX information has been removed from this documentation, as all HP-UX versions on the 31st December 2025 have reached the end of standard support. As of January 1st 2026, all HP-UX releases are "end-of-support" by HPE. For more information, see SAP Note <a href="#">3120243</a> . Though an extended "Mature Support" to December 31 2028 is still available, HPE will no longer provide software bug fixes, updates and patches. If you still want to use HP-UX, use SWPM10SP35_7 .SAR. For more information, see SAP Note <a href="#">3261541</a> .
5.0	2025-10-06	Updated version for Software Provisioning Manager 1.0 SP45 (SL Toolset 1.0 SP45)
4.9	2025-05-26	Updated version for Software Provisioning Manager 1.0 SP44 (SL Toolset 1.0 SP44)
4.8	2025-02-10	Updated version for Software Provisioning Manager 1.0 SP43 (SL Toolset 1.0 SP43)
4.7	2024-10-07	Updated version for Software Provisioning Manager 1.0 SP42 (SL Toolset 1.0 SP42)
4.6	2024-05-27	Updated version for Software Provisioning Manager 1.0 SP41 (SL Toolset 1.0 SP41)
4.5	2024-02-12	Updated version for Software Provisioning Manager 1.0 SP40 (SL Toolset 1.0 SP40)
4.4	2023-10-09	Updated version for Software Provisioning Manager 1.0 SP39 (SL Toolset 1.0 SP39)  Windows operating systems no longer supported for Software Provisioning Manager 1.0 SP39 and higher, according to SAP Note <a href="#">2998013</a> , have been removed.
4.3.1	2023-10-09	Updated version for Software Provisioning Manager 1.0 SP38 (SL Toolset 1.0 SP38): Last version containing information about no longer supported Windows operating systems according to SAP Note <a href="#">3346502</a> .
4.3	2023-05-26	Updated version for Software Provisioning Manager 1.0 SP38 (SL Toolset 1.0 SP38)
4.2	2023-02-13	Updated version for Software Provisioning Manager 1.0 SP37 (SL Toolset 1.0 SP37)

Version	Date	Description
4.1	2022-10-10	Updated version for Software Provisioning Manager 1.0 SP36 (SL Toolset 1.0 SP36) Operating systems and CPU architectures no longer supported according to SAP Note <a href="#">2998013</a> have been removed.
4.0.1	2022-10-10	Updated version for Software Provisioning Manager 1.0 SP35 (SL Toolset 1.0 SP35): Last version containing information about no longer supported operating systems and CPU architectures according to SAP Note <a href="#">2998013</a> .
4.0	2022-05-24	Updated version for Software Provisioning Manager 1.0 SP35 (SL Toolset 1.0 SP35)
3.9	2022-02-14	Updated version for Software Provisioning Manager 1.0 SP34 (SL Toolset 1.0 SP34)
3.8	2021-10-11	Updated version for Software Provisioning Manager 1.0 SP33 (SL Toolset 1.0 SP33)
3.7	2021-06-21	Updated version for Software Provisioning Manager 1.0 SP32 (SL Toolset 1.0 SP32)
3.6	2021-02-15	Updated version for Software Provisioning Manager 1.0 SP31 (SL Toolset 1.0 SP31)
3.5	2020-10-05	Updated version for Software Provisioning Manager 1.0 SP30 (SL Toolset 1.0 SP30)
3.4	2020-06-08	Updated version for Software Provisioning Manager 1.0 SP29 (SL Toolset 1.0 SP29)
3.3	2020-01-20	Updated version for Software Provisioning Manager 1.0 SP28 (SL Toolset 1.0 SP28)
3.2	2019-09-16	Updated version for Software Provisioning Manager 1.0 SP27 (SL Toolset 1.0 SP27) <ul style="list-style-type: none"> <li>• New Features: <ul style="list-style-type: none"> <li>• Oracle 18 c or higher: Support of Transparent Data Encryption (TDE), documented in: <i>New Features, SAP System Database Parameters, Support of Oracle Transparent Data Encryption ( Oracle TDE)</i></li> </ul> </li> </ul>
3.1	2019-05-27	Updated version for Software Provisioning Manager 1.0 SP26 (SL Toolset 1.0 SP26)
3.0	2019-01-21	Updated version for Software Provisioning Manager 1.0 SP25 (SL Toolset 1.0 SP25)
2.9	2018-09-17	Updated version for Software Provisioning Manager 1.0 SP24 (SL Toolset 1.0 SP24)
2.8	2018-05-07	Updated version for Software Provisioning Manager 1.0 SP23 (SL Toolset 1.0 SP23)

Version	Date	Description
2.7	2018-01-15	<p>Updated version for Software Provisioning Manager 1.0 SP22 (SL Toolset 1.0 SP22)</p> <ul style="list-style-type: none"> <li>New Features: <ul style="list-style-type: none"> <li>Software Provisioning Manager Log Files Improvements, documented in: <i>New Features, Useful Information about the Software Provisioning Manager, Troubleshooting with the Software Provisioning Manager</i></li> <li>Database Migration Option Preparation: Support of Oracle Database. documented in: <i>New Features, Preparing Target Database Oracle</i></li> <li>Enabling IPv6, documented in: <i>New Features, Prerequisites for Running the Software Provisioning Manager</i></li> </ul> </li> <li><i>New Features</i> section restructured: As of SP22, a dedicated subsection for each new SP has been created. New features below SP22 remain in a common table.</li> <li>The Java SDT GUI - which was in the SP21 version still available in parallel to the SL-UI - has been deprecated with SP22. As of SP22, SL-UI is the only available GUI of the Software Provisioning Manager: <ul style="list-style-type: none"> <li>The following sections which were explicitly related to Java SDT GUI were completely removed from this documentation: <i>Performing a Remote Installation Remote Processing of the Software Provisioning Manager ( Java SDT GUI only), Starting the Java SDT GUI Separately, Running the Software Provisioning Manager in Accessibility Mode</i> (general accessibility information was moved to <i>Useful Information About the Software Provisioning Manager</i>).</li> <li>The Java SDT GUI-specific information was removed from the common Software Provisioning Manager sections: <i>Running the Software Provisioning Manager, Useful Information About the Software Provisioning Manager, Interrupted Processing of the Software Provisioning Manager, Troubleshooting with the Software Provisioning Manager</i></li> </ul> </li> <li>New section <i>Using the Step State Editor (SAP Support Experts Only)</i> was added to section <i>Additional Information About the Software Provisioning Manager</i></li> <li>Option to install the SCS instance with an embedded SAP Web Dispatcher , documented in: <i>New Features, SCS Instance with Embedded SAP Web Dispatcher, Additional Parameters for an SAP Web Dispatcher Installation Embedded in the SCS Instance (Optional)</i></li> </ul> <div style="background-color: #e0e0e0; padding: 5px; margin-top: 10px;"> <p><b>Note</b></p> <p>This feature was retroactively released on 2018-02-12.</p> </div>
2.6	2017-09-11	<p>Updated version for Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21)</p> <ul style="list-style-type: none"> <li>New Features: <ul style="list-style-type: none"> <li>Media Signature Check, documented in: <i>New Features, Running the Software Provisioning Manager, Preparing the Media Required for Performing the Export</i> . This feature implies that section <i>Creating Kernel Archives from an Existing SAP System</i> has been deleted from this documentation because the related option in the Software Provisioning Manager had to be removed.</li> <li>Support of Oracle 12.2., documented in: <i>New Features</i></li> <li>Support of Oracle Database Vault, documented in: <i>New Features</i>.</li> </ul> </li> </ul>

Version	Date	Description
2.5	2017-05-22	Updated version for Software Provisioning Manager 1.0 SP20 (SL Toolset 1.0 SP20)
2.4.	2017-02-06	Updated version for Software Provisioning Manager 1.0 SP19 (SL Toolset 1.0 SP19) <ul style="list-style-type: none"> <li>Section <a href="#">Preparing the Media Required for Performing the Export [page 36]</a> refactored, created subsections <a href="#">Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 36]</a></li> </ul>
2.3	2016-10-07	Updated version for Software Provisioning Manager 1.0 SP18 (SL Toolset 1.0 SP18)
2.2	2016-06-06	Updated version for Software Provisioning Manager 1.0 SP17 (SL Toolset 1.0 SP17): <ul style="list-style-type: none"> <li>Archive-Based Installation (see <a href="#">New Features [page 12]</a>)</li> </ul>
2.1	2016-02-15	Updated version for Software Provisioning Manager 1.0 SP10 (SL Toolset 1.0 SP16)
2.01	2015-10-12	Updated version for Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP15)
2.0	2015-10-12	Updated version for Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP15)
1.9	2015-09-14	Updated version for Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP14)
1.81	2015-04-29	Updated version for Software Provisioning Manager 1.0 SP08 (SL Toolset 1.0 SP13)
1.8	2015-04-27	Updated version for Software Provisioning Manager 1.0 SP08 (SL Toolset 1.0 SP13)
1.7	2014-11-24	Updated version for Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12)
1.6	2014-07-07	Updated version for Software Provisioning Manager 1.0 SP06 (SL Toolset 1.0 SP11)
1.5	2014-03-17	Updated version for Software Provisioning Manager 1.0 SP05 (SL Toolset 1.0 SP10 )
1.4	2014-03-05	Updated Version
1.3	2013-11-22	Updated version
1.2	2013-10-28	Updated version
1.1	2013-08-19	Updated version
1.0	2013-07-17	Initial version

# 1 Homogeneous and Heterogeneous System Copy - Target Databases: SAP ASE; SAP MaxDB; Oracle; IBM Db2 for z/OS; IBM Db2 for Linux, UNIX, and Windows

This document describes how to perform a homogeneous or heterogeneous system copy of an SAP system based on the application server Java of SAP NetWeaver 7.5 with source operating system **UNIX**, using Software Provisioning Manager 1.0 SP46, which is part of SL Toolset 1.0 SP46.

## Note

SAP products based on SAP NetWeaver AS Java 7.10 to 7.40 SR2 are only supported in mainstream maintenance until the end of 2020. Extended maintenance will **not** be provided.

For more information, see SAP Note [2980160](#).

You can download the last published version of the guide set for the last Software Provisioning Manager 1.0 SP30 for out-of-maintenance products (SWPM10RMSP30\_<Version>.SAR) from SAP Note [2980160](#).

The guide set attached to SAP Note [2980160](#) covers only the SAP product versions which have reached end of maintenance.

The system copy procedures described in this guide consist of two phases:

1. Export of the source system's database content.
2. Installation of the target system using the source system's database content exported in the previous step. The target system installation consists of both the target database and target instance/application server installations.

The following **target** databases are supported:

- IBM Db2 for Linux, UNIX, and Windows
- IBM Db2 for z/OS
- SAP MaxDB
- Oracle
- MS SQL Server
- SAP Adaptive Server Enterprise ("SAP ASE" for short)

## Note

This system copy guide describes only the export of the source system in detail. For the installation of the target system, you use the **installation guide** for the database and operating system platform of your target system. This procedure describes only the additional system copy-specific steps for the target system installation and refers for the remaining steps to the target system [installation guide \[page 21\]](#).

Using Software Provisioning Manager 1.0 you can use [either database-specific methods or database-independent methods \[page 24\]](#).

For information about Software Provisioning Manager 1.0, see [About Software Provisioning Manager 1.0 \[page 10\]](#).

For information about SAP system products and releases covered by this guide, see [SAP Products Based on SAP NetWeaver 7.5 and SAP Solution Manager 7.2 SR2 Java Supported for System Copy Using Software Provisioning Manager 1.0 \[page 11\]](#).

For information about supported operating system and database platforms, see the Product Availability Matrix at <https://apps.support.sap.com/sap/support/pam>.

#### Note

Not all SAP NetWeaver releases or SAP Business Suite applications that are available in Software Provisioning Manager 1.0 and are described in this guide might have been released already. To make sure that the system copy options you want to perform are already supported, see SAP Note [1680045](#).

#### Note

As an alternative to using Software Provisioning Manager, you can copy or refresh your system with a completely automated end-to-end framework available using SAP Landscape Management. For more information, see SAP Note [1709155](#) and [https://help.sap.com/docs/SAP\\_LANDSCAPE\\_MANAGEMENT\\_ENTERPRISE](https://help.sap.com/docs/SAP_LANDSCAPE_MANAGEMENT_ENTERPRISE).

## Related Information

[About Software Provisioning Manager 1.0 \[page 10\]](#)

[New Features \[page 12\]](#)

[Naming Conventions \[page 17\]](#)

[Constraints \[page 18\]](#)

[Accessing the SAP Library \[page 21\]](#)

## 1.1 About Software Provisioning Manager 1.0

The “Software Provisioning Manager” 1.0 is the successor of the product- and release-specific delivery of provisioning tools, such as “SAPinst”. For consistency and better readability, tool names are capitalized throughout this document. We strongly recommend that you always download the latest version of the Software Provisioning Manager 1.0. The Software Provisioning Manager 1.0 is part of the Software Logistics Toolset 1.0 (“SL Toolset” for short). This way, you automatically get the latest fixes and supported processes. For more information about the Software Provisioning Manager as well as products and releases supported by it, see SAP Note [1680045](#) and <http://scn.sap.com/docs/DOC-30236>.

“SAPinst” has been renamed to “Software Provisioning Manager” in this documentation, but the terms “SAPinst” and “sapinst” are still used in:

- The name of the technical framework of the Software Provisioning Manager. For more information about the SAPinst Framework, see SAP Note [2393060](#).

- Texts and screen elements in the the Software Provisioning Manager GUI (SL Common GUI)
- Names of executables, for example `sapinst`
- Names of command line parameters, for example `SAPINST_HTTPS_PORT`
- Names of operating system user groups, such as the additional group `sapinst`

In the following, we generally refer to the Software Provisioning Manager 1.0 as the “Software Provisioning Manager”. We only use the term “software provisioning manager 1.0” if this is required for technical reasons.

## Related Information

[Preparing the Media Required for Performing the Export \[page 36\]](#)

# 1.2 SAP Products Based on SAP NetWeaver 7.5 and SAP Solution Manager 7.2 SR2 Java Supported for System Copy Using Software Provisioning Manager 1.0

Here you can find the list of SAP products based on SAP NetWeaver 7.5 and SAP Solution Manager 7.2 SR2 Java that are supported for system copy using Software Provisioning Manager 1.0, on the specific operating system and database combinations described in this guide.

SAP Product	Based on the following SAP NetWeaver Release
SAP S/4HANA 2025 Java	SAP NetWeaver 7.5
SAP S/4HANA 2023 Java	SAP NetWeaver 7.5
SAP S/4HANA 2022 Java	SAP NetWeaver 7.5
SAP S/4HANA 2021 Java	SAP NetWeaver 7.5
SAP S/4HANA 2020 Java	SAP NetWeaver 7.5
SAP S/4HANA 1909 Java	SAP NetWeaver 7.5
SAP S/4HANA 1809 Java	SAP NetWeaver 7.5
SAP S/4HANA 1709 Java	SAP NetWeaver 7.5

## SAP Product

## Based on the following SAP NetWeaver Release

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SAP S/4HANA 1610 Java (Out of Maintenance since December 2021)      SAP NetWeaver 7.5

### ⚠ Caution

The options for this product have been removed from Software Provisioning Manager 1.0 as of SP37. These options are still available in the “frozen” software provisioning manager 1.0 SP35 (see SAP Note [3220901](#))

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SAP S/4HANA ON-PREMISE 1511 Java (Out of Maintenance since December 2020)      SAP NetWeaver 7.5

### ⚠ Caution

The options for this product have been removed from Software Provisioning Manager 1.0 as of SP37. These options are still available in the “frozen” software provisioning manager 1.0 SP35 (see SAP Note [3220901](#))

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SAP Business Suite 7i 2016:      SAP NetWeaver 7.5

- EHP4 for SAP CRM 7.0 Java
- EHP8 for SAP ERP 6.0 Java
- EHP4 for SAP SRM 7.0 Java

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SAP Business Suite 7i 2013 Support Release 2:      SAP NetWeaver 7.5

- EHP3 for SAP CRM 7.0 Java Support Release 2 (**exception:** SAP CRM Application Server Java not supported on SAP NetWeaver 7.5)
- EHP7 for SAP ERP 6.0 Java Support Release 2 (**exception:** SAP XECO not supported on SAP NetWeaver 7.5)
- EHP3 for SAP SRM 7.0 Java Support Release 2

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SAP Solution Manager 7.2 Support Release 2      SAP NetWeaver 7.5

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## 1.3 New Features

This section provides an overview of the new features in Software Provisioning Manager 1.0.

Make sure that you also read the [Release Notes](https://help.sap.com) for your SAP product at <https://help.sap.com> > <Search your SAP Product> > <Select your SAP Product Version> > [What's New](#) >

Feature	Description	Availability
Certificate revocation list (CRL) required for SAPinst framework	Due to security requirements, a certificate revocation list (CRL) is required for the SAPinst framework of Software Provisioning Manager. For more information, see SAP Note <a href="#">3207613</a> and <a href="#">Prerequisites for Running Software Provisioning Manager [page 45]</a> .	Software Provisioning Manager 1.0 SP42 (SL Toolset 1.0 SP42)
<b>IBM Db2 for Linux, UNIX, and Windows only:</b> Enhanced support for range partitioning and inline LOB size	The Software Provisioning Manager now creates partition-specific tablespaces that are listed in the file DB6_PART_TABLESPACE.LST. This file is created by the ABAP program SMIGR_CREATE_DDL along with other SQL files for range-partitioned tables. For more information, see SAP Note <a href="#">3208238</a> .	
New SAPinst Framework Version 753	The SAPinst framework patch level has been upgraded from version 749 (SAP Note <a href="#">2393060</a> <i>SAPinst Framework 749 Central Note</i> ) to 753. For more information, see SAP Note <a href="#">3207613</a> <i>SAPinst Framework 753 Central Note</i> .	Software Provisioning Manager 1.0 SP36 (SL Toolset 1.0 SP36)
Support of AIX 7.3	AIX 7.3 is now supported for all software lifecycle management options from Software Provisioning Manager. For more information, see SAP Note <a href="#">3104875</a> .	Software Provisioning Manager 1.0 SP34 (SL Toolset 1.0 SP34)
Switch from 7.21_EXT Kernel to 7.22_EXT Kernel	Kernel 7.21 has reached end of maintenance. In addition, some issues have been fixed with the new 7.22_EXT kernel media.	Software Provisioning Manager 1.0 SP31 (SL Toolset 1.0 SP31)
Oracle 18 c or higher: Support of Transparent Data Encryption (TDE)	Software Provisioning Manager 1.0 supports Oracle Transparent Data Encryption (TDE) for SAP NetWeaver-based systems. For more information, see <a href="#">Support of Oracle Transparent Data Encryption (Oracle TDE) [page 183]</a> .	Software Provisioning Manager 1.0 SP27 (SL Toolset 1.0 SP27)
Support of Oracle 18	You can now perform all Software Provisioning Manager 1.0 tasks (installation, system copy, system rename) for SAP systems with the Oracle 18 database. For more information, see <a href="https://apps.support.sap.com/sap/support/pam">https://apps.support.sap.com/sap/support/pam</a> .	Software Provisioning Manager 1.0 SP25 (SL Toolset 1.0 SP25)
New Look and Feel of SL-UI	As of version 1.0 SP24 Patch Level 5, the Software Provisioning Manager has an updated look and feel of the SL-UI. For more information, see <a href="https://blogs.sap.com/2018/11/10/new-look-for-software-provisioning-manager/">https://blogs.sap.com/2018/11/10/new-look-for-software-provisioning-manager/</a> .	Software Provisioning Manager 1.0 SP24, PL05 (SL Toolset 1.0 SP24)
IBM Db2 for Linux, UNIX, and Windows: Dropping the database schema automatically while running Software Provisioning Manager to refresh the database instance or content	You can now drop the database schema automatically while running the <i>Database Refresh or Move</i> option or the <i>Refresh Database Content</i> option by choosing to drop the schema on screen <i>IBM Db2 for Linux, UNIX, and Windows - Drop Existing Schemas</i> . For more information, see <a href="#">Copying the Database Only – Refresh Database Instance [page 106]</a> and <a href="#">Copying the Database Only - Refresh Database Content on IBM Db2 for Linux, UNIX, and Windows [page 115]</a> .	Software Provisioning Manager 1.0 SP23 (SL Toolset 1.0 SP23)

Feature	Description	Availability
Software Provisioning Manager Log Files Improvements	Software Provisioning Manager log files are now available immediately after Software Provisioning Manager has been started, that is <b>before</b> a product has been selected on the <i>Welcome</i> screen. For more information, see <a href="#">Useful Information about Software Provisioning Manager [page 54]</a> and <a href="#">Troubleshooting with Software Provisioning Manager [page 64]</a> .	Software Provisioning Manager 1.0 SP22 (SL Toolset 1.0 SP22)
Media Signature Check	The digital signature of media is checked <b>automatically</b> by the Software Provisioning Manager during the <i>Define Parameters</i> phase while processing the <i>Media Browser</i> screens. The Software Provisioning Manager only accepts media whose digital signature has been checked.  For more information, see <a href="#">Preparing the Media Required for Performing the Export [page 36]</a> and <a href="#">Running the Software Provisioning Manager [page 48]</a> .	Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21)
Support of Oracle Database Vault	Oracle Database Vault 12c has been certified for SAP products that are based on SAP NetWeaver technology.  You can now copy an SAP system with Oracle Database 12c and configure Oracle Database Vault in the database of the target system.  Oracle Database Vault is supported for all <a href="#">system copy methods [page 24]</a> described in this documentation.  For more information, see SAP Note <a href="#">2218115</a>  .	Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21)
Support of Oracle 12.2	Software Provisioning Manager (the “Software Provisioning Manager”) now supports system copy for SAP systems with Oracle 12.2.	Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21)
SL-UI with SAPINST 7.49	With the new Software Provisioning Manager framework version SAPINST 7.49, you can now use the new SAPUI5-based graphical user interface (GUI) “SL-UI”. For more information, see <a href="#">Useful Information about Software Provisioning Manager [page 54]</a> , <a href="#">Running Software Provisioning Manager [page 48]</a> .	Software Provisioning Manager 1.0 SP20 (SL Toolset 1.0 SP20)
Cleanup of Operating System Users	You can now specify during the <i>Define Parameters</i> phase that the operating system users are to be removed from group <code>sapinst</code> after the execution of Software Provisioning Manager has completed.	Software Provisioning Manager 1.0 SP20 (SL Toolset 1.0 SP20)
Refresh Database Content for SAP MaxDB	For SAP MaxDB you can now refresh the content of an existing database using a database backup.  For more information, see <a href="#">Copying the Database Only - Refresh Database Content [page 108]</a> .	Software Provisioning Manager 1.0 SP20 (SL Toolset 1.0 SP20)

Feature	Description	Availability
Verification of Integrity of Data Units in Software Provisioning Manager	<p>The integrity of data units extracted from the Software Provisioning Manager archive is verified. For more information, see <a href="#">Downloading and Extracting the Software Provisioning Manager 1.0 Archive [page 36]</a> .</p> <p>In addition, check SAP Note <a href="#">1680045</a> whether additional information is available.</p>	Software Provisioning Manager 1.0 SP19 (SL Toolset 1.0 SP19)
Option to Restrict Access to Database Export	When running the database export, you can specify restricted access to the export directory. For more information, see <i>Prerequisites</i> in <a href="#">System Copy Procedure [page 40]</a> .	Software Provisioning Manager 1.0 SP19 (SL Toolset 1.0 SP19)
Refresh Database Content for all Databases Except SAP MaxDB	<p>For all databases except SAP MaxDB, you can now refresh the content of an existing database using a database backup.</p> <p>For more information, see <a href="#">Copying the Database Only - Refresh Database Content [page 108]</a>.</p>	Software Provisioning Manager 1.0 SP19 (SL Toolset 1.0 SP19)
Archive-Based Installation	You can now download the required <b>installation archives</b> instead of the complete SAP kernel installation media. For more information, see section <i>Downloading Specific Installation Archives (Archive-Based Installation)</i> in section <i>Preparing the Installation Media</i> in the target system <a href="#">installation guide [page 21]</a> ..	Software Provisioning Manager 1.0 SP17 (SL Toolset 1.0 SP17)
System Provisioning for SAP NetWeaver 7.5 and SAP NetWeaver 7.5-based Products	<p>All system provisioning tasks (installation, system copy, system rename) are available for the new SAP NetWeaver 7.5 release.</p> <p>The Dual Stack option, which integrates an AS ABAP and AS Java in a single system (common System ID &lt;SAPSID&gt;, common startup framework, common database), is no longer supported in SAP systems based on SAP NetWeaver 7.5.</p> <p>After upgrading to SAP NetWeaver 7.5 PI, you first have to split the still existing dual stack-system before you can use SAP NetWeaver 7.5 PI productively.</p> <p>For more information, see the <i>Upgrade Master Guide - SAP NetWeaver 7.5</i> at: <a href="https://help.sap.com/nw75">https://help.sap.com/nw75</a>  <a href="#">Installation and Upgrade</a> </p>	Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP15)
System Provisioning for SAP Solution Manager 7.2	All system provisioning tasks (installation, system copy, system rename) are available for the new SAP Solution Manager 7.2 release. Compared to previous SAP Solution Manager releases, SAP Solution Manager 7.2 is no longer provided as a classical dual-stack system (ABAP system with Java Add-in), but consists of a separate ABAP and Java stack.	Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP15)

Feature	Description	Availability
Creating Kernel Archives from existing SAP System	<p>You can reuse the binaries of a dedicated SAP system for a new SAP system installation or target system installation in the context of a system copy by creating *.SAR archives based on the *.lst files from the executable (.exe) directories of the source SAP system.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>Note</b></p> <p>This feature is only available for Unicode systems.</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p><b>Caution</b></p> <p>This feature has been deprecated with Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21) and the related option has been removed from the <i>Welcome</i> screen. This deprecation has been accomplished to ensure compliancy with the new feature "Media Signature Check" of Software Provisioning Manager 1.0 SP21 (SL Toolset 1.0 SP21) described above in this table.</p> </div>	Software Provisioning Manager 1.0 SP09 (SL Toolset 1.0 SP14)
Executing R3szchk in Parallel	<p><b>Valid for all Databases except of SAP ASE:</b></p> <p>You can now execute R3szchk in parallel. Using this feature you can improve the runtime of the export.</p>	Software Provisioning Manager 1.0 SP08 (SL Toolset 1.0 SP13)
Usage Type Library Deprecation for SAP Systems Based on SAP NetWeaver 7.3 EHP1 and Higher	<p>Software Provisioning Manager 1.0 no longer uses the "Usage Types" definitions in its business logic for SAP systems based on SAP NetWeaver 7.3 EHP1 and higher. This is done to unify modeling and terminology across all SAP tools used during the planning, installation and maintenance activities. The "Product Instance" definition replaces "Usage Types" regarding product modeling. For more information, see SAP Notes <a href="#">1970349</a> and <a href="#">1877731</a>.</p>	Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12)
Feedback Evaluation Form	<p>SAP SE's aim is to provide fast and efficient procedures. To evaluate the procedure you just carried out, we need information generated by the tool during process execution and your experience with the tool itself. A new evaluation form contains a simple questionnaire and XML data generated during the procedure.</p> <p>Port 4239 is used for displaying the feedback evaluation form. For more information, see <a href="#">Prerequisites for Running Software Provisioning Manager [page 45]</a>.</p>	Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12)

Feature	Description	Availability
Option <a href="#">Verify Signed Media</a>	The digital signature ensures that the signatory of a digital document can be identified unambiguously and signatory's name is documented together with the signed document, the date, and the time.  For more information, see SAP Note <a href="#">1979965</a> .	Software Provisioning Manager 1.0 SP06 (SL Toolset 1.0 SP11)

## 1.4 Naming Conventions

This section contains the naming conventions used in this documentation.

- The Software Provisioning Manager 1.0 is the successor of the product- and release-specific delivery of provisioning tools, such as "SAPinst". For consistency and better readability, tool names are capitalized throughout this document.  
This way, you automatically get the latest version with the latest fixes of the tool and supported processes. For more information about Software Provisioning Manager 1.0 as well as products and releases supported by it, see SAP Note [1680045](#) and [Software Provisioning Manager 1.0 and 2.0](#).  
"SAPinst" has been renamed to "Software Provisioning Manager" in this documentation, but the terms "SAPinst" and "sapinst" are still used in:
  - The name of the technical framework of the Software Provisioning Manager. For more information about the SAPinst Framework, see SAP Note [3207613](#) (*SAPinst Framework 753 Central Note*).
  - Texts and screen elements in the Software Provisioning Manager's SL-UI
  - Names of executables, for example `sapinst`
  - Names of command line parameters, for example `SAPINST_USE_HOSTNAME` or `SAPINST_STACK_XML`
  - Names of operating system user groups, such as the additional group `sapinst`
- "usage type", "technical usage", and "product instance"  
As of Software Provisioning Manager 1.0 SP07 (SL Toolset 1.0 SP12), the term "product instance" replaces the terms "usage type" and "technical usage".
- [System Copy](#)  
Duplication of an SAP system. Certain SAP parameters might change in a copy. When you perform a system copy, the Software Provisioning Manager installs all the instances again, but it uses a copy of the source system database to set up the database.
- [Source System and Target System](#)  
The SAP system containing the original database is called the **source system** and the system to which the database copy is to be imported is called the **target system**. Their SAP system names are abbreviated to `SOURCE_SAPSID` and `TARGET_SAPSID`. The terms source database and target database are also used in this description.
- [Homogeneous System Copy](#)  
During homogeneous system copy, you use the same operating system and database platform as the original system.  
You can perform it using either [Database Independent System Copy \[page 39\]](#) or [Database-Specific System Copy \[page 71\]](#) methods.

- **Heterogeneous System Copy**  
During heterogeneous system copy, you change either the operating system or the database system, or both. *Heterogeneous system copy* is a synonym for migration.  
You can perform it using the [Database Independent System Copy \[page 39\]](#) method.
- **Database Copy**  
Database-dependent part of the system copy.
- **Placeholders**  
Placeholders such as `<SAPSID>` are used in commands. They are used in the same way as in the SAP system installation documentation. You must replace them with the values valid for your site.  
The following additional placeholders are used:

Placeholder	Meaning	How to find out
<code>&lt;SAPSID&gt;</code>	SAP system ID	—
<code>&lt;S_HOST&gt;</code>	System name of the source host	Command <code>hostname</code>
<code>&lt;T_HOST&gt;</code>	System name of the target host	Command <code>hostname</code>
<code>&lt;S_SAPSID&gt;</code>	SAP system ID of the source system	<code>&lt;SAPSID&gt;</code> of the original system
<code>&lt;T_SAPSID&gt;</code>	SAP system ID of the target system	<code>&lt;SAPSID&gt;</code> of the target system
<code>&lt;S_DBSID&gt;</code>	Database ID of the source system	<code>&lt;DBSID&gt;</code> of the original system
<code>&lt;T_DBSID&gt;</code>	Database ID of the target system	<code>&lt;DBSID&gt;</code> of the target system

### Note

Database ID `<DBSID>` identifies the database instance. The Software Provisioning Manager prompts you for the `<DBSID>` when you are installing the database instance.

The `<DBSID>` can be the same on IBM i as the `<SAPSID>`.

- "SAP liveCache" refers to "SAP MaxDB liveCache".
- "SAP liveCache client" refers to "SAP MaxDB liveCache client".

## 1.5 Constraints

This section contains the constraints valid for the system copy procedures described in this documentation.

- HP-UX information has been removed from this documentation, as all HP-UX versions on the 31st December 2025 have reached the end of standard support. As of January 1st 2026, all HP-UX releases are "end-of-support" by HPE. For more information, see SAP Note [3120243](#). Though an extended "Mature Support" to December 31 2028 is still available, HPE will no longer provide software bug fixes, updates and patches. If you still want to use HP-UX, use `SWPM10SP35_7.SAR`. For more information, see SAP Note [3261541](#).

- Effective immediately, the Software Provisioning Manager no longer supports the deprecated CPU architectures and/or operating system versions listed in SAP Note [2998013](#).

### Note

- If your current operating system is listed as deprecated in SAP Note [2998013](#), we strongly recommend that you migrate to a supported platform.
- If you continue to run Software Provisioning Manager on the deprecated CPU architectures and/or operating system versions listed in SAP Note [2998013](#), you do so at your own risk and without support from SAP. The Software Provisioning Manager 1.0 SP36 and higher will still run on the deprecated CPU architectures and/or operating system versions listed in SAP Note [2998013](#) but it may run into an error. When you start the Software Provisioning Manager, you will see a warning like the following: “Platform Support : Support for SAP JVM on PPC64 big endian for Linux ends June 30 th, 2022. See SAP note 2998013.” If you run into an issue, you must use the “frozen” Software Provisioning Manager **1.0 SP35** software and the related system copy guide. For more information, see SAP Note [3220901](#).

- SAP recommends not migrating from the SAP HANA database to another database to remain future-proof.
- **Oracle Database:** [Refresh Database Instance \[page 108\]](#) and [Refresh Database Content \[page 121\]](#) are **not** supported for [Database Instance Installation on Oracle Automatic Storage Management \[page 185\]](#) and [Installing Oracle Real Application Clusters on your Target System \[page 186\]](#).
- For the development of Java applications, we strongly recommend that you follow the rules mentioned below. Otherwise, we cannot guarantee that you will be able to copy your AS Java later with the SAP tools to change your underlying operating system and/or database system.
- System copy is not supported for the Diagnostics Agent.  
For more information and guidance see the *Diagnostics Agent Maintenance Procedures* article at <http://wiki.scn.sap.com/wiki/x/n4efFg>.
- If you have implemented a federated portal network (FPN) across multiple SAP NetWeaver-based systems, see [SAP Note 2361152](#) before starting the system copy.
- System copy options for **SAP Solution Manager 7.2 Java Support Release 1:**  
Use these options only for SAP Solution Manager 7.2 Java lower than SP09.  
For SAP Solution Manager 7.2 Java SP09 or higher, use the options of SAP NetWeaver 7.5 Java.  
For more information, see [Running Software Provisioning Manager \[page 48\]](#).
- Only perform a system copy if you have experience in copying systems and thorough knowledge of the operating system, the database, and the Java Dictionary . Only perform a heterogeneous system copy (of a production, development, or test (QA) system) if you are a certified system support consultant or a certified SAP Technical Consultant.
- SAP does **not** support client transport as a system copy method. Transporting production clients is not supported at all. You can use client transport for the initial setup of an SAP system infrastructure. This documentation does **not** cover the client copy procedure.
- This documentation does **not** describe how to export and import a database with the installation tools for reorganization purposes. Use the appropriate tools for database reorganization, as SAP does not support this installation option.
- If you have made modifications in your development system and want to copy your quality assurance or production system onto the development system, see [SAP Note 130906](#).
- This documentation describes how to copy data from one SAP system to another SAP system based on SAP Netweaver Application Server. This documentation does not describe how to copy data from non-SAP systems to SAP systems.

- SAP does not support all data archiving operations after a system copy. If you used data archiving in the source system, you might not always have access from the target system to the archive files that were created. For more information, see [SAP Note 153433](#) and *Data Management Landscape & Transformation Solutions* at <https://support.sap.com/dm&lt>. Access from the target system to archived files in the source system without a dedicated archive migration project is only supported as follows:

- You have copied a source system that uses external data archiving. The target system has read-only access to this archive.
- You have copied a source system that uses data archiving locally. You can either arrange network access for appropriate archive file sharing or copy all archive files to the file system of the target system.

In all other cases, contact *Data Management Landscape & Transformation Solutions* at <https://support.sap.com/dm&lt>.

- When you perform a system copy, all product instances or usage types in the source system are copied to the target system. This means that none of the product instances or usage types in the target system can be excluded from the system copy, nor can you select product instances or usage types.
- “Dos and Don'ts” for system copy:
  - **Do:**
    - Save configuration data and runtime data in the Java database only.
    - Follow the Open SQL standard.
    - Make sure that all communication runs through the database pool.
  - **Don't:**
    - Save any system and infrastructure-specific data in business objects. Use a pointer to the central storage of such information, for example:
      - SAP system ID and SID (SAPSID = SID = SAP system name)
      - Host name
      - IP addresses
      - Services and ports
      - Logical destinations and logical system names
      - Other technical infrastructure names
    - Use file system persistency.
    - Set up dependencies between Java and ABAP.
    - Try to copy the Java part of a dual-stack (ABAP+Java) system to a Java standalone system or the other way around.

## 1.6 JLoad Limitations

This section describes JLoad limitations for system copy.

### Jload Limitations

- The Software Provisioning Manager generates a database dump of all SAP objects that are defined in the Java Dictionary (Jload). Other objects are not exported by the Software Provisioning Manager.

- For a consistent database export, no transactions on export-relevant database objects are allowed during the export. Otherwise, the export has to be restarted. Therefore, we recommend that you shut down the SAP system (excluding the database!) for the export. The database must still be running.
- JLoad applies special handling during the import for LOB/CLOB columns, which can increase processing time if a field contains more than 50 MB of data.

## Related Information

[Constraints \[page 18\]](#)

[Database Independent System Copy \[page 39\]](#)

## 1.7 Accessing the Installation Guides

The references to the "installation guide" in this system copy guide always refer to the following location on the SAP Support Portal, where you can access or download the installation guide for your operating system platform, database, and technical stack:

<http://support.sap.com/sltoolset> >> [System Provisioning](#) > [Install a System using Software Provisioning Manager](#) > [Installation Option of Software Provisioning Manager 1.0 SP<Current Number>](#) > [Installation Guides - Application Server Systems](#) > [Installation Guides - Application Server Systems - Software Provisioning Manager 1.0](#) > [SAP Application Server Systems Based on SAP NetWeaver](#) >

In the table, filter for the following: *Database* = <Your Target Database>, *Product Release* = SAP NetWeaver 7.X-based, *Operating System Platform* = <Your Target OS Platform>, *Technical Stack* = <Your Technical Stack>.

## 1.8 Accessing the SAP Library

The references to the **SAP NetWeaver Library** documentation in this guide always refer to the following on SAP Help Portal. When you come across a reference to SAP Library documentation in this guide, you always have to add the path of this reference to the basic URL for the SAP NetWeaver release your SAP product is based on, as given in the list below:

- SAP systems based on SAP NetWeaver 7.5:  
<http://help.sap.com/nw75> >> [Application Help](#) > [SAP NetWeaver Library: Function-Oriented View](#) >
- **SAP Solution Manager 7.2 SR2 only:**  
SAP systems based on SAP NetWeaver 7.4:  
<http://help.sap.com/nw74> >> [Application Help](#) > [SAP NetWeaver Library: Function-Oriented View](#) >

# 2 Planning

This section describes how to plan your system copy.

## [Before You Start \[page 22\]](#)

This section contains the information you need to consider before you start a system copy.

## [Use Cases for System Copy \[page 23\]](#)

This section describes the use cases for which you can apply the system copy.

## [System Copy Methods \[page 24\]](#)

This section describes the system copy methods that you can choose from.

## [Creating a System Copy Plan \[page 25\]](#)

Create a plan to perform the system copy.

## [Basic Planning Aspects and Parameters \[page 26\]](#)

This section provides information about basic planning aspects and parameters required for system copy.

## [System Copy and Migration Optimization \[page 29\]](#)

This section lists several methods that you can use to optimize the standard system copy procedure.

## 2.1 Before You Start

This section contains the information you need to consider before you start a system copy.

- The SAP OS/DB Migration Check prepares you in an optimal way for a successful migration and supports smooth continued operations on the new platform. The OS/DB Migration Check is mandatory, if you are going to migrate a productive system.

For more information, see <https://support.sap.com/support-programs-services/services/os-db-migration.html>. In addition to the information contained on this page, check the *SAP OS/DB Migration Planning Guide* that is available in the *Media Library*.

- **Before** you start the system copy, you must read the following :

- SAP Notes

Read the following SAP Notes for up-to-date information on system copy and corrections to the system copy documentation:

- SAP Note [1680045](#) – *Release Note for Software Provisioning Manager 1.0*
- SAP Note [1738258](#) – *System Copy of Systems Based on SAP NetWeaver 7.1 and Higher*
- SAP Note [888210](#) – *NW 7.\*\*: System copy (supplementary note)*

Make sure that you have the most recent version of the SAP Notes, which you can find at:

<https://support.sap.com/notes>.

- Guides for the target system installation

This system copy guide describes only the **source system export** in full detail. As for the installation of the **target system**, this system copy guide describes only the system copy-specific steps in section

[Setting Up the Target System \[page 66\]](#), but refers for all steps that are identical with a new system installation to the appropriate operating system and database-specific [installation guide \[page 21\]](#).

- *SAP System Copy and Migration* at <https://wiki.scn.sap.com/wiki/display/SL/System+Copy+and+Migration>
- SAP system landscape copy:
  - Best Practice document *SAP System Landscape Copy for SAP NetWeaver and SAP Solutions* available at <https://support.sap.com/esacademy>
  - **SAP Note 885343** – *SAP System Landscape Copy*
  - **SAP Note 1990240** – *Support of mixed landscapes (Unicode and Non-Unicode)*
  - **SAP Note 82478** – *SAP system OS/DB migration*
- If you have problems during the system copy, create a customer message using the application area **BC-INS-MIG**.

## 2.2 Use Cases for System Copy

This section describes the use cases for which you can apply the system copy.

You can apply the system copy for the following:

- Setting up system landscapes, where the SAP systems have different system IDs (<SAPSID>).
- Providing systems for testing, demonstration, training, and standby.  
To create these systems you can either perform an initial system copy or use a database export to overwrite the database of an already existing target system (refresh use case).  
Depending on the purpose of the system, it might be advisable to use the same SAP system ID, even though this prevents you from including the system in a system group for transports.

### Note

- **Oracle only:** You cannot create standby systems with a system copy.
  - You should perform system copy in a test system first. This way you can identify customer-specific problems that might result from modifications.
- Changing the operating system, the database, or both.  
You can use different operating system releases or database releases for the source and target systems, but the SAP system release of the source and target systems must be the same.
  - Changing the hardware.
  - Disaster recovery from an existing database backup

## 2.3 System Copy Methods

This section describes the system copy methods that you can choose from.

You can choose between the following system copy methods:

### Note

Before making your decision, read the documentation *SAP System Copy and Migration* at <https://wiki.scn.sap.com/wiki/display/SL/System+Copy+and+Migration> in order to make yourself familiar with the available system copy and migration procedures.

- **The database-independent procedure using SAP tools**

Use this method if database-specific methods are either not available or not suitable. For more information, see [Database-Independent System Copy \[page 39\]](#).

- **The database-specific procedure using tools provided by the database vendor**

Some database vendors offer specific tools for copying a database. These tools allow you to:

- Restore a backup of one database (source database) in another one (target database) (backup method)
- Unload the source database and load the data into the target database

For more information, see [Database-Specific System Copy \[page 71\]](#).

- **Copy single instances only**

The following options are supported:

- You can **move a primary application server instance** to a different host within your system. For more information, see [Copying the Primary Application Server Instance Only \[page 104\]](#).
- You can **move a database instance** to a different host within your system. For more information, see [Copying the Database Only – Move Database Instance \[page 104\]](#).
- You can **refresh an existing database instance** without having to copy the primary application server instance and to reinstall additional applications servers. For more information, see [Copying the Database Only – Refresh Database Instance \[page 106\]](#).
- You can **refresh the content of an existing database** without having to copy the primary application server instance and to reinstall additional applications servers.

### → Recommendation

We recommend that you use option *Refresh Database Content* if you need to equalize the database content of two or more already existing and configured systems, for example in automatized system landscapes with “template” systems which have to correspond to precisely defined standards, such as predefined host names, network settings, users, security policies.

For more information, see [Copying the Database Only - Refresh Database Content \[page 108\]](#)

### ⚠ Caution

You **cannot** copy single product instances, usage types, or components!

- **Changing the system variant**

If you want to change your system variant (for example, if you want to make your standard system a distributed or high-availability system), proceed as follows:

1. [Perform the export \[page 44\]](#).
  2. For the import, choose the relevant system copy options as described in the process flows of the [system copy procedure \[page 40\]](#).
- **Development Infrastructure (DI) only:**  
For the migration of Java Development Infrastructure (JDI) components you can apply either “Copy” or “Move”.
    - **Copy**  
“Copy” is supported only by Design Time Repository (DTR). After a copy, both the source DTR and target DTR can be used productively in parallel. However, Component Build Service (CBS), Change Management Service (CMS), and CM Services do not support such a copy.

#### Caution

If you are performing the system copy of a DI system and intend to keep CBS, CMS and CM services running on the target system, make sure to mark the checkbox *Target system will replace source system* on the *Java System Copy* screen.

- **Move**  
“Move” is supported by all JDI components (DTR, CBS, CMS, and CM Services). After a move, the source system can no longer be used, that is, only the target is active after the move has been performed.

## 2.4 Creating a System Copy Plan

Create a plan to perform the system copy.

### Procedure

1. When copying a system that contains production data, choose the moment for the copy carefully. This could be a month-end or year-end closing.
2. Consider the downtime of the source system (for preparations and copying) when planning the system copy.
3. Consider a test run.

Perform a test run of the system copy. You can use the time taken by the test run to calculate the system downtime:

- If you want your target system to replace your source system, try to perform a complete test run. This means that the entire database is exported from the source system, transferred to the target system, and imported there. System downtime is approximately equal to the total test time (that is, time for export, transport, and import).
- If you do not want to replace your source system, a partial test run (export of the entire database or parts of it) can be sufficient to calculate the system downtime. The source system is only down for the time of the export.

Calculating the system downtime is particularly important for very large databases (VLDB) or when tapes are being used. The test run is also to determine the amount of export data. Choose the best data transfer method . We recommend that you only perform read/write actions on local file systems.

4. Define a schedule for the test migration and the final migration.

## 2.5 Basic Planning Aspects and Parameters

This section provides information about basic planning aspects and parameters required for system copy.

### Support of Mixed Landscapes (Unicode and Non-Unicode)

If your system landscape is mixed with Unicode and Non-Unicode systems, or if you have third party software in your system landscape which does not support Unicode at all, check SAP Note [1990240](#) for potential support restrictions.

### Using NFS-Mounted File Systems

Note that the overall performance of the system copy depends on all links in the chain, starting from the performance of the source database to the following:

- Performance of the server on which the export is executed
- File system to which the export data is written
- Target side that reads from the export medium and imports it into the target database
- Use a **local** directory to perform the export, in order to increase the performance and avoid data corruption. When using NFS, consult SAP Note [2093132](#) for recommendations about NFS configuration and restrictions. Also take into account that it may directly affect performance.

You have to make sure that all aspects are configured for optimal performance. For recommendations on NFS configuration, see .

#### ⓘ Note

If you want to use NFS for the system copy export, make sure that you create secure file share permissions. Be aware that the communication protocol for NFS needs to be a safe one, for example SSFS.

### SAP System Copy on Oracle Solaris with Oracle Database

For more information about copying SAP Systems on Oracle Solaris with Oracle database, see SAP Note [1848918](#).

## Configuration Analysis and Hardware Configuration

- In the event of a **major change in hardware configuration** (for example, new machine type, new hard disk configuration, new file system type), consult your SAP-authorized hardware partner.
- You need to determine the following:
  - Number of application servers
  - Expected size of the database
  - Additional disks or other hardware required
  - Required memory

### Note

Refer to the section on hardware and software requirements in the SAP system installation documentation to determine the system requirements.

## Choosing an SAP system ID

You can choose the new SAP system ID `<TARGET_SAPSID>` freely during a new installation.

### Caution

To meet the requirements of the Workbench Organizer, you must choose different SAP system IDs for different SAP systems.

Make sure that your SAP system ID:

- Is unique throughout your organization  
Do not use an existing `<SAPSID>` when installing a new SAP system.
- Consists of exactly three alphanumeric characters
- Contains only uppercase letters
- Has a letter for the first character
- Does not include any of the reserved IDs listed in [SAP Note 1979280](#).
- If you want to install an additional application server instance, make sure that no Gateway instance with the same SAP System ID (SAPSID) exists in your SAP system landscape.

## SAP License

Once the installation is completed and the SAP system copy has been imported, you require a new license key for the target system. The license key of the source system is **not** valid for this system.

For information about ordering and installing the SAP license, see the [SAP Library \[page 21\]](#) for your release at:

#### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#) , and then continue the navigation as described below.

► ► [Solution Life Cycle Management](#) ► [SAP Licenses](#) ►

For more information about SAP license keys, see <http://support.sap.com/licensekey> or [SAP Note 94998](#).

## Archiving files

Data that has been archived in the source system (data that does not reside in the database but was moved to a different storage location using SAP Archive Management) must be made accessible in the target system. Adapt the file residence information in the target system.

For more information, see the following:

- The [SAP Library \[page 21\]](#) for your release at:

#### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#) , and then continue the navigation as described below.

► [SAP NetWeaver Library: Function-Oriented View](#) ► [Solution Life Cycle Management](#) ► [Data Archiving](#) ►

- The blogs at <https://blogs.sap.com/2016/10/11/software-application-lifecycle-management-sap-bw/> regarding SAP NetWeaver Application Lifecycle Management and housekeeping

Access to archive files is platform-independent.

## Special Prerequisites for SAP Business Warehouse (SAP BW) and IBM Db2 for Linux, UNIX, and Windows (IBM Db2) 10.5 and higher

For special prerequisites and required procedures for SAP BW and IBM Db2, including the implementation of DB2 BLU acceleration, see the appendix of the database administration guide *SAP Business Warehouse on IBM DB2 for Linux, UNIX, and Windows: Administration Tasks*, available at [https://help.sap.com/viewer/db6\\_admin](https://help.sap.com/viewer/db6_admin).

## When Using SAP Landscape Transformation Replication Server

If you use SAP Landscape Transformation Replication Server in your system landscape, we recommend that you stop replication and remove existing database triggers before you start the system copy. For more

information about SAP Landscape Transformation Replication Server and its dependencies, see SAP Note [1605140](#).

## More Information

FAQ - System Copy and Migration at: <https://wiki.scn.sap.com/wiki/display/SL/FAQ++System+Copy+and+Migration>.

## 2.6 System Copy and Migration Optimization

This section lists several methods that you can use to optimize the standard system copy procedure.

More information about system copy optimizations can be found in SAP Note [1875778](#).

### [Database Tuning \[page 29\]](#)

This is just a list of database parameters which could help you to tune your database . This list is not meant to give you detailed recommendations about the parameter settings.

### [Package Splitting \[page 31\]](#)

### [Table Splitting \[page 31\]](#)

### [Java Migration Monitor \[page 31\]](#)

The Java migration monitor is a tool that helps you to perform and control the unload and load process for the Java stack during the system copy procedure.

### [Database-Specific Central Notes \[page 31\]](#)

For some databases there are central SAP Notes where you can find information about how to optimize system copy and migration.

### 2.6.1 Database Tuning

This is just a list of database parameters which could help you to tune your database . This list is not meant to give you detailed recommendations about the parameter settings.

## Database Tuning Measures – Database Independent

If possible, update the database statistics.

#### Note

This recommendation is not valid for MSSQL Databases. For more information, see SAP Note [1660220](#).

## Database Tuning Measures – IBM Db2 for z/OS

Create indexes deferred.

## Database Tuning Measures – IBM Db2 for Linux, UNIX, and Windows

Refer to the documentation *DB2 Optimization Techniques for SAP Database Migration And Unicode Conversion* available at: <http://www.redbooks.ibm.com/abstracts/sg247774.html> and to the relevant SAP Note.

### Note

IBM Db2 for Linux, UNIX, and Windows databases have their recommendations in separate notes, one for each release. You can find them easily searching for **Standard Parameter Settings** under SV-BO application area. For example, for IBM Db2 for Linux, UNIX, and Windows V9.7, the relevant SAP Note is [1329179](#).

## Database Tuning Measures – Oracle

- Enlarge the number and size of redo logs experiences from other pilot projects by adding 4 additional redo logs of 100 MB each.
- Enlarge the number of db writers.
- Enlarge temporary tablespace PSAPTEMP (~20-30 GB).
- Increase sort\_area\_size or use pga\_\* parameters.
- Increase PSAPROLL (~20 GB).

## Database Tuning Measures – SAP MaxDB

- You can find general documentation about tuning measures of the current SAP MaxDB release in the [SAP Library for your release \[page 21\]](#) at:

### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [Application Help](#) ► [Function Oriented View](#) ► [English](#) ► [SAP NetWeaver by Key Capability](#) ► [Database Administration](#) ► [Database Administration for MaxDB](#) ► [MaxDB](#) ► [Basic Information](#) ► [Concepts of the Database System](#) ► [Performance](#) ►

- Increase the parameter CACHE\_SIZE to the maximum available size of main memory. Add the unused main memory of non-running Application Server components to the database cache.

- Increase the parameter `MAXCPU` to the maximum available number of processors to which the database system can distribute user tasks.
- You can use the parameter checker. For more information, see SAP Note [1111426](#).

## 2.6.2 Package Splitting

You can split the default packages `EXPORT.XML` and `IMPORT.XML` into several smaller and equal sized packages using the `Java Splitter` tool.

### Related Information

[Package and Table Splitting for Java Tables \[page 173\]](#)

## 2.6.3 Table Splitting

For copying large Java tables, you can use the `Java Splitter` tool which is integrated in the Software Provisioning Manager.

For more information, see [Package and Table Splitting for Java Tables \[page 173\]](#).

## 2.6.4 Java Migration Monitor

The Java migration monitor is a tool that helps you to perform and control the unload and load process for the Java stack during the system copy procedure.

### More Information

For more information, see [Jload Procedures Using the Java migration monitor \[page 166\]](#)

## 2.6.5 Database-Specific Central Notes

For some databases there are central SAP Notes where you can find information about how to optimize system copy and migration.

- For more information about **MS SQL Server**-specific migration optimization options, see SAP Note [1054852](#) (*Recommendations for migration to MS SQL Server*).

- For more information about **SAP ASE**-specific migration optimization options, see SAP Note [1680803](#) (Migration to SAP Sybase ASE - Best Practice).

## Related Information

[System Copy and Migration Optimization \[page 29\]](#)

# 3 Preparation

Before you start the system copy, you must perform the following preparation steps.

## General Technical Preparations [page 33]

To make a consistent copy of the database, you need to prepare the source system and perform some subsequent actions on the target system. This is not necessary when performing a test run.

## Product-Specific Preparations [page 35]

In this section, you can find information about product-specific preparations if there are any.

## Preparing the Media Required for Performing the Export [page 36]

For performing the **export on the source system**, you only need to download and extract the Software Provisioning Manager 1.0 archive which contains the Software Provisioning Manager.

## 3.1 General Technical Preparations

To make a consistent copy of the database, you need to prepare the source system and perform some subsequent actions on the target system. This is not necessary when performing a test run.

### Context

The following section describes important preparations on the source system before you perform a homogeneous or heterogeneous system copy.

For more information about SAP System Administration, see the *Administration* information in the [SAP Library \[page 21\]](#) for the SAP NetWeaver release your source system is based on:

#### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

#### SAP NetWeaver Release

#### SAP Library Path

- **SAP Solution Manager 7.2 SR2 only:** SAP systems based on SAP NetWeaver 7.4
- SAP systems based on SAP NetWeaver 7.5

▸ [Operations](#) ▸ [Technical Operations for SAP NetWeaver](#) ▸

## Procedure

1. Before you start a system copy, check the minimum kernel patch level required by the support package level of the source system.

It might be necessary to replace the SAP kernel delivered with the installation kit and installed during the installation of the target system by a newer kernel patch level before starting the target system. If you have to replace the delivered SAP kernel, you can do this after the installation of the primary application server instance.

2. **IBM Db2 for Linux, UNIX, and Windows** only: `JSizeCheck` requires monitoring functions that are no longer available with IBM Db2 for Linux, UNIX, and Windows version 10.5 by default. Before you start a Java export, you have to create these monitoring functions as follows:
  - a. Log on as user `db2<dbssid>`.
  - b. Execute the following command: `db2updv<DB2 version> -r -d <DBSID> -u db2<dbssid> -p <password>`

### Note

The name of the `db2updv...` tool changes with each DB2 version. For example, for DB2 10.5 or 11.1, you need to use `db2updv105` or `db2updv111`, respectively.

3. To avoid stopping the database due to a log directory being full, make sure that the log backup is enabled during the import.
4. If you use the Integration Repository and Directory, make sure that you apply SAP Note [1345600](#) to avoid any database inconsistencies.
5. If your source system is configured against a System Landscape Directory (SLD), check the size of table `BC_SLD_CHANGELOG`. The size of this table might be growing very fast because of the reasons described in SAP Note [1792134](#). It is recommended that you clean up table `BC_SLD_CHANGELOG` as described in SAP Note [1799613](#).
6. Make sure that you update the CIM data model in the system landscape directory (SLD) of the source system as described in SAP Note [669669](#). Otherwise, you might get an error during the target system installation (see SAP Note [1840394](#)).
7. If you are using the Services Registry, follow the instructions in SAP Note [2142836](#) to avoid having invalid data in the Services Registry after the system copy.
8. **SAP NetWeaver 7.30 only:** Before you start copying a Java system, make sure that it is running in `NORMAL` mode.  
To switch to `NORMAL` mode, proceed as follows:
  - a. Make sure that all possibly pending deployment processes are stopped. In case of deployment related issues, you may create a message on component `BC-UPG-TLS-TLJ`.
  - b. Start the Config Tool script file from the `/usr/sap/<SAPSID>/<Central_Instance_Name>/j2ee/configtool/` directory.
  - c. Choose **File > Safe Mode**.
  - d. A dialog box appears. In the *Safe Mode Enabled* drop-down list, choose *No* and confirm your entry.
  - e. Save the settings and confirm all occurring messages.
  - f. Restart the SAP system.
9. Before you start the system copy procedure, you have to check the secure store key phrase on the source system using the `checkKeyPhrase.sh` tool, which is located at `/usr/sap/<SAPSID>/SYS/global/`

stools. If the secure store key phrase is unknown to you, you must change it to a known value, and only then start the system copy procedure.

For more information about how to change the secure store key phrase, see [SAP Note 1683616](#).

During the installation of the target system, the secure store must be created using the same key phrase as the source system. Make sure that the key phrase is correct otherwise encrypted content cannot be decrypted and that prevents the server from starting.

#### ⚠ Caution

Make a backup of both the `SecStore.key` and the `SecStore.properties` file of the source system in a safe place and keep them until the whole system copy process - source system export **and** target system installation - has completed.

10. **Oracle Database only:** If your source system has Oracle Database Vault (DV) enabled, and you want to enable DV on the target system as well, you need the password of user `secadmin / c##secadmin` during the [Software Provisioning Manager import procedure \[page 68\]](#). For more information, see [SAP Note 2218115](#).

11. **Oracle Database only:** Before performing System Copy from any database to Oracle, check the contents of the TAORA and IAORA database tables and ensure that the entries are consistent.

You can use the upgrade-specific [SAP Note 541542](#) as a reference to check for the correct entries of the table. If there are any inconsistencies, they must be corrected on the source system before performing the export.

If there are inconsistent entries, system copy import fails with an error due to wrong tablespace names for TABARTs USER and USER1 in the Oracle specific tables TAORA and IAORA on the source system. These tables are not checked for consistency on the source system if the source database is not Oracle. This inconsistency in the source system is caused due to the usage of both old and new tablespace layout on the source system.

12. Prepare the [media required for the export \[page 36\]](#):

- a. Prepare the Software Provisioning Manager archive as described in [Downloading and Extracting the Software Provisioning Manager 1.0 Archive \[page 36\]](#).

13. Check [SAP Note 1410736](#) to avoid session timeout during the export or import procedure.

## 3.2 Product-Specific Preparations

In this section, you can find information about product-specific preparations if there are any.

### Development Infrastructure (DI)

If your SAP system has [Development Infrastructure \(DI\)](#) then this system can only be moved, but not be copied. This means that it is possible to migrate such a system from one host to another but it is not possible to keep

both systems active after the migration. The target system will be inactive after the copy. If you want to move an SAP system with *Development Infrastructure* (DI), make sure that the following prerequisites are met:

- The users and passwords created in the source system are valid in the target system (for example, they use the same UME).
- Check in (or revert) all open activities (of all users) in the SAP Developer Studio by using the Design Time Repository perspective (DTR perspective).
- Remove all existing development configurations from the SAP Developer Studio.
- Stop all applications of the Development Infrastructure (DI) on the source system.

## 3.3 Preparing the Media Required for Performing the Export

For performing the **export on the source system**, you only need to download and extract the Software Provisioning Manager 1.0 archive which contains the Software Provisioning Manager.

For the media required for performing the **target system installation**, see section *Preparing the installation Media* in the [installation guide \[page 21\]](#) for the operating system platform and database of your target system.

[Downloading and Extracting the Software Provisioning Manager 1.0 Archive \[page 36\]](#)

This section describes how to make the Software Provisioning Manager 1.0 available.

### 3.3.1 Downloading and Extracting the Software Provisioning Manager 1.0 Archive

This section describes how to make the Software Provisioning Manager 1.0 available.

#### Prerequisites

You must always download and extract the Software Provisioning Manager 1.0 archive from the SAP Software Download Center because you must use the latest version.

- Make sure that you are logged on as a user with `root` authorizations, and that the download directory has at least the permissions `755`.
- Make sure that you use the **latest** version of the `SAPCAR` tool when manually extracting the Software Provisioning Manager archive. You need the `SAPCAR` tool to be able to unpack and verify software component archives (\*.SAR files). \*.SAR is the format of software life-cycle media and tools that you can download from the SAP Software Download Center.

#### Note

An older `SAPCAR` version might extract archive files in a wrong way and this could prevent the Software Provisioning Manager from working consistently.

Proceed as follows to get the latest version of the SAPCAR tool:

1. Go to <https://me.sap.com/softwarecenter> > **SUPPORT PACKAGES & PATCHES** > *By Category* > **SAP TECHNOLOGY COMPONENTS** > **SAPCAR**.
  2. Select the SAPCAR for your operating system and download it to an empty directory.
  3. Even if you have the latest SAPCAR already available, we strongly recommend that you verify its digital signature anyway, unless you downloaded it directly from <https://me.sap.com/softwarecenter/> yourself. You can do this by verifying the checksum of the downloaded SAPCAR tool:
    1. Depending on what operating system you are using, compute a hash of the downloaded SAPCAR tool, using the SHA-256 algorithm used by SAP.
    2. Now verify the digital signature of the downloaded SAPCAR tool by comparing the hash with the checksum (generated by SAP using the SHA-256 algorithm) from the *Content Info* button in the *Related Info* column on the right-hand side of the place where you downloaded the SAPCAR tool.
  4. To improve usability, we recommend that you rename the executable to **SAPCAR**.
- For more information about SAPCAR, see SAP Note [212876](#).

## Procedure

1. Download the latest version of the Software Provisioning Manager 1.0 archive SWPM10SP<Support\_Package\_Number>\_<Version\_Number>.SAR from:  
<https://support.sap.com/sltoolset> > *System Provisioning* > *Download Software Provisioning Manager*
2. Using the latest version of SAPCAR, you can verify the digital signature of the downloaded SWPM10SP<Support\_Package\_Number>\_<Version\_Number>.SAR archive as follows:
  - a. Get the latest version of the SAPCRYPTOLIB archive to your installation host as follows:
    1. Go to <https://me.sap.com/softwarecenter> > **SUPPORT PACKAGES & PATCHES** and search for "**sapcryptolib**".
    2. Select the archive file for your operating system and download it to the same directory where you have put the SAPCAR executable.
    3. Use the following command to extract the SAPCRYPTOLIB archive to the same directory where you have put the SAPCAR executable:  
**SAPCAR -xvf sapcryptolib\_84...sar -R <target directory>**
    4. Download the Certificate Revocation List from <https://tcs.mysap.com/crl/crlbag.p7s> and move it to the same directory.
  - b. Verify the digital signature of the downloaded SWPM10SP<Support\_Package\_Number>\_<Version\_Number>.SAR archive by executing the following command:

### Note

Check SAP Notes [2178665](#) and [1680045](#) whether additional information is available.

```
./<Path to SAPCAR>/SAPCAR -tvvf <Path to Download Directory>/  
SWPM10SP<Support_Package_Number>_<Version_Number>.SAR -crl <file name of  
revocation list>
```

3. Unpack the Software Provisioning Manager archive to a local directory using the following command:

```
 /<Path to SAPCAR>/SAPCAR -xvf <Path to Download Directory>/  
 SWPM10SP<Support_Package_Number>_<Version_Number>.SAR -R <Path to Unpack  
 Directory>
```

#### ⓘ Note

Make sure that all users have at least read permissions for the directory to which you unpack the Software Provisioning Manager archive.

#### ⚠ Caution

Make sure that you unpack the Software Provisioning Manager archive to a dedicated folder. Do not unpack it to the same folder as other installation media.

# 4 Database Independent System Copy

With the Software Provisioning Manager, you can export and import your database content in a database-independent format. The Software Provisioning Manager uses the JLoad tool for exporting and importing the database content .

JLoad generates a database export of all SAP objects that are defined in the Java Dictionary, including the configuration and components in the file system.

## Note

Make sure that you have the most recent version of the , which you can download from <https://me.sap.com/softwarecenter> .

## Constraints

### Jload Limitations

- The Software Provisioning Manager generates a database dump of all SAP objects that are defined in the Java Dictionary (Jload). Other objects are not exported by the Software Provisioning Manager.
- For a consistent database export, no transactions on export-relevant database objects are allowed during the export. Otherwise, the export has to be restarted. Therefore, we recommend that you shut down the SAP system (excluding the database!) for the export. The database must still be running.
- JLoad applies special handling during the import for LOB/CLOB columns, which can increase processing time if a field contains more than 50 MB of data.

### Existing Target System

If the target system already exists and **if you do not plan to perform an MCOD installation**, delete the database on the target system before the import. For more information, see chapter *Installation of Multiple Components in One Database* in the installation documentation for your SAP component.

[System Copy Procedure \[page 40\]](#)

This section describes the system copy procedure using Jload .

## 4.1 System Copy Procedure

This section describes the system copy procedure using Jload .

### Prerequisites

Specify an **empty** directory with sufficient disk space for the export dump on the host where you want to perform the export. Make sure that this directory does not contain any files from any previous system copy exports. If you cancelled a system copy export and want to perform the export again, make sure that you remove all files from the previously cancelled export before you start the export from scratch.

#### ⓘ Note

As a result of the export, a dump of the database schema belonging to the SAP system is stored in the export directory. During the entire life-cycle of this export dump, you must ensure adequate protection from unauthorized read access and modification of the data exported. Therefore, you now have the option to specify a restricted access level for the export directory when you [run the Software Provisioning Manager \[page 48\]](#) to perform the export. You are enabled to specify that only the `<sapsid>adm` executing the export has permission to read and modify the database export.

### Process Flow on the Source System (Export)

When performing the export, the Software Provisioning Manager creates a migration export media which contains the data of the exported system, and which you use to install the target system.

Follow the sequence of steps described below for a:

- Standard system
  - Standard system – Performing the Export on the Source System
  - Standard system – Setting Up the Target System
- Distributed system or high-availability system
  - Distributed system or high-availability system – Performing the Export on the Source System
  - Distributed system or high-availability system – Setting Up the Target System

### Standard System – Performing the Export on the Source System

To perform the export for a standard system, proceed as follows on the standard system host:

1. Perform the export on the **standard system host**:
  1. You [run the Software Provisioning Manager \[page 48\]](#) to prepare the source system for the export. On the *Welcome* screen, choose the *Export Preparation* option.

### Note

You must run this option if you want to perform export processes in parallel with import processes during the system copy. Otherwise, this step is optional.

2. If required, you [prepare parallel export and import \[page 43\]](#).
3. [Start the Software Provisioning Manager \[page 48\]](#) to export the database instance. On the *Welcome* screen, choose option *Database Instance Export*.

### Note

- If parallel export and import has been prepared, ensure the following:
  - You choose *Parallel Export and Import* for the database instance Java export on the *Database Java Export* screen.
  - If you decided to transfer the export directory instead of sharing it to the target host, make sure that you transfer it while you are processing the *Database Instance Export* option, after you have stopped the source system and before you proceed with the export procedure.
- To split Java packages and tables you can use the Java splitter tool as part of the Software Provisioning Manager. For more information about the Java splitter tool, see [Package and Table Splitting for Java Tables \[page 173\]](#).
- You can perform several database load processes in parallel. For more information, see [Jload Procedures Using the Java Migration Monitor \[page 166\]](#).

### Caution

If your database instance is running on HP PA-RISC, you must proceed as described in [SAP Note 884452](#).

## Standard System – Setting Up the Target System

You use the Software Provisioning Manager to set up the target system and import the database files that you have exported from the source system.

### Note

This system copy guide describes only the **source system export** in full detail. As for the installation of the **target system**, this system copy guide describes only the system copy-specific steps in section [Setting Up the Target System \[page 66\]](#), but refers for all steps that are identical with a new system installation to the appropriate operating system and database-specific [installation guide \[page 21\]](#).

You perform the following steps on the **standard system host**:

1. You prepare the standard system host for the installation of your target system as described in the installation guide.
2. You [transfer the export files to the standard system target host \[page 67\]](#)
3. You [install the target system \[page 68\]](#).
4. If required, on the **host or hosts of the application server instance**, you install further **additional application server instances** as described in the installation guide.

## Distributed System or High-Availability System – Performing the Export on the Source System

To perform the export for a **distributed system** or a **high-availability system**, proceed as follows:

1. You perform the database instance export.

We recommend that you perform this step on the database instance host. If your source database is SAP HANA, you perform this step on any application server instance host.

1. You [run the Software Provisioning Manager \[page 48\]](#) to prepare the source system for the export. On the *Welcome* screen, choose the *Export Preparation* option.

### Note

You must run this option if you want to perform export processes in parallel with import processes during the system copy. Otherwise, this step is optional.

2. If required, you [prepare parallel export and import \[page 43\]](#).
3. [Run the Software Provisioning Manager \[page 48\]](#) to export the database instance. On the *Welcome* screen, choose the system copy option *Database Instance Export*.

### Note

- If parallel export and import has been prepared, ensure the following:
  - You choose *Parallel Export and Import* for the database instance Java export on the *Database Java Export* screen.
  - If you decided to transfer the export directory instead of sharing it to the target host, make sure that you transfer it while you are processing the *Database Instance Export* option, after you have stopped the source system and before you proceed with the export procedure.
- To split Java packages and tables you can use the Java splitter tool as part of the Software Provisioning Manager. For more information about the Java splitter tool, see [Package and Table Splitting for Java Tables \[page 173\]](#).
- You can perform several database load processes in parallel. For more information, see [Jload Procedures Using the Java Migration Monitor \[page 166\]](#).

### Caution

If your database instance is running on HP PA-RISC, you need to proceed as described in **SAP Note 884452**.

## Distributed System or High-Availability System – Setting Up the Target System

You use the Software Provisioning Manager to set up the target system and import the database files that you have exported from the source system.

### Note

This system copy guide describes only the **source system export** in full detail. As for the installation of the **target system**, this system copy guide describes only the system copy-specific steps in section [Setting Up](#)

the [Target System \[page 66\]](#), but refers for all steps that are identical with a new system installation to the appropriate operating system and database-specific [installation guide \[page 21\]](#).

In the following, we refer to this guide as “installation guide”.

Perform the following steps on the relevant installation hosts of your target system:

1. You prepare the **SCS instance host**, the **database instance host**, and the **host of the primary application server instance** for the installation of the corresponding instances of your target system as described in the installation guide.
2. You install the **SCS instance** for the target system as described in the installation guide.
3. You perform the following steps on the **database instance host**:
  1. You transfer the export files to the database instance target host.  
For more information, see [Transferring the Export Files to the Target Host \[page 67\]](#).
  2. You install the database instance of the target system.  
For more information, see [Installing the Target System \[page 68\]](#).
4. On the **host of the primary application server instance**, you install the primary application server instance of the target system.
5. If required, on the **host or hosts of the additional application server instance**, you install further additional application server instances as described in the installation guide.

## 4.1.1 Preparing Parallel Export and Import

If you want to perform export processes in parallel to import processes, you have to prepare the source system for the export.

### Context

The preparation includes the following steps that are required to set up the target database:

- Creating the export directory structure
- Calculating the size of the target database
- Creating a database size file named `DBSIZE.XML`

#### Note

The compression information is not available in the life-cycle of a Java system. Therefore, there is no information about the source system contained in the `DBSIZE.XML` file.

You can set the compression in the target system by creating compressed tablespaces during the [Define Parameters](#) phase of the target system installation. However, compression is not set automatically in the `DBSIZE.XML` during a system copy.

See also [Installing the Target System \[page 68\]](#).

### ⚠ Caution

Parallel export and import without *Export Preparation* is not supported. If you do not prepare the export, you have to wait for the export results before you can start with the target system setup.

## Procedure

1. Run the Software Provisioning Manager to perform the *Export Preparation* as described in [Exporting the Source System \[page 44\]](#).

This step creates the export directory structure, calculates the size of the target system and generates the `DBSIZE.XML` that is required to set up the target system.

2. Share or transfer the complete export directory with its structure and the generated `DBSIZE.XML` file to the target host.

If you transfer the export directory instead of sharing it, make sure that you transfer it while you are processing the *Database Instance Export* option, after you have stopped the source system and before you proceed with the export procedure.

For more information, see [Transferring the Export Files to the Target Host \[page 67\]](#).

## Related Information

[About the Java Migration Monitor \[page 166\]](#)

[Transferring the Export Files to the Target Host \[page 67\]](#)

## 4.1.2 Exporting the Source System

Here you can find information about how to run the Software Provisioning Manager to perform the export on the source system.

For more information about the overall sequence of steps required for exporting the source system, see [System Copy Procedure \[page 40\]](#).

[Prerequisites for Running Software Provisioning Manager \[page 45\]](#)

Make sure you meet the following prerequisites before running the Software Provisioning Manager.

[Running Software Provisioning Manager \[page 48\]](#)

This section describes how to run the Software Provisioning Manager to perform the export for system copy.

## Related Information

[Prerequisites for Running Software Provisioning Manager \[page 45\]](#)

[Running Software Provisioning Manager \[page 48\]](#)

### 4.1.2.1 Prerequisites for Running Software Provisioning Manager

Make sure you meet the following prerequisites before running the Software Provisioning Manager.

- For the SL-UI, make sure that the following web browser requirements are met:
  - You have one of the following supported browsers on the device where you want to run the SL-UI:
    - Google Chrome (recommended)
    - Mozilla Firefox
    - Microsoft EdgeAlways use the latest version of these web browsers.
  - If you copy the SL-UI URL manually in the browser window, make sure that you open a new Web browser window in private browsing mode (Internet Explorer), incognito mode (Chrome) or private browsing mode (Firefox). This is to prevent Web browser plugins and settings from interfering with the SL-UI.

#### ⚠ Caution

The Software Provisioning Manager uses a self-signed certificate, which is used temporarily only while the Software Provisioning Manager is running. This certificate is not trusted by the browser unless it is imported manually by the user running the Software Provisioning Manager. This behavior is intentionally designed in this way because - unlike ordinary public web servers - the Software Provisioning Manager has different usage patterns. You must configure your browser to trust the self-issued certificate of the Software Provisioning Manager after carefully performing the "thumbprint" verification described in [Running Software Provisioning Manager \[page 48\]](#). For more information about adding trusted certificates, see the documentation of your browser.

For more information about the SL-UI, see [Useful Information about Software Provisioning Manager \[page 54\]](#).

- The SAPinst framework of Software Provisioning Manager checks certificates for the Software Provisioning Manager, archives and media and therefore uses a certificate revocation list (CRL). Make sure that this CRL is available. For more information, see SAP Note [3207613](#).
- The Software Provisioning Manager uses shell scripts to obtain the environment for user `<sapsid>adm`.
  - If user `<sapsid>adm` does not yet exist, a working `/bin/csh` must be available on the host where you run the Software Provisioning Manager. For more information about recommended login shells, see SAP Note [202227](#).
  - If user `<sapsid>adm` already exists and uses `csh`, before you start the Software Provisioning Manager, execute the following command as user `<sapsid>adm` to make sure that the `csh` scripts are up-to-date, depending on your UNIX OS platform:  

```
/bin/csh -c "source /home/<sapsid>adm/.cshrc;env" or /bin/csh -c "source /home/<sapsid>adm/.login;env"
```

- Make sure that your operating system does not delete the contents of the temporary directory `/tmp` or the contents of the directories to which the variables `TEMP`, `TMP`, or `TMPDIR` point, for example by using a `crontab` entry.  
Make sure that the temporary directory has the permissions `755`.
- Make sure that you have at least 700 MB of free space in the installation directory for each installation option. In addition, you need 700 MB free space for the Software Provisioning Manager executables. If you cannot provide 700 MB free space in the temporary directory, you can set one of the environment variables `TEMP`, `TMP`, or `TMPDIR` to another directory with 700 MB free space for the Software Provisioning Manager executables.  
You can set values for the `TEMP`, `TMP`, or `TMPDIR` environment variable to an alternative installation directory as described in section [Useful Information about Software Provisioning Manager \[page 54\]](#).

### Note

Some tools such as `jspitter` may create files while the Software Provisioning Manager is running. The required free space in the `/tmp` directory depends on the amount of databases which you intend to unload.

- Make sure that `umask` is set to **022** for the user with `root` permissions that you want to use for running the Software Provisioning Manager.  
As the user with `root` permissions that you want to use for running the Software Provisioning Manager, enter the following command: **`umask 022`**

Only valid for 'Platform': AIX

**AIX:** Make sure that you have set the limits for operating system users as described in SAP Note [323816](#).

End of 'Platform': AIX

Only valid for 'Platform': HP-UX, Linux, Oracle Solaris

**Linux:** On Linux, starting with SLES 15, RHEL 8 and Oracle Linux 8, and respective recent SAP kernel patch levels, there is native integration into `systemd`. In this case, limits for operating system users `root`, `<sapsid>adm`, and your database-specific operating system users do not need to be set any longer. Make sure that `polkit` is installed. `systemd` requires `polkit` for authorization checks for the `<sapsid>adm` user. For older Linux versions and SAP kernel patch levels, however, you must still set these limits. For more information about how to proceed for older Linux versions, see the following instructions. For more information about Linux with `systemd` and the relevant SAP kernel patch levels, see SAP Note [3139184](#).

**Oracle-Solaris, Linux (versions lower than SLES 15, RHEL 8 and Oracle Linux 8 or lower SAP kernel patch levels):** Make sure that you have set the limits for operating system users `root`, `<sapsid>adm`, and your database-specific operating system users (see also sections *Creating Operating System Users and Groups* and *Running the Software Provisioning Manager* in the installation guide).

### Caution

Caution: the `limit` mechanism supports hard- and soft-limits. The soft-limit cannot be bigger than the hard-limit. The hard-limit can be set/increased by the root user like: **`limit -h <limit> <new_value>`**, for example **`limit -h datasize unlimited`**.

- Using `ssh` shell, the output of command `limit` needs to be at least as follows:

### Example

The following table lists example output taken from SUSE Linux Enterprise Server 15 (x86\_64).

Output	Properties
cputime	unlimited
filesize	unlimited
datasize	unlimited
stacksize	8192 KB
coredumpsize	unlimited
descriptors	8192
memoryuse	unlimited

- Using `sh` or `ksh` shell, the output of command `ulimit -a` needs to be at least as follows:

#### Example

The following table lists example output taken from SUSE Linux Enterprise Server 15 (x86\_64).

Output sh	Output ksh	Properties
cpu time (seconds)	cpu time (seconds)	unlimited
file size (blocks)	file size (blocks)	unlimited
data seg size (kbytes)	data size (Kibytes)	unlimited
stack size (kbytes)	stack size (Kibytes)	8192 KB
core file size (blocks)	core file size (blocks)	unlimited
open files	nofile	8192
max memory size (kbytes)	max memory size (Kibytes)	unlimited

End of 'Platform': HP-UX, Linux, Oracle Solaris

- Make sure that the following ports are not used by other processes:
  - Port 4237 is used by default as HTTPS port for communication between the Software Provisioning Manager and the SL-UI.  
If this port cannot be used, you can assign a free port number by executing `sapinst` with the following command line parameter:  
**SAPINST\_HTTPS\_PORT=<Free Port Number>**
  - Port 4239 is used by default for displaying the feedback evaluation form at the end of the Software Provisioning Manager processing.  
The filled-out evaluation form is then sent to SAP using HTTPS.

If this port cannot be used, you can assign a free port number by executing `sapinst` with the following command line parameter:

```
SAPINST_HTTP_PORT=<Free Port Number>
```

- If you want to perform the export in unattended mode, see [System Provisioning Using an Input Parameter File \[page 56\]](#) which describes an improved procedure using `inifile.params`.
- Specify an **empty** directory with sufficient disk space for the export dump on the host where you want to perform the export. Make sure that this directory does not contain any files from any previous system copy exports. If you cancelled a system copy export and want to perform the export again, make sure that you remove all files from the previously cancelled export before you start the export from scratch.
- **Caution:** Make sure that you shut down all SAP application servers before the export. The database must still be running. Otherwise, the target system might be inconsistent.

## 4.1.2.2 Running Software Provisioning Manager

This section describes how to run the Software Provisioning Manager to perform the export for system copy.

### Prerequisites

For more information, see [Prerequisites for Running Software Provisioning Manager \[page 45\]](#).

### Context

The Software Provisioning Manager has a web browser-based GUI named “SL-UI of the Software Provisioning Manager” - “SL-UI” for short.

This procedure describes an installation where you run the Software Provisioning Manager and use the SL-UI, that is you can control the processing of the Software Provisioning Manager from a browser running on any device.

For more information about the SL-UI, see [Useful Information about Software Provisioning Manager \[page 54\]](#).

### Procedure

1. Log on to the host where you want to run the Software Provisioning Manager.

Make sure that you log on as a user with `root` permissions.

#### Caution

Make sure that this user has not set any environment variables for a different SAP system or database.

### ⚠ Caution

Do not use an existing `<sapsid>adm` user or built-in administrator.

If your security policy requires that the person running the Software Provisioning Manager is not allowed to know the credentials of a user with `root` permissions on the host where the Software Provisioning Manager is to perform the system copy export, you can specify another operating system user for authentication purposes. You do this using the `SAPINST_REMOTE_ACCESS_USER` parameter when starting the `sapinst` executable from the command line. You must confirm that the user is a trusted one. For more information, see SAP Note [1745524](#).

2. Make the required media available.

For more information, see [Preparing the Media Required for Performing the Export \[page 36\]](#)

### → Recommendation

Make the installation media available **locally**. For example, if you use Network File System (NFS), reading from media mounted with NFS might fail.

Only valid for 'Platform': Oracle Solaris

### ⓘ Note

If you mount installation media, make sure that you do this with option `nomaplace`.

End of 'Platform': Oracle Solaris

3. Start the Software Provisioning Manager as follows:

Open a command prompt and enter the following command:

```
/<Path_To_Unpack_Directory>/sapinst
```

The Software Provisioning Manager GUI starts automatically by displaying the *Welcome* screen.

### ⓘ Note

If you want to use a virtual host name, start the Software Provisioning Manager with the Software Provisioning Manager property `SAPINST_USE_HOSTNAME` as follows:

```
/<Path_To_Unpack_Directory>/sapinst SAPINST_USE_HOSTNAME=<Virtual_Host_Name>
```

### ⚠ Caution

Make sure that the installation directory is not mounted with NFS, or there might be problems when starting the Java Virtual Machine.

4. The Software Provisioning Manager now starts and waits for the connection with the SL-UI.

You can find the URL you require to access the SL-UI at the bottom of the shell from which you are running the Software Provisioning Manager.

```
...
*****
Open your browser and paste the following URL address to access the GUI
https://[<hostname>]:4237/sapinst/docs/index.html
Logon users: [<users>]
*****
```

...

### Note

If the host specified by `<hostname>` cannot be reached due to a special network configuration, proceed as follows:

1. Terminate the Software Provisioning Manager as described in [Useful Information about Software Provisioning Manager \[page 54\]](#).
2. Restart the Software Provisioning Manager from the command line with the `SAPINST_GUI_HOSTNAME=<hostname>` property.  
You can use a fully-qualified host name.

If you have a supported web browser (see [Prerequisites for Running Software Provisioning Manager \[page 45\]](#)) installed on the host where you run the Software Provisioning Manager, you can open this URL directly in the shell. Otherwise, open the URL in a supported web browser that runs on another device.

### Caution

After opening the browser URL, make sure that the URL in the browser starts with "https://" to avoid security risks such as SSL stripping.

Before you reach the *Welcome* screen, your browser warns you that the certificate of the `sapinst` process on this computer could not be verified.

Proceed as follows to avoid security risks such as a man-in-the-middle attack:

1. Click on the certificate area on the left hand side in the address bar of your browser, and view the certificate.
2. Open the certificate fingerprint or thumbprint, and compare all hexadecimal numbers to the ones displayed in the console output of the Software Provisioning Manager.

Proceed as follows to get the certificate fingerprint or thumbprint from the server certificate printed in the Software Provisioning Manager console:

1. Go to the `sapinst_exe.xxxxxx.xxxx` directory in the temporary directory to which the Software Provisioning Manager has extracted itself:  
`<User_Home>/ .sapinst/`
2. In the `sapinst_exe.xxxxxx.xxxx` directory, execute the `sapgenpse` tool with the command line option `get_my_name -p`.

As a result, you get the server fingerprint or thumbprint from the server certificate.

3. Accept the warning to inform your browser that it can trust this site, even if the certificate could not be verified.

The SL-UI opens in the browser by displaying the *Welcome* screen.

5. On the *Welcome* screen, choose **>> <Product> > <Database> > System Copy > Source System > Based on AS Java >**.

### Note

For SAP products that have reached out-of-maintenance (see [SAP Products Based on SAP NetWeaver 7.5 and SAP Solution Manager 7.2 SR2 Java Supported for System Copy Using Software Provisioning Manager 1.0 \[page 11\]](#)) you need to change to the *Product Versions Out of Maintenance* directory.

### Note

Products with the addition "SAP internal only" are only for SAP internal purposes and may not be used outside of this purpose.

### Note

If you want to copy one of the following Business Suite releases, you must use the system copy option available for the corresponding SAP NetWeaver release on which the Business Suite release is based on:

- SAP Business Suite 7i 2011 Java
- SAP Business Suite 7i 2010 Java
- SAP Business Suite 7 Support Release 1 Java

### Note

System copy options for **SAP Solution Manager 7.2 Java Support Release 2:**

▶ [SAP Solution Manager 7.2 Support Release 2](#) ▶ [System Copy \(SAP Solution Manager 7.2 Java below SP9\)](#) ▶

Use these options only for SAP Solution Manager 7.2 Java lower than SP09.

For SAP Solution Manager 7.2 Java SP09 or higher, use the options of SAP NetWeaver 7.5 Java:

▶ [SAP NetWeaver 7.5](#) ▶ [<Database>](#) ▶ [System Copy](#) ▶ [Source System](#) ▶ [Based on AS Java](#) ▶

Select the corresponding system copy option from the tree structure according to the sequence of the process flow for the [database-independent system copy procedure \[page 39\]](#).

### Note

Do **not** perform these steps if you perform a system copy using a **database-specific** method because then you do not perform an export using Software Provisioning Manager 1.0 (the "Software Provisioning Manager") but only use Software Provisioning Manager 1.0 for installing the target system. For more information, see [Database-Specific System Copy \[page 71\]](#).

6. Choose [Next](#).

### Note

If there are errors during the self-extraction process of the Software Provisioning Manager, you can find the log file `dev_selfex.out` in the temporary directory.

7. Follow the instructions in the Software Provisioning Manager input screens and enter the required parameters.

### Note

To find more information on each parameter during the [Define Parameters](#) phase, position the cursor on the required parameter input field, and choose either  or the [HELP](#) tab. Then the available help text is displayed in the [HELP](#) tab.

### Note

**IBM Db2 for Linux, UNIX, and Windows only:** When you are asked for the security administrator, enter a user that has DB2 SECADM authorities. By default, db2<dbssid source> has these authorities.

### Caution

The digital signature of installation media and installation archives is checked **automatically** during the *Define Parameters* phase while processing the *Media Browser* and - if you perform an archive-based installation - the *Software Package Browser* screens.

Note that this automatic check is only committed once and **not** repeated if you modify artifacts such as SAR archives or files on the media **after** the initial check has been done. This means that - if you modify artefacts later on either during the remaining *Define Parameters* phase or later on during the *Execute Service* phase - the digital signature is not checked again.

For more information, see SAP Note [2393060](#).

8. After you have entered all requested input parameters, the Software Provisioning Manager displays the *Parameter Summary* screen. This screen shows both the parameters that you entered and those that the Software Provisioning Manager set by default.

If required, you can revise the parameters before starting the system copy export procedure.

9. To start the execution, choose *Next*.

The Software Provisioning Manager starts the system copy export and displays its progress during the processing phase.

10. If required, delete directories with the name `sapinst_exe. .... .xxxx` after the Software Provisioning Manager has finished. Sometimes these remain in the temporary directory.

### → Recommendation

Keep all Software Provisioning Manager directories until you are sure that the system, including all instances, is completely and correctly installed. Once the system is completely and correctly installed, make a copy of the Software Provisioning Manager directories with all their contents. Save the copy to a physically separate medium, such as a medium or a USB drive that is separate from your installation hosts.

This might be useful for analyzing any issues that might occur later when using the system. For security reasons, do **not** keep the Software Provisioning Manager directories on hosts where you processed it, but make sure that you delete them after saving them separately.

11. If you copied installation media to your hard disk, you can delete these files when the Software Provisioning Manager has successfully completed.

12. For security reasons, we recommend that you delete the `.sapinst` directory within the home directory of the user with which you ran the Software Provisioning Manager:

```
<User_Home>/ .sapinst/
```

13. For security reasons, we recommend that you remove the operating system users from the group `sapinst` **after** you have completed the system copy export.

### Note

This step is only required, if you did **not** specify during the *Define Parameters* phase that the operating system users are to be removed from the group `sapinst` **after** the execution of the Software Provisioning Manager has completed.

14. The Software Provisioning Manager log files contain IP addresses and User IDs such as the ID of your S-User. For security, data protection, and privacy-related reasons we strongly recommend that you delete these log files once you do not need them any longer.

You find the Software Provisioning Manager log files in the `sapinst_instdir` directory. For more information, see [Useful Information about Software Provisioning Manager \[page 54\]](#).

[Additional Information about Software Provisioning Manager \[page 53\]](#)

The following sections provide additional information about the Software Provisioning Manager.

## Related Information

[Useful Information about Software Provisioning Manager \[page 54\]](#)

[Restarting Interrupted Processing of Software Provisioning Manager \[page 60\]](#)

[Troubleshooting with Software Provisioning Manager \[page 64\]](#)

### 4.1.2.2.1 Additional Information about Software Provisioning Manager

The following sections provide additional information about the Software Provisioning Manager.

[Useful Information about Software Provisioning Manager \[page 54\]](#)

This section contains some useful technical background information about the Software Provisioning Manager and the SL-UI.

[System Provisioning Using an Input Parameter File \[page 56\]](#)

Provisioning with Software Provisioning Manager, for example installation, of SAP systems in unattended mode with an input parameter file.

[Restarting Interrupted Processing of Software Provisioning Manager \[page 60\]](#)

Here you find information about how to restart the Software Provisioning Manager if its processing has been interrupted.

[Troubleshooting with Software Provisioning Manager \[page 64\]](#)

This section tells you how to proceed when errors occur while the Software Provisioning Manager is running.

[Troubleshooting during the Export Process \[page 65\]](#)

If the export process aborts during the *Execute Service* phase (for example, due to a hardware failure, such as power outage, operating system crash, file system full), you have to repeat the export of the complete package.

[Using the Step State Editor \(SAP Support Experts Only\) \[page 65\]](#)

This section describes how to use the `Step State Editor` available in the Software Provisioning Manager.

## 4.1.2.2.1.1 Useful Information about Software Provisioning Manager

This section contains some useful technical background information about the Software Provisioning Manager and the SL-UI.

- The Software Provisioning Manager has a framework named “SAPinst”. For more information about the current SAPinst Framework version and its features, see SAP Note [3207613](#) (SAPinst Framework 753 Central Note).
- The Software Provisioning Manager has the web browser-based “SL-UI of the Software Provisioning Manager” - “SL-UI” for short.  
The SL-UI uses the SAP UI Development Toolkit for HTML5 - also known as SAPUI5 - a client-side HTML5 rendering library based on JavaScript. The benefits of this user interface technology for the user are:
  - Zero foot print, since only a web browser is required on the client
  - Controls and functionality, for example, view logs in web browser.

As of version 1.0 SP24 Patch Level 5, the Software Provisioning Manager has an updated look and feel of the SL-UI. For more information, see <https://blogs.sap.com/2018/11/10/new-look-for-software-provisioning-manager/>.

The SL-UI connects the web browser on a client with the `sapinst` executable - which is part of Software Provisioning Manager - running on the installation host using the standard protocol HTTPS.

For the SL-UI the Software Provisioning Manager provides a pre-generated URL at the bottom of the shell from which you are running the Software Provisioning Manager . If you have a supported web browser installed on the host where you run the Software Provisioning Manager, you can start the SL-UI directly from this URL. Otherwise, open a web browser supported by the SL-UI on any device and run the URL from there.

For more information about supported web browsers see [Prerequisites for Running Software Provisioning Manager \[page 45\]](#).

If you need to run the **SL-UI in accessibility mode**, apply the standard accessibility functions of your web browser.

- As soon as you have started the `sapinst` executable, the Software Provisioning Manager creates a `.sapinst` directory underneath the `/home/<User>` directory where it keeps its log files. `<User>` is the user with which you have started the Software Provisioning Manager.  
After you have reached the *Welcome* screen and selected the relevant Software Provisioning Manager option for the SAP system to be exported , the Software Provisioning Manager creates a directory `sapinst_instdir` where it keeps its log files, and which is located directly below the temporary directory. The Software Provisioning Manager finds the temporary directory by checking the value of the `TEMP`, `TMP`, or `TMPDIR` environment variable. If no value is set for these variables, the Software Provisioning Manager uses `/tmp` by **default**.  
All log files which have been stored so far in the `.sapinst` folder are moved to the `sapinst_instdir` directory as soon as the latter has been created.  
If you want the `sapinst_instdir` directory to be created in another directory than `/tmp`, set the environment variable `TEMP`, `TMP`, or `TMPDIR` to this directory before you start the Software Provisioning Manager.

Shell Used	Command
Bourne shell (sh)	<code>TEMP=&lt;Directory&gt;</code> <code>export TEMP</code>
C shell (csh)	<code>setenv TEMP &lt;Directory&gt;</code>
Korn shell (ksh)	<code>export TEMP=&lt;Directory&gt;</code>

### ⚠ Caution

Make sure that the installation directory is not mounted with NFS, or there might be problems when the Java Virtual Machine is started.

The Software Provisioning Manager records its progress in the `keydb.xml` file located in the `sapinst_instdir` directory. Therefore, if required, you can continue with the Software Provisioning Manager from any point of failure, without having to repeat the already completed steps and without having to reenter the already processed input parameters. For security reasons, a variable encryption key is generated as soon as the `sapinst_instdir` directory is created by the Software Provisioning Manager. This key is used to encrypt the values written to the `keydb.xml` file.

### → Recommendation

We recommend that you keep all installation directories until the system is completely and correctly installed.

- The Software Provisioning Manager extracts itself to the temporary directory. These executables are deleted again after the Software Provisioning Manager has stopped running. Directories called `sapinst_exe.xxxxxx.xxxx` sometimes remain in the temporary directory after the Software Provisioning Manager has finished. You can safely delete them. The temporary directory also contains the log file `dev_selfex.out` from the self-extraction process of the Software Provisioning Manager, which might be useful if an error occurs.

### ⚠ Caution

If the Software Provisioning Manager cannot find a temporary directory, the installation terminates with the error `FCO-00058`.

- To see a list of all available Software Provisioning Manager properties (command line options) and related documentation, start the Software Provisioning Manager as described above with command line parameter `-p`:  
`./sapinst -p`
- If you want to perform the export in unattended mode, see [System Provisioning Using an Input Parameter File \[page 56\]](#) which describes an improved procedure using `infile.params`.
- Before starting the export, make sure that you have at least the same amount of disk space available in `/sapmnt/<SAPSID>/<Instance_Name>/<SAPSID>/program` as is used in `/sapmnt/<SAPSID>/<Instance_Name>/<SAPSID>/root/origin`. During the export, some archives are written to the program subdirectories and the tool aborts if there is not enough space.

- If required, stop the Software Provisioning Manager by choosing the *Cancel* button.

#### Note

If you need to terminate the Software Provisioning Manager, press `Ctrl` + `C`.

## 4.1.2.2.1.2 System Provisioning Using an Input Parameter File

Provisioning with Software Provisioning Manager, for example installation, of SAP systems in unattended mode with an input parameter file.

### Prerequisites

Provisioning of SAP systems can also be done in unattended mode without the user interface of Software Provisioning Manager. This means that, after inserting the required parameters into a parameter-file and running the `sapinst` executable by providing the path to this parameter-file, the installation will run in the background and no further user interaction is required.

### Context

This section describes the steps that you need to execute in addition to the procedure described in this guide, when running Software Provisioning Manager in unattended mode using an input parameter file.

Since the new Web-based SL-UI (see [Useful Information about Software Provisioning Manager \[page 54\]](#)) was introduced in 2017 there are two ways to run the unattended mode: “`observer mode`” and “`non-observer mode`”.

#### Observer Mode

If you are running an installation in unattended mode but you are sitting in front of the screen, you might want to check the progress from time to time. In this case the “`observer mode`” makes sense.

Start the installation as described below in the Solution section, using the following parameters:

```
SAPINST_INPUT_PARAMETERS_URL=<path_to_your_parameterfile>
SAPINST_EXECUTE_PRODUCT_ID=<product-id for the installation>
SAPINST_SKIP_DIALOGS=true
```

The Software Provisioning Manager will start the installation in the background AND start a Web Dispatcher and provide an URL to access the SL-UI. The user who has started the installation can now connect to the URL and observe the progress of the installation, for example to look at the logfiles in the Web browser. However, all parameters will be taken from the input parameter file and can not be changed in the Web browser.

#### Non-Observer Mode

Choose that mode if you want to run a “scripted” or by other means automated scenario, for example overnight. In that case it is crucial that the process is started without a Web Dispatcher and therefore without

the Software Provisioning Manager's SL-UI. Otherwise, the automation could be stuck if Software Provisioning Manager encounters a situation that requires user interaction.

Start the installation as described below in the Solution section, using the following parameters (use the same parameters like for Observer Mode, but provide **SAPINST\_START\_GUISERVER=false** in addition):

```
SAPINST_INPUT_PARAMETERS_URL=<path_to_your_parameterfile>
SAPINST_EXECUTE_PRODUCT_ID=<product-id for the installation>
SAPINST_SKIP_DIALOGS=true
SAPINST_START_GUISERVER=false
```

This will start the installation but this time **NO** Web Dispatcher will be started and no URL to access the SL-UI will be provided either. So the user can not follow the processing of the installation in a Web browser and the installation will run completely in the background.

If the process runs into an error, the Software Provisioning Manager will abort and you have to check for the reason in the log files.

## Restrictions

In exceptional cases, parameters prompted or displayed in the Software Provisioning Manager UI are not maintainable in the input parameter file. If one of those parameters, that are only available in the UI mode of the Software Provisioning Manager, is needed for your unattended installations, you should create a ticket in the best fitting component below BC-INS to get the issue analyzed.

## Must Know about the Input Parameter File

- The input parameter file only contains values that you entered in the SL-UI of Software Provisioning Manager.
- With the `SAPINST 753.0.6` or by other means patch we provide a better encryption of passwords in Software Provisioning Manager files:  
If the input parameter file has parameters which are encrypted with AES256 encryption, the `instkey.pkey` file available in the installation directory contains the key for the encryption. The `instkey.pkey` file must be always located in the same directory as the input parameter file and is used to decrypt the values of the encrypted parameters. If you need to copy an input parameter file to another directory, you must also copy the `instkey.pkey` file to this directory.
- Not explicitly set parameters are documented as comments in the generated input parameter file.
- Each parameter has got a documentation assigned as a comment on top.

### ❁ Example

Example for a parameter that is not used and therefore commented out:

```
# Specify whether Software Provisioning Manager is to drop the schema if
it exists. <= Documentation
# HDB_Schema_Check_Dialogs.dropSchema = false
```

### ❁ Example

Example for a parameter that is used:

```
# The name of the database schema. <= Documentation
HDB_Schema_Check_Dialogs.schemaName = SAPABAP2
```

- You have to manually provide the media information, using the following convention:

```
SAPINST.CD.PACKAGE.<unique_media_name>=<location>
```

- For each media location you must **manually** insert a dedicated line in your input parameter file. The Software Provisioning Manager does not automatically take over the media locations you entered while processing the *Media Browser* dialog.
- For <media\_name> you can choose any value, but the <location> must be unique.
- To find out the required media entries, open the summary.html file which you can find in the installation directory and go to the *Dialog "Media"* section.
- Make sure that you enter the full paths to all required media, relative paths are not sufficient.

### ❁ Example

Example on UNIX:

```
SAPINST.CD.PACKAGE.KERNEL = /mnt/KERNEL
SAPINST.CD.PACKAGE.LOAD = /mnt/LOAD
SAPINST.CD.PACKAGE.RDBMS = /mnt/RDBMS
```

### ❁ Example

Example on Windows:

```
SAPINST.CD.PACKAGE.KERNEL = C:\sapdvds\KERNEL
SAPINST.CD.PACKAGE.LOAD = C:\sapdvds\LOAD
SAPINST.CD.PACKAGE.RDBMS =C:\sapdvds\RDBMS
```

- If one media contains several subfolders, you can specify it in one of the following ways:

### ❁ Example

The SAP Export DVDs/media:

```
Installation Master      /usr/local/TESE/SWPM/slinst_d_stream/
IM_OS400_PPC64
Installation Export NW73 (folder EXP1)    /sapmnt/mediaserver2/
arch04_6/51042309/DATA_UNITS/EXP1
Installation Export NW73 (folder EXP3)    /sapmnt/mediaserver2/
arch04_6/51042309/DATA_UNITS/EXP3
Installation Export NW73 (folder EXP2)    /sapmnt/mediaserver2/
arch04_6/51042309/DATA_UNITS/EXP2
```

- By specifying each subfolder:

```
SAPINST.CD.PACKAGE.ExportNW73EXP1=/sapmnt/mediaserver2/
arch04_6/51042309/DATA_UNITS/EXP1

SAPINST.CD.PACKAGE.ExportNW73EXP2=/sapmnt/mediaserver2/
arch04_6/51042309/DATA_UNITS/EXP3

SAPINST.CD.PACKAGE.ExportNW73EXP3=/sapmnt/mediaserver2/
arch04_6/51042309/DATA_UNITS/EXP3
```

- By specifying only the root-folder:

```
SAPINST.CD.PACKAGE.ExportNW73=/sapmnt/mediaserver2/arch04_6/51042309
```

- **Restriction:** Currently you can only specify complete media, not paths to single files like \*.SAR archives.
- When performing a system copy, you need to add one additional media path:

```
SAPINST.CD.PACKAGE.JMIG = <full path to Java Export media>
```

- **Caution:**  
If you want to use archives for your installation, you must copy all files that are to be used to a single directory. In the input parameter file you must specify this directory as a download basket, using the `archives.downloadBasket` parameter.  
Make sure that there is only one version of the same archive in the directory, for example `SAPPEXE_<Version>.SAR`

## Procedure

1. You plan and prepare the run as described in [Planning \[page 22\]](#) and [Preparation \[page 33\]](#).
2. Create your input parameter file as follows:
  1. Start Software Provisioning Manager as described in [Running Software Provisioning Manager \[page 48\]](#).
  2. Choose the option you want to run, and follow the instructions on the screens by entering all parameter values.
  3. Stop after the *Parameter Summary* screen has been displayed.
  4. Find the input parameter file named "inifile.params" in the installation directory.
    - In the same directory, you will also find the `instkey.pkey` file with the keys for the encrypted parameters. For more information, see *Must Know about the Input Parameter File* above.
    - In the same directory, you will also find the `summary.html` file with the required media locations. For more information, see *Must Know about the Input Parameter File* above.
  5. If required, you can rename the "inifile.params" file as you wish.
3. Adjust the values of the input parameter file as follows:
  1. Edit your input parameter file and modify the parameters according to your needs.
  2. Add required media or archives information line by line.
4. Identify the Product-ID:
  - To start in unattended mode, you need to know the component ID for the option that are required for your provisioning scenario.  
Proceed as follows:
    1. Open the `sapinst_dev.log` in the installation directory.
    2. Check for the "product-id"

### Example

```
product-id=NW_ABAP_ASCS:NW750.ADA.ABAP
```

- Alternatively, you can check the header of the generated input parameter file.

### Example

```
product id 'NW_ABAP_ASCS:NW750.ADA.ABAP'
```

5. [Run the Software Provisioning Manager \[page 48\]](#) with the parameters required for unattended mode:
  - Make sure that the `instkey.pkey` file with the keys for the encrypted parameters is available in the same directory as the input parameter file. Otherwise the encrypted parameters cannot be decrypted. For more information, see *Must Know about the Input Parameter File* above.

- **In observer mode:** Start the `sapinst` executable from an empty directory with the following parameters:

```
SAPINST_INPUT_PARAMETERS_URL=<path_to_your_parameterfile>
SAPINST_EXECUTE_PRODUCT_ID=<product-id for the installation>
SAPINST_SKIP_DIALOGS=true
```

- **In non-observer mode:** Start the `sapinst` executable from an empty directory with the following parameters:

```
SAPINST_INPUT_PARAMETERS_URL=<path_to_your_parameterfile>
SAPINST_EXECUTE_PRODUCT_ID=<product-id for the installation>
SAPINST_SKIP_DIALOGS=true
SAPINST_START_GUI_SERVER=false
```

6. After Software Provisioning Manager has completed, perform follow-up activities as described in [Follow-Up Activities \[page 131\]](#).

## Related Information

[SAP Note 2230669 Provisioning with Software Provisioning Manager - for example installation - of SAP systems in unattended mode with an input parameter file.](#)

[SAP Note 2849054 Software Update Manager Automation with Software Provisioning Manager](#)

[SAP Note 2742212 Unattended installation fails with "Empty directory name is not allowed." message](#)

[SAP Note 2626837 'isUnicode': Radio group contains an invalid value ". Valid values are: false|true|](#)

### 4.1.2.2.1.3 Restarting Interrupted Processing of Software Provisioning Manager

Here you find information about how to restart the Software Provisioning Manager if its processing has been interrupted.

## Context

The processing of the Software Provisioning Manager might be interrupted for one of the following reasons:

- An error occurred during the *Define Parameters* or *Execute* phase:  
The Software Provisioning Manager does not terminate in error situations. If an error occurs, processing is paused and a dialog box appears. The dialog box contains a short description of the choices listed in the table below as well as a path to a log file that contains detailed information about the error.

- You interrupted the processing of the Software Provisioning Manager by choosing *Cancel* in the SL-UI.

### ⚠ Caution

If you stop an option in the *Execute* phase, any system or component **processed** by this option is incomplete and not ready to be used. Any system or component **removed** by this option is not completely removed.

The following table describes the options in the dialog box:

Option	Definition
<i>Retry</i>	<p>The Software Provisioning Manager retries the installation from the point of failure without repeating any of the previous steps.</p> <p>This is possible because the Software Provisioning Manager records its progress in the <code>keydb.xml</code> file.</p> <p>We recommend that you view the entries in the log files, try to solve the problem, and then choose <i>Retry</i>.</p> <p>If the same or a different error occurs, the Software Provisioning Manager displays the same dialog box again.</p>
<i>Stop</i>	<p>The Software Provisioning Manager stops the installation, closing the dialog box and the Software Provisioning Manager's SL-UI.</p> <p>The Software Provisioning Manager records its progress in the <code>keydb.xml</code> file. Therefore, you can continue with the Software Provisioning Manager from the point of failure without repeating any of the previous steps. See the procedure below.</p>
<i>Continue</i>	The Software Provisioning Manager continues the installation from the current point.
<i>View Log</i>	Access installation log files.

The following procedure describes the steps to restart an installation, which you stopped by choosing *Stop*, or to continue an interrupted installation after an error situation.

## Procedure

- Log on to the host where Software Provisioning Manager is running as a user with the required permissions as described in [Running Software Provisioning Manager \[page 48\]](#).
- Make sure that the media required for the system copy export are still available.

For more information, see [Preparing the Media Required for Performing the Export \[page 36\]](#).

### → Recommendation

Make the media available **locally**. For example, if you use remote file shares on other Windows hosts, CIFS shares on third-party SMB-servers, or Network File System (NFS), reading from media mounted with NFS might fail.

Only valid for 'Platform': Oracle Solaris

### Note

**Oracle Solaris:** If you mount installation media, make sure that you do this with option `nomaplace`.

End of 'Platform': Oracle Solaris

- Restart the Software Provisioning Manager from the directory to which you unpacked the Software Provisioning Manager archive by executing the following command:  
`<Path_To_Unpack_Directory>/sapinst`
- The Software Provisioning Manager is restarting.

You can find the URL you require to access the SL-UI at the bottom of the shell from which you are running the Software Provisioning Manager.

```
...
*****
Open your browser and paste the following URL address to access the GUI
https://[<hostname>]:4237/sapinst/docs/index.html
Logon users: [<users>]
*****
...
```

### Note

If the host specified by `<hostname>` cannot be reached due to a special network configuration, proceed as follows:

- Terminate the Software Provisioning Manager as described in [Useful Information about Software Provisioning Manager \[page 54\]](#).
- Restart the Software Provisioning Manager from the command line with the `SAPINST_GUI_HOSTNAME=<hostname>` property.  
You can use a fully-qualified host name.

If you have a supported web browser (see [Prerequisites for Running Software Provisioning Manager \[page 45\]](#)) installed on the host where you run the Software Provisioning Manager, you can open this URL directly in the shell. Otherwise, open the URL in a supported web browser that runs on another device.

### Caution

After opening the browser URL, make sure that the URL in the browser starts with "https://" to avoid security risks such as SSL stripping.

Before you reach the *Welcome* screen, your browser warns you that the certificate of the `sapinst` process on this computer could not be verified.

Proceed as follows to avoid security risks such as a man-in-the-middle attack:

- Click on the certificate area on the left hand side in the address bar of your browser, and view the certificate.
- Open the certificate fingerprint or thumbprint, and compare all hexadecimal numbers to the ones displayed in the console output of the Software Provisioning Manager.

Proceed as follows to get the certificate fingerprint or thumbprint from the server certificate printed in the Software Provisioning Manager console:

- Go to the `sapinst_exe.xxxxxx.xxxx` directory in the temporary directory to which the Software Provisioning Manager has extracted itself:

```
<User_Home>/sapinst/
```

2. In the `sapinst_exe.xxxxxx.xxxx` directory, execute the `sapgenpse` tool with the command line option `get_my_name -p`.  
As a result, you get the server fingerprint or thumbprint from the server certificate.
3. Accept the warning to inform your browser that it can trust this site, even if the certificate could not be verified.

The SL-UI opens in the browser by displaying the *Welcome* screen.

5. From the tree structure on the *Welcome* screen, select the installation option that you want to continue and choose *Next*.

The *What do you want to do?* screen appears.

6. On the *What do you want to do?* screen, decide between the following alternatives and continue with *Next*:

Alternative	Behavior
<i>Perform a new run</i>	<p>The Software Provisioning Manager does not continue the interrupted export for system copy option. Instead, it moves the content of the old Software Provisioning Manager directory and all Software Provisioning Manager-specific files to a backup directory. Afterwards, you can no longer continue the old option.</p> <p>The following naming convention is used for the backup directory:</p> <pre>log_&lt;Day&gt;_&lt;Month&gt;_&lt;Year&gt;_&lt;Hours&gt;_&lt;Minutes&gt;_&lt;Seconds&gt;</pre> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p><b>❖ Example</b></p> <pre>log_01_Oct_2016_13_47_56</pre> </div> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p><b>ⓘ Note</b></p> <p>All actions taken by the export for system copy before you stopped it (such as creating directories or users) are not revoked.</p> </div> <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p><b>⚠ Caution</b></p> <p>The Software Provisioning Manager moves all the files and folders to a new log directory, even if these files and folders are owned by other users. If there are any processes currently running on these files and folders, they might no longer function properly.</p> </div>
<i>Continue with the existing one</i>	<p>The Software Provisioning Manager continues the interrupted export for system copy from the point of failure.</p>

## 4.1.2.2.1.4 Troubleshooting with Software Provisioning Manager

This section tells you how to proceed when errors occur while the Software Provisioning Manager is running.

### Context

If an error occurs, the Software Provisioning Manager:

- Stops processing
- Displays a dialog informing you about the error

### Procedure

1. Check SAP Note [SAP Note 3207613](#) (SAPinst Framework 753 Central Note) for known Software Provisioning Manager issues.
2. If an error occurs during the *Define Parameters* or the *Execute Service* phase, do one of the following:
  - Try to solve the problem:
    - To check the Software Provisioning Manager log files (`sapinst.log` and `sapinst_dev.log`) for errors, choose the *LOG FILES* tab.

#### Note

The *LOG FILES* tab is only available if you have selected on the *Welcome* screen the relevant Software Provisioning Manager option for the SAP system to be exported.

If you need to access the log files before you have done this selection, you can find them in the `.sapinst` directory underneath the `/home/<User>` directory, where `<User>` is the user that you used to start the Software Provisioning Manager.

For more information, see [Useful Information about Software Provisioning Manager \[page 54\]](#).

- To check the log and trace files of the Software Provisioning Manager's SL-UI for errors, go to the directory `<User_Home>/ .sapinst/`
  - Then continue by choosing *Retry*.
  - If required, abort the Software Provisioning Manager by choosing *Cancel* in the tool menu and restart the Software Provisioning Manager. For more information, see [Restarting Interrupted Processing of Software Provisioning Manager \[page 60\]](#).
3. If you cannot resolve the problem, report a case in [SAP for Me](#) using the appropriate subcomponent of BC-INS\*.

For more information about using subcomponents of BC-INS\*, see SAP Note [1669327](#).

## 4.1.2.2.1.5 Troubleshooting during the Export Process

If the export process aborts during the *Execute Service* phase (for example, due to a hardware failure, such as power outage, operating system crash, file system full), you have to repeat the export of the complete package.

### Procedure

- **System Copy – export (common issues)**
  - a. Remove the `<Package> . <nnn>` dump files, the `<Package> . TOC` file, and the `<Package> . log` file.
  - b. Make sure that all tables in the `<Package> . *TSK*` file have the status flag `xeq` or `err` set.
  - c. Repeat the export of the complete package.

- **System Copy – export on UNIX (especially for upgraded systems)**

#### Symptom:

Processes started under the OS users `<sapsid>adm` or `ora<dbsid>` cannot create or open files in the Software Provisioning Manager directory.

#### Reason:

Only members of the `sapinst` UNIX group can access the Software Provisioning Manager directory.

#### Solution:

- a. Manually associate `<sapsid>adm` and `ora<dbsid>` OS users with `sapinst` group if this association is missing.
- b. Verify the `/etc/group` file and check if the `sapinst` group exists and OS users are members of this group.
- c. If the `sapinst` group does not exist yet, start the Software Provisioning Manager. The Software Provisioning Manager creates this group during startup before the product catalog list is displayed.
- d. Edit `/etc/group` file and associate OS users with `sapinst` group.
- e. Continue with the export.

## 4.1.2.2.1.6 Using the Step State Editor (SAP Support Experts Only)

This section describes how to use the `Step State Editor` available in the Software Provisioning Manager.

### Note

Only use the `Step State Editor` if the SAP Support requests you to do so, for example to resolve a case in [SAP for Me](#).

## Prerequisites

- SAP Support requests you to use the `Step State Editor`.
- Make sure that the host where you run the Software Provisioning Manager meets the requirements listed in [Prerequisites for Running Software Provisioning Manager \[page 45\]](#).

## Procedure

1. Start the Software Provisioning Manager from the command line as described in [Running Software Provisioning Manager \[page 48\]](#) with the additional command line parameter `SAPINST_SET_STEPSTATE=true`
2. Follow the instructions on the Software Provisioning Manager screens and fill in the parameters prompted during the *Define Parameters* phase until you reach the *Parameter Summary* screen.
3. Choose *Next*.

The `Step State Editor` opens as an additional dialog. Within this dialog you see a list of all steps to be executed by the Software Provisioning Manager during the *Execute Service* phase. By default all steps are in an initial state. Underneath each step, you see the assigned Software Provisioning Manager component. For each step you have a *Skip* and a *Break* option.

- Mark the checkbox in front of the *Break* option of the steps where you want the Software Provisioning Manager to pause.
  - Mark the checkbox in front of the *Skip* option of the steps which you want the Software Provisioning Manager to skip.
4. After you have marked all required steps with either the *Break* or the *Skip* option, choose *OK* on the *Step State Editor* dialog.

The Software Provisioning Manager starts processing the *Execute Service* phase and pauses one after another when reaching each step whose *Break* option you have marked. You can now choose one of the following:

- Choose *OK* to continue with this step.
  - Choose *Step State Editor* to return to the `Step State Editor` and make changes, for example you can repeat the step by marking the checkbox in front of the *Repeat* option.
  - Choose *Cancel* to abort the Software Provisioning Manager.
5. Continue until you have run through all the steps of the *Execute Service* phase of the Software Provisioning Manager.

### 4.1.3 Setting Up the Target System

To set up the target system, you first need to transfer the export files from the source host to the target host, then to install the target system and perform the import of the export files.

[Transferring the Export Files to the Target Host \[page 67\]](#)

This section describes how to transfer the complete export directory with its structure and the generated `DBSIZE.XML` file to the target host.

[Installing the Target System \[page 68\]](#)

This section describes how to set up the target system using the Software Provisioning Manager.

## Related Information

[Transferring the Export Files to the Target Host \[page 67\]](#)

[Installing the Target System \[page 68\]](#)

### 4.1.3.1 Transferring the Export Files to the Target Host

This section describes how to transfer the complete export directory with its structure and the generated `DBSIZE.XML` file to the target host.

#### Context

As an alternative, you can also share the complete export directory so that it can be accessed from the target host.

#### Procedure

1. On the target host, create a directory `<EXPDIR>` with sufficient space for the database export files available.

#### ⚠ Caution

Do **not** create this directory under the installation directory or another directory that contains installation information (such as the installation media or export files).

Otherwise, the Software Provisioning Manager does not ask you to specify the export directory and automatically chooses one that you may not want to use. In this case, the Software Provisioning Manager does not display the export directory and you cannot change it.

2. Transfer all files and directories (recursively) that are located on the source host in the migration export directory `<EXPDIR>` from the source host to the target host.

You can choose one of the following methods:

- Copy the export dump directory manually to the target host.
- The export dump directory can be shared and thus made accessible on the target host (network share).

3. Check the permissions of the transferred files on the target host.

#### Note

All files have to be accessible for user `<sapsid>adm` of the target system which is created during the target system installation.

4. If you use ECM Infrastructure (ECMI) or an application depending on ECMI like BPM, you also have to copy `/<sapmnt>/<SOURCE_SAPSID>/global/content/` on the file system of the source system to `/<sapmnt>/<TARGET_SAPSID>/global/content/` in the file system of the target system. Here ECMI stores the raw data of documents, for example the documents itself. In the database only the metadata and the folder and file hierarchy is saved.

#### Note

- If you have modified the parameter `ContentStorePath` for particular repositories (which is not recommended), you have to make sure that also the file system locations specified here are copied to the appropriate locations in the target system.
- Make sure that between copying the data base and the copy of the file system no modifications are made in the document set stored in ECMI. Otherwise it cannot be guaranteed that all documents of the source system are also available in the target system.

## 4.1.3.2 Installing the Target System

This section describes how to set up the target system using the Software Provisioning Manager.

### Prerequisites

- There is enough free space on the target system for the database load.  
To find out the size of the export and the sizes of the `tablespaces` or `dbspaces` that will be created, look at the file `DBSIZE.XML`, which is located in the following directory:  
`<EXPDIR>/DB/<DATABASE>`

#### Note

The compression information is not available in the life-cycle of a Java system. Therefore, there is no information about the source system contained in the `DBSIZE.XML` file.

You can set the compression in the target system by creating compressed tablespaces during the *Define Parameters* phase of the target system installation. However, compression is not set automatically in the `DBSIZE.XML` during a system copy.

See also [Preparing Parallel Export and Import \[page 43\]](#).

- **SAP MaxDB only:** If the database platform of your target system is **SAP MaxDB**, you must reserve at least twice as much space as specified in the `DBSIZE.XML` file. During the import, monitor the remaining free space in the database using the SAP MaxDB administration tools Database Manager or Database Studio, and increase it if required.

- As a post-step during the refresh database instance scenario ([Copying the Database Only – Refresh Database Instance \[page 106\]](#)) and the refresh database content scenario (see [Copying the Database Only - Refresh Database Content \[page 108\]](#)), the Software Provisioning Manager connects to the target SAP system via remote function call (RFC). Since the certificates are from the source system, make sure that secure network communications (SNC) is turned off for the RFC, or at least that the insecure RFC connection is allowed. This is only necessary during the short time of the post-processing steps, and after they are completed, you can turn SNC back on.

## Context

This system copy guide describes only the export of the source system in detail. For the installation of the target system, you use the **installation guide** for the database and operating system platform of your target system. This procedure describes only the additional system copy-specific steps for the target system installation and refers for the remaining steps to the target system [installation guide \[page 21\]](#).

In the following, we refer to this guide as the “installation guide”.

## Procedure

1. Prepare the target system host as described in the **installation guide** for the operating system and database platform intended for the target system.
2. Start the Software Provisioning Manager as described in the **installation guide** for the operating system and database platform intended for the target system.




### ⚠ Caution








Do **not** create the installation directory (for example: `sapinst_instdir`) in the following directories:

- `/usr/sap/<SAPSID>`
- `/sapmnt/<SAPSID>`

### ⚠ Caution

If you plan to use Advanced Configuration options during the SAP System Database Import, make sure you have installed the most current version of the Software Provisioning Manager to avoid performance problems during the [Define Parameters](#) phase. You can find the latest version of the Software Provisioning Manager at:

<http://support.sap.com/sltoolset>  [System Provisioning](#)  [Download Software Provisioning Manager](#) 

3. On the [Welcome](#) screen, navigate to the following folder according to the requirements of your target system:  [<Product>](#)  [<Database>](#)  [System Copy](#)  [Target System](#)  [<System\\_Variant>](#)  [Based on AS Java](#) .
4. Run the installation options required for your target system in the sequence they are listed in the specific folder and according to process flow in [System Copy Procedure \[page 40\]](#)

To install the target system, follow the instructions in the Software Provisioning Manager input screens (*Define Parameters* phase) and enter the required parameters.

- If you want to perform export processes in parallel to import processes and you have prepared the export, you must do the following:
    - Choose *Custom* on the *Parameter Mode* screen.
    - Select *Parallel Export and Import* on the *SAP System Database Import* screen.
  - On the *SAP System Database* screen, choose *Standard System Copy/Migration (Load-Based)*. The SAP data dump from the migration export media that was created during the database instance export is loaded in the newly installed SAP system database.
  - When the Software Provisioning Manager displays the *Media Browser* screen and prompts for the *Export Location*, enter the path to the export directory `<EXPDIR>`.
5. Complete the installation as described in the installation documentation for your SAP component.

#### 📘 Note

If you have to restart the import after an error, just restart the Software Provisioning Manager. The import continues with the table that has not yet been successfully imported.

#### ⚠ Caution

If you are performing the system copy of a DI system and intend to keep CBS, CMS and CM services running on the target system, make sure to mark the checkbox *Target system will replace source system* on the *Java System Copy* screen.

6. When the installation of the target system has completed, the AS Java is not started automatically. You have to start the AS Java manually. Depending on the product or product instances of your target system, you have to perform certain follow-up steps in a running AS Java system (online) or in a stopped AS Java system (offline). That is you have to manually start the AS Java after you have performed the offline follow-up activities.

For more information, see [Performing Follow-Up Activities for Java \[page 131\]](#).

# 5 Database-Specific System Copy

The following sections describe the database-specific methods for the system copy.

## ⓘ Note

When performing a system copy using a database-specific method, it is **not** required to run the Software Provisioning Manager in the source system to export it. You only have to run the Software Provisioning Manager on the target host to install the target system.

## ⚠ Caution

- You must **not** uninstall all application server instances of an SAP system if you want to continue using the database instance of this SAP system. Otherwise, you delete configuration-specific data in the database instance that is required for performing the homogeneous system copy.

## Process

Follow the sequence of steps described in the process flows below for a:

- Standard system
- Distributed system
- High-availability system

## Standard System

### ⓘ Note

When performing a system copy using a database-specific method, it is not required to run the Software Provisioning Manager in the source system to export it. You only have to run the Software Provisioning Manager on the target host to install the target system.

### Process Flow on the Source System (Export)

1. **Oracle only:** You [generate the control file structure for the target database \[page 77\]](#).
2. **Oracle only:** If required, you [create an offline backup of the source database \[page 86\]](#).

### Process Flow on the Target System

#### ⓘ Note

For the target system installation, you use the [installation guide \[page 21\]](#) for your target operating system and database.

In the following we refer to this documentation as “installation guide”.

1. **Oracle only:** You [prepare the target system \[page 82\]](#):
  1. Start the Software Provisioning Manager as described in the installation guide and follow the instructions on the Software Provisioning Manager screens until the Software Provisioning Manager requests you to install the database software and to perform the database backup/restore.

#### ⚠ Caution

Make sure that you create the secure store of the target system using the same key phrase as for the source system. Otherwise, the UME service cannot be started.

2. You create the database file system (if not yet existing).
3. You install the database software.
2. Start the Software Provisioning Manager as described in the installation guide and follow the instructions on the Software Provisioning Manager screens until you are requested to perform the database backup/restore.

#### 📘 Note

If required, you have to restart the Software Provisioning Manager as described in the installation guide.

3. To complete the system copy, you [perform the follow-up activities \[page 131\]](#).

## Distributed System or High Availability System

#### 📘 Note

When performing a system copy using a database-specific method, it is no longer required to run the Software Provisioning Manager in the source system to export it. You only have to run the Software Provisioning Manager on the target host to install the target system.

### Process Flow on the Source System (Export)

1. **Oracle only:** On the **database instance host** of the source system, you [generate the control file structure for the target database \[page 77\]](#).
2. **Oracle only:** If required, on the **database instance host**, you [create an offline backup of the source database \[page 86\]](#).

### Process Flow on the Target System

#### 📘 Note

For the target system installation, you use the [installation guide \[page 21\]](#) for your target operating system and database.

In the following we refer to this documentation as “installation guide”.

1. **Oracle only:** You [prepare the target system \[page 82\]](#):
  1. On the **database instance host**, start the Software Provisioning Manager as described in the installation guide and follow the instructions on the Software Provisioning Manager screens until

the Software Provisioning Manager requests you to install the database software and to perform the database backup/restore.

2. On the **database instance host**, you create the database file system (if not yet existing).
3. On the **database instance host**, you install the database software.
2. On the **database instance host**, start the Software Provisioning Manager as described in the installation guide and follow the instructions on the Software Provisioning Manager screens until you are requested to perform the database backup/restore.

#### Note

If required, you have to restart the Software Provisioning Manager as described in the installation guide.

3. To complete the system copy, you [perform the follow-up activities \[page 131\]](#).

[Oracle-Specific Procedure \[page 73\]](#)

[SAP MaxDB-Specific Procedure \[page 87\]](#)

In an SAP system environment, you can create a homogeneous copy of an SAP MaxDB database by using the backup and restore method. This method is suitable for creating an exact copy of an existing database. The source of the copy is a complete data backup of your source database.

[IBM Db2 for Linux, UNIX, and Windows-Specific Procedures \[page 89\]](#)

The database-specific procedure for the creation of a system copy is based on a restore of an existing online or offline backup. Therefore, this method is also referred to as *backup/restore procedure*. Since you can use a Db2 backup cross-platform within certain limitations (see below), this method is not limited to the homogenous system copy only.

[IBM Db2 for z/OS Specific Procedures \[page 94\]](#)

In an SAP system environment, you can create a homogeneous system copy of a DB2 database using the offline system copy method.

[SAP ASE 16.x Server-Specific Procedure \[page 101\]](#)

This section describes how to perform a homogeneous system copy of a SAP ASE 16.x database by using the `load database dump` method, or the `attach database device` method in an SAP environment. The Software Provisioning Manager supports both methods.

## 5.1 Oracle-Specific Procedure

### Purpose

In an SAP system environment, you can create a homogeneous copy of an Oracle database by copying database files. This method is suitable for creating an exact copy of an existing database. The source of the copy can be an online or offline backup, or the file system of your source host.

You use the Software Provisioning Manager for the installation on the target system host as described in the installation documentation for your SAP component. Only the Software Provisioning Manager steps for setting up and loading the database steps are different.

## Advantages

- You can use existing offline backups (provided that redo logs were cleaned up with forced log switches).
- This method is faster than the Jload method.

## Disadvantages

- Offline backup/copy of database files in a heterogeneous environment is not possible because the hardware of the source and target systems must be binary-compatible.
- Source system host and target system host must be different.
- You must shut down the SAP system and the database during offline backup/copy of database files.
- You cannot change the database schema and the tablespace names.

## Prerequisites

- You must use the same Oracle release and patch level for your database in the source and target system.
- The source and target systems must run on different hosts for security reasons.
- The source and target systems must be binary compatible.

### Note

You can also perform a system copy from 32-bit systems to 64-bit systems and the other way around (same operating system assumed) even if source and target system are not binary compatible.

- If your source system uses the `US7ASCII` character set, you must choose this character set when installing the target system. The Software Provisioning Manager prompts for the character set during the installation (key: `Database Character Set`). The installation default is `WE8DEC` or `UTF8` for Unicode systems. To find out the character set used by the source system, connect to the source database as user `sap<schemaid>` or `sapr3` with `sqlplus` and enter: **`SELECT * FROM V$NLS_PARAMETERS;`**
- If your source system has Oracle Database Vault (DV) enabled, and you want to enable DV on the target system as well, you need the password of user `secadmin / c##secadmin` during the [Software Provisioning Manager import procedure \[page 68\]](#). For more information, see SAP Note [2218115](#).

## Oracle Storage-Based System Copy Methods Available in the Software Provisioning Manager

You can choose between the following methods:

- Database already recovered, continue with database-specific post activities  
You have already performed backup/restore with Oracle-specific methods. In this case, the Software Provisioning Manager does not need to perform the backup/restore. You just have to ensure that the restored Oracle database on your target system is up and running.

- [Performing Online or Offline Recovery with saphostctrl \[page 75\]](#)
- [Using a CONTROL.SQL File Created by the ORABRCOPY Tool \[page 77\]](#)

## Related Information

[Database-Specific System Copy \[page 71\]](#)

### 5.1.1 Performing Online or Offline Recovery with “saphostctrl”

This section describes how to perform a recovery using `saphostctrl`.

For the **offline** recovery method, we recommend that you shut down the database. Alternatively, the Software Provisioning Manager can also make an instance recovery of the database if it has not been shut down before the copy process.

For the **online** recovery method, you have to set the database to a backup mode and the backup control files and the Oracle archives will be copied to an existing shared directory.

A “shared directory” can be any directory path which the source system and the target system can access. The archives and also the `init<SID>.ora` files from the source system will be saved in this directory

## Restrictions

You **cannot** change the database schemas `SAP<SchemaId>` and `SAP<SchemaId>DB`. There is no “move” schema.

The `<DBSID>` can be changed because the rename process is able to create new control files with a new `<DBSID>`.

The `<SAPSID>` can be also changed.

## Related Information

[Performing Online Recovery \[page 76\]](#)

[Performing Offline Recovery \[page 76\]](#)

## 5.1.1.1 Performing Online Recovery

For the **online** recovery method, you have to proceed as follows.

### Procedure

1. You can set the source database to a backup mode using the following command:

```
saphostctrl -user sapadmsaphostctrl -function PrepareDatabaseCopy -dbname  
<DBSID> -dbtype ora -dbconfdir <shared_directory> -copymethod Online -timeout -1
```

2. Back up the data files, for example using image copy or snapshot technology.
3. After the database backup has finished, you have to set the database back to a normal mode using the following command:

```
saphostctrl -function FinalizeDatabaseCopy -dbname <DBSID> -dbtype ora  
-dbconfdir <shared_directory> -copymethod Online -timeout -1
```

4. Start the target system installation and follow the instructions on the Software Provisioning Manager screens.

Start the target system installation as described in the *Installation Guide - Installation of SAP Systems Based on the Application Server Java of SAP NetWeaver 7.5, and SAP Solution Manager 7.2 SR2 Java, on UNIX : Oracle* (see [Accessing the Installation Guides \[page 21\]](#)).

5. On the *Performing Oracle Storage Based System Copy* screen, select option *Online or Offline Recovery Method with saphostctrl*.

## 5.1.1.2 Performing Offline Recovery

For the **offline** recovery method, you have to proceed as follows.

### Procedure

1. Shut down the source database.
2. Back up the data files, for example using image copy or snapshot technology.
3. Start the target system installation and follow the instructions on the Software Provisioning Manager screens.

Start the target system installation as described in the *Installation Guide - Installation of SAP Systems Based on the Application Server Java of SAP NetWeaver 7.5, and SAP Solution Manager 7.2 SR2 Java, on UNIX : Oracle* (see [Accessing the Installation Guides \[page 21\]](#)).

4. On the *Performing Oracle Storage Based System Copy* screen, select option *Online or Offline Recovery Method with saphostctrl*.
5. Leave the dialog field of the `<shared_directory>` empty while performing an offline recovery while no additional files from the source system are needed.

6. When the Software Provisioning Manager stops for database restore, copy all saved files to the target System.

Make sure that you also copy either the source `spfile<DBSID>.ora` file - which must contain parameters and not only the entry `spfile=...` - or the source `spfile<DBSID>.ora` file.

## 5.1.2 Using a CONTROL.SQL File Created by the ORABRCOPY Tool

### Related Information

[Generating the Control File Structure \[page 77\]](#)

[Preparing the Target System \(Oracle\) \[page 82\]](#)

[Restoring the Database Files on the Target System \[page 83\]](#)

[Restoring the Database Files on the Target System with BR\\*Tools \[page 85\]](#)

### 5.1.2.1 Generating the Control File Structure

#### Use

The `OraBRCopy` Java tool writes a file `CONTROL.SQL` to the current working directory, which can be used without further adaptations on the target system.

For more information about command line options and output files of the `OraBRCopy` tool, see [Additional Information about the OraBRCopy Tool \[page 189\]](#).

#### Prerequisites

##### → Recommendation

We recommend that you shut down the SAP system before you perform the following steps. The database must still be running.

## Procedure

1. Create an installation directory `<INSTDIR>` with permissions 777 on the source system.
2. Copy the `ORABRCOPY.SAR` archive from the directory to which you unpacked the `SWPM10SP<Support_Package_Number>_<Version_Number>.SAR` file and extract it using `SAPCAR`. You can find the archive in the following directory:  
`<Path_To_Unpack_Directory>/COMMON/INSTALL/ORA/ORABRCOPY.SAR`
3. Make sure that all redo log groups are archived
4. Start the `OraBRCopy` tool as an OS user with Oracle DBA privileges:
  - `user ora<dbsid>`
  - `user <sapsid>adm`
5. Execute the `ora_br_copy.sh` script in one of the following ways:
  - If you perform an **offline** manual copy, enter the following commands:  
`./ora_br_copy.sh -generateFiles -forceLogSwitches -targetSid <TARGET_DBSID> -password <system_password> -listenerPort <listener_port>`  
The tool creates the files `CONTROL.SQL`, `CONTROL.TRC` and `init<targetSID>.ora` in your installation directory, shuts down and restarts the database and performs the required log switches.
  - If you perform an **offline or online** backup using BR\*Tools, enter the following commands:  
`./ora_br_copy.sh -generateFiles -targetSid <TARGET_DBSID> -password <system_password> -listenerPort <listener_port>`

### Note

During the online backup, the database must be up and running. To ensure this, this command must not contain the parameter `-forceLogSwitches`.

The tool creates the files `CONTROL.SQL`, `CONTROL.TRC` and `init<targetSID>.ora` in your installation directory, and performs the required log switches.

### Note

If an error occurs, check the log file:

`<INSTDIR>/ora.br_copy.log`

6. Verify and, if necessary, update the `CONTROL.SQL` control file using the `CONTROL.TRC` trace file as follows.

## Example

In the following example, entries of `CONTROL.SQL` written in bold should be compared and changed according to the trace file:

```
REM
```

```
=====
```

```
REM CONTROL.SQL
```

```
REM
```

```
REM SAP AG Walldorf
```

```
REM Systeme, Anwendungen und Produkte in der Datenverarbeitung
```

```
REM
```

REM (C) Copyright SAP AG 2004

REM

=====

REM Generated at:

REM Fri Sep 17 08:33:25 CEST 2005

REM for target system NEW

REM on

REM Windows 2000 5.0 x86

CONNECT / AS SYSDBA

STARTUP NOMOUNT

CREATE CONTROLFILE REUSE

SET DATABASE "NEW"

RESETLOGS

ARCHIVELOG

**MAXLOGFILES** 255

**MAXLOGMEMBERS** 3

**MAXDATAFILES** 1022

**MAXINSTANCES** 50

**MAXLOGHISTORY** 1134

LOGFILE

GROUP 1 (

'/oracle/NEW/origlogA/log\_g11m1.dbf',

'/oracle/NEW/mirrlogA/log\_g11m2.dbf'

) **SIZE 50M,**

GROUP 2 (

'/oracle/NEW/origlogB/log\_g12m1.dbf',

'/oracle/NEW/mirrlogB/log\_g12m2.dbf'

) **SIZE 50M,**

GROUP 3 (

'/oracle/NEW/origlogA/log\_g13m1.dbf',

'/oracle/NEW/mirrlogA/log\_g13m2.dbf'

) **SIZE 50M,**

GROUP 4 (

```

'/oracle/NEW/origlogB/log_g14m1.dbf',
'/oracle/NEW/mirrlogB/log_g14m2.dbf'
) SIZE 50M
DATAFILE
'/oracle/NEW/sapdata1/system_1/system.data1',
'/oracle/NEW/sapdata3/ims_1/ims.data1',
'/oracle/NEW/sapdata3/ims_2/ims.data2',
'/oracle/NEW/sapdata3/ims_3/ims.data3',
'/oracle/NEW/sapdata3/ims_4/ims.data4',
'/oracle/NEW/sapdata4/ims_5/ims.data5',
'/oracle/NEW/sapdata4/ims_6/ims.data6',
'/oracle/NEW/sapdata4/ims_7/ims.data7',
'/oracle/NEW/sapdata4/ims_8/ims.data8',
'/oracle/NEW/sapdata4/ims_9/ims.data9',
'/oracle/NEW/sapdata1/ims700_1/ims700.data1',
'/oracle/NEW/sapdata1/ims700_2/ims700.data2',
'/oracle/NEW/sapdata1/ims700_3/ims700.data3',
'/oracle/NEW/sapdata1/ims700_4/ims700.data4',
'/oracle/NEW/sapdata2/ims700_5/ims700.data5',
'/oracle/NEW/sapdata2/ims700_6/ims700.data6',
'/oracle/NEW/sapdata2/ims700_7/ims700.data7',
'/oracle/NEW/sapdata2/ims700_8/ims700.data8',
'/oracle/NEW/sapdata2/ims700_9/ims700.data9',
'/oracle/NEW/sapdata3/ims700_10/ims700.data10',
'/oracle/NEW/sapdata4/ims700_11/ims700.data11',
'/oracle/NEW/sapdata1/imsUSR_1/imsUSR.data1',
'/oracle/NEW/sapdata2/roll_1/roll.data1'
;
ALTER DATABASE OPEN RESETLOGS;
ALTER TABLESPACE PSAPTEMP ADD TEMPFILE
'/oracle/NEW/sapdata3/temp_1/temp.data1'
SIZE 350M REUSE AUTOEXTEND OFF;

```

## Note

In the above example, entries and values of `CONTROL.SQL` written in bold should be compared to the trace file.

### Changes to be made

1. If you want to migrate your database from 32-bit to 64-bit or vice versa, add the following lines at the bottom of the `CONTROL.SQL` file:

```
shutdown immediate
startup upgrade
spool utlirp.log
@?/rdbms/admin/utlirp.sql
spool off
shutdown immediate
startup
spool utlrp.log
@?/rdbms/admin/utlrp.sql
spool off
exit
```
2. `MAXLOGFILES 255`  
...  
The numbers must be greater than or equal to the corresponding numbers in the trace file.
3. `GROUP 1 (`  
`'/oracle/NEW/origlogA/LOG_G11M1.DBF',`  
`'/oracle/NEW/MIRRLPGA/LOG_G11M2.DBF'`  
`) SIZE 50M,`  
`Group 2 (`  
...  
The sizes of the respective groups must be equal to the sizes of the corresponding groups in the trace file.
4. `'/oracle/NEW/sapdata1/SYSTEM_1/SYSTEM.DATA1',`  
`'/oracle/NEW/sapdata3/ims_1/ims.DATA1',`  
...  
`'/oracle/NEW/sapdata1/ims700_1/ims700.DATA1'`  
...  
The count of the data files must be equal to the count of the corresponding data files in the trace file.
5. `ALTER TABLESPACE PSAPTEMP ADD TEMPFILE`  
`'/oracle/NEW/sapdata3/temp_1/temp.DATA1'`  
`SIZE 350M REUSE AUTOEXTEND OFF;`  
...  
The size must be equal to the corresponding size in the trace file.
6. The number of rows with `ALTER TABLESPACE` must be equal to the number of corresponding rows in the trace file.

## 5.1.2.2 Preparing the Target System (Oracle)

This section describes how to prepare the target system for Oracle-specific system copy.

### Prerequisites

Make sure that `sapdata<n>` file systems on the target system host are large enough.

### Procedure

1. Install the target SAP system with the Software Provisioning Manager as described in the installation documentation for your SAP solution.

#### ⚠ Caution

When you perform a system copy with the Oracle backup/restore method, you **cannot** change the database schema and the tablespace names of the new target system. When installing the target primary application server instance, the target database instance, or the target additional application server instance make sure that you enter the correct database schema names (which are the database schema names of the **source** system). The schema names of the source and target system must be identical.

- a. On the *Welcome* screen, choose `>> <Your Product> > <Your Database> > System Copy > Target System > <System Variant> > <Technical Stack> >`.
- b. When the Software Provisioning Manager prompts for the database copy method, choose *Homogeneous System Copy (Backup/Restore)*.
- c. Proceed until the Software Provisioning Manager stops to restore the database files on the target system.

The following message is displayed:

```
SAPinst now stops the installation. Proceed as follows:...
```

2. If necessary, extract the Oracle stage archives manually and install the Oracle software as described in the installation documentation for your SAP solution.
3. Restore the database files on the target system.
4. If they do not exist, create the following directories on the target system:
  - `/oracle/<TARGET_DBSID>/mirrlog<x>`
  - `/oracle/<TARGET_DBSID>/origlog<x>`
  - `/oracle/<TARGET_DBSID>/sapdata<x>`
  - `/oracle/<TARGET_DBSID>/sapreorg`
  - `/oracle/<TARGET_DBSID>/saparch`
  - `/oracle/<TARGET_DBSID>/oraarch`
  - `/oracle/<TARGET_DBSID>/saptrace`

- /oracle/<TARGET\_DBSID>/saptrace/background
  - /oracle/<TARGET\_DBSID>/saptrace/usertrace
  - /oracle/<TARGET\_DBSID>/origlogA/cntrl
  - /oracle/<TARGET\_DBSID>/sapdata1/cntrl
  - /oracle/<TARGET\_DBSID>/saparch/cntrl
  - /oracle/<TARGET\_DBSID>/sapcheck
  - If **Oracle TDE** is enabled, make sure that you also copy the Oracle wallet key file to the target system. The wallet file is located under /oracle/<DBSID>/orawallet/tde/\*.
5. Make sure that the following directories are empty (except the subdirectory saparch/cntrl):
    - /oracle/<TARGET\_DBSID>/saparch
    - /oracle/<TARGET\_DBSID>/oraarch
  6. All directories must be owned by the software owner oracle:oinstall (default for Oracle 12c) of the target database or ora<target\_dbsid>:dba (default for Oracle 11g).

To do this, enter the following command:

**Oracle 12c:** `chown -R oracle:oinstall <directory>`

**Oracle 11g:** `chown -R ora<target_dbsid>:dba <directory>`

## 5.1.2.3 Restoring the Database Files on the Target System

### Use

#### ⚠ Caution

If you do not use an offline backup but copy the database files directly from the source to the target system host, make sure that you shut down the database on the source system before you copy the listed files from the source to the target directories.

### Procedure

1. Copy the following files from the source to the target system host either by using an offline backup or by copying the listed files from the source directories to the target directories.

Directories on UNIX

Source and Target Directory	Files
/oracle/<DBSID>/sapdata<x>	All files
/oracle/<DBSID>/origlog<x>	All files

Source and Target Directory	Files
/oracle/<DBSID>/mirrlog<x>	All files
<b>Source:</b> <INSTDIR>	CONTROL.SQL
<b>Target:</b> <SAPINST_INSTDIR>	
<b>Source:</b> <INSTDIR>	init<TARGET_DBSID>.ora
<b>Target:</b> /oracle/<DBSID>/<DB_VERSION>_<BIT>/dbs	

Directories on Windows

Source and Target Directory	Files
<drive>:\oracle\<DBSID>\sapdata<x>	All files
<drive>:\oracle\<DBSID>\origlog<x>	All files
<drive>:\oracle\<DBSID>\mirrlog<x>	All files
<b>Source:</b> <INSTDIR>	CONTROL.SQL
<b>Target:</b> <SAPINST_INSTDIR>	
<b>Target:</b>	
%programfiles%	
\sapinst_instdir\<SAP_System_Name>\LM\ORA\COPY\ORA	
\SYSTEM\<system_variant>\<technical_stack>	
<b>Source:</b> <INSTDIR>	init<TARGET_DBSID>.ora
<b>Target:</b> \oracle\<DBSID>\<DB_VERSION>_<BIT>\database	

- After you have copied the database files, make sure that the files on the source and target system are not located in different directories or drives. If required, make the corresponding changes in the files control.sql and the init<DBSID>.ora.
- Verify that the created directories and copied files have the owner ora<target\_dbsid>, belong to the group dba, and have the permissions 740.
- Make sure that the control files are not restored. If necessary, remove them. The file names are specified by the parameter control\_files of the init<TARGET\_DBSID>.ora file.

## 5.1.2.4 Restoring the Database Files on the Target System with BR\*Tools

### Procedure

1. Copy the following files from the source system host to the target system host by copying manually the listed files from the source directories to the target directories.

Source and Target Directory	Files
<b>Source:</b> <INSTDIR>	CONTROL.SQL
<b>Target:</b> <SAPINST_INSTDIR>	
<b>Source:</b> <INSTDIR>	init<TARGET_DBSID>.ora
<b>Target:</b> /oracle/<DBSID>/<DB_VERSION>_<BIT>/dbs	

2. Call the restore and recovery function of BR\*Tools.

If you follow these instructions, the prerequisites are fulfilled. The main prerequisite is that the corresponding BR\*Tools logs (BRBACKUP detailed and summary log, BRARCHIVE summary log) are copied from the source to the target system. In addition, the postprocessing steps mentioned in the SAP Note [1003028](#) are covered during the standard system copy procedure.

#### Note

If [Oracle TDE \[page 183\]](#) is enabled when using BR recovery, you need to provide your wallet password.

You can specify the wallet password with the BRRECOVER option `-pw <wallet password>`.

Example:

```
brrecover -u / -t reset -b last -f <DB_SID> -pw <wallet password> -c force
```

For more information about the execution of restore and recovery under the control of BRRECOVER and the exact syntax of BRRECOVER, see the section *Homogeneous Database Copy* in SAP Note [1003028](#).

For more information about BR\*Tools, see the [SAP Library \[page 21\]](#) for your release at:

#### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [SAP NetWeaver Library: Function-Oriented View](#) ► [Administration of Databases](#) ► [Database Administration for Oracle](#) ► [SAP Database Guide: Oracle BR\\*Tools for Oracle DBA](#)

3. Shut down the Oracle database instance as follows:

```
sqlplus /nolog  
  
shutdown immediate  
  
exit
```

## 5.1.3 Creating a Backup

Create a backup if required. Choose between the following possibilities: Performing an offline backup manually or an offline or online backup with BR\*Tools.

### Related Information

[Creating an Offline Backup \[page 86\]](#)

[Creating an Offline or Online Backup with BR\\*Tools \[page 86\]](#)

### 5.1.3.1 Creating an Offline Backup

Create an offline backup, if required. There are different possibilities for preparing the actual transfer of the database files:

- If you have an up-to-date offline backup, you can use it (provided that `redo logs` were cleaned up with forced log switches).
- If you want to transport the database file (for example, on tape) or if you have to perform the database shutdown at a certain time, stop the database (normal shutdown) and perform a complete offline backup. You can use the trace file `CONTROL.TRC` created by `ORABRCPY` to determine the file system trees that have to be saved.
- Stop the database (normal shutdown) and copy the database files when the actual transfer to the target system takes place. You do not have to perform any preparations for the actual transfer now. Proceed with the next steps.

### 5.1.3.2 Creating an Offline or Online Backup with BR\*Tools

You can use any backup strategy supported by BR\*Tools as the basis for a system copy: offline or online, with or without `BACKINT`, with or without `RMAN`, complete or incremental, and so on. The backup strategy must simply be valid for restore and recovery. This means that a complete restore and recovery of the source database must be possible. In addition for `BACKINT` and `RMAN`, the external backup tools must be configured so that a restore is possible on the target host.

## Procedure

Proceed as described in the [SAP Library \[page 21\]](#) for your release at:

### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [SAP NetWeaver Library: Function-Oriented View](#) ► [Administration of Databases](#) ► [Database Administration for Oracle](#) ► [SAP Database Guide: Oracle](#) ► [BR\\*Tools for Oracle DBA](#) ► [BR\\*Tools in Action](#) ► [Backup and Database Copy with BR\\*Tools](#) ►

## 5.2 SAP MaxDB-Specific Procedure

In an SAP system environment, you can create a homogeneous copy of an SAP MaxDB database by using the backup and restore method. This method is suitable for creating an exact copy of an existing database. The source of the copy is a complete data backup of your source database.

### Prerequisites

- Byte order – little-endian or big-endian  
You can use the backup and restore method to copy systems with the same byte order. That is, you can copy a system based on little-endian to another system based on little-endian. You can also copy a system based on big-endian to another system based on big-endian. Check SAP Note [552464](#) to find out which processor and operating system combination uses which byte order.
- Data backup  
You perform the **complete** data backup of your source database.
- Recovery tool (manual restore)  
Use the SAP MaxDB Database Studio. For more information, see the [SAP Library \[page 21\]](#) at: ►  
► [Database Administration](#) ► [Database Administration for SAP MaxDB](#) ► [SAP MaxDB](#) ► [SAP MaxDB Tools](#) ► [SAP MaxDB Database Studio](#) ► [Restoring Databases: Overview](#) ► [Restoring Databases](#) ►
- Database Software  
The database software on the target host must have the same version as the software on the source host. The build number of the software version on the target host must be greater than or equal to the version on the source host.
- Size of the data on the target system  
The size of the target system must be greater than the used space on the source system. You can find the size of the used pages on the source system as follows:  

```
dbmcli -d <database_name> -u <dbm_user>,<password> -n <database_server> -u SQL  
sap<sid>,<password> sql_execute 'SELECT USEDPERM FROM SERVERDBSTATISTICS'
```

The result of this query is the amount of used space, expressed as the number of 8 KB pages. To get the used space in MB, divide this value by 128. When the Software Provisioning Manager prompts you, configure the database data volumes according to this value.

## Context

The Software Provisioning Manager is used for installation on the target system host as described in the installation documentation for your SAP solution at <http://support.sap.com/sltoolset> > > > [System Provisioning](#) > [Installation Option](#) >. In the Software Provisioning Manager, you select the backup and restore method as the database installation method.

This description is **not** valid for the liveCache system copy.

### ⚠ Caution

Make sure that you know the password of the database system administrator (SUPERDBA) from the source system **before** you start the procedure below. Otherwise, you cannot access the database contents on the target system.

You must also know the name of the SQL database schema on the source system, `SAP<SAPSID>` – for example, `SAPR3`.

You can perform this procedure in the following ways:

- Manual restore  
The Software Provisioning Manager stops before the database instance initialization and asks you to perform the restore on the target database. After you have performed restore and post-restore activities, you can continue the installation in the Software Provisioning Manager.
- Automatic restore  
The Software Provisioning Manager performs the restore to import the data into the target system. In this scenario, you have to use a single file as the backup medium for the whole backup. The restore can use any SAP MaxDB backup, as long as it is a **single** file.

### ℹ Note

The minimum size of the database is calculated from the size of the backup file.

## Advantages

- You can use existing offline backups.
- This method is faster than the [database-independent method using Jload \[page 39\]](#).

## Disadvantage

You can only copy between systems with the **same** byte order.

Perform the following steps on the target system:

## Procedure

1. To import the target system, start the Software Provisioning Manager as follows and then follow the prompts:

▶ <Product> ▶ <Database> ▶ *System Copy* ▶ *Target System* ▶ <System Variant> ▶ <Technical Stack> ▶

2. When the Software Provisioning Manager prompts for the database copy method, choose *Homogeneous System Copy*.
3. In the *MaxDB Backup Template* screen, choose one of the following, *Manual Restore*, or *Restore by Software Provisioning Manager*:
  - *Manual restore*  
In the execution phase, you are prompted to do the following:  
Follow the restore procedure as described in the [SAP Library \[page 21\]](#) at: ▶▶ *Database Administration* ▶ *Database Administration for SAP MaxDB* ▶ *SAP MaxDB* ▶ *SAP MaxDB Tools* ▶ *SAP MaxDB Database Studio* ▶ *Restoring Databases: Overview* ▶ *Restoring Databases* ▶
  - *Restore by the Software Provisioning Manager*  
Enter the following information:
    - *Template name*
    - *Device/file*
4. After installation is completed, maintain the database connection for CCMS.  
For more information, see SAP Note [588515](#).

## 5.3 IBM Db2 for Linux, UNIX, and Windows-Specific Procedures

The database-specific procedure for the creation of a system copy is based on a restore of an existing online or offline backup. Therefore, this method is also referred to as *backup/restore procedure*. Since you can use a Db2 backup cross-platform within certain limitations (see below), this method is not limited to the homogenous system copy only.

### ⓘ Note

This backup/restore procedure described here only works using the Software Provisioning Manager. System copy using native Db2 backup/restore procedures **without** the Software Provisioning Manager are **not** supported for SAP systems.

## Prerequisites

- It must be possible to restore the backup of the source system on the platform of the target system.

### Note

For more information about cross-platform backups, also see *Backup and restore operations between different operating systems and hardware platforms* in the IBM Db2 Information Center at <https://publib.boulder.ibm.com/infocenter/db2luw/v9r7/index.jsp?topic=/com.ibm.db2.luw.admin.ha.doc/doc/c0005960.html> .

- If errors occur when restoring the backup on the target system, the complete restore must be repeated.
- If you restore from an encrypted Db2 database backup, you need to make sure that your Db2 instance is set up for encryption in order to access the data from the backup image. The Software Provisioning Manager will configure the Db2 instance for encryption and create a keystore file in which you must provide the master key of the backup. For details, see the procedure below.

## Context

### Note

You can also create an SAP system copy with a Db2 database if more advanced techniques like file system snapshots are available. The necessary procedure in this case is called *database relocation*. The database relocation procedure differs significantly from the backup/restore procedure and is **not** described in this guide.

For more information, see the *Database Administration Guide: SAP on IBM Db2 for Linux, UNIX, and Windows*, section *db2inidb Option: as snapshot*.

The Software Provisioning Manager is used for the installation on the target system host as described in the installation documentation for your SAP component. Before you start the Software Provisioning Manager on the target system make sure that all prerequisites for the SAP system installation are met. Especially, make sure that the relevant file systems are available. For more information, see the [installation guide \[page 21\]](#).

### Advantages of the Backup Method

- You can use existing online and offline backups.
- Using the backup method is faster than the [database-independent method \[page 39\]](#).

### Disadvantages of the Backup Method

- You cannot change the name of the database schema. The name of the database schema is the same as that of the source system. However, you can change the name of the connect user during the *Define Parameters* phase of the target system installation.
- You cannot copy an individual MCOB component to another system. You can only copy the complete system.

## Procedure

1. You perform an online or offline backup.

If you use an online backup to copy your system, a roll forward of your database is required after the database restore on the target system. As a prerequisite, the respective database logs must be accessible. We, therefore, recommend that you include the necessary log files in the backup image. Logs are included in the online backup image as long as the option `EXCLUDE LOGS` is not specified.

### Note

To export the database content for Java, you can also use the database-specific method (backup/restore).

During the *Define Parameters* phase, the Software Provisioning Manager asks you in the *Database Export* dialog box to specify the system copy method. If you want to use the backup/restore method, choose *Use database-specific tools*.

2. To create a target system, run the Software Provisioning Manager on the target system host by choosing the following on the *Welcome* screen: **► <Product> ► <Database> ► System Copy ► Target System ► <System\_Variant> ► <Technical\_Stack> ►**

Perform the installation options in the given sequence and follow the instructions on the Software Provisioning Manager dialogs. When the Software Provisioning Manager prompts for the database copy method, choose *Homogeneous System Copy*.

### Note

If you restore from an encrypted database or you want to encrypt your new database from an unencrypted backup, you must select *Use Db2 native encryption* in the *Define Parameters* phase. The Db2 instance will be configured to allow usage of Db2 native encryption, and a keystore file and a new master key will be created.

### Caution

Be aware of the following constraints when using the backup method for a homogeneous system copy:

- You cannot change the name of the database schema, during the dialog phase make sure that you enter the database schema exactly as on your source system.
- The tablespace names remain the same during the database restore. However, you can change them after the installation.
- If you want to change the name or the location of the Db2 container on the target system, you have to adapt the Db2 container paths or names in the redirected restore script and then perform a redirected restore. For more information, see the documentation *Database Administration Guide: SAP on IBM Db2 for Linux, UNIX, and Windows*, section *Usage of Tool brdb6brt*.

3. Multi-Partition Database Environments only: Add database partitions

If you copy a system with multiple database partitions, the target system must have the same number of partitions as the source system. For more information, see *Setting up partitioned database environments* in the IBM Db2 Information Center at: <http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/index.jsp?topic=/com.ibm.db2.luw.qb.server.doc/doc/t0023605.html> ➔

4. If you restore from an encrypted backup image, you must provide the master key used with the backup image.

- a. Log on as `db2<dbssid>` to your database host.
- b. Run the following command:

```
setenv PATH ${PATH}:/db2/db2<dbssid>/sqllib/gskit/bin
```

- c. Depending on your platform, run the following:

```
AIX: setenv LIBPATH ${LIBPATH}:/db2/db2<dbssid>/sqllib/lib64/gskit
```

```
HP: setenv SHLIB_PATH ${SHLIB_PATH}:/db2/db2<dbssid>/sqllib/lib64/gskit
```

```
Linux and Solaris: setenv LD_LIBRARY_PATH ${LD_LIBRARY_PATH}:/db2/db2<dbssid>/  
sqllib/lib64/gskit
```

- d. Import the master key from your source system. Make sure the file permissions allow access to the source keystore file. You can choose to import all master keys from the source system or only the one used with the backup image by adding `-label <labelname>` to the following command:

```
gsk8capicmd_64 -cert -import -db <source_keystorefile>.p12 -target /db2/  
db2<dbssid>/keystore/sapdb2<dbssid>_db_encr.p12
```

- e. Make sure that you add encryption options to your restore command.

- If your target database is encrypted, insert the following:  

```
encrypt cipher <cipher type> key length <key_length> master key label  
sap_db2<dbssid>_<hostname>_dbencr_000
```

where `<cipher type>` is either `AES` or `3DES`

#### → Recommendation

We recommend that you use the master key label of your target system. This was generated by the Software Provisioning Manager before the exit step.

- If your target database is unencrypted, insert the following:  

```
no encrypt
```

For more information, see the IBM documentation for the database restore command.

5. Restore your database.

To restore your database, you can choose between one of the following options:

- Simple database restore  
To perform a database restore, use the Db2 **RESTORE** command. For more information, see the IBM manual *Db2 Command Reference*.

#### ⓘ Note

With a simple restore, you can neither change the name nor the location of Db2 containers.

- Redirected restore  
This is the recommended method.  
A redirected restore allows you to change the name or the location of the Db2 container. To perform a redirected restore, you use the Db2 **RESTORE DATABASE** command with the `REDIRECT GENERATE SCRIPT` option. For more information, see *RESTORE DATABASE command* in the IBM Db2 Information Center at:

<http://publib.boulder.ibm.com/infocenter/db2luw/v9r7/index.jsp?topic=/com.ibm.db2.luw.admin.cmd.doc/doc/r0001976.html> .

Alternatively, you can use the tool `brdb6brt` that retrieves a database backup and creates a CLP script to restore this backup image. Since `brdb6brt` needs to connect to the source system, the source system must be available. For more information about how to use the tool `brdb6brt`, see *Redirected Restore Using brdb6brt* in the *Database Administration Guide: SAP on IBM Db2 for Linux, UNIX, and Windows*.

You cannot use the `brdb6brt` tool to perform a redirected restore. By default, the `brdb6brt` tool is not available in a Java only system. If you want to use it, you have to download from <https://me.sap.com/softwarecenter>. `brdb6brt` is part of the ABAP kernel.

### Note

You do not have to export the database content for backup/restore with Jload. During the dialog phase, the Software Provisioning Manager asks if you want to export the database content using database tools or using Jload. If you choose the database tools, Jload is not used.

For more information, see SAP Note [1238351](https://me.sap.com/notes/1238351).

If you have used an online backup, you have to make sure that you have access to the log files that were created during the online backup. You also have to perform a rollforward operation to bring the database into a consistent state.

If you have chosen to use Db2 native encryption for your target database, verify that your restored database is encrypted by checking the database configuration with `db2 get db config for <DBSID>` and search for "Encrypted database = YES" in the output.

You can now continue with the installation.

## Next Steps

After the installation on the target system, do the following:

- If you performed a redirected restore, check all settings of the database manager and database configuration parameters. Specifically, make sure that the following configuration parameters point to the correct path:
  - `DIAGPATH` (DBM)
  - `DFTDBPATH` (DBM)
  - Path to log files (DB)
  - If set, `NEWLOGPATH` (DB), `OVERFLOWLOGPATH` (DB), `FAILARCHPATH` (DB) and `MIRRORLOGPATH` (DB)

## More Information

- *Database Administration Guide: SAP on IBM Db2 for Linux, UNIX, and Windows* available at [https://help.sap.com/viewer/db6\\_admin](https://help.sap.com/viewer/db6_admin).
- IBM Knowledge Center at <https://www.ibm.com/support/knowledgecenter/SSEPGG>
- IBM Db2 manuals at <http://www-01.ibm.com/support/docview.wss?uid=swg27023558>

## 5.4 IBM Db2 for z/OS Specific Procedures

In an SAP system environment, you can create a homogeneous system copy of a DB2 database using the offline system copy method.

### Prerequisites

The following prerequisites must be fulfilled to use this method:

- The permissions of the source and target systems must be completely separate. The source system must not be able to use the resources of the target system, and the target system must not be able to use the resources of the source system.
- RACF authorization for the target DB2 subsystem is complete.
- Source and target systems must work with DB2 managed objects.
- Procedures of the source and the target system are defined in the DB2 PROCLIB.
- Source and target systems have appropriate entries in the APF list.
- Volumes of the source and target systems are managed by SMS.
- At first source and target systems run with the same DB2 service level. After copying the source system to a target system, you can migrate or upgrade both systems to a higher service level.

### Context

This document assumes that the database schema of your SAP system is `SAPR3`. If you employ a different schema, adapt the references to `SAPR3` in the following SQL statements and jobs to reflect the actual schema name.

The following section describes an **offline system copy method** for SAP systems on IBM Db2 for z/OS.

#### Advantage of the Offline System Copy Method

This method is faster than the [database-independent method \[page 39\]](#).

#### Restriction of the Offline System Copy Method

At the moment, you cannot copy an individual MCODE component to another system. You can only copy the complete system.

#### Note

The offline system copy must be performed by an experienced database administrator.

You can find an adapted procedure for an **online system copy** in the IBM documentation *High Availability for SAP on zSeries Using Autonomic Computing Technologies*.

## Process Flow of the Main Steps in this Procedure

The following sections contain the detailed steps involved in the homogeneous system copy procedure for Db2 for z/OS.

The offline system copy can be divided into the following steps:

## Procedure

1. [Step 1: Check the Source System and Stop it after Successful Check \[page 95\]](#)
2. [Step 2: Consider DB2 Procedures of the Target System \[page 97\]](#)
3. [Step 3: Delete All Obsolete Objects of the Target System \[page 97\]](#)
4. [Step 4: Copy All Objects of the Source System into the Target System \[page 97\]](#)
5. [Step 5: Add All DB2 Subsystem Libraries to a PARMLIB Containing Definitions Required for APF \[page 97\]](#)
6. [Step 6: Alter the BSDS of the Target System \[page 98\]](#)
7. [Step 7: Change Entries of logcopy Data Sets in the BSDS of the Target System \[page 98\]](#)
8. [Step 8: Customize DB2 Modules Using DSNTIJUZ \[page 98\]](#)
9. [Step 9: Configure the Distributed Data Facility \(DDF\) \[page 99\]](#)
10. [Step 10: Start the Target System Using ACCESS\(MAINT\) \[page 99\]](#)
11. [Step 11: Update the DB2 Catalog Using CATMAINT UPDATE VCAT SWITCH \[page 99\]](#)
12. [Step 12: Stop and Restart the Target System \[page 99\]](#)
13. [Step 13: Create DSNTPE2 and DSNTPE4 Load Modules for the Target System \[page 100\]](#)
14. [Step 14: Alter All WLM Environments of Stored Procedures \[page 100\]](#)
15. [Step 15: Perform Post-Offline System Copy Actions \(Optional\) \[page 100\]](#)

### 5.4.1 Step 1: Check the Source System and Stop it after Successful Check

#### Procedure

1. Check the source system for active threads using the following DB2 command: **DIS THD(\*)**  
If there are active threads, stop all applications running against the source system.
2. Check the source system for authorized utilities using the following DB2 command: **DIS UTIL(\*)**  
The command shows the status of all utility jobs known to DB2. You should get the following message: **NO AUTHORIZED UTILITY FOUND FOR UTILID = \***  
If there are utilities, wait for their successful completion or terminate them.
3. Ensure that all DB2 objects of the source system are started in RW mode.  
You can check this using the following DB2 command: **DISPLAY DATABASE(\*) SPACENAM(\*) RES**  
The command displays all databases, table spaces, or indexes in a restricted status.  
You should get the following message: **NO DATABASES FOUND**

In all other cases do not proceed. We recommend that you repair all databases, table spaces, or indexes identified as restricted. For more information, see the command reference of Db2 for z/OS.

4. The source system must be stopped and restarted now in `ACCESS(MAINT)`.

`ACCESS(MAINT)` prohibits access to any authorization IDs other than `SYSADM`, `SYSOPR` and `SECADM`.

5. Later in this workflow all `WLM ENVIRONMENTS` of DB2 procedures must be altered in the target system. Identify all created procedures and `WLM ENVIRONMENTS` with the following SQL statement:

```
SELECT 'ALTER PROCEDURE ' CONCAT
       SCHEMA CONCAT '.' CONCAT NAME CONCAT ' '
       CONCAT ' WLM ENVIRONMENT '
       CONCAT STRIP(WLM_ENVIRONMENT) CONCAT ';'
FROM SYSIBM.SYSROUTINES
WHERE ROUTINETYPE='P';

SELECT 'ALTER SPECIFIC FUNCTION ' CONCAT
       SCHEMA CONCAT '.' CONCAT SPECIFICNAME CONCAT ' '
       CONCAT ' WLM ENVIRONMENT '
       CONCAT STRIP(WLM_ENVIRONMENT) CONCAT ';'
FROM SYSIBM.SYSROUTINES
WHERE ROUTINETYPE='F'
AND FENCED = 'Y';
```

The result of this query should look like the following:

#### Note

This is only an excerpt from the result.

```
ALTER PROCEDURE DSNADM."ADMIN_TASK_LIST" WLM ENVIRONMENT D990_GENERAL;
ALTER PROCEDURE DSNADM."ADMIN_TASK_OUTPUT" WLM ENVIRONMENT D990_GENERAL;
ALTER PROCEDURE DSNADM."ADMIN_TASK_STATUS" WLM ENVIRONMENT D990_GENERAL;
ALTER PROCEDURE DSNADM."ADMIN_TASK_STATUS" WLM ENVIRONMENT D990_GENERAL;
ALTER PROCEDURE SYSPROC."DSNACICS" WLM ENVIRONMENT D128_GENERAL;
```

Keep the results of this query in a safe place.

6. Stop the source system again.
7. After the source system has completely terminated, print the contents of all source system boot strap datasets using utility `DSNJU004`.

Carefully save the output. The values of `START RBA` and `END RBA` of all logcopy datasets are needed later in this workflow.

#### Caution

Do not start the source system until all objects (`boot strap datasets`, `LOGCOPY`, `VSAM clusters` and so on) are copied into the target system. Otherwise the target system might be highly inconsistent. Therefore it is strongly recommended to prevent the source system from being started until [step 4 \[page 97\]](#) of this process flow has been completed successfully.

## 5.4.2 Step 2: Consider DB2 Procedures of the Target System

Consider the following cases:

- Homogeneous system copy of the source system is provided in an existing target system. In this case you can skip step 2.
- Homogeneous system copy of the source system is provided in a nonexistent target system. In this case customize and run a private copy of `DSNTIIMV` to update the `DB2 PROCLIB`.

## 5.4.3 Step 3: Delete All Obsolete Objects of the Target System

Consider the following cases:

- Homogeneous system copy of the source system is provided in a target system that already exists. In this case delete all obsolete bootstrap datasets, logcopy datasets, archives, VSAM clusters. Ensure that all obsolete objects of the target system are deleted.
- Homogeneous system copy of the source system is provided in a non-existing target system. In this case you can skip step 3. All necessary datasets are copied from the source system in [step 4 \[page 97\]](#) of this process flow.

## 5.4.4 Step 4: Copy All Objects of the Source System into the Target System

1. Ensure that the source system is still stopped.  
Otherwise `bootstrap datasets`, `logcopy datasets`, `VSAM clusters` are allocated by the source system and cannot be copied.
2. Customize and run a job using, for example, program `ADRSSU`.  
Use **ADRSSU parameter RENUMC** to rename all objects to reflect the high-level qualifiers of the target system.
3. Now you can restart the source system without any risk of inconsistency in the target system.

## 5.4.5 Step 5: Add All DB2 Subsystem Libraries to a PARMLIB Containing Definitions Required for APF

Consider the following cases:

- The target system was already up and running in the past, so that all definitions required for authorized program facility (APF) already exist.  
In this case you can skip step 5.
- The target system was never up and running.

In this case add all definitions required for `APF` to an appropriate `PARMLIB` and set `APF`. Otherwise the target system cannot be started.

## 5.4.6 Step 6: Alter the BSDS of the Target System

Change `VSAMCAT` in the bootstrap data sets (BSDS) of the target system. Use the `DSNJU003` utility in DB2 with parameter `NEWCAT VSAMCAT` to reflect the new `VSAMCAT` high-level qualifier.

Repeat this step for each data sharing member BSDS of data sharing systems, .

## 5.4.7 Step 7: Change Entries of logcopy Data Sets in the BSDS of the Target System

Use DB2 utility `DSNJU003` to delete obsolete and invalid `DSNAME` entries using the `DELETE DSNAME` parameter. In the same job you can define the name of the new `logcopy` data sets with the `NEWLOG DSNAME` parameter. Carefully customize the `STARTRBA` and `ENDRBA` parameters using the values of the source system.

Repeat this step for each data sharing member BSDS of data sharing systems.

## 5.4.8 Step 8: Customize DB2 Modules Using DSNTIJUZ

For the target system you have to customize the DB2 data-only load module `DSNHMCID`, the application defaults load module (`DSNHDECP`), and the subsystem parameter module using `DSNTIJUZ`.

At least change the following parameters:

- The name of the libraries identified in `STEPLIB`, `SYSLIB`
- `SYSLMOD DD` statements
- The `ADMTPROC` parameter, if the administrative task scheduler is used
- The `CATALOG` parameter
- The `FCCOPYDDN` parameter
- The `IRLMPROC` parameter
- The `IRLMSID` parameter
- The `ARCPFX1` and `ARCPFX2` parameters, if the target system is to run with archiving.  
If the target system is to run without archiving, identified by parameter `OFFLOAD=NO`, the `ARCPFX2` / `ARCPFX2` parameters must not be changed. However, for security reasons it is recommended to run the target system with archiving.

Other parameters of the target system can be modified as requested by the owner of the subsystem.

Repeat this step for each data sharing member BSDS of data sharing systems.

## 5.4.9 Step 9: Configure the Distributed Data Facility (DDF)

Use the DSNJU003 stand-alone utility to change the bootstrap data sets (BSDS). Adjust `LOCATION`, `LUNAME`, `PORT`, and `RESPORT` considering the new Distributed Data Facility (DDF) environment.

Repeat this step for each data sharing member BSDS of data sharing systems.

## 5.4.10 Step 10: Start the Target System Using ACCESS(MAINT)

You must be able to start the target system with `ACCESS (MAINT)`, otherwise the `CATMAINT` utility fails in the [next step \[page 99\]](#) of this process flow.

If the target system does not start successfully, do **not** proceed with [Step 11: Update the DB2 Catalog Using CATMAINT UPDATE VCAT SWITCH \[page 99\]](#).

For data sharing systems, start the first member and continue with [Step 11: Update the DB2 Catalog Using CATMAINT UPDATE VCAT SWITCH \[page 99\]](#).

## 5.4.11 Step 11: Update the DB2 Catalog Using CATMAINT UPDATE VCAT SWITCH

Use the `CATMAINT` utility with option `VCAT SWITCH` to provide the new high-level qualifier of the target system in the DB2 catalog.

For data sharing systems, run this step with the first started member.

## 5.4.12 Step 12: Stop and Restart the Target System

Stop and restart the target system.

When the target system is restarted, you have to check the `SYSLLOG` carefully for normal completion.

### Caution

Do not proceed with the [next step \[page 100\]](#) if problems occur while the target system is being stopped or restarted.

## 5.4.13 Step 13: Create DSNTEP2 and DSNTEP4 Load Modules for the Target System

Create, test, and run the DSNTEP2 and DSNTEP4 load modules. To be able to do this, you have to customize and run DSNTEJ1L.

## 5.4.14 Step 14: Alter All WLM Environments of Stored Procedures

### Use

In [step 1 \[page 95\]](#) of this process flow, you ran a query to prepare all ALTER PROCEDURE statements for the target system.

Now you have to customize the result of the query by changing the WLM ENVIRONMENT value for the WLM ENVIRONMENT names of the target system.

### Procedure

1. Ensure that the APPLICATION ENVIRONMENT NAMES and the appropriate PROCEDURE NAMES exist in the DB2 PROCLIB and that the APPLICATION ENVIRONMENTS are activated.
2. Run all ALTER PROCEDURE commands in the target system using the DSNTEP2 program.

## 5.4.15 Step 15: Perform Post-Offline System Copy Actions (Optional)

1. As all GRANTS of the source system are still valid, check them using SPUIFI by executing the following command: **SELECT \* FROM SYSIBM.SYSUERAUTH;**  
Maintain this table according to your needs.
2. Grant new users or revoke obsolete users.
3. If required, change the user authorizations of the target system.  
The IBM Db2 catalog still contains the authorizations of the source system.

## 5.5 SAP ASE 16.x Server-Specific Procedure

This section describes how to perform a homogeneous system copy of a SAP ASE 16.x database by using the `load database dump` method, or the `attach database device` method in an SAP environment. The Software Provisioning Manager supports both methods.

### Context

The `load database dump` method and the `attach database device` method have the following advantages compared to the `Jload` method:

- You can use an existing full database dump and optionally also transaction dumps.
- You can copy the complete database software and database devices (all files below `/sybase/<DBSID>`) to the target system and use this copy to create the target system.
- These methods are faster than the [database-independent method \[page 39\]](#).

For more information about system copy with SAP ASE 16.x as target database, see SAP Note [1697542](#).

### Procedure

1. Provide the database files required for the target system setup using one of the following ways:
  - Suspend write operations to the database devices of the source system database together with the creation of a database manifest file (using SAP ASE 16.x command `quiesce database <DBSID>_tag hold <DBSID> for external dump to <manifest_file>`), copy all necessary files to the target system, and enable the write operation again (using SAP ASE 16.x command `quiesce database <DBSID>_tag release`).
  - Create a backup (SAP ASE 16.x command `dump database`).
2. Copy the files to the target system.
3. Run the Software Provisioning Manager to install the target system by choosing the following on the *Welcome* screen:

► <Product> ► SAP ASE ► System Copy ► Target System ► <System Variant> ► Based on <Technical Stack> ►

#### Note

- Choose the installation services in exactly the order they appear. For more information, see the [installation guide \[page 21\]](#) for your SAP NetWeaver-based system on SAP ASE.
- On the Software Provisioning Manager screen *SAP SystemDatabase*, make sure that you select *Homogeneous System Copy (SAP ASE-specific: Attach database device or Load database dump)*.
- The Software Provisioning Manager asks you if you want to use either an already existing SAP ASE installation on the target system or the database software from the installation media.
- Depending on the method chosen, you have to enter either the path to the database dump files or the location of the database manifest file. The Software Provisioning Manager tries to find the

database devices mentioned in the manifest file automatically, otherwise it asks for the files during the Software Provisioning Manager execution phase.

## 6 Copying Single Instances Only

If you want to copy single instances of your SAP system only, you can use one of the following procedures, depending on your use case.

### ⚠ Caution

You **cannot** copy single product instances, usage types, or components!

### ℹ Note

For heterogeneous system copy you can perform the [Database Independent System Copy \[page 39\]](#) method.

### ℹ Note

This system copy guide describes only the export of the source system in detail. For the installation of the target system, you use the **installation guide** for the database and operating system platform of your target system. This procedure describes only the additional system copy-specific steps for the target system installation and refers for the remaining steps to the target system [installation guide \[page 21\]](#).

#### [Copying the Primary Application Server Instance Only \[page 104\]](#)

With this procedure, you can move a primary application server instance to a different host within your system.

#### [Copying the Database Only – Move Database Instance \[page 104\]](#)

This section is about how to **move** a database instance to a different host within your system. Depending on your database, you can perform the move using either database-specific methods or the SAP standard method based on `JLoad`.

#### [Copying the Database Only – Refresh Database Instance \[page 106\]](#)

With this procedure you can refresh an existing database **instance** - that is a new database instance is installed - without having to copy the primary application server instance and to reinstall additional applications servers. You can perform the refresh using either database-specific methods or the SAP standard method based on `JLoad`.

#### [Copying the Database Only - Refresh Database Content \[page 108\]](#)

Using the *Refresh Database Content* option in the Software Provisioning Manager you can refresh the **content** of an existing database using a database backup without having to copy the primary application server instance, and to reinstall additional applications servers. No new database instance is installed. The sections below describe how to use the *Refresh Database Content* option for your database.

## 6.1 Copying the Primary Application Server Instance Only

With this procedure, you can move a primary application server instance to a different host within your system.

### Prerequisites

The central services instance (SCS instance) is installed.

### Procedure

1. Shut down all application servers.
2. Uninstall the old primary application server instance as described in the *Additional Information* section of the installation guide .
3. On your **target** host, start the Software Provisioning Manager as described in [Running Software Provisioning Manager \[page 48\]](#) .
4. On the *Welcome* screen, navigate to the following folder according to the requirements of your target system:

▶ <Product> ▶ <Database> ▶ *System Copy* ▶ *Target System* ▶ *Distributed System or High-Availability System* ▶ *Based on <Technical Stack>* ▶ *Primary Application Server Instance* ▶

5. After the installation has finished, restart all additional application server including the instance services.

## 6.2 Copying the Database Only – Move Database Instance

This section is about how to **move** a database instance to a different host within your system. Depending on your database, you can perform the move using either database-specific methods or the SAP standard method based on JLoad .

### Note

For **Oracle Database** you **cannot** use the database-independent method described in the *Procedure* below. Instead, you must use the database specific method (see [Oracle-Specific Procedure \[page 73\]](#)) to copy or restore your database in the target system.

## Context

“Move” means moving the database instance to a different host to refresh the database content. The procedure below describes the database-independent method, which is not feasible for all databases. For using database-specific methods, see [Database-Specific System Copy \[page 71\]](#).

If you only want to “refresh” the database content with the database instance staying on the same host, use either the procedure described in [Copying the Database Only – Refresh Database Instance \[page 106\]](#) or the procedure described in [Copying the Database Only - Refresh Database Content \[page 108\]](#)

For more information, see <https://blogs.sap.com/2017/03/02/refresh-database-content-without-reinstalling-the-database-or-kernel-for-abap-systems/>

### Note

- Consider the following:
  - The <DBSID> must not be changed.
  - When copying the database only, you cannot change to another database but need to perform a database-homogeneous copy.
  - The old database instance cannot be uninstalled using the Software Provisioning Manager-based uninstall procedure. This always deletes the current database of the system.

## Procedure

- On the **source** host, run the Software Provisioning Manager to perform the export in one of the following ways:
  - If you perform the export using `UIoad`, on the *Welcome* screen, choose **>> <Product> > <Database> > System Copy > Source System > Based on AS Java > Database Instance Export** to export the database.
  - If you perform the export using database-specific tools, you must start them manually.
- On the **target** host, stop all SAP application server instances, but leave the SCS instance running.
- On the target system, run the Software Provisioning Manager and choose **>> <Product> > <Database> > System Copy > Target System > <System\_Variant> > Based on AS Java > Refresh or Move Database Instance** to install the database.

### Note

Since the target database instance is to replace the source database, do not change the <DBSID>.

- When the Software Provisioning Manager has completed the installation of the database, restart your system including all instance services.
- Shut down the old database instance.
- SAP MaxDB only:** Set up the xuser entries from the home directory of the user <sapsid>adm on each application server as follows:

```
xuser -U <key> -u <dbuser>,<password> -d <dbsid> -n <dbhost> -S SAPR3 -t 0 -I 0  
set
```

The required keys and dbusers are as follows:

- Key `DEFAULT` with dbuser `SAP<SAPSID>`
- Key `c` with dbuser `control`
- Key `c_j2ee` with dbuser `control`
- Key `w` with dbuser `superdba`

## Related Information

[Running Software Provisioning Manager \[page 48\]](#)

## 6.3 Copying the Database Only – Refresh Database Instance

With this procedure you can refresh an existing database **instance** - that is a new database instance is installed - without having to copy the primary application server instance and to reinstall additional applications servers. You can perform the refresh using either database-specific methods or the SAP standard method based on `Jload`.

### Prerequisites

- The source system and the target system already exist.
- You must prepare the kernel media and the RDBMS media as described in section *Preparing the Installation Media* in the [installation guide \[page 21\]](#).
- As a post-step during the refresh database instance, the software provisioning manager connects to the target SAP system via remote function call (RFC). Since the certificates are from the source system, make sure that secure network communications (SNC) is turned off for the RFC, or at least that the insecure RFC connection is allowed. This is only necessary during the short time of the post-processing steps, and after they are completed, you can turn SNC back on.

### Context

This procedure implies a “refresh of the database instance” using kernel and RDBMS media with the database instance staying on the same host.

If you want to “move” the database instance to a different host, use the procedure described in [Copying the Database Only – Move Database Instance \[page 104\]](#).

If you want to only refresh the database content using a database backup - that is without using kernel and RDBMS media, and without installing a new database instance - use the procedure described in [Copying the Database Only - Refresh Database Content \[page 108\]](#)

For more information, see <https://blogs.sap.com/2017/03/02/refresh-database-content-without-reinstalling-the-database-or-kernel-for-abap-systems/>

## Procedure

- On the source system, note down the IDs for each of the Java instances in the profile of the application server.  
The ID is stored in the instance profile as parameter `j2ee/instance_id`.
- On the **source** system, perform the export in one of the following ways:
  - If you perform the export using `Jload`, start the Software Provisioning Manager and on the *Welcome* screen choose `>> <Product> >> <Database> >> System Copy >> Source System >> Based on AS Java >> Database Instance Export >>` to export the database.
  - If you perform the export using database-specific tools, you must start them manually.
- On the **target** host, stop all SAP application server instances, but leave the SCS instance running.
- Run the Software Provisioning Manager and choose `>> <Product> >> <Database> >> System Copy >> Target System >> <System_Variant> >> Based on AS Java >> Database Refresh or Move >>` to install the database.  
**IBM Db2 for Linux, UNIX, and Windows only:** If you receive a message that the schema already exists, you must delete the existing database schema. You can do this in one of the following ways:
  - Automatically while running the *Database Refresh or Move* option by choosing to drop the schema on screen
  - Manually before you run the *Database Refresh or Move* option, as described in [Deleting a Database Schema Manually \[page 180\]](#).
- When the Software Provisioning Manager has completed the installation of the database, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### ⚠ Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

### 🔗 Example

#### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
```

```
ABC_J00_<host1>:j2ee/instance_id = ID32225
```

```
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

#### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
```

```
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016

Target System (after reassignment):
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance_id = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Next Steps

If there are more application servers on the target system than on the source system, you must reinstall the ones that additionally exist on the target system.

## Related Information

[Running Software Provisioning Manager \[page 48\]](#)

## 6.4 Copying the Database Only - Refresh Database Content

Using the *Refresh Database Content* option in the Software Provisioning Manager you can refresh the **content** of an existing database using a database backup without having to copy the primary application server instance, and to reinstall additional applications servers. No new database instance is installed. The sections below describe how to use the *Refresh Database Content* option for your database.

As a post-step during the refresh database content, the Software Provisioning Manager connects to the target SAP system via remote function call (RFC). Since the certificates are from the source system, make sure that secure network communications (SNC) is turned off for the RFC, or at least that the insecure RFC connection is allowed. This is only necessary during the short time of the post-processing steps, and after they are completed, you can turn SNC back on.

### → Recommendation

We recommend that you use option *Refresh Database Content* if you need to equalize the database content of two or more already existing and configured systems, for example in automatized system landscapes with “template” systems which have to correspond to precisely defined standards, such as predefined host names, network settings, users, security policies.

### 📘 Note

If you want to “move” the database instance to a different host, use the procedure described in [Copying the Database Only – Move Database Instance \[page 104\]](#).

If you want to “refresh” the complete database instance - then you need kernel and RDBMS media to install a new database instance - use the procedure described in [Copying the Database Only – Refresh Database Instance \[page 106\]](#)

For more information, see <https://blogs.sap.com/2017/03/02/refresh-database-content-without-reinstalling-the-database-or-kernel-for-abap-systems/>

### 📌 Note

System copy option *Refresh Database Content* is currently **not** released for SAP SCM.

#### [Copying the Database Only - Refresh Database Content on SAP ASE \[page 109\]](#)

Using the *Refresh Database Content* option in the software provisioning manager, you can refresh the **content** of an existing database **using a database backup** without having to copy the primary application server instance and to reinstall additional applications servers. No new database instance is installed. The refresh can be done using either **database-specific methods** or the **SAP standard method** based on JLoad .

#### [Copying the Database Only - Refresh Database Content on IBM Db2 for Linux, UNIX, and Windows \[page 115\]](#)

Using the *Refresh Database Content* option in the Software Provisioning Manager, you can refresh the **content** of an existing database **using a database backup** without having to copy the primary application server instance and to reinstall additional applications servers. No new database instance is installed. You can do the refresh using either database-specific methods or the SAP standard method based on JLoad .

#### [Copying the Database Only - Refresh Database Content on Oracle Database \[page 121\]](#)

Using the *Refresh Database Content* option in the Software Provisioning Manager, you can refresh the **content** of an existing database **using a database backup** without having to copy the primary application server instance and to reinstall additional applications servers. No new database instance is installed. You can do the refresh using either database-specific methods (backup/restore) or the SAP standard method based on JLoad .

#### [Copying the Database Only - Refresh Database Content on IBM Db2 for z/OS \[page 124\]](#)

Using the *Refresh Database Content* option in the Software Provisioning Manager, you can refresh the **content** of an existing database **using a database backup** without having to copy the primary application server instance and to reinstall additional applications servers. No new database instance is installed. You can do the refresh using either database-specific methods or the SAP standard method based on JLoad .

#### [Copying the Database Only - Refresh Database Content on SAP MaxDB \[page 127\]](#)

Using the *Refresh Database Content* option in the Software Provisioning Manager, you can refresh the **content** of an existing database **using a database backup** without having to copy the primary application server instance and to reinstall additional applications servers. No new database instance is installed. You can do the refresh using either database-specific methods or the SAP standard method based on JLoad .

## 6.4.1 Copying the Database Only - Refresh Database Content on SAP ASE

Using the *Refresh Database Content* option in the software provisioning manager, you can refresh the **content** of an existing database **using a database backup** without having to copy the primary application server

instance and to reinstall additional applications servers. No new database instance is installed. The refresh can be done using either **database-specific methods** or the **SAP standard method** based on `Jload`.

## Prerequisites

- Your SAP system must be based on SAP NetWeaver 7.3 or higher.
- The source system and the target system already exist.
- Prerequisite for using a database-specific method is that source and target database version match. It is not possible to use a target database version that is lower than the source database version. To refresh the content of an existing database you can use database and transaction dumps or a copy of the database device files of the SAP database. For more information about creating database and transaction dumps, and handling of database device files, see the *SAP ASE Administration Guide* at [https://help.sap.com/viewer/product/SAP\\_ASE/Operate/System Administration Guide: Volume 2](https://help.sap.com/viewer/product/SAP_ASE/Operate/System%20Administration%20Guide:Volume%202).
- If the source database is using the full database encryption feature, your target database must use the encryption details of the source system to be able to load and mount the database content. The Software Provisioning Manager prompts for the database encryption details of the source systems. For more information, see SAP Note [2224138](#).
- Make sure that you have the password for the DDIC user in client 000 of your source system at hand. The Software Provisioning Manager will prompt you for this password during the *Refresh Database Content* procedure.
- Refreshing the content of a database that is part of a replication environment is not supported. Perform a full teardown, preferably with the `removehadx` utility, and then start a replication setup after the database refresh is complete.

## Context

We recommend that you use option *Refresh Database Content* if you need to equalize the database content of two or more already existing and configured systems, for example in automatized system landscapes with “template” systems which have to correspond to precisely defined standards, such as predefined host names, network settings, users, security policies.

### Note

If you want to “move” the database instance to a different host, use the procedure described in [Copying the Database Only – Move Database Instance \[page 104\]](#).

If you want to “refresh” the complete database instance - then you need kernel and RDBMS media to install a new database instance - use the procedure described in [Copying the Database Only – Refresh Database Instance \[page 106\]](#)

For more information, see <https://blogs.sap.com/2017/03/02/refresh-database-content-without-reinstalling-the-database-or-kernel-for-abap-systems/>

## Using the SAP Standard Method

1. On the source system, proceed as follows:
  1. On the source system, note down the IDs for each of the Java instances in the profile of the application server.  
The ID is stored in the instance profile as parameter `j2ee/instance_id`.
  2. Stop the SAP system.
  3. Perform the database instance export as follows:
    1. Start the Software Provisioning Manager preferably on the database instance host or on any other host of the SAP system as described in [Exporting the Source System \[page 44\]](#).
    2. On the *Welcome* screen, run option `>> <Product> >> <Database> >> System Copy >> Source System >> Based on AS Java >> Database Instance Export >`
2. On the target system, proceed as follows:
  1. Stop all SAP application server instances, but leave the SCS instance and the database instance running
  2. Refresh the database content as follows:
    1. Start the Software Provisioning Manager preferably on the database instance host or on any other host of the SAP system as described in [Exporting the Source System \[page 44\]](#).
    2. On the *Welcome* screen, run option `>> Generic Options >> <Database> >> Refresh Database Content >`
  3. When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### ⚠ Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

### 🔗 Example

#### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

#### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

#### Target System (after reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Using the Database-specific Method

### Procedure Using database and transaction dumps

“Database dumps” contain the entire database, including both the data and the transaction log.

“Transactions dumps” contain a record of any database changes made since the last transaction log dump or database dump.

1. On the source system, note down the IDs for each of the Java instances in the profile of the application server.

The ID is stored in the instance profile as parameter `j2ee/instance_id`.

2. On the database host of the source system, create a full database backup.

In the following examples, replace `<SAPSID>` with the name of your SAP System and `<dump_file>` with a full path name of the file to which the database server can write the database content:


1. Open a command shell for OS user `syb<dbSID>` and connect to the database server using the following command line: `isql -X -Usapsa -S <SAPSID>`
2. Enter the following commands to create a full database dump:

```
use master
go
dump database <SAPSID> to '<dump_file>'
go
quit
```

3. Enter the following commands to create a transaction dump:

```
use master
go
dump transaction <SAPSID> to '<trans_file>'
go
quit
```

3. On the database host of the target system, proceed as follows:

1. Stop all SAP application server instances, but leave the SCS instance and the database instance running
2. Transfer the database dump file from the database host of the source system to the database host of the target host.
3. Verify that the OS user `syb<dbSID>` is able to read the dump file.
4. Refresh the database content as follows:
  1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
  2. On the *Welcome* screen, run option **Generic Options** > **<Database>** > **Refresh Database Content** 
  3. When the Software Provisioning Manager asks for the database dump details, enter the location of the database and transaction dump files.  
The tool creates the necessary SQL statements to load the database content with that information.
  4. Optionally the database content can be refreshed with a two-step approach if the database dump should be loaded now and transaction files at a later point in time.
    1. Enter the location of the database dump files.
    2. Enable the check box *After loading the database dump, keep the database offline and terminate the Software Provisioning Manager*.

3. The Software Provisioning Manager will perform the database load and terminate.
  4. The database will be offline and cannot be used at that point in time.
  5. When the last transaction dump is ready, start the Software Provisioning Manager once more.
  6. Enter the location of the transaction files.
  7. The Software Provisioning Manager will load the transactions and proceed with the remaining steps of the refresh procedure.
4. When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### ⚠ Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

### 🔗 Example

#### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

#### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

#### Target System (after reassignment):


```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Procedure With Copying of the database device files of the SAP database

1. On the database host of the source system, do the following:
  1. On the source system, note down the IDs for each of the Java instances in the profile of the application server.  
The ID is stored in the instance profile as parameter `j2ee/instance_id`.
  2. Stop the SAP system
  3. Create a database manifest file  
In the following example, replace `<SAPSID>` with the name of your SAP system and `<manifest_file>` with a full path name of the file to which the database server can write the database manifest:
    1. Open a command shell for OS user `syb<dbssid>` and connect to the database server using the following command line: `isql -X -Usapsa -S <SAPSID>`
    2. Enter the following commands:

```
use master
go
create manifest file
```

```
<SAPSID> to '<manifest_file>'
go
quit
```

4. Stop the database server
2. On the database host of the target system, do the following:
  1. Stop all SAP application server instances, but leave the SCS instance and the database instance running.
  2. Create new folders for the device files (for example like `/sybase/<SAPSID>/sapdata_2` and `/sybase/<SAPSID>/saplog_2`).
  3. Transfer the database device files from the database host of the source system that belong to the SAP database (normally the files in folder `/sybase/<SAPSID>/sapdata_1` and `/sybase/<SAPSID>/saplog_1`) to the newly created `sapdata` and `saplog` folders.
  4. Also transfer the manifest file created on the source system to target system.
  5. Verify that the OS user `syb<dbsid>` is able to read both the database device files and the manifest file.
  6. Refresh the database content as follows:
    1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
    2. On the *Welcome* screen, run option **Generic Options** > **<Database>** > **Refresh Database Content** 
3. When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

### Example

#### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

#### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

#### Target System (after reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Next Steps

Perform the follow-up activities for system copy.

For more information, see [Follow-Up Activities \[page 131\]](#).

## Related Information

[Running Software Provisioning Manager \[page 48\]](#)

[Follow-Up Activities \[page 131\]](#)

## 6.4.2 Copying the Database Only - Refresh Database Content on IBM Db2 for Linux, UNIX, and Windows

Using the *Refresh Database Content* option in the Software Provisioning Manager, you can refresh the **content** of an existing database **using a database backup** without having to copy the primary application server instance and to reinstall additional applications servers. No new database instance is installed. You can do the refresh using either database-specific methods or the SAP standard method based on JLoad.

### Prerequisites

- The source system and the target system already exist.
- For the database-specific method, you can use either an online or an offline backup of the database. The following restrictions apply:
  - Source and target database versions must match.
  - This backup must be written to disk if you want the Software Provisioning Manager to refresh the content automatically (the default mode).
  - The database version must be 10.1 or higher.
  - The database must only use automatic storage for its tablespaces.
  - Database setups with multiple servers cannot use the database-specific method. This includes:
    - Partitioned databases using the DB2 Database Partitioning Feature (DPF)
    - IBM Db2 databases using the Db2 pureScale Feature
    - IBM Db2 High Availability Disaster Recovery (HADR) setups
- Make sure that you have the password for the DDIC user in client 000 of your source system at hand. The Software Provisioning Manager will prompt you for this password during the *Refresh Database Content* procedure.
- If you refresh your database content from an encrypted Db2 database backup, you need to make sure that your Db2 instance is set up for encryption in order to access the data from the backup image. You must provide the master key of the backup in a keystore file. For details, see the procedure below.

## Context

We recommend that you use option *Refresh Database Content* if you need to equalize the database content of two or more already existing and configured systems, for example in automatized system landscapes with “template” systems which have to correspond to precisely defined standards, such as predefined host names, network settings, users, security policies.

### Note

If you want to “move” the database instance to a different host, use the procedure described in [Copying the Database Only – Move Database Instance \[page 104\]](#).

If you want to “refresh” the complete database instance - then you need kernel and RDBMS media to install a new database instance - use the procedure described in [Copying the Database Only – Refresh Database Instance \[page 106\]](#)

For more information, see <https://blogs.sap.com/2017/03/02/refresh-database-content-without-reinstalling-the-database-or-kernel-for-abap-systems/>

## Using the SAP Standard Method

1. On the source system, do the following:
  1. On the source system, note down the IDs for each of the Java instances in the profile of the application server.  
The ID is stored in the instance profile as parameter `j2ee/instance_id`.
  2. Stop the SAP system.
  3. Perform the database instance export as follows:
    1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
    2. On the *Welcome* screen, run option **>> <Product> > <Database> > System Copy > Source System > Based on AS Java > Database Instance Export >**
2. On the target system, do the following:
  1. Stop all SAP application server instances but leave the database instance running.
  2. Refresh the database content as follows:
    1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
    2. On the *Welcome* screen, run option **>> Generic Options > <Database> > Refresh Database Content >**

If you receive a message that the schema already exists, you must delete the existing database schema. You can do this in one of the following ways:

    - Automatically while running the *Refresh Database Content* option by choosing to drop the schema on screen *IBM Db2 for Linux, UNIX, and Windows - Drop Existing Schemas*
    - Manually before you run the *Refresh Database Content* option, as described in [Deleting a Database Schema Manually \[page 180\]](#).

- When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### ⚠ Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

### 🔗 Example

#### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

#### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

#### Target System (after reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Using the Database-Specific Method

- On the **source system**, note down the IDs for each of the Java instances in the profile of the application server.  
The ID is stored in the instance profile as parameter `j2ee/instance_id`.
- On the **source system**, create a backup of your database. You may perform either an online or an offline backup.  
This backup must be written to disk if you want the Software Provisioning Manager to automatically refresh the database content from the backup. This is the default mode.  
You can also use other backup types. In this case, you must do the restore of the database manually. The Software Provisioning Manager will pause at the appropriate processing step and prompt you to restore the database.  
The following examples give details for creating a backup to disk.  
In the following examples, replace `<DBSID>` with the name of the database for your SAP System and `<backup_dir>` with a full path name of the directory to which the database server can write the database content. This directory must exist and be empty.
  - Using an online backup:  
If you choose this option, your SAP system can still be used during the backup.

## Note

You can only use this option if your database is running in log retention mode. For more information, see the following documentations:

- *Installation of SAP Systems Based on the Application Server <Stack> of SAP NetWeaver 7.1 to 7.5 on UNIX : IBM Db2 for Linux, UNIX, and Windows* at <https://support.sap.com/sltoolset>  
    > *System Provisioning* > *Installation Option of Software Provisioning Manager* >
- *Database Administration Guide — SAP on IBM Db2 for Linux, UNIX, and Windows* available at [https://help.sap.com/viewer/db6\\_admin](https://help.sap.com/viewer/db6_admin)

1. Log onto the database host of your source system as the db2<dbsid> user.
  2. Create a backup directory: `mkdir <backup_dir>`
  3. Run the following command: `db2 backup db <DBSID> online to <backup_dir> compress include logs`
  4. If your database backup is encrypted, retrieve your current master key label. You will need to import the master key to the target database instance in order to restore your target database. In order to retrieve your current master key label and export it, do the following as user db2<dbsid>:
    1. To get the <labelname>, execute the following command:  
`db2 "SELECT MASTER_KEY_LABEL FROM TABLE(SYSPROC.ADMIN_GET_ENCRYPTION_INFO())"`
    2. Then run the following command:  
`setenv PATH ${PATH}:/db2/db2<dbsid>/sqllib/gskit/bin`
    3. Depending on your platform, run the following:  
AIX: `setenv LIBPATH ${LIBPATH}:/db2/db2<dbsid>/sqllib/lib64/gskit`  
HP: `setenv SHLIB_PATH ${SHLIB_PATH}:/db2/db2<dbsid>/sqllib/lib64/gskit`  
Linux and Solaris: `setenv LD_LIBRARY_PATH ${LD_LIBRARY_PATH}:/db2/db2<dbsid>/sqllib/lib64/gskit`
    4. Export the master key with the label <labelname> from your source system with the following command. You can choose to export all master keys from the source system by omitting `-label <labelname>` from the command:  
`gsk8capicmd_64 -cert -export -db "/db2/db2<dbsid>/keystore/<source_keystore>.p12" -stashed -target <source_master_keyfile>.p12 -target_type pkcs12 -target_pw <strong_password> -label <labelname>`
    5. Copy the keystore file <source\_master\_keyfile>.p12 to the keystore directory in the home directory of your target db2<dbsid> user on your target system.
- Using an offline backup:
    1. Stop the SAP system.
    2. Log onto the database host of your source system as the db2<dbsid> user.
    3. Create a backup directory using the following command: `mkdir <backup_dir>`
    4. If the database server is not running, start it with the following command: `db2start`
    5. Run the following command: `db2 backup db <DBSID> to <backup_dir> compress`
    6. If your database backup is encrypted, retrieve your current master key label. You will need to import the master key to the target database instance in order to restore your target database.

In order to retrieve your current master key label and export it, do the following as user `db2<dbssid>`:

1. To get the `<labelname>`, execute the following command:  

```
db2 "SELECT MASTER_KEY_LABEL FROM
TABLE(SYSPROC.ADMIN_GET_ENCRYPTION_INFO())"
```
  2. Then run the following command:  

```
setenv PATH ${PATH}:/db2/db2<dbssid>/sqllib/gskit/bin
```
  3. Depending on your platform, run the following:  
**AIX:**

```
setenv LIBPATH ${LIBPATH}:/db2/db2<dbssid>/sqllib/lib64/gskit
```

  
**HP:**

```
setenv SHLIB_PATH ${SHLIB_PATH}:/db2/db2<dbssid>/sqllib/lib64/gskit
```

  
**Linux and Solaris:**

```
setenv LD_LIBRARY_PATH ${LD_LIBRARY_PATH}:/db2/
db2<dbssid>/sqllib/lib64/gskit
```
  4. Export the master key with the label `<labelname>` from your source system with the following command. You can choose to export all master keys from the source system by omitting `-label <labelname>` from the command:  

```
gsk8capicmd_64 -cert -export -db "/db2/db2<dbssid>/keystore/
<source_keystore>.p12" -stashed -target <source_master_keyfile>.p12
-target_type pkcs12 -target_pw <strong_password> -label <labelname>
```
  5. Copy the keystore file `<source_master_keyfile>.p12` to the keystore directory in the home directory of your target `db2<dbssid>` user on your target system.
3. On the database host of the **target system**, do the following:
    1. Stop all SAP application server instances but leave the database instance running.
    2. Make sure that the backup directory `<backup_dir>` is accessible on the target system and is readable for the `db2<dbssid>` user. This only applies if you want the Software Provisioning Manager to refresh the database content automatically (the default mode).
    3. If your backup image is encrypted, you must provide the master key used with the backup image.
      1. Log on as `db2<dbssid>` to your database host.
      2. Run the following command:  

```
setenv PATH ${PATH}:/db2/db2<dbssid>/sqllib/gskit/bin
```
      3. Depending on your platform, run the following:  
**AIX:**

```
setenv LIBPATH ${LIBPATH}:/db2/db2<dbssid>/sqllib/lib64/gskit
```

  
**HP:**

```
setenv SHLIB_PATH ${SHLIB_PATH}:/db2/db2<dbssid>/sqllib/lib64/gskit
```

  
**Linux and Solaris:**

```
setenv LD_LIBRARY_PATH ${LD_LIBRARY_PATH}:/db2/db2<dbssid>/
sqllib/lib64/gskit
```
      4. Import the master key from your source system.  
Make sure the file permissions allow access to the copied source keystore file. You can choose to import all master keys from the source system or only the one used with the backup image by adding `-label <labelname>` to the following command:  

```
gsk8capicmd_64 -cert -import -db <source_master_keyfile>.p12 -target /db2/
db2<dbssid>/keystore/sapdb2<dbssid>_db_encr.p12 -stashed
```
      5. Optional: to view all existing master keys and their respective labels, enter the following command:  

```
gsk8capicmd_64 -cert -list -db "/db2/db2<dbssid>/keystore/
sapdb2<dbssid>_db_encr.p12" -stashed
```
  4. Refresh the database content as follows:
    1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).

2. On the *Welcome* screen, run option **Generic Options** > **<Database>** > **Refresh Database Content**

#### Note

Note: If you want to restore your database manually, you must choose to run the Software Provisioning Manager in custom mode.

#### Note

When you are prompted to enter your connect user and schema information, you must enter the schema of your source system and the connect user of your target system.

3. In the Software Provisioning Manager, enter the master key label of your target system when asked in the *Define Parameters* phase.

#### Note

We recommend using the master key label of your target system. The default for a newly installed system is `sap_db2<dbsid>_<hostname>_dbencr_000`. You can use any existing master key label of your target system.

4. When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

#### Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

#### Example

##### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

##### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

##### Target System (after reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Next Steps

- Perform the follow-up activities for system copy.  
For more information, see [Follow-Up Activities \[page 131\]](#).

## Related Information

[Running Software Provisioning Manager \[page 48\]](#)

[Deleting a Database Schema Manually \[page 180\]](#)

[Follow-Up Activities \[page 131\]](#)

### 6.4.3 Copying the Database Only - Refresh Database Content on Oracle Database

Using the *Refresh Database Content* option in the Software Provisioning Manager, you can refresh the **content** of an existing database **using a database backup** without having to copy the primary application server instance and to reinstall additional applications servers. No new database instance is installed. You can do the refresh using either database-specific methods (backup/restore) or the SAP standard method based on JLoad.

## Prerequisites

- The source system and the target system already exist.
- If you want to use the *Database Backup/Restore Method*, source and target database version must match. It is not possible to use a target database version that is lower than the source database version.
- If you want to use the *Database Backup/Restore Method*, the database schema must be identical in the source and target database.
- If your source system has Oracle Database Vault (DV) enabled, and you want to enable DV on the target system as well, you need the password of user `secadmin / c##secadmin` during the [Software Provisioning Manager import procedure \[page 68\]](#). For more information, see SAP Note [2218115](#).
- If your source system has Oracle TDE, consider the additional information in section [Support of Oracle Transparent Data Encryption \(Oracle TDE\) \[page 183\]](#).
- Make sure that you have the password for the DDIC user in client 000 of your source system at hand. The Software Provisioning Manager will prompt you for this password during the *Refresh Database Content* procedure.


## Context

We recommend that you use option *Refresh Database Content* if you need to equalize the database content of two or more already existing and configured systems, for example in automatized system landscapes with “template” systems which have to correspond to precisely defined standards, such as predefined host names, network settings, users, security policies.

### Note

If you want to “move” the database instance to a different host, use the procedure described in [Copying the Database Only – Move Database Instance \[page 104\]](#).

If you want to “refresh” the complete database instance - then you need kernel and RDBMS media to install a new database instance - use the procedure described in [Copying the Database Only – Refresh Database Instance \[page 106\]](#)

For more information, see <https://blogs.sap.com/2017/03/02/refresh-database-content-without-reinstalling-the-database-or-kernel-for-abap-systems/> 

## Using the SAP Standard Method

1. On the source system, do the following:
  1. On the source system, note down the IDs for each of the Java instances in the profile of the application server.  
The ID is stored in the instance profile as parameter `j2ee/instance_id`.
  2. Stop the SAP system.
  3. Perform the database instance export as follows:
    1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
    2. On the *Welcome* screen, run option **>> <Product> > <Database> > System Copy > Source System > Based on AS Java > Database Instance Export >**
2. On the target system, do the following:
  1. Stop all SAP application server instances.
  2. Refresh the database content as follows:
    1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
    2. On the *Welcome* screen, run option **>> Generic Options > <Database> > Refresh Database Content >**
  3. When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database

to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

### ❁ Example

#### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

#### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

#### Target System (after reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Using the Database Backup/Restore Method

Follow the procedure for Oracle backup/restore in [Database-Specific System Copy \[page 71\]](#) and the instructions in [Oracle-Specific Procedure \[page 73\]](#).

1. On the source system, do the following:  
Create a backup of your database following the procedure Oracle backup/restore in [Database-Specific System Copy \[page 71\]](#) and the instructions in [Oracle-Specific Procedure \[page 73\]](#).
2. On the target system, do the following:
  1. Restore the backup of your database following the procedure Oracle backup/restore in [Database-Specific System Copy \[page 71\]](#) and the instructions in [Oracle-Specific Procedure \[page 73\]](#).
  2. Stop all SAP application server instances.
  3. Refresh the database content as follows:
    1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
    2. On the *Welcome* screen, run option **► Generic Options ► <Database> ► Refresh Database Content ►**
  4. When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### ⚠ Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

## ❁ Example

### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

### Target System (after reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance_id = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Next Steps

Perform the follow-up activities for system copy.

For more information, see [Follow-Up Activities \[page 131\]](#).

## Related Information

[Running Software Provisioning Manager \[page 48\]](#)

[Follow-Up Activities \[page 131\]](#)

## 6.4.4 Copying the Database Only - Refresh Database Content on IBM Db2 for z/OS

Using the *Refresh Database Content* option in the Software Provisioning Manager, you can refresh the **content** of an existing database **using a database backup** without having to copy the primary application server instance and to reinstall additional applications servers. No new database instance is installed. You can do the refresh using either database-specific methods or the SAP standard method based on `Jload`.

## Prerequisites

- The source system and the target system already exist.
- Prerequisite for using a database-specific method is that source and target database version are identical.
- Make sure that you have the password for the DDIC user in client 000 of your source system at hand. The Software Provisioning Manager will prompt you for this password during the *Refresh Database Content* procedure.

## Context

We recommend that you use option *Refresh Database Content* if you need to equalize the database content of two or more already existing and configured systems, for example in automatized system landscapes with “template” systems which have to correspond to precisely defined standards, such as predefined host names, network settings, users, security policies.

### Note

If you want to “move” the database instance to a different host, use the procedure described in [Copying the Database Only – Move Database Instance \[page 104\]](#).

If you want to “refresh” the complete database instance - then you need kernel and RDBMS media to install a new database instance - use the procedure described in [Copying the Database Only – Refresh Database Instance \[page 106\]](#)

For more information, see <https://blogs.sap.com/2017/03/02/refresh-database-content-without-reinstalling-the-database-or-kernel-for-abap-systems/>

## Using the SAP Standard Method

1. On the source system, do the following:
  1. On the source system, note down the IDs for each of the Java instances in the profile of the application server.  
The ID is stored in the instance profile as parameter `j2ee/instance_id`.
  2. Stop the SAP system.
  3. Perform the database instance export as follows:
    1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
    2. On the *Welcome* screen, run option **>> <Product> > <Database> > System Copy > Source System > Based on AS Java > Database Instance Export >**
2. On the target system, do the following:
  1. Stop all SAP application server instances, but leave the SCS instance running
  2. Refresh the database content as follows:
    1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).

2. On the *Welcome* screen, run option **► Generic Options ► <Database> ► Refresh Database Content ►**
3. When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### ⚠ Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

### 🔗 Example

#### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

#### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

#### Target System (after reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Using the Database-Specific Method

1. On the source system, note down the IDs for each of the Java instances in the profile of the application server.  
The ID is stored in the instance profile as parameter `j2ee/instance_id`.
2. Execute all steps as described in section [IBM Db2 for z/OS Specific Procedures \[page 94\]](#).
3. Refresh the database content as follows:
  1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
  2. On the *Welcome* screen, run option **► Generic Options ► <Database> ► Refresh Database Content ►**
4. When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### ⚠ Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

### 🔗 Example

#### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

#### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

#### Target System (after reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Next Steps

Perform the follow-up activities for system copy.

For more information, see [Follow-Up Activities \[page 131\]](#).

## Related Information

[Running Software Provisioning Manager \[page 48\]](#)

[Follow-Up Activities \[page 131\]](#)

## 6.4.5 Copying the Database Only - Refresh Database Content on SAP MaxDB

Using the *Refresh Database Content* option in the Software Provisioning Manager, you can refresh the **content** of an existing database **using a database backup** without having to copy the primary application server instance and to reinstall additional applications servers. No new database instance is installed. You can do the refresh using either database-specific methods or the SAP standard method based on `Jload`.

## Prerequisites

- The source system and the target system already exist.
- If you want to use the database backup/restore method, source and target database version must match. You cannot use a target database version that is lower than the source database version.
- No kernel media and no RDBMS media are required.
- Make sure that you have the password for the DDIC user in client 000 of your source system at hand. The Software Provisioning Manager will prompt you for this password during the [Refresh Database Content](#) procedure.

## Context

We recommend that you use option [Refresh Database Content](#) if you need to equalize the database content of two or more already existing and configured systems, for example in automatized system landscapes with “template” systems which have to correspond to precisely defined standards, such as predefined host names, network settings, users, security policies.

### Note

If you want to “move” the database instance to a different host, use the procedure described in [Copying the Database Only – Move Database Instance \[page 104\]](#).

If you want to “refresh” the complete database instance - then you need kernel and RDBMS media to install a new database instance - use the procedure described in [Copying the Database Only – Refresh Database Instance \[page 106\]](#)

For more information, see <https://blogs.sap.com/2017/03/02/refresh-database-content-without-reinstalling-the-database-or-kernel-for-abap-systems/>

## Using the SAP Standard Method

On the source system, do the following:

1. Stop the SAP system.
2. Perform the database instance export as follows:
  1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
  2. On the *Welcome* screen, run option **>> <Product> > <Database> > System Copy > Source System > Based on AS Java > Database Instance Export >**

On the target system, do the following:

1. Stop all SAP application server instances, but leave the ASCS instance and the database instance running.
2. Refresh the database content as follows:
  1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).

2. On the *Welcome* screen, run option **Generic Options** > **<Database>** > **Refresh Database Content**
3. When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### ⚠ Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

### 🔗 Example

#### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

#### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

#### Target System (after reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Using the Database Backup/Restore Method

On the source system, do the following:

Create Database Backup. If you want to import the content using the Software Provisioning Manager, you perform the backup into single backup file.

You can also use other backup types. In this case, you must do the restore of the content manually, the Software Provisioning Manager will stop when reaching the appropriate processing step. For more information, see [SAP MaxDB-Specific Procedure \[page 87\]](#), subsection *Prerequisites*.

On the target system, do the following:

1. Stop all SAP application server instances, but leave the ASCS instance and the database instance running.
2. Make the backup available on the target system.
3. Define the backup template, which is referencing the backup from the source system. For more information regarding backup template definition read MaxDB online Help at <http://maxdb.sap.com> > **Documentation** > **SAP MaxDB <version> Library** > **Database Administration** > **Backing Up Databases**

4. Refresh the database content as follows:
  1. Start the Software Provisioning Manager on the database host as described in [Exporting the Source System \[page 44\]](#).
  2. On the *Welcome* screen, run option ► *Generic Options* ► *<Database>* ► *Refresh Database Content* ►
5. When the Software Provisioning Manager has completed the refresh of the database content, adapt the profiles in the application server on the target system by reassigning the profile IDs of the Java instances. Make sure that they are the same as on the source system.

### ⚠ Caution

One application server (AS) is assigned to exactly one Java instance, and the other way around. That means that, in the target system, you must assign every Java instance in the database to exactly one application server. You **cannot** assign the same Java instance to more than one application server.

### 🔗 Example

#### Source System:

```
ABC_J88_<host1>:j2ee/instance_id = ID8873787
ABC_J00_<host1>:j2ee/instance_id = ID32225
ABC_J20_<host2>:j2ee/instance_id = ID2078823
```

#### Target System (before reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID7732291
XYZ_J00_<host2>:j2ee/instance_id = ID74637
XYZ_J01_<host1>:j2ee/instance_id = ID129016
```

#### Target System (after reassignment):

```
XYZ_J77_<host1>:j2ee/instance_id = ID8873787
XYZ_J00_<host2>:j2ee/instance = ID32225
XYZ_J01_<host1>:j2ee/instance_id = ID2078823
```

## Next Steps

Perform the follow-up activities for system copy.

For more information, see [Follow-Up Activities \[page 131\]](#).

## Related Information

[Running Software Provisioning Manager \[page 48\]](#)

[SAP MaxDB-Specific Procedure \[page 87\]](#)

[Follow-Up Activities \[page 131\]](#)

# 7 Follow-Up Activities

To finish the system copy of your SAP system, you have to perform follow-up activities in the target system.

## Note

The AS Java is not started automatically. After the target system has been installed and the follow-up activities have been performed, you have to start the AS Java manually.

[Performing Follow-Up Activities in the Target System \[page 131\]](#)

To complete the system copy process, you need to perform several follow-up activities on the target system.

## Related Information

[Performing Follow-Up Activities in the Target System \[page 131\]](#)

## 7.1 Performing Follow-Up Activities in the Target System

To complete the system copy process, you need to perform several follow-up activities on the target system.

## Note

Make sure that you also complete the post-installation steps contained in the [installation guide \[page 21\]](#). This system copy guide describes only the system copy-specific steps that are required in addition.

[Performing Follow-Up Activities for Java \[page 131\]](#)

[General Follow-Up Activities \[page 132\]](#)

This section contains general follow-up activities for SAP systems based on AS Java.

[Product-Specific Follow-Up Activities \[page 138\]](#)

You have to perform the following activities for specific product instances or usage types of the copied SAP system.

### 7.1.1 Performing Follow-Up Activities for Java

## Note

When the installation of the target system has completed, the AS Java is not started automatically. You have to start the AS Java manually. Depending on the product or product instances of your target system,

you have to perform certain follow-up steps in a running AS Java system (online) or in a stopped AS Java system (offline). That is you have to manually start the AS Java after you have performed the offline follow-up activities.

1. Offline follow-Up activities, to be done prior to the first start of the Java system:
  1. Perform [Activities at Database Level \[page 133\]](#).
  2. If your Java system has the User Management Engine (UME) in an external ABAP system, adjust the UME configuration as described in [Configuring the User Management \[page 134\]](#).
  3. Perform Adobe Configuration steps, to avoid having to restart the AS Java again. For more information, see [Adobe Document Services \[page 138\]](#).
2. [Start the AS Java System \[page 193\]](#).
3. Perform online follow-up activities:
  1. [General Follow-Up Activities to be Performed Online \[page 135\]](#)
  2. [Product-Specific Follow-Up Activities to be Performed Online \[page 139\]](#)

## 7.1.2 General Follow-Up Activities

This section contains general follow-up activities for SAP systems based on AS Java.


### Note


Make sure that you also complete the post-installation steps contained in the [installation guide \[page 21\]](#). This system copy guide describes only the system copy-specific steps that are required in addition.

### Note

When the installation of the target system has completed, the AS Java is not started automatically. You have to start the AS Java manually. Depending on the product or product instances of your target system, you have to perform certain follow-up steps in a running AS Java system (online) or in a stopped AS Java system (offline). That is you have to manually start the AS Java after you have performed the offline follow-up activities.

### Note

You can use Java post-copy automation (PCA) to perform general follow-up activities automatically. Java post-copy automation (PCA) provides task lists with a predefined sequence of configuration tasks to configure extensive technical scenarios automatically. For more information, see SAP Note [1807150](#) .

To be able to use PCA, you must install the license for SAP Landscape Virtualization Management Enterprise Edition. For more information, see SAP Note [1912110](#) .

### 7.1.2.1 General Follow-Up Activities to be Performed Offline

The follow-up activities listed in this section require a stopped AS Java.

### [Activities at Database Level \[page 133\]](#)

This section includes the adaptations that you have to make at database level in your target system.

### [Configuring the User Management \[page 134\]](#)

After the target system installation has completed, configure the user management of your SAP system.

### [Applying Stronger Encryption Algorithms \[page 135\]](#)

If you have performed a [database-independent \[page 39\]](#) or [database-specific system copy \[page 71\]](#) on an SAP system based on SAP NetWeaver Java 7.50 SP24 or higher, ensure that you apply the stronger encryption algorithms on the target system.

## 7.1.2.1.1 Activities at Database Level

This section includes the adaptations that you have to make at database level in your target system.

### Procedure

1. Before starting the SAP system, make sure that the logging mechanism of the database is active.
2. Check the parameters in the database profiles.
3. **Oracle Database only:**
  - a. Delete all entries from the following tables:  
DBSTATHORA, DBSTAIHORA, DBSTATIORA, DBSTATTORA.
  - b. Delete the user OPS\$<SOURCE\_SAPSID>ADM (if existing).
  - c. If you changed the <DBSID> during the system copy, we recommend that you adapt the `global_name` parameter by using the following SQL command:

```
alter database rename global_name to <NEW_DBSID>;
```

If the parameter does not exist on your system, ignore this step.

### 7.1.2.1.1.1 Checking the Database Parameters for IBM Db2 for Linux, UNIX, and Windows

#### Note

This section is only valid if your database is IBM Db2 for Linux, UNIX, and Windows.

After the installation of the target system has completed, make sure that you check the parameters of the database configuration and of the database manager configuration. A check of the database parameters ensures that your database parameters conform with the latest SAP recommendations where necessary and are adapted to your needs.

## Procedure

Compare the current parameters of your database with the parameters as they are recommended for SAP systems in the following SAP Notes:

Database Version	Corresponding SAP Note
IBM Db2 V9.7	<a href="#">1329179</a>
IBM Db2 10.1	<a href="#">1692571</a>
IBM Db2 10.5	<a href="#">1851832</a>
IBM Db2 11.1	<a href="#">2303771</a>
IBM Db2 11.5	<a href="#">2751102</a>

### 7.1.2.1.2 Configuring the User Management

After the target system installation has completed, configure the user management of your SAP system.

#### Context

During the target system setup for a system copy you cannot change the UME settings. Hence, after completing the target system setup it points to the same location as for the source system.

#### Procedure

If your system uses UME in an external ABAP system, you must configure the UME in such a way that it points to the copy of the original ABAP system in order to avoid disruptions to the production system.

For information about how to adapt the UME configuration, see the [SAP Library \[page 21\]](#) at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
SAP NetWeaver 7.5	<a href="#">▶ Security</a> > <a href="#">Identity Management</a> > <a href="#">User Management of SAP NetWeaver AS Java</a> > <a href="#">Configuring User Management</a> > <a href="#">UME Data Sources</a> > <a href="#">User Management of Application Server ABAP as Data Source</a> >

## More Information

For more information about adjusting the UME configuration offline, see SAP Note [1827807](#).

### 7.1.2.1.3 Applying Stronger Encryption Algorithms

If you have performed a [database-independent \[page 39\]](#) or [database-specific system copy \[page 71\]](#) on an SAP system based on SAP NetWeaver Java 7.50 SP24 or higher, ensure that you apply the stronger encryption algorithms on the target system.

For more information, see SAP Note [3153525](#) - *Improvement of SecureStoreFS encryption algorithms*.

## 7.1.2.2 General Follow-Up Activities to be Performed Online

The follow-up activities listed in this section require a running AS Java.

### [Installing the SAP License Key \[page 135\]](#)

Once the installation of the target system is completed, you have to install a new SAP license key.

### [Configuration Steps for the SAP Java Connector \[page 136\]](#)

You need to perform these post-installation steps for a copied Java system that includes a component that has to connect to an ABAP back end using the SAP Java Connector (SAP JCo), for example SAP Business Warehouse or SAP Enterprise Portal.

### [SAP Solution Manager: Connection Between SLD and LMDB \[page 137\]](#)

For an SAP Solution Manager system, check the connection between System Landscape Directory (SLD) and Landscape Management Database (LMDB).

### [Generating Public-Key Certificates \[page 137\]](#)

The public-key certificates need to be reconfigured on the target system

### 7.1.2.2.1 Installing the SAP License Key

Once the installation of the target system is completed, you have to install a new SAP license key.

You must install a **permanent** SAP license. When you install your SAP system, a **temporary** license is automatically installed.

#### Note

If the copied system has a valid permanent license for AS Java, this license key is preserved in the target system. This means, no temporary license is installed if a valid permanent license key is detected in the target system.

For more information about ordering and installing the SAP license, see the [SAP Library \[page 21\]](#) for your release at:

### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

#### SAP Release and SAP Library Quick Link

- **SAP Solution Manager 7.2 SR2 only:** SAP NetWeaver 7.4  
<http://help.sap.com/nw74>
- SAP NetWeaver 7.5  
<http://help.sap.com/nw75>

#### SAP Library Path (Continued)

▶ *Application Help* ▶ *SAP NetWeaver Library: Function-Oriented View* ▶ *Solution Life Cycle Management* ▶ *SAP Licenses* ▶

## More Information

For more information about how to order permanent SAP license keys, see <https://support.sap.com/licensekey>.

## 7.1.2.2.2 Configuration Steps for the SAP Java Connector

You need to perform these post-installation steps for a copied Java system that includes a component that has to connect to an ABAP back end using the SAP Java Connector (SAP JCo), for example SAP Business Warehouse or SAP Enterprise Portal.

### Procedure

1. Log on to the SAP NetWeaver Administrator as an administrator.
2. Choose ▶ *Configuration Management* ▶ *Infrastructure* ▶ *JCo RFC Provider* ▶.
3. Select the RFC destination that you use for the connection to the back end.
4. Maintain the required parameters for the RFC destination and repository.
5. Remove the old JCo destination that was copied from the source system.
6. Restart the Java server and the component.

## 7.1.2.2.3 SAP Solution Manager: Connection Between SLD and LMDB

For an SAP Solution Manager system, check the connection between System Landscape Directory (SLD) and Landscape Management Database (LMDB).

- Consider the following if you move parts of a system, for example the database, or the complete system to new hardware:
  - Each change in the host name generates new elements in the system landscape directory (SLD) which can result in system duplicates.
  - SAP recommends using stable (virtual) host names which remain constant over time, in the system profiles. SAP Note [1052122](#) lists the profile parameters evaluated by the SLD Data Suppliers for the host names.
- If you omitted to use virtual host names at installation time or if you cannot use virtual host names now, the SLD offers a possibility to prevent the creation of system duplicates. For more information, see SAP Note [1727294](#).
- If you cannot apply SAP Note [1727294](#) to the SLD, and if you already found a duplicate registration for the system in the SLD, refer to SAP Note 1694004 for guidance how to clean up such inconsistencies. SAP Note [1747926](#) describes the cleanup procedure for older SLD releases.
- If you want to copy an SAP Solution Manager system with a filled Landscape Management Database (LMDB), see SAP Note [1797014](#).
- If you want to create a new synchronization connection between the Landscape Management Database (LMDB) and the System Landscape Directory (SLD), see SAP Note [1699142](#).
- If you want to delete a synchronization connection between two SLD systems or between an SLD system and LMDB, see SAP Note [1770691](#).

## 7.1.2.2.4 Generating Public-Key Certificates

The public-key certificates need to be reconfigured on the target system

### Reconfiguring the Public-Key Certificates

After the system copy, the public-key certificates are not correct on the target system. You need to reconfigure them as described in the [SAP Library \[page 21\]](#) for your release at:

#### 📌 Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [Security](#) ► [User Authentication and Single Sign-On](#) ► [Integration in Single Sign-On \(SSO\) Environments](#) ► [Single Sign-On for Web-Based Access](#) ► [Using Logon Tickets](#) ► [Using Logon Tickets with AS Java](#) ► [Configuring the AS Java to Issue Logon Tickets](#) ► [Replacing the Key Pair to Use for Logon Tickets](#) ►

## Importing the Public-Key Certificates

You also need to import this public-key certificate on any systems that are to accept logon tickets from the AS Java system. For more information, see the [SAP Library \[page 21\]](#) for your release at:

### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [Security](#) ► [User Authentication and Single Sign-On](#) ► [Integration in Single Sign-On \(SSO\) Environments](#)  
► [Single Sign-On for Web-Based Access](#) ► [Using Logon Tickets](#) ► [Using Logon Tickets with AS Java](#) ► [Configuring the AS Java to Issue Logon Tickets](#) ►

## 7.1.3 Product-Specific Follow-Up Activities

You have to perform the following activities for specific product instances or usage types of the copied SAP system.

### Note

Make sure that you also complete the post-installation steps contained in the [installation guide \[page 21\]](#). This system copy guide describes only the system copy-specific steps that are required in addition.

### Note

When the installation of the target system has completed, the AS Java is not started automatically. You have to start the AS Java manually. Depending on the product or product instances of your target system, you have to perform certain follow-up steps in a running AS Java system (online) or in a stopped AS Java system (offline). That is you have to manually start the AS Java after you have performed the offline follow-up activities.

### 7.1.3.1 Product-Specific Follow-Up Activities to be Performed Offline

The product-specific follow-up activities listed in this section require a stopped AS Java.

#### 7.1.3.1.1 Adobe Document Services

##### Copying Files to the Target System

After performing a system copy, some additional files need to be copied manually from the original ADS system to the target system.

1. Copy the following files and subdirectories:
  - `DIR_GLOBAL\AdobeDocumentServices\TrustManagerService\trust\*.*`
  - `DIR_GLOBAL\AdobeDocumentServices\JobProfiles\Custom\*.*`
  - `DIR_GLOBAL\AdobeDocumentServices\FontManagerService\fonts\customer\*.*`
  - `DIR_GLOBAL\AdobeDocumentServices\lib\custom_*.*`
2. If you have adjusted the threshold for error file logging in the ADS, or if you are not sure whether you have adjusted it, copy the following file to your target system:  
`DIR_GLOBAL\AdobeDocumentServices\lib\renderErrorLog\renderErrorLogConfig.xml`
3. If you have made modifications to any XDC files, copy all XDC files to your target system:  
`DIR_GLOBAL\AdobeDocumentServices\lib\*.xdc`

#### Note

When copying the files to the new system, do not replace any existing files. Otherwise the changes made the XDC files provided by Adobe will be overwritten on system restart.

4. Restart your target system.

### Manual Configuration

1. Adjust the RFC connection ADS.  
Make sure you change the server name, the port, and the authentication information to match the target system.
2. Create the HTTP destination `FP_ICF_DATA_<SAPSID of target system>`.

## 7.1.3.2 Product-Specific Follow-Up Activities to be Performed Online

The product-specific follow-up activities listed in this section require a running AS Java.

### 7.1.3.2.1 EP Core – Application Portal

After system copy, you have to perform some follow-up activities for Enterprise Portal Core.

If trust between a portal (*Enterprise Portal* or *EP Core - Application Portal*) and any other system is required, then you need to replace certificates and re-establish trust with the newly copied system on which the portal is installed. For more information, see [Generating Public-Key Certificates \[page 137\]](#).

If you have more than one portal in your landscape and the portals share content via a federated portal network (FPN), refer to **SAP Note 2361152** for more information about post-system copy configuration steps.

## 7.1.3.2.2 Enterprise Portal: Knowledge Management and Collaboration

After the system copy, the Knowledge Management and Collaboration (KMC) target system still has access to the same data as the original source system. If the source and target system have write access to the same data, this results in serious inconsistencies in both systems. For this reason, it is essential to prevent both systems from using the same data.

Critical items that are accessed by both systems are, for example:

- Indexes for search and classification (TRES)
- Data in external repositories, for example, on file system shares
- Data on groupware servers

### Procedure

To prevent source and target system from working with the same data, reconfigure the following components on the target system:

- TRES
- Repository Managers
- Services
- Collaboration

The tables below summarize the configuration steps for each of the components and specify where you can find more information.

#### TRES

After the system copy, the target system is still connected to the same TRES installation as the source system. For this reason you need to install a new instance of TRES and connect it to the target system.

#### Caution

While KMC is still connected to the old TRES installation, do not delete any indexes, otherwise they will also be deleted on the source system.

Task	Detailed Information
For the target system, install a new instance of TRES.	Proceed as described in SAP Note <a href="#">1856942</a> .

Task	Detailed Information
<p>On the target system, set up the connection to the newly installed TREX system.</p>	<p>See the <a href="#">SAP Library [page 21]</a> for your release at:</p> <p> <a href="#">Search and Operational Analytics</a> &gt; <a href="#">Other Search Technologies</a>  <a href="#">Search and Classification TREX</a> &gt; <a href="#">TREX &lt;your version&gt;</a> &gt; <a href="#">TREX Configuration</a> &gt; <a href="#">TREX Basic Configuration</a> &gt; <a href="#">Connecting TREX with an Application</a> &gt; <a href="#">Connecting TREX with a Java Application (HTTP Connection)</a> &gt; <a href="#">Specifying the Address of the TREX Name Server</a> </p>
<p>On the target system, delete old indexes that belong to the source system. Define and generate new indexes for the target system.</p>	<p>See the <a href="#">SAP Library [page 21]</a> for your release at:</p> <p> <a href="#">Enterprise Portal</a> &gt; <a href="#">Knowledge Management</a> &gt; <a href="#">Administering the Knowledge Management System</a> &gt; <a href="#">System Administration</a> &gt; <a href="#">System Configuration</a> &gt; <a href="#">Administering Indexes</a> </p>
<p><b>Note</b></p> <p>The prerequisite for this step is that all repository managers are configured correctly for the target system.</p>	

## Repository Managers

Ensure that the target system does not have write access to the same repositories as the source system.

Task	Detailed Information
<p>On the target system, check the configuration of all <b>external</b> and <b>internal</b> repository managers that have write access to the same data as the source system. Make sure that the source and target system do not have write access to the same data. For example, check the repository manager settings for:</p> <ul style="list-style-type: none"> <li>• CM FSDB or CM DBFS repositories</li> <li>• Simple File System repositories</li> </ul>	<p>See the <a href="#">SAP Library [page 21]</a> for your release at:</p> <p> <a href="#">Enterprise Portal</a> &gt; <a href="#">Knowledge Management</a>  <a href="#">Administering the Knowledge Management System</a> &gt; <a href="#">System Administration</a> &gt; <a href="#">System Configuration</a>  <a href="#">Knowledge Management Configuration</a> &gt; <a href="#">Repositories and Repository Managers</a> </p>

## Services

Task	Detailed Information
<p><b>Content Exchange</b></p> <p>If content exchange is in use, the configuration on the source and target system is identical. However, it does not make sense to have the same content exchange procedures configured twice. For this reason, you delete the configuration on the target system and, if required, set up a new configuration. To remove the existing configuration on the target system, you run a cleanup file:</p> <ul style="list-style-type: none"> <li>• Download the cleanup file attached to <b>SAP Note 870863</b>. Note that the cleanup procedure automatically creates a new ID for a syndicator and subscriber.</li> <li>• Import the cleanup file into the target portal. To do this, choose <b>System Administration &gt; System Configuration &gt; Knowledge Management &gt; Content Management</b> and then, on the right, choose <b>Actions &gt; Import</b>.</li> <li>• If required, configure new content exchange settings on the target system.</li> </ul>	<p>See the <a href="#">SAP Library [page 21]</a> for your release at:</p> <p><b>Enterprise Portal &gt; Knowledge Management &gt; Administering the Knowledge Management System &gt; System Administration &gt; System Configuration &gt; Knowledge Management Configuration &gt; Global Services &gt; Content Exchange Service</b></p>
<p><b>URL Generator</b></p> <p>On the target system, check the settings for the <code>Host</code> and <code>Alternative Host</code> parameters.</p>	<p>See the <a href="#">SAP Library [page 21]</a> for your release at:</p> <p><b>Enterprise Portal &gt; Knowledge Management &gt; Administering the Knowledge Management System &gt; System Administration &gt; System Configuration &gt; Knowledge Management Configuration &gt; Global Services &gt; URL Generator Service</b></p>
<p><b>System Landscape:</b> On the target system, delete the old system IDs that belong to the source system.</p>	<p>Log on to the Portal and choose <b>System Administration &gt; System Configuration &gt; Knowledge Management &gt; Content Management &gt; Global Services &gt; System Landscape Definitions &gt; Systems &gt; Content Management Systems</b>.</p>
<p><b>Scheduler Service:</b> If the target system is a Java EE cluster, then you must assign scheduler tasks to the new system IDs of the target system. After the system copy, tasks are still assigned to the IDs of the source system.</p>	<p>See the <a href="#">SAP Library [page 21]</a> for your release at:</p> <p><b>Enterprise Portal &gt; Knowledge Management &gt; Administering the Knowledge Management System &gt; Basic Configuration for Knowledge Management &gt; Additional Manual Configuration Steps &gt; Cluster Only: Assigning Tasks to Nodes</b></p>

**Collaboration**

Task	Detailed Information
On the target system, adapt the room backend properties <code>server address</code> , <code>server port</code> , and <code>web protocol</code> .	See the <a href="#">SAP Library [page 21]</a> for your release at: ▶ <a href="#">Enterprise Portal</a> ▶ <a href="#">Collaboration</a> ▶ <a href="#">Administration Guide</a> ▶ <a href="#">Collaboration Configuration</a> ▶ <a href="#">Wizard-Based Basic Configuration for Collaboration</a> ▶ <a href="#">Defining the Web Address and Automatic E-Mail Dispatch for Rooms</a> ▶
On the target system, generate a new index to enable search operations in the content of rooms.	See the <a href="#">SAP Library [page 21]</a> for your release at: ▶ <a href="#">Enterprise Portal</a> ▶ <a href="#">Collaboration</a> ▶ <a href="#">Administration Guide</a> ▶ <a href="#">Making Rooms Available in the Portal</a> ▶ <a href="#">Preparing Rooms for Use</a> ▶ <a href="#">Configuring the Search for Room Content</a> ▶
On the target system, check the properties of the <code>roomsearch</code> object. Make sure that the parameter <code>Use TREX</code> is set.	See the <a href="#">SAP Library [page 21]</a> for your release at: ▶ <a href="#">Enterprise Portal</a> ▶ <a href="#">Collaboration</a> ▶ <a href="#">Administration Guide</a> ▶ <a href="#">Making Rooms Available in the Portal</a> ▶ <a href="#">Preparing Rooms for Use</a> ▶ <a href="#">Configuring the Search for Rooms</a> ▶
On the target system, configure the connection to the required groupware server.	See the <a href="#">SAP Library [page 21]</a> for your release at: ▶ <a href="#">Enterprise Portal</a> ▶ <a href="#">Collaboration</a> ▶ <a href="#">Administration Guide</a> ▶ <a href="#">Collaboration Configuration</a> ▶ <a href="#">Wizard-Based Basic Configuration for Collaboration</a> ▶ <a href="#">Configuring E-Mail Connectivity</a> ▶
If the e-mailing service is active on the source system, but is not required on the target system, you need to delete the e-mail transport. After deletion of the transport, e-mailing is disabled. E-mails will no longer be automatically sent, for example, when members are excluded from a room or documents are updated and deleted.	See the <a href="#">SAP Library [page 21]</a> for your release at: ▶ <a href="#">Enterprise Portal</a> ▶ <a href="#">Collaboration</a> ▶ <a href="#">Administration Guide</a> ▶ <a href="#">Groupware</a> ▶ <a href="#">Groupware Framework</a> ▶ <a href="#">Installing and Configuring E-Mail Connectivity</a> ▶ <a href="#">Configuration Steps</a> ▶ <a href="#">Creating an E-Mail Transport</a> ▶
On the target system, reconfigure the <code>ServerName</code> and <code>ServerPort</code> for the application sharing server.	See the <a href="#">SAP Library [page 21]</a> for your release at: ▶ <a href="#">Enterprise Portal</a> ▶ <a href="#">Collaboration</a> ▶ <a href="#">Administration Guide</a> ▶ <a href="#">Real-Time Collaboration</a> ▶ <a href="#">Configuring Real-Time Collaboration</a> ▶ <a href="#">Configuring the RTC Application Sharing Server</a> ▶ <a href="#">Setting RTC Application Sharing Server Parameters</a> ▶

## 7.1.3.2.3 Business Intelligence Java Components (BI Java)

You have to perform the following follow-up activities for BI Java:

### 7.1.3.2.3.1 Business Intelligence (BI Java)

Follow the instructions in this section if the entries for source system connection have not been copied to the services file of your target system.

#### Prerequisites

You have performed a system copy that includes BI Java.

#### Procedure

You have to do the following to add the entries to the services file:

##### Your target host runs on a UNIX platform

1. Log on to your target system as user `root`.

#### ⚠ Caution

Make sure that the user `root` has not set any environment variables for a different SAP system or database.

2. Edit the file `/etc/services`.
3. Add the entries for your source system connection, for example `sapgw47 3347`.

##### Your target host runs on a Windows platform or on IBM i

1. Log on to your target system as a member of the local administration group.
2. Edit the file `<WindowsDirectory>\system32\drivers\etc\services`.
3. Add the entries for your *source system connection*, for example `sapgw47 3347`.

### 7.1.3.2.3.2 Basic Configuration for BI Java

## Procedure

Perform the steps described in the [SAP Library \[page 21\]](#) for your release at: ► [Business Warehouse](#)  
► [Configuration](#) ► [Automatically Configuring BI Java](#) ►

### 7.1.3.2.4 Enterprise Services Repository: Connecting to the SLD

Adapt the connection to the System Landscape Directory (SLD). For more information, see the [SAP Library \[page 21\]](#) for your release at:

► [Solution Life Cycle Management](#) ► [Configuring, Working With, and Administering System Landscape Directory](#) ► [Connecting Systems to the SLD](#) ►

### 7.1.3.2.5 SAP Process Integration (PI)

You have to perform the following follow-up activities for SAP Process Integration (PI):

#### 📘 Note

- You can use the wizard-based configuration task [PI System Copy](#) to perform some of these follow-up activities automatically. For more information, see SAP Note [1299373](#) 📄.
- The following changes reflect exactly the regular configuration steps for PI. For more detailed instructions about how to change the values, read the configuration information in the [SAP Library \[page 21\]](#) for your release at:

#### 📘 Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [Process Integration](#) ► [Configuring Process Integration \(PI\) After Installation](#) ►

To perform readiness checks, see SAP Note [817920](#) 📄.

## 7.1.3.2.5.1 System Landscape Directory

For information on how to perform the following tasks, see the [SAP Library \[page 21\]](#) for your release at:

### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [Solution Life Cycle Management](#) ► [Configuring, Working With, and Administering System Landscape Directory](#) ► [Administrating the SLD](#) ►

Release	SAP Library Path
SAP Solution Manager 7.2 SR2 only:SAP NetWeaver 7.4	<a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a> ► <a href="#">Application Help</a> ► <a href="#">Function-Oriented View</a> ► <a href="#">Solution Life Cycle Management</a> ► <a href="#">Configuring, Working With, and Administering System Landscape Directory</a> ► <a href="#">Administrating the SLD</a> ►
SAP NetWeaver 7.5	<a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a> ► <a href="#">Application Help</a> ► <a href="#">Function-Oriented View</a> ► <a href="#">Solution Life Cycle Management</a> ► <a href="#">Configuring, Working With, and Administering System Landscape Directory</a> ► <a href="#">Administrating the SLD</a> ►

The respective sections are stated below.

## Tasks

- Maintain server settings in the SLD:  
Change the value for the object server.  
For more information, see section [Configuring Server Parameters](#).
- Configure the SLD Bridge:  
Change the value for the Gateway server as well as for the Gateway service.  
For more information, see section [Configuring the SLD Bridge](#).

### Note

For more information about problems with SLD registration after installation, upgrade, or system copy, see [SAP Note 1117249](#).

## 7.1.3.2.5.2 PI: Integration Server

You have to perform some follow-up activities for the PI integration server.

### Procedure

1. Maintain the logical system:

Call transaction SCC4 to maintain the logical system information.

For more information, see the [SAP Library \[page 21\]](#) for your release at:

#### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [Security](#) ► [Identity Management](#) ► [User and Role Administration of Application Server ABAP](#)  
► [Configuration of User and Role Administration](#) ► [Central User Administration](#) ► [Setting Up Central User Administration](#) ► [Setting Up Logical Systems](#) ► [Assigning a Logical System to a Client](#) ►

2. Maintain the technical system and the business system for the Integration Server:

In the SLD, maintain a product for the technical system. Create a business system for the Integration Server and maintain the logical system information.

3. Delete the PI domain of the source system in the SLD (optional):

In the case that you do not need the PI domain of the source system in the SLD any longer, delete it as follows:

1. Start the SLD.
2. Choose *Technical Systems*.
3. Choose *Process Integration*.
4. Select the domain of the source system from the list and choose *Delete*.

4. Create RFC destinations in the ABAP environment:

Call transaction SM59, navigate to destination INTEGRATION\_DIRECTORY\_HMI, and change the value for the target host as well as for the HTTP port number.

5. Maintain the RFC destination in the ABAP and Java environment:

For the following connections, change the value for the Gateway host as well as for the Gateway service on the ABAP side and in the SAP NetWeaver Administrator. In the SAP NetWeaver Administrator, additionally change the value for the application host name and the system number. Change the value for the Gateway host as well as for the Gateway service on the ABAP side and the value for the PI host in the SAP NetWeaver Administrator for the following connections. To do so, in the SAP NetWeaver Administrator, choose ► [Configuration Management](#) ► [Infrastructure](#) ► [Jco RFC Provider](#) ►.

Connection	Description
AI_RUNTIME_JCOSERVER	Used for the connection of the ABAP part to the Java part of the Integration Server
LCRSAPRFC	Used for the connection of the Integration Server to the SLD.
SAPSLDAPI	

6. Create the HTTP destination `pmistore` in the Java environment:  
Change the value for the host and port number in the destination URL.
7. Maintain the pipeline to the Integration Server:  
Change the pipeline to the Integration Server by running transaction `SXMB_ADM`.
8. Maintain prefix numbers for Workflow and Organizational Management.  
Run transaction `SWF_XI_CUSTOMIZING`, select **► Maintain Definition Environment ► Maintain Prefix Numbers ►** and choose *Perform Automatic Workflow Customizing (F9)*.
9. Refresh host name buffer.  
After you have maintained the required RFC destinations, the host name buffer needs to be reset. Call transaction `SM51` and choose **► Goto ► Host Name Buffer ► Reset ► Entire System ►**.

### 7.1.3.2.5.3 PI: Changes in the Exchange Profile

1. Maintain server settings for Exchange Profile connection:
  - For a **secure** connection, proceed as follows:
    1. Log on to SAP NetWeaver Administrator at `http://<host>:<port>/nwa` and choose *ConfigurationInfrastructureDestinations*
    2. Adapt the Java RFC destination `XI_EXCHANGE_PROFILE` to the target system.
    3. To test the connection, access the exchange profile at: `http://<host>:<port>/exchangeProfile`
  - Only if you still use an insecure connection, change the value for the host name as well as for the instance number.

#### Caution

It is essential that you change the connection for the following steps of this section. Without adjusting the connection parameters, all changes in this section affect the exchange profile of the source system.

2. Change all parameters pointing to the source system:  
The following parameters contain the host name for the connection of components. All parameters pointing to the source system must be changed to reference the target system.

For more information about the parameters, see the [SAP Library \[page 21\]](#) for your release at:

### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [Process Integration](#) ► [Configuring Process Integration \(PI\) After Installation](#) ► [Configuring Process Integration \(PI\) Dual-Stack](#) ► [Exchange Profile Parameters](#) ►

Parameter	Description
<code>com.sap.aii.connect.cr.name</code>	Contains the host name of the component repository server.
<code>com.sap.aii.connect.cr.httpport</code>	Contains the HTTP port number of the component repository server.
<code>com.sap.aii.connect.directory.name</code>	Contains the host name of the directory server.
<code>com.sap.aii.connect.directory.httpport</code>	Contains the HTTP port number of the directory server.
<code>com.sap.aii.connect.directory.httpsport</code>	Contains the HTTPS port number of the directory server.
<code>com.sap.aii.connect.directory.rmiport</code>	Contains the RMI port number of the directory server.
<code>com.sap.aii.connect.integrationserver.name</code>	Contains the host name of the integration server.
<code>com.sap.aii.connect.integrationserver.httpport</code>	Contains the HTTP port of the AS Java of the integration server. Used by the XI integration directory to connect to the XI runtime.
<code>com.sap.aii.connect.integrationserver.httpsport</code>	Contains the HTTPS port number of the integration server.
<code>com.sap.aii.connect.integrationserver.r3.sysnr</code>	R3 system number of the SAP NetWeaver Application Server on which the integration server runs.
<code>com.sap.aii.connect.integrationserver.r3.httpport</code>	Contains the HTTP port number of the integration server.
<code>com.sap.aii.connect.integrationserver.httpsport</code>	Contains the HTTPS port of the AS Java of the integration server. Used by the XI integration directory to connect to the XI runtime.

Parameter	Description
<code>com.sap.aii.connect.landscape.name</code>	Contains the host name of the landscape directory server.
<code>com.sap.aii.connect.landscape.httpport</code>	Contains the HTTP port number of the landscape directory server.
<code>com.sap.aii.connect.landscape.httpsport</code>	Contains the HTTPS port number of the landscape directory server.
<code>com.sap.aii.connect.repository.name</code>	Contains the host name of the repository server.
<code>com.sap.aii.connect.repository.httpport</code>	Contains the HTTP port number of the repository server.
<code>com.sap.aii.connect.repository.httpsport</code>	Contains the HTTPS port number of the repository server.
<code>com.sap.aii.connect.repository.rmiport</code>	Contains the RMI port number of the repository server.
<code>com.sap.aii.connect.rwb.name</code>	Contains the host name of the Runtime Workbench (RWB).
<code>com.sap.aii.connect.rwb.r3.sysnr</code>	R3 system number of the SAP NetWeaver Application Server on which the Runtime Workbench runs.
<code>com.sap.aii.connect.rwb.httpport</code>	Contains the HTTP port number of the Runtime Workbench.
<code>com.sap.aii.connect.rwb.httpsport</code>	Contains the HTTP port number of the Runtime Workbench.
<code>com.sap.aii.ib.server.connect.webas.r3.ashost</code>	Connection from the Java system to the ABAP system of the SAP NetWeaver Application Server.
<code>com.sap.aii.ib.server.connect.webas.r3.sysnr</code>	Connection from the Java system to the ABAP system of the SAP NetWeaver Application Server.
<code>com.sap.aii.rwb.server.centralmonitoring.r3.ashost</code>	Application server of the SAP NetWeaver Application Server on which the central PMI, the central CCMS, and the central alert server run.
<code>com.sap.aii.rwb.server.centralmonitoring.r3.sysnr</code>	System number of the SAP NetWeaver Application Server on which the central PMI, CCMS, and Alert Server run.

Parameter	Description
<code>com.sap.aii.rwb.server.centralmonitoring.httpport</code>	HTTP port of the SAP NetWeaver Application Server (ABAP part) on which the central PMI, the CCMS, and the Alert Server run.

### 7.1.3.2.5.4 PI: Refresh Caches

1. Restart the AS Java:  
To initialize caches of Exchange Profile and SLD, restart the AS Java.
2. Refresh the CPACache:  
Since the restart of the AS Java only leads to a delta cache refresh for the CPACache, a full CPACache refresh is to be forced by executing the following URL:

**`http://<host>:<Java-Port>/CPACache/refresh?mode=full`**

#### Note

To call the CPACache refresh URL, you have to enter user **PIDIRUSER** and the corresponding password you entered during the installation.

3. Refresh the PI Cache:  
Refresh the PI Cache by running transaction `SXI_CACHE`.

### 7.1.3.2.5.5 PI: Switching Addresses

The newly installed target integration server resides at a new network address. In case you want to reconnect business systems, you must make address changes at several locations to account for this change.

The following actions are performed automatically:

- Communication from the target integration server to business systems is set due to copying BI content, which contains the communication channels for these business systems.

The following sections contain a detailed description of all necessary manual address changes.

## Connecting Business Systems to the SLD of the Target System

Business systems with an integration engine require a connection to the SLD server of the target system to obtain their name from the SLD. The business system name is used in the header of the message sent to the integration server. The connection to the SLD is established by creating an RFC destination (as described below) and calling a registered server program, which is defined on the Java EE JRFC engine of the Integration Server. The server program is called with the HTTP address as a parameter that is maintained with transaction `SLDAPICUST`.

### Note

For more information about how to perform the individual tasks, see the [SAP Library \[page 21\]](#) for your release at:

### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [Process Integration](#) ► [Configuring Process Integration \(PI\) After Installation](#) ► [Configuring Process Integration \(PI\) Dual-Stack](#) ► [Configuration of Business Systems with Integration Engine](#) ► [Connecting to the System Landscape Directory](#) ►

1. Use transaction `SLDAPICUST` in the business system to define the SLD access data. This data consists of the host and port of the SLD as well as a user (`PIAPPLUSER`) and password. You can use the entries that you maintained on your Integration Server.
2. Change all RFC destinations on your business system. They use the same registered server program, which is defined as part of the JRFC engine settings of the Java EE engine on the SLD host. This means that all business systems can use the same server program ID (`SAPSLDAPI_UNICODE` or `SAPSLDAPI_NONUNICODE`) for their RFC destinations `LCRSAPRFC` and `SAPSLDAPI`.
3. You must also change the RFC destinations in:
  - all business systems (enter the new Integration Server and, if necessary, adjust the roles)
  - all technical adapters
  - file `SLDaccessor.properties` in directory `/tech_adapter/BaseConfiguration`
4. Enter the Gateways in file `etc/services`.
5. For Unicode business systems (program ID `SAPSLDAPI_UNICODE`), the Unicode indicator is set in the JRFC engine settings. For non-Unicode business systems (program ID `SAPSLDAPI_NONUNICODE`), the Unicode indicator is not set.

## Maintaining System Connections and Destinations

If the host name and port of your Integration Server have changed after the system copy, you have to maintain the destinations and connections if you want to reconnect Integration Engines and adapters. For information on how to perform the individual tasks, see the [SAP Library \[page 21\]](#) for your release at:

### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [Process Integration](#) ► [Configuring Process Integration \(PI\) After Installation](#) ►

The respective sections are stated below.

- Update the HTTP destinations:  
Update the HTTP destination that points from the Integration Engines (business systems) to the PI Integration Server. For more information, see section *Configuration of Business Systems with Integration Engine* in the configuration information.
- Optional: Update the destinations to the integration server for receiver preidentification:  
In the integration engine, update RFC destination `AI_INTEGRATION_SERVER`. For more information, see section *Configuration of Business Systems with Integration Engine* in the configuration information.
- Optional: Update the destinations to the integration server for maintenance of value mapping table:  
In the integration engine, update RFC destination `AI_INTEGRATION_SERVER`. For more information, see section *Configuration of Business Systems with Integration Engine* in the configuration information.
- Reintegrate business systems using the IDoc adapter of the source system:  
In the sending system, update the RFC destination to the integration server. For more information, see section [▶ Integration of Business Systems without Integration Engine ▶ Integration Using the IDoc Adapter ▶](#) in the configuration information.
- In case you made configuration settings *Maintain Services* for the integration server in transaction `SICF`, make sure these settings are maintained in the newly installed target system, too.  
For the following steps, see the [SAP Library \[page 21\]](#) for your release at:

#### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

[▶ Process Integration ▶ Configuring Process Integration \(PI\) After Installation ▶ Integration of Business Systems without Integration Engine ▶](#)

- Change the system connections for the RFC adapter:  
In all application systems, change the program ID RFC destination in transaction `SM59` to the new program ID defined in your sender channels in the RFC adapter. For more information, see [▶ Integration Using the Advanced Adapter Engine ▶ Java Service Properties for the Adapter Framework ▶ Properties Related to RFC Servers \(Sender Channels\) ▶](#).
- Integrate business systems using the Adapter Engine (Java SE):  
Update the URL of the HTTP destination to the integration server in the sender adapters. For more information, see section [Integration Using the Adapter Engine \(Java SE\)](#).

## 7.1.3.2.5.6 PI: Connection Checks

1. Checks in `SLDCHECK`:  
On the integration server, call transaction `SLDCHECK`.
2. Checks in `SPROXY`:  
Call transaction `SPROXY`, choose [▶ Goto ▶ Connection Test ▶](#) and execute all checks.

## 7.1.3.2.6 Adapter Engine

After copying your system, you must run a wizard-based configuration task for the initial setup of the Adapter Engine according to your configuration option.

### Context

- *PI Adapter Engine Initial Setup*: Initial setup for systems with a Java UME connected to an SAP PI system  
For more information, see [SAP Note 1360472](#).
- *Advanced Adapter Engine*: Initial setup for systems with a ABAP UME connected to an SAP PI system  
For more information, see [SAP Note 1314855](#).
- *PI Adapter Engine for AEX*: Initial setup for systems connected to an Advanced Adapter Engine Extended (PI-AEX) or to a Process Integration and Orchestration Package system (PI-CP)  
For more information, see [SAP Note 1525614](#).

### More Information

For more information about the functional unit configuration tool, see the [SAP Library \[page 21\]](#) at:

#### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [SAP NetWeaver Library: Function-Oriented View](#) ► [Solution Life Cycle Management](#) ► [Software Logistics](#)  
► [Automation Tools](#) ► [Java Functional Unit Configuration](#) ►

If you experience problems with the System Landscape Directory (SLD) registration while running the functional unit configuration, the following SAP Notes might be helpful for you:

- [764176](#): *Error in XI due to inconsistent SLD contents*
- [1031321](#): *Self-Registration of Adapter Engine and RWB fails*
- [1117249](#): *Incomplete Registration of PI components in SLD*

### Procedure

1. In the functional unit configuration tool, make sure that the functional unit for your configuration option is disabled. If the configuration of the selected functional unit requires additional functional units, ensure that they are also disabled.
2. Select the functional unit for your configuration option and choose *Enable Automatically*.

## 7.1.3.2.7 Advanced Adapter Engine Extended

After copying your Advanced Adapter Engine Extended (AEX) system, you must run the wizard-based configuration task for the initial setup of the Advanced Adapter Engine Extended.

### Context

For more information, see [SAP Note 1414465](#).

### More Information

For more information about the functional unit configuration tool, see the [SAP Library \[page 21\]](#) at:

#### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

► [SAP NetWeaver Library: Function-Oriented View](#) ► [Solution Life Cycle Management](#) ► [Software Logistics](#) ► [Automation Tools](#) ► [Java Functional Unit Configuration](#) ►

If you experience problems with the System Landscape Directory (SLD) registration while running the functional unit configuration, the following SAP Notes might be helpful for you:

- [764176](#): *Error in XI due to inconsistent SLD contents*
- [1031321](#): *Self-Registration of Adapter Engine and RWB fails*
- [1117249](#): *Incomplete Registration of PI components in SLD*

### Procedure

1. In the functional unit configuration tool, make sure that the *PI Advanced Adapter Engine Extended Initial Setup* functional unit is disabled. If the configuration of the functional unit requires additional functional units, ensure they are disabled as well.
2. Select the *PI Advanced Adapter Engine Extended Initial Setup* functional unit and choose .

## 7.1.3.2.8 Process Integration and Orchestration Package

After copying your system, you must run the wizard-based configuration task for the initial setup of Process Integration and Orchestration Package (PI-CP).

## Context

- For more information about running the wizard-based configuration task for the initial setup of Process Integration and Orchestration Package (PI-CP), see SAP Note [1548120](#).
- For more information about the functional unit configuration tool, see the [SAP Library \[page 21\]](#) at:

### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

▶ [SAP NetWeaver Library: Function-Oriented View](#) ▶ [Solution Life Cycle Management](#) ▶ [SAP NetWeaver Configuration](#) ▶ [Java Functional Unit Configuration](#) ▶

- For more information about eventually required further configuration steps, see the [SAP Library \[page 21\]](#) at:

### Note

Navigate to the SAP Help Portal page for the SAP NetWeaver release your SAP product is based on as described in section [Accessing the SAP Library \[page 21\]](#), and then continue the navigation as described below.

▶ [SAP NetWeaver Library: Function-Oriented View](#) ▶ [Process Orchestration](#) ▶

- If you experience problems with the System Landscape Directory (SLD) registration while running the functional unit configuration, the following SAP Notes might be helpful for you:
  - [764176](#): *Error in XI due to inconsistent SLD contents*
  - [1031321](#): *Self-Registration of Adapter Engine and RWB fails*
  - [1117249](#): *Incomplete Registration of PI components in SLD*

## Procedure

1. In the functional unit configuration tool, ensure that the [Process Integration and Orchestration Package](#) functional unit is disabled. The configuration of this functional unit requires additional functional units that also need to be disabled.
2. Select the [Process Integration and Orchestration Package](#) functional unit. Additional functional units that are required are selected automatically.
3. Choose [Enable Automatically](#).

## 7.1.3.2.9 Development Infrastructure (DI)

You have to perform the following manual steps on the target system after the move of an SAP system with *Development Infrastructure* (DI). The assumption here is that all components (DTR, CBS, CMS, SLD, CM Services, and name server) were on a single host before the move and will remain on a single host after the move.

### Procedure

1. If your old `NWDI` server is available, start it.
2. If you are using an LDAP server for user management it should be running to ensure that all the users that were created when the *Development Infrastructure* (DI) was on the source system will still be valid after the move to the target system.
3. Check the AS Java configuration:
  - Set `MaxHeapSize` and other engine parameters to the recommended values. For more information, see the corresponding section in your installation guide.
  - For general recommendations for the configuration of the *Development Infrastructure* Servers, see [SAP Note 889038](#).
4. Design Time Repository (DTR): Perform *Update Statistics* (30%) on the database.

#### Note

If your database is MaxDB you can use the Database Manager to update the database statistics.

5. System Landscape Directory (SLD): If you used the SLD on the source host as the name server, you need to change the `CimomURL` of your local SLD to point to the target host.

#### Caution

Do not change the `ObjectServer` attribute.

6. Component Build Service (CBS): The service properties `JDK_HOME_PATHS`, `BUILD_TOOL_JDK_HOME`, `rootFolder`, and `threadPoolSize` have to be adjusted according to the hardware and software configuration of the new system.

For more information about these parameters, see the corresponding section in your installation guide.

7. Change Management Service (CMS): The main steps in CMS involve resetting the fields containing URLs to other components (such as DTR, CBS, SLD).
  - **If CMS has not been configured yet**, proceed as follows:
    1. Copy the folder `/usr/sap/trans/EPS/in/CMS<Host><SAPSID>`, including its content, to the target host.
    2. Rename the folder to the new host value and new SAP system ID (if changed).
    3. Make sure that the engine user (`<sapsid>adm`) has write permissions in the copied folder.
  - **If CMS has been configured and you have used it already**, proceed as follows:
    1. For the domain (in the *Domain Data* tab):
      1. Change the SLD URL to point to the target host.
      2. Change the CMS URL to point to the target host.

3. Change the transport directory to the appropriate directory on the new CMS (target host).
  4. Save the domain. You should see a status message that the data was saved successfully.
  5. Update CMS (choose *Update CMS*). You should see a status message that the CMS update was successfully.
2. Copy the contents of the transport directory of the old CMS (source system) to the transport directory of the new CMS (target system). The transport directory is configured in the domain (see *Domain Data* tab).
  3. For each track (in the *Track Data* tab):
    1. Change the CBS and DTR URLs.
    2. For each runtime system that is defined, change the runtime system configuration to point to the appropriate host (of the target runtime system).  
If this has not changed, leave the fields unchanged.
    3. Save the track definition.  
You should see a status message that the data was saved successfully.
    4. Restore System State (of the DEV system). This will place the Software Components (SCs) into the import queue of this system.
    5. Import these SCs. After the import is finished, you should see a status for each SC.
8. CM Services: The main steps in CM Services involve resetting fields that contain URLs to other components (such as DTR, CBS, SLD). Proceed as follows:
    1. On the *System Landscape Directory* tab, adapt the SLD URL and the CM Services URL to the target host.  
These data are valid for all development configurations on this server.

### Note

If at least one configuration is created using CTS+ (type "CTS System"), SLD URL and CM Services URL can be changed only in the CTS. To change the SLD URL and CM Services URL, perform the following:

1. Log on to the CTS System.
2. Call transaction **SM59** and configure the host and port of destination CTSCONFIG to point to the target server.
3. Call transaction **STMS**, navigate to *System Overview* and select a system that has a development configuration connected to it (DI\_SYSTEM=true).
4. In tab *Transport Tool*, update the value for DI\_SLD\_URL to the target server, save the changes and then execute `Goto - Development Infrastructure - Update Configuration Service`.

2. On the *Local Settings* tab, perform the following steps for each development configuration:
    1. Development configurations of type *Stand-Alone* only: Copy the content of both the inbox and outbox directories of CM Services in the source system to the corresponding directories of CM Services in the target system.
    2. Change the CBS and DTR URLs.
    3. Save the development configuration.
9. IDE:
    - Change the SLD URL in the preference page of the SAP NetWeaver Developer Studio (under **Preferences > Development Infrastructure > Landscape Directory**).  
This should now point to the new SLD on the target system.

- Import the development configuration you had earlier used for development.

Now you are ready to begin the development with you new (relocated) *Development Infrastructure* (DI).

#### 10. Verification Steps (optional)

The following steps can optionally be done to verify that the *Development Infrastructure* (DI) is fully functional after the move:

1. Log on to the DTR (using the browser) for all defined users and browse the repository.
  2. Using IDE, create a new *Development Component* (DC), checking and activate:
    - The activation should succeed.
    - The name of the Development Component (DC) must be reserved on the name server.
  3. Release the activity created above (from the Transport view in the IDE):  
The activity (*Change Request*) should appear in the import queue of the CONS system of the track.
  4. Import the *Change Request* into the CONS system (from the CMS Transport Studio).
  5. Assemble a new version of your Software Components (SCs) in one of the tracks.
11. If you have started your old NWDI server, stop it.

## 7.1.3.2.10 SAP ERP: Self Services (XSS)

### Related Information

[Recreating the JCo Destinations \[page 159\]](#)

[XSS: SAP Web Dynpro Applications \[page 160\]](#)

### 7.1.3.2.10.1 Recreating the JCo Destinations

#### Use

You must recreate the JCo destinations.

#### Procedure

Proceed as described in the [SAP Library \[page 21\]](#) for your release at:

► [SAP NetWeaver Library: Function-Oriented View](#) ► [Application Server](#) ► [Application Server Java](#)  
 ► [Developing Java Web Dynpro Applications](#) ► [Content Administration and Measurements](#) ► [Web Dynpro Content Administrator](#) ► [Functions for JCo Destinations](#) ► [Creating JavaConnector \(JCo\) Destinations](#) ►

## 7.1.3.2.10.2 XSS: SAP Web Dynpro Applications

SAP Web Dynpro applications that use Adaptive RFC (a Web Dynpro technology based on JCo and All), require that their destinations (back-end connections) are configured with the Web Dynpro Content Administrator (a tool specific to Web Dynpro). The configuration data is stored in the System Landscape Directory (SLD) where it is associated with the Java EE cluster that the Content Admin runs on. Some additional data is stored in the Secure Storage of the Java EE cluster itself. For both reasons, the destinations have to be configured for each Java EE cluster individually and currently cannot be transported.

For more information, see the [SAP Library \[page 21\]](#) for your release at:

► [SAP NetWeaver Library: Function-Oriented View](#) ► [Application Server](#) ► [Application Server Java](#)  
► [Developing Java Web Dynpro Applications](#) ►

### Note

Make sure you use the correct host and port in the portal under ► [System Administration](#) ► [System Configuration](#) ► [Systems](#) ► [SAP\\_Webdynpro](#) ►.

## 7.1.3.2.11 SAP CRM, SAP ERP: CRM Java Components (JCRM) / Extended E-Selling Components (XECO)

### 7.1.3.2.11.1 XECO: Workforce Deployment AS/CS

#### Use

The XCM parameters for Workforce Deployment Application and Calculation Services (WFD AS/CS) point to an SAP CRM or SAP ERP back-end system. The WFD Calculation Services also have an XCM parameter `cs.http.port` that points to the HTTP port of the Java EE instance it was installed on.

If the system copy involves copying the mySAP CRM backend system, you need to adjust the `cs.jco.xxxxxx` XCM parameters (which point to the mySAP CRM back-end system) in the target system.

If the system copy involves copying the Java EE engine, you need to adjust the `cs.http.port` XCM parameter for WFD Calculation Services in the target system. It should point to the HTTP port of the target Java EE engine.

## Procedure

Configure XCM parameters for WFD Application Services:

`http://<JavaEEHOST>:<>/wfd/admin/xcm/init.do.`

Configure XCM parameters for WFD Calculation Services:

`http://<JavaEEHOST>:<JavaEEHTTPPORT>/wfdcs/admin/xcm/init.do`

## 7.1.3.2.12 SAP SRM: SRM Live Auction Cockpit (SRMLAC)

### Related Information

[Defining a Web Alias \[page 161\]](#)

[SRMLAC: Configuring Single Sign-On \[page 162\]](#)

### 7.1.3.2.12.1 Defining a Web Alias

#### Use

To facilitate customization, the resource files for the Live Auction Cockpit applet are packaged separately from the Web application itself. In order for the applet to retrieve its resources, the Web server must make the resource files accessible via HTTP. This is achieved by creating a Web alias for the directory that contains the resources. Without this alias, the applet cannot load properly.

#### Procedure

1. Go to the SAP NetWeaver Administrator using the following URL: `http://<host>:<port>/nwa` where
  - `<host>` is the host where AS Java is installed
  - `<port>` is the HTTP port of the ICM. It consists of `5<Java_Instance_Number>00`.
2. Choose **Configuration** > **Infrastructure** > **Java HTTP Provider Configuration** > **Aliases** >
3. Choose **Add Alias**
4. In the *Name* column, enter `srmla/lib/resources`.
5. Enter *Path*.

### ❖ Example

```
<INSTDIR>:\usr\sap\<SAPSID>\SYS\global\srmla\resources
```

6. Choose [Save](#).

### 📘 Note

If you are using Load Balancing – that is, running Live Auction Cockpit on more than one Java server – you must carry out the following steps:

1. On the Central Instance, share the **srmla** folder (`<INSTDIR>:\usr\sap\<SAPSID>\SYS\global\srmla`) for the dialog server user.
2. Maintain the alias for the Dialog instance so that the path points to the shared folder on the Central Instance.

## 7.1.3.2.12.2 SRMLAC: Configuring Single Sign-On

### Use

To enable Single Sign-On (SSO) you need to configure certain settings in SAP Enterprise Buyer (EBP).

### 📘 Note

If you are using an external SAP Internet Transaction Server (ITS), you need certain system patches to make sure that the SSO ticket is properly generated. For more information, see [SAP Note 720738](#).

### Prerequisites

You have access to the following transactions in EBP:

- **RZ10** (Edit Profiles)
- **STRUST** (Trust Manager)

### Procedure

1. Create SSO ticket in [Profile Maintenance](#).
  1. Go to transaction **RZ10**.
  2. Choose the [Default](#) profile along with the latest version number and select [Extended Maintenance](#).
  3. Change the following profile parameters:
    - `login/create_sso2_ticket = 1`
    - `login/accept_sso2_ticket = 1`

4. *Save* and *Activate* the profile.  
A new profile is automatically generated.
5. Restart the application server.

#### ⚠ Caution

Do **not** forget or skip this step.

2. Export the R3 SSO certificate from the *Trust Manager* on the target host server.
  1. Go to transaction STRUST.
  2. Double-click the textbox to the right of *Own certif.*  
The certificate information is displayed.

#### 📌 Note

Make a note of the values displayed in the certificate information because you need to enter those values below in step 3.

3. Click the icon with the quick info: *Export Certificate*.
4. Save the file as **<R3\_Name>-<Client>.crt**.

#### 🔗 Example

For SAP System EBS, client 3000, the file name is `EBS-300.crt`.

#### ⚠ Caution

Make sure *Binary* is selected under *File Format*.

#### 📌 Note

If you export the certificate to a local system, you must copy the file from the local system to the target host server.

3. Import R3 SSO certificate to the J2EE engine using the administrator tool.

#### 📌 Note

Make sure the J2EE engine is started.

1. Open the J2EE administration tool.
2. Enter the J2EE engine administrator password and click *Connect*.
3. Choose **► Server ► Services ► Key Storage ►**.
4. Click *TicketKeyStore* in the *View* panel.
5. Click *Load* in the *Entry* group box.
6. Choose the **<R3\_Name>-<Client>.crt** certificate that was exported from EBP earlier in step 2.  
The certificate is added to the list in the *Entries* panel.

#### 📌 Note

Make a note of the issuer and subject distinguished names displayed in the certificate of the SAP system. These values must be identical to those you define for the properties in step 4.

4. Configure the Security Provider service in SAP J2EE Engine using the administrator tool.
  1. Choose **Server > Services > Security Provider**.
  2. Choose *ticket* in the component panel and go to the *Authentication* tab.
  3. Modify the options of *EvaluateTicketLoginModule* and add the following properties to each back-end system on which you want to configure SSO:

#### ⓘ Note

For each property below, {n} represents the number of the back-end system on which you want to configure SSO.

- trustedsys{n}: <R3\_Name>, <Client>

#### ⚙ Example

trustedsys1: EBS, 300

- trustediss{n}: <the issuer distinguished name>

#### ⓘ Note

The value you define here must be identical to the issuer distinguished name in the certificate of the SAP system. This certificate was already imported into the keystore when you previously configured SSO for that system. You can find the certificate there and copy the needed data. For more information, see [SAP Note 721815](#).

#### ⚙ Example

trustediss1: CN=EBS

- trusteddn{n}: <the subject distinguished name>

#### ⓘ Note

The value you define here must be identical to the subject distinguished name in the certificate of the SAP system. This certificate was already imported into the keystore when you previously configured SSO for that system. You can find the certificate there and copy the needed data. For more information, see [SAP Note 721815](#).

#### ⚙ Example

trusteddn1: CN=EBS

## 8 Additional Information

[Jload Procedures Using the Java Migration Monitor \[page 165\]](#)

[Analysis of the Export and Import Times \[page 172\]](#)

[Package and Table Splitting for Java Tables \[page 173\]](#)

[IBM Db2 for Linux, UNIX, and Windows Database \[page 178\]](#)

[Oracle Database \[page 182\]](#)

[Online Information from SAP \[page 192\]](#)

[Starting and Stopping SAP System Instances Using the SAP Management Console \[page 193\]](#)

You can start and stop all instances of your SAP system using the SAP Management Console (SAP MC).

[Starting and Stopping SAP System Instances Using Commands \[page 196\]](#)

### Related Information

[Jload Procedures Using the Java Migration Monitor \[page 165\]](#)

[Analysis of the Export and Import Times \[page 172\]](#)

[Package and Table Splitting for Java Tables \[page 173\]](#)

[Database Instance Installation on Oracle Automatic Storage Management \[page 185\]](#)

[Additional Information about the “OraBRCopy” Tool \[page 189\]](#)

[Online Information from SAP \[page 192\]](#)

## 8.1 Jload Procedures Using the Java Migration Monitor

### Related Information

[About the Java Migration Monitor \[page 166\]](#)

[Configuration for Using the Java Migration Monitor \[page 167\]](#)

[Starting the Java Migration Monitor \[page 168\]](#)

[Output Files of the Java Migration Monitor \[page 171\]](#)

[Restarting Jload Processes \[page 171\]](#)

## 8.1.1 About the Java Migration Monitor

The Java migration monitor is a tool that helps you to perform and control the unload and load process during the system copy procedure.

The Java migration monitor performs the following steps:

- Starting the `Jload` processes to load or unload the data according to the requirements of the user
- Informing the person performing the system copy in case of errors

### Note

Some features described in this documentation might be not available in the JMigmon tool if you do not use the most current version of the tool

### Tool

The tool is part of the `CORETOOL*`. SCA and consists of the following:

- User Guide
  - `JMigrationMonitor.pdf`
  - Located:  
`/usr/sap/<SAPSID>/SYS/global/sltools`
- Scripts
  - `jmigmon_export.sh / jmigmon_export.bat`
  - `jmigmon_import.sh / jmigmon_import.bat`
  - Located:  
**UNIX, IBM i:** `/usr/sap/<SAPSID>/SYS/global/sltools`
- jar archive
  - `jmigmon.jar`
  - Located:  
**UNIX, IBM i:** `/usr/sap/<SAPSID>/SYS/global/sltools/sharedlib`
- Property files
  - `export.jmigmon.properties`
  - `import.jmigmon.properties`
  - Located:  
`/usr/sap/<SAPSID>/SYS/global/sltools`

### Prerequisites

- The `JRE` version must be at least 1.6.1.
- `JAVA_HOME` environment variable must point to the `JRE` directory.
- The correct directory structure for `Jload` dump files must exist on both the source and target hosts

## 8.1.2 Configuration for Using the Java Migration Monitor

The following options can be provided via the property file or via command line. Command line parameters take precedence over parameters specified in the property file.

### Help

The tool displays the available parameters, if you call it with one of the following command line options:

- `-help`
- `-?`

### Version Information

With the following command line option, the tool displays version information: `-version`.

### General Options

Name	Description	Comment
<code>mode</code>	Java migration monitor mode: import or export	Only available as command line option
<code>sid</code>	SAP system ID	SAP system ID
<code>dsn</code>	Data source name	Specifies the data source name and is registered in the SecureStore; usually <code>jdbc/pool/&lt;SAPSID&gt;</code>
<code>ssProps</code>	Path to the SecureStore properties file	On Windows: local drive or UNC path
<code>ssKey</code>	Path to the SecureStore key file	On Windows: local drive or UNC path
<code>exportDirs</code>	Export directories path	Specifies the path or paths for exported data and triggers the export functionality.  Separator on Windows: ";"  Separator on UNIX, IBM i: ":"

Name	Description	Comment
<code>importDirs</code>	Import directories path	Specifies the path or paths for imported data and triggers the import functionality.  Separator on Windows: ";"  Separator on UNIX, IBM i: ":"
<code>orderBy</code>	Package order	This can be the name or path of the file that contains package names. If the option value is omitted the package order is not determined.
<code>jobNum</code>	Number of parallel export jobs	Default is 3.
<code>monitorTimeout</code>	Monitor time-out in seconds	Default is 30 seconds.
<code>disableStatistics</code>	Disables statistics logging	Disables statistics logging for each Jload process: Therefore Jload does not collect statistics data that could later be displayed by the time analyzer.

#### Additional Options (all optional)

Name	Description	Comment
<code>jobNum</code>	Number of parallel export jobs	Default is 3.
<code>monitorTimeout</code>	Monitor time-out in seconds	Default is 30 seconds.

## 8.1.3 Starting the Java Migration Monitor

### Prerequisites

#### Note

We recommend that you create a certain directory and start the tool from there, because the `Java migration monitor` produces log and trace files in the current working directory.

Before you run the Java migration monitor, set the following environment variables:

- `SLTOOLS_HOME`  
Set this variable to the following directory:  
**UNIX, IBM i:** `<sapmnt>/<SAPSID>/global/sltools/sharedlib`
- `SLTOOLS_SECURITY_HOME`  
Set this variable to the directory, which contains the `iaik_jce.jar` file.  
The default directory is:  
**UNIX, IBM i:** `<sapmnt>/<SAPSID>/global/security/lib/tools`

- `SLTOOLS_DBDRIVER_HOME`  
Set this variable to the directory, which contains the database driver.

### ❁ Example

For MaxDB on Windows: `<Drive>:\sapdb\programs\runtime\jar`

## Context

You can start the tool using one of the following:

- The UNIX shell scripts `jexport_monitor.sh` / `jimport_monitor.sh`
- As part of the `export/import` procedure of the Software Provisioning Manager

The application allows you to specify options in the command line or in the export or import property files. The names of the property files are `export_jmigmon.properties` and `import_jmigmon.properties`.

Any options specified in the command line take precedence over the corresponding options in the application property file. Options are case-sensitive; any options that are not recognized are ignored. To specify an option:

- In the command line, enter `-<optionName> <optionValue>`
- In the application property file, insert the new line `<optionName>=<optionValue>`

## Procedure

1. Start the Java migration monitor as user `<sapsid>adm` by executing one of the following from the command line:
  - `./jmigmon_export.sh -<optionName> <optionValue>`
  - `./jmigmon_import.sh -<optionName> <optionValue>`

### ❁ Example

2. Close the shell window or command processor. The monitor process runs in the background. Use the `monitor *.log` and `*.console.log` files to check monitor processing state.

## Results

What happens during the export or import:

During the **import** the tool starts a search in the directories specified by the `-importDirs` parameter for packages in XML format and puts them into a working queue.

Next it starts a number (specified by the `-jobNum` parameter) of parallel Jload importing tasks, taking tasks from the working queue until the queue is empty.

During the **export** the tool starts a search in the directories specified by the `-exportDirs` parameter for packages in XML format and puts them in a working queue.

Then it starts exporting all the packages containing metadata one after another (not in parallel) while removing them from the queue. The tool then starts a number (specified by the `-jobNum` parameter) of parallel JLoad export tasks, taking tasks from the working queue until the queue is empty.

## Example

### export\_jmigmon.properties file with export options

```
# jmigmon mode: import or export
mode = export
# number of parallel export jobs, default is 3
jobNum = 1
# <SAPSID> of the system
sid = CE3
# name of datasource registered in system's SecureStore; usually jdbc/pool/
<SAPSID>
dsn = jdbc/pool/CE3
# path of the SecureStore properties file
ssProps = D:\usr\sap\CE3\SYS\global\security\data\SecStore.properties
# path of the SecureStore key file
ssKey = D:\usr\sap\CE3\SYS\global\security\data\SecStore.key
# list of export directories
exportDirs = D:\JPKGCTL
# monitor timeout in seconds, default is 30
monitorTimeout = 30
```

### import\_monitor.properties file with import options

```
./jmigmon_export.sh -sid CE3 -dsn jdbc/pool/CE3 -ssProps
# jmigmon mode: import or export
mode = export
# number of parallel export jobs, default is 3
jobNum = 1
# <SAPSID> of the system
sid = CE3
# name of datasource registered in system's SecureStore; usually jdbc/pool/
<SAPSID>
dsn = jdbc/pool/CE3
# path of the SecureStore properties file
ssProps = D:\usr\sap\CE3\SYS\global\security\data\SecStore.properties
# path of the SecureStore key file
ssKey = D:\usr\sap\CE3\SYS\global\security\data\SecStore.key
# list of import directories
importDirs = D:\export\unpacked\JAVA\JDMP
# monitor timeout in seconds, default is 30
monitorTimeout = 30
```

## 8.1.4 Output Files of the Java Migration Monitor

### Export

- `export.state.properties`
- `<PACKAGE>.xml.log`

### Import

- `import.state.properties`
- `<PACKAGE>.xml.log`

Both the export and import state files contain package state lines such as the following:

```
SAPUSER=+
```

Format of lines is `<PACKAGE>=<STATE>`. The following table shows the possible values for state:

Value	Description
0	Package export/import not yet started.
?	Package export/import in progress.
-	Package export/import finished with errors.
+	Package export/import finished successfully.

## 8.1.5 Restarting Jload Processes

### Context

The state file allows package states to be manually updated to restart failed Jload processes.

#### ❖ Example

If package processing failed and the package state has the value “-”, the state can be set to “0” and processing of the package will be started again.

## Procedure

- To restart package processing, set the package state from “-” to “0”.
- To skip package processing, set the package state from “0” or “-” to “+”.

### ⚠ Caution

This is not recommended because it can cause inconsistent data files or database content.

- If the package is currently being processed (the package state is “?”) then any manual modifications of the package state are ignored.

## 8.2 Analysis of the Export and Import Times

You can reduce the runtimes by splitting the packages in question or extracting long-running tables from the packages.

You can use the `jmigtime.jar` archive to analyze the runtimes of the individual packages. The tool is part of the `CORETOOL*`. SCA archive and consists of the following:

- User Guide
  - `JavaTimeAnalyzer.pdf`
  - Located:  
`/usr/sap/<SAPSID>/SYS/global/sltools`
- Scripts
  - `jexport_time.sh / jexport_time.bat`
  - `jimport_time.sh / jimport_time.bat`
  - `jtime_join.sh / jtime_join.bat`
  - Located:  
`/usr/sap/<SAPSID>/SYS/global/sltools`
- jar archive
  - `jmigtime.jar`
  - Located:  
`/usr/sap/<SAPSID>/SYS/global/sltools/sharedlib`
- Property files
  - `export.jmigtime.properties`
  - `import.jmigtime.properties`
  - Located:  
`/usr/sap/<SAPSID>/SYS/global/sltools`

## 8.3 Package and Table Splitting for Java Tables

The Java Splitter, which is integrated in the Software Provisioning Manager, offers the following options:

- Splitting the default packages `EXPORT.XML` and `IMPORT.XML` into several smaller and equal sized packages:
- Extracting large tables into packages of their own
- Splitting large tables into several smaller and equal sized packages (table splitting)

Software Provisioning Manager provides the corresponding split packages for export and import. Package splitting and table splitting can be used combined or separately.

You are prompted to select the appropriate option and add the required input file while performing the [source system export \[page 44\]](#).

### 8.3.1 Configuration for Using the Java Splitter

The following options can be provided via the property file or via command line. Command line parameters take precedence over parameters specified in the property file.

#### Note

To get the complete list of supported options run `java com.sap.inst.<tool> -help`

## Help

With the following command line option, the tool displays all parameters available:

`-help`

## General Options

General Splitting Options

Option	Description	Comment
<code>help</code>	Prints help options for the parameters and their usage	none
<code>sid</code>	SAP system ID of the system	Specifies the SAP system ID of the system

Option	Description	Comment
<code>dsn</code>	Data Source Name	Specifies the Data Source Name and is registered in the SecureStore; usually <code>jdbc/pool/&lt;SAPSID&gt;</code>
<code>dataDir</code>	Output data directory	If this option is missing, the split rules are taken from the command line arguments.
<code>log</code>	Log file with program output messages and errors	Default log file name is <code>JPKgCtl.console.log</code> . The log file is created in the current working directory. In addition, the <code>JPKgCtl.trc</code> trace file with detailed process descriptions, errors, and messages is generated.

### Mandatory General Options

The following splitting options are mandatory for both package and table splitting:

`sid`, `dsn`, `ssProps`, `ssKey`, `dataDir`

## Package Splitting Options

Package Splitting Options

Option	Description	Comment
<code>split</code>	Size of the split packages	Size can be specified without unit (bytes assumed), as kilobytes (K), megabytes (M), gigabytes (G), or terabytes (T), for example, 1048576, 200M, 8G, and so on.

### Additional Mandatory Option for Package Splitting

Splitting option: `split`

## Table Splitting Options

### Prerequisites

- `<COLUMN_TO_BE_USED_FOR_SPLITTING>` must be part of the primary key (PK) of the table if the table has a PK.
- `<COLUMN_TO_BE_USED_FOR_SPLITTING>` must have no NULL values. This is guaranteed by the primary key (PK).
- The SQL type of `<COLUMN_TO_BE_USED_FOR_SPLITTING>` must support string comparison.

### Considerations and Recommendations

- `<COLUMN_TO_BE_USED_FOR_SPLITTING>` defines the WHERE, GROUP BY and ORDER BY clauses of the SELECT statements and as such influences the time to execute the table split and the data-dumping queries.
- `<COLUMN_TO_BE_USED_FOR_SPLITTING>` ideally splits the table into packages taking similar time to export and/or import.  
Evenly distributed data on `<COLUMN_TO_BE_USED_FOR_SPLITTING>` guarantees that. The worst case would be that data are clustered into only one package. In this case splitting would be useless.
- If no string-comparable column part of the primary key exists, do not specify `<COLUMN_TO_BE_USED_FOR_SPLITTING>`. The Table Splitter will calculate the most suitable column.

#### Table Splitting Options

Option	Description	Comment
<code>splitrulesfile</code>	Files that describe, which tables shall be split and how	Syntax:  <code>&lt;TABLE_NAME&gt; : &lt;NUMBER_OF_PACKAGES_FOR_SPLITTING&gt; : &lt;[COLUMN_TO_BE_USED_FOR_SPLITTING]&gt;</code>
<code>tablesplitt</code>	Parameter for specifying rules for table splitting on the command line	
<code>checksplitrules</code>	Checks the following: <ul style="list-style-type: none"> <li>• Syntax of <code>splitrulesfile</code></li> <li>• If the database tables specified in the <code>splitrulesfile</code> exist</li> <li>• If all database tables specified in the <code>splitrulesfile</code> without <code>COLUMN_TO_BE_USED_FOR_SPLITTING</code> have a primary key</li> </ul> <p>It expects a file as an argument.</p>	<b>Example</b> <code>J2EE_CONFIG:2:J2EE_CONFIGENTRY:4:CID</code>

#### ⚠ Caution

When configuring table splitting for a table without primary key (such as `J2EE_CONFIGENTRY`), you have to provide a value for parameter `<COLUMN_TO_BE_USED_FOR_SPLITTING>` if you use an old release of the tool. If the table to be split has a primary key (PK), this parameter is optional.

#### Additional Mandatory Options for Table Splitting

Splitting options: `splitrulefile`, `tablesplitt`

### Example

`JSplitter_cmd.properties:`

```
#
# Table Splitting options
#
```

```

# Common options

#

# List of SAPSID, data source name[,SecureStore property file, SecureStore key
file][,SecureStore key phrase]

-sec=CE1, jdbc/pool/CE1,/usr/sap/CE1/SYS/global/security/data/
SecStore.properties, /usr/sap/CE1/SYS/global/security/data/SecStore.key

# Size of the split package with tables

-split=200M

# Output data directory

-dataDir=/jsplitter_export_dir

# File that contains key fields for each table with the following syntax:
<TABLE_NAME>:<NUMBER_OF_PACKAGES_FOR_SPLITTING>:<[TABLE_KEY_FOR_SPLITTING]>

-splitrulesfile=/jsplitter_export_dir/splitrulesfile.txt

# Log file with program output messages and errors

-log=

# Check splitrulesfile syntax

-checksplitrules=/jsplitter_export_dir/splitrulesfile.txt

```

## 8.3.2 Starting the Java Splitter

This section describes how to start the Java splitter.

### Prerequisites

Before you run the table splitter, set the following environment variables:

- `SLTOOLS_HOME`  
Set this variable to the following directory:  
`/sapmnt/<SAPSID>/global/sltools/sharedlib`
- `SLTOOLS_SECURITY_HOME`  
Set this variable to the directory, which contains the `iaik_jce.jar` file.  
The default directory is:  
`/sapmnt/<SAPSID>/global/security/lib/tools`
- `SLTOOLS_DBDRIVER_HOME`  
Set this variable to the directory, which contains the database driver.

## Context

### → Recommendation

We recommend to create a certain directory for splitting and start the tools from there, because the splitter produces log and trace files in the current working directory.

The application allows you to specify options in the command line or in the application property file. The name of the property file is `JSPplitter_cmd.properties`.

Any options specified in the command line take precedence over the corresponding options in the application property file. Options are case-sensitive; any options that are not recognized are ignored.

### 📘 Note

To check the splitting processing state, use the `splitter *.trc` and `*.console.log` files.

## Procedure

1. Start the table splitter as user `<sapsid>adm` using the shell script `jspplitter.sh`.
2. Specify options as required in one of the following ways—`optionName optionValue`.
  - Command line:  
Specify the option in the format `-optionName optionValue`
  - Property file:  
Add an option as a new line in the format `optionName=optionValue`

### 📘 Note

If you use an invalid option or you enter `-help`, the available options for starting the tool are displayed.

## Example

### Command line:

```
./jspplitter.sh -tablesplitt BC_COMPVERS:2 -tablesplitt J2EE_CONFIG:4:CID;PATHHASH  
-tablesplitt J2EE_CONFIGENTRY:4:CID
```

## 8.3.3 Output Files of the Java Splitter

- `JPkgCtl.console.log`  
Default log file of splitter tool
- `JPkgCtl.trc`

Trace file with additional and more detailed information

- `IMPORT_<PKG_NUMBER>.XML`  
Resulting xml files for import after package splitting
- `EXPORT_<PKG_NUMBER>.XML`  
Resulting xml files for export after package splitting
- `IMPORT_PKG_METADATA.XML`  
Metadata for tables
- `EXPORT_PKG_METADATA.XML`  
Metadata for tables
- `sizes.xml`  
File with list of the biggest tables with their expected package size in bytes

## 8.4 IBM Db2 for Linux, UNIX, and Windows Database

[Enabling Recoverability of the IBM Db2 for Linux, UNIX, and Windows Database \[page 178\]](#)

[Deleting a Database Schema Manually \[page 180\]](#)

You can generate and use the following scripts to delete a database schema manually (**not** the complete database). During the manual deletion, you must delete all tables and indexes, modules, views, functions, procedures, variables, and tablespaces belonging to the schema.

[Online Information from IBM \[page 182\]](#)

### 8.4.1 Enabling Recoverability of the IBM Db2 for Linux, UNIX, and Windows Database

#### Use

##### Caution

This section **only** applies to your database. You only have to perform the steps outlined in this section once — even if you install multiple SAP systems into one database.

Roll forward recovery provides the ability to recover lost data due to media failure, such as hard disk failure, and applies log file information (log journal) against the restored database. These log files contain the changes made to the database since the last backup.

##### Caution

A production system **must** run in log retention mode.

If a system is **not** running in log retention mode, all changes applied to the database since the last complete backup are lost in the event of a disk failure.

In log retention mode, the log files remain in the log directory (`log_dir`). To archive the log files, you can use the Db2 log file management solution. For more information, see the *Database Administration Guide for SAP on IBM Db2 for Linux, UNIX, and Windows*.

## Procedure

1. Log on to the database server as user `db2<dbsid>`.
2. To activate log retention mode and to specify the log archiving method, you must set configuration parameter `LOGARCHMETH1` to one of the following options:
  - `LOGRETAIN`  
No log archiving takes place. Log files remain in the log directory.
  - `DISK:<log_archive_path>`  
Log files are archived to a disk location. You can archive them to tape using the Db2 tape manager (`db2tapemgr`) at a later point in time.
  - `TSM:<TSM_management_class>`  
Log files are archived to Tivoli Storage Management (TSM)
  - `VENDOR:<path_to_vendor_lib>`  
Log files are archived to a library that is provided by your vendor storage management
  - `USEREXIT`  
For downward compatibility with the former user exit concept, you can specify value `USEREXIT` for parameter `LOGARCHMETH1`.

To set configuration parameter `LOGARCHMETH1` for your preferred archiving method, enter the following command:

```
db2 update db cfg for <dbsid> using LOGARCHMETH1 <log_archiving_method>
```

For more information, see the *Database Administration Guide for SAP on IBM Db2 for Linux, UNIX, and Windows*.

3. To activate the settings, you must restart the database. The database is now in backup pending mode. You need to take an offline backup before you can continue.
4. To start the offline backup for a single-partitioned database, enter the following command:  

```
db2 backup db <dbsid> to <device>
```

### ❖ Example

For example, to perform an offline backup of database `C11` to tapes in devices `rmt0` and `rmt1`, enter the following command:

```
db2 backup database C11 to /dev/rmt0, /dev/rmt1
```

### 📄 Note

On a multi partition database, you must activate log retention mode on all database partitions. In addition, you also have to perform an offline backup for all database partitions.

For more information about how to start a Db2 backup, see the IBM Db2 online documentation.

## More Information

- For access to the *Database Administration Guide for SAP on IBM Db2 for Linux, UNIX, and Windows* and more documentation about SAP systems on IBM Db2 for Linux, UNIX, and Windows, see [Online Information from SAP \[page 192\]](#).
- For access to online information about Db2 that is provided by IBM, see [Online Information from IBM \[page 182\]](#).

## 8.4.2 Deleting a Database Schema Manually

You can generate and use the following scripts to delete a database schema manually (**not** the complete database). During the manual deletion, you must delete all tables and indexes, modules, views, functions, procedures, variables, and tablespaces belonging to the schema.

### Prerequisites

- Make sure that any instance that uses the schema is stopped.
- The database must be up and running.

### Context

You delete a database schema in the following situation: You are running multiple components on one database (MCOB) and you **only** want to delete the database schema of the corresponding component to be deleted.

### Procedure

1. Log on to the database server as db2<dbsid> and open a command prompt.
2. To delete all tables of the database schema, proceed as follows:
  - a. Enter the following SQL statement to create a script:

```
db2 "SELECT 'DROP TABLE ' || CHR(34) || VARCHAR(tabschema) || CHR(34)
|| '.' || CHR(34) || tablename || CHR(34) || ';' FROM syscat.tables WHERE
tabschema='<SAP_SYSTEM_SCHEMA>' AND TYPE in ('T','G') " | grep "DROP" >
drop_<sap_system_schema>_tables.txt
```

where <SAP\_SYSTEM\_SCHEMA> is the name of the database schema.

- b. To delete all tables, run this script using the following command:

```
db2 -tvf drop_<sap_system_schema>_tables.txt
```

3. To delete all views of the database schema, proceed as follows:

- a. Enter the following SQL statement to create a script:

```
db2 " SELECT 'DROP VIEW ' || CHR(34) || VARCHAR(tabschema) || CHR(34)
|| '.' || CHR(34) || tablename || CHR(34) || ';' FROM syscat.tables
WHERE tabschema='<SAP_SYSTEM_SCHEMA>' AND TYPE='V' " | grep "DROP" >
drop_<sap_system_schema>_views.txt
```

where <SAP\_SYSTEM\_SCHEMA> is the name of the database schema.

- b. To delete all views, run this script using the following command:

```
db2 -tvf drop_<sap_system_schema>_views.txt
```

4. To delete all modules of the database schema, proceed as follows:

- a. Enter the following SQL statement to create a script:

```
db2 " SELECT 'DROP MODULE ' || CHR(34) || VARCHAR(moduleschema) ||
CHR(34) || '.' || CHR(34) || modulename || CHR(34) || ';' FROM
syscat.modules WHERE moduleschema='<SAP_SYSTEM_SCHEMA>' " | grep "DROP" >
drop_<sap_system_schema>_modules.txt
```

where <SAP\_SYSTEM\_SCHEMA> is the name of the database schema.

- b. To delete all modules, run this script using the following command:

```
db2 -tvf drop_<sap_system_schema>_modules.txt
```

5. To delete all functions of the database schema, proceed as follows:

- a. Enter the following SQL statement to create a script:

```
db2 " SELECT 'DROP SPECIFIC FUNCTION ' || CHR(34) || VARCHAR(funcschema)
||CHR(34) || '.' || CHR(34) || specificname || CHR(34) || ';' FROM
syscat.functions WHERE funcschema='<SAP_SYSTEM_SCHEMA>' " | grep "DROP" >
drop_<sap_system_schema>_functions.txt
```

where <SAP\_SYSTEM\_SCHEMA> is the name of the database schema.

- b. To delete all functions, run this script using the following command:

```
db2 -tvf drop_<sap_system_schema>_functions.txt
```

6. To delete all procedures of the database schema, proceed as follows:

- a. Enter the following SQL statement to create a script:

```
db2 " SELECT 'DROP SPECIFIC PROCEDURE ' || CHR(34) || VARCHAR(routineschema)
||CHR(34) || '.' || CHR(34) || specificname || CHR(34) || ';' FROM
syscat.routines WHERE routineschema='<SAP_SYSTEM_SCHEMA>' " | grep "DROP" >
drop_<sap_system_schema>_procedures.txt
```

where <SAP\_SYSTEM\_SCHEMA> is the name of the database schema.

- b. To delete all procedures, run this script using the following command:

```
db2 -tvf drop_<sap_system_schema>_procedures.txt
```

7. To delete all variables of the database schema, proceed as follows:

- a. Enter the following SQL statement to create a script:

```
db2 "SELECT 'DROP VARIABLE ' || CHR(34) || VARCHAR(varschema) ||
CHR(34) || '.' || CHR(34) || varname || CHR(34) || ';' FROM
```

```
syscat.variables WHERE varschema='<SAP_SYSTEM_SCHEMA>' " | grep "DROP" >  
drop_<sap_system_schema>_variables.txt
```

where <SAP\_SYSTEM\_SCHEMA> is the name of the database schema.

- b. To delete all variables, run this script using the following command:

```
db2 -tvf drop_<sap_system_schema>_variables.txt
```

8. Drop the database schema using the following command:

```
db2 drop schema <SAP_SYSTEM_SCHEMA> restrict
```

9. Delete all tablespaces by performing the following steps:


- a. To see an overview, list all tablespaces using the following command:

```
db2 list tablespaces
```

- b. In an ABAP-only or Java-only system, delete all tablespaces starting with <SAPSID>#.
- c. To delete the relevant tablespaces, enter the following command:

```
db2 drop tablespace <tablespace_name>
```

## 8.4.3 Online Information from IBM

For product documentation on your Db2 version, go to the [IBM Db2 documentation](#) . You can use this landing page by IBM as a starting point to all kinds of documentation for your Db2 database.

## 8.5 Oracle Database

[Support of Oracle Transparent Data Encryption \(Oracle TDE\) \[page 183\]](#)

Oracle Transparent Data Encryption (TDE) for Oracle 18c is supported as of Software Provisioning Manager 1.0 SP27 for SAP systems based on SAP NetWeaver.

[Database Instance Installation on Oracle Automatic Storage Management \[page 185\]](#)

[Installing Oracle Real Application Clusters on your Target System \[page 186\]](#)

You want to install your target system with Oracle Real Application Clusters (RAC) using the Software Provisioning Manager in an SAP environment. This section provides additional information for the RAC installation using the Software Provisioning Manager.

[Additional Information about the OraBRCopy Tool \[page 189\]](#)

## 8.5.1 Support of Oracle Transparent Data Encryption (Oracle TDE)

Oracle Transparent Data Encryption (TDE) for Oracle 18c is supported as of Software Provisioning Manager 1.0 SP27 for SAP systems based on SAP NetWeaver.

### Prerequisites

- Oracle database 18c or higher
- Software Provisioning Manager 1.0 SP 27 or higher
- SAP system is based on SAP NetWeaver 7.0 or higher
- If you perform a system copy or a database refresh with `J1oad`, the Oracle database on the target system does not need to have the same encryption type as the Oracle database on the source system. You can always change the encryption type when the Oracle database or the Oracle tablespaces are recreated, and the data are reloaded again in the Oracle database by `J1oad`.

### Constraints

- Oracle Database 18c only supports TDE tablespace encryption, but not yet TDE full database encryption. For more information, see SAP Note [2485122](#).
- With the Software Provisioning Manager 1.0 you cannot configure TDE and encrypt tablespaces in the database of an already existing SAP System. You have to do this manually.
  - You can manually configure TDE in an SAP system that already exists.
  - You can manually convert a non-encrypted Oracle SAP database into an encrypted Oracle SAP database.
- With the Software Provisioning Manager 1.0 you cannot deconfigure TDE and decrypt the data in the database of an existing SAP system. You have to do this manually.

For more information, see SAP Note [2485122](#).

### Supported Software Provisioning Manager 1.0 Scenarios

- SAP system installation from scratch  
See section *Support of Oracle Transparent Data Encryption ( Oracle TDE)* in the [installation guide \[page 21\]](#).
- SAP system copy  
When you copy an SAP system with the Software Provisioning Manager 1.0, there are two options for copying the database. From a security perspective, the first option is the preferred option as the SAP data remains security encrypted during the whole system copy process.
  - **Option 1: Backup / Restore**  
The Software Provisioning Manager 1.0 creates a new encrypted database by restoring an encrypted database backup. The data remains encrypted during the whole process.

- **Option 2: Export / Import with J1oad, or Oracle Data Pump**

The Software Provisioning Manager 1.0 (1) unloads the SAP application data with J1oad to SAP export dump files, (2) creates a new encrypted database, (3) loads the SAP export dump files and then (4) deletes the SAP export dump files. The data in the SAP export dump files is not encrypted with Oracle TDE.

**Exporting SAP data with J1oad.**

Oracle TDE encrypts SAP application data that is stored inside the Oracle database. When the data is written to Oracle database files, online redo log files or archive files, the data is encrypted. Oracle TDE is only effective and protects your SAP application data as long as you keep it inside the Oracle database.

When you export SAP application data with Oracle data pump into encrypted Oracle data pump export files, the data remains encrypted. This method allows you to safely export/import Oracle data from one Oracle database to another Oracle database.

Whenever you export SAP application data with J1oad from the Oracle database into J1oad dump files, the SAP application data is not encrypted and not protected any more by Oracle Transparent Data Encryption.

**Exporting SAP Data with Oracle Data Pump**

To perform import or export operations with Oracle tools, you must use Oracle Data Pump.

For more information, see [2485122](#).

- SAP system rename  
See section *Support of Oracle Transparent Data Encryption ( Oracle TDE)* in the system rename guides at <https://support.sap.com/sitoolset> >> *System Provisioning* > *Rename a System using Software Provisioning Manager* > *System Rename Option of Software Provisioning Manager 1.0*
- SAP system database refresh  
[Copying the Database Only - Refresh Database Content on Oracle Database \[page 121\]](#)

For more information, see SAP Note [2485122](#).

## Supported Oracle 18c Configuration Scenarios

- Oracle single instance installation  
Software keystore is located in filesystem
- Real Application Clusters (RAC)  
See section *Installing Oracle Real Application Clusters* in the [installation guide \[page 21\]](#).  
Software keystore is shared (in ASM or shared filesystem)
- Automatic Storage Management (ASM)  
See section *Database Instance Installation on Oracle Automatic Storage Management* in the [installation guide \[page 21\]](#).  
Software keystore is located in ASM
- CDB architecture (Singletenant, Multitenant)  
See section *Multitenant Database Installation of Oracle Database 12c or Higher* in the [installation guide \[page 21\]](#).  
Only united mode software keystore is supported.
- Oracle Database Vault  
[SAP Note 2218115](#)  
Oracle TDE and Oracle DV can be combined together.

For more information, see SAP Note [2485122](#).

## Supported TDE Encryption Algorithms

- The Software Provisioning Manager 1.0 allows you to choose which encryption key to use.
- Default Encryption is TDE or AES128.
- NOTDE is the value for No Transparent Data Encryption.
- Currently only user tablespaces can be encrypted.
- Tablespaces `SYSTEM`, `PSAPTEMP`, and `SYSAUX` are not supported.

## Log and SQ files in installation directory for TDE

During the installation, Database Refresh and Systemcopy with `Jload` with the software provisioning manager 1.0 the TDE will be set and installed when the *Install Oracle TDE* checkbox is marked.

For a database rename, the wallet is already available with the same master key as before. Only the Auto Login Wallet will be reset. The following log and sql files are created in the installation directory for TDE.

- `CreateKeystore.log` & `CreateKeystore.sql`
  - Create keystore log and sql file
  - During the installation or system copy the keystore is created in `$SAPDATA_HOME/orawallet/tde`
- `CreateKSKey.log` & `CreateKSKey.sql`
  - Create keystore key log and sql file
  - The Master Key is written to the keystore file `ewallet.p12` and a backup file `ewallet_<number>.p12` is created as well.
- `CreateKSAutologin.log` & `CreateKSAutologin.sql`
  - Create keystore auto login log and sql file
  - During startup the wallet will be open automatically. The Auto Login Wallet file is `cwallet.sso` in the keystore.

## 8.5.2 Database Instance Installation on Oracle Automatic Storage Management

This section provides information on the installation of a database instance on an Oracle Automatic Storage Management (ASM).

Software Provisioning Manager performs the following steps that differ from the general installation on non-ASM systems:

- It creates the `oracle` user and the additional Oracle groups `oinstall`, `asmdba`, `asmadmin`, and `asmoper`.
- It installs the correct user environment for the `oracle` and `<sapsid>adm` users.

## Prerequisites

- You must have installed the Oracle GRID software. This software ensures that ASM can be used.
- You must have created the following Oracle disk groups:
  - +DATA, +<DBNAME>\_DATA or +DATA\_<DBMACHINE\_NAME> for all data files, online redo logs (first copy), and control file (first copy).
  - +ARCH, +<DBNAME>\_ARCH for control file (second copy) and archive redo logs (not for engineered systems such as Exadata or SuperCluster).
  - +RECO, +<DBNAME>\_RECO or +RECO\_<DBMACHINE\_NAME> for control file (third copy), online redo log (second copy), RMAN backups and fast recovery area.
  - +OLOG, + MLOG for redo log file are optional for larger systems (not for engineered systems such as Exadata or SuperCluster).

## More Information

For more information, see [SAP on Oracle Automatic Storage Management \(ASM\)](#) .

## 8.5.3 Installing Oracle Real Application Clusters on your Target System

You want to install your target system with Oracle Real Application Clusters (RAC) using the Software Provisioning Manager in an SAP environment. This section provides additional information for the RAC installation using the Software Provisioning Manager.

## Prerequisites

### ❁ Example

As an example, this section describes the installation steps for RAC on your target system using the following installation parameters:

- `DB_SID=C11`
- `default ASM data diskgroup=+DATA`
- `database hostnames (three node cluster)=vhost1,vhost2,vhost3`
- `three-digit threads=001,002,003` (it is also possible to have `single-digit threads=1,2,3`)

During the target system installation, the Software Provisioning Manager executes the Oracle executable `$ORACLE_HOME/bin/srvctl` to create the `<DBSID>` cluster database (`add database`) and adds three instances (`add instance`) on the different hosts. While the database is being loaded, the cluster is disabled (`disable database`).

- When the database installation, database load and also additional steps like `update statistics`, setting database users and creating secure store have all finished, the Software Provisioning Manager sets the database to cluster mode (`cluster_database=true`) and enables the cluster database (`enable database`).  
You can find all these commands in the Software Provisioning Manager log files `sapinst_dev*.log` in the installation directory (default: `/tmp/sapinst_inst_dir`):

#### ❁ Example

```

/oracle/C11/<release-specific folder name>/bin/srvctl add database -d C11 -o
/oracle/C11/<release-specific folder name> -p +DATA/C11/spfileC11.ora -a DATA
/oracle/C11/<release-specific folder name>/bin/srvctl add instance -d C11 -i
C11001 -n vhost1

/oracle/C11/<release-specific folder name>/bin/srvctl add instance -d C11 -i
C11002 -n vhost2

/oracle/C11/<release-specific folder name>/bin/srvctl add instance -d C11 -i
C11003 -n vhost3

/oracle/C11/<release-specific folder name>/bin/srvctl disable database -d C11

sqlplus "/ as sysdba"

ALTER SYSTEM SET CLUSTER_DATABASE=true

exit

/oracle/C11/<release-specific folder name>/bin/srvctl enable database -d C11



```

- When the database installation has finished and the Software Provisioning Manager has stopped, you can check the database status as Oracle user or `<sapsid>adm` user with the following command:

**Oracle 11:** `srvctl status database -d C11`

**Oracle 12 and higher:** `srvctl status database -db C11`

## Context

For additional information about how set up SAP systems to use Oracle Real Application Clusters (RACs), see the whitepapers at <https://www.sap.com/community/topic/oracle.html>  *SAP on Oracle Real Application Clusters (RAC)* 

These whitepapers describe all required changes to the Oracle database, Oracle network configuration, Oracle instance parameters, and so. However, they do not contain information about RAC installation with the Software Provisioning Manager.

## Procedure

- You can then start the database on all nodes with the following command:

## Oracle 12 and higher: `srvctl start database -db C11`

The Software Provisioning Manager does not start the database on all nodes after the installation has finished. Only the first database RAC node is started.

You need to start all other instances manually after completing the preparation on the other database nodes. In addition, when the installation is finished, the `<sapsid>adm` environment variable `ORACLE_SID` is set to `C11001` on the first node.

2. You prepare all other database instances as described in the following:

After completing the installation of the first RAC database node, you need to prepare all other database nodes with the Software Provisioning Manager. These installation preparation steps create the required operating system users and groups and also install the required kernel files like `dba*tools` and SAP Host Agent.

You can find this option on the *Welcome* screen of the software provisioning manager at: [Generic Installation Option > Oracle > Database tools > RAC/ASM/Exadata Database Instance Preparation - Kernel <Version>](#)

3. You install the primary application server instance and the additional application server instances:

For the RAC installation, the Software Provisioning Manager performs some additional steps during the installation of the additional application server instance so that the application server of the additional application server instance can connect to the cluster nodes. For this the Software Provisioning Manager updates the `tnsnames.ora` file with some additional RAC-specific entries.

The Software Provisioning Manager modifies `tnsname.ora` like in the following example:

```
C11.WORLD
C11001.WORLD, C11002.WORLD, C11003.WORLD
C11_DVEBMGS01.WORLD
C11_D02.WORLD
```

The Software Provisioning Manager modifies SAP instance or start profiles like in the following example, where `<xx>` is a free sequence number in the instance profile or start profile:

```
SETENV_XX = dbs_ora_tnsname=C11_DVEBMGS01
SETENV_XX = dbs_ora_tnsname=C11_D02
```

During the installation of the additional application server instance, the Software Provisioning Manager tries to restart the instance but this fails because the RAC services are not registered at the cluster ware. To register the RAC services, the Software Provisioning Manager creates the required commands in a shell script in the local installation directory.

You need to execute these shell scripts on one node of the cluster database as follows:

1. Log on to the database server as the `Oracle` user.
2. Set the Oracle environment to the home directory of the RDBMS using the following command:  
`setenv ORACLE_HOME /oracle/C11/<release-specific folder name>`
3. Run the shell script using the following command:  
`call <Path_Of_Shell_Script>/C11_DVEBMGS01.sh`

## ❖ Example

Entries of the shell script:

```
srvctl add service -d C11 -s C11_DVEBMGS01 -r C11001 -a C11002,C11003 -P  
BASIC -y AUTOMATIC -q true -j long -e SELECT -m BASIC -z 3 -w 5
```

```
srvctl start service -d C11 -s C11_DVEBMGS01
```

Entries of shell script for the additional application server instance server C11\_D02.sh:

```
srvctl add service -d C11 -s C11_D02 -r C11002 -a C11001,C11003 -P BASIC -y  
AUTOMATIC -q true -j long -e SELECT -m BASIC -z 3 -w 5
```

```
srvctl start service -d C11 -s C11_D02
```

### Oracle 12 and higher:

Entries of the shell script:

```
srvctl add service -db C11 -service C11_DVEBMGS01 -preferred C11001  
-available C11002,C11003 -tafpolicy BASIC -policy AUTOMATIC -notification  
true -failovertype SELECT -failovermethod BASIC -failoverretry 3  
-failoverdelay 5  
srvctl start service -db C11 -service C11_DVEBMGS01
```

Entries of shell script for the additional application server instance server C11\_D02.sh:

```
srvctl add service -db C11 -service C11_D02 -preferred C11002 -available  
C11001,C11003 -tafpolicy BASIC -policy AUTOMATIC -notification true  
-faileovertype SELECT -faileovermethod BASIC -faileoverretry 3 -failoverdelay  
5  
  
srvctl start service -db C11 -service C11_D02
```

After you have executed these commands on the database server, the installation of the additional application server instance can continue. Now you can start the instance without connection problems.

4. You start the additional application server instance instance.

## 8.5.4 Additional Information about the “OraBRCopy” Tool

### Related Information

[Configuration \[page 190\]](#)

[Output Files \[page 192\]](#)

## 8.5.4.1 Configuration

### Help

The tool displays the available parameters, if you call it with one of the following command line options:

- `-help`
- `-?`

### Version

The tool will display the version information (release branch and build date), if you call it with the following command line option:

- `-version`

### Application Options

Name	Description	Comment
<code>oracleHome</code>	Oracle home directory	Determined automatically in script/ batch files from the <code>ORACLE_HOME</code> environment variable
<code>sourceSid</code>	Source database SID	Determined automatically in script/ batch files from the <code>ORACLE_SID</code> environment variable
<code>targetSid</code>	Target database SID	
<code>listenerPort</code>	Listener port number	Mutually exclusive with <code>tnsAlias</code> . Can be found in the <code>listener.ora</code> file of the source database.
<code>tnsAlias</code>	Oracle TNS alias	Mutually exclusive with <code>listenerPort</code> . Can be found in the <code>tnsnames.ora</code> file of the source database.
<code>password</code>	Password of SYSTEM database user	
<code>generateFiles</code>		Generates control/trace and <code>init&lt;TARGET_DBSID&gt;.ora</code> files.

Name	Description	Comment
<code>forceLogSwitches</code>		Forces log switches. If this option is specified then Oracle database will be stopped during the tool execution. 3

## Additional Options

Name	Description	Comment
<code>bg</code>	Enables background mode	<p><b>Note</b> Takes effect only as command line option.</p> <p>If the tool is running in the background mode, the UNIX shell window or Windows command prompt can be closed after startup.</p>
<code>secure</code>	Enables secure mode	<p><b>Note</b> Takes effect only as command line option.</p> <p>If the tool is running in the secure mode, command line parameters (ex. passwords) will be hidden for java process. The secure mode implicitly enables background mode.</p>
<code>trace</code>	Trace level	Possible values: all, off, 1 (error), 2 (warning), 3 (info), 4 (config, default), 5, 6, 7 (trace)

## Mandatory Options

- Generate files mode  
`generateFiles`, `targetSid`, `password`, `listenerPort` or `tnsAlias`
- Force log switches mode  
`forceLogSwitches`, `password`, `listenerPort` or `tnsAlias` 4

## 8.5.4.2 Output Files

- CONTROL.SQL
- CONTROL.TRC
- init<TARGET\_DBSID>.ora
- ora\_br\_copy.log
- OraBRCopy.console.log

## 8.6 Online Information from SAP

More information is available online as follows:

Titel	Internet Address
Overview page: Central access to all documentation for SAP on IBM Db2	<a href="https://help.sap.com/viewer/p/DB6">https://help.sap.com/viewer/p/DB6</a>
SAP on Db2 for Linux, UNIX, and Windows Community	<a href="https://community.sap.com/topics/db2-for-linux-unix-windows">https://community.sap.com/topics/db2-for-linux-unix-windows</a>
SAP Notes	To find SAP Notes, use the <a href="#">SAP Support portal</a> .
<i>Database Administration Guide for SAP on IBM Db2 for z/OS</i>	<a href="https://help.sap.com/viewer/db2_administration_guide">https://help.sap.com/viewer/db2_administration_guide</a>
<i>Planning Guide for SAP on IBM Db2 for z/OS</i>	<a href="https://help.sap.com/viewer/db2_planning_guide">https://help.sap.com/viewer/db2_planning_guide</a>
<i>SAP Security Guide for SAP on IBM Db2 for z/OS</i>	<a href="https://help.sap.com/viewer/db2_security_guide">https://help.sap.com/viewer/db2_security_guide</a>
<i>SAP on Db2 for z/OS Community</i>	<a href="https://pages.community.sap.com/topics/db2-for-zos">https://pages.community.sap.com/topics/db2-for-zos</a>
<i>TLS with Client Certificate Authentication for SAP Application Server Connections to Db2 on IBM Z</i>	<a href="https://www.sap.com/documents/2020/10/90ca5a5f-b37d-0010-87a3-c30de2ffd8ff.html">https://www.sap.com/documents/2020/10/90ca5a5f-b37d-0010-87a3-c30de2ffd8ff.html</a>
<i>Database Administration Guide: SAP Applications on SAP Adaptive Server Enterprise</i>	<a href="https://help.sap.com/viewer/ase_admin">https://help.sap.com/viewer/ase_admin</a>
<i>Security Guide for SAP Application on SAP Adaptive Server Enterprise</i>	<a href="https://help.sap.com/viewer/ase_security">https://help.sap.com/viewer/ase_security</a>

## 8.7 Starting and Stopping SAP System Instances Using the SAP Management Console

You can start and stop all instances of your SAP system using the SAP Management Console (SAP MC).

### Prerequisites

- Make sure that the host names defined in the DNS server match the names of the SAP system instance hosts. In particular, keep in mind that host names are case-sensitive. For example, if the names of the SAP system instance hosts are in upper case, but the same host names are defined in the DNS server in lower case, starting and stopping the system does not work.
- If you want to start or restart remote systems or instances, make sure that you have registered them in the SAP Management Console (SAP MC). You do not need to register SAP systems or instances installed on the local host, because the SAP MC displays them automatically.
- The SAP Host Agent is installed on the host where the application server of the SAP system or instance runs.
- You have installed Java Runtime Environment (JRE) 5.0 or higher.
- Your Web browser supports Java.
- Your Web browser's Java plug-in is installed and enabled to run scripting of Java applets.

#### Note

If your Web browser no longer supports Java applet technology, you can configure the SAP MC to run locally on your PC. For more information, see section *Configuring SAP MC locally* in SAP Note [1014480](#).

### Context

#### → Recommendation

If you experience any issues when starting or using the SAP MC, refer to SAP Note [1153713](#).

- For more information about handling the SAP MC, see the SAP Library at:

SAP Release and SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>• <b>SAP Solution Manager 7.2 SR2 only:</b> SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> <li>• SAP NetWeaver AS for ABAP 7.52 <a href="https://help.sap.com/nw752abap">https://help.sap.com/nw752abap</a></li> </ul>	<ul style="list-style-type: none"> <li>▶ <a href="#">Application Help</a> ▶ <a href="#">Function-Oriented View</a> ▶ <a href="#">Solution Life Cycle Management</a> ▶ <a href="#">SAP Management Console</a> ▶</li> </ul>

- If your newly installed SAP system is part of a heterogeneous SAP system landscape comprising systems or instances on Windows platforms, you can also start and stop it from a Windows system or instance using the **SAP Microsoft Management Console (SAP MMC)**.  
For more information about handling the SAP MMC, see the SAP Library at:

Release SAP Library Quick Link	SAP Library Path (Continued)
<ul style="list-style-type: none"> <li>• <b>SAP Solution Manager 7.2 SR2 only:</b> SAP NetWeaver 7.4 <a href="http://help.sap.com/nw74">http://help.sap.com/nw74</a></li> <li>• SAP NetWeaver 7.5 <a href="http://help.sap.com/nw75">http://help.sap.com/nw75</a></li> </ul>	<ul style="list-style-type: none"> <li>▶ <a href="#">Application Help</a> ▶ <a href="#">Function-Oriented View</a> ▶ <a href="#">Solution Life Cycle Management</a> ▶ <a href="#">SAP Microsoft Management Console: Windows</a> ▶</li> </ul>

Only valid for 'Platform': Linux

### Note

**Linux only:** If your server runs on a Linux distribution using systemd version 234 or later, it's technically possible that you use systemd commands on operating system level to start and stop SAP systems. However, we recommend that you **do not** use these systemd commands. For example, using systemd to restart or stop the systemd unit will not only stop the start service, but the entire related SAP instance with time limits for the processes to shut down. This might end in unexpected results. To start and stop SAP instances, we recommend that you use the SAP Management Console, as outlined here, or the `sapcontrol` commands (see also [Starting and Stopping SAP System Instances Using Commands \[page 196\]](#)). For more information about systemd, see SAP Note [3139184](#).

End of 'Platform': Linux

## Procedure

- **Starting the Web-Based SAP Management Console**
  1. Start a Web browser and enter the following URL:  
**`http://<Host_Name>:5<Instance_Number>13`**

### ☛ Example

If the instance number is 53 and the host name is `saphost06`, you enter the following URL:

<http://saphost06:55313>

This starts the SAP MC Java applet.

### 📌 Note

If your browser displays a security warning message, choose the option that indicates that you trust the applet.

2. Choose *Start*.

The SAP Management Console (SAP MC) appears.

By default, the instances installed on the host you have connected to are already added in the SAP MC.

### 📌 Note

If the instances have not been added or if you want to change the configuration to display systems and instances on other hosts, you have to register your system manually. This is described in *Registering Systems and Instances in the SAP Management Console* below.

#### • Starting SAP Systems or Instances

Similarly, you can start or restart all SAP systems and individual instances registered in the SAP MC.

1. In the navigation pane, open the tree structure and navigate to the system node that you want to start.
2. Select the system or instance and choose *Start* from the context menu.
3. In the *Start SAP System(s)* dialog box, choose the required options.
4. Choose *OK*.

The SAP MC starts the specified system or system instances.

### 📌 Note

The system might prompt you for the SAP system administrator credentials. To complete the operation, you require administration permissions.

Log in as user `<sapsid>adm`.

#### Starting SAP System Instances Successively

1. Start the database instance.
2. Start the central services instance `SCS<Instance_Number>`.
3. Start the primary application server instance `J<Instance_Number>`.
4. Start additional application server instances `J<Instance_Number>`, if there are any.

#### • Stopping SAP Systems or Instances

Similarly, you can stop all SAP systems and individual instances registered in the SAP MC.

1. Select the system or instance you want to stop and choose *Stop* from the context menu.
  2. In the *Stop SAP System(s)* dialog box, choose the required options.
  3. Choose *OK*.
- The SAP MC stops the specified system or system instances.

### Note

The system might prompt you for the SAP system administrator credentials. To complete the operation, you require administration permissions.

Log in as user `<sapsid>adm`.

### Stopping SAP System Instances Successively

1. Stop additional application server instances `J<Instance_Number>`, if there are any.
2. Stop the primary application server instance `J<Instance_Number>`.
3. Stop the central services instance `SCS<Instance_Number>`.
4. Stop the database instance.

## 8.8 Starting and Stopping SAP System Instances Using Commands

### Prerequisites

You are logged on to the SAP system host as user `<sapsid>adm`.

### Context

#### Note

The `startsap` and `stopsap` commands are deprecated. SAP recommends that you do not use them any longer. For more information, see SAP Notes [1763593](#) and [809477](#).

Only valid for 'Platform': Linux

**Linux only:** If your server runs on a Linux distribution using systemd version 234 or later, it's technically possible that you use systemd commands on operating system level to start and stop SAP systems. However, we recommend that you **do not** use these systemd commands. For example, using systemd to restart or stop the systemd unit will not only stop the start service, but the entire related SAP instance with time limits for the processes to shut down. This might end in unexpected results. To start and stop SAP instances, we recommend that you use the `sapcontrol` commands or the SAP Management Console (see also [Starting and Stopping SAP System Instances Using the SAP Management Console \[page 193\]](#)). For more information about systemd, see SAP Note [3139184](#).

End of 'Platform': Linux

This section only lists the basic commands how to start or stop an SAP system. You can find a detailed list of all `SAPControl` options and features in the command line help, which you can call as follows:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol --help
```

## ❖ Example

```
/usr/sap/GB1/D00/exe/sapcontrol --help
```

## Procedure

### • Starting an SAP System or Instance

- Starting an SAP System:

You can start an SAP system by executing the following commands from the command line (<Instance\_Number> can be the number of any instance of the SAP system):

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-function StartSystem
```

## ❖ Example

```
/usr/sap/GB1/D00/exe/sapcontrol -nr 01 -function StartSystem
```

- Starting an SAP System Instance

You can start an SAP system instance by executing the following commands from the command line:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-function Start
```

## ❖ Example

Starting an instance with <instance\_number> 02: `/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -function Start`

For remote instances, the syntax is slightly different, because you also have to apply the `-host` and `-user` parameters:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-host <remote host> -user <sapsid>adm <password> -function Start
```

## ❖ Example

Starting a remote instance with <instance\_number> 02: `/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -host myremotehost -user gbladm -function Start`

### • Stopping an SAP System or Instance

- Stopping an SAP System

You can stop an SAP system by executing the following commands from the command line (<Instance\_Number> can be the number of any instance of the SAP system):

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-function StopSystem
```

### ☞ Example

```
/usr/sap/GB1/D00/exe/sapcontrol -nr 01 -function StopSystem
```

- Stopping an SAP System Instance

You can stop an SAP system instance by executing the following commands from the command line:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-function Stop
```

### ☞ Example

Stopping an instance with <instance\_number> 02: `/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -function Stop`

For remote instances, the syntax is slightly different, because you also have to apply the `-host` and `-user` parameters:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-host <remote host> -user <sapsid>adm <password> -function Stop
```

### ☞ Example

Stopping a remote instance with <instance\_number> 02: `/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -host myremotehost -user gbladm -function Stop`

### 📌 Note

The database is not stopped by these commands. You have to stop the database using database-specific tools or commands.

- **Checking System Instance and Processes**

- With the following command you get a list of system instances, their status, and the ports used by them (<Instance\_Number> can be the number of any instance of the SAP system):

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-host <remote host> -user <sapsid>adm <password> -function  
GetSystemInstanceList
```

### ☞ Example

```
/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -host myremotehost -user gbladm  
-function GetSystemInstanceList
```

- With the following command you get a list of instance processes and their status:

```
/usr/sap/<SAPSID>/<INSTANCE><NUMBER>/exe/sapcontrol -nr <instance_number>  
-host <remote host> -user <sapsid>adm <password> -function GetProcessList
```

### ☞ Example

```
/usr/sap/GB1/D00/exe/sapcontrol -nr 02 -host myremotehost -user gbladm  
-function GetProcessList
```

- **Troubleshooting**



If you get an error like "FAIL: NIECONN\_REFUSED", execute `sapcontrol -nr <Instance_Number> -function StartService <SAPSID>` to ensure that `sapstartsrv` is running. Then execute again the start or stop command.

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