

Upgrade Guide

CUSTOMER

Software Update Manager 1.0

Document Version: 1.0 – June 06, 2016

Database Migration Option of Software Update Manager 1.0 SP17

Target Database: SAP HANA



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Document History

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

Caution

Before you start implementation, make sure that you have the latest version of this document. You can find the latest version on the SAP Help Portal at <http://help.sap.com/sltoolset> ► *System Maintenance* ►.

Table 1:

Version	Date	Description
1.0	June 06, 2016	Initial version

1 Introduction

1.1 About this Document

This guide gives you an overview of the update procedure with the Software Update Manager (SUM) tool using its Downtime Migration Option (DMO).

To smooth the way to the target database, SAP introduced a one-step procedure that combines the system update and the database migration. This is provided with the Database Migration Option (DMO) feature, which is delivered with the Software Update Manager (SUM) tool, a part of the Software Logistics Toolset (SLToolset).

The main benefits of DMO are:

- Simplified migration steps
- System update and database migration combined in one tool
- Reduced business downtime
- The source database remains consistent, thus a fast fallback is possible

This guide includes special planning, preparation and follow-up activities as well as information about using SUM with DMO and some troubleshooting information. The information in this document is intended for SAP system administrators with operating system, database, and SAP NetWeaver Application Server knowledge.

The document

- provides you with information to consider before and during the update procedure using SUM with DMO, and what you can do when you encounter errors
- describes specifics, when you want to update your existing SAP systems based on SAP NetWeaver Application Server for ABAP with subsequent migration of your database to SAP HANA database

1.2 Further Documentation

In addition to this document, you also require other information such as the current central SUM Note or the following documents:

- **Upgrade Master Guide – SAP NetWeaver** <Release>
- **Upgrade and Update Guide for ABAP – SAP NetWeaver** <Release>

The Upgrade Master Guide guides you through the complete update process and refers you to the required documentation for each step.

The Upgrade and Update Guide describes application-specific preparations and follow-up activities, which you have to perform when you update your SAP NetWeaver ABAP system. It supplements the SUM Guide and refers to various SAP NetWeaver applications such as SAP Business Warehouse or Application Server ABAP. You can access the latest versions of these documents on the SAP Help Portal

- for SAP Enhancement Package 1 for NetWeaver 7.3 at: <http://help.sap.com/nw73>
- for SAP NetWeaver 7.4 at: <http://help.sap.com/nw74>

- for SAP NetWeaver 7.5 at: <http://help.sap.com/nw75>

Choose then for every version ► [Installation and Upgrade Information](#) ►.

- **Update Guide – Update of SAP Systems Using Software Update Manager** <Version>

i Note

In this document, we also use the abbreviation *SUM Guide*.

This document describes how to update SAP systems based on SAP NetWeaver using the Software Update Manager (SUM). It includes general planning, preparation and follow-up activities, information about using the SUM, and troubleshooting information.

You can access the latest version of this document on the SAP Help Portal at:

<http://help.sap.com/sltoolset> ► [System Maintenance](#) ► [Software Update Manager \(SUM\)](#) <version> ►.

- **System Copy Guide for SAP Systems Based on SAP NetWeaver Application Server 7.1 and higher (for ABAP)**

This guide is relevant among others when you want to:

- use the stand-alone Table Comparison tool (see also [Table Comparison \[page 44\]](#))

You can access the latest version of this document on the SAP Help Portal at <http://help.sap.com/sltoolset>

► [System Provisioning](#) ► [System Copy Option](#) ► [Guide for Systems Based on SAP NetWeaver 7.1 & Higher](#) ►.

1.3 Naming Conventions

This section deals with the most important naming conventions used in this guide.

See the *SUM Guide* for a comprehensive overview about naming conventions. The most important naming conventions in this guide are:

Table 2:

Naming	Meaning
SUM Guide	Abbreviation for: <i>Update Guide – Update of SAP Systems Using Software Update Manager</i> <version>
Update	For clarity and readability, the generic term Update is used in this document in the context of release upgrade, enhancement package installation and Support Package Stack application with SUM.
SAPup	The DMO procedure is only available for systems based on AS ABAP, so on technical level, the executable SAPup (as part of SUM) is used, for example, in the log files or in commands.
anyDB	DMO of SUM migrates from an existing relational database type (called anyDB) to the target database.
<SUM directory>	This spelling is used when referring to <path to SUM directory>/SUM.

2 Planning

This part of the document contains information about planning your SAP system update and the database migration.

2.1 DMO Concept

This section describes the idea behind the database migration option of the Software Update Manager.

The DMO feature helps you avoiding landscape changes (SID, host name) and allows the combination of all relevant steps for the in-place migration to the target database (Unicode Conversion, Update, and Migration) in one tool.

It even makes the database update of anyDB unnecessary, because DMO requirements for the anyDB version are reduced compared to the standard update.

Further benefits of DMO are the reduced Business Downtime and the remaining consistency of the source database so that a fast fallback is possible.

Assuming that you run your SAP system on anyDB, and you want to update the SAP system and to migrate the anyDB to the wanted target database, several steps such as a

- Dual-stack split
- Unicode conversion
(not for target systems based on SAP NetWeaver 7.5 or higher)
- Database update of anyDB
- Update of your SAP software
- Database migration to target database

may be necessary. The processing sequence is based on the shadow system functionality of SUM:

1. The SUM creates the shadow repository on the traditional database until downtime phase, while in parallel the target database is being set up (such as client, schema).
2. The shadow repository is copied to the target database. Then the downtime starts.
3. After the migration of the application data (including data conversion), the update is finalized and the SAP system runs on the target database.

The Source database continues to run and it is not modified. It remains as a fallback for the [Reset Option \[page 26\]](#) throughout the complete DMO procedure. After the successful DMO procedure however, it cannot be used anymore as a productive database for an SAP system in parallel with the target database. It remains as a fallback for the reset procedure throughout the complete procedure.

The following figure shows the different phases of the DMO during the procedure

DMO phases during the procedure

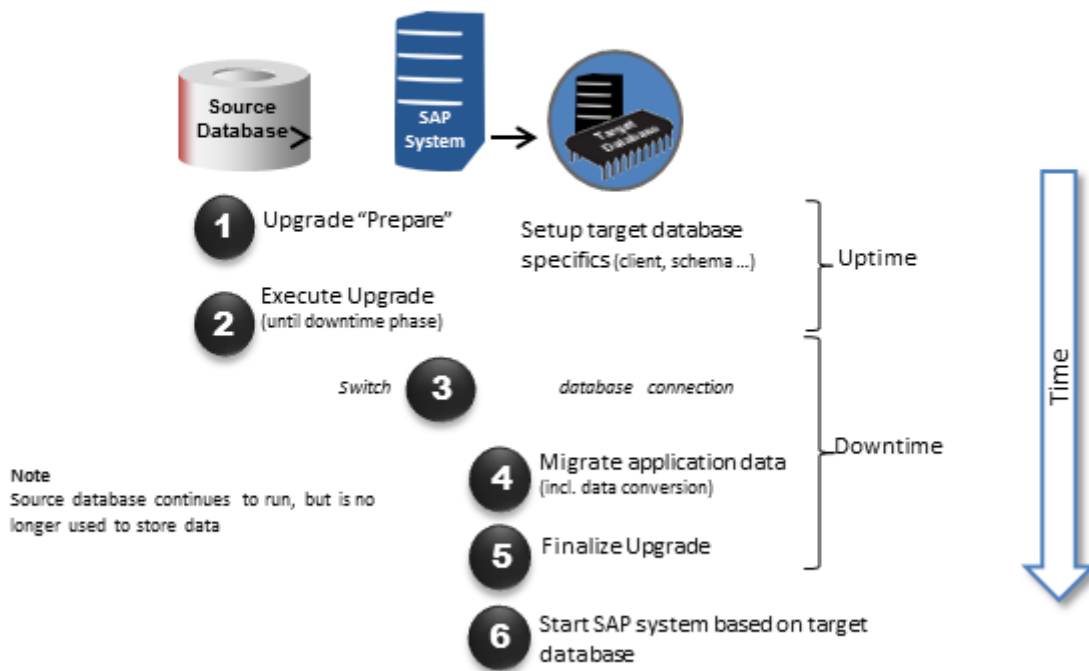


Figure 1: DMO at a glance

2.2 Standard SUM versus SUM with DMO

Take into account the following main differences to the standard SUM procedure, that is, the system update without combined database migration in a one-step procedure:

- Different prerequisites
Supported are all database versions listed in the Product Availability Matrix (PAM) of the source release and all operating system versions listed in the PAM of the target release.

⚠ Caution

See also the latest SAP Note for DMO mentioned in [Relevant SAP Notes \[page 13\]](#) for the current prerequisites and restrictions.

This note involves information regarding

- operating systems and databases
- minimum support packages
- source and target releases

- **Download directory**
One of the first DMO dialogs in the browser is the question where the stack configuration file `stack.xml` is located. SUM presumes that this file is part of the download directory, so there is no separate question about the location of the download directory. (The download directory includes the kernel and software files that were downloaded after using the *Maintenance Optimizer* or the *Maintenance Planner*.)
- **Additional kernel files required**
When you select the required kernel files in the Maintenance Optimizer or the *Maintenance Planner*, select the kernel files of the target software release for both the source database and the target database (in addition to the other files).
- **Additional Steps**
Since the database migration is an additional part of the DMO procedure (compared to the standard update procedure of the SUM), you must provide specific information for the migration and for the target database during the DMO procedure, such as a migration key. Or you must provide access to the SAP HANA database client installer.
Technically, SUM triggers the `R3load` to export and import the data. Further on, the shadow repository is created on the source database first and then migrated to the target database.
- **Easy reset**
An easy fallback to the traditional database is possible, as long as the source database and the SUM directory (of the existing update) exist. Do not perform a reset in a productive environment after the end users started working on the new system based on the new database.
- **Password restrictions for SAP HANA database**
Currently, the password restrictions for users on SAP HANA database are different to those of the SUM. Take that into consideration when creating users for the SAP HANA database. Hint: Start the password with a capital letter and use alphanumerical characters only.

2.3 Performance Optimization with Migration Duration Files

You can provide the Software Update Manager with the information about table migration durations from a previous SUM with DMO run. SUM uses this data to optimize the performance of subsequent DMO runs.

Although SUM does consider the table sizes for the migration sequence, other factors can influence the migration duration. In other words, consider more criteria than just the table size for the duration of a table migration. The real durations are the best criteria, but they are only known after the migration of the tables.

During a migration, SUM creates text files with the extension XML that contain the information about the migration duration for each migrated table. The files are created in directory `SUM\abap\htdoc\` and are called

- `MIGRATE_UT_DUR.XML` for the uptime migration
- `MIGRATE_DT_DUR.XML` for the downtime migration

They can be used for the next DMO run to improve the table splitting. For this purpose, put the files into the download folder so that SUM can consider the files during the next run.

i Note

The files with the duration information ("duration files") can even be reused for a similar system. The systems can also have a different SID.

For example, you can use a duration file from a copy of the productive system for the DMO run on the productive system. The file contains both the table migration time as well as the table size, and in case of different table sizes, SAPup will adapt the migration time accordingly.

2.4 Dual-Stack Split

Since the DMO works only with ABAP systems, a dual-stack split may be required beforehand.

If a dual-stack split is necessary, make sure that it has already been performed before you start the update and migration procedure.

For more information about the dual-stack split, see the *Upgrade Master Guide*, which is mentioned in section [Further Documentation \[page 5\]](#).

Note

Upgrade to SAP Solution Manager 7.2

If you want to upgrade your SAP Solution Manager system from release 7.1 to 7.2, and you want to migrate your database to SAP ASE or SAP HANA, we recommend to not perform a dual-stack split beforehand.

Use instead the upgrade and migration procedure about which you find more information in section [Upgrade to SAP Solution Manager 7.2 using DMO \[page 10\]](#).

2.5 Upgrade to SAP Solution Manager 7.2 using DMO

Under certain circumstances, you can use the DMO of SUM for the upgrade and migration procedure from SAP Solution Manager 7.1 to SAP Solution Manager 7.2.

If you want to migrate to SAP HANA target database with your SAP Solution Manager 7.2, and you do not need to use SAP Solution Manager 7.2 directly after the upgrade and before the migration step, you can use the upgrade and migration procedure incorporating DMO of SUM and the combined split and migration procedure with the Software Provisioning Manager (SWPM).


The first step in this procedure is the upgrade of your SAP Solution Manager system to version 7.2 and the migration of the ABAP part of the system to the target database in one step with the Software Update Manager (SUM). The dual-stack version of the SL Common UI guides you through the steps of the ABAP and Java parts of the dual-stack, taking care of the synchronization between the ABAP upgrade and the Java upgrade.

The old SAP Solution Manager 7.1 system can be used in parallel while the SUM is already upgrading and preparing the migration of the system. Parts of the migration can be performed during the uptime processing of the SUM. The downtime of the SAP Solution Manager system and the switch of the connected agents in the maintenance mode can be delayed until the technical downtime of the ABAP part starts in the SUM.

The result is an SAP Solution Manager 7.2 dual-stack system with the APAB stack already running on the target database and the Java part still running on the source database. Afterwards, you perform the dual-stack split and the migration of your AS Java system to the target database using the SWPM.

Note

This upgrade and migration procedure is **currently available on request**.

For more and more detailed information on this upgrade and migration procedure, see the SAP Community Network (SCN) at: <http://scn.sap.com/community/it-management/alm/software-logistics/blog/2016/05/04/simplified-upgrade-and-migration-to-sap-solution-manager-72>

2.6 ASCS Instance Split

The Software Update Manager is equipped with a procedure to split off the ASCS from the primary application server instance. This procedure creates a new ASCS instance that runs on the primary application server.

If you carry out an update with database migration option, the ASCS split is optionally possible. The Software Update Manager prompts you in a dialog to select one of the following options:


- Perform the ASCS instance split
- Keep the current system setup


For more information, see in the *SUM Guide* section [3.Planning](#) > [ASCS Instance Split](#) >

2.7 Unicode

The DMO is available for Unicode and non-Unicode SAP systems. If you want to apply the DMO from an existing SAP system with non-Unicode Single Code Page, a conversion to Unicode is mandatory because the target databases run on Unicode systems only.

Caution

SAP NetWeaver 7.5 supports Unicode only. A Combined Upgrade & Unicode Conversion (CU&UC) for target systems based on SAP NetWeaver 7.5 or higher (such as SAP ERP 6.0 EHP 8) is not possible. In this case, make sure that the SAP NetWeaver source system already supports Unicode. See also SAP Note [2033243](#).

The unicode conversion takes place automatically during the update with DMO if you have carried out the preparatory steps for the unicode conversion as described in the guide *Release Change & Single Code Page Conversion Guide with Database Migration*. This guide is available as attachment to SAP Note [1968508](#). (See also [Preparing Unicode Conversion \[page 15\]](#).)

The guide provides you with detailed information about the steps necessary to convert an existing non-Unicode SAP System with one standard non-Unicode system code page to Unicode. This includes a general description of the conversion, preparatory steps, and follow-up activities as well.

Note

MDMP-systems are not supported for the conversion.

2.8 ICNV

ICNV, the transaction for *incremental table conversion*, is not possible in a SUM with DMO run and will be automatically disabled beforehand.

For more information about the incremental table conversion. see in the *SUM Guide* (mentioned in [Further Documentation \[page 5\]](#)) the section ► *3 Planning* ► *Incremental Table Conversion* ►.

3 Preparation

This part of the document contains information about the preparations that you perform before you update your system and migrate your database to the desired target database.

You can prepare for the update while the system is in production operation. Careful preparation of the update is the best guarantee that it runs without errors.

The Software Update Manager supports you by making a range of checks automatically in the preparation roadmap steps (*Initialization*, *Extraction*, *Configuration*, and *Checks*). To make sure that all requirements are met, run the preparation roadmap steps of Software Update Manager as soon as possible. The successful execution of the preparation roadmap steps is a prerequisite for starting the roadmap step *Preprocessing*.

You can reset and repeat the preparation roadmap steps as often as you need by choosing *Back* before you start the actual procedure in roadmap step *Preprocessing*.

3.1 Relevant SAP Notes

To prepare and perform the update of your SAP system and the migration of your database, you require some additional information that is not included in this document.

This information is in a range of SAP Notes from the SAP Support Portal at <http://support.sap.com/notes>. Check the notes before you start with the preparations.

Caution

Make sure that you always have the latest version of the SAP Notes.

Central SUM Note and the SAP Notes for your source database:

Table 3:


SAP Note Number	Description
2223738	Central Note - Software Update Manager 1.0 SP17

Note

The additional SAP Notes for the databases are listed in this central SUM Note.

SAP Note for the DMO

Table 4:

SAP Note Number	Description
2257362 	Database migration option (DMO) of SUM 1.0 SP17










➔ Recommendation

See also the PDF documents, which are attached to the DMO Note and the central SUM Note, for a graphical representation of the supported update and upgrade paths.

SAP Notes regarding SAP Business Warehouse (SAP BW)

If you are updating an SAP BW system, read and implement the following notes before starting the update:













Table 5:

SAP Note Number	Description
1142427 	Trace cannot be deleted regularly
1388287 	RSRD_BOOKMARK_REORGANISATION: Specified time not used
1695112 	Activities in BW after migrating to the SAP HANA database
1714734 	Functions RSPC_SHUTDOWN and RSPC_STARTUP do not exist
1845061 	Background user has no authorization for scheduling
1860274 	SAP HANA adj. for BW Workspaces: Inactive Composite Providers (only required for BW Workspaces and target releases below BW 7.31 SP 9)
1958346 	BW on SAP HANA: Landscape redistribution check procedures
1908075 	BW on SAP HANA SP06: Landscape redistribution
2190948 	730SP14: DMO/Houskeeping Task 'PSA_MAPPING_CHECK' inactivates older version of PSAs

Other SAP Notes that contain additional information

In addition to the above-mentioned SAP Notes, this document also refers you to other SAP Notes with additional information. The following list contains these SAP Notes

Table 6:

SAP Note Number	Description
816861 	Migrating entries in the secure storage
928729 	Combined Upgrade & Unicode Conversion (CU&UC)
936441 	Oracle settings for R3load based system copy
1031096 	Installing Package SAPHOSTAGENT
1784377 	Checking pool tables and cluster tables
1788379 	Transport of SAP NOTES
1845061 	Background user has no authorization for scheduling
1929357 	HDB client installation on HP-UX
1968508 	Release change & Single Code Page Conversion to Unicode with DMO
1899817 	SAP Business Suite on distributed SAP HANA database (scaleout): Landscape redistribution
1000009 	ASU Toolbox 2008
2033243 	End of non-Unicode Support: Release Details


3.2 Preparing Unicode Conversion

Perform pre-processing steps if an existing SAP NetWeaver non-Unicode system with one standard non-Unicode system code page has to be converted to a SAP NetWeaver Unicode system during the update with DMO.

Context

Caution

SAP NetWeaver 7.5 supports Unicode only. A Combined Upgrade & Unicode Conversion (CU&UC) for target systems based on SAP NetWeaver 7.5 or higher (such as SAP ERP 6.0 EHP 8) is not possible. In this

case, make sure that the SAP NetWeaver source system already supports Unicode. See also SAP Note [2033243](#) .

Procedure

Follow the instructions in the Conversion Guide mentioned in section [Unicode \[page 11\]](#). See in this guide especially the sections *1.Preparation* and *2.Unicode Preconversion Phase*.

3.3 Checking Pool and Cluster Tables

We recommend to check all pool tables or cluster tables in the source system before the migration.

Context

Several reports are available with which you can check pool tables or cluster tables if

- there are corrupt or initial cluster records
- in a certain table pool the contained pool tables are readable
- the BCD number are correct in a table that you must specify individually

Note

Note that some reports may have long runtimes for large datasets.

Procedure

Apply the check reports that are described in SAP Note [1784377](#) .

3.4 BW: Checking RFC Destination into BW client

Ensure that the RFC connection from client 000 to the Business Warehouse (BW) client is working.

Context

Check if the RFC destination into the BW client for import post-processing is working. Furthermore, make sure that the user assigned to this destination (usually the BW-user for background processes) is authorized to submit programs of group SODQADM for background processing.

Procedure

Apply for this purpose SAP Note [1845061](#) (only required for target releases lower than BW 7.31 SP 08).

If the SAP Note is not applicable to the source release or support package level, authorize the BW background user to execute programs in the authorization group SODQADM (authorization object S_PROGRAM with field *P_ACTION* = BTCSUBMIT and *P_GROUP* = SODQADM).

3.5 BW: Deleting InfoObject OBCTCOMP

Check if the InfoObject OBCTCOMP is used.

Context

The InfoObject OBCTCOMP is obsolete in SAP BW. Note that this InfoObject is not delivered anymore with SAP BW 7.30 and higher (no new D version).

Procedure






- If the InfoObject is not in use, delete the (active version) using transaction RSD1.
- Otherwise, edit the InfoObject (active version) in transaction RSD1 and de-select *short text exists* and *with texts*, save your changes and activate the InfoObject.

3.6 BW: Applying SAP Notes

Some SAP Notes related to SAP Business Warehouse (SAP BW) are relevant for the DMO preparation.

Context

The following SAP Notes must be considered:

- [1142427](#) 
- [1714734](#) 
- [1388287](#) 
- [1860274](#)  (only required for BW Workspaces and target releases below SAP BW 7.31 SP 09)
- [2190948](#) 

Procedure

Apply the above-mentioned SAP Notes. For more information, see section [SAP Notes regarding SAP Business Warehouse \(SAP BW\)](#) in [Relevant SAP Notes \[page 13\]](#).

3.7 Oracle: Suppressing Long-Running Phases

If your source database is Oracle, you can suppress long-running phases before you start the update.

Context

During the update with DMO, the following phases can be long-running:

- EU_CLONE_DT_SIZES
- EU_CLONE_UT_SIZES

In the course of these phases, the system updates the database statistics regarding the usage of space that the tables need on the database. The aim is a better distribution of the tables during the system cloning. Before you start the update, you can suppress these long-running phases using the following procedure.

Procedure

1. Log on to the host where the Oracle database instance is running.

Use user `ora<dbid>` for UNIX system or user `<sapsid>adm` for Windows.

2. Open a command prompt and execute the following command:

```
brconnect -u / -c -f stats -o <schema_owner> -t all -f allsel,collect,space -p 8
```

3. Add to file `SAPup_add.par` the following line:

```
/ORA/update_spacestat = 0
```

The file `SAPup_add.par` is located in the subdirectory `bin` of the SUM directory. If this file does not exist yet, create it.

3.8 Oracle: Checking Database Parameterization

If your source database is Oracle, make sure that the database parameterization is properly configured with regard to parameter `parallel_max_server`.

Procedure

Apply SAP Note [936441](#) .

3.9 Preparing Target Database SAP HANA

Prepare the target database SAP HANA for the SUM with DMO run.

Procedure

1. Make sure that you have successfully installed an SAP HANA database.
2. Make sure that you are prepared to enter system details and the password of user `SYSTEM` as well.

3.10 Requesting Migration Key for Target Database

Make sure that you have a valid migration key for the new target database.

Procedure

Request the migration from the SAP Support Portal at <https://support.sap.com/migrationkey> .

3.11 Downloading Latest Database Client Software

Make sure that you have the latest client software for your target database.

Context

If you have to install the client software for your target database, proceed as follows:

Caution

UNIX systems other than Linux:

If you are using a UNIX-based operating system except for Linux, install the SAP HANA database client manually to avoid the error described in section [Troubleshooting \[page 48\]](#). See in this section the item *[The HANA database client installation on HP-UX \(and other UNIX-based operating systems except for Linux\) fails with an error.](#)*

Procedure

1. Download the software from the SAP Service Marketplace.
2. Extract the software on the server that runs the DMO.

SUM with DMO requests the path to the executable `hdbinst`.

3.12 Requesting Permanent SAP License

Make sure that you have a permanent SAP license for your system that will be migrated to the target database.

Context

You can request a new license key from the SAP Support Portal. It is mandatory that you keep your installation number to avoid a secure store migration.

Procedure

1. Download the license key from <http://support.sap.com/licensekey>.
2. Copy the SAP license file to the server that runs the DMO.

The SUM with DMO will request the path to this license file.

3.13 Preparing Software Update Manager

Make sure that you have the latest version of the Software Update Manager (SUM).

Context

The SUM controls the entire procedure, from checking the system requirements and importing the necessary programs through stopping production operation until production operation is resumed. The procedure is divided up into a number of different roadmap steps. The roadmap steps are in turn divided into individual steps. The successful completion of a step is a precondition for the success of all subsequent steps.

For more information, see the *SUM guide* mentioned in [Further Documentation \[page 5\]](#), especially the section [► 5. Running the Software Update Manager ► Downloading and Unpacking the Software Update Manager. ▢](#).

Caution

ABAP system with z/Linus and PowerLinux on SAP HANA

If you run the (primary) application server of your ABAP system on an SAP HANA target database and with one of the following operating systems:

- Linux on System z (also known as zLinux or z/Linux)
- PowerLinux (also known as Linux running on IBM Power Architecture)

you must not download the normal SUM archive SUM10SP<version>. Choose instead the SUM archive SUM10HDBSP<version>, which is intended for these OS/DB-combinations.

Procedure

1. Download the latest version of SUM from the main Software Logistics Toolset page.
2. Unpack the SUM archive SUM.SAR to the defined SUM directory

3.14 Changing Schema Name

This section is relevant if you want to change the schema name of the target database SAP HANA.

Context

By default, the new database schema and the schema user will be created as SAP<SID>, where <SID> is the ID of the SAP System to be migrated. If required, it is possible to choose another value instead of <SID>. In any case, make sure that the schema name starts with SAP.

To change the schema name, proceed as follows:

Procedure

1. Extract the SUM archive.
2. After the extraction, add the following line to the file SAPup_add.par:

```
/migrate/targetschemasid = <VAL>
```

- <VAL> is the desired identifier to be appended to form the schema name SAP<VAL>.
- The file SAPup_add.par is located in the directory <SUM directory>/abap/bin/. If it does not exist yet, create it manually.

3.15 Preparing SAP Host Agent

This section covers the `SAP Host Agent` tool in combination with the SUM so that the `SL Common UI` and the SUM work properly.

Context

To ensure that the SAP Host Agent runs correctly with the SUM, follow the following steps that are described in the SUM guide mentioned in [Further Documentation \[page 5\]](#):

Procedure

1. Install the latest version of the SAP Host Agent.

For more information, see in the SUM Guide: ► [4 Preparation](#) ► [Checking the Software Requirements](#) ► [Installing or Updating SAP Host Agent](#) ►.

2. Configure the secure socket layer (SSL) for SAP Host Agent

For more information, see in the SUM Guide: ► [4 Preparation](#) ► [Checking the Software Requirements](#) ► [Configuring SAP Host Agent Authentication and SSL Connection](#) ►.

3. Registering SUM in SAP Host Agent **before** you start SUM with DMO.

For more information, see in the SUM Guide: ► [5 Running the Software Update Manager](#) ► [Registering SUM in SAP Host Agent](#) ►.

3.16 Downloading Files from Maintenance Planner

Download the files calculated by the SAP Maintenance Planner that are necessary for the update.

Context

Note

As of July 2015, *Maintenance Planner* in SAP Support Portal is the central tool to plan updates, upgrades and new installations in your system landscape, and it is the successor of the *SAP Solution Manager Maintenance Optimizer (MOpz)*. For this reason, we mention here the Maintenance Planner only, although the MOpz is still in use by supporting SAP Solution Manager 7.1 customers. However, we recommend using the Maintenance Planner.

For more information, see <http://wiki.scn.sap.com/wiki/x/VlwqCw> and <http://scn.sap.com/docs/DOC-65243>.

The *Maintenance Planner* supports the download of a consistent queue that includes all necessary support packages and enhancement packages. In addition, it calculates a valid import queue for the selected SAP system and generates the stack configuration file `stack.xml`. In the *Select Target* phase of the SUM, you enter the path to the stack configuration file.

Procedure

1. In the *Maintenance Planner*, select for the download the following options:

- SAP Kernel
- 721 EXT kernel# when targeting for SAP_BASIS 731

Note

- The `SAPEXEDB` archives for both target database and source database are not selectable and will be downloaded automatically.
- When you select the kernel files using *Maintenance Planner*, consider that you have to select the kernel files of the target software release for both the source database and the target database. The reason is that the system creates the shadow instance for the target software release on the existing source database first and then copies it to the target database.
- We recommend using the path `/usr/sap/<SID>/download` to store the required files. Alternatively, you could create a symbolic link.
- **Additional kernel components**
Make sure that you have selected all necessary kernel components, such as the `IGSEXE.SAR` file, in the *Maintenance Optimizer* or the *Maintenance Planner*. Currently, the *Maintenance Planner* does not calculate these files automatically.

2. Upload the following files to a folder on the application server on which you run the Software Update Manager (typically, this is the primary application server):

- The files calculated by *Maintenance Planner* including kernel for the source and target database
- `stack.xml` file
- Target database client for the required operating system

Note

Additional SPAM files might be required:

The *Maintenance Planner* only offers the latest `SPAM` version for the target software release.

If the Software Update Manager prompts you during the `SPAM` version check to import the latest `SPAM` update for your source release, download the latest `SPAM` version for the current software release manually and extract the files to the directory `/usr/sap/trans/EPS/in`. Afterwards you confirm the directory in the dialogue so that SUM can find and check this `SPAM` version.

If the latest `SPAM` version for the source release is already in the download directory before the update, the Software Update Manager will extract the files automatically

3.17 BW: Using Application-Specific Upgrade Toolbox

If you update an SAP BW system, consider also the application-specific upgrade toolbox (ASU Toolbox).

Context

The ASU toolbox allows you to manage the preparation and follow-up activities you need to perform for the technical update. For more information, see the *Upgrade and Update Guide: SAP NetWeaver <Release> ABAP* (mentioned in section [Further Documentation \[page 5\]](#), and see SAP Note [1000009](#) as well.

Procedure

Execute the ASU Toolbox before the update using transaction `/ASU/START` and select the appropriate ASU content definition.

3.18 Testing Update and Migration

Before your start the actual update and migration procedure for your productive system, it is necessary and highly recommended that you carry out DMO test runs.

Context

The aim of these DMO test runs is the optimization of the various parameters (such as the R3load processes) and the determination of the expected total length of the update and migration procedure of your productive system.

Procedure

Perform at least one update and migration procedure of an SAP system for testing purposes with a similar set of data, ideally with a system copy of your production system.

4 Running the Software Update Manager

This part of the document provides information about the update and migration procedure using SUM with DMO.

The Software Update Manager controls the entire procedure, from checking the system requirements and importing the necessary programs through stopping production operation until production operation is resumed. The procedure is divided up into a number of different roadmap steps. The roadmap steps are in turn divided into individual steps. The successful completion of a step is a precondition for the success of all subsequent steps.

This section describes features and DMO-specific actions during the different roadmap steps. In addition, you receive information about the `Reset`-option in the SUM with DMO and the built-in Table Comparison tool.

If your target database is SAP HANA, consider also the information about the [Landscape Reorganization for SAP HANA Scale out \[page 36\]](#). And if you start with SAP R/3 4.6 C, follow the instructions regarding [Table Partitioning when Start Release is SAP R/3 \[page 37\]](#).

Note

All required planning and preparation actions must be completed.

4.1 Reset Option

The Software Update Manager offers the option to reset the update, that is, to undo all changes that have been made in the system during the update procedure.

The reset option is described in the *SUM guide* (see [Further Documentation \[page 5\]](#)) in section [5 Running the Software Update Manager](#) [Resetting the Update](#).

However, when you use the built-in database migration option, SUM offers a sole reset-procedure in which all update and migration activities, which are carried out the point in time you start the reset, will be revoked. Furthermore, the connection to the source database will be reestablished.

To perform this reset-procedure, SUM displays a [Reset](#)-button in the dialogues of every roadmap step. This means that you can carry out the reset at every step of the update and migration procedure, even during or after the Business Downtime.

The system is not only reset to run on anyDB afterwards, but completely reset to its status before the update and migration procedure was started. You can then start the update and migration with the SUM again.

Note that after you have chosen the [Reset](#)-button, a [Confirmation](#) dialog box appears first to prevent an unintended reset

Caution

• Prerequisites

To carry out the reset, it is required that

- anyDB is still available
- the SUM directory is not cleaned up
- **Limitations**
 - Target database client is not deleted from PAS / AAS automatically
 - BR tools are not restored
 - User `DBACOCKPIT` and related roles are not deleted in target database
- **No Reset possible after Cleanup**

After the update and migration procedure comes to an end, the Software Update Managers offers in addition the option [Cleanup](#). Be aware that after a cleanup, a reset is not possible anymore. For example, you cannot carry out a manual reset on operating system level (as described in SUM guide) after a cleanup.

i Note

After the update procedure has been performed successfully, SUM displays an appropriate information in the Web browser window. Afterwards, you must terminate all remaining `SAPup` processes on operating system level to stop SUM completely. This also applies after a reset and the subsequent cleanup in case you do not want to continue the update.

4.2 Roadmap Steps with DMO features

4.2.1 Extraction

In this roadmap step, SUM extracts the required software.

The following actions are carried out:

- Provision of the path to the download directory and `stack.xml`
- Provision of passwords for `DDIC` user and database user in the source system
- Check of relevant tool and system parameters

DMO-specific actions:

- Provision of target database type and the migration key
- Decision about [Using the Migration Repetition Option for Testing \[page 35\]](#)
- Decision about the option `Table Comparison` with SUM (see [Table Comparison \[page 33\]](#))
- Decision about the landscape reorganization for SAP HANA scale out (see [Landscape Reorganization for SAP HANA Scale out \[page 36\]](#))
- Implementation of SAP Notes required by SUM

i Note

During the update and migration procedure, SUM works with two kernel sets:

- One kernel set for the source database. It is located in folder `SUM\abap\exe`
- One kernel set for the target database. It is located in folder `SUM\abap\exe_2nd.`

This may be relevant in case you want to check that the existing version after SUM has extracted the kernel. If the tool asks you to provide a newer kernel version, you will have to copy it into the download folder.

Further features::

- The `SL Common UI` can be accessed concurrently by several users. However, it is not possible to define different roles when using the URL of the SAP Host Agent.
- In the phase `PREP_INPUT/MIG2NDDB_INI`, you decide if you want to migrate your system to the target database or keep the existing database.
- The option *Do not migrate to a different DB* corresponds to the known SUM functionality, that is, update without migration.
- In the phase `PREP_PARSETUP/CHECK4NOTES_TOOL`, SUM displays a list of SAP Notes that are prerequisite for a successful update.
- To transport SAP Notes that cannot be implemented using the SAP Note Assistant (SNOTE), use the report `SCWN_TRANSPORT_NOTES` as described in the SAP Note [1788379](#) or in the SCN blog *Provide SAP Note for SUM by transport, not SNOTE*

Related Information

SCN blog: [Provide SAP Note for SUM by transport, not SNOTE](#)

4.2.2 Configuration

In this roadmap step, SUM asks for all information required to run the update with DMO.

The following actions are carried out:

- Configuration of processes and other performance relevant parameters

DMO-specific actions:

- Provision of connection parameters and users of the target database
- Installation of target database client on the DMO host

Note

If you encounter problems with the installation of the client, you can install it manually. Make sure that you use the correct directory for the installation.

- Extraction of kernels for both the source and the target databases
- Upload of additional packages, customer change requests, and modifications

Further features::

- When you execute a migration to the target database, use either the *Standard* or *Advanced* preconfiguration mode in the tool configuration. The option *Single System* is not offered for DMO.

For more information about the options, see in the *SUM Guide* the section [3 Planning](#) [Preconfiguration Mode Planning](#).

- The number of `R3load` processes, which you can set in the phase `PREP_CONFIGURATION/INITSUBST`, is the only visible parameter that affects the migration performance in the downtime. Note that you can configure the number of processes dynamically at a later point in time.
- In the new DMO-specific phases, you provide connection data and user credentials for the target database.
- In the phase `PREP_CONFIGURATION/SUBMOD_MIG_CONFIG/INSTHDBCLI`, you provide details required for the installation of the target database client. Note that you need root credentials to install the database client.

4.2.3 Checks

In this roadmap step, SUM checks if your system fulfills the requirements for the update and migration procedure (for example, whether the required free space is available).

The following actions are carried out:

- Calculation of the space for the shadow system
- System health checks (such as `nametab`, `transport system`)
- Checks of relevant tool and system parameters

Further features:

- In the phase `MIG2NDDDB_HANA_BW_PARAMS`, which is relevant for the usage of specific reports related to SAP BusinessObjects Business Intelligence (BI), you provide parameters for SAP BW-specific cleanup tasks. This includes
 - temporary BW query bookmarks
 - sent BW query bookmarks
 - BW traces
 - BW statistics
- Temporary database space, which is required for the shadow system and is calculated during the execution of the roadmap step `Checks`, is too generous.
You can use the command `<SUM_directory>/abap/bin/SAPup dmpspc` to check the used space at different points of time.

4.2.4 Preprocessing

In this roadmap step, SUM creates the shadow system.

The shadow system is then used for various update activities while you can still use the original system in production operation. The SUM builds up the shadow system by cloning parts of the original system. All tables of the SAP NetWeaver Application Server are needed as shadow tables to operate the shadow system.

The shadow system is used to perform the modification adjustment of the ABAP Dictionary objects and the activation of new ABAP Dictionary objects that are part of the update. Finally, the Software Update Manager performs the shadow import and writes directly into the shadow tables.

Modifications to the contents of the original tables are indicated by triggers. These tables are copied and imported during downtime

The following actions are carried out:

- Checks for locked objects
- ABAP Workbench locking
- Running the shadow system for preparation of new release (ACT_UPG, PARDIST, SGEN)

DMO-specific actions:

- Uptime migration: Repository
- Execution of SMIGR_CREATE_DDL
- Execution of phases related to SAP Business Warehouse
- Transition to the downtime (system isolation)

Further features::

- In the phase MIG2NDDB_HANA_BW_PARAMS, provide parameters for SAP BW-specific cleanup tasks.
- Temporary database space, which is required for the shadow system and is calculated during the execution of the roadmap step Checks, is too generous.

You can use the command `<SUM directory>/abap/bin/SAPup dmpspc` to check the used space at different points of time.

i Note

If the Software Update Manager stops in phase EU_CLONE_MIG_UT_RUN, for example due to an error, note that the option `init` will not restart the whole data migration from the beginning. The Software Update Manager takes into account the status of the TSK-files in the SUM directory `migrate_ut_run` for the restart of the failed export processes.

4.2.5 Execution

In this roadmap step, the switch to the target system takes place.

The SUM completes the copy import action during downtime for all tables with set triggers. The EU_SWITCH phase completes the switch to the new system. All tables prepared in the shadow system are copied to the target system. The KX_SWITCH_1 phase switches the SAP kernel. The PARCONV_UPG phase converts the application table, and the phase TABIM_UPG imports the remaining data. Finally, the XPRAS_UPG phase starts the XPRAS required by the system.

The following **DMO-specific actions** are carried out:

- Migration of application data
- Repository & kernel switch
- Adoptions of structures to new release (phase PARCONV)
- Main import (phase TABIM)
- XPRAS

Further features:

- Migration of application data from source database to target database
- To change the number of R3load processes dynamically, use the following commands:

`cd <SUM directory>/abap/bin`

```
./SAPup set procpa gt=scroll
```

- Consistency of the migrated content is checked by the command `COUNT (*)` on each table in the source and the target database
- (Target Release SAP NW 7.31 only:) The table type in SAP HANA database (row store vs. column store) is controlled based on the file `<SUM directory>/abap/bin/ROWSTORELIST.TXT`.

i Note

As of target release SAP NetWeaver 7.4, this information is part of the ABAP dictionary.

- Time estimation for the overall process and for long-running phases is written to the file `<SUM directory>/abap/log/SAPupStat.log`

i Note

If the Software Update Manager stops in phase `EU_CLONE_MIG_DT_RUN`, for example due to an error, note that the option `init` will not restart the whole data migration from the beginning. The Software Update Manager takes into account the status of the TSK-files in the SUM directory `migrate_dt_run` for the restart of the failed import processes.

4.2.6 Postprocessing

In this roadmap step, SUM saves the log files and prompts you to start certain follow-up activities.

The following actions are carried out:

- Cleanups
- Transaction `SPAU`
- Transport unlock

DMO-specific actions:

- Phases related to SAP Business Warehouse (SAP BW)
- Runtime evaluation

Further features:

- `Postprocessing` includes several SAP BW-specific phases
- Evaluation of the update and migration process is written to the file `<SUM directory>/abap/htdoc/UPGANA.XML`. To display this file in a human-readable form, store the file `UpgAnalysis.xml` in the same directory.

4.3 Special Features for DMO

4.3.1 Utilities for DMO (Extended UI)

The [Utilities](#) menu item of the menu [More](#) of the Software Update Manager offers you some DMO-related utilities.

In the upper-right corner of the SL Common UI, you find the menus [Legend](#) and [More](#). The [More](#) menu contains the item [Utilities](#), which opens a new window with an extended user interface. It offers you several options to configure or monitor the current update procedure and among others several utilities, which are only relevant if you are executing the database migration option (DMO) of the Software Update Manager.

- [DMO Migration Preparation](#)

This option offers a visualization of the migration preparation (phases EU_CLONE_*_PRP), that is, different process slots with its containing tables will be visualized using charts. In detail, you see the following charts:

- Sorted tables in descending order. You can click a column in the chart to open a popup with information about the name and the size of the table.
- Shuffled tables: Visualization of the reordered tables sequence.
- Split decision: Visualization of the distribution of tables among the different process slots.
- Table load: Visualization of the split of the tables for the table load. You see the aggregated tables sizes per process steps.

- [DMO Migration Control Center](#)

This option offers a [charts control center](#) for the following real-time monitoring of [R3load utilization during a migration procedure](#):

- Real-time Chart R3load Utilization (use of R3load processes given in percent)
- Real-time Gauges Hana System Load (CPU load, given in percent, and memory usage of SAP HANA system)
- Process buckets: An overview about the process buckets that are finished, running, or rescheduled. Form here, you can also restart process buckets that failed during the update. The SL Common UI informs you during the update procedure about failed buckets by means of the [Failed Buckets Notification Flag \[page 33\]](#). The flag disappears after you have restarted failed buckets successfully.

The option [Configuration](#) displays the resource files for the charts area. The system checks the existence of the selected default resource files and also of the custom resource files of other DMO migrations.

- [DMO Migration Post Analysis](#)

This option offers a charting tool for the visualization of the [R3load utilization after a migration procedure](#). You can select between a line chart and a bar chart.

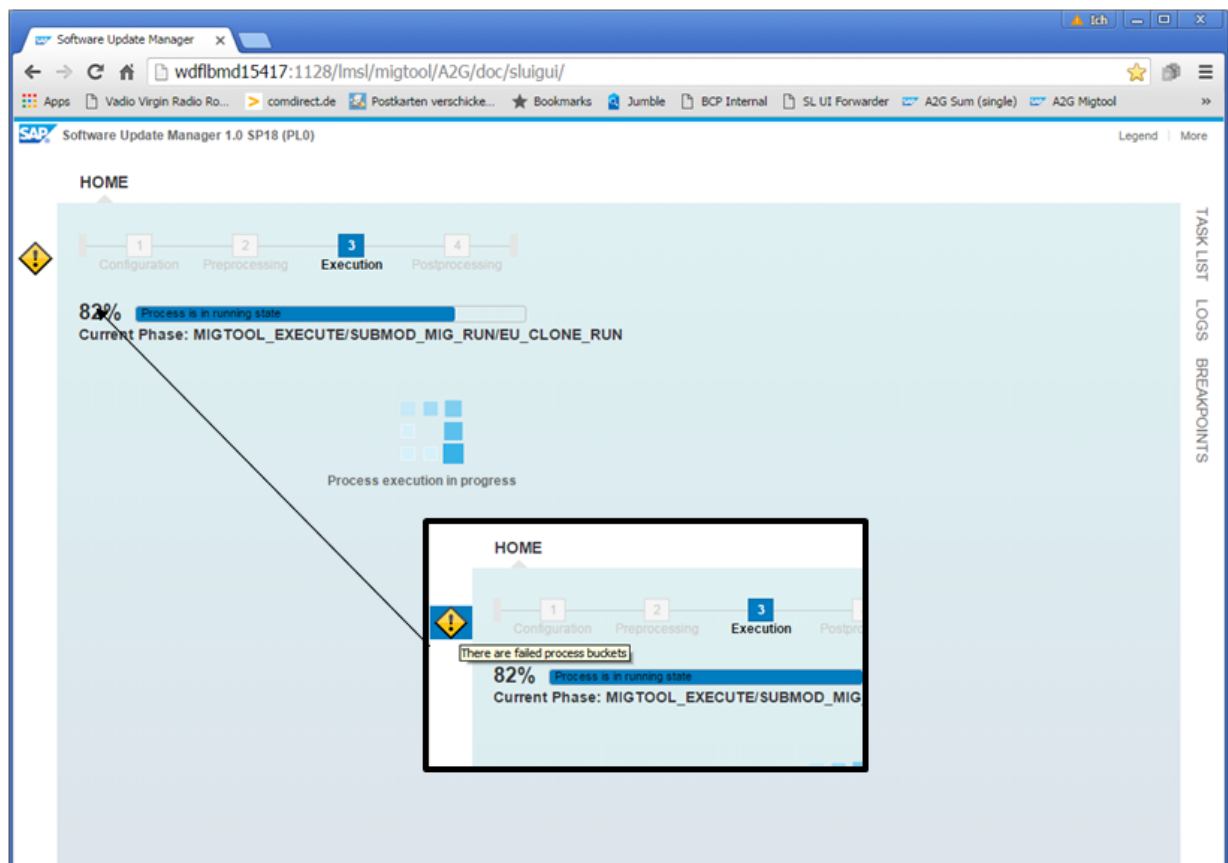
The option [Configuration](#) displays the resource files for the charts area. The system checks the existence of the selected default resource files and also of the custom resource files of other DMO migration.

i Note

Be aware that some options of the [Utilities](#) can only be used during the update procedure if the corresponding data is available in the system.

4.3.2 Failed Buckets Notification Flag

If you are executing the database migration option (DMO) of the Software Update Manager, and failed buckets occur during the DMO, warning icon appears on the SL Common UI with a tooltip "There are failed process buckets", as you can see in the following example:



If you click that icon, a new window with the *Utilities* opens as extended user interface. In this window, the *DMO Migration Control Center* is displayed directly, which allows you to monitor and maintain the buckets immediately.

For more information, see [Utilities for DMO \(Extended UI\)](#) [page 32].

4.3.3 Table Comparison

This section covers the built-in Table Comparison tool.

After the migration of tables in both the uptime and the downtime, SUM compares with the function `Table Comparison` with SUM based on calculated checksums the content of target database tables with the table contents on the source database. In a dialog in roadmap step `Extraction`, SUM offers the following options:

- *Do not compare table contents*

- *Compare the content of all tables*
- *Compare only the content of selected tables*

The last option offers the possibility to check and compare the table contents of certain tables only. If you choose this option, you are prompted afterwards to enter the location of the file that includes the table names to be checked.

➔ Recommendation

Note that the scope of the selected tables influences the runtime of the subsequent phases. That is, the more tables have to be compared, the longer are the affected phases during uptime or downtime.

To avoid in particular a long downtime, we strongly recommend comparing the content of selected tables only, such as important application tables. We also highly recommend executing the table comparison not on the productive system but on a separate system such as a test system or a copy of the productive system.

The function `Table Comparison with SUM` calculates after the migration the checksum for an entire table on both the target database and the source database and compares the values. If the values are not equal, SUM displays an error message depending on uptime or downtime

- either in the `Preprocessing` roadmap step in phase `MAIN_SHDIMP/SUBMOD_MIG_UPTIME_RUN/EU_CLONE_MIG_UT_CRC_RUN`
- or during the `Execution` roadmap step in phase `MAIN_SWITCH/SUBMOD_MIG_SWITCH/EU_CLONE_MIG_DT_CRC_RUN`

In parallel, the system generates an LST-file, which informs you about the affected tables, the possible fixing or ignoring options and their consequences during the `Repeat` phase. The location of the file is displayed in the dialog, which accompanies the error message.

In case of errors, SUM offers you the following options:

1. Exit the program.
2. Fix the errors in the affected tables on the target database. You can fix
 - all errors
 - the severe errors only and accept the non-severe errors

Afterwards, you repeat the phase so that the table comparison runs again and the phase continues at the point it stopped.

3. Fix the errors in the affected tables on the source database. Afterwards, you initialize the phase to restart it from the beginning. The tables will be migrated and checked again.

⚠ Caution

- The function `Table Comparison with SUM` is only available for update and migrations procedures with Unicode SAP systems.
- This function is only intended for SAP tables that belong to the ABAP dictionary. Other tables such as system catalog or database schema tables will not be processed.
- This migration tool mode is similar to the stand-alone migration tool `Table Comparison`, which is described in section [Table Comparison \[page 44\]](#). However, while this function can be part of the update and migration procedure dependent on your decision in roadmap step `Extraction`, the stand-alone migration tool `Table Comparison` is designed for other tools such as the `System Copy` procedure.

4.3.4 Using the Migration Repetition Option for Testing

The option *Migration Repetition* allows the repetition of the downtime migration for testing purposes.

Context

To optimize the SUM with DMO procedure, it is necessary to manually adapt some parameters such as the number of `R3load` processes to the performance of the application server, and to repeat the migration afterwards. However, the [Reset Option \[page 26\]](#) only allows the reset of the complete procedure. This means that all check and preprocessing phases will have to be passed again during the next run.

The option to jump back to the beginning of the downtime migration offers a fast test cycle by repeating the downtime migration phase only. This way, the repeated migration will start from the beginning with the number of `R3loads` you detected as optimum. In addition, SUM will consider the table duration files from the previous run for the table split calculation automatically (see for more information: [Performance Optimization with Migration Duration Files \[page 9\]](#)).

Caution

Use this option for test migrations only and not for any productive run, since the procedure will stop during the downtime.

You deal with the *Migration Repetition* option in the following dialogs during the run:

Procedure

1. Dialog *Database Migration Option* (phase `MIG2NDDB_INI`)

During the roadmap step [Extraction \[page 27\]](#), you select in this dialog the option *Enable Migration Repetition Option*. As a result, SUM stops after the downtime migration phase and displays an additional dialog that allows you to repeat the downtime migration (see step 3).

2. Dialog *Preparations for Downtime* (phase `DOWNCONF_DTTRANS`)

If you have enabled the *Migration Repetition* option, this dialog displays an additional warning that the SUM will stop after the downtime migration phase and allows you to repeat the phase. Be aware that you must not use this option for a productive run.

Note

if you want to disable the option now, set the following parameter in the file `SUM\abap\bin\SAPup_add.par`:

`/migrate_option/OPTIMIZECLONING = 0`

The file `SAPup_add.par` is located in the subdirectory `bin` of the SUM directory. If this file does not exist yet, create it manually.

3. Dialog *Test cycle* (after phase EU_CLONE_MIG_DT_RUN)

If the *Migration Repetition* option is still enabled, SUM displays the dialog *Test cycle* after the downtime migration phase in which you are asked if you want to repeat the phase.

Select *Yes*, if you want to initialize the downtime migration again and repeat it. As long as the *Migration Repetition* option is enabled, this dialog is shown after the downtime migration again and offers the possibility of another test cycle, if desired.

Select *No*, if you want that the DMO run continues without any additional dialogs or steps related to the test cycle.

4.3.5 Landscape Reorganization for SAP HANA Scale out

This section deals with the automated Landscape Reorganization feature for the SAP HANA scale out scenario that is available as of Software Update Manager version 1.0 SP10.

The scale out scenario means the deployment of multiple server nodes in case memory requirements exceed the available memory of a single server node after the migration to SAP HANA database. For this, several phases are carried out during the SUM with DMO run:

- REQ_LANDSCAPE_REORG
In this phase, SUM prompts you in a dialogue to import an SQL-file from SAP Note [1958346](#) into the database.
- REQ_LANDSCAPE_REORG_2
In this phase, SUM prompts you in a dialogue to import an SQL-file from one of the following notes into the database according to your product:
 - BW on SAP HANA: SAP Note [1908075](#)
 - Suite on HANA: SAP Note [1899817](#)

The following phases run automatically:

- HDB_CHK_LANDSCAPE_REORG_PRE
In this phase, SUM checks whether the prerequisites for the landscape reorganization are met.
- HDB_LANDSCAPE_REORG
In this phase, the landscape reorganization is performed.
- HDB_CHK_LANDSCAPE_REORG_POST
In this phase, SUM checks whether the landscape reorganization has been performed correctly.

4.3.6 Table Partitioning when Start Release is SAP R/3

If the start release of your SAP system is SAP R/3 4.6 C, take into account that no automatic partitioning of large tables is provided for DMO.

Context

Since the SAP HANA database has a limit of 2 billion entries per table, it may occur that the migration for a larger table fails. This is especially relevant for cluster tables. In this case, partition the table manually using SAP HANA studio and repeat the update and migration procedure for the relevant bucket. Note that you have to guess the number of partitions. We recommend to create one partition for each 1 billion entries.

Below you find the procedure to create a partition in SAP HANA studio with an example for table T100:

Procedure

1. Delete the complete table content using the following command:

```
TRUNCATE TABLE "<table name>"
```

Example

```
TRUNCATE TABLE "T100"
```

2. Determine the primary key fields with the following commands:

```
select column_name
from index_columns
where table_name = '<table name>' and constraint = 'PRIMARY KEY'
order by position
```

Example

```
select column_name
from index_columns
where table_name = 'T100' and constraint = 'PRIMARY KEY'
order by position
```

Example of a result list:

SPRSL

ARBGB

MSGNR

3. Partition the table with the following command:

```
ALTER TABLE "<table name>" PARTITION BY HASH(<fieldlist>) PARTITIONS  
<num_partitions>
```

Example

Assuming that table T100 has 5 billion entries. The recommendation is to create 5 partitions. The primary key fields will be taken as partitioning fields:

```
ALTER TABLE "T100" PARTITION BY HASH("SPRSL","ARBGB","MSGNR") PARTITIONS 5
```

Note

The commands `TRUNCATE` and `ALTER`, table and field names shall be tagged by double quotes as shown above, because the names may include special characters like "/" (slash).

4.3.7 Targeting SAP HANA Multitenant Database Containers

You can also choose as target database a SAP HANA system that supports SAP HANA multitenant database containers (SAP HANA MDC).

Context

If you target to a SAP HANA database with SAP HANA MDC option, the Software Update Manager offers a special sequence of dialogues to prepare the migration to that SAP HANA system.

Procedure

1. Enter the target Hostname of a SAP HANA database that supports SAP HANA MDC.

In the dialog *Database Migration Initialization*, you enter in the field *Target Hostname* a SAP HANA database that supports SAP HANA MDC. Furthermore, you enter here the system-ID, the instance number, and the database schema of the target database.

2. Decide for the automatic creation of the tenant.

If the given system-ID of the target database does not exist, the dialog *MultiDB Tenant Creation* appears. You have now the option to choose *Create Tenant* with the result that the tenant will be created automatically during the migration.

The second option *Do not create tenant* brings you back to the dialog *Database Migration Initialization*.

3. Enter the password for the SAP HANA MDC superuser `SYSTEMDB`

To enable the creation of the tenant, it is necessary to authenticate with the password for the SAP HANA MDC superuser `SYSTEMDB`.

-
4. Enter the new password for the tenant database user `SYSTEM` and confirm it.
 5. Continue with the update and migration procedure.

5 Follow-Up Activities


This part of the document contains information about the follow-up activities that you need to perform after the you have updated your SAP system.

5.1 Postprocessing Unicode Conversion

If you have converted an existing SAP NetWeaver non-Unicode SAP System with one standard non-Unicode system code page to a SAP NetWeaver Unicode system during the update with DMO, carry out the postprocessing steps for the unicode conversion.

Context

Caution

SAP NetWeaver 7.5 supports Unicode only. A `Combined Upgrade & Unicode Conversion (CU&UC)` for target systems based on SAP NetWeaver 7.5 or higher (such as SAP ERP 6.0 EHP 8) is not possible. In this case, make sure that the SAP NetWeaver source system already supports Unicode. See also SAP Note [2033243](#) .

Procedure

Follow the instructions in the Conversion Guide mentioned in section [Unicode \[page 11\]](#). See in this guide especially the section 4. *Unicode Conversion Completion Phase*

5.2 Configuring Domain Controller for Transport Management System

After an update, distribute the information about the new release to all systems in the transport domain.

Context

This procedure is described in the *SUM Guide* in section [6 Follow-Up Activities > Transport Management System: Distributing the Configuration](#). However, due to the database change, it is necessary to configure the domain controller before you update the configuration.

Procedure

1. Log on to the system that is configured as the domain controller.
2. Call transaction `STMS` and choose [Overview > Systems](#).
3. In the system overview, select the updated SAP System that runs on the target database and choose [SAP System > Change](#) or double-click the system ID. The dialog for *Transport Management System (TMS) configuration* appears.
4. Choose the tab *Transport Tool*, replace the current parameters `DBHOST` and `DBTYPE` with the parameters of your target database and save your changes.
5. Go back to the system overview.
6. Select the system again and choose [SAP System > Update Configuration](#). A message box is displayed first, in which you select *Yes* to confirm.
7. Choose [Extras > Distribute and Activate Configuration](#). A message box is displayed first, in which you select the option that is suitable for your requirements.

5.3 BW: Using the Application-Specific Upgrade Toolbox

After an update of an SAP BW system, consider also the application-specific upgrade toolbox (ASU Toolbox).

Context

The ASU toolbox allows you to manage the preparation and follow-up activities you need to perform for the technical update. For more information, see the *Upgrade and Update Guide: SAP NetWeaver <Release> ABAP* (mentioned in section [Further Documentation \[page 5\]](#), and see SAP Note [1000009](#) as well.

Procedure

Execute the ASU Toolbox after the update using transaction `/ASU/START` and select the appropriate ASU content definition.

6 Migration Tools

The Software Update Manager (SUM) offers stand-alone options besides the standard update and migration procedure. These options are bundled as migration tools and run in the `migtool` mode of the SUM. These migration tools can be started within the SUM as described below in the next section before you start the actual update and migration procedure.

6.1 Starting the Migration Tool Dialog

Before you start the actual update and migration procedure, you can use the migration tools by starting the dialog provided for this purpose.

Context

You start the dialog with a special address. In the dialog *Migration Tool*, you decide the operation mode for the migration tools. The following modes are available:

- [Table Comparison \[page 44\]](#)
- [Benchmark Migration \[page 44\]](#)

Procedure

1. To start the `migtool` mode of SUM, open a browser window and enter the following internet address in the address bar:

`http://<hostname>:1128/lmsl/migtool/<SID>/doc/sluigui`

i Note

- Replace `<SID>` with the system-ID
- 1129 is the https-port of the SAP Host Agent
- If the secure socket layer is not configured, use `http` instead of `https`:

`http://<hostname>:1128/lmsl/migtool/<SID>/doc/sluigui`

2. A dialogue box appears, in which you enter as user name the `<sid>adm` and the password. Afterwards, the dialog *Migration Tool* appears.

6.2 Table Comparison

Table Comparison offers you the possibility to compare export and import table checksums for your database.

This migration tool mode is similar to the built-in function that is described in [Table Comparison \[page 33\]](#). However, while this function can be part of the update and migration procedure dependent on your decision in roadmap step `Extraction`, the stand-alone migration tool `Table Comparison` is designed for other tools such as the `System Copy` procedure.

For more information, see the section ► [9 Additional Information](#) ► [Table Comparison with Software Update Manager](#) of the *System Copy guide* for ABAP technology, which is mentioned in [Further Documentation \[page 5\]](#).

6.3 Benchmark Migration

Benchmark Migration offers you the possibility to simulate certain processes or only a part of it with the objective of estimating their speed.

A database migration consists of two processes:

- The export of data from the source system
- The import of data into the target system

The Software Update Manager offers a benchmarking of these two processes with the migration tool mode `Benchmark Migration`. You can simulate the export and import processes or the export process only to estimate their speed.

Prerequisites

- You use a SAP system based on AS ABAP
- You have the latest SAP Host Agent installed and configured
- Your target database is available to ensure a complete procedure
- You have prepared the download directory with the kernel files for the target system
- If you want to combine a Unicode Conversion with DMO and use the Benchmarking Migration tool: Carry out all preparatory activities for the Unicode Conversion before you start the tool. See also: [Preparing Unicode Conversion \[page 15\]](#).

6.3.1 Benchmarking the Migration: Export

This section covers the benchmarking of the export of data from the source system.

Context

To carry out the benchmarking, SUM displays a sequence of dialogues, which you have to maintain.

Procedure

1. **Dialog *Migration Parameters*:** Select if the migration benchmark shall relate to all tables, that is, to the whole database, or to selected tables only.
 - If you choose *Operate on all tables*, you can specify additionally whether the benchmarking shall be performed for the whole database or on a sampling basis. Enter for this a value from 1 to 100 in percentage, where 100% means the whole database.
If you enter a lower value, the system determines internally the size of all tables, sorts them according to the size, and selects the tables based on a sequence until the given size of the database is reached. In addition you specify in percentage the maximum size of the largest table in the sample based on the database size.

Example

Assuming that the source database has a size of 1 TB and you want to export 10%. This means that 102.4 GB of the database will be the sample. However, the number of tables depends on their size. If for example the database contains among others one table with 102 GB, the sample would contain only this table.

Therefore you specify the size of the largest table in the sample based on the size of the database. For example, 1% percent as maximum size means 1% of 1 TB database size. Hence, the largest table in the sample must not be bigger than 10.24 GB. In this case, the minimum number of tables in the sample is theoretically 10 tables with a size of 10.24 GB. The number increases with the number of smaller tables.

- If you choose *Operate on selected tables only*, enter the name and the path of the txt-file that includes the table names. The txt-file contains each table in one line.
 - Select the option *Target database declustered*, if you already know that the database will be declustered during the actual update and migration procedure, for example if you plan to update to SAP Kernel 7.40 or higher. This option allows you to receive the best possible simulation result.
2. **Dialog *Download Directory*:** Specify the download directory that contains the required kernel files and the R3load for the source database.
 3. **Dialog *Parallel Processes Configuration*:** Configure the number of parallel SQL and R3load processes.

Note

For the benchmarking, *Uptime* means the Preparation roadmap steps, in which the tables for the export are determined, and *Downtime* means the Execution roadmap step, in which the table content is exported.

4. **Dialog *Continue with (...)***: Check the Checks log files whether further manual steps have to be carried out. Afterwards you continue with the Preprocessing roadmap step.
5. **Dialog *Required System Passwords***: Database-specific password. Provide the password of the user `System` of the source database.
6. **Dialog *Continue with (...)***: Check the Checks log files whether further manual steps have to be carried out. Afterwards you continue with Execution roadmap step.
7. **Dialog *Benchmarking completed***: Analyze the log file `EUMIGRATERUN.LOG` for benchmarking results.

Check in the log file the section with the migration speeds. It starts with the entry *Bucket evaluation*. After the analysis, close the log file and continue the procedure to start the cleanup.

8. Fill in the evaluation form that SUM displays after the update and migration procedure is finished.
9. Reset the procedure at the end, so that the SUM directory will be reset.

6.3.2 Benchmarking the Migration: Export and Import

This section covers the benchmarking of the export of data from the source system and the import of data into the target system as well.

Context

To carry out the benchmarking, SUM displays a sequence of dialogues, which you have to maintain.

Procedure

1. **Dialog *Migration Tool***: If you choose the benchmarking mode for import and export, specify additionally the database type of the target database first.
2. **Dialog *Migration Parameters***: See the description in section [Benchmarking the Migration: Export \[page 45\]](#). In addition, provide in this dialog for the export mode as well as the import mode the migration key for the data import.

Caution

If the kernel version of your target system is 7.40 or higher, and in your source system is only an old license installed instead of a new digitally signed license, set the installation number manually to *INITIAL* before you start the migration benchmarking. Otherwise, the provided migration key will not be accepted by the

R3load during the export. The R3load stops the procedure and writes an error message to a log file, such as *Pipe broken*.

To set the installation number to *INITIAL*, add the following line to the file `SAPup_add.par`:

```
installation_number=INITIAL
```

The file `SAPup_add.par` is located in the directory `<SUM directory>/abap/bin/`. If it does not exist yet, create it manually.

3. **Dialog *Download Directory*:** Specify the download directory that contains the required kernel files and the R3load for the source database.
4. **Dialog *Target Database Client*:** Specify the installation path to the database client. If the client is not yet installed, you specify the future path after the installation. In this case, you also have to specify the installation files in a subsequent dialog.
5. **Dialog *Database Migration Initialization*:** Specify the parameters for the initialization of database migration: target hostname, SID of target database, target instance number, and target database schema.

Note

- The SUM displays in the dialog the SID of your source database. If the SID of the target database is different, adapt the SID accordingly.
- If your target database can only be reached via IP name and not via host name (for example for a cloned system), edit the `etc/hosts` file because the `hdbslib` used for the connection resolves and uses the host name.

6. **Dialogs for *Required Migration Specific Passwords*:** Provide the migration-specific passwords for different users on the target database, such as:

Example

- User `SYSTEM`
- User `DBACOCKPIT` (only if it does not yet exist on the target database and SUM has to create it)
- User `SAP<SID>` (Note: SUM will create it on the target database)

7. **Dialog *Continue with (...)*:** You check the `Checks` log files whether further manual steps have to be carried out. Afterwards you continue with `Preprocessing` roadmap step.
8. **Dialog *Required System Passwords*:** Database-specific password. Provide the password of the user `System` on the source database.
9. **Dialog *Continue with (...)*:** You check the `Checks` log files whether further manual steps have to be carried out. Afterwards you continue with `Execution` roadmap step.
10. **Dialog *Continue with (...)*:** You check the `Checks` log files whether further manual steps have to be carried out. Afterwards you continue with `Postprocessing` roadmap step.
11. **Dialog *Benchmarking completed*:** After the analysis of the log files, continue the procedure to start the cleanup.

Check in the log file the section with the migration speeds. It starts with the entry *Bucket evaluation*. After the analysis, close the log file and continue the procedure to start the cleanup.

12. Fill in the evaluation form that SUM displays after the update and migration procedure is finished.
13. Reset the procedure at the end, so that the data will be discarded.

7 Troubleshooting

This part of the document contains additional information about how to proceed when you want to correct known problems that have occurred during the update.

Table 7: Known problems and issues

Symptom	Solution
You run a dialogue instance installation after a DMO, and the database SID is shown incorrectly in the dialogue.	Set the parameter <code>j2ee/dbname = <YOUR_HDB_SID></code> in the default profile and start the installation again.
The SAP HANA database client installation on HP-UX or other UNIX-based operating systems except for Linux fails with an error.	See SAP Note 1929357 for more information and for instructions to solve the issue.
RFC connection errors occur during the <code>Postprocessing</code> roadmap step.	If RFC connection errors occur, check the connection information for <code>DBACOCKPIT</code> to the target database after the downtime processing of SUM and during <code>Postprocessing</code> roadmap step. If the user is locked, choose Activate user now and Reset connect attempts .
The system does not accept the password of user <code>SYSTEM</code> in phase <code>DBQUERY_PRE</code> .	Move the 720 database administration tools to the subdirectory <code>/abap/exe</code> of your SUM directory.
Error in the <code>Postprocessing</code> roadmap step in phase <code>RUN_PSA_VERSION_CREATE</code> .	Check with transaction <code>SECSTORE</code> your system for any inconsistent entries. Repair the connection to the SAP BW client following SAP Note 816861 after you have applied the new license.
Some secondary indexes, which are to be created on selected databases only, can be inconsistent after the migration. These inconsistencies are found in phase <code>RUN_RSDB02CK_END</code> and reported in the log file.	To fix the inconsistencies, use transaction <code>SE14</code> or <code>SE11</code> and repeat the phase after the correction.
The creation of a logical index for the master data terminates after the migration to the SAP HANA database. The error messages issued during the execution of the query are for example: <i>table config error; column store error: fail to create scenario/ Index does not exist</i>	See SAP Note 1695112 for further information and for a solution.

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