

# Heterogeneous ABAP System Copy – Technical Overview

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# Goal of this presentation

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Even if heterogeneous system copies must only be performed by certified system support consultants or certified SAP Technical Consultants, the intention of this presentation is to provide a technical overview for all involved in **heterogeneous copy/migration projects of ABAP systems**

- Standard process flow (not all variations are covered)
- Involved tools
- Most important files that were created

**This presentation is not intended to replace any training on OS and DB migration, such as *TADM70 SAP System: Operating System and Database Migration***

# Agenda

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## Overview of System Copy of SAP Systems

## Technical Overview of Heterogeneous ABAP System Copy

- Standard process Flow
- Involved Tools
- Created Files

## Further Information



# SAP System Copy

Overview



# SAP System Copy

## Introduction

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### **If you want to duplicate an SAP system, you perform a system copy**

- Certain SAP parameters may change when a system is copied
- As part of system copy, all instances are newly installed, but database is set up using a copy of source system database

### **A system copy can be either homogeneous or heterogeneous:**

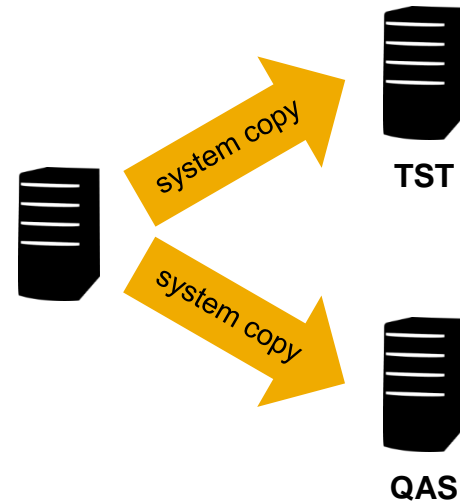
- *Homogenous System Copy*
  - Both operating system and database system stay the same
  - Performed in most cases with database-specific procedure (database-independent procedure could optionally also be used)
- *Heterogeneous System Copy*
  - One of the following is changed during the system copy:
    - Operating system (in this case, system copy is called *OS migration*)
    - Database system (in this case, system copy is called *DB migration*)
    - Operating system and database system (in this case, system copy is called *OS/DB migration*)
  - Has to be performed with database-independent procedure (with some exceptions for certain OS migrations, where cross-platform backup-/restore is supported)

# SAP System Copy

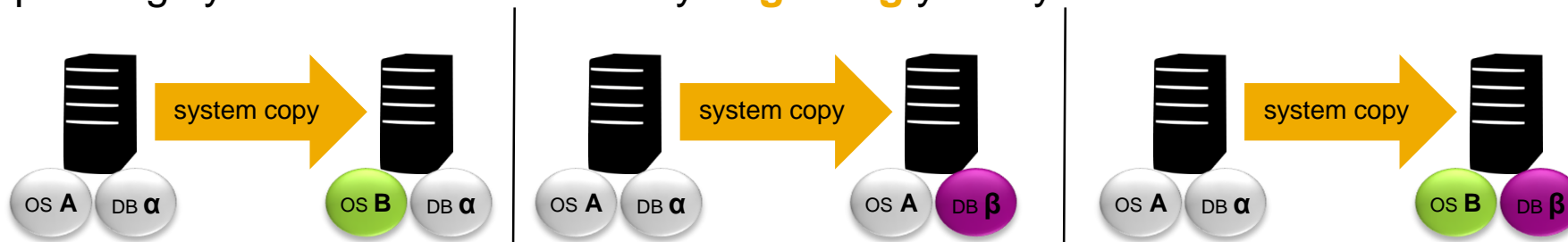
## Introduction – use cases

### System copies are elemental part of lifecycle of SAP landscapes:

- Create test, demo and training systems as **copy** of existing systems



- Change your operating system and/or database by **migrating** your system



- Perform a **Unicode conversion**

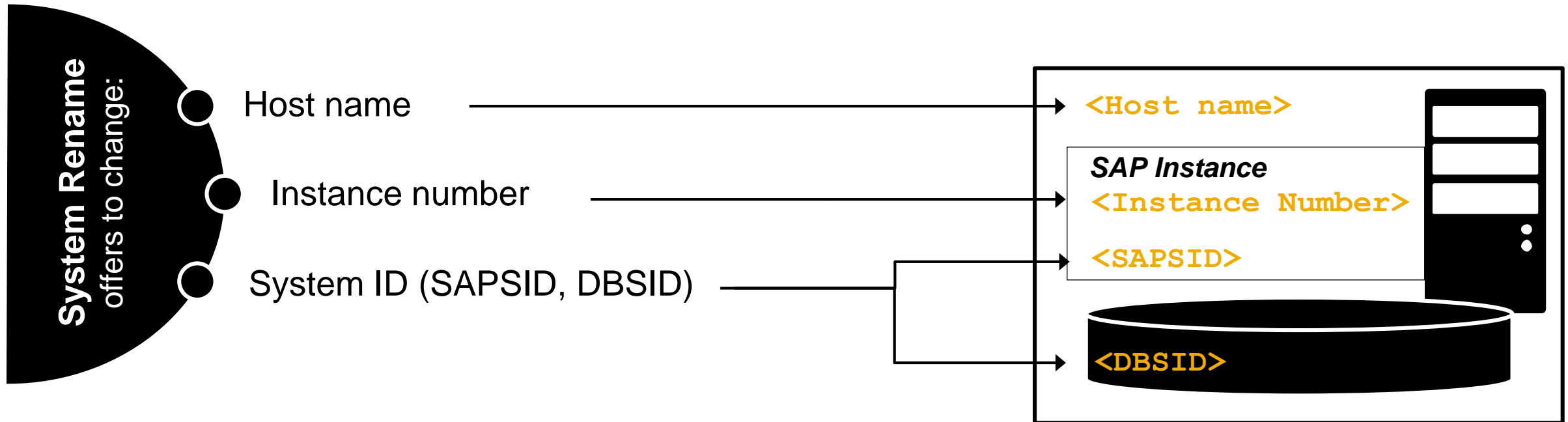
# SAP System Copy

## Introduction – use cases

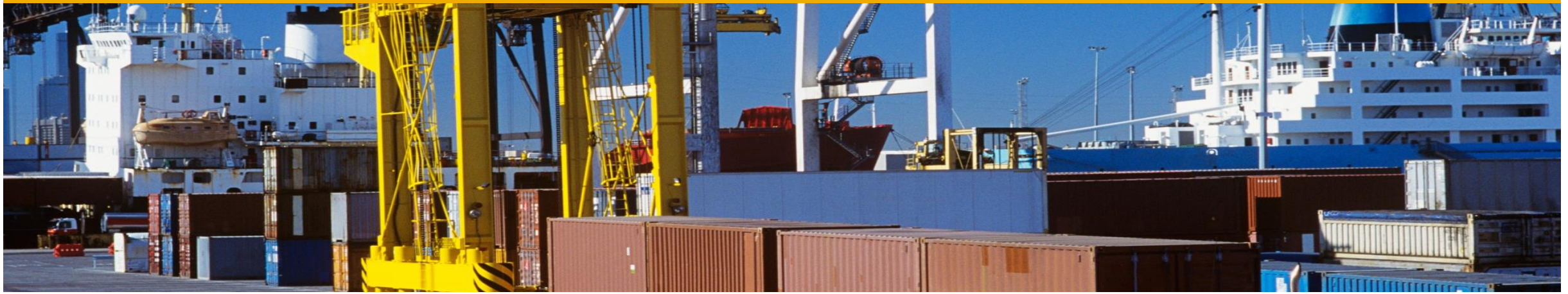
### NOTE:

If you want to change characteristics of an existing SAP system, you can now use the **system rename** procedure for many product versions instead of performing a system copy

- Changes hostname, instance number or system ID (SAP system ID or database system ID)
- No system copy required
- For more information, see the corresponding [SCN page](#) and [SAP Note 1619720](#)







# Heterogeneous ABAP System Copy

Tools involved in standard migration process (including most important created files)



# Migration of ABAP Systems

## Involved tools

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### Software Provisioning Manager

- Provides latest version of SAPinst
- *Key objective:* installs SAP systems, controls the system copy (overall orchestration of involved tools)
- Available via *Software Logistics Toolset*



### Migration Monitor (MIGMON)

- *Key objective:* control load, accelerate load by automatic parallelization
- Triggers creation of R3load task (TSK) files (generated by R3load) and generates command (CMD) files
- Part of *software provisioning manager*



### R3load

- *Key objective:* performs all load tasks in database- and platform-independent format
- Generates database export of all SAP objects that are defined in the ABAP Dictionary in database-independent format, including configuration and components in the file system
- Performs load of ABAP tables into target database
- Available via kernel of SAP application server ABAP



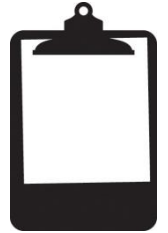
# Migration of ABAP Systems

## Involved tools

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### R3LDCTL

- *Key objective:* make information of source system database tables available for migration tools offline
- Reads ABAP Dictionary structures from source database
- Creates structure (`STR`) files that describe definition of tables, indexes and views
- Creates database-specific template (`TPL`) files that contain Data Definition Language (DDL) commands that define data structures
- Available via kernel of SAP application server ABAP



### R3SZCHK

- *Key objective:* calculate size of target database
- Calculates space requirements of ABAP tables and indexes for target database (stored in `EXT` files) and rough estimation of overall database size (`DBSIZE.XML`)
- Available via kernel of SAP application server ABAP



### R3ta Table Splitter

- *Key objective:* accelerate load by preparing parallel load (optional)
- Can generate multiple `WHERE` conditions that define work packages (stored in `WHR` files) for parallel R3load processes
- Available via kernel of SAP application server ABAP



# Migration of ABAP Systems

## Involved tools

### Package Splitter

- *Key objective:* splits default packages into smaller parts to reduce overall runtime of export + import
- Splits packages using existing structure files (`STR + EXT`)
- Default, but can be skipped for small databases
- Part of *software provisioning manager*



### MIGCHECK

- *Key objective:* make sure import was successful
- Verified that the import of all packages was at least started and that all objects (tables, views, indexes, primary keys) are successfully created/loaded in the database
- Optionally, you can perform further checks (such as using [Table Checker](#) to verify if number of exported rows is same as number of imported rows)
- Part of *software provisioning manager*

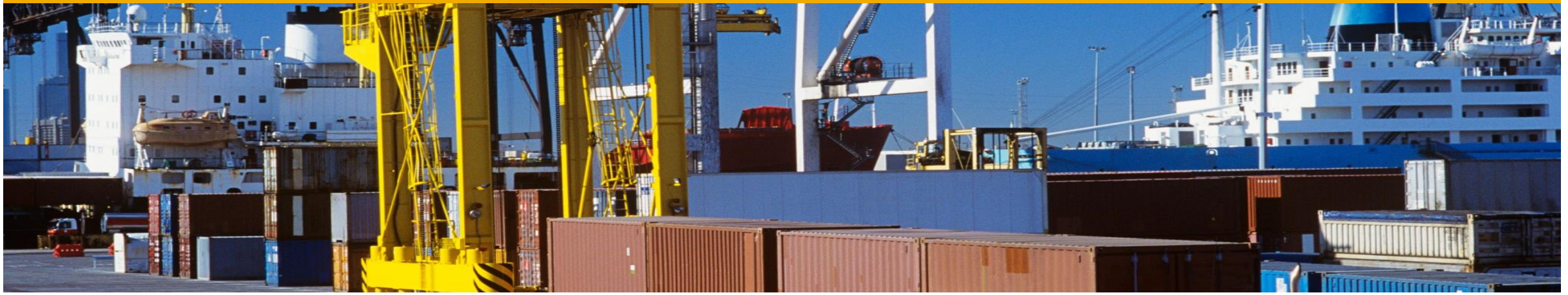


### MIGTIME (Time Analyzer)

- *Key objective:* provide statistics about run-times of load processes (calculates run-time per package)
- Part of *software provisioning manager*







# Heterogeneous ABAP System Copy

Plan & prepare

# Migration of ABAP Systems

## Plan

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### **Plan your migration process – for example:**

- Consider downtime of source system
- Perform test run of system copy
  - Calculate expected downtimes based on experience made during test run
  - Adapt general process to actual system and environment
- Plan to order and install new SAP license for target system

**For more information, see system copy documentation**

# Migration of ABAP Systems

## Prepare

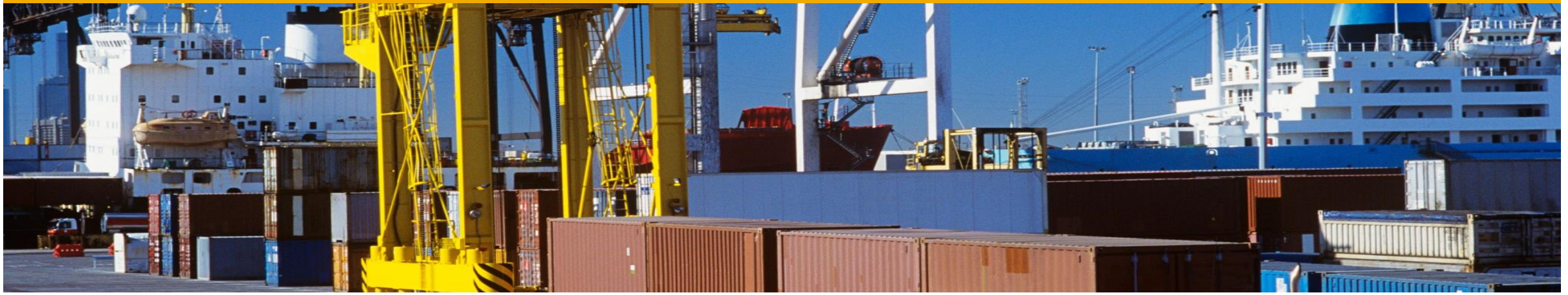
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### Prepare the migration – for example:

- Check that SAP kernel delivered with installation kit fits to SP level of source system
- Prepare source system (for example, check for canceled or pending update requests and operation mode)
- For migration to SAP HANA, check source database (for example, for tables with high data volume and to verify transformation of cluster and pool tables performed during migration will work properly)
- **Download latest tool versions:**
  - Always use latest version of **Software Provisioning Manager** in SAP Service Marketplace at: <http://service.sap.com/sltoolset>
  - Download latest update of **R3\* tools** versions from SAP Service Marketplace at: <http://support.sap.com/swdc>  
→ *Support Packages and Patches* → *A – Z Alphabetical List of Products* → *K* → *SAP KERNEL <VERSION>*  
→ *<Release>* → *<Platform>*
  - Download latest SAPCAR version from SAP Service Marketplace at: <http://support.sap.com/swdc>  
→ *Support Packages and Patches* → *A – Z Alphabetical List of Products* → *S* → *SAPCAR*
- Make installation media available (such as kernel DVD)
- Generate a [migration key](#)

**For more information, see system copy documentation**



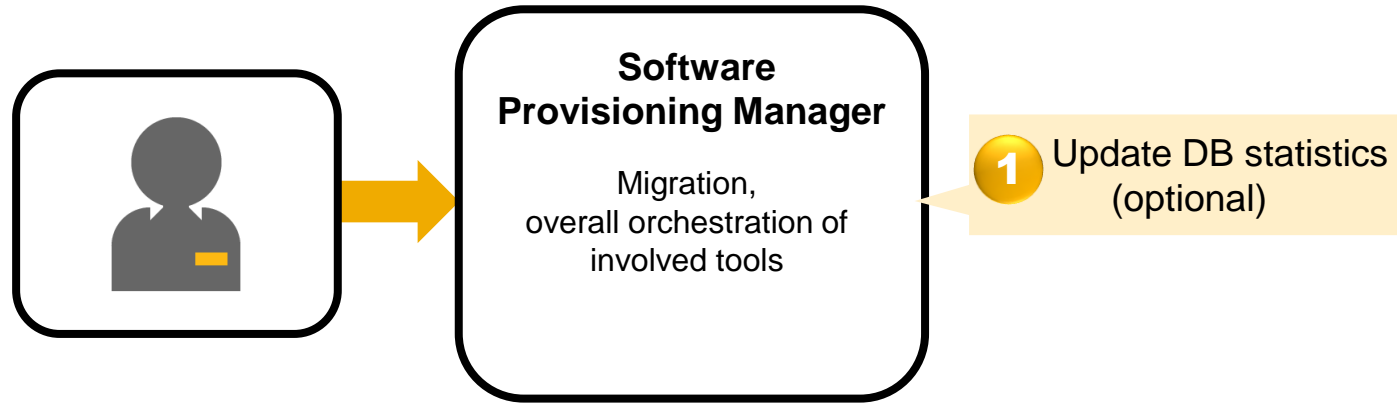


# Heterogeneous ABAP System Copy

Standard process flow of export

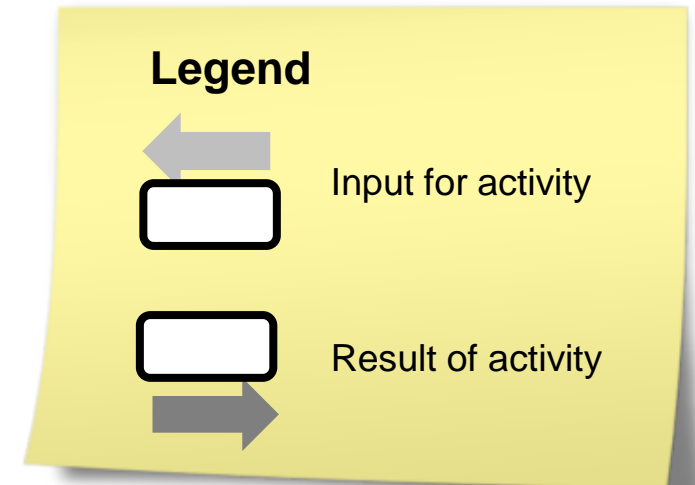
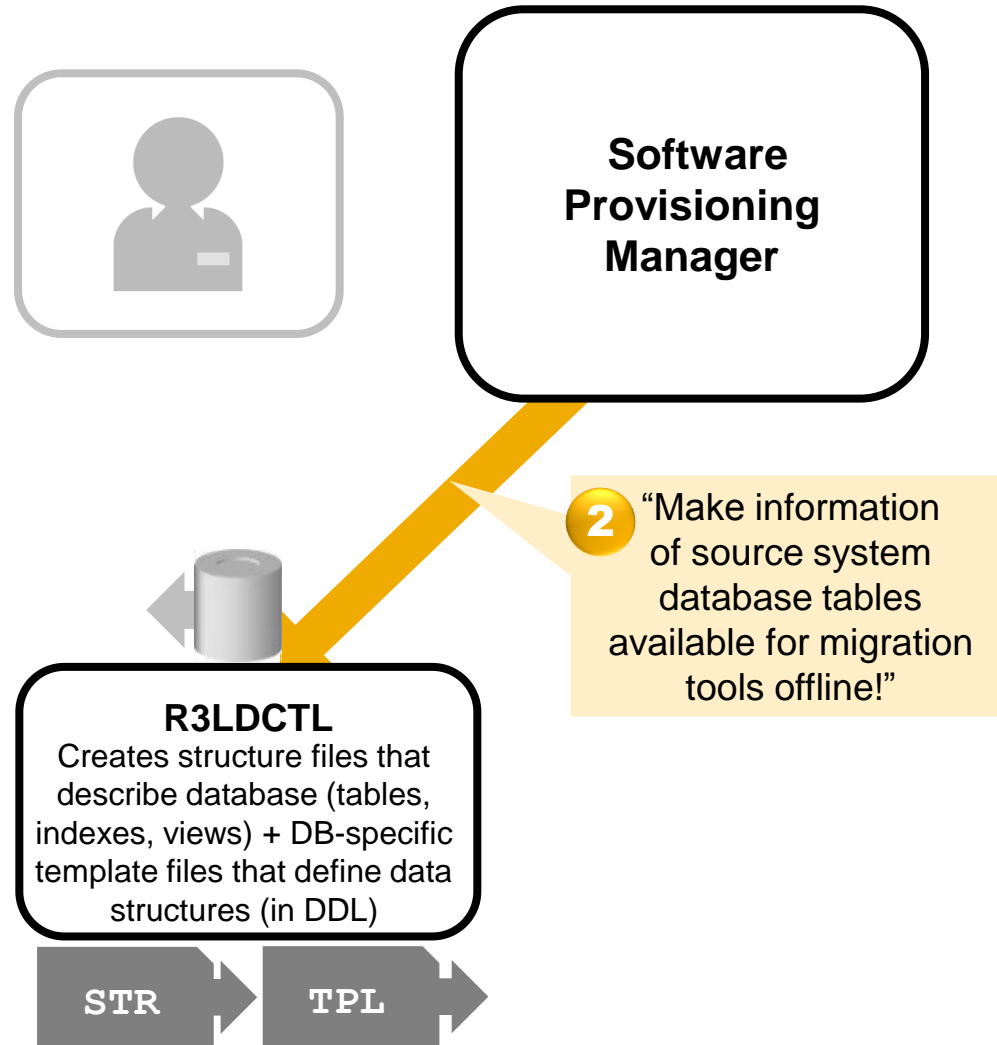
# Migration of ABAP Systems

Process flow of export



# Migration of ABAP Systems

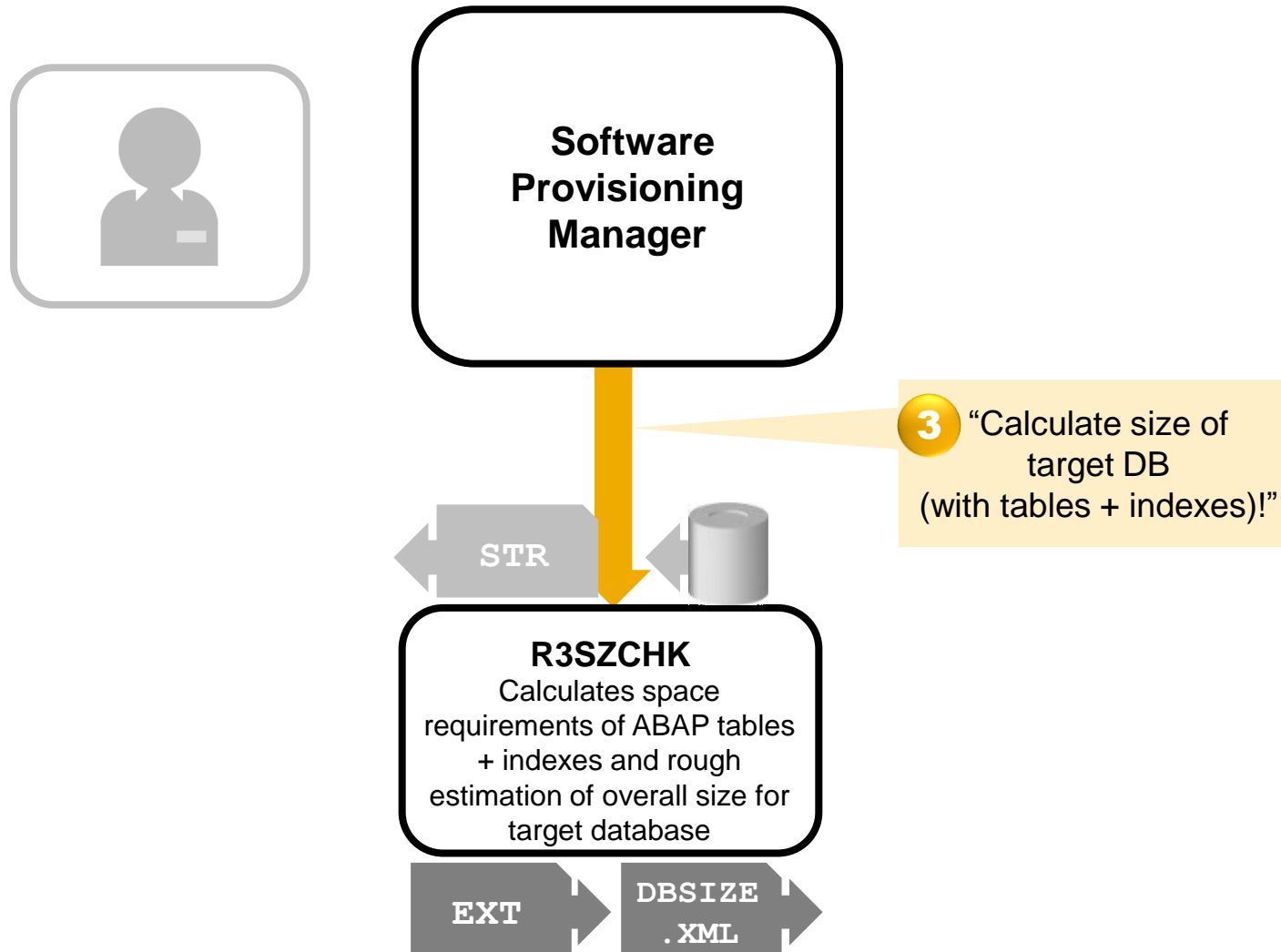
## Process flow of export





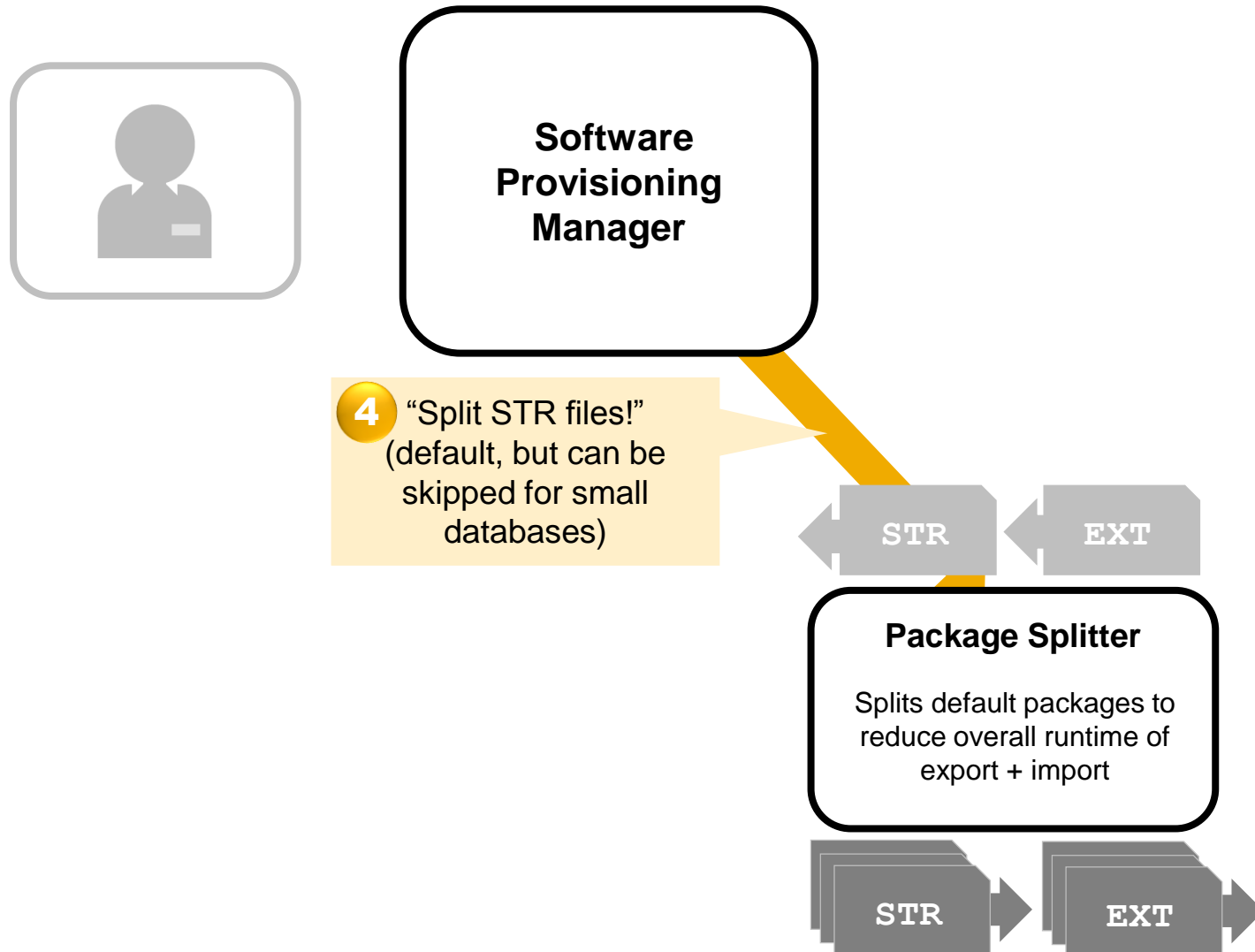
# Migration of ABAP Systems

## Process flow of export



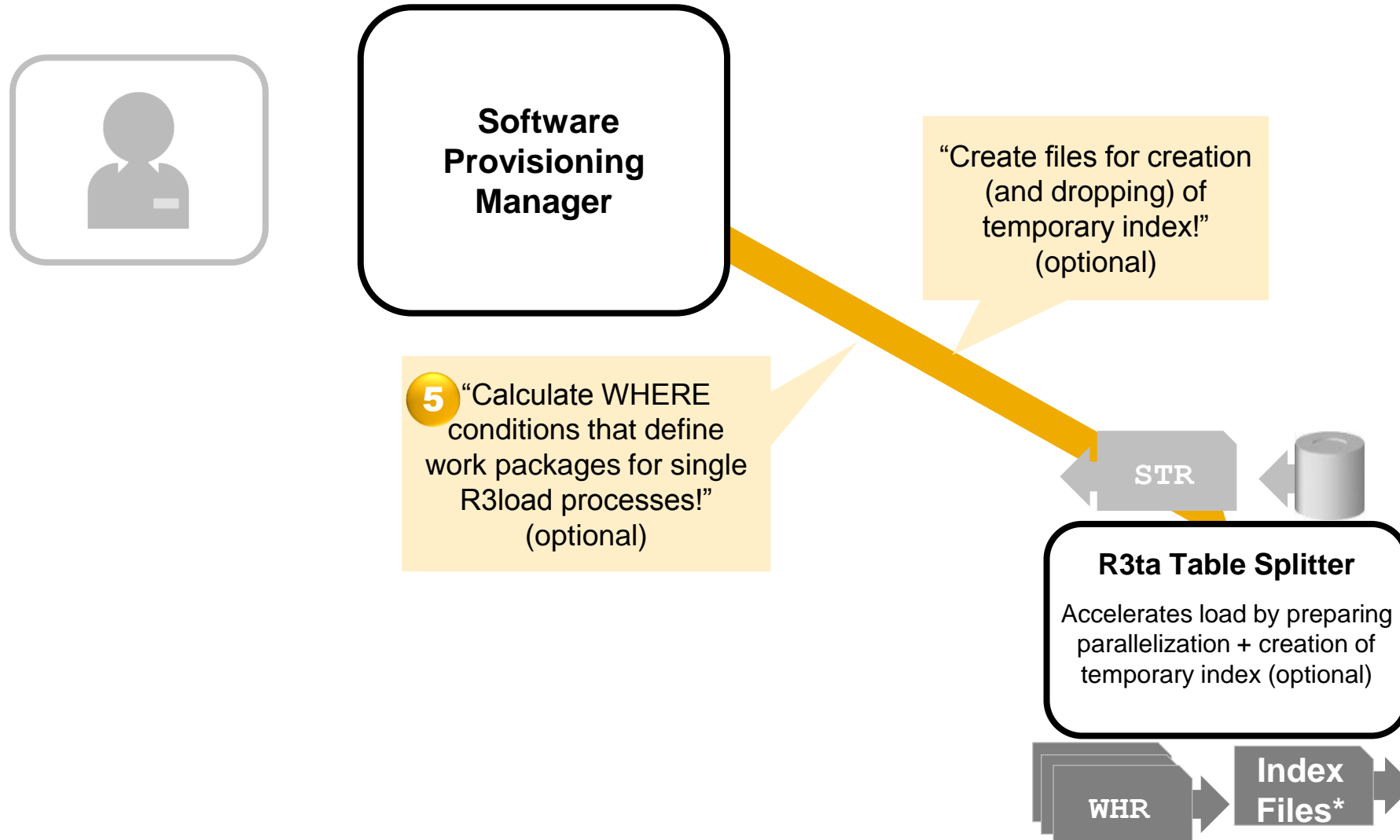
# Migration of ABAP Systems

## Process flow of export



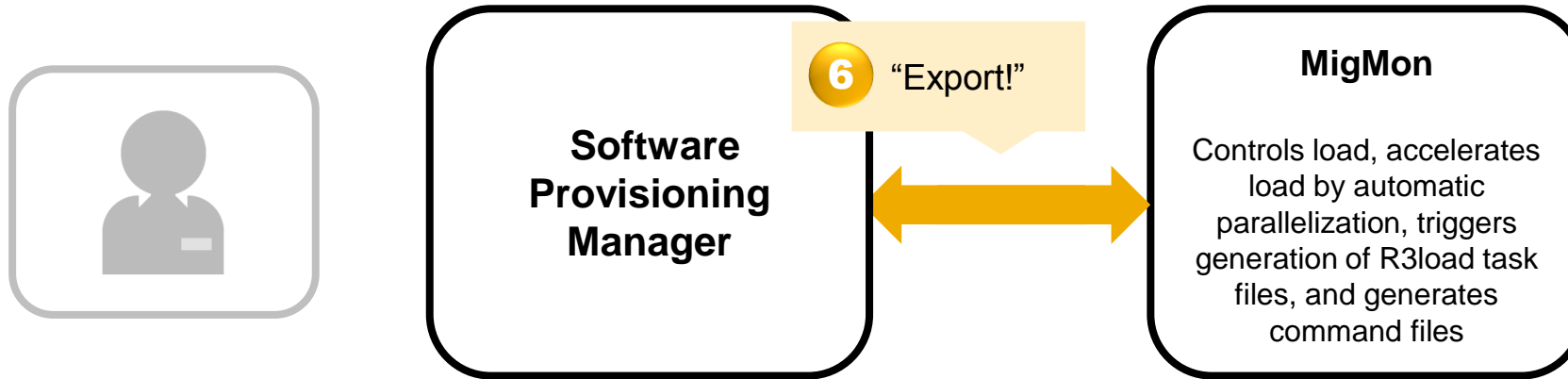
# Migration of ABAP Systems

## Process flow of export



# Migration of ABAP Systems

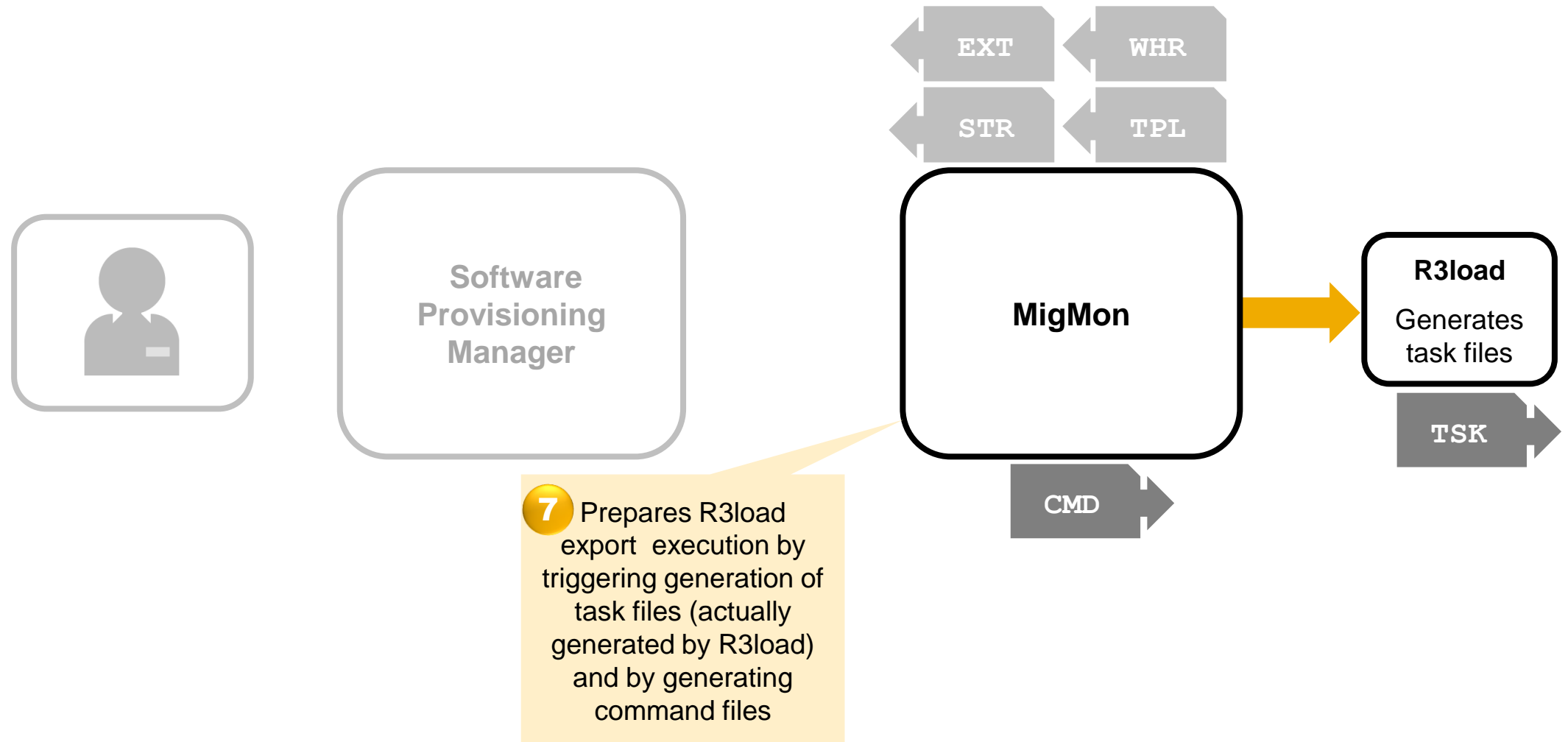
## Process flow of export





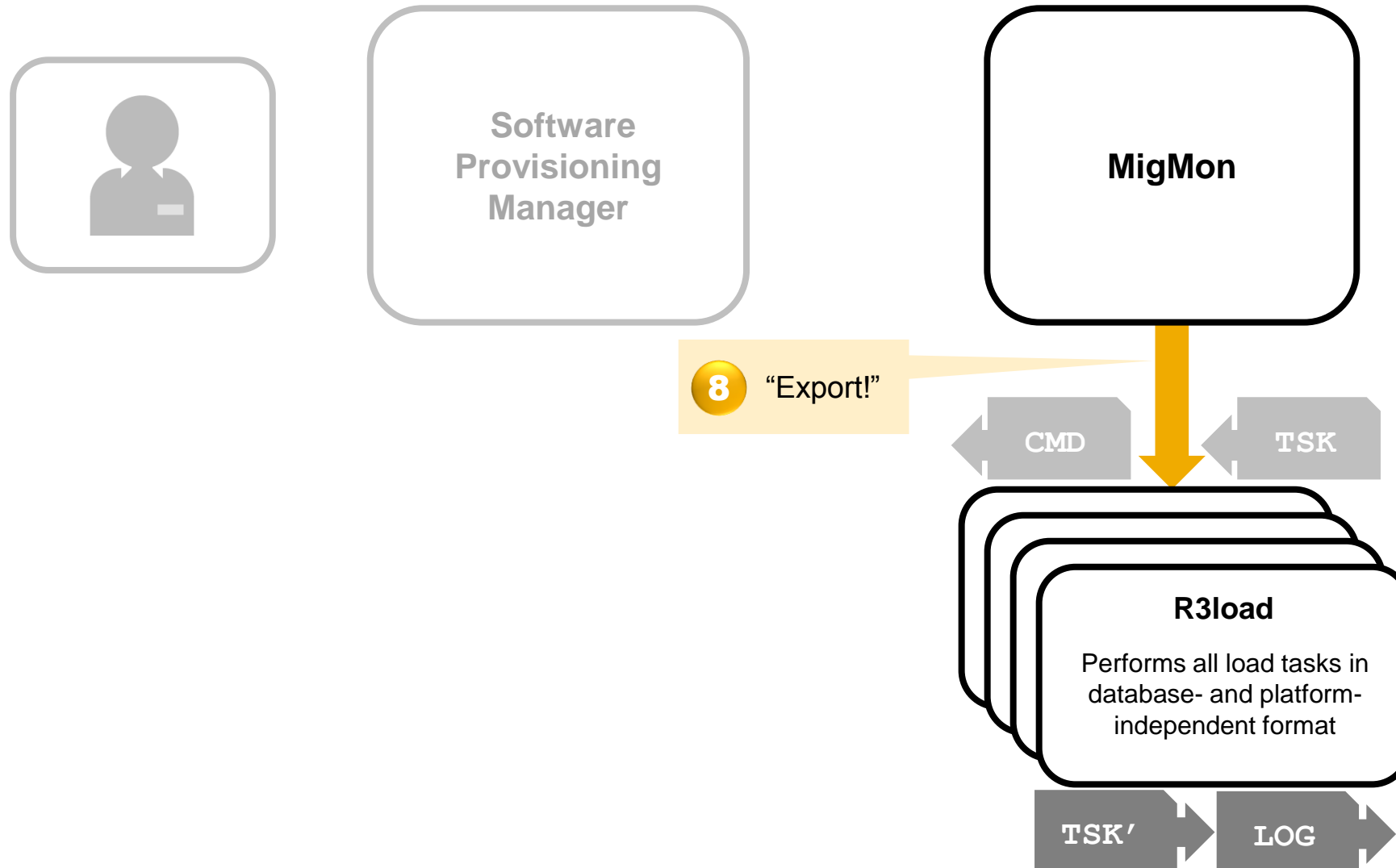
# Migration of ABAP Systems

## Process flow of export



# Migration of ABAP Systems

Process flow of export





# Heterogeneous ABAP System Copy

Standard process flow of import

# Migration of ABAP Systems

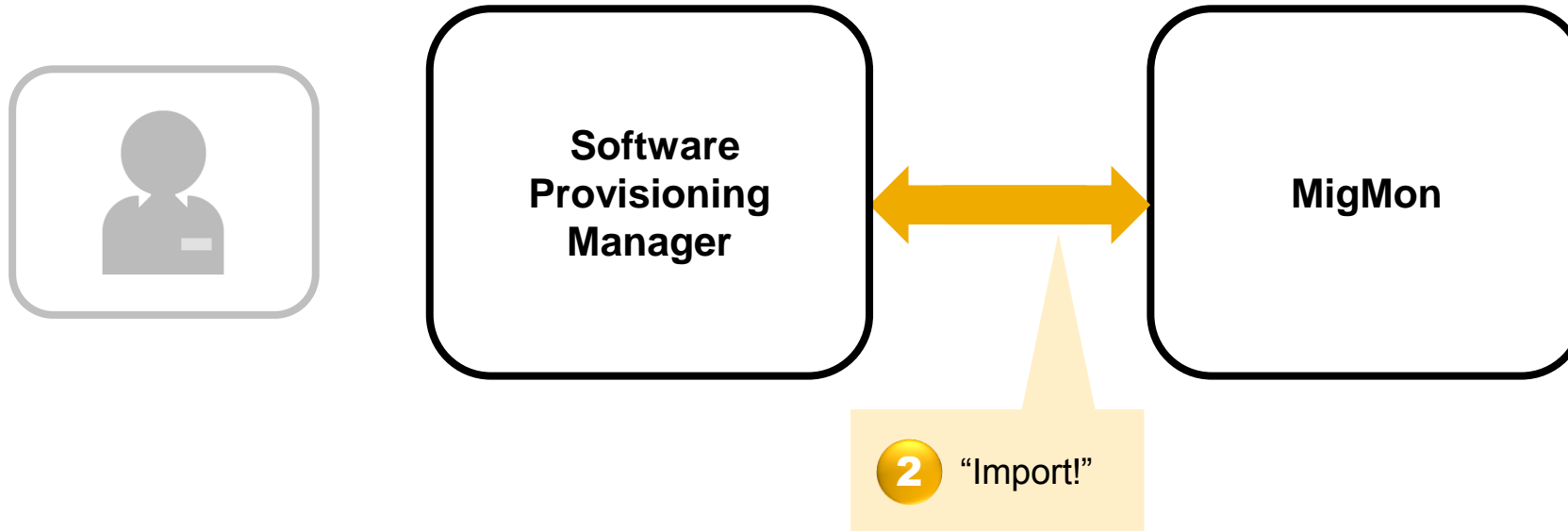
## Process flow of import





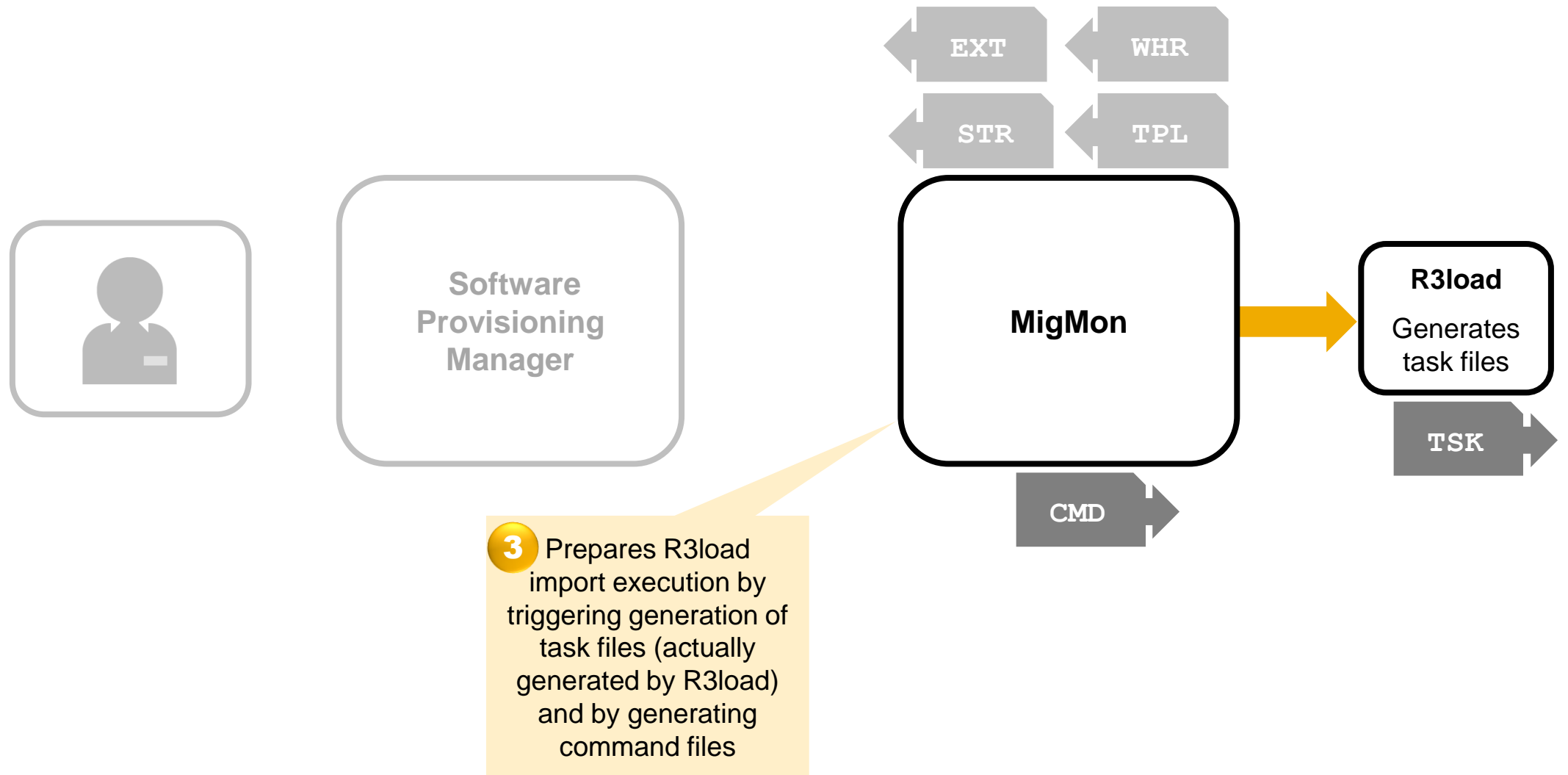
# Migration of ABAP Systems

Process flow of import



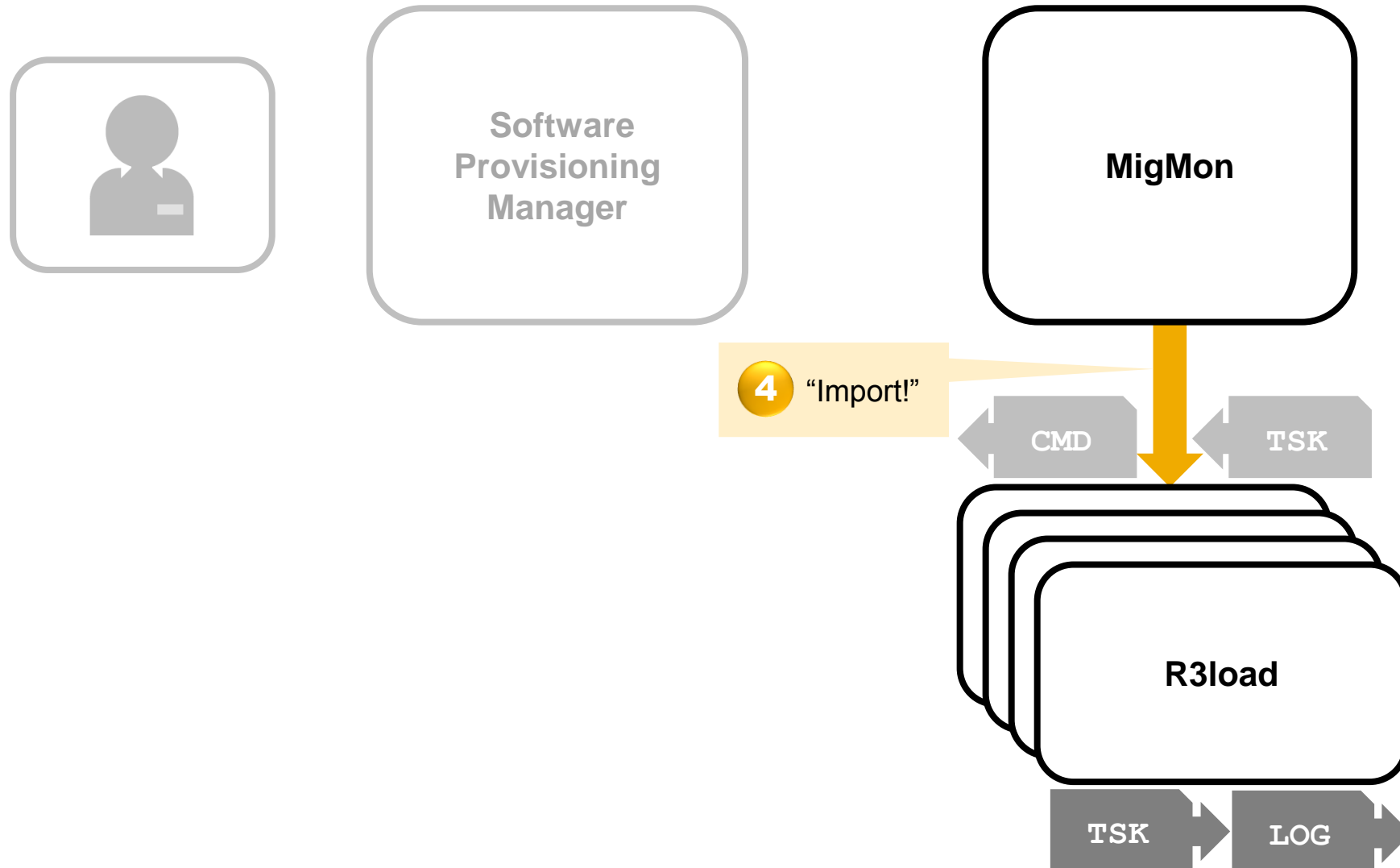
# Migration of ABAP Systems

## Process flow of import



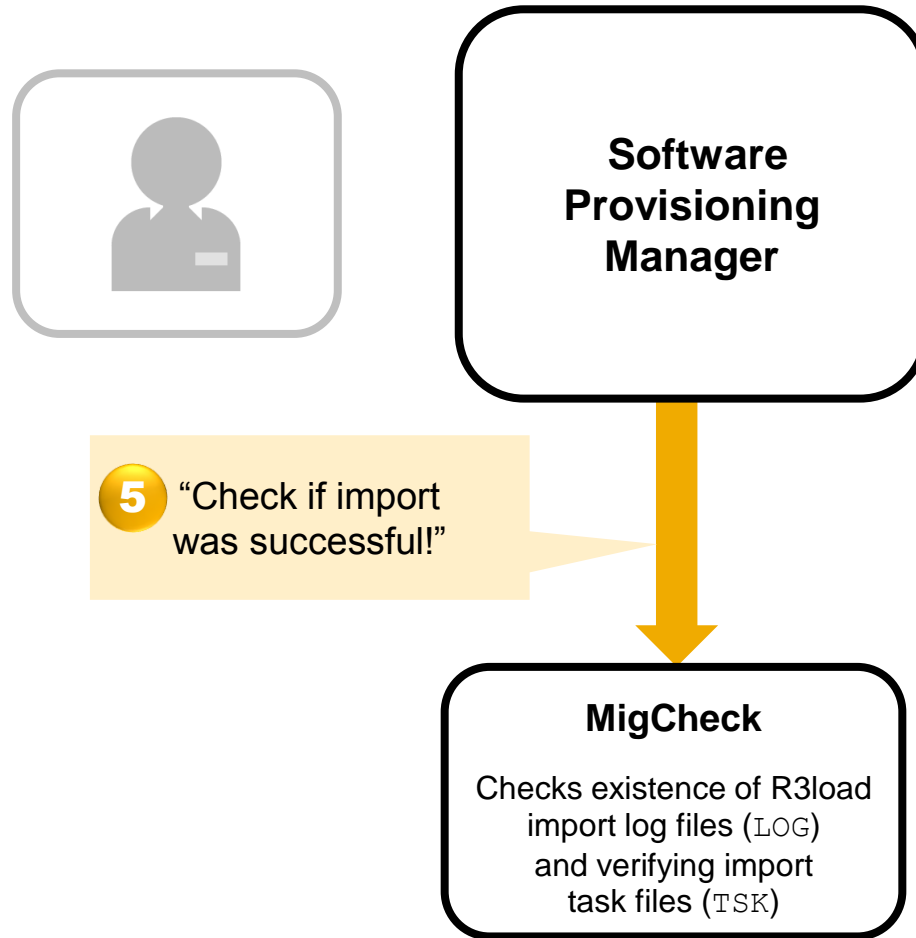
# Migration of ABAP Systems

Process flow of import



# Migration of ABAP Systems

## Process flow of import





# Migration of ABAP Systems

Process flow of import



# Migration of ABAP Systems

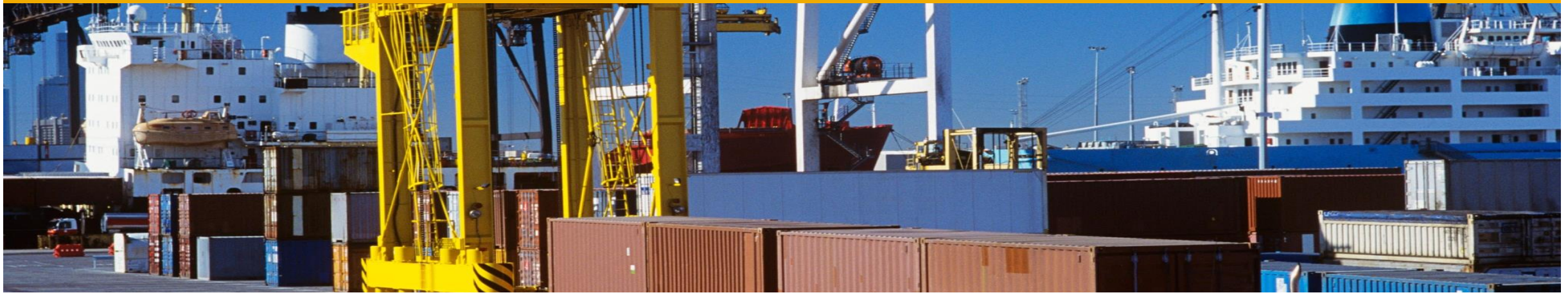
## Follow-up activities

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### **Perform technical activities after migration procedure**

- On source system
- On target system
- For more information, see system copy documentation

### **Perform post-migration tests**



# Further Information

# Further Information

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## For more information, see:

- System copy guides available in SAP Service Marketplace at:

<http://service.sap.com/sltoolset>

→ *Software Logistics Toolset 1.0*

→ *Documentation*

→ *System Provisioning*

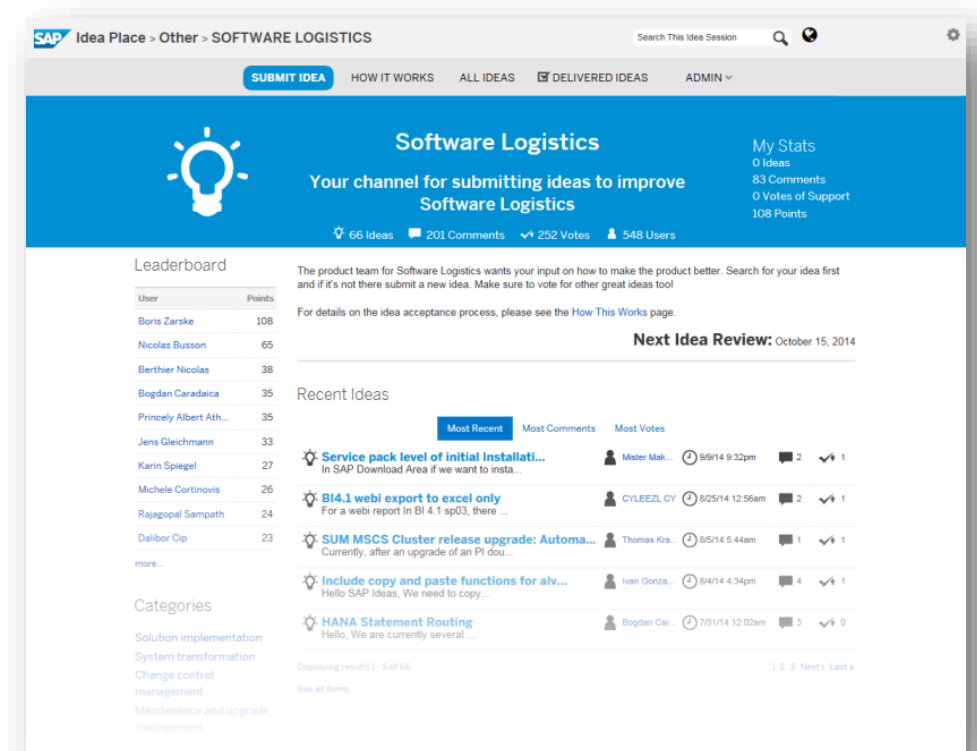
- System copy and migration page in [SAP Community Network](#)



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# Thank you

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