

Software Update Manager (SUM): Migration overview and tuning

SAP

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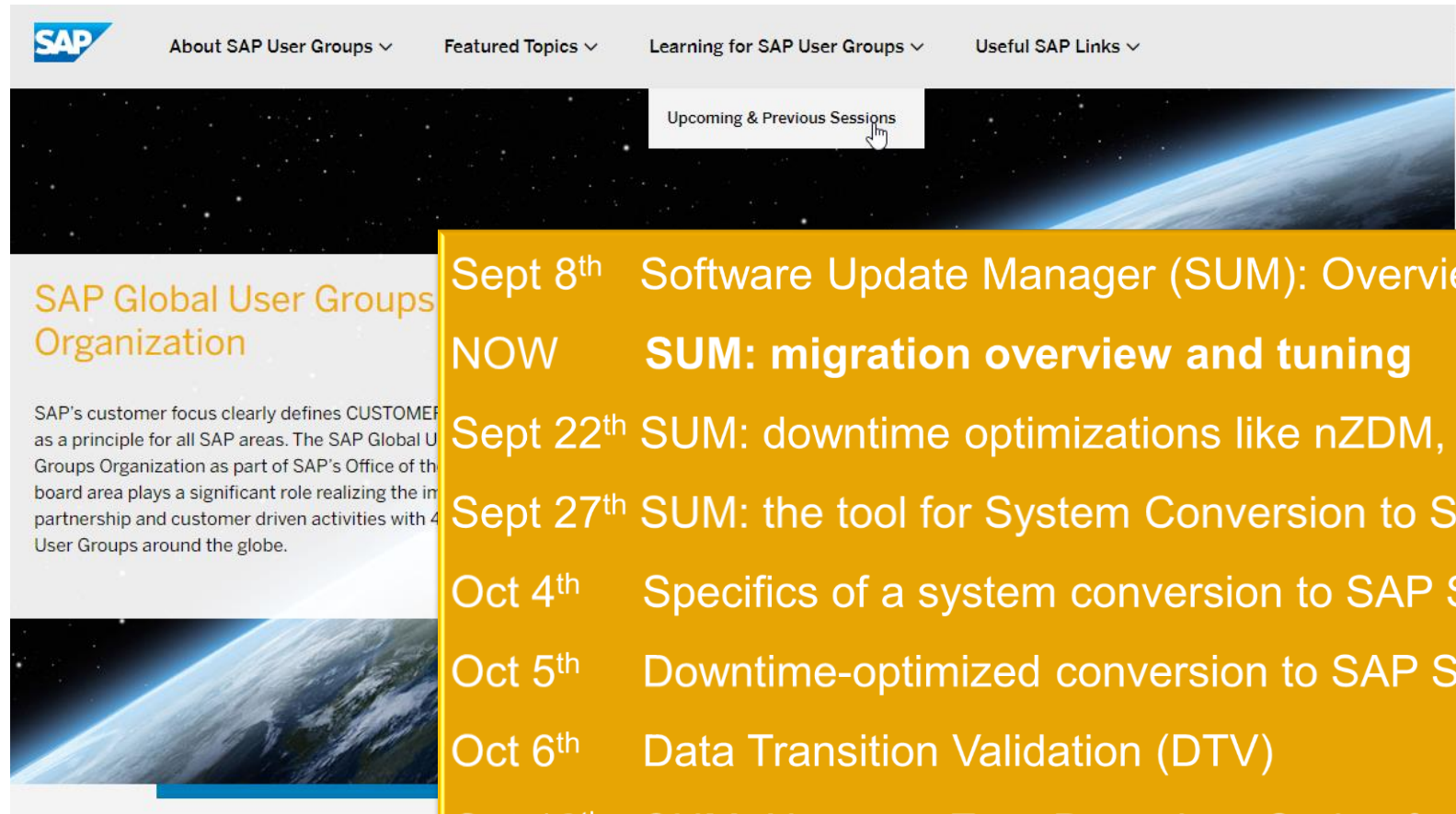
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Knowledge Transfer for SAP User Groups - SAP CLM Webcast Series *(extract)*

<https://webinars.sap.com/sap-user-groups-k4u/en/upcoming>



- Sept 8th Software Update Manager (SUM): Overview and scenarios
- NOW **SUM: migration overview and tuning**
- Sept 22th SUM: downtime optimizations like nZDM, ZDO, doDMO, NZDT
- Sept 27th SUM: the tool for System Conversion to SAP S/4HANA
- Oct 4th Specifics of a system conversion to SAP S/4HANA Cloud, private edition
- Oct 5th Downtime-optimized conversion to SAP S/4HANA
- Oct 6th Data Transition Validation (DTV)
- Oct 12th SUM: News on Zero Downtime Option for SAP S/4HANA Upgrades and Updates
- Oct 20th 360° View of the Technical Downtime Optimization Application

Extract of session list from Cloud & Lifecycle Management (CLM) in 2022 – dates subject to change

Agenda Migration Overview and Tuning

What is DMO: Database Migration Option of SUM?

- What use cases? Which kind of systems?

How does it work?

- Procedure details

How to tune and optimize downtime?

- Aspects for technical downtime of DMO procedure

DMO and classical migration

Classical Migration

- Scenario *heterogenous system copy* of tool Software Provisioning Manager
- Requires manual decision on table splitting, productive migration requires certified consultant
- Allows to migrate AS Java based systems to SAP HANA DB

Database Migration Option (DMO)

- Scenario *migration & update* of tool Software Update Manager (SUM)
- SAP's recommendation for migration target SAP HANA database: use DMO, if possible (see <https://blogs.sap.com/2017/11/22/comparing-sap-migration-procedures-to-sap-hana-database/>)

DMO in a nutshell

SUM use case

- for AS ABAP based systems, using SUM 1.1 (target < 7.50) or SUM 2.0 (target ≥ 7.50)

Database Migration:

- migrate a system to a different database type (heterogenous migration)

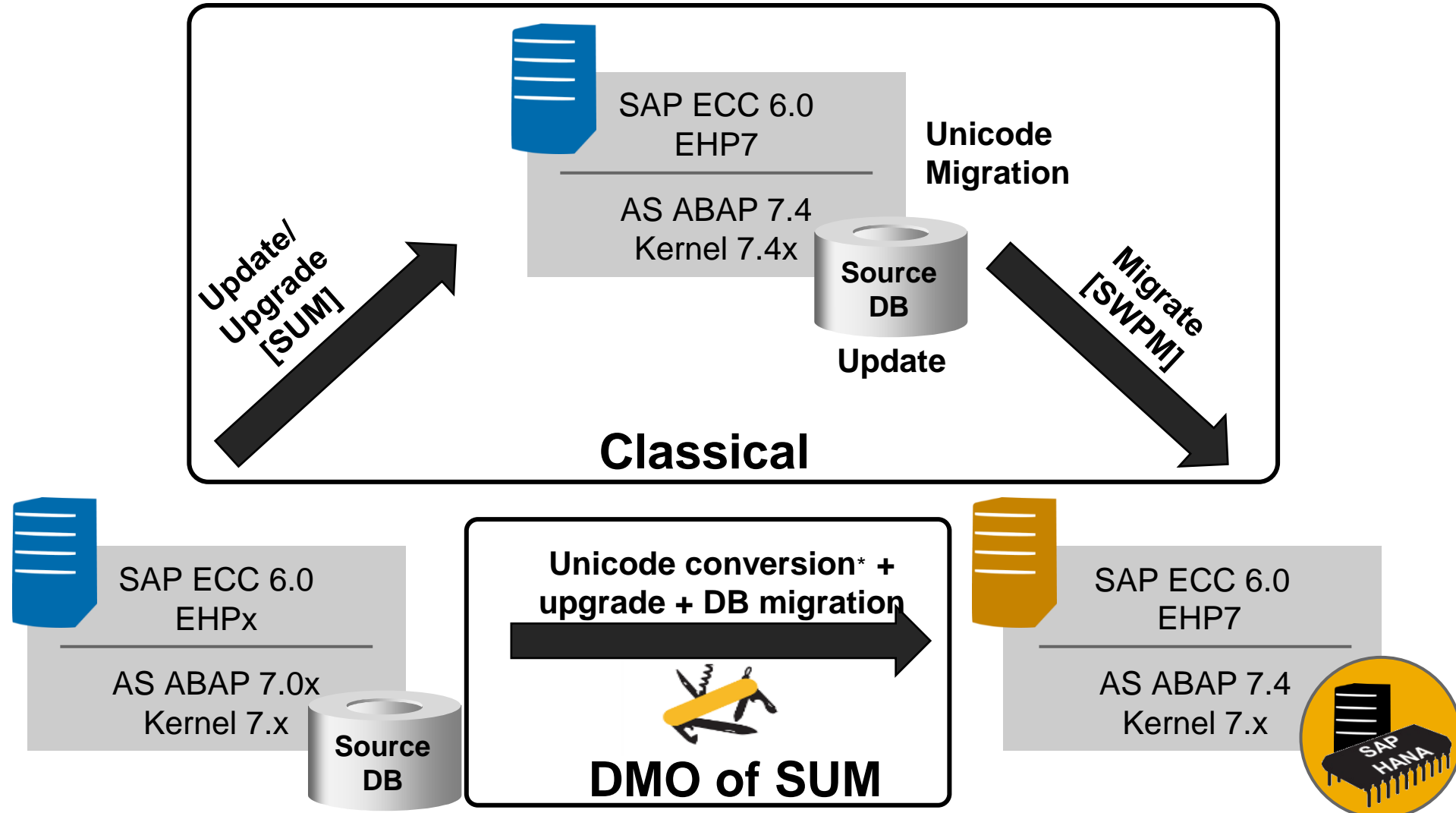
In-place procedure:

- database (host) is switched, but Primary Application Server (PAS) host is kept

Initially only target database type SAP HANA, now additional targets possible (see SAP note on DMO)

System Conversion from SAP ERP to SAP S/4HANA uses DMO (if source database not yet SAP HANA)

Comparison of migration options – example: SAP HANA database



DMO: Business Case

Upgrade and migration in a combined procedure reduces TCO and risks

Combined procedure needs only one maintenance phase (not two)

- Reduces business downtime (TCO), less regression tests necessary

In-place migration keeps application server and System-ID stable

- Low impact on system landscape: only database server is new

Original database is kept, can be reactivated as fallback

- Reduces risk, no restore required, more time for testing before cutover

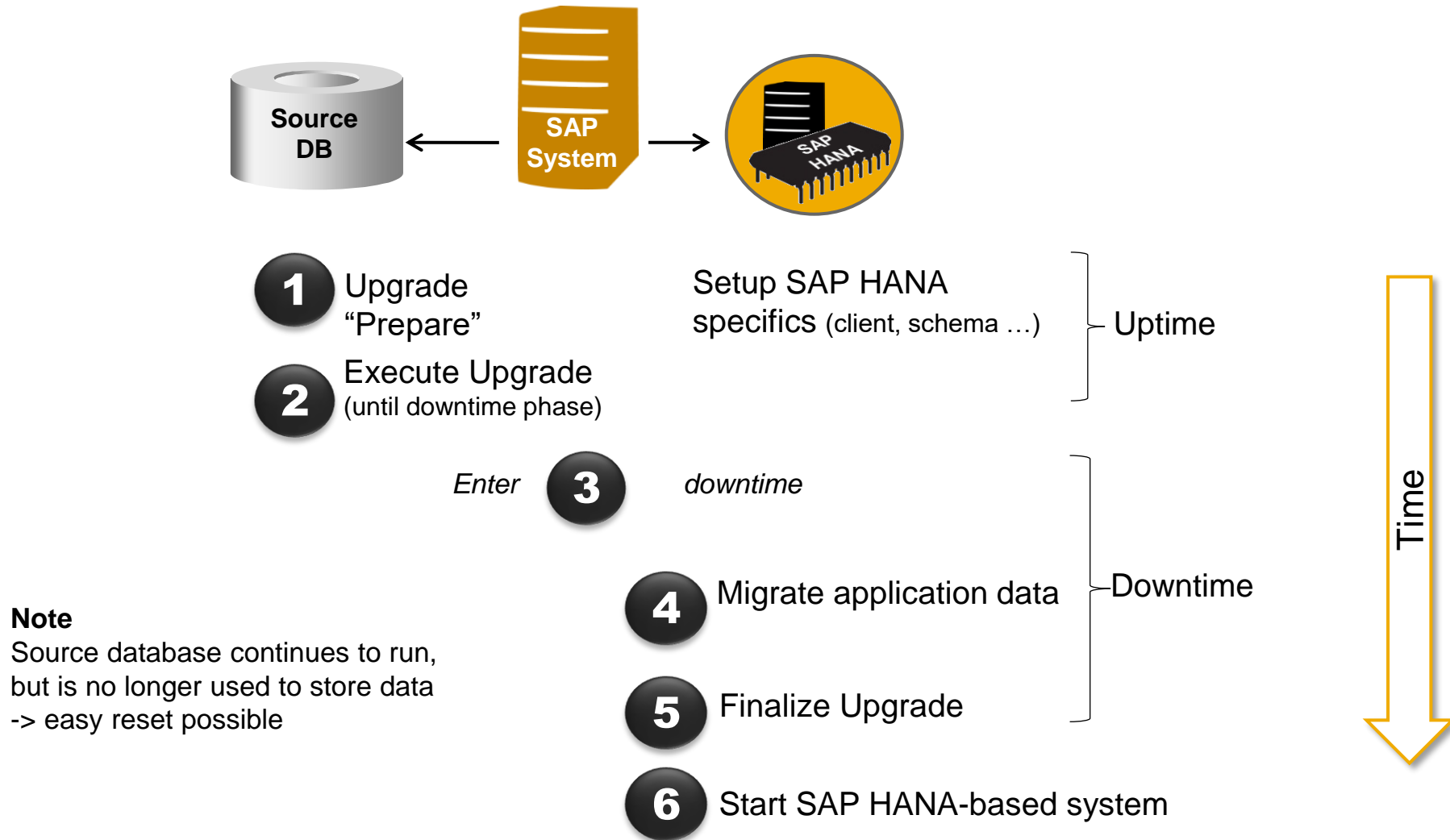
No necessity for big export file share during migration

- Direct migration transfer without large dump files (using R3load pipe mode)

No need for manual table splitting to reduce downtime

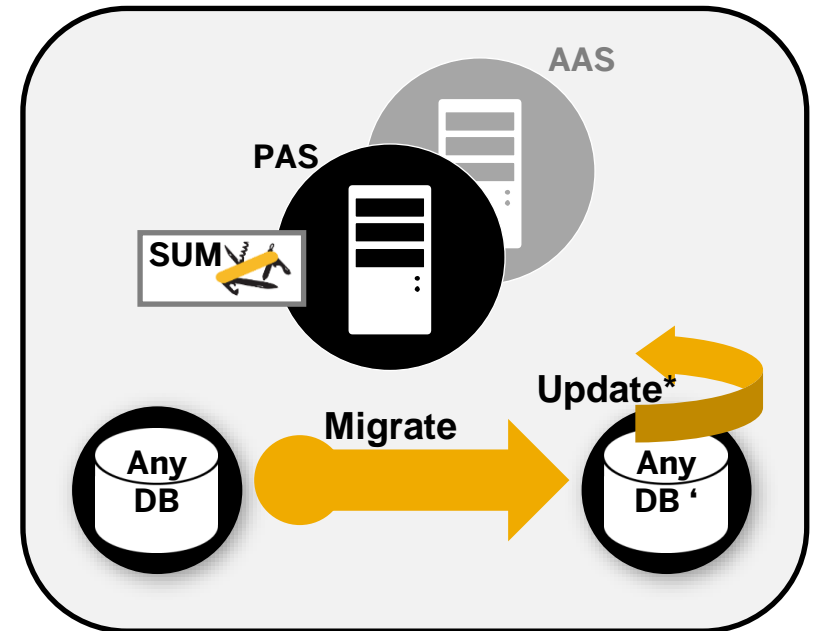
- SUM uses smart algorithm to determine table splitting

DMO phases during the procedure



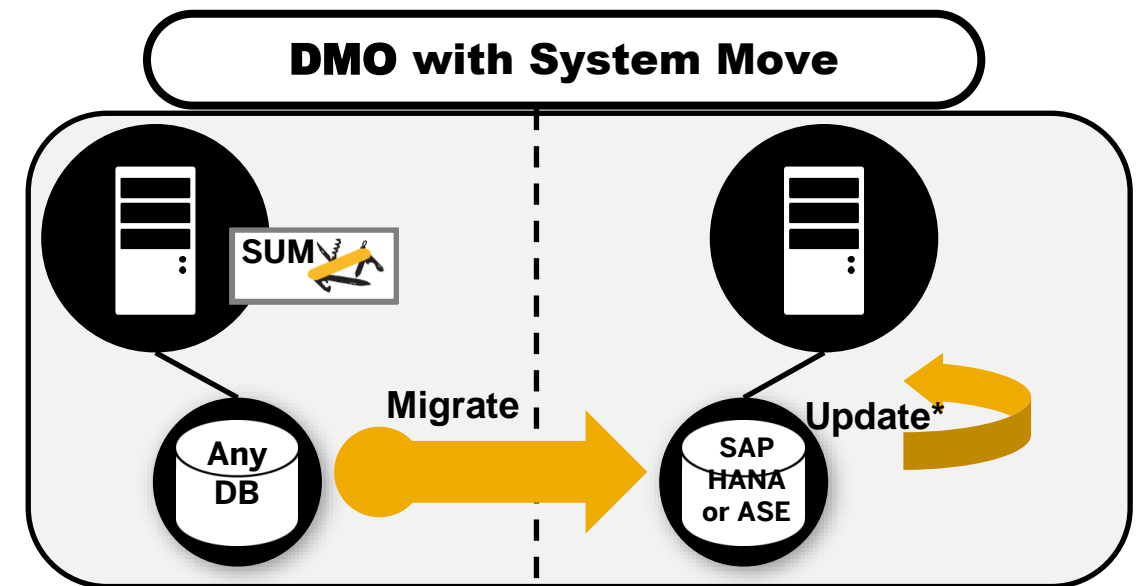
DMO use cases (1/2)

- **DMO** is the combination of update and migration, potentially with Unicode Conversion (target < 7.50)
- **SUM runs on PAS** host (“in-place”), SUM starts R3load on that host
- **Running SUM on AAS** (Additional AS) host is possible (restrictions apply, see SAP Note on DMO)
Benefit: run SUM on host with best resources
- „**DMO without System Update**“:
use case to migrate only, no update of SAP software (only for target database type SAP HANA)



DMO use cases (2/2)

- DMO not supported for data center migration due to latency issues *
(source & target database in separate data center)
- **“DMO with System Move”**:
use case to move complete SAP system
 - Allows to switch PAS host
 - Allows to migrate across data centers
 - Allows to migrate to cloud (IAAS)
- Requirements:
 - Target database and target PAS are set up prior to start
 - Target database type is SAP HANA or SAP ASE
- Sequence:
 - Start SUM in source, export happens
 - Copy and start SUM on target, import happens
- Can be combined with “*DMO without Software Update*” and with “*SUM on AAS*”



Agenda Database Migration Option (DMO) with SUM

What is DMO: Database Migration Option of SUM?

- What use cases? Which kind of systems?

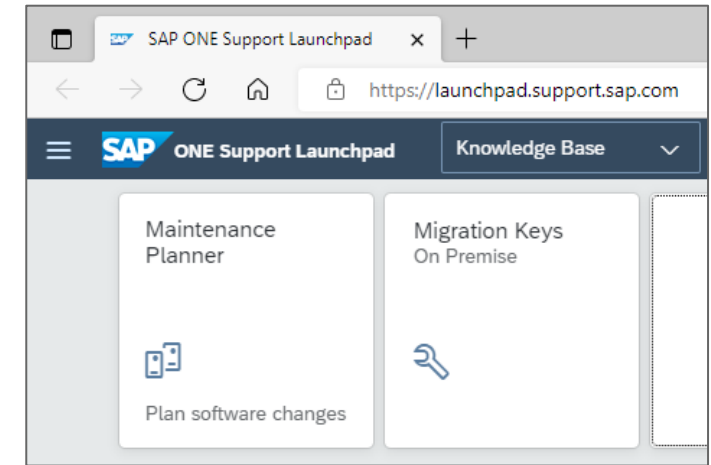
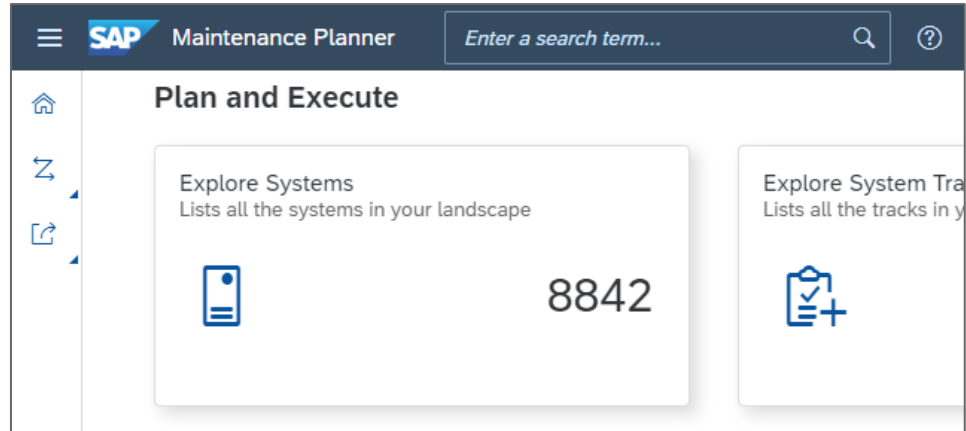
How does it work?

- Procedure details

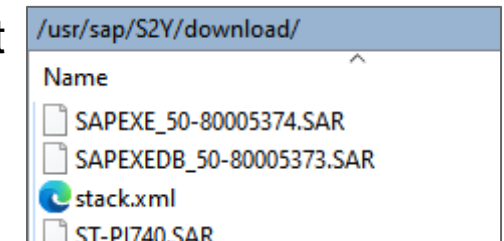
How to tune and optimize downtime?

- Aspects for technical downtime of DMO procedure

DMO Prerequisites



- You have planned the scenario in Maintenance Planner
 - Including selection of the target release kernel files for the target database
 - You have provided the download folder with all software archives on the SUM host
- You have requested and received the migration key



SUM UI First Steps

The image displays two overlapping screenshots of the SAP Software Update Manager (SUM) 2.0 SP14 (PL3) user interface. The top screenshot shows the 'Specify the Scenario Category' step, where the user is prompted to enter a valid name and path to the stack configuration file. The bottom screenshot shows the 'Decision on Database Migration Option' step, where the user is prompted to select the type of database for the database migration option (DMO).

SAP DMS Software Update Manager 2.0 SP14 (PL3) 207.2 GB FREE Tasklist Logs Breakpoints Help

Get Roadmap

0% - Process is in a dialog

Current Phase: MOD_SELROADMAP/SELECT_ROADMAP
Started at: 2022-09-13 12:40:20

Welcome to the Software Update Manager

[SAP Note 3112322](#) and all further SAP Notes mentioned in it, such as the database-specific S
Update Manager. Read the current version before you start the preparatory activities and che

Specify the Scenario Category

☒ Scenario using Stack Configuration File

Enter a valid name and path to the stack configuration file:

*Stack file

☐ No Stack Configuration File required for scenario

Back Next

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Get Roadmap

0% - Process is in a dialog

Current Phase: MOD_SELROADMAP/SELECT_ROADMAP
Started at: 2022-09-13 12:40:20

Decision on Database Migration Option

Target Database

Select the type of database for the database migration option (DMO).
If the DMO is not mandatory, you can also opt for "No migration".

DATABASE TYPE

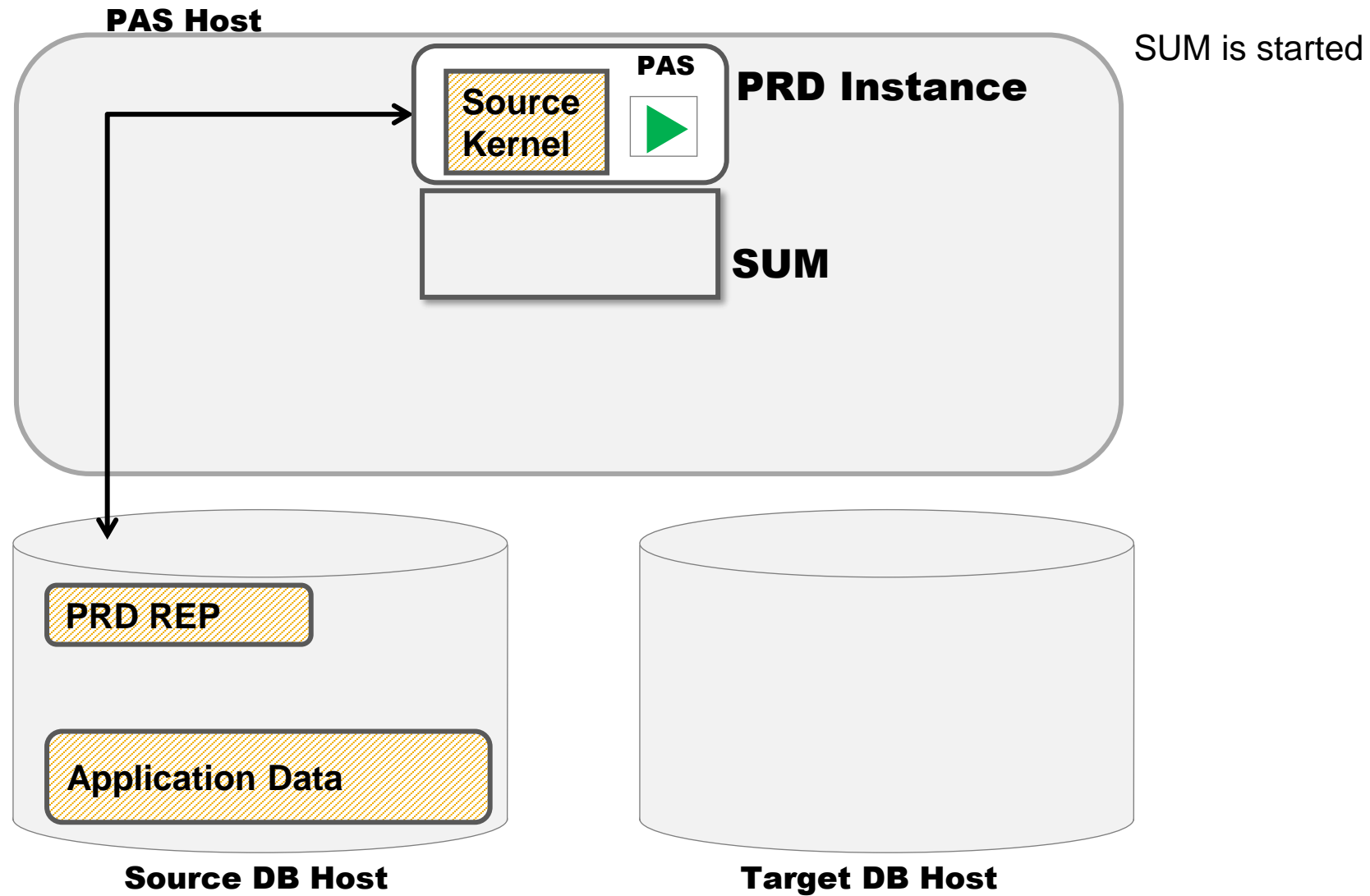
☐ No migration

☒ SAP HANA DB

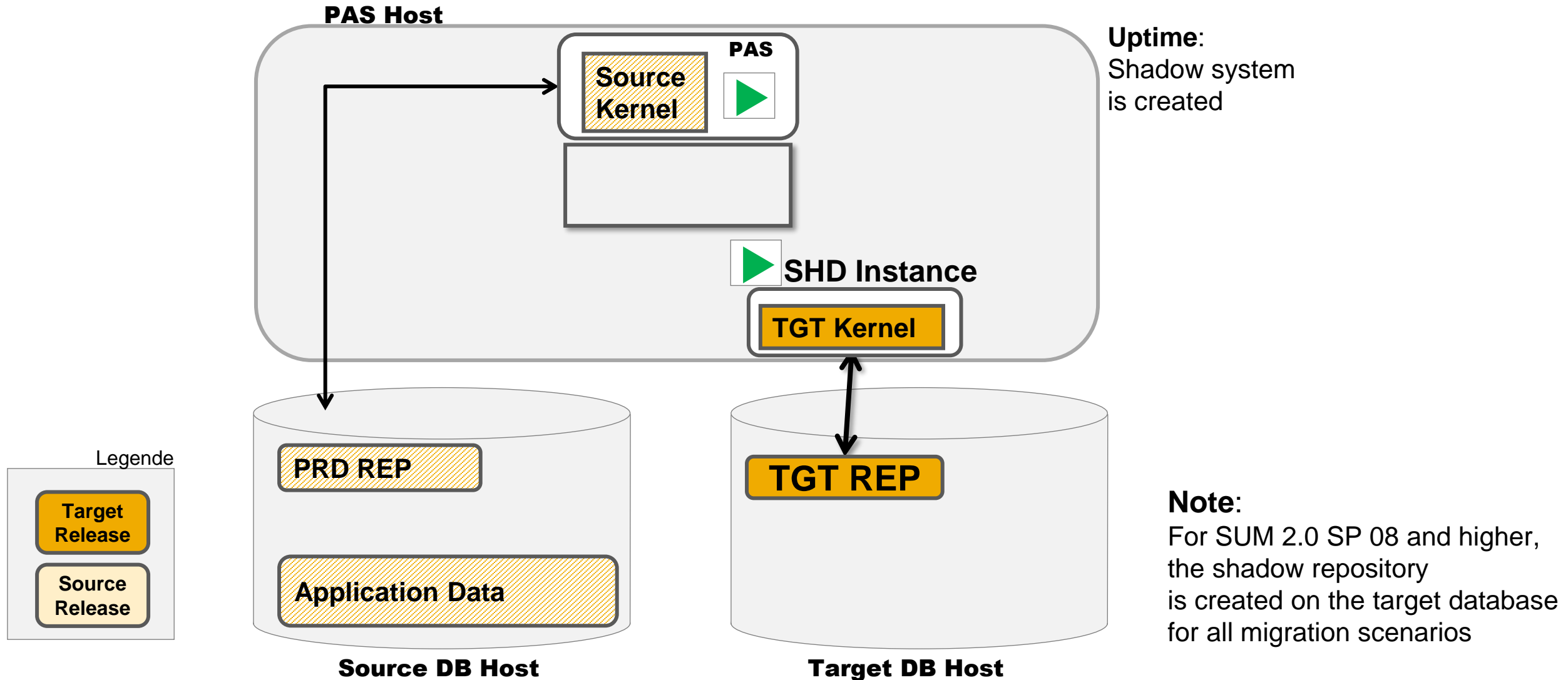
☐ SAP ASE

Back Next

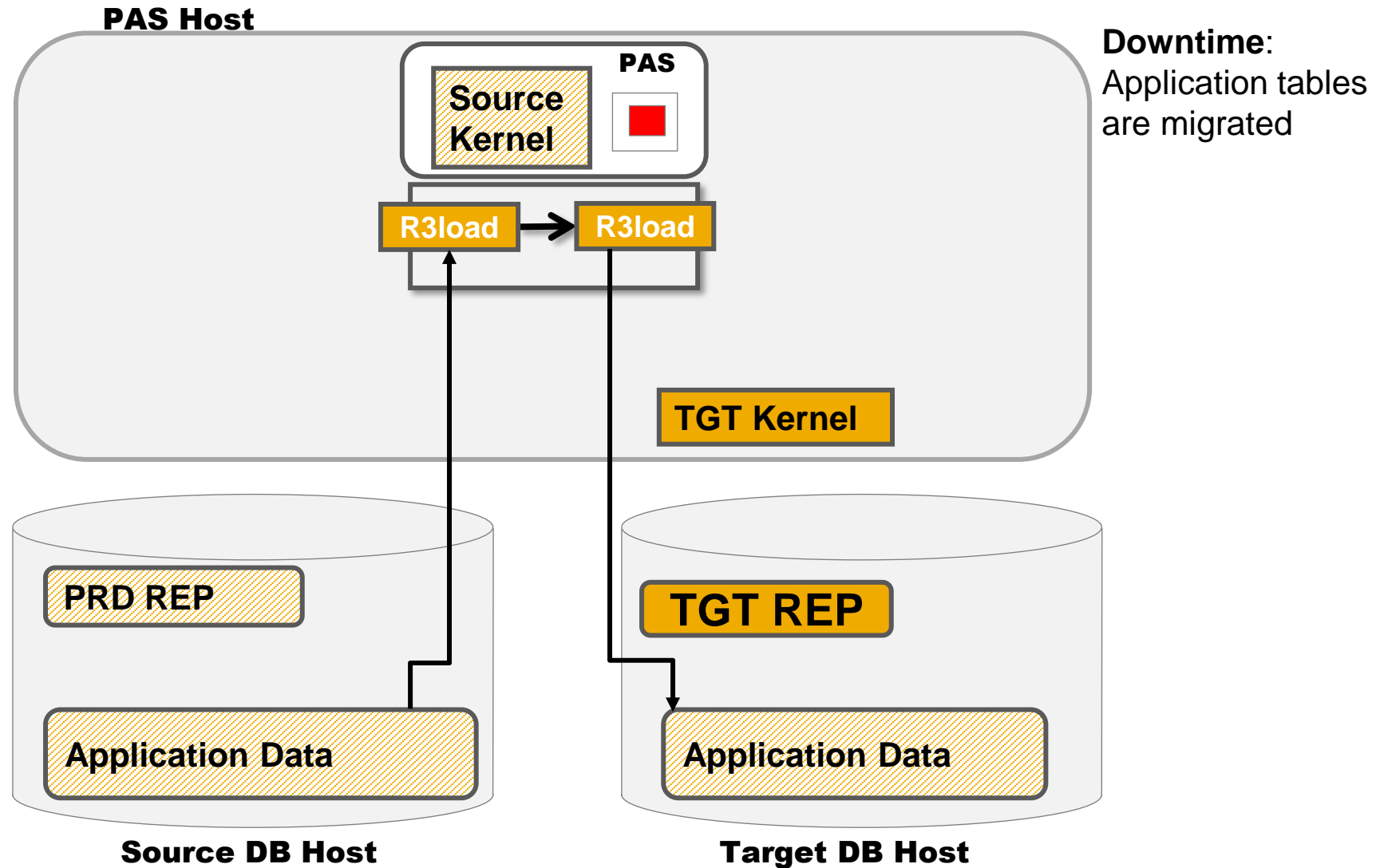
DMO: SUM Start



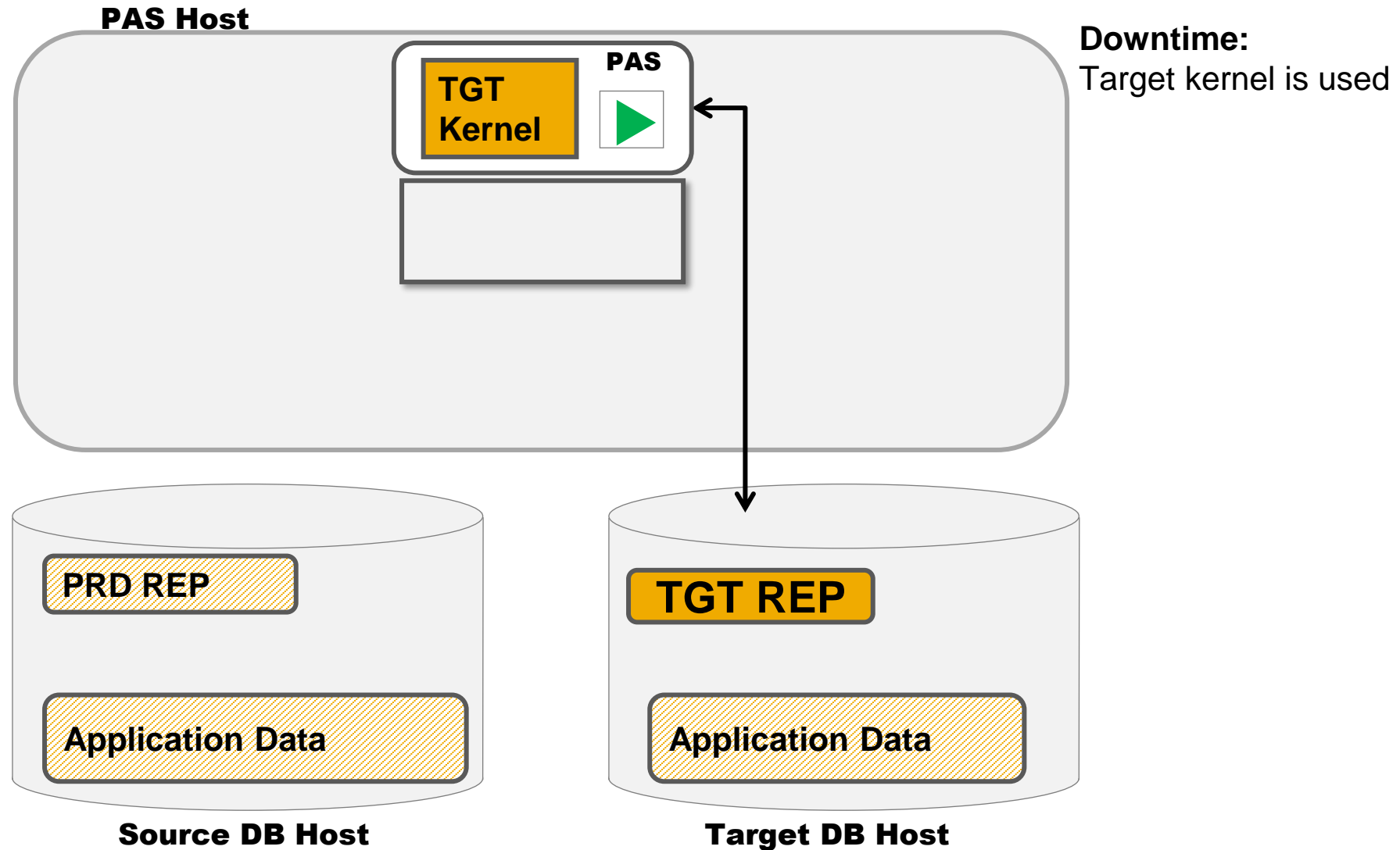
DMO: shadow system created



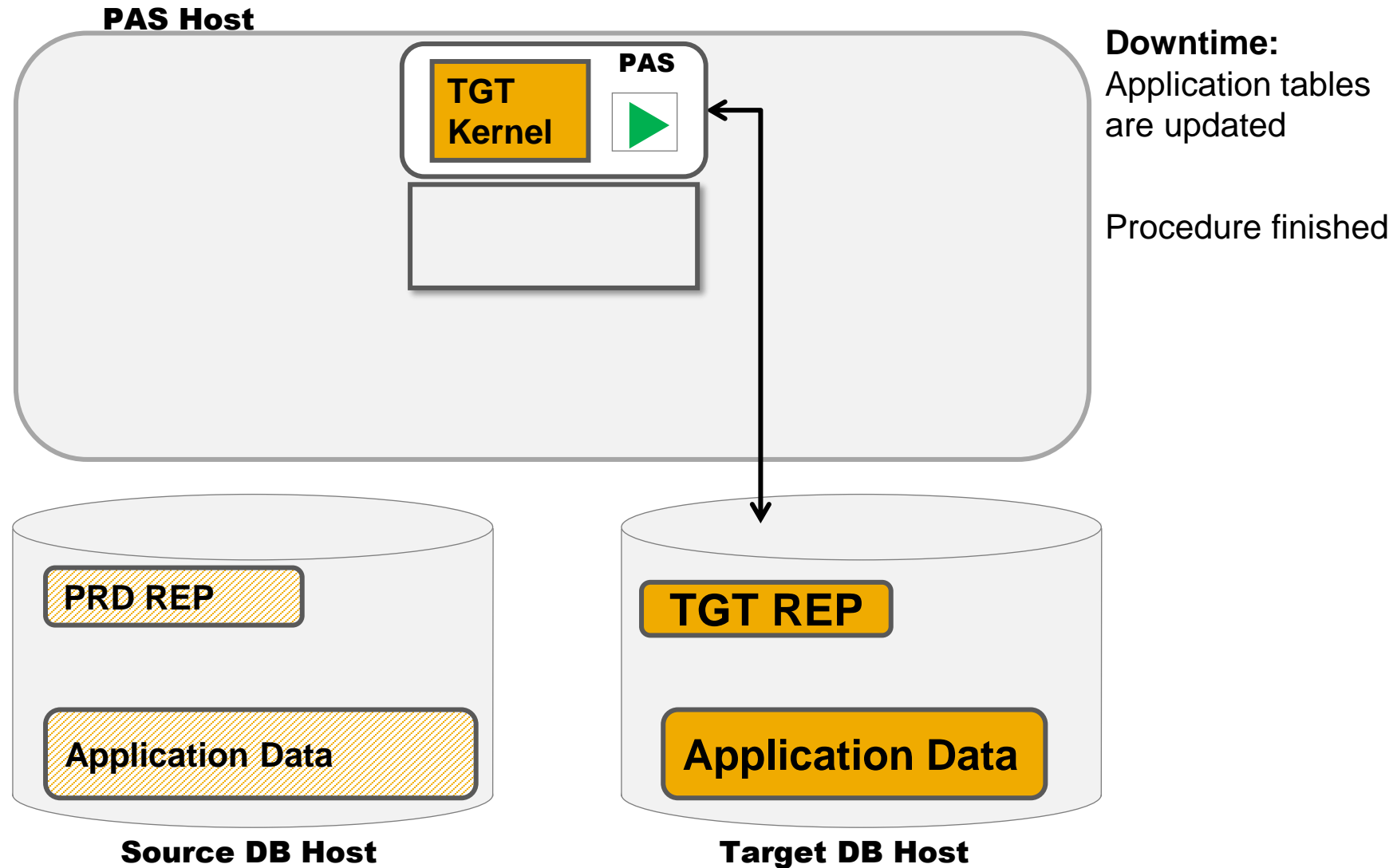
DMO: application tables are migrated



DMO: update part



DMO: procedure finished



Agenda Database Migration Option (DMO) with SUM

What is DMO: Database Migration Option of SUM?

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How to tune and optimize downtime?

- Aspects for technical downtime of DMO procedure

Tune and optimize downtime

- **Downtime** is dominated by migration part
- **Migration** is influenced by
 - Number of R3loads configured for downtime
 - Network bandwidth: use 10 Gbit/s network card, use no firewall
- Rule of thumb: migration rate of ~ 300 GB/hours should be possible in standard set up with an estimated additional ~8 hours for the update part, technical downtime can be estimated

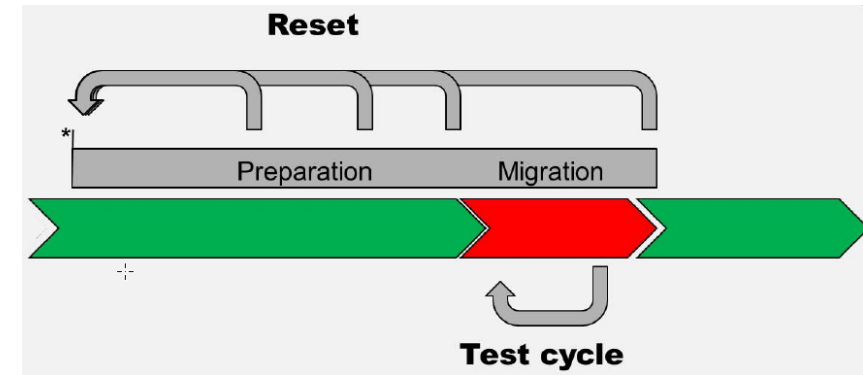
⇒ **Task is to optimize number of R3load processes**

- Table split calculated by SUM automatically, based on table *size*
 - Keep source database statistic up to date

⇒ **Optimize table split calculation** by providing table *duration files* from previous run

Downtime optimization: overview

- **Use Benchmarking** before the DMO run: quick test
Benchmarking focuses on migration (no shadow system)
- **Adjust number of R3load processes**
during Benchmarking, and during DMO procedure
- **Use the Test Cycle Option**
this allows a fast repetition of only the downtime migration for a test run, no need to start from scratch
- **Provide the migration duration** file from previous run in download folder:
it lists measured table migration duration, SUM will use this for optimized table split
- **Consider downtime optimized techniques:**
 - Downtime-optimized DMO: migrate large application tables partly to uptime (for SAP Business Suite systems; only with SUM 2.0)
 - Delta queue cloning (for SAP BW systems)
 - NZDT service approach (SAP Note 693168) for drastic reduction of downtime



Recommended Procedure

- **Start with the Benchmarking tool**
 - *Export only* mode with 100 % of all tables:
shows potential bottleneck in source database and log file shows total database size to be migrated
 - *Export & Import* mode with 10 % of all tables: first impression on migration rate
 - Vary number of R3loads to find optimum, use migration repetition option (test cycle) for fast repeat
- **Continue with DMO**, reuse duration file from benchmarking run, use migration repetition option
 - Vary number of R3loads to find optimum, use migration repetition option (test cycle) for fast repeat
 - Then keep optimum number of R3load processes fixed during complete procedure
- Details are explained in the following blog post: <https://url.sap/91hupn>

Adapting number of R3loads on the fly

Using the SUM Utilities from the menu

The image shows two overlapping SAP SUM screenshots. The background screenshot displays the 'SUM Parameters' configuration page, specifically the 'SUM Process Parameters' section. A table lists various process types with their current and target counts. The 'R3load Processes' row is highlighted with a black box, showing a value of 40. The foreground screenshot shows the 'Process Control Center' with a 'Charts Control Center' tab. A 'Realtime Process Graph' shows the number of processes over time, with a 'R3load Process Limit' slider set to 40, also highlighted with a black box. Below the graph, a 'Process Buckets' table lists the status of various processes.

Parameter	Uptime	Down
ABAP Processes	4	4
SQL Processes	6	6
R3trans Processes	6	6
R3load Processes	40	40

Ref. ID	Duration Exp./Imp. [sec]	Status	Export Log	Import Log
00080_REPOSRC	992 /	Running		
00086_REPOSRC	992 /	Running		
00087_REPOSRC	992 /	Running		
00094_REPOSRC	990 /	Running		
00095_REPOSRC	990 /	Running		


Process Statistics - Planned: 546 / Finished: 273 / Running: 40 / Rescheduled: 0 / Failed: 0

Table Count and Table comparison check

Welcome to the Software Update Manager


[SAP Note 3112322](#) and all further SAP Notes mentioned in it, such as the database-specific Update Manager. Read the current version before you start the preparatory activities and check the release notes.

Specify the Scenario Category

☒ Scenario using Stack Configuration File 

Enter a valid name and path to the stack configuration file:

*Stack file

☐ No Stack Configuration File required for scenario 

Decision on Database Migration Option

Target Database

Select the type of database for the database migration option. If the DMO is not mandatory, you can also opt for "No migration".

DATABASE TYPE

☐ No migration

☒ SAP HANA DB

☐ SAP ASE

...

Scenario Strategy

Specify the scenario strategy

☒ Standard (standard configuration)

☐ Downtime-optimized (high configuration)

Migration Parameters

Table Selection

Select tables for the table comparison checks:

TABLES

- ☒ Do not compare table contents
- ☐ All tables
- ☐ Selected tables

Table Count Verification

After the data migration with "R3load", the table rows are counted to ensure that no data loss has occurred.

- ☒ Perform table count verification

Migration Key

Provide a valid migration key for installation number "XXXXXX". For more information on migration key generation, see [SAP Note 317096](#).

*Migration Key

Migration Repetition Option

This option will stop the tool after the downtime migration phase and enables a simple repetition of the latter to optimize the procedure by adjusting the parameters (such as R3load processes). You must not use this option for a productive run!

- ☐ Enable migration repetition option

DMO with System Move

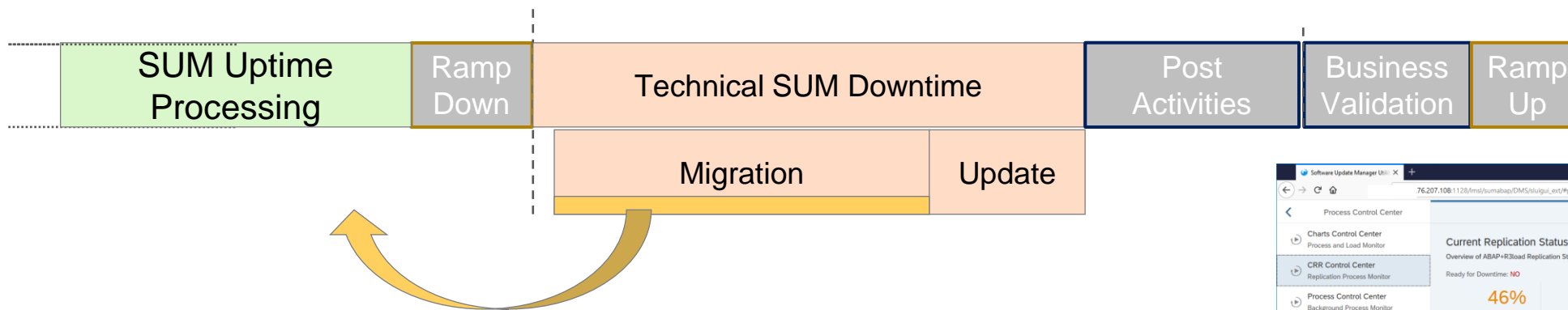
The R3load exports the database content to the file system. After you have moved all the content to the target host, you continue the DMO procedure there.

- ☐ Enable the migration with System Move

Uptime Migration (downtime-optimized DMO)

Generally available with SUM 2.0 SP 06 (and higher) for system conversions and migrations

- **Uptime migration** for selected large application tables
 - User changes are reflected with record-and-replay technology of SUM
 - Includes initial and delta migration in uptime, remaining delta migration in downtime



- Option is offered on SUM dialog on scenario strategy
- Report available to select appropriate tables for uptime migration
- Replication monitoring is part of SUM Utilities
- Applicable only if source is not yet on SAP HANA database

The screenshot shows the SUM interface with the 'Current Replication Status' section. It displays the following data:

Table Name	Replay Status	Recorded Changes	Replayed Changes	Pending Changes	Percentage (in %)
ED40		0	0	0	0
CDCLS		0	0	0	0

Further Information for DMO of SUM

DMO Guide

- Use the quicklink <http://support.sap.com/sltoolset> and navigate to the Maintenance section
- SAP First Guidance – Migration BW on HANA using the DMO option in SUM

Blogs on DMO

- Migration to SAP HANA: Overview Video of Database Migration Option DMO
- DMO: introducing the new UI
- DMO: technical background
- DMO: background on table split mechanism
- DMO without software change
- Optimizing DMO Performance
- DMO: optimizing system downtime ...
- DMO: table comparison and migration tools
- DMO: Handling table comparison checksum errors
- DMO: introducing the benchmarking tool
- DMO: comparing pipe and file mode for R3load
- DMO: downtime optimization by migrating app tables during uptime (preview)
- Phases behind DMO R3load parallel export/import during UPTIME and DOWNTIME to target HANA DB
- Short history of DMO

Blogs on related topics

- Migration of SAP Systems to SAP HANA
- A better way to migrate your SAP NetWeaver BW from any database to SAP HANA
- Decision Matrix to Choose Best Migration Option of ABAP Systems to SAP HANA
- Software Update Manager (SUM): introducing the tool for software maintenance
- Best Practice Guide – Classical Migration of SAP NetWeaver AS ABAP to SAP HANA
- <http://wiki.scn.sap.com/wiki/display/SLGB/Strategy+beyond+SAP+Business+Suite+7+Innovations+2011>



Central Release Note
Software Logistics Toolset 1.0 – 1563579
<http://service.sap.com/sap/support/notes/1563579>

DMO with SUM 1.1 SP 00
<https://launchpad.support.sap.com/#/notes/3126536>

DMO with SUM 2.0 SP 14
<https://launchpad.support.sap.com/#/notes/3126581>

SAP Support Portal
quick link: /sltoolset
<http://support.sap.com/sltoolset>

SAP Support portal page on DMO
<https://support.sap.com/en/tools/software-logistics-tools/software-update-manager/database-migration-option-dmo-.html>

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