



UPGRADE GUIDE | PUBLIC

Document Version: 1.0 – 2019-04-30

Upgrade Guide for SAP S/4HANA 1709

Content

- 1 Upgrade Guide for SAP S/4HANA. 4**
- 2 Getting Started. 5**
 - 2.1 Documentation, Tools, and SAP Notes for the Upgrade. 5
 - 2.2 Overview of the Upgrade Process. 7
- 3 Preparing the Upgrade. 10**
 - 3.1 Supported Start Releases. 11
 - 3.2 Maintenance Planner. 11
 - 3.3 Simplification Item-Check. 13
 - 3.4 Custom Code Analysis. 15
 - 3.5 Upgrade Preparation for SAP Fiori for SAP S/4HANA 1709. 16
- 4 Realizing the Upgrade. 17**
 - 4.1 Follow-On Activities for SAP Fiori. 18

Document History

Version	Date	Description
1.0	September 15, 2017	First published version.
1.0	October 16, 2017	Updated SUM version.
1.0	October 23, 2017	Corrected SAP Note in section Simplification Item-Check [page 13] .
1.0	January 29, 2018	Updated section Simplification Item-Check [page 13] .
1.0	January 31, 2018	Minor corrections.
1.0	February 12, 2018	Additional SAP Note 2536195 in sections Documentation, Tools, and SAP Notes for the Upgrade [page 5] and Realizing the Upgrade [page 17] .
1.0	May 03, 2018	Updated with references to the Simplification Item Catalog.
1.0	April 30, 2019	Minor corrections in section Simplification Item-Check [page 13] .

1 Upgrade Guide for SAP S/4HANA

This guide explains the upgrade process for the upgrade from SAP S/4HANA, on-premise edition 1511 and SAP S/4HANA 1610 (all feature package stacks) to SAP S/4HANA 1709.

2 Getting Started

Read this guide carefully to get an overview of how to do the upgrade from SAP S/4HANA 1511 or 1610 (all feature package stacks) to SAP S/4HANA 1709.

This guide has to be used together with the following documents and tools:

- Simplification Item Catalog
This tool allows you to search and browse upgrade-relevant simplification items online.
- *Software Update Manager (SUM) 2.0 SP <latest version>* (guide)
- *Maintenance Planner User Guide*

You find more information about these tools and guides (including where to find them), as well as additional important documents and SAP Notes relevant for the upgrade in the section [Documentation and SAP Notes for the Upgrade \[page 5\]](#)







The section [Overview of the Upgrade Process \[page 7\]](#) provides information about the different phases of the upgrade and the tools involved.

The sections [Preparing the Upgrade \[page 10\]](#) and [Realizing the Upgrade \[page 17\]](#) provide details for those upgrade phases.

2.1 Documentation, Tools, and SAP Notes for the Upgrade

Required Documents, Tools, and SAP Notes

You require at least the following documents and SAP Notes.

Document	Available at	Comment
Simplification Item Catalog This tool enhances and replaces the <i>Simplification List for SAP S/4HANA</i> (PDF). The PDF is still available, but we recommend using the catalog.	http://help.sap.com/s4hana_op_1709  Conversions & Upgrade Assets 	Lists the simplifications in comparison to the previous releases, SAP S/4HANA 1511 and 1610 (all feature package stacks), such as, simplified functions, merged database tables, and new data models.
<i>Software Update Manager (SUM) 2.0 SP<latest version></i>	http://help.sap.com/sltoolset   Software Logistics Toolset (SL Toolset)  System Maintenance 	Describes how to do the upgrade to SAP S/4HANA 1709 using the Software Update Manager tool.

Document	Available at	Comment
<i>Maintenance Planner User Guide</i>	http://help.sap.com/maintenanceplanner	Describes how to use the Maintenance Planner for calculating and downloading the required stack.xml file and software packages.
<i>SAP S/4HANA 1709: Release Information Note</i>	SAP Note 2482453	-
<i>SAP S/4HANA 1709: Restriction Note</i>	SAP Note 2491467	-
<i>SAP S/4HANA Add-on Note</i>	SAP Note 2214409	-
<i>SAP Fiori for SAP S/4HANA 1709 Release Information Note</i>	SAP Note 2482461	-
<i>General Information: Fiori UI Infrastructure Components for products on SAP Frontend Server 3.0 (S4H)</i>	SAP Note 2356936	-
<i>Unable to upgrade to S/4HANA 1709</i>	SAP Note 2536195	Important fix for an upgrade error.

Additional Information and SAP Notes

The following table lists important additional documents and SAP Notes.

Document	Available at	Comment
<i>Custom Code Migration</i>	http://help.sap.com/s4hana_op_1709 ▶ SAP NetWeaver for SAP S/4HANA ▶ Function-Oriented View ▶ Application Server ▶ Application Server ABAP ▶ Application Development on AS ABAP ▶ Customer-specific ABAP Development ▶ Custom Code Migration ▶	Describes how you can check your custom code for required adaptations
<i>SAP S/4HANA: Always-Off Business Functions</i>	SAP Note 2240359	
<i>SAP S/4HANA: Always-On Business Functions</i>	SAP Note 2240360	
<i>Uninstalling ABAP Add-ons</i>	SAP Note 2011192	

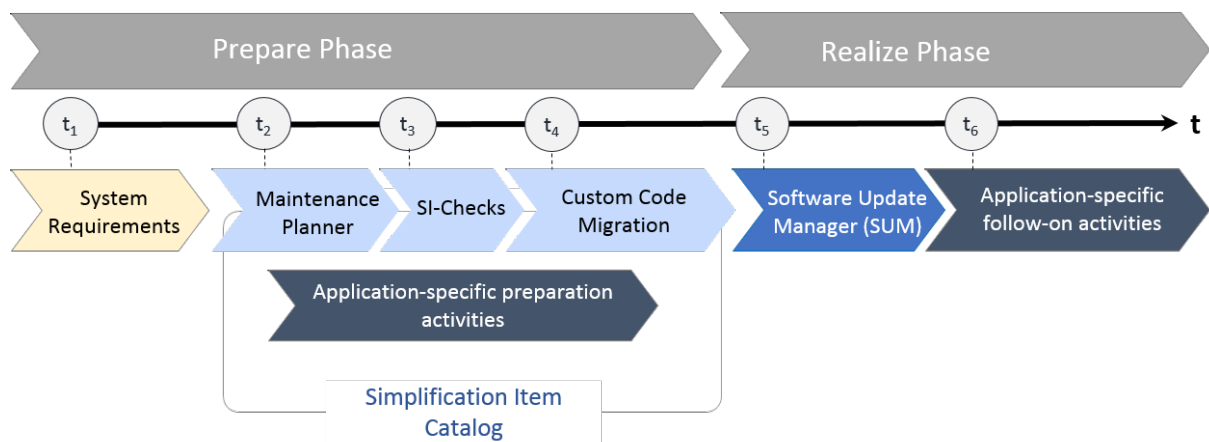
Document	Available at	Comment
SPAU Adjustment	SAP Note 2344014	
SAP S/4HANA System Conversion / Upgrade: Measures to reduce technical downtime	SAP Note 2351294	

2.2 Overview of the Upgrade Process

The overview of the upgrade process shown in the figure below (including the tools, the phases, and the activities involved in the upgrade process) is intended to help you to plan and perform the upgrade from lower SAP S/4HANA releases to SAP S/4HANA 1709.

→ Recommendation

We recommend that you do the activities in the sequence shown in the figure and explained in the sections below.



Upgrade to SAP S/4HANA 1709: Sequence

Prepare Phase

Simplification Item Catalog

To enable you to do an optimal planning of your upgrade to SAP S/4HANA 1709 FPS01, we provide the we provide the Simplification Item Catalog. The Simplification Item Catalog is a tool that allows you to search or browse the complete collection of simplification items grouped by product version and presented by application or functional area. Each simplification item details the steps that need to be taken for the conversion and/or the upgrade from a business and a technical point of view, both preparatory and follow-on steps and each item is available as a SAP Note. You need to search for the upgrade-relevant simplification items – most of the simplification items are not relevant for the upgrade.

You find the Simplification Item Catalog at http://help.sap.com/s4hana_op_1709 ► *Conversion & Upgrade Assets* ►.

The simplification items are integrated with the Simplification Item-Check and custom code migration tools. These tools provide detailed reports when the code of your lower SAP S/4HANA release does not comply with the scope and data structures of the SAP S/4HANA release to which you are upgrading.

Before starting the realization phase of the upgrade process, you also have to do the following preparatory activities:

1. **System Requirements**

You need to be aware of system requirements, see [Supported Start Releases \[page 11\]](#).

2. **Maintenance Planner**

You need to run the maintenance planner tool as a first step in the upgrade process. It checks your components, add-ons, and business functions to ensure compatibility with SAP S/4HANA 1709 and also creates the stack file used during the upgrade process (done by the Software Update Manager tool). For more information, see [Maintenance Planner \[page 11\]](#).

i Note

This step is mandatory, because the Software Update Manager requires the stack file for the upgrade process.

The Maintenance Planner has replaced the Maintenance Optimizer, which is not supported by SAP S/4HANA.

3. **Simplification Item-Check**

This check identifies the steps you need to take to make sure that your system can technically be upgraded and that your business processes can start running directly after the upgrade process has been completed. The Simplification Item-Check (SI-Check) is called by the Software Update Manager. For more information, see [Simplification Item-Check \[page 13\]](#).

i Note

This step is mandatory and will be triggered by the Software Update Manager. Ideally, you run the SI-Check report early in the upgrade process so that you can take note of the preparation information provided by the SI-Check results (see also [2399707](#) ►).

4. **Custom Code Migration**

The custom code migration tool checks your custom code against the *Simplification List* items relevant for the upgrade to SAP S/4HANA 1709. For more information, see [Custom Code Migration \[page 15\]](#).

i Note

While not mandatory, this step is highly recommended. Ideally, you combine the SAP S/4HANA 1709 upgrade project with housekeeping activities for your existing custom code base. In particular, you need a consolidated view of productively used custom developments and you should remove custom code that is no longer used.

We recommend that you do the steps 3 to 5 in the prepare phase in the sequence listed above. It is, however, technically possible to do them independently or in parallel.

5. **Application-specific preparation activities**

You may need to do application-specific manual preparation activities. These activities are identified by the SI-Checks and custom code migration checks and documented by SAP Notes, which you get through the check results.

Realize Phase

After you have done the steps of the prepare phase, you continue with the activities of the realize phase:

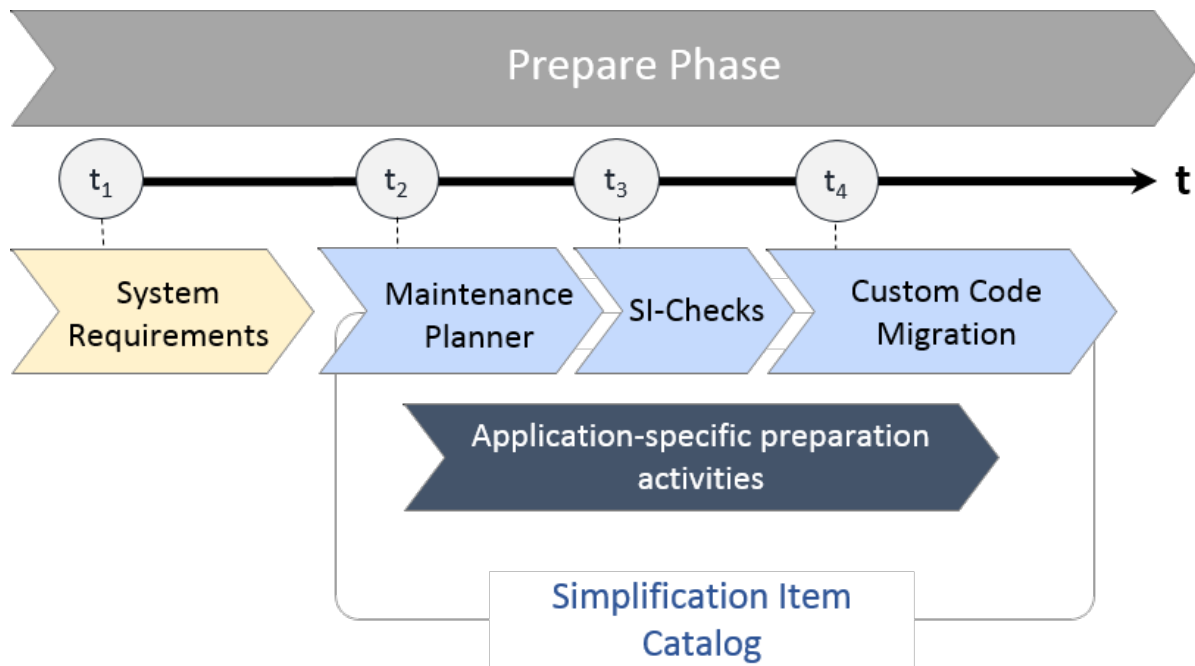
1. **Software Update Manager (SUM)**

When you have completed the steps above, and have implemented all the adaptations required to ensure your system and your custom code is suited to SAP S/4HANA 1709, you then run the SUM. The SUM does the actual software upgrade. For more information, see [Realizing the Upgrade \[page 17\]](#).

2. **Application-specific follow-on activities**

You may need to do application-specific manual activities. These activities are identified by the SI-Check and custom code migration checks and documented by SAP Notes, which you get through the checks.




3 Preparing the Upgrade



Upgrade to SAP S/4HANA: Preparations

For the upgrade to SAP S/4HANA you have to prepare an overall project plan and schedule the tasks. The preparation activities described in this section give you an idea of what is involved. Please make sure that you also check the upgrade-relevant simplification items. For a short overview of the complete process, see [Overview of the Upgrade Process \[page 7\]](#).

i Note

In addition, review the planning section of the Software Update Manager guide *Software Update Manager (SUM) 2.0 SP<latest version>* at <https://support.sap.com/sltoolset>  [Software Logistics Toolset](#)  [System Maintenance](#) .

i Note

You get any application-specific preparation steps with the Simplification Item-Check and custom-code migration check results and with the Simplification Item Catalog.

3.1 Supported Start Releases

Please check the *SAP S/4HANA 1709: Release Information Note* [2482453](#) for the required feature package stack equivalencies for the upgrade from SAP S/4HANA 1511 and 1610 (all feature package stacks) to 1709.

If you intend to move from an SAP ERP release to SAP S/4HANA 1709, you need to do a system conversion, not an upgrade. For information about system conversion, see the *Conversion Guide for SAP S/4HANA 1709* at http://help.sap.com/s4hana_op_1709.

3.2 Maintenance Planner

Overview

You have to use the Maintenance Planner to do the upgrade to SAP S/4HANA 1709. The Maintenance Planner generates the download files (add-ons, packages, DBDs, and the stack configuration file) that the Software Update Manager (SUM) uses to do the upgrade. In particular, the Maintenance Planner checks if the following items are supported for the upgrade:

- Add-ons to your system
- Active business functions in your system
- Industry solutions

If there is no valid upgrade path for any of the items listed above (for example, an add-on is not released for the upgrade yet), the Maintenance Planner prevents the upgrade. After the check, the Maintenance Planner creates the stack configuration file (stack.xml).

i Note

Your need to run the Maintenance Planner before the Simplification Item-Check (SI-Check), because the SI-Check report also requires the stack.xml file as an input.

For more information, see the Maintenance Planner User Guide at <http://help.sap.com/maintenanceplanner>.

Preparing the Use of the Maintenance Planner

Besides the general preparation described in the *Maintenance Planner User Guide*, you have to make the following preparatory steps specific to the upgrade to SAP S/4HANA 1709:

1. Setup the Maintenance Planner as described in the *Maintenance Planner User Guide* available at <http://help.sap.com/maintenanceplanner>.
2. Check the SPAM/SAINT version in your source release system.

i Note

At least SPAM/SAINT patch 61 is required.

3. Apply SAP Note [2186164](#) to your SAP Solution Manager system.

4. Create an RFC-connection between your source release system and SAP Solution Manager:
 1. In SAP Solution Manager, choose **SOLMAN_WORKCENTER** > **Solution Manager Administration** > **Landscape (Technical Systems)**.
 2. Click **RFC connections** > **Start New Window**.
 3. Select client 000 and choose **Advanced Mode**.
 4. Under **Export Options**, fill in the field **SAP Solution Manager Host Name**.
 5. Under **Communication RFCs**, select **Create SM_<SID>CLNT<CLNT>_READ**.
 6. Select **Create New User**.
 7. Enter a password.
 8. Enter a user and password under **Managed System Setup Administrator**, and choose **Test Login** in the group **Administration Users** to check that it works.

Business Functions

Business functions can have the following status: `always_on`, `customer_switchable`, and `always_off`. This results in the following behavior during the upgrade:

- If a business function was switched on in the start release system, but defined as `always_off` in the SAP S/4HANA target release, then an upgrade is not possible with this release.
- If a business function was switched off in the start release system, but defined as `always_on` in the SAP S/4HANA target release, then the business function will be activated during the upgrade.
- If a business function is defined as `customer_switchable` in the SAP S/4HANA target release, it will keep the state defined in the target release during the upgrade.

For more information about always-off and always-on business functions in SAP S/4HANA 1709, see SAP Notes [2240359](#) and [2240360](#).

Add-Ons

For a list of supported add-ons, see SAP Note [2214409](#).

For information about uninstalling add-ons, see SAP Note [2011192](#).

Industry Solutions

For information about supported industry solutions, see SAP Note [2491467](#).

3.3 Simplification Item-Check

With SAP S/4HANA 1709 the Simplification Item-Check (SI-Check) replaces the pre-checks available with earlier SAP S/4HANA releases. The SI-Check is called by the Software Update Manager (SUM) tool and it identifies the simplification items relevant for your system upgrade.

i Note

For upgrades with the target releases SAP S/4HANA 1511 and 1610 (all feature package stacks), the SUM still calls the old pre-checks which are delivered with SAP Note [2182725](#).

The SI-Check is delivered with SAP Notes [2399707](#) and [2502552](#). SAP Note [2399707](#) delivers the new check report; SAP Note [2502552](#) delivers the check classes via transport-based correction instructions (TCI) and prerequisite notes.

i Note

If you follow the process described in SAP Note [2502552](#) exactly, you do not need to read any of the SAP Notes required by SAP Note [2502552](#). They do not contain any manual tasks and are independent of business functionality. After you run the SI-Check, the result list will contain the SAP Notes you have to look at in detail.

i Note

The SI-Check is not relevant for updates within a release, for example for an update from SAP S/4HANA 1709 to FPS01!

Implementing TCI and the SI-Check

1. To enable TCI implementation, follow the instructions provided in SAP Note [2187425](#) (see especially the PDF file attached to the SAP Note).

i Note

If you do not enable your system to install TCI notes, SAP Note [2502552](#) will be implemented without the TCI part, which will cause missing check class errors.

2. Follow the process description in SAP Note [2502552](#) to implement the SI-Checks.

Running the SI-Check

You run the SI-Check to identify the simplification items relevant for your upgrade project. We recommend to do this early in the project, to get an overview of the upgrade scope.

1. Start the report `/SDF/RC_START_CHECK` in transaction SA38.

2. In the section [Simplification Item Check Options](#), choose the target SAP S/4HANA version.
3. Choose the mode in which you want to run the checks:
 - In online mode: The results are displayed immediately after the check is finished.
 - As a background job: We recommend this option if the check will need a long running time.
4. Run the checks to get an overview over all simplification items and then check the system consistency with [Check Consistency for All](#).
5. Check the results

The report returns a list of relevant and irrelevant simplification items. We recommend that you check every relevant simplification item for the impact it will have on your upgrade project.

Some simplification items have a consistency check. The consistency check identifies inconsistencies in the system that would be a problem during the SUM process. It also provides additional information on how to solve the problem.

Some of the error messages from the consistency check aim for you to read and understand the information provided by the consistency check error – for example, the information might be about data loss incurred during the upgrade process. These errors can only be processed by creating an exception for them which is logged in the system. The errors are highlighted in the report in the column [Exemption Possible](#), so that you can see which errors need an exemption.

For more information about how to use the SI-Checks, see the user guide in SAP Note [2399707](#).

SI-Check Messages and Their Meanings

The SI-Checks checks your system for data consistency (necessary for the upgrade of existing data) and effects on the data after the upgrade. The severity of the resulting messages indicates whether there are no inconsistencies, warnings you should look at, or inconsistencies you need to resolve. The results are provided as green, yellow, or red messages:

Message Overview

Message Color	Message Return Code	Descriptions
Green	0	These messages indicate that there are no technical or other inconsistencies. They also function as status messages and indicate that the upgrade can go ahead.

Message Color	Message Return Code	Descriptions
Yellow	4	<p>These messages provide important information (or warnings) about various topics, such as changes to business functions, or adaptations that can be done either before or after the upgrade (but must be done to ensure business continuity). They indicate that there are no technical problems for the upgrade itself. However, some of these yellow messages provide information about possible data changes, changes in functionality, or required tasks after the upgrade. For instance, per default, no custom table appends are retained during the upgrade – the data from those fields is just lost.</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>⚠ Caution</p> <p>Please do not underestimate yellow messages. Read them carefully and do what is required to ensure system consistency after the upgrade, so that business continuity is not compromised.</p> </div>
Red	7	<p>These messages show skippable errors that indicate important changes for the affected simplification items. The errors are no inconsistencies, but you need to confirm that you have read and understood them. Usually they point out imminent data loss, deprecation, or required activities after the upgrade. Once you have confirmed (that is, exempted) them, they will no longer act as blockers for the upgrade.</p>
	8 or 12	<p>These messages always indicate inconsistencies in the system. These inconsistencies need to be solved before the upgrade, as they would act as blockers in later SUM phases. Please read the messages for information about how you can solve the inconsistencies.</p> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <p>i Note</p> <p>The Software Update Manager (SUM) runs the SI-Check at the beginning of the SUM process and again just before the downtime. At the beginning, the SUM process is stopped if a message with return code 12 is detected. Just before the downtime, the SUM process is stopped if a message with return code 8 or higher is found. So, for the SUM process to run successfully, you need to make sure that all the inconsistencies found by the SI-Check with message return codes at 8 or higher are solved.</p> </div>

3.4 Custom Code Analysis

Before upgrading to SAP S/4HANA 1709, you need to check your custom code against the SAP S/4HANA simplifications in a SAP NetWeaver 7.52 system with the Custom Code Migration tool. After you run the tool, you get a list of instances where your custom code does not comply with the scope and data structure of SAP S/4HANA 1709.

i Note

Although it is not mandatory, we highly recommend that you perform these checks regularly so that your code remains in compliance with the SAP S/4HANA code.

For additional information about the Custom Code Migration tool, see:

- SAP Note [2241080](#) for information about how to download the simplification database.
- SAP Help Portal at http://help.sap.com/s4hana_op_1709 ► *SAP NetWeaver for SAP S/4HANA* ► *Function-Oriented View* ► *Application Server* ► *Application Server ABAP* ► *Application Development on AS ABAP* ► *Customer-specific ABAP Development* ► *Custom Code Migration* ►

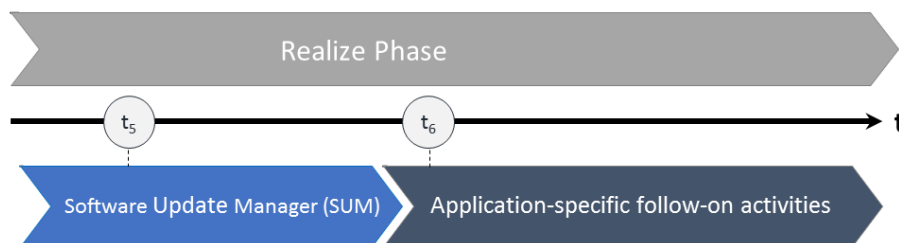
3.5 Upgrade Preparation for SAP Fiori for SAP S/4HANA 1709

When planning your upgrade you need to consider the following SAP Fiori information:

1. SAP Note [2356936](#)
When upgrading the Gateway server from SAP S/4HANA 1511 to SAP S/4HANA 1709, you need the SAP Fiori Front-End Server 3.0 (included with SAP NetWeaver 7.52 for SAP S/4HANA 1709), but the other SAP NetWeaver components can stay on the SAP NetWeaver 7.50 release.
See also the *SAP Fiori for SAP S/4HANA 1709 Release Information Note* [2482461](#), which contains correction notes.
2. For information about the new SAP Fiori launchpad features, see the What's New documentation for UI technologies at http://help.sap.com/s4hana_op_1709 ► *SAP NetWeaver for SAP S/4HANA* ► *What's New* ►.

See also [Follow-On Activities for SAP Fiori \[page 18\]](#).

4 Realizing the Upgrade



Upgrade to SAP S/4HANA 1709: Realization

After the preparation phase, you start the upgrade to SAP S/4HANA 1709 using the Software Update Manager (SUM) tool. Make sure that you also check the upgrade-relevant simplification items! For a short overview of the entire process, see [Overview of the Upgrade Process \[page 7\]](#).

Software Update Manager (SUM) is the technical tool used for the upgrade to SAP S/4HANA.

i Note

You have to run the Maintenance Planner before the SUM, because the SUM requires the `stack.xml` generated by the Maintenance Planner as an input. For more information, see [Maintenance Planner \[page 11\]](#).

For all information about using the SUM, see the guide *Software Update Manager (SUM) 2.0 SP<latest version>* available at <https://support.sap.com/sltoolset> [▶](#) *Software Logistics Toolset 1.0 (SL Toolset)* [▶](#) *System Maintenance* [▶](#).

i Note

Simplification Item-Check and custom-code migration checks are carried out by the SUM tool. It will provide you with a list of results that may include manual application-specific activities you need to do before the upgrade can be finalized.

i Note

See also SAP Note [2536195](#). The note contains an important correction for an upgrade-relevant error.

4.1 Follow-On Activities for SAP Fiori

Please do the following tasks on your **front-end server** after the technical upgrade with the Software Update Manager (SUM) to SAP S/4HANA 1709 to ensure that your SAP Fiori Launchpad and SAP Fiori Applications are able to run properly:

1. Check the latest correction notes from the *SAP Fiori for SAP S/4HANA 1709 Release Information Note* [2482461](#).
2. **Clear caches:**
 1. Run transaction `/UI2/INVAL_CACHES` to invalidate all UI2 caches.
 2. If you are using the SAPUI5 cache busting mechanism for your SAP Fiori Launchpad, run the report `/UI2/INVALIDATE_CLIENT_CACHES` to invalidate the client caches.
For more information, see the product assistance at: http://help.sap.com/s4hana_op_1709 ► *SAP NetWeaver for SAP S/4HANA* ► *Function-Oriented View* ► *UI Technologies in SAP NetWeaver* ► *SAP Fiori Launchpad* ► *Administration Guide* ► *Operations* ► *Performance* ► *Cache Buster for SAP Fiori* ►.
 3. Run the report `/UI2/DELETE_CACHE_AFTER_IMP`. It clears the UI2 cache on the front-end server.
3. **Update the SAPUI5 application index** by running the report `/UI5/APP_INDEX_CALCULATE` with the option *Full calculation* enabled.
For more information, see the product assistance at: http://help.sap.com/s4hana_op_1709 ► *SAP NetWeaver for SAP S/4HANA* ► *Function-Oriented View* ► *UI Technologies in SAP NetWeaver* ► *SAPUI5: UI Development Toolkit for HTML5* ► *Developing Apps* ► *The SAPUI5 ABAP Repository and the ABAP Back-End Infrastructure* ► *SAPUI5 Application Index* ►.
4. **Replicate app descriptors from the back-end system:**

If you use Web Dynpro or SAP GUI for HTML Apps on your SAP Fiori Launchpad it may be necessary to update their app descriptors or to load new app descriptors from the connected back-end system.

 1. Check that your system is configured as described in section *Replicate App Descriptors from Back-End System* in the *UI Technology Guide for SAP S/4HANA 1709*. You find this guide at: http://help.sap.com/s4hana_op_1709 ► *Product Documentation* ► *UI Technology Guide* ►.
 2. Run the report `/UI2/GET_APP_DESCR_REMOTE_ALL` on your front-end server to start the replication.

i Note

The above steps are also required when updating to a new service pack (SP) or feature package stack (FPS).

Please do the following task on your **back-end server**:



If you use SAP GUI for HTML Apps on your SAP Fiori Launchpad, check if the ICF node `/sap/public/bc/its` and all its sub-nodes are activated (use transaction `SICF`).

Important Disclaimers and Legal Information

Hyperlinks

Some links are classified by an icon and/or a mouseover text. These links provide additional information.

About the icons:

- Links with the icon : You are entering a Web site that is not hosted by SAP. By using such links, you agree (unless expressly stated otherwise in your agreements with SAP) to this:
 - The content of the linked-to site is not SAP documentation. You may not infer any product claims against SAP based on this information.
 - SAP does not agree or disagree with the content on the linked-to site, nor does SAP warrant the availability and correctness. SAP shall not be liable for any damages caused by the use of such content unless damages have been caused by SAP's gross negligence or willful misconduct.
- Links with the icon : You are leaving the documentation for that particular SAP product or service and are entering a SAP-hosted Web site. By using such links, you agree that (unless expressly stated otherwise in your agreements with SAP) you may not infer any product claims against SAP based on this information.

Beta and Other Experimental Features

Experimental features are not part of the officially delivered scope that SAP guarantees for future releases. This means that experimental features may be changed by SAP at any time for any reason without notice. Experimental features are not for productive use. You may not demonstrate, test, examine, evaluate or otherwise use the experimental features in a live operating environment or with data that has not been sufficiently backed up.

The purpose of experimental features is to get feedback early on, allowing customers and partners to influence the future product accordingly. By providing your feedback (e.g. in the SAP Community), you accept that intellectual property rights of the contributions or derivative works shall remain the exclusive property of SAP.

Example Code

Any software coding and/or code snippets are examples. They are not for productive use. The example code is only intended to better explain and visualize the syntax and phrasing rules. SAP does not warrant the correctness and completeness of the example code. SAP shall not be liable for errors or damages caused by the use of example code unless damages have been caused by SAP's gross negligence or willful misconduct.

Gender-Related Language

We try not to use gender-specific word forms and formulations. As appropriate for context and readability, SAP may use masculine word forms to refer to all genders.

© 2019 SAP SE or an SAP affiliate company. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP SE or an SAP affiliate company. The information contained herein may be changed without prior notice.

Some software products marketed by SAP SE and its distributors contain proprietary software components of other software vendors. National product specifications may vary.

These materials are provided by SAP SE or an SAP affiliate company for informational purposes only, without representation or warranty of any kind, and SAP or its affiliated companies shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP or SAP affiliate company products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

SAP and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP SE (or an SAP affiliate company) in Germany and other countries. All other product and service names mentioned are the trademarks of their respective companies.

Please see <https://www.sap.com/about/legal/trademark.html> for additional trademark information and notices.