



Upgrade Guide | PUBLIC

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# Upgrade Guide for SAP S/4HANA 2021

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# Document History

Version	Date	Description
1.0	October 13, 2021	Version for SAP S/4HANA 2021.
1.1	November 9, 2021	Added information about the SAP Readiness Check for SAP S/4HANA upgrades throughout the guide.
1.2	December 14, 2021	Updated section <a href="#">Silent Data Migration [page 24]</a> .
2.0	February 23, 2022	Version for SAP S/4HANA 2021 FPS01.
3.0	May 25, 2022	Version for SAP S/4HANA 2021 FPS02.
4.0	November 07, 2022	Version for SAP S/4HANA 2021 SPS03.
5.0	May 17, 2023	Version for SAP S/4HANA 2021 SPS04.
6.0	November 08, 2023	Version for SAP S/4HANA 2021 SPS05.
7.0	July 24, 2024	Version for SAP S/4HANA 2021 SPS06.
7.1	October 24, 2024	Updates to section <a href="#">Silent Data Migration [page 24]</a> .
8.0	January 22, 2025	Version for SAP S/4HANA 2021 SPS07.

# 1 Upgrade Guide for SAP S/4HANA

This guide explains the upgrade process for the upgrade from all lower releases of SAP S/4HANA to SAP S/4HANA 2021 (any feature package or support package stack).

## 2 Getting Started

Read this guide carefully to get an overview of how to do the upgrade from a lower release of SAP S/4HANA to SAP S/4HANA 2021 (any feature package or support package stack).

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 2.0 <latest version>*
- *Maintenance Planner User Guide*
- **SAP Readiness Check for SAP S/4HANA upgrades**  
This tool analyzes your SAP S/4HANA source system and highlights important aspects of the upgrade to your SAP S/4HANA target system, such as identification of relevant simplification items, high-level custom code analysis, add-on compatibility, and more.

### → Recommendation

Although not mandatory, this tool is highly recommended. It is relevant for product release upgrades (for example from SAP S/4HANA 2020 to 2021), but not for updates from one FPS or SPS to the next (for example from SAP S/4HANA 2020 FPS02 to SPS03).

- *Custom Code Migration Guide for SAP S/4HANA*

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 \[page 8\]](#) provides information about the different phases of the upgrade and the tools involved.

The sections [Preparing the Upgrade \[page 14\]](#) and [Realizing the Upgrade \[page 24\]](#) 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
<p>Simplification Item Catalog</p> <p>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.</p>	<p><a href="https://help.sap.com/s4hana_op_2021">https://help.sap.com/s4hana_op_2021</a></p> <p>► <i>Implement</i> ► <i>Conversions &amp; Upgrade Assets</i> ►</p>	<p>Lists the simplifications in comparison to the previous releases, SAP S/4HANA 1511, 1610, 1709, 1809, 1909 and 2020 (all feature package stacks), such as, simplified functions, merged database tables, and new data models.</p>
<p><i>Software Update Manager 2.0 &lt;latest SP&gt;</i></p>	<p><a href="http://help.sap.com/sltoolset">http://help.sap.com/sltoolset</a> ►</p> <p>► <i>Software Logistics Toolset (SL Toolset)</i> ► <i>System Maintenance</i></p> <p>► <i>System Maintenance Scenarios</i></p> <p>► <i>Software Update/Upgrade using SUM</i> ►</p>	<p>Describes how to do the upgrade to SAP S/4HANA 2021 using the Software Update Manager tool.</p>
<p><i>Maintenance Planner User Guide</i></p>	<p><a href="http://help.sap.com/maintenanceplanner">http://help.sap.com/maintenanceplanner</a> ►</p>	<p>Describes how to use the Maintenance Planner for calculating and downloading the required stack.xml file and software packages.</p>
<p>SAP Readiness Check for SAP S/4HANA upgrades</p>	<p><a href="https://sap.com/readinesscheck">https://sap.com/readinesscheck</a> ►</p>	<p>This tool analyzes your SAP S/4HANA source system and highlights important aspects of the upgrade to your SAP S/4HANA target system, such as identification of relevant simplification items, high-level custom code analysis, add-on compatibility, and more.</p>
<div style="background-color: #e0e0e0; padding: 10px; border: 1px solid #ccc;"> <p>→ Recommendation</p> <p>Although not mandatory, this tool is highly recommended. It is relevant for product release upgrades (for example from SAP S/4HANA 2020 to 2021), but not for updates from one FPS or SPS to the next (for example from SAP S/4HANA 2020 FPS02 to SPS03).</p> </div>		
<p><i>Custom Code Migration Guide for SAP S/4HANA</i></p>	<p><a href="https://help.sap.com/s4hana_op_2021">https://help.sap.com/s4hana_op_2021</a> ► <i>Implement</i> ►</p> <p><i>Conversion &amp; Upgrade Assets</i> ►</p>	<p>Provides instructions on how to adapt your custom code.</p>
<p><i>SAP S/4HANA 2021: Release Information Note</i></p>	<p>SAP Note <a href="#">3015539</a> ►</p>	<p>-</p>

Document	Available at	Comment
SAP S/4HANA 2021: Feature Package Stack 00: Additional Release Information	SAP Note <a href="#">3015509</a>	-
SAP S/4HANA 2021: Restriction Note	SAP Note <a href="#">3079550</a>	-
SAP S/4HANA Add-on Note	SAP Note <a href="#">2214409</a>	-
ABAP Platform 2021 – General Information	SAP Note <a href="#">3075227</a>	-
ABAP Platform 2021 – Restrictions	SAP Note <a href="#">3075238</a>	-
Notes relevant for the Simplification Item Check	SAP Notes <a href="#">2399707</a> and <a href="#">2502552</a>	With these notes, the SI-Check is delivered.
SAP S/4HANA 2021 - application specific notes in system conversion / upgrade preparation phase	SAP Note <a href="#">3079720</a>	Information about errors that may occur during the preparation phase of the upgrade.
Additional information about the upgrade with the Software Upgrade Manager tool.	SAP Note for the latest version of SUM 2.0 at <a href="https://support.sap.com/sltoolset">https://support.sap.com/sltoolset</a> <a href="#">▶</a> <a href="#">System Maintenance</a> <a href="#">▶</a> <a href="#">System Maintenance Scenarios</a> <a href="#">▶</a> <a href="#">Software Update/Upgrade using SUM</a> <a href="#">▶</a>	Information about errors that may occur during the SUM phase of the upgrade.
SAP S/4HANA 2021 - application specific notes in system conversion / upgrade follow-on phase	SAP Note <a href="#">3079695</a>	Information about errors that may occur during the follow-on phase of the upgrade.
SAP S/4HANA Foundation 2021: Release Information Note	SAP Note <a href="#">2975721</a>	-
SAP Fiori for SAP S/4HANA 2021 Release Information Note	SAP Note <a href="#">3067553</a>	-
General Information: Installation details of SAP Fiori front-end server 2021 for SAP S/4HANA	SAP Note <a href="#">3085560</a>	-

## Additional Information and SAP Notes

The following table lists important additional documents and SAP Notes.

Document	Available at	Comment
<i>SAP S/4HANA: Always-Off Business Functions</i>	SAP Note <a href="#">2240359</a>	-
<i>SAP S/4HANA: Always-On Business Functions</i>	SAP Note <a href="#">2240360</a>	-
<i>Uninstalling ABAP Add-ons</i>	SAP Note <a href="#">2011192</a>	-
<i>SPAU Adjustment</i>	SAP Note <a href="#">2344014</a>	-
<i>Automated guided steps for enabling Note Assistant for TCI and Digitally Signed SAP Notes</i>	SAP Note <a href="#">2836302</a>	-
<i>SAP S/4HANA System Conversion / Upgrade: Measures to reduce technical downtime</i>	SAP Note <a href="#">2351294</a>	-
<i>Superfluous field "BUFFERED" causes exception in Consolidation and Mass Processing and potential S/4 upgrade error</i>	SAP Note <a href="#">2781530</a>	-
<i>SAP S/4HANA Service: Upgrade Information for WebClient UI Framework</i>	SAP Note <a href="#">2834255</a>	-

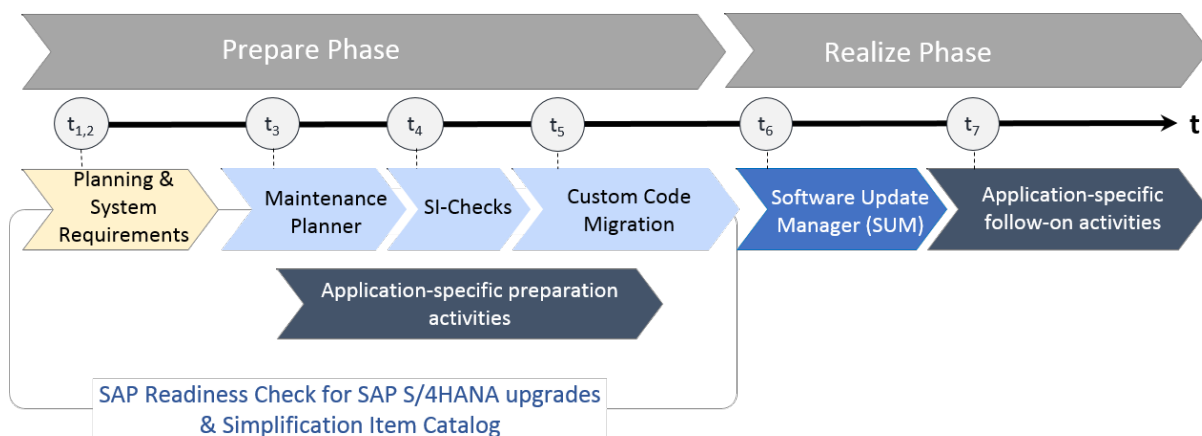
## 2.2 Overview of the Upgrade Process

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 higher SAP S/4HANA releases.

### → 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: Sequence

## Prepare Phase

### Simplification Item Catalog

To enable you to do an optimal planning of your upgrade, 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.

#### → Recommendation

We recommend that you consume the simplification items also via the SAP Readiness Check for SAP S/4HANA upgrades. Based on an analysis of the configuration, data, and usage of your productive SAP S/4HANA source release, the SAP Readiness Check for SAP S/4HANA for upgrades identifies the simplification items relevant for your upgrade to your SAP S/4HANA target release.

For more information about how to use the SAP Readiness Check for SAP S/4HANA upgrades, see <https://sap.com/readinesscheck>.

You find the Simplification Item Catalog at <https://launchpad.support.sap.com/#/sic>.

#### ⓘ Note

When using the Simplification Item Catalog directly instead of the SAP Readiness Check for SAP S/4HANA upgrades, please note that the catalog contains **all** the simplification items, not only those that are relevant for your upgrade project. This means you need to identify those which are actually relevant for your upgrade (which the SAP Readiness Check for SAP S/4HANA upgrades does automatically). And when you have done this, you also need to look at the relevant simplification SAP Notes themselves to get all the available information. The SAP Notes contain all the required information for each simplification item. The SAP Readiness Check for SAP S/4HANA upgrades links directly to the most recent version of the SAP Notes.

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 have to do the following preparatory activities:

## 1. Planning

### → Recommendation

We highly recommend to run the SAP Readiness Check for SAP S/4HANA upgrades in advance of your upgrade project to identify any issues you need to consider and activities you need to do in preparation for your project.

For more information about how to use the SAP Readiness Check for SAP S/4HANA upgrades, see <https://sap.com/readinesscheck>.

See also, [SAP Readiness Check Versus SI-Check \[page 11\]](#).

## 2. System Requirements

You need to be aware of system requirements, see [Supported Start Releases \[page 15\]](#).

## 3. 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 the SAP S/4HANA release to which you are upgrading and also creates the stack file used during the upgrade process (done by the Software Update Manager tool). For more information, see [Maintenance Planner \[page 15\]](#).

### ⓘ 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.

## 4. 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 \[page 17\]](#).

### ⓘ 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 SAP Note [2399707](#)).

See also, [SAP Readiness Check Versus SI-Check \[page 11\]](#).

## 5. Custom Code Migration

The custom code migration tool checks your custom code against the simplification items relevant for the upgrade. For more information, see [Custom Code Analysis \[page 19\]](#).

### Note

While not mandatory, this step is highly recommended. Ideally, you combine the 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.

For more information, see the Custom Code Migration Guide for SAP S/4HANA at [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► *Implement* ► *Conversion & Upgrade Assets* ►.

#### 6. 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.

### → Recommendation

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

## 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 the SAP S/4HANA release to which you are upgrading, you then run the SUM. The SUM does the actual software upgrade. For more information, see [Realizing the Upgrade \[page 24\]](#).

Migration of application data usually happens during release upgrades or updates while the system is down. SAP provides the Silent Data Migration Infrastructure (SDMI) to allow the migration of application data after the upgrade during business operations. For more information, see [Silent Data Migration \[page 24\]](#).

#### 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.

## 2.3 SAP Readiness Check Versus SI-Check


The tools SAP Readiness Check SAP S/4HANA upgrades and Simplification Item-Check (SI-Check) are used to support the upgrade process, see also [Overview of the Upgrade Process \[page 8\]](#). The following table explains the differences between the two tools.


	<b>SAP Readiness Check</b>	<b>Simplification Item-Check</b> <i>/SDF/RC_START_CHECK</i>
<b>Type</b>	Customer self-service provided by SAP Digital Business Services (included as standard support)	Standalone report
<b>SAP Solution Manager</b>	Not required	Not required
<b>User Interface</b>	Cloud-based web interface	SAP GUI
<b>Included Checks</b>	<ul style="list-style-type: none"> <li>• Simplification item relevance</li> <li>• Custom code</li> <li>• Recommended SAP Fiori apps</li> <li>• Add-on compatibility</li> <li>• SAP Custom Development projects</li> <li>• Check of system consistency before conversion or upgrade</li> <li>• Integration analysis</li> </ul>	<ul style="list-style-type: none"> <li>• Simplification item relevance</li> <li>• Check of system consistency before conversion or upgrade</li> </ul>
<b>Called by Software Update Manager (SUM)</b>	No	Yes
<b>Mandatory</b>	No	Yes
<b>Use Cases</b>	<ul style="list-style-type: none"> <li>• Conversion to SAP S/4HANA</li> <li>• Upgrade to a higher SAP S/4HANA release</li> </ul>	<ul style="list-style-type: none"> <li>• Conversion to SAP S/4HANA</li> <li>• Upgrade to a higher SAP S/4HANA release</li> </ul>

While both the SAP Readiness Check and the Simplification Item-Check can display information on simplification item relevance and consistency, they serve different purposes and are both required:

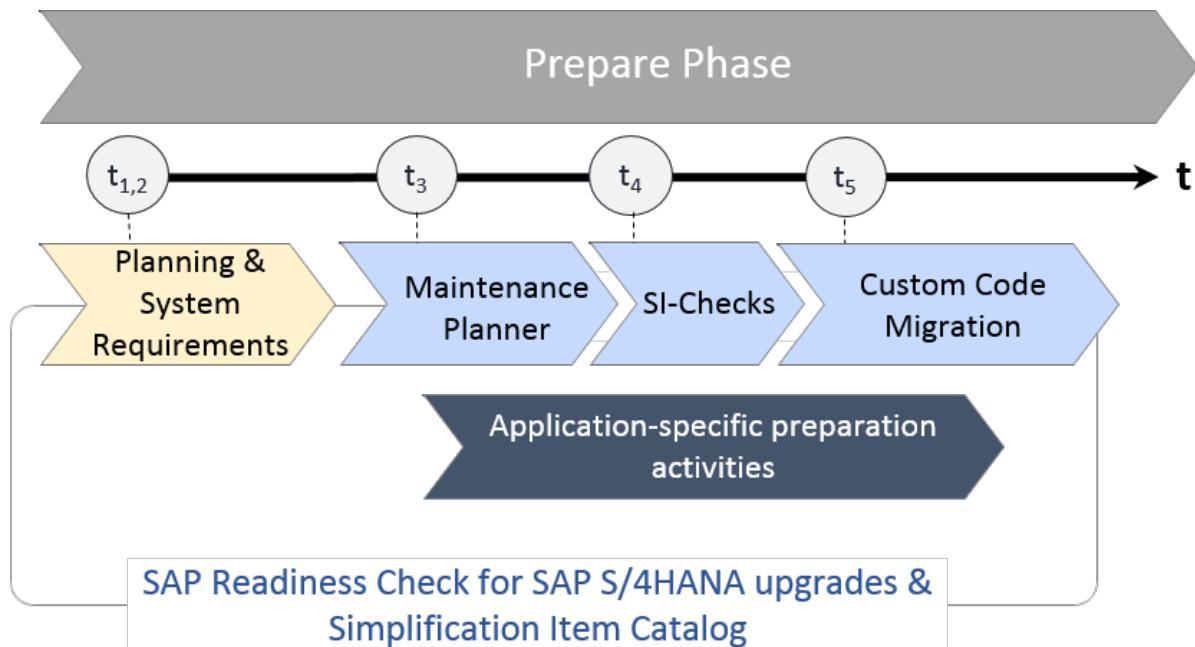
- SAP Readiness Check for SAP S/4HANA upgrades is mainly a planning tool which you run early in an upgrade project to get an overview about the required activities – including tasks related to simplification items. It is also useful for tracking these activities during the project, for example, using the burndown chart that shows simplification item consistency errors.
- The Simplification Item-Check is used on operational level during the cleanup of the simplification item consistency errors, up to the downtime, before which the SUM tool does the final executions of the SI-Check. So, the SI-Check offers a more detailed control over running the checks. This includes the option to re-run checks for individual simplification items instead of running all checks like SAP Readiness Check for SAP S/4HANA upgrades does. This option can significantly reduce the check runtime when you just want to re-check if a specific error which you have just fixed is really gone. In addition, the SI-Check offers the option to exempt certain types of errors (for details, see the blog post linked below).

For more information, see:

- SAP Note [3059197](#)  (about the SAP Readiness Check).
- In this guide [Simplification Item-Check \[page 17\]](#)

- Blog post [https://blogs.sap.com/2018/03/26/sap-s4hana-simplification-item-check-how-to-do-it-right./](https://blogs.sap.com/2018/03/26/sap-s4hana-simplification-item-check-how-to-do-it-right/) 

### 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 \[page 8\]](#).

#### 📌 Note

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

#### 📌 Note

You find some preparation steps in this guide and you get additional ones with the Simplification Item-Check and custom-code checks as well as with the Simplification Item Catalog or the SAP Readiness Check for SAP S/4HANA upgrades.

Please see also SAP Note [3079720](#) ▶.

## 3.1 Supported Start Releases

Please check the *SAP S/4HANA 2021: Release Information Note* [3015539](#) for the required feature package stack equivalencies for the upgrade from SAP S/4HANA 1511, 1610, 1709, 1809, 1909 or 2020 (all feature package and support package stacks) to 2021 (all feature package and support package stacks).

If you intend to move from an SAP ERP release to SAP S/4HANA 2021, you need to do a system conversion, not an upgrade. For information about system conversion, see the *Conversion Guide for SAP S/4HANA* at [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► *Implement* ► *Guides* .

## 3.2 Maintenance Planner

### Overview

You have to use the Maintenance Planner to do the upgrade to an SAP S/4HANA release. 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).

#### 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:

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.

#### Note

SPAM/SAINT patch 71 (or higher) 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, 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 [3079550](#).



### 3.3 Simplification Item-Check

The SI-Check is called by the Software Update Manager (SUM) tool and it identifies the simplification items relevant for your system upgrade.

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.

#### 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.

#### Note

The SI-Check is not relevant for updates within a release, for example for an update from SAP S/4HANA 1909 FPS01 to FPS02!

### 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).

#### 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. However, if your system is on SAP NetWeaver / ABAP Platform releases listed in the table, TCI is already enabled:

TCI Enabled Releases

Release	Minimum Support Package
750	SP05
751	SP02
752	SP00
753	SP00
Or higher	-

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 simplification items do not have a consistency check, but nevertheless are relevant. This means that from a technical perspective an upgrade of your system is possible without any action from you, but there will be an impact and you should investigate it.

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><b>⚠ Caution</b></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><b>📄 Note</b></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

The custom code migration checks are based on the simplification item concept. Before upgrading to SAP S/4HANA 2021 (or any of its feature package or support package stacks), you need to check your custom code against the SAP S/4HANA simplifications in a SAP S/4HANA 2021 system (on the correct feature package or support package stack) 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 2021 (any feature package or support package stack).

## Note

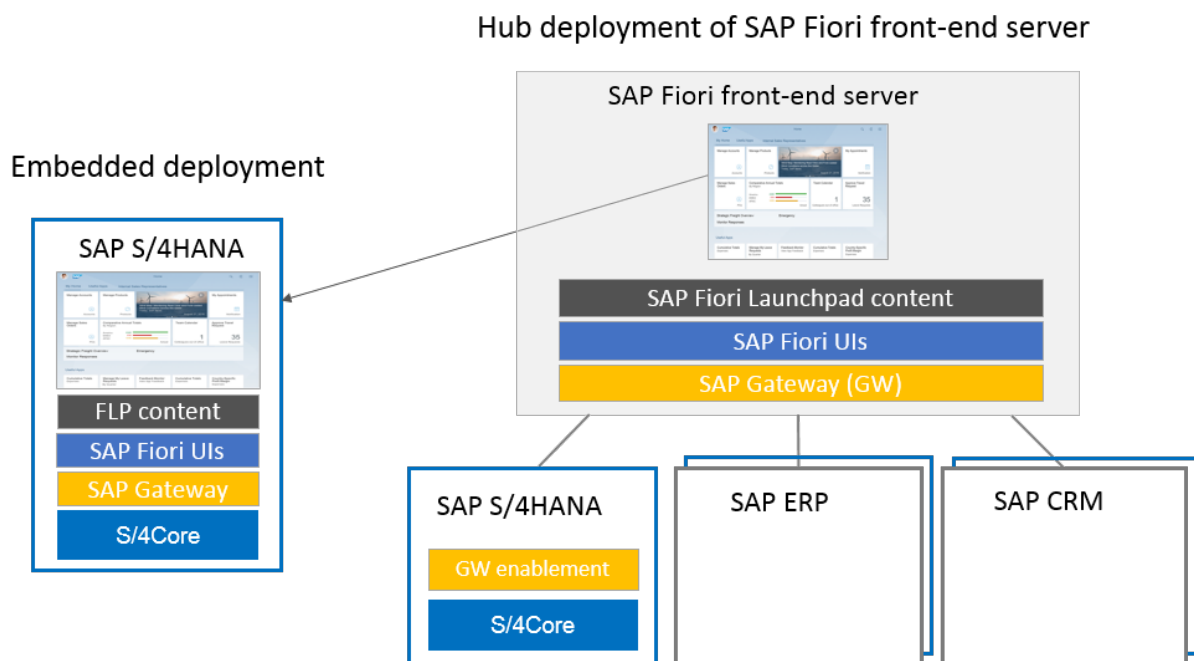
Although it is not mandatory, we highly recommend that you perform these checks regularly so that your code remains in compliance with the SAP S/4HANA code.

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

- SAP Note [2241080](#) for information about how to download the simplification database.
- *Custom Code Migration Guide for SAP S/4HANA* at [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► *Implement* ► *Conversion & Upgrade Assets* ►.

## 3.5 Upgrade Information for SAP Fiori for SAP S/4HANA

SAP Fiori can be deployed in an embedded and/or a hub scenario. In the sections below, you find information about the components and versions required for each of the two scenarios.



For more information, see:

- SAP Note [2590653](#) (about SAP Fiori deployment options)
- *SAP Fiori for SAP S/4HANA 2021: Release Information Note* [3067553](#)
- *SAP Fiori Overview* at [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► *Use* ► *Product Assistance* ► *English* ► *Enterprise Technology* ► *SAP Fiori* ►.  
See the section *Update, Upgrade, or Migrate*.

See also [Follow-On Activities for SAP Fiori \[page 26\]](#).

## Embedded Deployment

The columns in the table below show the embedded components for the SAP S/4HANA releases 1709 to 2020.

### Note

The SAP Fiori front-end server 2021 for SAP S/4HANA (SAP FES 2021) is downward compatible with SAP S/4HANA 1909 and 2020. It is therefore possible to upgrade to SAP FES 2021 first and upgrade the SAP S/4HANA version later.

Embedded Deployment

Embedded 1809	Embedded 1909	Embedded 2020	Embedded 2021
Optional UI Components (HR, Travel, MDG)	Optional UI Components (HR, Travel, MDG)	Optional UI Components (HR, Travel, MDG)	Optional UI Components (HR, Travel, MDG)
SAP Fiori for SAP S/4HANA 1809	SAP Fiori for SAP S/4HANA 1909	SAP Fiori for SAP S/4HANA 2020	SAP Fiori for SAP S/4HANA 2021
SAP FES 5.0 (with My Inbox) SAPUI5 1.56 <b>Or SAP FES 6.0</b> <b>Or SAP FES 2020</b>	SAP FES 6.0 (with My Inbox) SAPUI5 1.65 <b>Or SAP FES 2020</b> <b>Or SAP FES 2021</b>	SAP FES 2020 for SAP S/4HANA SAPUI5 1.78 <b>Or SAP FES 2021</b>	SAP FES 2021 for SAP S/4HANA SAPUI5 1.90
SAP S/4HANA 1809	SAP S/4HANA 1909	SAP S/4HANA 2020	SAP S/4HANA 2021
SAP Gateway 7.53	SAP Gateway 7.54	SAP Gateway 7.55	SAP Gateway 7.56
ABAP Platform 1809	ABAP Platform 1909	ABAP Platform 2020	ABAP Platform 2021
See also, SAP Note <a href="#">2662732</a>	See also, SAP Note <a href="#">2790996</a>	See also, SAP Note <a href="#">2935725</a>	See also, SAP Note <a href="#">3085560</a>

## Hub Deployment

The columns in the table below show the hub and backend components for the SAP S/4HANA releases 1809 to 2021.

### Note

The SAP Fiori front-end server 2021 for SAP S/4HANA (SAP FES 2021) is downward compatible with SAP S/4HANA 1909 and 2020. It is therefore possible to upgrade to SAP FES 2021 first and upgrade the SAP S/4HANA version later.

## Hub Deployment

Hub 1809	Hub 1909	Hub 2020	Hub 2021
<b>Frontend</b>	<b>Frontend</b>	<b>Frontend</b>	<b>Frontend</b>
Optional UI Components (HR, Travel, MDG)	Optional UI Components (HR, Travel, MDG)	Optional UI Components (HR, Travel, MDG)	Optional UI Components (HR, Travel, MDG)
SAP Fiori for SAP S/4HANA 1809	SAP Fiori for SAP S/4HANA 1909	SAP Fiori for SAP S/4HANA 2020	SAP Fiori for SAP S/4HANA 2021
SAP Fiori FES 5.0 (with My Inbox)	SAP Fiori FES 6.0 (with My Inbox)	SAP FES 2020 for SAP S/4HANA	SAP FES 2021 for SAP S/4HANA
SAPUI5 1.56	SAPUI5 1.65	SAPUI5 1.78	SAPUI5 1.90
SAP Gateway 7.51 (minimum version)	SAP Gateway 7.51 (minimum version)	SAP Gateway 7.52 (minimum version)	SAP Gateway 7.52 (minimum version)
Kernel 7.49 PL401 (minimum version)	SAP NetWeaver 7.51 SP06 (minimum version - the maximum version is SAP NetWeaver 7.52)	SAP NetWeaver 7.52 SP07 (minimum version)	SAP NetWeaver 7.52 SP08 (minimum version)
SAP NetWeaver 7.51 SP06 (minimum version - the maximum version is SAP NetWeaver 7.52)			
<b>Or SAP Fiori FES 6.0</b>			
<b>Backend</b>	<b>Backend</b>	<b>Backend</b>	<b>Backend</b>
SAP S/4HANA 1809	SAP S/4HANA 1909	SAP S/4HANA 2020	SAP S/4HANA 2021
SAP Gateway 7.53	SAP Gateway 7.54	SAP Gateway 7.55	SAP Gateway 7.56
ABAP Platform 1809	ABAP Platform 1909	ABAP Platform 2020	ABAP Platform 2021
See also, SAP Note <a href="#">2662732</a>	See also, SAP Note <a href="#">2790996</a>	See also, SAP Note <a href="#">2935725</a>	<a href="#">3085560</a>

## Recommended SAP Fiori Apps

You can use the SAP Readiness Check for SAP S/4HANA upgrades to recommend SAP Fiori apps based on your transaction usage history, see the section *Recommended SAP Fiori Apps* at <https://sap.com/readinesscheck> ▶ *Feature Scope Description* ▶ *SAP Readiness Check* ▶ *Functions of SAP Readiness Check for SAP S/4HANA Upgrades* ▶.

## 3.6 Upgrade Information for Java Instances

If you plan an upgrade for SAP S/4HANA Java instances to SAP S/4HANA 2021 (any feature package or support package stack), first check that your operating system is still supported. For more information, see the Product Availability Matrix at <https://apps.support.sap.com/sap/support/pam>.

If your operating system is no longer supported, you have to migrate to a supported operating system using the system copy procedure. For information see the system copy guide at <https://support.sap.com/slttoolset> ► *System Provisioning* ► *System Provisioning Scenarios* ► *Copy a System using Software Provisioning Manager*.

## 3.7 Upgrade Information for Operational Data Provisioning for SAP BW

When upgrading to SAP S/4HANA 2021, software component SAP BASIS is also updated to Version 7.56. With the upgrade of SAP BASIS 7.53, two technical job definitions automatically became active:

- `SAP_ODQ_CLEANUP`: Scheduling of program `ODQ_CLEANUP` for reorganization of delta queue
- `SAP_ODQ_DAEMON_STARTER`: Scheduling of program `ODQ_DAEMON` for support of real-time subscriptions

Before the upgrade, please check whether you have scheduled program `ODQ_CLEANUP` or `ODQ_DAEMON` with your own variants. In this case, you must decide whether you continue with the scheduling of your own variants after the upgrade, or instead, want to use the variants recommended by SAP in the technical job definitions. If your own variants correspond to the variants recommended by SAP, choose to use the technical job definitions.

For more information, see SAP Note [2677355](https://support.sap.com/2677355).

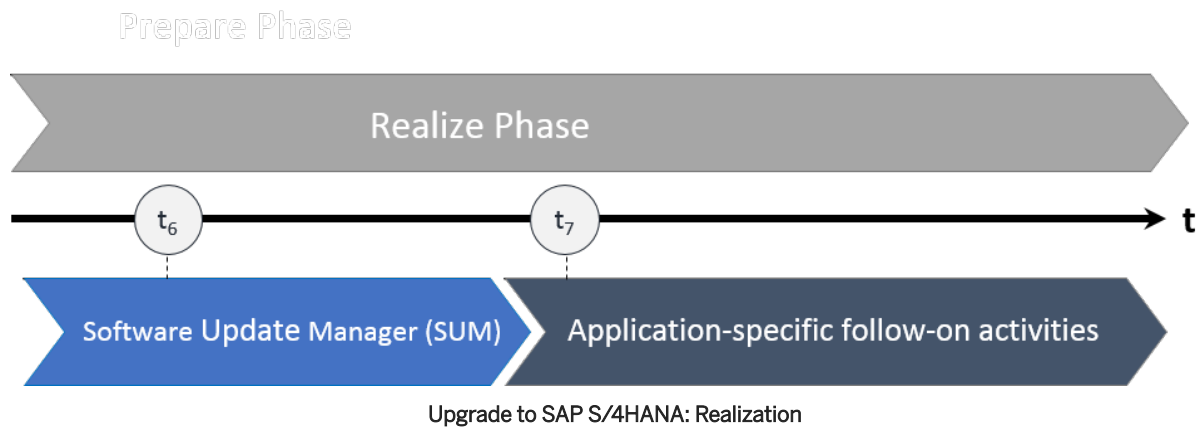
## 3.8 Data Transition Validation

The data transition validation is a tool that allows you to compare business data before and after a system conversion from SAP ERP to SAP S/4HANA, or before and after an SAP S/4HANA upgrade. The tool supports validation of upgrade or conversion scenarios with predelivered content for business validation. The tool uses business reports or transactions as instruments of comparison. It is available as part of the standard license.

For more information about the DTV tool, see:

- Product documentation at [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► *Use* ► *Product Assistance* ► *English* ► *Enterprise Technology* ► *ABAP Platform* ► *Adminstrating the ABAP Platform* ► *Administration Concepts and Tools* ► *Solution Life Cycle Management* ► *Software Logistics* ► *Data Transition Validation*
- SAP Note [3117879](https://support.sap.com/3117879)

## 4 Realizing the Upgrade



After the preparation phase, you start the upgrade 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 \[page 8\]](#).

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

### 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 \[page 15\]](#).

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

### 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.

Please see also SAP Note [3079695](#) ►.

### 4.1 Silent Data Migration

Migration of application data usually happens during release upgrades or updates during downtime. In contrast, the Silent Data Migration Infrastructure (SDMI) allows zero-downtime upgrades and runs after the upgrade (or conversion) during business operations.



An SDMI supports uptime capability for at least one release. Therefore zero-downtime upgrades are possible if every release is taken into account. If an upgrade jumps over a certain release (for example, if the upgrade goes from SAP S/4HANA 1809 straight to SAP S/4HANA 2020), the SDMIs from the release that was jumped over (in this example, SAP S/4HANA 1909) are done during business downtime (if they do not support uptime capability for the target release).

As of SAP S/4HANA 2020 (as start release) SDMIs also support **three** releases in uptime making it possible to do jump-upgrades with zero downtime option (ZDO) over up to **two** releases (towards the **third** release), for example from SAP S/4HANA 2020 to SAP S/4HANA 2023.

By default the SDMIs are run during uptime. The SDMI job from the job repository starts and calls the SDMIs in each client individually once the system comes out of the maintenance mode. To see all relevant SDMIs, call transaction `SDM_MON`.

The users can be maintained in transaction `SDM_USER` prior to the upgrade, so that the users can comply to your corporate standard. However, they can also be created as technical users during the upgrade process by the Software Update Manager (SUM). During the post-processing phase, the SUM checks if the technical user exists. If not, a message will be created in the update log. If the users are not created, the SDMIs cannot be started and the data will not be migrated.

#### Note

It is also possible to create the technical users after the SUM run. For more information, see [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► Use ► Product Assistance ► English ► Enterprise Technology ► ABAP Platform ► Adminstrating the ABAP Platform ► Administration Concepts and Tools ► Solution Life Cycle Management ► Silent Data Migration Infrastructure ►.

The SUM offers the option to force the SDMI processing during downtime. In that case, the SDMIs are finished by the time the system resumes business operations.

#### Caution

On the one hand, this option has the one benefit that the business data is no longer changed by SDMI processes after the upgrade procedure is completed. On the other hand, this option also includes disadvantages that you should be aware of:

- The overall system business downtime is significantly extended due to the time it takes to execute the data migration because the SUM runs the SDMI jobs synchronously and waits until they are completed.
- Depending on the available resources, the size of the migration tables and the configuration of the dialog work processes and the parallelization framework, the downtime can even reach a duration that is no longer tolerable.

#### Note

Please take care that all SDMIs have been processed successfully in all clients. Otherwise this will leave the upgrade unfinished and bears the risk, that some new application functionality may not be available on the target release. Furthermore, all SDMIs need to be done before the next upgrade can happen.

For more information, see:

- SAP Note [2850918](#) ► Authorizations required for Silent Data Migration (SDMI) in SAP S/4HANA Release
- SAP Note [2664638](#) ► Create and assign SDMI User in a client

- SAP Note [2907976](#) *Silent Data Migration (SDMI) - FAQ*
- SAP Note [2916801](#) *Silent Data Migration (SDMI) Configuration Options*
- SAP Note [3258425](#) *SDMI Classes in the Silent Data Migration Framework in SAP S/4HANA 2021 (Details, Corrections, Special Handling)*
- SAP Note [3445802](#) *Silent Data Migration (SDMI) New Rows after Migration - FAQ*
- <https://blogs.sap.com/2019/10/03/s4hana-silent-data-migration-infrastructure-quick-guide/>

## 4.2 Cleaning Up Obsolete Data After the Upgrade

The Obsolete Data Handling tool allows you to delete obsolete data that may remain after the upgrade.

Obsolete data originates from SAP S/4HANA data model simplifications in many application areas where the related application data is migrated to new data structures. These areas include Material Management, Financials, Sales and Distribution, Environment and Health Science and others. The source data is not deleted automatically during the conversion because this would increase the business downtime and the obsolete data store may sometimes be required during or after the upgrade. Therefore, after you have successfully tested and validated the upgrade results, you can clean up the obsolete data with the Obsolete Data Handling tool.

For information on how to enable and use this tool in a productive SAP S/4HANA system, see SAP Note [2661837](#) .

## 4.3 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 2021 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 2021 Release Information Note* [3067553](#) .
2. **Update the SAPUI5 application index** by running the report `/UI5/APP_INDEX_CALCULATE`.  
For more information about how to run this report, see the product assistance at: [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) *Use* *Product Assistance* *English* *Enterprise Technology* *ABAP Platform* *UI Technologies* *SAPUI5: UI Development Toolkit for HTML5* *Developing Apps* *The SAPUI5 ABAP Repository and the ABAP Back-End Infrastructure* *SAPUI5 Application Index* .
3. **Replicate app descriptors:**  
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 backend catalogs into the technical frontend catalogs.
  1. Check that your system is configured as described in *Replicate App Descriptors* at [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) *Use* *Product Assistance* *English* *Enterprise Technology* *SAP Fiori* *SAP Fiori Overview* *Implement SAP Fiori Apps* *UI-Specific Implementation Tasks* *Basic Information* .

2. Run the report `/UI2/GET_APP_DESCR_REMOTE_ALL` on your front-end server to start the replication.

#### Note

This replication step is also required in an embedded deployment scenario.

#### 4. Invalidate caches:

1. Run transaction `/UI2/INVAL_CACHES` or report `/UI2/INVALIDATE_GLOBAL_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: [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► Use ► Product Assistance ► English ► Enterprise Technology ► ABAP Platform ► UI Technologies ► SAP Fiori Launchpad ► Administration Guide ► Operations ► Performance ► Client-Side Cache ► Cache Buster for SAP Fiori Launchpad and SAP Fiori Apps ► Invalidating Client Caches ►.

3. Run the report `/UI2/DELETE_CACHE_AFTER_IMP`. It clears the UI2 cache on the front-end server.

#### 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`).

## SAP Fiori Launchpad Settings for Improved Performance

As of SAP S/4HANA 1809 additional configuration settings are available for the SAP Fiori Launchpad that improve the system performance when launching SAP GUI for HTML and Web-Dynpro apps.

#### → Recommendation

When you upgrade from a lower SAP S/4HANA release or if these settings were not yet implemented in SAP S/4HANA 1809, 1909 or 2020, we recommend that you enable these performance improvements by activating the features described below on your front-end server after the upgrade to SAP S/4HANA 2021 (any feature package or support package stack).

#### 1. In-place navigation for classic UIs (SAP GUI for HTML and Web-Dynpro Apps)

#### Note

We recommend activating the in-place navigation centrally on your front-end server (on client level). If this is not desired for some users or roles, you can override the central setting by defining a target mapping parameter for ex-place and assigning it (using a catalog) to a specific role. In addition, it is also possible to define exceptions for ex-place navigation on app level (in the target mapping) in the launchpad content.

For more information, see [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► Use ► Product Assistance ► English ► Enterprise Technology ► ABAP Platform ► UI Technologies ► SAP Fiori Launchpad ► Administration Guide ► Managing Launchpad Settings ► Configuring In-Place Navigation for Classic UIs ►.

## 2. Improved performance when launching SAP GUI for HTML apps

For more information, see [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► Use ► Product Assistance ► English ► Enterprise Technology ► ABAP Platform ► UI Technologies ► SAP Fiori Launchpad ► Administration Guide ► Operations ► Performance ► Improving Navigation Performance for SAP GUI Applications ►.

### Note

In mixed backend scenarios, where backend products with lower SAP S/4HANA releases are also connected to your front-end server, the features are not supported.

For more information on how to configure the SAP Fiori Launchpad, see [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► Use ► Product Assistance ► English ► Enterprise Technology ► ABAP Platform ► UI Technologies ► SAP Fiori Launchpad ►.

## 4.4 Default Authorization Values and PFCG Roles

### Checking Default Authorization Values After the Upgrade

After the upgrade, you must do some follow-up activities regarding the authorization concept.

The default authorization values are the data basis for the provision of authorizations required for applications in the Profile Generator (transaction PFCG).

Default authorization values for standard SAP applications are delivered via upgrade, support package deployment, or SAP Note. This SAP-provided data is displayed and maintained in transaction SU22.

Customer default authorization values are maintained in transaction SU24. Only these customer default authorization values are applied when PFCG is used.

After the upgrade the SAP default values may have been changed. You therefore must use transaction SU25 to carry out a comparison of the default values (steps 2a and 2b) and transfer the default values maintained by SAP.

For more information about this process, see SAP Notes [1539556](#) and [440231](#).

### Updating PFCG Roles

After checking and updating the default authorization values you must do some follow-up activities for the PFCG roles. You need to consider how changed default authorization values as well as new or changed content in SAP Fiori Catalogs affect your PFCG roles. You adjust your PFCG roles using the transaction SU25 actions *Update of Application Groups in Role Menu* and *Roles to Be Checked*.

## 4.5 Follow-On Activities for Advanced Variant Configuration

- Tasks required after the upgrade from SAP S/4HANA releases lower than 1709:  
In this case, you have to all the steps described in the section *Follow-Up Activities for Advanced Variant Configuration* in the *Installation Guide for SAP S/4HANA* at [https://help.sap.com/s4hana\\_op\\_2021](https://help.sap.com/s4hana_op_2021) ► *Implement* ► *Guides* ►.
- Tasks required after the upgrade from SAP S/4HANA releases equal to or higher than 1709:  
In this case, you have to do the steps described in SAP Note [2987015](#) ►.

## 4.6 Follow on Activities for SAP Production Planning Optimizer

### Period Profile

To use the period profile in the product planning table, follow the steps in SAP Note [3085498](#) ►. This will add a missing customizing entry.

### Product View Periodic and Fill Level View Periodic

If you are working with an already existing User Variant and you want to get new information rows added with SAP S/4HANA 2021 in Product View Periodic and Fill Level View Periodic, follow the instructions in SAP Note [3085787](#) ►.

### Safety Stock Method and Period Factor for Time Dependent Stock Levels

*Safety Stock Method* and *Period Factor TDS* are two fields which are introduced in SAP S/4 HANA 2021 release which changes the data reading of different stock level parameters like Safety Stock, Max Stock, Safety Days of Supply by Production Planning Optimizer.



Tasks required after the upgrade from SAP S/4HANA releases lower than 2021 are mentioned in SAP Note [3087005](#) ►.

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