Upgrade Guide for SAP S/4HANA 2021
# 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 ..................................................... 8
   2.3  SAP Readiness Check Versus SI-Check .......................................... 11

3  Preparing the Upgrade .............................................................................. 14
   3.1  Supported Start Releases ................................................................. 15
   3.2  Maintenance Planner ....................................................................... 15
   3.3  Simplification Item-Check ............................................................... 17
   3.4  Custom Code Analysis ..................................................................... 19
   3.5  Upgrade Information for SAP Fiori for SAP S/4HANA .................... 20
   3.6  Upgrade Information for Java Instances ......................................... 23
   3.7  Upgrade Information for Operational Data Provisioning for SAP BW .. 23

4  Realizing the Upgrade ............................................................................... 24
   4.1  Silent Data Migration ........................................................................ 24
   4.2  Cleaning Up Obsolete Data After the Upgrade .................................. 25
   4.3  Follow-On Activities for SAP Fiori .................................................. 26
   4.4  Default Authorization Values and PFCG Roles ............................... 27
   4.5  Follow-On Activities for Advanced Variant Configuration .............. 28
   4.6  Follow on Activities for SAP Production Planning Optimizer .......... 28
## Document History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>October 13, 2021</td>
<td>Version for SAP S/4HANA 2021 FPS00.</td>
</tr>
<tr>
<td>1.1</td>
<td>November 9, 2021</td>
<td>Added information about the SAP Readiness Check for SAP S/4HANA upgrades throughout the guide.</td>
</tr>
</tbody>
</table>
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.
<table>
<thead>
<tr>
<th>Document</th>
<th>Available at</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplification Item Catalog</td>
<td><a href="https://help.sap.com/s4hana_op_2021">https://help.sap.com/s4hana_op_2021</a></td>
<td>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.</td>
</tr>
<tr>
<td>Software Update Manager 2.0 &lt;latest SP&gt;</td>
<td><a href="http://help.sap.com/sitoolset">http://help.sap.com/sitoolset</a></td>
<td>Describes how to do the upgrade to SAP S/4HANA 2021 using the Software Update Manager tool.</td>
</tr>
<tr>
<td>SAP Readiness Check for SAP S/4HANA upgrades</td>
<td><a href="https://sap.com/readinesscheck">https://sap.com/readinesscheck</a></td>
<td>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.</td>
</tr>
<tr>
<td>→ Recommendation</td>
<td></td>
<td>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).</td>
</tr>
<tr>
<td>SAP S/4HANA 2021: Release Information Note</td>
<td>SAP Note 3015539</td>
<td>-</td>
</tr>
</tbody>
</table>
### Additional Information and SAP Notes

The following table lists important additional documents and SAP Notes.

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

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

### 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.
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](https://sap.com/readinesscheck).

You find the Simplification Item Catalog at [https://launchpad.support.sap.com/#/sic/](https://launchpad.support.sap.com/#/sic/).

**i 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](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 Migration](#) [page 19].
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.
## Tool Comparison

<table>
<thead>
<tr>
<th></th>
<th><strong>SAP Readiness Check</strong></th>
<th><strong>Simplification Item-Check</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type</strong></td>
<td>Customer self-service provided by SAP Digital Business Services (included as standard support)</td>
<td>Standalone report</td>
</tr>
<tr>
<td><strong>SAP Solution Manager</strong></td>
<td>Not required</td>
<td>Not required</td>
</tr>
<tr>
<td><strong>User Interface</strong></td>
<td>Cloud-based web interface</td>
<td>SAP GUI</td>
</tr>
</tbody>
</table>
| **Included Checks** | ● Simplification item relevance  
● Custom code  
● Recommended SAP Fiori apps  
● Add-on compatibility  
● SAP Custom Development projects  
● Check of system consistency before conversion or upgrade  
● Integration analysis | ● Simplification item relevance  
● Check of system consistency before conversion or upgrade |
| **Called by Software Update Manager (SUM)** | No                                                                                   | Yes                                                                                         |
| **Mandatory**       | No                                                                                     | Yes                                                                                         |
| **Use Cases**       | ● Conversion to SAP S/4HANA  
● Upgrade to a higher SAP S/4HANA release | ● Conversion to SAP S/4HANA  
● Upgrade to a higher SAP S/4HANA release |

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](https://support.sap.com) (about the SAP Readiness Check).
- In this guide Simplification Item-Check [page 17]
3 Preparing the Upgrade

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].

**i 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/sitoolset ➤ Software Logistics Toolset ➤ System Maintenance ➤ System Maintenance Scenarios ➤ Software Update/Upgrade using SUM ➤.

**i 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 2020: Release Information Note 2884313 for the required feature package stack equivalencies for the upgrade from SAP S/4HANA 1610, 1709, 1809, 1909 or 2020 (all feature package and support package stacks) to 2020 (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

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).

**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:

2. Check the SPAM/SAINT version in your source release system.

**i 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

With SAP S/4HANA 1709 the Simplification Item-Check (SI-Check) replaced 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.

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 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).

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

<table>
<thead>
<tr>
<th>TCI Enabled Releases</th>
<th>Minimum Support Package</th>
</tr>
</thead>
<tbody>
<tr>
<td>750</td>
<td>SP05</td>
</tr>
<tr>
<td>751</td>
<td>SP02</td>
</tr>
<tr>
<td>752</td>
<td>SP00</td>
</tr>
<tr>
<td>753</td>
<td>SP00</td>
</tr>
<tr>
<td>Or higher</td>
<td>-</td>
</tr>
</tbody>
</table>
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**

<table>
<thead>
<tr>
<th>Message Color</th>
<th>Message Return Code</th>
<th>Descriptions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Green</td>
<td>0</td>
<td>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.</td>
</tr>
<tr>
<td>Message Color</td>
<td>Message Return Code</td>
<td>Descriptions</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Yellow</td>
<td>4</td>
<td>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.</td>
</tr>
</tbody>
</table>

**Caution**

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.

| Red           | 7                   | 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. |

| 8 or 12       |                     | 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. |

**Note**

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.

## 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).
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.

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.

Hub deployment of SAP Fiori front-end server

For more information, see:

- SAP Note 2590653 (about SAP Fiori deployment options)
- SAP Fiori for SAP S/4HANA 2021: Release Information Note 3067553
  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.

### i 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

<table>
<thead>
<tr>
<th>Embedded 1809</th>
<th>Embedded 1909</th>
<th>Embedded 2020</th>
<th>Embedded 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optional UI Components (HR, Travel, MDG)</td>
<td>Optional UI Components (HR, Travel, MDG)</td>
<td>Optional UI Components (HR, Travel, MDG)</td>
<td>Optional UI Components (HR, Travel, MDG)</td>
</tr>
<tr>
<td>SAP FES 5.0 (with My Inbox)</td>
<td>SAP FES 6.0 (with My Inbox)</td>
<td>SAP FES 2020 for SAP S/4HANA</td>
<td>SAP FES 2021 for SAP S/4HANA</td>
</tr>
<tr>
<td>SAPUI5 1.56</td>
<td>SAPUI5 1.65</td>
<td>SAPUI5 1.78</td>
<td>SAPUI5 1.90</td>
</tr>
<tr>
<td>Or SAP FES 6.0</td>
<td>Or SAP FES 2020</td>
<td>Or SAP FES 2021</td>
<td></td>
</tr>
<tr>
<td>SAP Gateway 7.53</td>
<td>SAP Gateway 7.54</td>
<td>SAP Gateway 7.55</td>
<td>SAP Gateway 7.56</td>
</tr>
<tr>
<td>ABAP Platform 1809</td>
<td>ABAP Platform 1909</td>
<td>ABAP Platform 2020</td>
<td>ABAP Platform 2021</td>
</tr>
</tbody>
</table>

See also, SAP Note 2662732, See also, SAP Note 2790996, See also, SAP Note 2935725, See also, SAP Note 3085560

### Hub Deployment

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

### i 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

<table>
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<th>Hub 1809</th>
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<th>Hub 2021</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Frontend</strong></td>
<td><strong>Frontend</strong></td>
<td><strong>Frontend</strong></td>
<td><strong>Frontend</strong></td>
</tr>
<tr>
<td>Optional UI Components (HR, Travel, MDG)</td>
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<td>Optional UI Components (HR, Travel, MDG)</td>
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<tr>
<td>SAP Gateway 7.51 (minimum version)</td>
<td>SAP Gateway 7.51 (minimum version)</td>
<td>SAP Gateway 7.52 (minimum version)</td>
<td>SAP Gateway 7.52 (minimum version)</td>
</tr>
<tr>
<td>Kernel 7.49 PL401 (minimum version)</td>
<td>SAP NetWeaver 7.51 SP06 (minimum version)</td>
<td>SAP NetWeaver 7.52 SP07 (minimum version)</td>
<td>SAP NetWeaver 7.52 SP08 (minimum version)</td>
</tr>
<tr>
<td>SAP NetWeaver 7.51 SP06 (minimum version - the maximum version is SAP NetWeaver 7.52)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Or SAP Fiori FES 6.0</strong></td>
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</tr>
<tr>
<td><strong>Backend</strong></td>
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</tbody>
</table>

See also, SAP Note [2662732](#)  See also, SAP Note [2790996](#)  See also, SAP Note [2935725](#)  See also, SAP Note [3085560](#)

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### 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** in the Feature Scope Description at [https://sap.com/readinesscheck](https://sap.com/readinesscheck).
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/sltolset.

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.
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.

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 ➤ .

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).

When the system comes out of the maintenance mode after the upgrade (or conversion), the SDMI job from the job repository starts and calls the SDMIs in each client individually. To see all relevant SDMIs, call transaction SDM_MON.

A user is therefore required in every client. The user can be maintained in transaction SDM_USER and can also be created during the SUM process, when a dialog box appears asking you whether technical users for SDMIs should be created. In this dialog, choose Yes, to allow the Software Update Manager (SUM) to create the technical users. If you choose No, SUM will not create the technical users in clients where they are missing. 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. The SDMIs need to be done before the next upgrade can happen.

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

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

### 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 2020 Release Information Note 2935911**.

2. **Update the SAPUI5 application index** by running the report `UI5/APP_INDEX_CALCULATE`.
   

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 your app descriptors or to load new app descriptors from the backend catalogs into the front-end catalogs.
   
   
   2. Run the report `UI2/GET_APP_DESCR_REMOTE_ALL` on your front-end server to start the replication.

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

   **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`).
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 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

2. Improved performance when launching SAP GUI for HTML apps

   → 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

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 do 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.
- 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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