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SAP Add-On Installation Tool

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1 SAP Add-On Installation Tool

SAP offers a wide range of add-ons that you can use to enhance your standard SAP system. These add-ons can be Industry Solutions, plug-ins, or customer-specific development projects.

Use

SAP Add-On Installation Tool (transaction `SAINT`) was developed to enable users to install and upgrade add-ons directly from their standard SAP system. If necessary, you can also use this tool to uninstall ABAP add-ons. However, this function is only available for add-ons that are explicitly intended for deletion, and that are marked as deletable. You do not need to access the operating system or restart the system.

SAP offers Preconfigured Systems (PCS or *SAP Best Practices*) that can also be installed using SAP Add-On Installation Tool. A PCS reduces the amount of work needed to install and customize an industry-specific solution. For more information about preconfiguration with SAP Best Practices, see [Installing Preconfigured Systems \(PCS\) \[page 35\]](#).

Prerequisites

The SAP Add-On Installation Tool is delivered in its own support package, the [SPAM/SAINT Update \[page 72\]](#). We enhance and improve the tool constantly, and recommend that you always import the latest version from SAP Support Portal before performing an installation or upgrade.

Hinweis

Note that the SPAM/SAINT Update is available in English and German only. If you are working in any other language, new or updated user interface elements or texts might be displayed in English or German only. We therefore recommend that you logon in either English or German when using SAP Add-On Installation Tool.

By pressing the Info button in the SAP Add-On Installation Tool, you can obtain the latest version of the documentation, together with information about the new SAP Add-On Installation Tool functions, or you can go to <https://help.sap.com/spmanager> in the SAP Help Portal.

Since 2009, you require maintenance certificates to import SAP support packages with the Support Package Manager. You can use SAP Solution Manager to request these maintenance certificates and to automatically distribute them to the managed systems. The importing of support packages for software from third-party vendors is not affected. You can import this type of support packages without maintenance certificates. For more information, see the SAP Support Portal under <http://support.sap.com/maintenancecertificate>  and SAP Note [1240265](#) .

Features

- Add-On Installation Tool checks compliance with import conditions, such as the SAP NetWeaver Release and the support package level of the various software components, accepting or rejecting them accordingly.
- To simplify the import process, the complete installation or upgrade is first put together in the customer system from the add-on package, any support packages that are needed, and any Conflict Resolution Transports (CRTs).
- Installing and Upgrading Add-Ons
 - Restart capability
The installation itself can be restarted, like the support package import process.
 - Special import procedure
You can use a special import procedure to reduce downtime while importing add-on packages (see also: [Import Mode: Downtime-Minimized \[page 28\]](#)).
 - Start time definition
The separate phases in SAP Add-On Installation Tool are grouped into modules. You are free to choose any start time you want for these modules.
 - Background Processing
You can also schedule the modules with defined start times for background processing.
- During the uninstallation of ABAP Add-Ons, the system determines all content of the add-ons to be deleted and all dependencies to other content, and checks how to proceed with the objects. The SAP Add-On Installation Tool makes sure that the system is in a correct state after the uninstallation.

ⓘ Hinweis

Not all ABAP add-ons can be deleted. You can only perform the uninstallation if the add-on fulfills certain prerequisites and was designated as deletable when it was created.

1.1 New Features in the SAP Add-On Installation Tool

This section provides an overview of all new and changed functions in the SAP Add-On Installation Tool.

The following table contains all changes to this documentation from SPAM/SAINT update #78. For information about new features and changes in earlier SPAM/SAINT updates, see the [Information](#) tab page in the [SAP Software Download Center](#) for the individual versions of the SPAM/SAINT update.

New Features in the SAP Add-On Installation Tool

Title	Description	Type	Available Since	Version of SPAM/ SAINT Update (SL Toolset)
Improved background job handling	<p>You can define whether scheduled background jobs are automatically descheduled and re-scheduled.</p> <p>More information:</p> <ul style="list-style-type: none"> • Settings for SAP Add-On Installation Tool [page 8] • Installing the Queue [page 25] • Phases of the Installation Process [page 36] • Phases of the Combined Import and Uninstallation Process [page 57] 	New	February 10, 2025	#90 (1.0 SPS43)
New check: Check the available background work processes	<ul style="list-style-type: none"> • Checks While Importing a Queue [page 41] • Checks in the Combined Import and Uninstallation Process [page 61] 	New	February 10, 2025	#90 (1.0 SPS43)
Improvements when resetting the queue status	<p>The status of the installation queue can be completely or partially reset during the import process.</p> <p>More Information:</p> <ul style="list-style-type: none"> • Installing the Queue [page 25] • General Description of the Uninstallation Process [page 47] • Checks During the Uninstallation Process [page 50] 	Changed	October 7, 2024	#89 (1.0 SPS42)

Title	Description	Type	Available Since	Version of SPAM/ SAINT Update (SL Toolset)
Documentation supplement about the duration of the import and uninstallation phases	<p>In the information about the individual phases of the installation process and the uninstallation process, you can now also find a rough estimate of the expected duration of each individual phase.</p> <p>More Information:</p> <ul style="list-style-type: none"> • Phases of the Installation Process [page 36] • Phases of the Uninstallation Process [page 47] • Phases of the Combined Import and Uninstallation Process [page 57] 	New	May 26, 2023	#85 (1.0 SPS38)
Documentation supplement about the duration of import phases	<p>In the information about the individual phases of the import process, you can now also find a rough estimate of the expected duration of each individual phase.</p> <p>More information: Phases of the Installation Process [page 36]</p>	New	February 13, 2023	#84 (1.0 SPS37)
Improvement when including modification adjustment transports	<p>You can now also include adjustment transports in your queue that differ from the target system in the component vector.</p> <p>More information: Optional: Including Modification Transports in the Installation Queue [page 22]</p>	Changed	October 11, 2021	#79 (1.0 SPS33)
Improvements to the uninstallation process	<ul style="list-style-type: none"> • Large add-ons with substantial object lists are now supported. • The simulation tool can now also be used in development and test systems of add-ons. • New object types are supported. • The list of deletable add-ons has been expanded. 	Changed	June 21, 2021	#78 (1.0 SPS32)

1.2 Authorizations for SAP Add-On Installation Tool

To use all the functions in the SAP Add-On Installation Tool, you require various authorizations.

You receive these authorizations automatically via the authorization profile `S_A.SYSTEM`. It contains the following authorizations:

- S_TRANSPRT
- S_CTS_ADMIN
- S_BTCH_ADM
- S_DATASET
- S_ADMI_FCD
- S_RFC

Assign this authorization profile to the system administrator only.

If you log on without the correct user profile, you can only use the display functions.

1.3 Settings for SAP Add-On Installation Tool

You can define general settings for SAP Add-On Installation Tool. The settings affect the tool's behavior when loading and importing installation packages.

You only have to define the following settings once. These are then saved and automatically apply whenever you use SAP Add-On Installation Tool again.

ⓘ Hinweis

These settings also take effect in Support Package Manager. One exception is the setting for the import mode *Downtime-minimized*. This does not automatically take effect in Support Package Manager.

To modify or check the tool settings, go to the initial screen of SAP Add-On Installation Tool and choose

► *Extras* ► *Settings* ►

Tab Page: Load Packages

- **Directory on application server**
You can check which directory on the application server the OCS packages are located in.
- **Load CAR/SAR archives from front end**
 - **Display content before decompressing**
You can decide whether to display a dialog box with the contents of the CAR/SAR archive before decompressing it. This is the default setting.
 - **Delete archive after decompressing**
You can choose whether to delete the CAR/SAR archive transferred to the application server after decompressing it. This is the default setting.
 - **Check archive signature**
You can specify whether the digital signature of the SAR archive created by SAP is to be checked. We strongly recommend that you switch on this option; this is the default setting.

- **Save last upload directory**

You can decide whether to save the most recently used upload directory from your front-end host. This directory then appears automatically as the start directory in the archive selection dialog box the next time it is called. This is the default setting.

You can enter an upload directory of your choice in the *Upload Directory* field. This upload directory then appears as the start directory in the archive selection dialog box.

Tab Page: Define Queue

Including Modification Adjustment Transports

You can specify whether the system always checks the queue definition for modification adjustment transports to be included.

- **Include adjustment transports**

During queue definition, the dialog step for including adjustment transports is always performed.

- **Do not include adjustment transports**

No adjustment transports are included in the installation queue. The corresponding dialog step is skipped.

- **Always ask**

After queue definition, the system prompts you to decide whether to include adjustment transports. You can then decide whether the dialog step for including adjustment transports is to be performed or not.

Tab Page: Import Queue

- **Scenario**

When you choose the scenario, you specify which activities you want to perform in the installation.

- **Standard**

You use the standard scenario to perform full installations or uninstallations. All steps are performed.

- Import Mode *Downtime-Minimized*

You can decide whether to perform the installation in import mode *downtime-minimized* to reduce downtime. In the default setting, this option is deactivated. The packages are installed using the conventional import method.

📘 Hinweis

To find the best import mode for your system, check the prerequisites under [Import Mode: Downtime-Minimized \[page 28\]](#).

- **Test**

Before you begin with the installation or uninstallation, you can use the test scenario to determine whether manual steps are required (for example, modification adjustment for installation) or if conflicts occur, which need to be resolved (for example, incomplete repairs when performing an installation or data that is still in use when performing an uninstallation). In a test scenario, no objects are imported into your SAP system or deleted (except for administration data).

There is no test scenario for SPAM/SAINT updates. Imports of SPAM/SAINT updates ignore the scenario you select.

- **Parallel import**

You can set the maximum number of parallel import processes that can be started in the system simultaneously.

- **Number of parallel processes per R3trans**

You specify the number of parallel processes that are started by `R3trans` to import transport request data into the database. We recommend you set this to a maximum of 5.

For more information about this `R3TRANS` function, see SAP Note [1127194](#). To avoid known problems with this function, use the version of `R3TRANS` from at least December 19, 2008.

ⓘ Hinweis

This option affects the import of all packages imported with SAP Add-On Installation tool.

- **Max. number of parallel R3TRANS processes**

You can specify the maximum number of parallel process with which the transport program `R3TRANS` can import data into the database at one time. We recommend you set this to 3.

- **Max. number of parallel background processes**

You can specify the maximum number of parallel background processes for executing the after-import method. We recommend you enter the value 1. If you have enough space in the main memory then you can enter up to 3 processes.

ⓘ Hinweis

The options *Max. number of parallel R3TRANS processes* and *Max. number of parallel background processes* only affect add-on installation and add-on upgrade packages that actually permit parallel importing (packages that have been prepared accordingly). You can find further details about a specific add-on installation in the relevant installation or upgrade note.

- **Handle R3TRANS data files**

- **Delete data file after import**

You can decide whether you want the data files to be deleted after importing the packages. This saves hard disk space and is the default setting.

If you use a multiple system landscape with a common transport directory, it is best to deactivate this option. This saves you from having to create new data files in the other systems.

- **Checks during import**

Different checks are executed in the individual import phases when importing a queue to ensure that the import is successful and that the system remains consistent. Some of these checks can be deactivated without risk according to system environment and configuration.

- **Check for active DDIC user**

Individual import steps are processed by background jobs in the ABAP system (DDIC activation for example). These background jobs usually run under user DDIC. To avoid problems when processing these background jobs, the system checks whether the DDIC user exists in the system and is active. Since the DDIC user can represent a security risk, another user can be defined for processing the import steps in the transport system configuration. More information can be found in the section about transports in the *SAP NetWeaver Security Guide* under <https://help.sap.com/nw> ► *SAP NetWeaver Platform* ► *<your release>* ► *Security* ► *SAP NetWeaver Security Guide* ►. In this case, deactivate the check for the DDIC user.

- **Check for requests pending import in TMS**

When importing an installation queue, it is checked before the physical import of the OCS package if the import queue in Transport Management System (TMS) contains requests that have to be imported before importing the OCS package. This check takes place only on the basis of the request attributes that contain the installed software component versions of the export system at the time of the export. If this check finds that the system state after the import of the installation queue no longer matches the state of the export system, then a warning is displayed about performing a transport for the previous import.

However, during this check, the content of the transport requests is ignored. In other words, the system does not check to see if there really is a conflict with the OCS packages to be imported. This

means the check result is only ever a recommendation that can be ignored when importing the OCS package.

It can make sense in some constellations to deactivate this check entirely, for example, if the transport requests only contain customer-own objects that do not collide with SAP OCS packages or if Change Management Tools (for example, CHARM in Solution Manager) are used to ensure system changes are executed in the correct order.

- **Check the signature of OCS packages pending import**

You can specify if you want the system to check the digital signature (of the OCS packages to be imported) during the import phase. This is the default setting.

ⓘ Hinweis

SAP Note [2520826](#) is required to run this check. If this note has not been imported, the check is not performed.

- **Create object versions at import (does not apply to PCS)**

You can choose to create versions of the objects in the OCS packages in the installation queue during import. This option is deactivated by default, since it only makes sense to do this if versioning is active for all imports. This can take a long time and uses up a lot of space in the database.

ⓘ Hinweis

If versioning is activated in the configuration of the transport profile in Transport Management System, parameter `VERS_AT_IMP` must be set as `ALWAYS`.

- **Deschedule and schedule background jobs**

You can specify whether scheduled background jobs are automatically descheduled at the start of the import module *Import 2* and rescheduled at the end of this import module.

ⓘ Hinweis

Automatic descheduling only applies to background jobs that have not yet been started. Background jobs that are already running are not stopped.

- **ABAP/dynpro generation**

Select this option if you want the programs and dynpros delivered in the OCS packages to be generated when they are imported.

- **Never execute**

If you set this option, the programs and screens are generated only when called for the first time.

- **Always execute**

If you set this option, the programs and screens are always generated. Note that generation can take a long time and may cause errors.

- **According to SAP instructions**

If you set this option, the programs and dynpros are generated if the option of generating during import has been activated by SAP for this OCS package.

Tab Page: Runtime Analysis

- **Send the runtime analysis and feedback form**

When you confirm a queue, a dialog box opens in which you can specify whether you want to send a runtime analysis and feedback form to SAP. Deselect this option if you want to hide the dialog box.

- **Default values for the feedback form**

You use these options to specify which information is added to your feedback form by default.

- **System type**
You use this option to specify whether your feedback applies to, for example, your development system, quality assurance system, or production system.
- **Valid e-mail address**
You use this option to enter an e-mail address as your default contact address in the feedback form.

SAP Default Settings

Property	Default Value
Display content before decompressing	On
Delete archive after decompressing	On
Check archive signature	On
Save last upload directory	On
Include modification adjustment transports	Always ask
Scenario	Standard
Import mode: <i>Downtime-minimized</i>	Off
Number of parallel processes for each R3trans	1
Max. number of parallel R3trans processes	1
Max. number of parallel background processes	1
Delete data file after import	On
Check for active DDIC user	On
Check for requests pending import in TMS	On
Check the signature of OCS packages pending import	On
Create object versions at import	Off
Deschedule and schedule background jobs	Off
ABAP/dynpro generation	Never execute
Send the runtime analysis form	On

2 General Description of the Import Process

All activities executed by the import tool run in phases. These phases are combined into modules.

Modules have the following properties:

- They can be executed individually
- You can start them as a background process
- You can control the start time of the module.

The import process is divided into the following modules:

Preparation Module

All the preparatory and test steps (including the test import and add-on conflict check) are performed in this module. This module can run during production operation.

After performing the *Preparation* module, you can reset or delete the queue. If you continue with module *Import 1*, data in the database is changed, and you can no longer reset or delete the queue.

ⓘ Hinweis

For more information about the check steps in the module *Preparation*, see [Checks While Importing a Queue \[page 41\]](#).

Module Import 1

This module executes the import of dictionary objects and, if required, modification adjustments. When using the `Downtime-minimized` import mode, the inactive import of program code and program texts also takes place. The changes that result from dictionary imports and inactive imports are still in an inactive state in the system. The runtime system is still unable to "see" these changes. If you are sure that no manual changes are being made, and that no transports are being imported into the system, this module can also run during production operation. This is normally the case in production systems.

Module Import 2

The remaining import steps (dictionary activation, main import, after-import method execution, and so on) are executed in this module. Since the changes are imported in different transport objects and the system is temporarily inconsistent, no production operation should take place while this module is in process.

ⓘ Hinweis

There are software components whose installation or update does not slow down the production operation of a system, for example, the Solution Manager plug-in components `ST-PI` and `ST-A/PI`. If the queue contains only OCS packages of components whose manufacturers have confirmed that the production operation is not slowed down, the *Import 2* module can also be run during production operation.

📌 Hinweis

If you are using a CRM system and importing CRM-relevant packages, you need to perform manual steps in the module *Import 2*. For more information, see [Importing CRM Support Packages \[page 74\]](#).

Clean Up Module

All cleanup steps are performed in this module. The most important of these is the adjustment of modifications in the repository objects. When all modifications have been adjusted, production operation may resume.

Since the package import process can be stopped after each module, modules *Preparation* and *Import 1* can run during production operation. After the system has switched to non-production operation, as scheduled, module *Import 2* and, if required, the modification adjustment can be performed. Production operation can then resume.

⚠️ Achtung

In the time between *Preparation* and *Import 2*, no transports can take place (apart from the modification adjustment transport, if required) and no manual changes can be made to repository objects (ABAP programs, dictionary objects).

2.1 Loading Installation Packages

Before you can install or upgrade an add-on, or install a PCS, you have to load the relevant installation packages.

Use

SAP uses various media to make these packages available:

- Add-on CDs (add-on installations and add-on upgrades)
- SAP Support Portal: <https://support.sap.com/swdc> (special add-on installations, support packages)
- PCS CDs (Preconfigured Systems)

Prerequisites

- The Change and Transport System (CTS) is configured correctly.
- There is enough space in the transport directory (UNIX: `/usr/sap/trans`).
- You are using the latest version of the SAP Add-On Installation Tool.
- You have the relevant authorizations for the SAP Add-On Installation Tool.
- You have called the SAP Add-On Installation Tool (transaction `SAINT`).

Activities

[Loading Installation Packages from the Application Server \[page 15\]](#)

[Loading Installation Packages from the Front End \[page 16\]](#)

2.1.1 Loading Installation Packages from the Application Server

You want to load archives (*.CAR or *.SAR) from the application server so that you can use SAP Add-On Installation Tool to install the corresponding package.

Prerequisites

- You want to load multiple packages simultaneously.
- You want to load packages from SAP Support Portal and make them known to the SAP Add-On Installation Tool.
- You want to load packages from a CD or DVD and make them known to the SAP Add-On Installation Tool.
- You cannot proceed as described under [Loading Installation Packages from the Front End \[page 16\]](#).

Procedure

1. Load the installation packages and support packages from SAP Support Portal or mount the relevant CD or DVD. Copy the SAR archive with the packages to the EPS download area of your transport directory (Unix and IBM system i: `/usr/sap/trans/EPS/download`; Windows: `<DRIVE>:\usr\sap\trans\EPS\download`).
2. To load the packages into your system, call the SAP Add-On Installation Tool and choose ► *Installation Package* ► *Load Packages* ► *SAR Archive from Application Server* ►.

If this option is selected, the SAR archives are automatically unpacked and the contained EPS files are placed in the EPS inbox of your transport directory (Unix and IBM system i: `/usr/sap/trans/EPS/in`; Windows: `<DRIVE>:\usr\sap\trans\EPS\in`). Then the unpacked EPS files in the system are made known.

By default, the digital signature of the SAR archives is checked and a signed manifest is stored in the EPS inbox for each unpacked EPS file. These signed manifests are used later on during the import process, to check the integrity of the EPS data again.

ⓘ Hinweis

If you load the packages using option *EPS Files from Application Server*, you first need to manually unpack the packages. To do this, log on to your system as `<sid>adm` and then go to the

directory `/usr/sap/trans` (UNIX and IBM System i) or `<HD-Drive>:\usr\sap\trans` (Windows). Unpack the archive containing the packages using the following command:

Operating System	Command
UNIX	<code>SAPCAR -xvf /<CD_DIR>/<PATH>/<ARCHIVE>.CAR</code>
IBM System i	<code>SAPCAR '-xvf /QOPT/<VOLID>/<PATH>/<ARCHIVE>.CAR'</code>
Windows	<code>SAPCAR -xvf <CD_DRIVE>:\<PATH>\<ARCHIVE>.CAR</code>

Since no signed manifests are created for the EPS files during manual unpacking, this option should only be used in exceptional circumstances. Instead, you should use the options to directly upload the SAR archives.

A list is displayed of the uploaded packages that are known together with all their attributes in the SAP system and can be handled in the correct way by SAP Add-On Installation Tool.

3. Choose [Back](#) to return to the initial screen of the SAP Add-On Installation Tool.

2.1.2 Loading Installation Packages from the Front End

You want to load archives (*.CAR or *.SAR) up to a size of 200 MB from the front end to the application server so that you can use SAP Add-On Installation Tool to install the corresponding package.

Prerequisites

The archives that you load from the front end are smaller than 200 MB.

ⓘ Hinweis

If they are larger than 200 MB, proceed as described in [Loading Installation Packages from the Application Server \[page 15\]](#), since the procedure described in the present chapter is not suitable for large installation packages.

Procedure

1. You have called SAP Add-On Installation Tool with transaction `SAINT`.
2. Choose **► Installation Package ► Load Packages ► SAP Archive from Frontend ►**. The system displays an archive selection dialog box.
3. Select the relevant archive.

This archive is copied to the application server. Then the digital signature of the archive is checked and the system reads the table of contents. The result of the signature check and the list of files contained in the archive is then displayed in a dialog box.

Archives provided by SAP are signed digitally, so the check must be successful. If a check with errors is displayed, do not use this archive. Load the archive from the Support Portal again, or contact SAP to clarify the integrity of the archive.

Archives of independent software vendors are not usually signed. This is also displayed. Clarify with the software vendor how the integrity of the archives can be ensured.

Hinweis

You can switch off the signature check and the display of the dialog box in the SAP Add-On Installation Tool settings (see [Settings for SAP Add-On Installation Tool \[page 8\]](#)).

4. To unpack the files contained in the archive and inform the system, choose *Decompress*.

The signature manifest additionally contained in a signed archive (`SIGNATURE.SMF`) is also unpacked and stored in the EPS inbox under the name of the EPS file (*.PAT file) contained in the archive. If the archive contains more than one EPS file, a specific manifest file is generated for each EPS file.

Once the package you want to install has been decompressed, it is displayed in SAP Add-On Installation Tool.

Results

The archive has been copied to the application server and decompressed. The original archive has been deleted from the application server (see [Settings for SAP Add-On Installation Tool \[page 8\]](#)).

2.2 Installing and Upgrading Add-Ons

SAP Add-On Installation Tool can process two different types of add-on delivery packages: add-on installations and add-on upgrades.

Use

Hinweis

Only import packages when the system load is low, since users must not be logged onto the system and there should be no background jobs running. Otherwise, problems can arise, such as terminated transactions or problems with synchronization.

Since the add-on installation procedure is identical to the add-on upgrade procedure, the installation is used as an example.

Prerequisites

- If you want to import SAP add-on packages, you must have distributed the required maintenance certificates in your system. For more information, see the SAP Support Portal under <http://support.sap.com/maintenancecertificate> and SAP Note [1240265](#).
- You are logged on in client 000.
- You have loaded the relevant [installation packages \[page 14\]](#) into your system.
- You have called SAP Add-On Installation Tool with transaction **SAINT**. The add-ons that have already been installed are listed on the initial screen.
- You have selected the required installation mode in the SAP Add-On Installation Tool settings.

Procedure

Before installing add-ons, you must first make a number of specifications, which SAP Add-On Installation Tool guides you through. You reach the next step by pressing the *Continue* button. You can return to the previous step with the *Back* button.

1. You define the installation queue.
Since you often install more than one add-on at the same time, you must first select the add-on packages to be installed. The system calculates the installation queue from the add-on packages that are selected, that is, all packages that the installation consists of in the correct order.
If you have a stack XML file, you can use this stack XML to define the installation queue, or you can define the queue manually.
For more information, see [Defining the Installation Queue \[page 19\]](#).
2. Optional: You add support packages to the installation queue.
If, in addition to the add-ons to be installed, you also want to add support packages to the installation queue, you can select support packages to be installed for every software component on the *Support Package Selection* tab page.
For more information, see [Extending the Installation Queue with Support Packages \[page 20\]](#).
3. Optional: You include modification adjustment transports into the installation queue.
If you have already adjusted a modification (for example, in the development system) and have created an adjustment transport for it, then you can include this in the installation queue in the follow-on systems.
For more information, see [Including Modification Adjustment Transports in the Installation Queue \[page 22\]](#).
4. You define the start options or check those selected.
You can define start options for the individual modules according to your system requirements. If you confirm the dialog field without changing any settings, the import tool uses the default start options, in accordance with the selected import mode. If you change any settings, you can save them as a template for future import activities.
For more information, see [Defining Start Options \[page 23\]](#).
5. You install the queue.
The selected start options determine when the queue installation will begin. For example, if you have selected the option *Immediate Start* for the *Preparation* module, then the installation starts straight after you have confirmed the start options.
Depending on the import mode selected, SAP Add-On Installation Tool executes the installation.
For more information, see [Installing the Queue \[page 25\]](#).

2.2.1 Defining the Installation Queue

You can use the installation queue to specify which add-ons you want to install. You can either define the installation manually or using a stack XML.

Procedure

1. To select the add-on packages, choose *Start*.

The *SAP Add-On Installation Tool: Add-On Selection* screen appears.

The list of add-on packages is filtered. The filtered overview shows all packages that match in your system in question according to the initial tests. To deactivate the filter and display all existing add-on packages, choose *Deactivate Filter*.

When creating an add-on, thematically similar add-on packages can be grouped together. Add-on packages that belong to a group are displayed in a tree. To expand or collapse the tree, double-click on the name of the group.

2. Optional: Load further installation packages into your system. To search for additional installation packages in the current system's EPS directory, choose *Load*. The system then displays any new packages it finds too.

See also: [Loading Installation Packages \[page 14\]](#).

3. Select the add-ons that you want to install or upgrade and start the queue definition as follows:

- Defining the Installation Queue Using Stack XML

Choose this procedure if you have scheduled the installation or upgrade of your add-on in the maintenance planner and have a stack XML.

1. To upload the stack XML from your front end, choose *Stack XML File*.

2. Select the required XML file and confirm your selection by choosing *Open*.

This loads the XML file into the system and interprets it. The SAP Add-On Installation Tool checks whether the configuration in question matches your system. If this is not the case, an error message appears.

If the configuration is suitable, it is applied automatically, and you cannot change it anymore. You can, however, undo the preconfigured selection by choosing *Reset Selection*.

3. In the *Add On Selection* dialog box, the add-on packages for the selected configuration are listed. Check the selection and confirm by pressing *Continue*.

The system calculates the complete installation queue including any support packages. This can have varying results:

- The selected add-ons cannot be installed in this system, as not all installation conditions have been met. If this happens, the condition that is not fulfilled is named.
- Additional packages (support packages or CRTs) are needed to install an add-on. The system specifies which packages are missing. The installation does not start. Load the missing packages.

Hinweis

If errors occur during queue definition, read the [queue calculation log \[page 33\]](#).

- If all import conditions are met and all required OCS packages exist, the installation queue is calculated and the [Add-On Installation Tool: Calculated Queue](#) screen appears.
4. You can check the installation queue on the [Installation Queue](#) tab.
- Defining the Installation Queue Manually
Choose this procedure if you do not have a stack XML.
1. Select the add-ons to install manually and choose [Continue](#). This can have varying results:
 - The selected add-ons cannot be installed in this system, as not all installation conditions have been met. If this happens, the condition that is not fulfilled is named.
 - Additional packages (support packages or CRTs) are needed to install an add-on. The system specifies which packages are missing. The installation does not start. Load the missing packages.

ⓘ Hinweis

If errors occur during queue definition, read the [queue calculation log \[page 33\]](#).

- If all import conditions are met and all required OCS packages exist, the installation queue is calculated and the [Add-On Installation Tool: Support Package Selection](#) screen appears.
2. You can check the installation queue on the [Installation Queue](#) tab.
 3. Add the relevant support packages if you want to add more support packages to the installation queue or if the system informs you that more support packages are required (see also [Adding Support Packages to the Installation Queue](#)). [\[page 20\]](#)
4. To start the queue calculation, choose [Continue](#).

2.2.2 Optional: Extending Installation Queues with Support Packages

You can add support packages to an installation queue manually.

Prerequisites

This is possible in the following cases:

- The current maintenance level of your SAP system requires an update of one or more software components. Since the risk of a downgrade and the loss of data exists, you should include the relevant support packages into the upgrade queue. A list of affected software components is displayed along with the minimum support package level that needs to be included.
- Some software component versions require a minimum support package level. If this is not achieved, you are shown a list of affected software components is displayed along with the minimum support package level that needs to be included. The installation queue cannot be imported without this update.
- You want to update your system. If support packages exist for an add-on, you can include them in the installation queue.

Procedure

1. To do this, go to the [Support Package Selection](#) tab page and select the highest support package that you want to import from the selection list for each component that you require. If you do not want to add any other support packages for a component, select the empty field from the selection list. The system automatically enters the support package level of the chosen support package in the [Level](#) field.
2. Once you have selected the target support packages for all the components you require, choose [Continue](#).

The system calculates the maximum possible queue using the chosen target support packages and the installation queue that has already been calculated. The results of the queue calculation are summarized in the [Status/Comment](#) section, whilst the resulting queue is listed in detail on the [Installation Queue](#) tab page.

At the same time, the support package level attained with the calculated queue is displayed on the [Software Components](#) tab page for each component, and linked to the support package level of the chosen target support package by way of a comparison symbol. This provides you with a rapid overview of the result of the queue calculation.

Results

The queue calculation can have the following results:

- The extended queue is consistent and corresponds completely to the target support packages that you have chosen.
- The extended queue is consistent, but does not correspond completely to your chosen target support packages. For certain components, the chosen target support package levels could not be reached using the calculated queue, or more support packages from a component had to be included in the queue than had originally been required, in order to ensure a consistent queue. These variances occur because of the dependencies between support packages from different components. These make it impossible to completely match the target support package levels that you have chosen. This can happen, for example, if you need to include Conflict Resolution Transports (CRTs).
- The system could not extend the installation queue consistently. An error message is displayed to explain the issue.

Hinweis

If errors occur during queue definition, read the [queue calculation log \[page 33\]](#).

2.2.3 Optional: Including Modification Transports in the Installation Queue

If you have created an adjustment transport for a modification adjustment, you can integrate this into the follow-up systems.

Prerequisites

- The system prompts you to decide whether to include the modification adjustment transports in the installation queue.

ⓘ Hinweis

You can suppress this prompt in the [SAP Add-On Installation Tool Settings \[page 8\]](#).

- You have already executed the modification adjustment for the same queue (see [Adjusting Modifications \[page 31\]](#)).

Procedure

1. Confirm that you want to include modification adjustment transports.

A dialog box appears, containing a list of existing modification adjustment transports. You have the following options:

- If no adjustment transports are displayed in the list, you need to notify the system of the transports. To do this, choose [Find Adjustment Transports](#).
The system searches for adjustment transports in the Transport Management System import queue and in the transport directory on the application server. The system lists the transport requests that you have selected as [Modification Adjustment Transports](#) and released in the export system.
- For each adjustment transport listed, the *Status* field shows whether or not it fits the current queue and can be included.
Adjustment transports that match the queue are already selected in the table. An adjustment transport "matches" the queue if the target package level of the current queue is the same as the one in the export system when the modification adjustment transport is exported.
You can use the [Details](#) pushbutton to go to a detail view in which the state of the export system is compared with the state of the current system for each software component. Differences are displayed at the top of the list and are marked accordingly.
You can use this information to check whether the objects contained in the adjustment transport are part of the software components with different states. If this is not the case, you can ignore the differences and include the transport anyway. To do this, select the [Ignore differences in component vector](#) checkbox and select the transport as an adjustment transport.
- If required, change the adjustment transport selection.
You cannot select adjustment transports that do not match the queue. To hide adjustment transports that do not match the queue, choose [Activate Filter](#).

2. To continue adding the adjustment transports to the queue, choose *Continue*.

Achtung

When a modification adjustment transport is imported as part of an installation queue, it is deleted from the normal transport flow for workbench requests. Requests are not forwarded to follow-on systems automatically. If you are working with the classic three-system landscape comprising a development system (DEV), quality assurance system (QAS) and production system (PRD), the modification adjustment transport is put into the QAS import queue after being exported from the DEV system. If you include the adjustment transport in an installation queue in system QAS, it is deleted from the QAS import queue. Since no transport forwarding takes place when importing an installation queue, the adjustment transport is not forwarded to the PRD system's import queue. You then need to import the adjustment transport into the PRD system as part of an installation queue, using the same procedure as in the QAS.

2.2.4 Defining the Start Options

You can define start options for the individual modules according to your system requirements. If you confirm the dialog field without changing any settings, the import tool uses the default start options, in accordance with the selected import mode. If you change any settings, you can save them as a template for future import activities.

Prerequisites

- You have started importing the queue.
- If you want to perform the import in the background: You have ensured that your system has at least two free background processes and that no other background jobs will be executed at the same time.

Procedure

1. In the *Start Options for the Queue* dialog, you can select the options you require for each module from the relevant tab page:
 - *Immediate start/continue in dialog immediately*
Choose this option if you want the module to be processed immediately in the dialog. If you select this option for multiple modules, they are processed consecutively without interruption. The mode is blocked for the duration of the import.
 - *Immediate start/continue in background immediately*
Choose this option if you want the module to be processed immediately in the background. If you select this option for multiple modules, they are processed consecutively without interruption.
 - *Later start/continue in background later*
Choose this option if you want to start the module in the background later. Select the required start date and time using input help. If you choose *No Start After*, the module is processed only in the period

between *Planned Start* and *No Start After*. If no background processes are available during this time, the module is not processed.

- *Manual start/continue manually*

Choose this option if you want to process the module manually. The import tool interrupts the process after processing the previous module.

2. If you change the start option for a module, start options for other modules can be affected too. You can see an overview of the current start options for all modules in the summary in the upper part of the dialog sequence. The summary is usually automatically updated when changes are made. However, for certain changes (for example, if you enter a start time), the automatic refresh does not take place. In this case, use the *Refresh* function.

3. If you want to save your selection as a template for future import activities, choose *Save As Template*. The template is then used by default whenever the import process is started again in the same import mode. If you have stored a start time in a template, the start time is automatically adjusted to the current date when you use this template (start the import process for a new queue). If you have specified a time slot, this is also copied and adjusted to the new start time.

You can only save the selected options as a template when starting a new queue import and defining the options for the entire import process. When restarting the import process after a module has been processed or after an error has occurred, it is no longer possible to save the changed options as a template.

4. Confirm your selection by choosing *Continue*.

Results

The import tool starts importing the queue using your start options.

If the import tool interrupts the processing procedure after processing a module, you can check the start options before the next module starts and change them if required. If you have scheduled modules to be processed in the background, you can only make changes using Job Administration. To do this, choose [► Environment ► Background Processing in the import tool ►](#).

Standard Settings for Unchanged Use of the Conventional Import Procedure

If you have chosen the conventional import (import mode `Downtime-minimized` is not activated), the following settings are made by default:

Module	Option
Preparation	Immediate start in dialog
Import 1	Continue in dialog immediately
Import 2	Continue in dialog immediately
Cleanup	Continue in dialog immediately

Standard Settings for Unchanged Use of the Import Mode `Downtime-minimized`

Hinweis

The import mode `Downtime-minimized` is only available for import-only processes. This means that the default settings of the regular import process apply to uninstalls and combined import and uninstalls.

If you have selected import mode `Downtime-minimized`, the following settings are made by default:

Module	Option
Preparation	Immediate start in dialog
Import 1	Continue in dialog immediately
Import 2	Continue manually
Cleanup	Continue manually

2.2.5 Installing the Queue

The SAP Add-On Installation Tool enables you to install a queue in the test scenario before you carry out the final installation in the standard scenario.

Context

- **Test Scenario**

Before starting the installation of the queue, use the test scenario to detect any conflicts or problems (for example, repairs that have not been released), or any requirement for modification adjustments.

This scenario helps you to estimate and minimize the time and effort needed for the installation. This scenario does not import any data into the system. If errors do occur, you can continue the installation without correcting them.

You must choose the test scenario explicitly.

- **Standard Scenario**

In the standard scenario, the queue is installed in full. If errors occur, you have to resolve all of them before you can continue with the installation.

If you choose the standard scenario, you can also choose between the conventional import mode and [Import Mode: Downtime-Minimized \[page 28\]](#) to reduce the downtime.

Installations in the Test Scenario

Procedure

1. To set the test scenario, choose ► [Extras](#) ► [Settings](#) ►.
2. On the *Import Queue* tab page, choose *Test* and define the other [settings \[page 8\]](#) for the import.
3. [Start the installation \[page 17\]](#).

After starting installation, the SAP Add-On Installation Tool runs through a set series of phases. If errors occur in any of these phases, the installation is paused, and a description of the error is provided. Make sure that you can remove any errors in the installation in the standard scenario. You can resume the installation in the test scenario by choosing *Skip*.

The SAP Add-On Installation Tool performs the entire processing in the dialog box. You can reset the queue at any time.

Installations in the Standard Scenario

Procedure

1. To set the standard scenario, choose ► [Extras](#) ► [Settings](#) ►.
2. On the *Import Queue* tab page, choose *Standard* and define the other [Settings \[page 8\]](#) for the import.
3. [Start the installation \[page 17\]](#).

- **Conventional Import Mode**

If you have imported the standard options without making any changes, then the installation starts after you have confirmed the start options. The SAP Add-On Installation Tool performs the entire processing in the dialog box. Since the whole import process is run through in this case without stopping, your system should already be non-production at this time.

If you have selected a start time or *Continue Manually* for module *Import 2*, your system can stay in production operation until module *Import 2* is ready to start. Only then must the system be set to a non-production state.

ⓘ Hinweis

To set the system to a non-production state, use the report `BTCTRNS1` to deschedule all scheduled background jobs. You can automate this step by activating the option *Automatic Descheduling and Scheduling of Background Jobs* in the [settings \[page 8\]](#). Prompt all users to close any transactions they are working in and to log off from the SAP system.

ⓘ Hinweis

There are software components whose installation or update does not slow down the production operation of a system, for example, the Solution Manager plug-in components `ST-PI` and `ST-A/PI`. If the queue contains only OCS packages of components whose manufacturers have confirmed that the production operation is not slowed down, the import can also take place during production operation. Then the steps described above are not necessary.

After starting installation, the SAP Add-On Installation Tool runs through a set series of phases. The SAP Add-On Installation Tool first performs preparation and check steps (module *Preparation*). For more information about the check steps in the module *Preparation*, see [Checks While Importing a Queue \[page 41\]](#).

The SAP Add-On Installation Tool then performs the import steps in the modules `Import 1` and `Import 2`.

If errors occur in any of these phases, the uninstallation is paused and a description of the error is provided. Eliminate the cause of the error. You can then continue the installation by choosing *Continue*. If any errors in a phase cannot immediately be resolved, you can reset the installation using *Back*. If the error occurred in one of the phases of the *Preparation* module, the installation is completely reset so that, for example, further support packages or SAP Note corrections can be imported. If the error occurred in one of the phases of the `Import 1` or `Import 2` modules, the import process is only reset to the beginning so that errors can be corrected more easily (for example, by implementing SAP Note corrections).

ⓘ Hinweis

Since the database content has already been changed in these phases, the installation can no longer be completely reset. You must continue the process by choosing *Continue* after correcting the errors.

If you have modified SAP objects but have not included any adjustment transports, or if the included adjustment transports do not cover all objects that need adjusting, the SAP Add-On Installation Tool prompts you to perform a modification adjustment during one of the subsequent phases. To do this, proceed as described under [Adjusting Modifications \[page 31\]](#).

- **Import mode** `Downtime-minimized`

If you have selected import mode `Downtime-minimized`, some of the objects will be imported inactively. You can continue using your system as a production system during this phase.

After starting installation, the SAP Add-On Installation Tool runs through a set series of phases. Some preparation and check steps run first (module *Preparation*).

ⓘ Hinweis

For more information about the check steps in the module *Preparation*, see [Checks While Importing a Queue \[page 41\]](#).

The tool then runs through the import steps (module `Import 1`) that can be performed during production operation.

The development environment is blocked when the module `Import 1` starts, thus ensuring that modifications do not endanger the consistency of the system. At the end of the module, the SAP Add-On Installation Tool displays a dialog box prompting you to stop production operation for the next import module (`Import 2`). To do this, proceed as follows:

1. To stop the installation process and switch your system to a non-production state in a controlled manner, choose *Cancel*.
2. Use the report `BTCTRNS1` to deschedule all scheduled background jobs. You can automate this step by activating the option *Automatic Descheduling and Scheduling of Background Jobs* in the [settings \[page 8\]](#). Prompt all users to close any transactions they are working in and to log off from the SAP system.
3. To complete the import, choose *Continue*.

The next phase activates the inactively imported objects and imports the remaining objects from the installation packages in the queue. Once these phases have been completed, the SAP Add-On Installation Tool informs you that you can restart production operation in your system.

ⓘ Hinweis

This applies only if you have made either no or very few modifications to SAP objects.

If errors occur in any of these phases, the uninstallation is paused and a description of the error is provided. Eliminate the cause of the error. You can then continue the installation by choosing [Continue](#). If any errors in a phase cannot immediately be resolved, you can reset the installation using [Back](#). If the error occurred in one of the phases of the Preparation module, the installation is completely reset so that, for example, further support packages or SAP Note corrections can be imported. If the error occurred in one of the phases of the `Import 1` or `Import 2` modules, the import process is only reset to the beginning so that errors can be corrected more easily (for example, by implementing SAP Note corrections).

ⓘ Hinweis

Since the database content has already been changed in these phases, the installation can no longer be completely reset. You must continue the process by choosing [Continue](#) after correcting the errors.

If you have modified SAP objects but have not included any adjustment transports, or if the included adjustment transports do not cover all objects that need adjusting, the SAP Add-On Installation Tool prompts you to perform a modification adjustment during one of the subsequent phases. To do this, proceed as described under [Adjusting Modifications \[page 31\]](#).

4. To complete the import, choose [Continue](#).

If you have selected the import mode `Downtime-minimized`, then, in the subsequent import phases, program code and program texts that have been made obsolete by the imported objects are physically deleted from the database.

ⓘ Hinweis

You can restore production operation in parallel to this import module, or you can start the preparation activities for restoring production operation (for example, execute [ABAP Mass Generation with the SAP Load Generator \[page 44\]](#)).

5. If you descheduled the background jobs manually using the report `BTCTRNS1`, you can schedule them again using the report `BTCTRNS2`. This is done automatically if the option [automatic descheduling and scheduling of background jobs](#) is activated in the [settings \[page 8\]](#).
6. After you have installed the queue successfully, check the [Logs \[page 33\]](#).

2.2.6 Import Mode: Downtime-Minimized

The `Downtime-minimized` import mode was developed to reduce downtime when importing packages. It enables the majority of objects to be imported while the system is in production operation.

Use

Due to the size and extent of OCS packages (support packages, add-on installation packages, and add-on upgrades), importing packages entails lengthy system downtime. The system is not restarted here, however it

should not be used in production operation during the import process. This restriction is often a disadvantage in production systems.

In the `Downtime-minimized` import mode, downtime can be reduced significantly if a package has a high percentage of program code and program texts (these objects can potentially be imported while the system is in production operation). This proportion is around 70-80% in `SAP_BASIS` and `SAP_APPL` support packages.

In the `Downtime-minimized` import mode, the objects are imported into the database in an inactive state, where they are largely 'invisible' to the system. The system can still be used in production operation.

The new procedure contains some actions (activation of the inactive objects) and organizational steps that were not in the old procedure. This lengthens the duration of the import process. The efficiency or time saved in the non-production phase over the conventional procedure partly depends on the proportion of inactively imported objects in the total imported data. The duration of other actions performed in downtime (such as after-import methods or XPRAs) also contributes to the time that can be saved.

ⓘ Hinweis

Import the packages in queues that are as large as possible (ideally in a single queue).

Note that, in some cases, it is not possible to import support packages in a queue using Support Package Manager. For more information, check the OCS composite SAP Note for the current release. SAP Note [97620](#) contains an overview of the most important OCS SAP Notes.

Prerequisites

Temporary free space is required in the database, since the inactive objects exist in the database alongside the active versions.

A defined process that is triggered by Support Package Manager or SAP Add-On Installation Tool activates the objects later. However, since the inactive objects are not completely isolated from the system, parallel changes might cause unwanted activation and inconsistencies in the system.


Make sure of the following during the import:

- You have enough free space in the database.

→ Empfehlung

We recommend around 1.5 times the size of the packages that you are importing.

Database	Tablespaces/Dbspaces/Volumes Affected
Oracle	PSAPES <REL>D
DB2 UDB	PSAPES <REL>I
Informix	psapes <REL>

Database	Tablespaces/Dbspaces/Volumes Affected
MaxDB	If necessary, create a new volume to extend the database (see also 34690 )

- No other transport requests are imported at the same time.
- The development environment is not being used as a production environment.

Use the `Downtime-minimized` import mode:

- for installations and upgrades
- in production systems
- in test systems, if you want to test the expected downtime of the production system
During the import, you must treat the systems like production systems (make no manual changes to program objects, no parallel imports from other transport requests).

Do **not** use the `Downtime-minimized` import mode:

- for uninstallations and combined import and uninstallation processes
- in development systems, or in systems where frequent imports are made (QA or test systems)
The consistency of the system cannot be guaranteed during the import if manual changes are made to program objects at the same time, or if other transport requests are imported.
- to import support packages into BBP systems
The additional pre-import and post-import steps in the special BBP Support Package Manager ensure that the whole import can be performed effectively during downtime.
- to import support packages into CRM systems
The additional pre-import and post-import steps for CRM systems ensure that the whole import can be performed effectively during downtime.
- To import Preconfigured Systems (SAP Best Practices) with SAP Add-On Installation Tool.

Activities

- Support Package Manager
 - Support Package Manager Settings
 - Importing Support Packages with Support Package Manager
- SAP Add-On Installation Tool
 - Settings for SAP Add-On Installation Tool
 - Installing and Upgrading Add-Ons

2.2.7 Adjusting Modifications

If you have modified SAP objects from the add-on that you want to install, you need to adjust these objects when importing them. This ensures that your modifications are not overwritten by SAP objects. Transaction `SPDD` adjusts dictionary objects and transaction `SPAU` adjusts repository objects.

Context

You should always perform a modification adjustment if you have not integrated any adjustment transports, or if the integrated adjustment transports do not cover all the objects to be adjusted. SAP Add-On Installation Tool has prompted you to adjust your modifications.

If you have already performed the modification adjustment in a system (in a development system for example), you do not need to perform it manually in the follow-on systems (quality assurance and production systems). You can include the transport requests that you created for the modification adjustment (modification adjustment transports) in the queue. The modification adjustment then takes place automatically when the queue is imported. For more information, see [Installing and Upgrading Add-Ons \[page 17\]](#).

Depending on which type of object modifications you want to adjust, you have different options:

- Running a Modification Adjustment for Dictionary Objects - Transaction `SPDD`:
Complete all modification adjustments before continuing with the import. If you do not do this, modifications to dictionary objects will be lost. This can lead to data loss. To do this, perform all the steps as described below:
- Running a Modification Adjustment for Repository Objects - Transaction `SPAU`:
 - Adjust all modifications before continuing with the import.
This is recommended if you only need to adjust a small number of objects. To do this, perform all the steps as described below:
 - Perform the modification adjustment and the remaining phases in parallel.
This is recommended if you need to adjust a large number of objects.
This procedure is intended in particular for using [Import Mode: Downtime-minimized \[page 28\]](#). In the subsequent phases, SAP Add-On Installation Tool deletes all versions of program code and program texts that have become obsolete. Since this can be a lengthy process, you can save time by adjusting your modifications in parallel (at the same time).
If you want to perform the import in parallel, choose [Continue](#) on the screen that prompts you to perform a modification adjustment. Then carry out steps 1 through 3 as described below.

Procedure

1. To enable your development team to adjust modifications, go to the Transport Organizer and create one or more requests that include tasks for individual members of the development team.

Achtung

If you want to include the transport requests from the import queue in the follow-on systems, create them as transportable workbench requests. If you do not do this, they cannot be exported from the system and cannot be used in follow-on systems.

→ Empfehlung

We recommend that you create one transport request for adjusting dictionary objects and another for adjusting repository objects.

2. If you want to include the created requests in the queue in the follow-on systems for automatic modification adjustment, you need to mark them as adjustment transports.

- a. To do this, call transaction `SPDD` or `SPAU` and choose **Utilities > Select for Transport**.

This function is also used to select modification adjustment transports for the system upgrade. If you have already performed a system upgrade, the system might prompt you to decide whether to select the adjustment transport for use in the upgrade or for use in importing an add-on installation queue (OCS). Choose `OCS`.

- b. On the selection screen, choose the request you created previously and confirm your selection.

The transport request is now selected for use as a modification adjustment transport.

⚠ Achtung

To select a workbench request as a modification adjustment transport, assign it to the predefined CTS project `SAP_ADJUST`. This means that a workbench request selected as a modification adjustment transport cannot be assigned to a customer-defined CTS project. This assignment would always be overwritten by the project `SAP_ADJUST` when the selection is made.

- c. If you have created multiple transport requests, repeat the process for all of them.

3. Ask the development team to adjust the modifications for its objects.

If you have not yet confirmed the installation, the transaction `SPDD` or `SPAU` can be called by choosing **Extras > Adjust Modifications** on the initial screen of SAP Add-On Installation Tool.

Once the adjustment is complete, the development team must release its tasks and inform you. Modifications can be adjusted in any client.

4. If you have not yet continued with the installation after being prompted for a modification adjustment, perform the following steps:

- a. Call SAP Add-On Installation Tool (transaction `SAINT`).
- b. View the status of the queue. To do this, choose **Goto > Status > Installation Queue**.

A screen appears, prompting you to perform a modification adjustment.

- c. Choose **Confirm Adjustment** and confirm the prompt.
- d. To continue importing the queue, choose **Continue**.

Results

SAP Add-On Installation Tool continues the process (transaction `SPDD`) or completes it (transaction `SPAU`), and displays the status.

If you have created a modification adjustment transport, you can release and export it in Transport Organizer after importing the queue.

⚠ Achtung

The modification adjustment transport is a regular workbench request, which means it is placed automatically in the import queue of the follow-on system during the export process, where it can be imported as normal. However, performing this import only makes sense if the corresponding add-ons and support packages have been imported into the follow-on system. For this reason, make sure the import is not performed too early. To do this, use the mechanisms and functions contained in the Transport Management System, such as project management, QA mechanisms, and deleting the request from the import queue.

2.2.8 Logs in the Import Process and the Combined Process

SAP Add-On Installation Tool contains various types of logs. When you define the queue, you can use the [queue calculation log](#) for troubleshooting purposes. After successfully importing the queue, you should always check the [import log](#) and the [action log](#).

- **Queue Calculation Log**

The queue calculation log displays detailed information for queue calculation. The log is structured hierarchically. The highest package occupies the highest position. This log provides you with various details, including the prerequisites for importing the package. You helps you determine which prerequisites have not been met, so preventing successful queue calculation.

If analyzing the log does not solve your problem, you can save it using the print function. You can then send a problem message to SAP and include the log as an attachment.

- **Import Log**

The import log display logs for phases in the SAP Add-On Installation Tool that use the transport control program `tp`.

Assignment of Phases to Log Files

Phase	Log File
DISASSEMBLE_PATCH	Create cofile
IMPORT_OBJECT_LIST	Command file import
EXPORT_DELETION	Export (only in the combined process)
CREATE_VERS_BEFORE	Object versioning
DDIC_IMPORT	Dictionary import
DDIC_ACTIVATION	Dictionary activation
INACTIVE_IMPORT	Inactive import of program code and program texts (only for import mode downtime-minimized).

Phase	Log File
IMPORT_PROPER	Import; transport steps that are independent of requests (dictionary distribution, activation of inactive runtime objects, and so on)
XPRA_EXECUTION or AIM_EXECUTION	XPRA/method execution
ABAP_GENERATION	ABAP/dynpro generation

Meaning of the Return Codes

Return Code	Meaning
0 or 4	System information and warnings. Warnings are generally not critical for the system. You should still check them, however, as they can sometimes cause further errors.
Greater than 4	Serious errors that must be corrected before you can successfully import the support package.

- **Action Log**

The action log contains information about the actions that take place during the individual phases when importing an installation queue. It also includes information about the point at which a phase was stopped, as well as detailed error information.

To call the log display, choose **|| Goto > <menu option> >** on the initial screen of SAP Add-On Installation Tool.

Menu Options for the Logs

Function	Menu Option
Queue calculation log	<i>Queue Calculation Log</i>
Import logs	 Import Log > Queue >
Action log	<i>Action Log</i>

2.3 Installing Preconfigured Systems (PCS)

SAP offers `Preconfigured Systems` (PCS - or `SAP Best Practices`) for specific industries. These systems contain special industry information for typical structures in an industry, and the corresponding default values for these structures in the SAP system.

Prerequisites

- You have loaded the relevant [packages into your system \[page 14\]](#).
- You have not yet installed a PCS or compatible PCS.

ⓘ Hinweis

PCSs are not usually compatible with each other. They cannot be installed together. However, if you wish to enable related PCSs, SAP organizes them in groups in order to guarantee compatibility. If a PCS is assigned to a different group to that of an installed PCS, or has no group assignment at all, you cannot install it.

- You are logged on to the SAP system in a client other than 000 or 066. These clients are always protected against PCS imports. In client 000, you can use the SAP Add-On Installation Tool to [install add-ons \[page 17\]](#).

ⓘ Hinweis

A PCS is always installed in the client where you started the SAP Add-On Installation Tool.

- The client where you install the PCS is not protected against imports. If you are unsure, call transaction `scc4` to check the client settings and change them if necessary. If you are logged on to a protected client, you can only use the SAP Add-On Installation Tool display functions.
- The system is not being used as a production system. In other words, no clients are flagged as production clients (see transaction `scc4`).

ⓘ Hinweis

Only install packages when there is a low system load. There must be no other users logged on to the system, and there must be no background jobs running. Otherwise, problems can arise, such as terminated transactions or problems with synchronization.

Context

A PCS consists of the following elements:

- Industry-specific solution
- Industry-specific SAP clients

- Industry-specific customizing data

A PCS also contains test data and industry-specific documentation. You can use this test data to try out examples of processes and scenarios. The documentation provides you with detailed descriptions of the process models.

📘 Hinweis

- Only use the PCS as a basis for configuring a system installation.
- Always install the PCS in your test system first, so that you can check that its settings meet your requirements.

Procedure

1. Call the SAP Add-On Installation Tool (transaction `SAINT`). The initial screen is displayed, listing the PCSs and add-ons that are already installed.
2. Choose *Start* to begin the installation process. The screen shows you the installable PCS packages.
3. To search for additional packages in the current system's EPS directory, choose *Load*. If new packages are found, they are displayed.
4. To begin installing a PCS, select the PCS you want from the list of installable packages and choose *Continue*. This can have varying results:
 - The PCS may not be installed in this system, as some installation conditions have not been met. If this happens, the system specifies the conditions in question.
 - Additional packages (support packages or CRTs) are needed for the installation. The system specifies which packages are missing. The installation does not start. Use Support Package Manager (transaction `SPAM`) to install these packages.
 - Once all the conditions are met, the relevant installation queue appears (in a PCS installation, this queue only contains the PCS package). You can now start the installation process.
5. To start the installation, choose *Continue*. After starting the installation, the program runs through a set series of phases. If errors occur in any of these phases, the installation process terminates, and a description of the error is provided. Once the problem has been corrected, choose *Continue* to restart the installation process. If you cannot correct the problem, you can reset the installation by choosing *Back* up to the phase `SCHEDULE_RDDIMPDP` (see [Phases of the Installation Process \[page 36\]](#)).

In later phases, the database content has already been changed. You therefore need to continue the installation.

2.4 Phases of the Installation Process

The following table lists all phases of the installation process in the order in which they are performed by the SAP Add-On Installation Tool (transaction code `SAINT`). In addition to a short description, the table also contains information about the expected duration of each phase. The duration is described using international sizes:

XS	Very short, up to one second
S	Short, a few seconds
M	Medium, one to five minutes
L	Long, five to 30 minutes
XL	Very long, 30 minutes and longer

The duration of the phases can depend on the number and size of the support packages in the queue to be imported. This information is also displayed in the table.

Phases of the Installation Process

Name	Description	Duration
Preparation Module		
PROLOGUE	This phase checks whether you are authorized to import packages.	XS, independent of the queue
CHECK_REQUIREMENTS	This phase checks various requirements for importing a support package, for example, whether the transport control program <code>tp</code> can log on to your system.	S-M, independent of the queue
CP_INCLUSION	This phase adds transport-based correction instructions (TCIs) that are still valid after the import to the queue to prevent corrections from being overwritten.	S, independent of the queue
DISASSEMBLE	This phase unpacks files from the appropriate EPS parcels and saves them to the transport directory.	M, dependent on the queue
CREATE_COMPONENTS	This phase initializes the software components to be installed.	S, dependent on the queue
ADD_TO_BUFFER	This phase adds the queue to your system's transport buffer.	S, dependent on the queue
MODIFY_BUFFER	This phase prepares the transport buffer so that the subsequent import phases can be processed correctly.	S, dependent on the queue
ADD_SYNCMARKS	This phase inserts synchronization marks into the transport buffer.	S, dependent on the queue
IMPORT_OBJECT_LIST	This phase imports the object lists for the packages in the queue into the system.	M, dependent on the queue

Name	Description	Duration
OBJECTS_LOCKED_?	This phase checks for objects that are overwritten by the import and are in requests that have not yet been released.	S, dependent on the queue
CHECK_HDI_CONTAINER	This phase checks whether the prerequisites for importing special transport objects (R3TR AMHC) are met in SAP HANA systems.	XS, dependent on the queue
CHECK_INACT_OBJECTS	In this phase, the tool detects any objects that are inactive.	S, dependent on the queue
TEST_IMPORT	In this phase, a test import is run for the current queue with the transport control program tp. The system checks for objects that are in open repairs and that are overwritten during the import, or for other factors that might prevent an object being imported.	M, dependent on the queue
ADDON_CONFLICTS_?	It checks for conflicts with imported support packages with a higher version than specified in the import prerequisites for the add-on. If another add-on is already installed, Add-On Installation Tool checks for conflicts between this add-on and any support packages that were included as import prerequisites for the new add-on. It also checks whether the new add-on has direct object conflicts with the add-on that is already installed.	M-L, dependent on the queue and the number of installed software components
MT_CHK_SHARED_IMPORT (only relevant for SAP Cloud systems)	This phase runs only if you are installing or upgrading add-ons. This phase checks whether the import into the shared DB container has taken place.	XS, independent of the queue
SCHEDULE_RDDIMPDP	This phase schedules the transport daemon (program RDDIMPDP).	XS, independent of the queue

Import 1 Module

Name	Description	Duration
CREATE_VERS_BEFORE	<p>It generates versions of the objects contained in the packages in the queue (if this option is set).</p> <p>This phase runs only if you are installing or upgrading add-ons.</p>	M-L, dependent on the queue
SPDD_SPAU_CHECK	<p>In this phase, the system checks whether a modification adjustment is necessary (transactions SPDD/ SPAU).</p> <p>This phase runs only if you are installing or upgrading add-ons.</p>	M-L, dependent on the queue
DDIC_IMPORT	<p>It imports all ABAP Dictionary objects in the queue.</p> <p>This phase runs only if you are installing or upgrading add-ons.</p>	M-XL, dependent on the queue
AUTO_MOD_SPDD	<p>It checks whether all modifications to Dictionary objects can be adjusted automatically.</p> <p>This phase runs only if you are installing or upgrading add-ons.</p>	M, independent of the queue
RUN_SPDD_?	<p>This phase prompts you to adjust your modifications to dictionary objects by calling transaction SPDD.</p> <p>This phase runs only if you are installing or upgrading add-ons.</p>	XS, independent of the queue
LOCK_EU (only for import mode <i>downtime-minimized</i>)	<p>This phase locks the development environment.</p> <p>This phase runs only if you are installing or upgrading add-ons.</p>	XS, independent of the queue
INACTIVE_IMPORT (only for import mode <i>downtime-minimized</i>)	<p>This phase imports program code and program texts in an inactive state.</p> <p>This phase runs only if you are installing or upgrading add-ons.</p>	M-XL, dependent on the queue
Import 2 Module		
UNSCHEDULE_BTC_JOBS(only relevant if automatic background job handling is enabled)	In this phase, background jobs are descheduled.	S, independent of the queue

Name	Description	Duration
CRM_STOP_QUEUE_BDOCS(only relevant for CRM systems)	In this phase, replication and realignment queues are stopped, inbound queues are logged off, and BDoc messages are processed.	S, independent of the queue
CRM_LOCK_RUNTIME_GEN(only relevant for CRM systems)	In this phase, the CRM runtime objects are blocked.	S, independent of the queue
DDIC_ACTIVATION	This phase activates the imported ABAP Dictionary objects. This phase runs only if you are installing or upgrading add-ons.	M-XL, dependent on the queue
IMPORT_PROPER	This phase imports all repository objects and table entries not already imported during phase <code>INACTIVE_IMPORT</code> . This is preceded by actions such as table conversion and activation of the name tabs.	M-XL, dependent on the queue
PREPARE_XPRA	This phase prepares the execution of the XPRA and after-import methods.	S, dependent on the queue
UNLOCK_EU (only for import mode <i>downtime-minimized</i>)	This phase unlocks the development environment. This phase runs only if you are installing or upgrading add-ons.	XS, independent of the queue
AUTO_MOD_SPAU	This phase runs only if you are installing or upgrading add-ons. It checks whether modifications can be adjusted automatically.	M, independent of the queue
XPRA_EXECUTION	This phase executes the XPRA and after-import methods.	M-XL, dependent on the queue
CRM_UNLOCK_RUNTIME_GEN(only relevant for CRM systems)	In this phase, the generation of runtime objects is unblocked and CRM Adapter repository tables are adjusted.	S, independent of the queue
CRM_MERGE_BDOCS(only relevant for CRM systems)	In this phase, inconsistent BDoc messages are adjusted.	S, independent of the queue
CRM_REGEN_RUNTIME_OBJS(only relevant for CRM systems)	In this phase, changed runtime objects are regenerated.	S-M, independent of the queue
CRM_START_QUEUE(only relevant for CRM systems)	In this phase, the replication and realignment queues are restarted and the inbound queue is logged on.	S, independent of the queue

Name	Description	Duration
RESCHEDULE_BTC_JOBS(only relevant if automatic background job handling is enabled)	This phase reschedules the background jobs that were descheduled in phase UNSCHEDULE_BTC_JOBS.	S, independent of the queue
ABAP_GENERATION	This phase generates runtime objects for the imported repository objects (ABAP source code and screens). This phase runs only if you are installing or upgrading add-ons.	M-XL, dependent on the queue
Cleanup		
RUN_SPAU_?	This phase prompts you to adjust your modifications to repository objects by calling transaction SPAU. This phase runs only if you are installing or upgrading add-ons.	XS, independent of the queue
CLEAR_OLD_REPORTS (only for import mode <i>downtime-minimized</i>)	This phase deletes obsolete versions of program code and program texts in the database. This phase runs only if you are installing or upgrading add-ons.	M-L, dependent on the queue
EPILOGUE	This phase completes the import process. The add-on is now registered.	S, dependent on the queue

2.5 Checks While Importing a Queue

To ensure imports of OCS packages (support packages, add-on installation packages, or add-on upgrades) run as smoothly as possible, the import tool executes various checks in the *Preparation* module.

Check the transport tools `tp` and `R3trans`

The transport tools `tp` and `R3trans` must work correctly when importing a queue. If errors occur here, the system shows the following error message: `TP_CANNOT_CONNECT_TO_SYSTEM`. The cause is usually an error in the configuration of transports in Transport Management System (transaction `STMS`). You can call a detail check for more precise information on the errors and the possible causes. To do so, choose **Utilities** > **Check Transport Tool**. Solve the error and continue the import.

Check Minimum Versions of the Transport Tools `tp` and `R3trans`.

Some functions of the import tools and the OCS packages themselves require minimum versions of the transport tools `tp` and `R3trans`. If the required minimum versions of the transport tools are not installed, the

system displays this in a dialog window. Load at least the minimum required versions (or newer) of the tools from SAP Support Portal and install them (see SAP Note [19466](#)). Then continue the installation process.

Check on Available Background Work Processes

The import process can run in the foreground or be started as a background process. Various import steps (for example, DDIC activation) are always executed as a background process. For the import to be successful, a minimum number of free background work processes is required:

- 1 - If the import process is running in the foreground
- 2 - If the import process is started as a background process

If there are fewer background work processes available than this minimum number, the system tells you how to solve the problem. Follow the instructions. Then continue the installation process.

Check User DDIC Status

The system executes individual import steps under the control of the user DDIC. For this the user DDIC must exist and not be locked. If this is not the case, the system shows a message that informs you how you can solve the problem. Follow the instructions. Then continue the installation process.

Since user DDIC can pose a security threat, it is possible to set a different user to process the import steps via the configuration page in the transport system. For more information, see the section dealing with the transport system in the SAP NetWeaver Security Guide, under <https://help.sap.com/nw> ► [SAP NetWeaver Platform](#) ► [<your release version>](#) ► [Security](#) ► [SAP NetWeaver Security Guide](#) ►. In this case, deactivate the check for user DDIC.

Check Open Data Extraction and V3 Update Requests

If changes are made to DDIC structures by an import, it is possible that open data extractions and V3 update requests can no longer be processed. The processing must take place before the `IMPORT_2` module is started. For more information about these data extraction requests, see [1081287](#), [1083709](#), and [328181](#).

If the system finds open requests, it shows them in a dialog box and cancels the import process. You either have to process the open requests (or not) before continuing with the import depending on whether you have defined the import tool to execute the processing of the `IMPORT_2` module immediately or start manually in the start options. If you have chosen manual start the `IMPORT_2` module you can first ignore this warning message with the *Skip* pushbutton.

Check for CRM-Specific System Settings

This check is performed only if you use a CRM system.

For CRM packages to be able to be imported, certain system settings are required. If these settings have not been made, you are prompted to adjust the settings. Then continue the installation process.

Check the Transport Requests Still to be Imported in the Transport Management System (TMS)

To avoid problems, only import transport requests into systems that have the same system state as the installed software component versions (including the support package level) as the export system at the time of the export. This checks if there are transport requests in the import queue of the TMS that are to be imported before importing the package queue. If this is the case, the system displays the transport requests in a dialog box. You can jump directly to the TMS using the *TMS - Import Queue* pushbutton and start the import of the transport requests.

If you are sure that the transport requests that are still to be imported are independent from the system state and the OCS packages that are to be imported, you can ignore the check with the *Skip* pushbutton and continue with the import.

Check the signature of OCS packages pending import

OCS packages from SAP have a digital signature. This can be checked using the signature manifest when the queue is imported. If errors occur during the check, you need to resolve these problems before you can continue with the import process. You can find details about these errors in the action log for the phase `DISASSEMBLE`.

If the digital signature check fails, you should delete the relevant EPS file from the EPS inbox. Then you should download the installation package or support package from the SAP Support Portal again, and load the SAR archive into the system using one of the options under *Support Packages* or **► Installation Package ► Load Packages ►**.

If a warning appears prompting you to check the installation packages or support packages, then you should check them. If the check cannot be run due to a missing manifest file, reload the SAR archive for the relevant installation or support package into the system, using one of the options under *Support Packages* or **► Installation Package ► Load Packages ►**.

If you think the warning is not critical, you can skip the warning by pressing *Ignore*.

Check for note corrections to implement before import

It is possible that OCS packages can only be imported after specific note corrections have been implemented in the system. For example, this makes sense to avoid import errors as a result of known and corrected software errors. If this is the case, the system lists the SAP Notes to be implemented in a dialog box. You can use the *Note Assistant* pushbutton to jump straight to the Note Assistant and implement the specified SAP Notes.

Check for open conversion requests in the DDIC

When importing transport requests, table conversions and requests for creating table indexes can be triggered which can be canceled for different reasons. Since such requests are also processed when importing OCS packages and can then cause serious problems, they have to be processed or removed before the import.

If requests like this exist, the system displays the affected objects in a dialog box. To check the specified objects, use the DDIC tools of transactions `SE11` or `SE14`. Either process the open conversion requests completely or, if this is no longer necessary, delete them.

Check for open workbench requests

If objects that are also changed by the imported OCS packages were changed locally in the system, this change must be completed, which means that the related workbench change request must be released. Only in this way can you ensure that local changes and OCS package changes do not conflict and that a modification adjustment is possible.

If objects from the imported OCS packages are still locked in open workbench requests, the system displays them in a dialog box. By double-clicking a request you can branch directly to the request display and release the request directly, as long as you have the required authorization and are logged on in the relevant client. You can continue with the import when all open workbench requests are released.

Check for inactive objects

If objects from the imported OCS packages are still inactive, the system displays them in a dialog box. By double-clicking on the object name, you can open the object display directly and activate the object (provided

that you have the required authorization and are logged on in the relevant client). Once you have activated all of the inactive objects, you can continue with the import.

Check for add-on conflicts

If an imported support package has a higher version than specified by the import prerequisites for the add-on, conflicts can arise. Conflicts can also arise between installed add-ons and support packages included as import prerequisites or between the objects of a new add-on and the objects of installed add-ons.

If conflicts occur, cancel the process by choosing [Back](#). Review the following options:

- Conflict between installed add-on and new add-on
 - Ask the vendor whether a version of the new add-on is available that is compatible with the installed add-on. If this is the case, start the process again with the compatible version.
 - Check whether the installed add-on can be uninstalled. If this is the case, uninstall it can start the process again.
- Conflict between installed support package and new add-on
Check whether an appropriate CRT is available. If this is the case, load it into your system and start the process again. The CRT is included automatically.

If the conflict cannot be resolved, the add-on cannot be installed.

2.6 Performing ABAP/Dynpro Generation

By default, the SAP Add-On Installation Tool is configured so that no ABAP/Dynpro generation is performed during the import process. The relevant programs are generated only when they are called. However, you can define Add-On Installation Tool so that that these objects are generated during the installation process. Alternatively, you can start generation of all imported objects after the import process, using the SAP Load Generator.

Context

The SAP Add-On Installation Tool might return error messages during generation, for example if it finds syntactic errors in a program written by the customer or a modification to an existing program that points to an imported object. It is usually best to ignore the generation error at first and correct it after the support package has been imported.

To modify the generation of ABAP programs and dynpros, on the initial screen of the SAP Add-On Installation Tool, choose **► Extras > <menu option> ►**.

Function	Menu Option
Switch generation on and off	Settings
Ignore generation errors during import	Ignore Generation Errors

If you deactivated generation in the SAP Add-On Installation Tool settings, you can use the SAP Load Generator to perform generation after an add-on has been imported.

→ Empfehlung

We recommend that you use this method for ABAP/dynpro generation of large numbers of objects after installing large add-ons. The SAP Load Generator saves you time, since the generation set is processed in parallel on multiple application servers.

Procedure

1. Call SAP Load Generator (transaction `SGEN`).
2. Choose *Generate All Objects of Selected Components*.
3. Select the software component of the installed add-on.
This ensures that all objects in the installed add-on are generated again.
4. To start the search, choose *Next*.

2.7 Checking the Status of Background Processing

If you have scheduled the import of OCS Packages in the background, you can check the status of the scheduled background job in Job Administration.

Prerequisites

In the [start options \[page 23\]](#), you have specified that you want at least one module to be processed in the background.

To make changes to a background job that has been scheduled by another user, you need the relevant authorization.

Context

Checks on background processing may be necessary, for example, if the system is shut down while a background job is running, causing the background processing to change to an inconsistent state.

Support Package Manager and the SAP Add-On Installation Tool do not allow you to change the parameters of a background job after it has been scheduled. If you want to modify a background job later (to change the start time of the import, for example) or if you want to delete the job entirely, you can do this in Job Administration.

The job scheduled for background processing is called `OCS_QUEUE_IMPORT`.

Procedure

1. Call Job Administration by choosing the *Environment* menu in the import tool, or by calling transaction SM37.

Alternatively you get to the menu using ► *System* ► *Own Jobs* ► in the display of your own jobs. Here you can see an overview of jobs you have scheduled in the past, together with their status. Choose *Job Selection* to go to Job Administration.

2. Select the job OCS_QUEUE_IMPORT.
3. Choose one of the following:
 - Check the status of the job
 - Check the job log
 - Make changes to the job
 - Delete the job

Results

The import tool copies the changes from Job Administration. If you have deleted a background job, the status of the package queue changes accordingly. In the import tool, you can restart or reschedule the import of the OCS queue either in the dialog or in the background.

You can find more information on background processing in Job Administration, under ► *Help* ► *Application Help* ►.

3 General Description of the Uninstallation Process

During the uninstallation process, the SAP Add-On Installation Tool runs through different phases (see [Phases of the Uninstallation Process \[page 47\]](#)). Unlike installation, you cannot intervene while these phases are being processed.

First, the tool performs preparation steps to ensure that general system conditions and technical prerequisites are met.

In the check steps that follow, the SAP Add-On Installation Tool searches the system for content that belongs to the Add-Ons to be deleted: .

- All content contained in installation packages, upgrade packages, and support packages of the add-ons
- Content that was automatically generated by SAP Notes for the add-ons
- Content that was manually created in development packages that belong to the add-ons

From this content, the tool creates a part list containing the objects that need to be deleted to uninstall the add-ons. It also checks whether what dependencies exist between the objects in the part list and other content, or whether objects were modified or are inactive, for example. Objects of this type, which are identified as having errors during these checks can only be deleted once these errors have been corrected. In most cases, the tool performs these corrections. If that is not possible, for example, for modified objects, the tool displays this information at the end of the check phase and you need to manually correct the problems.

For more information about the check steps, see [Checks During the Uninstallation Process \[page 50\]](#).

If errors occur in these Preparation and Check phases, you have the option of cancelling the uninstallation or continuing after correcting the errors. If the Check phase is completed without errors, the SAP Add-On Installation Tool automatically starts the deletion process. You are then no longer able to interrupt the uninstallation process. Since data was changed in the database by the deletion, it is also no longer possible to reset the uninstallation.

After all checks have been performed correctly, the SAP Add-On Installation Tool removes the objects to be deleted from the system and changes the system status correspondingly.

3.1 Phases of the Uninstallation Process

The following list explains the phases of the uninstallation process in the order in which they are performed by the SAP Add-On Installation Tool (transaction code `SAINT`).

In addition to a short description, the table also contains information about the expected duration of each phase. The duration is described using international sizes:

XS Very short, up to one second

S	Short, a few seconds
M	Medium, one to five minutes
L	Long, five to 30 minutes
XL	Very long, 30 minutes and longer

The duration of the phases can depend on the number and size of the support packages in the queue to be imported. This information is also displayed in the table.

Phases of the Uninstallation Process

Checks Module

CHECK_GENERAL_REQ	This phase checks whether the transport system is correctly configured and is working properly.	S, independent of the queue
CHECK_SWCV	In this phase, the tools checks whether other installed software component versions require the software components to be deleted. If this is the case, the software components cannot be uninstalled.	S, dependent on the queue
CHECK_EMPTY_TP_BUFFER	This phase checks whether the transport buffer contains old OCS packages that have not been processed.	XS, independent of the queue
CHECK_OPEN_TMS_REQ	This phase checks whether the import queue in Transport Management System (TMS) contains requests that need to be imported before the uninstallation.	S-M, independent of the queue
CHECK_REQ	This phase checks whether ABAP Dictionary is consistent. To do so, it ensures that table conversions are completed and inactive runtime objects are activated.	S, independent of the queue
COLLECT_OBJLIST	This phase creates the local deletion package in the transport system as a transport request. The object list includes all imported delivery packages of the software component to be deleted. The list is formatted so that the deletion also includes dependent transport objects completely and correctly.	M-XL, dependent on the queue
CHECK_OBJECT_REQ	This phase checks whether the system requirements for deleting certain object types are met.	S, dependent on the queue
CHECK_PROFILES_ROLES	This phase checks whether roles and authorization profiles in the deletion package are assigned to other authorization profiles, roles, or users. These assignments must be deleted before the uninstallation can be resumed.	S, dependent on the queue
CHECK_USAGE	This phase checks whether objects in the deletion package are used by other development objects or belong to software components other than the ones you want to delete. These objects can only be deleted once these usages have been removed.	M-L, dependent on the queue


CHECK_MOD	In this phase, the tool checks whether the deletion package contains objects with customer modifications. In this case, you can either confirm the deletion of the objects or cancel and reset the uninstallation process.	S, dependent on the queue
CHECK_INCTV_OBJ	This phase checks whether there are any objects that are currently inactive. These must be activated before the uninstallation.	S, dependent on the queue
CHECK_LOCKED_OBJ	In this phase, the tool checks whether objects in the deletion package are locked in a transport request. You need to release these transport requests before the uninstallation.	S, dependent on the queue
Preparation Module		
EXPORT_DELETION	In this phase, the local deletion package is exported with the transport function "Deletion Export". When this is done, all transport objects in the deletion package are handled as deletions, namely as if they do not exist in the system.	M-L, dependent on the queue
ADD_TO_BUFFER	This phase adds the deletion package to the transport buffer of your system	S, dependent on the queue
MODIFY_BUFFER	This phase prepares the transport buffer so that the processing of the deletion package can be performed correctly. Import steps that are not required for the import of a deletion package are deactivated during this phase.	S, dependent on the queue
Import Module		
DDIC_IMPORT	This phase imports all ABAP Dictionary objects in the deletion package.	M-L, dependent on the queue
DDIC_ACTIVATION	This phase activates the imported ABAP Dictionary objects.	M-XL, dependent on the queue
IMPORT_PROPER	In this phase, the actual deletion of the objects in the deletion package takes place. All repository objects and table entries are imported as deletions, table conversions are performed, and names tables are activated. .	M-XL, dependent on the queue
AIM_PREPARATION	This phase prepares the transport buffer is for the import step AIM_EXECUTION.	S, dependent on the queue
AIM_EXECUTION	In this phase, the after-import method (AIM) is executed for logical transport objects.	M-L, dependent on the queue
Cleanup		
EPILOGUE	In this phase, cleanup steps such as the deletion of the deletion package from the transport buffer and the updating of system description tables are performed. The software component is now uninstalled in full and can be installed again as required.	S, dependent on the queue
FINALIZATION	In this phase, you perform final checks that the uninstallation was successful and end the process.	XS, dependent on the queue

3.2 Checks During the Uninstallation Process


To ensure that the deletion of add-ons runs as smoothly as possible, the SAP Add-On Installation Tool performs a number of checks.

Check Transport Tools tp and R3trans

Incorrect Parameters and Connection to the Database

The transport tools tp and R3trans must work correctly when processing a queue. If errors occur here, the system shows the following error message: `TP_CANNOT_CONNECT_TO_SYSTEM`. The cause is usually an error in the system configuration of the transport system in the Transport Management System (transaction STMS). You can call a detail check for more precise information on the errors and the possible causes. To do so, choose **► Utilities ► Check Transport Tool** . Solve the error and continue the deletion.

Minimum Version of the Transport Tools

Some functions of the transport tools and the OCS packages themselves require minimum versions of the transport tools tp and R3trans. If the required minimum versions of the transport tools are not installed, the system displays this in a dialog window. Load at least the minimum required versions (or newer) of the tools from SAP Support Portal and install them (see SAP Note [19466](#) ). Then continue the deletion.

Check Software Component Version

This check determines whether other installed software component versions require the software components to be deleted. If this is the case, the software components cannot be deleted. Any prerequisite relationships within the software components in question are ignored.

Check for Open Transport Requests

In this phase, the tool checks whether the import queue in Transport Management System (TMS) contains requests that need to be imported before the uninstallation. If this is the case, the system displays the transport requests in a dialog box. You can jump directly to the TMS using the *TMS - Import Queue* pushbutton and start the import of the transport requests. If you are sure that the transport requests that are still to be imported are independent from the system state and the deletion package to be imported, you can ignore the check with the *Skip* pushbutton and continue with the import.

Checking the Request

This check examines whether certain note corrections are implemented in the system. This helps, for example, to avoid import errors caused by known and resolved software errors. If this is the case, the system lists the SAP Notes in question in a dialog box. You can access Note Assistant directly from here and implement the specified SAP Notes.

Check for Roles and Authorization Profiles

Roles and authorization profiles from the add-on can only be deleted once the assignments to any other authorization profiles, roles, and users have been removed. The system displays the usages in a dialog box from which you can switch directly to the relevant transaction to edit the assignments. Once you have removed all usages of these objects, you can continue the deletion process.

Check for Objects In Use

You can only delete objects in the deletion package that are used by other development objects or belong to software components other than the one to be deleted if these usages have been removed. The system

displays the objects in use in a dialog box, from which you can switch directly to the relevant transaction to edit the object. Once you have removed all usages of these objects, you can continue the deletion process.

Check for Modified Objects

An add-on can only be deleted if none of its objects have been modified. If an add-on to be deleted has modifications, you need to reset these before starting the deletion process. The system displays the modifications in a dialog box, from which you can switch directly to the relevant transaction to edit the object. Once you have removed all modifications of these objects, you can continue the deletion process.

Check for Inactive Objects

If objects in the deletion package are inactive, the system displays them in a dialog box. By double-clicking on the object name, you can open the object display directly and activate the object (provided that you have the required authorization and are logged on in the relevant client). Once you have activated all of the inactive objects, you can continue with the deletion.

Check for Locked Objects

If objects in a deletion package in a transport request are locked, the system displays them in a dialog box. By double-clicking the object names or the associated transport request, you can switch directly to the transport request and release it, as long as you are authorized to do so. Once you have released the transport requests for all locked objects, you can continue the deletion.

Check User DDIC Status

The system executes individual transport steps under the control of the user DDIC. For this to happen, the user DDIC must exist and not be locked. If this is not the case, the system shows a message that informs you how you can solve the problem. Follow the instructions. Then continue the deletion.

Since user DDIC can pose a security threat, it is possible to set a different user to process the import steps via the configuration page in the transport system. For more information, see the section dealing with the transport system in the SAP NetWeaver Security Guide, under <https://help.sap.com/nw> ► *SAP NetWeaver Platform* ► *<your release version>* ► *Security* ► *SAP NetWeaver Security Guide* ►. In this case, deactivate the check for user DDIC.

Check Open Data Extraction and V3 Update Requests

If changes are made to DDIC structures by the deletion process, it is possible that open data extractions and V3 update requests can no longer be processed. The processing must therefore take place before the deletion of the objects in the deletion package is started. If the system finds open requests during the check phase, it displays these in a dialog box, from which you can switch directly to the request display. Process the open requests and then continue the deletion process.

For more information about data extraction requests, see SAP Notes [1081287](#), [1083709](#), and [328181](#).

3.3 Performing an Uninstallation

You can uninstall add-ons in a test scenario or in a standard scenario.

Context

The uninstallation is performed in a defined order, which is described in detail under [General Description of the Uninstallation Process \[page 47\]](#).

SAP Add-On Installation Tool provides two scenarios for uninstalling queues:

- **Test scenario**

You use this test scenario before the actual uninstallation to detect any conflicts or problems that need to be resolved before the uninstallation. The test scenario does not delete any data or objects in your SAP system.

This scenario helps you to estimate and minimize the time and effort needed for the uninstallation. If errors occur, you can continue the uninstallation without removing them.

You must choose the test scenario explicitly.

ⓘ Hinweis

Once you have run the test scenario, you must select the standard scenario explicitly.

- **Standard scenario**

In the standard scenario, the uninstallation is performed in full. If errors occur, you have to resolve them before you can continue with the uninstallation.

Uninstallations in the Test Scenario

Procedure

1. To set the test scenario, choose **Extras > Settings**.
2. On the *Import Queue* tab page, choose *Test*.
3. Start the uninstallation as described under *Uninstallations in the Standard Scenario*.


The test scenario also allows you to select start options for the individual modules (see [Defining the Start Options \[page 23\]](#)).

4. After starting the uninstallation, SAP Add-On Installation Tool runs through a set series of phases. If errors occur in any of these phases, the uninstallation process terminates, and a description of the error is provided. Make sure that you can remove any errors in the uninstallation in the standard scenario. You can resume the uninstallation in the test scenario by choosing *Skip*.

Uninstallations in the Standard Scenario

Procedure

1. To set the standard scenario, choose ► *Extras* ► *Settings* ►.
2. On the *Import Queue* tab page, choose *Standard*.

On the initial screen of SAP Add-On Installation Tool (transaction code `SAINT`), the tab page *Uninstallable Components* displays an overview of all uninstalleable add-ons that are available on your system. Entries of the type *customer-initiated uninstallation*  are non-SAP ABAP software components whose deletion is not supported by the vendor. However, there is an uninstallation configuration for these add-ons, which SAP Add-On Installation Tool can use to perform the deletion.

ⓘ Hinweis

If there is no uninstallation configuration for a non-deletable third-party ABAP software component version, you can use the configuration tool to create one. For more information about the configuration tool, see the documentation <https://help.sap.com/spmanager> at <https://help.sap.com/spmanager>.


Note that the tab page *Uninstallable Components* is only displayed if uninstalleable add-ons exist in the system.

3. Select the add-ons that you want to uninstall.

You can do this in the following ways:

- If you scheduled the uninstallation of add-on products in Maintenance Planner, save the generated stack XML file on your front end. Choose *Stack XML File* and select the file on your front end. This loads the XML file into the system and interprets it. SAP Add-On Installation Tool checks whether the configuration in question matches your system. If it does not match, an error message appears. If the configuration is suitable, it is applied automatically, and you cannot change it anymore. You can, however, undo the preconfigured selection by choosing *Reset Selection*.
- If you did not schedule the uninstallation in Maintenance Planner, select the add-on components you want to uninstall manually.

ⓘ Hinweis

If you select the add-on components to uninstall manually, the product information cannot be updated by the uninstallation process. You must then use the CISI process (see SAP Note [1816146](https://support.sap.com/en/notes/1816146) ) to correct any inconsistencies.

4. If you have selected all add-on components to uninstall, choose *Start*.

A dialog box appears prompting you to read notes that are assigned to the add-ons you want to uninstall. Each of these notes contains specific information about uninstalling the add-on in question. Perform the preparation activities listed in the SAP Notes before you start the uninstallation in SAP Add-On Installation Tool. To display the notes, follow the links in question.

5. After you have read the notes and performed the activities, choose the start options you want for the individual modules in the uninstallation (see [Defining the Start Options \[page 23\]](#)).

6. **⚠ Achtung**

Note that, after you start the uninstallation process, you can only intervene and cancel the uninstallation process if errors occur.

To proceed with the uninstallation, choose *Continue*. SAP Add-On Installation Tool starts the deletion process.

7. If errors occur during the Preparation or Check phases at the start of the uninstallation process, SAP Add-On Installation Tool interrupts the process and prompts you to correct the errors. After you have corrected the errors, continue the deletion process. The terminated phase is automatically repeated and, if no more errors occur, the tool continues with the next phase.

Alternatively, if you cannot solve the errors in the Preparation and Check phases, you can also cancel the uninstallation by choosing the *Back* button.

For more information about the checks, see [Checks During the Uninstallation Process \[page 50\]](#).

8. After you have successfully performed the uninstallation, complete the process by choosing *Exit*.

3.4 Logs in the Uninstallation Process

There are a number of different types of logs in SAP Add-On Installation Tool that can help you when analyzing errors. After you have successfully imported the queue, you should always check the import logs.

- **Import Logs or Transport Logs**

Various phases of SAP Add-On Installation Tool use the transport programs tp and R3trans. These programs create specific logs for the individual phases.

Assignment of Phases to Log Files

Phase	Log File
EXPORT_DELETION	Pre-export methods; export
DDIC_IMPORT	Dictionary import
DDIC_ACTIVATION	Dictionary activation
IMPORT_PROPER	Import; transport steps that are independent of requests (dictionary distribution, activation of inactive runtime objects, and so on)
AIM_EXECUTION	Method execution

Meaning of the Return Codes

Return Code	Meaning
0 or 4	System information and warnings Warnings are generally not critical for the system. You should still check them, however, as they can sometimes cause further errors.
Greater than 4	Serious errors that must be corrected before you can complete the import successfully.

- **Action Log**

The action log contains information about the actions that take place during the individual phases while installing the current queue. This includes, for example, information about the point at which a phase was stopped, as well as detailed error information.

To call the log display, choose **▶ Goto > <menu option> ▾** on the initial screen of SAP Add-On Installation Tool:

Function	Menu Option
Import logs	▶ <i>Import Logs</i> > <i>Queue</i> ▾
Action log	▶ <i>Action Log</i> ▾

4 General Description of the Combined Import and Uninstallation Process

If the changes you want to make involve importing software and uninstalling software components, you can combine both these steps in a single process. This reduces downtime and also manual effort. Furthermore, dependencies between installations and uninstallations in some cases make it mandatory that the two processes run together.

In the combined import and uninstallation process, SAP Add-On Installation Tool runs through various phases of the import process and of the uninstallation process (see [Phases of the Combined Import and Uninstallation Process \[page 57\]](#)). These phases are combined into modules.

Modules have the following properties:

- They can be executed individually.
- You can start these modules in a background process.
- You can control the start time of the module.

The import process is divided into the following modules:

Module *Preparation*

All the preparatory and test steps (including creating the deletion packages, the test import, and add-on conflict checks) are performed in this module. This module can run during production operation. First, check steps and preparation steps ensure that general system conditions and technical prerequisites are met. The deletion packages of the software components you want to uninstall are then created, checked, and exported. The deletion packages have the following content:

- All content contained in installation packages, upgrade packages, and support packages of the add-ons
- Content that was automatically generated by SAP Notes for the add-ons
- Content that was manually created in development packages that belong to the add-ons

After this, checks specific to object lists are made on the installation packages, deletion packages, and support packages in the queue. These ensure that the system can be restored to a consistent target state.

For more information about the check steps, see [Checks in the Combined Import and Uninstallation Process \[page 61\]](#).

If any errors occur in these preparation and check phases, you can cancel the import process or resume it after correcting the errors.

After performing the *Preparation* module, you can still reset or delete the queue. If you continue with module *Import 1*, data in the database is changed, and you can no longer reset or delete the queue.

Achtung

In the time between *Preparation* and *Import 2*, no transports can take place (apart from the modification adjustment transport, if required) and no manual changes can be made to repository objects (ABAP programs, dictionary objects).

Module *Import 1*

This module executes the import of dictionary objects and, if required, modification adjustments. The changes made by the dictionary import are still in an inactive state in the system; the runtime system cannot "see" these changes yet. If you are sure that no manual changes are being made, and that no transports are being imported into the system, this module can also run during production operation. This is normally the case in production systems.

Module *Import 2*

The remaining import steps (such as dictionary activation, main import, or after-import methods) are executed in this module. Changes are imported in different transport objects or different transport objects are deleted, which makes the system temporarily inconsistent and means production operation should stop during this module.

📘 Hinweis

There are software components whose installation or update does not slow down the production operation of a system, for example, the Solution Manager plug-in components ST-PI and ST-A/PI. If the queue contains only OCS packages in components whose vendor can confirm that production operation is not affected, the module *Import 2* can also run in production operation.

Module *Cleanup*

All cleanup steps are performed in this module. The most important of these is the adjustment of modifications in the repository objects. When all modifications have been adjusted, production operation may resume.

The package import process can be stopped after each module, which means that modules *Preparation* and *Import 1* can run during production operation. After the system has switched to non-production operation, as scheduled, module *Import 2* and, if required, the modification adjustment can be performed. Production operation can then resume.

4.1 Phases of the Combined Import and Uninstallation Process

The following list explains the phases of the uninstallation process in the order in which they are performed by the SAP Add-On Installation Tool (transaction code `SAINT`).

In addition to a short description, the table also contains information about the expected duration of each phase. The duration is described using international sizes:

XS	Very short, up to one second
S	Short, a few seconds
M	Medium, one to five minutes
L	Long, five to 30 minutes
XL	Very long, 30 minutes and longer

The duration of the phases can depend on the number and size of the support packages in the queue to be imported. This information is also displayed in the table.

Phases of the Combined Import and Uninstallation Process

Preparation Module

CHECK_GENERAL_REQ	This phase checks whether the transport system is correctly configured and is working properly.	S, independent of the queue
CHECK_SWCV	This phase checks whether other installed software component versions require the software components that you want to uninstall. If this is the case, the software components cannot be uninstalled.	S, dependent on the queue
CHECK_EMPTY_TP_BUFFER	This phase checks whether the transport buffer contains old OCS packages that have not been processed.	XS, independent of the queue
CP_INCLUSION	This phase adds transport-based correction instructions (TCIs) that are still valid after the import to the queue to prevent corrections from being overwritten.	S, independent of the queue
DISASSEMBLE	This phase unpacks files from the appropriate EPS parcels of the OCS packages in the queue and saves them to the transport directory.	M, dependent on the queue
CREATE_COMPONENT	This phase initializes the software components to be installed.	S, dependent on the queue
ADD_TO_BUFFER_PREP	This phase places the installation packages and support packages in the queue into the transport buffer of your system, ready for the preparatory object list import.	S, dependent on the queue
MODIFY_BUFFER_PREP	This phase prepares the transport buffer so that the preparatory object list import can be processed correctly.	S, dependent on the queue
IMPORT_OBJ_LIST_PREP	This phase imports the object lists of the installation packages and support packages of the queue into the system so that the deletion packages can be created correctly.	M, dependent on the queue
DEL_FROM_BUFFER_PREP	This phase deletes the previously configured entries from the transport buffer.	S, dependent on the queue
COLLECT_OBJLIST	This phase creates the local deletion package in the transport system as a transport request. The object list includes all imported delivery packages of the software component to be deleted. The list is formatted so that the deletion also includes dependent transport objects completely and correctly.	M-XL, dependent on the queue
CHECK_OBJECT_REQ	This phase checks whether the system requirements for deleting certain object types are met.	S, dependent on the queue
CHECK_PROFILES_ROLES	This phase checks whether roles and authorization profiles in the deletion package are assigned to other authorization profiles, roles, or users. These assignments must be deleted before the uninstallation can be resumed.	S, dependent on the queue

CHECK_USAGE	This phase checks whether objects in the deletion package are used by other development objects or belong to software components other than the ones you want to delete. These objects can only be deleted once these usages have been removed.	M-XL, dependent on the queue
EXPORT_DELETION	This phase exports the local deletion packages using the transport function "Deletion Export". When this is done, all transport objects in the deletion package are handled as deletions, namely as if they do not exist in the system.	M-L, dependent on the queue
CHECK_REQ	This phase checks whether ABAP Dictionary is consistent. To do so, it ensures that table conversions are completed and inactive runtime objects are activated.	S, independent of the queue
CHECK_OPEN_TMS_REQ	This phase checks whether the import queue in Transport Management System (TMS) contains requests that need to be imported before the uninstallation.	S-M, independent of the queue
ADD_TO_BUFFER	This phase places the deletion packages, installation packages, and support packages of the queue into the transport buffer of your system.	S, dependent on the queue
MODIFY_BUFFER	This phase prepares the transport buffer so that it can be processed correctly in the following import. Any import steps not required for the import are deactivated here.	S, dependent on the queue
ADD_SYNCMARKS	This phase inserts SYNCMARKS in the transport buffer to prepare the parallel import of the installation packages.	S, dependent on the queue
IMPORT_OBJECT_LIST	This phase imports the object lists for the installation packages and support packages in the queue into the system.	M, dependent on the queue
CHECK_LOCKED_OBJ	This phase checks for objects that are overwritten by the import and are in requests that have not yet been released. These transport requests must be released before further imports.	S, dependent on the queue
CHECK_HDI_CONTAINER	This phase checks whether the prerequisites for importing special transport objects (R3TR AMHC) are met in SAP HANA systems.	XS, dependent on the queue
CHECK_INCTV_OBJ	This phase checks whether there are any objects that are still inactive. These objects must be activated before further imports.	S, dependent on the queue
TEST_IMPORT	This phase performs a test import for the current queue. The system checks for objects that are in open repairs and that could be overwritten during the import, or for other factors that might prevent an object being imported.	M, dependent on the queue
ADDON_CONFLICTS	This phase checks for any conflicts between installed software components (including their imported support packages) and the new software components or support packages in the queue.	M-L, dependent on the queue and the number of installed software components

MT_CHK_SHARED_IMPORT (only relevant for SAP Cloud systems)	This phase checks whether the import into the shared DB container has taken place.	XS, independent of the queue
SCHEDULE_RDDIMPDP	This phase checks whether the transport daemon (program RDDIMPDP) is scheduled and schedules it if necessary.	XS, independent of the queue
Import 1 Module		
CREATE_VERS_BEFORE	This phase creates versions of the objects of the packages in the queue (if this option is selected in the settings).	M-L, dependent on the queue
SPDD_SPAU_CHECK	This phase checks whether a modification adjustment (in transaction SPDD or SPAU) is required and prepares any relevant objects for this adjustment.	M-L, dependent on the queue
DDIC_IMPORT	This phase imports all ABAP Dictionary objects of the packages in the queue.	M-XL, dependent on the queue
AUTO_MOD_SPDD	This phase checks whether any modifications to dictionary objects can be synchronized (adjusted) automatically and prepares the manual modification adjustment.	M, independent of the queue
RUN_SPDD	This phase prompts you to adjust any modifications you made to dictionary objects in transaction SPDD.	XS, independent of the queue
Import 2 Module		
UNSCHEDULE_BTC_JOBS(only relevant if automatic background job handling is enabled)	In this phase, background jobs are descheduled.	S, independent of the queue
CRM_STOP_QUEUE(only relevant for CRM systems)	In this phase, the replication and realignment queues are stopped and the inbound queues are logged off.	S, independent of the queue
CRM_CONVERT_BDOCS(only relevant for CRM systems)	In this phase, BDoc messages are processed to keep them stable against changes to data structures.	S, independent of the queue
CRM_LOCK_RUNTIME_GEN(only relevant for CRM systems)	In this phase, CRM runtime objects are blocked.	S, independent of the queue
DDIC_ACTIVATION	This phase activates the imported ABAP Dictionary objects.	M-XL, dependent on the queue
IMPORT_PROPER	This phase imports all repository objects and table entries, performs table updates, and activates name tables. This phase also deletes the objects in the deletion packages.	M-XL, dependent on the queue
AIM_PREPARATION	This phase prepares the transport buffer is for the import step AIM_EXECUTION.	S, dependent on the queue
AUTO_MOD_SPAU	This phase checks whether any modifications can be synchronized (adjusted) automatically and prepares the manual modification adjustment.	M, independent of the queue
AIM_EXECUTION	This phase executes the after-import methods (AIMs) for logical transport objects.	M-XL, dependent on the queue
CRM_UNLOCK_RUNTIME_GEN(only relevant for CRM systems)	In this phase, the generation of runtime objects is unlocked.	S, independent of the queue

CRM_ADAPTER_WIZARD(only relevant for CRM systems)	In this phase, the CRM adapter repository tables are adjusted.	S, independent of the queue
CRM_MERGE_BDOCS(only relevant for CRM systems)	In this phase, inconsistent BDoc messages are adjusted.	S, independent of the queue
CRM_REGEN_RUNTIME_OBJS(only relevant for CRM systems)	In this phase, changed runtime objects are regenerated.	S-M, independent of the queue
CRM_START_QUEUE(only relevant for CRM systems)	In this phase, the replication and realignment queues are restarted and the inbound queue is logged on.	S, independent of the queue
RESCHEDULE_BTC_JOBS(only relevant if automatic background job handling is enabled)	This phase reschedules the background jobs that were descheduled in phase UNSCHEDULE_BTC_JOBS.	S, independent of the queue
Cleanup		
RUN_SPAU	This phase prompts you to adjust any modifications you made to repository objects in transaction SPAU.	XS, independent of the queue
EPILOGUE	This phase performs follow-up steps such as deleting the deletion packages, installation packages, and support packages from the transport buffer and updating the system description tables. The software components are now uninstalled or installed in full.	S, dependent on the queue
FINALIZATION	In this phase, you check whether the uninstallation and installation of software components was successful and finish the process.	XS, dependent on the queue

4.2 Checks in the Combined Import and Uninstallation Process

SAP Add-On Installation Tool runs various checks to ensure the combined import and uninstallation process runs as smoothly as possible.

Check on the Transport Tools tp and R3trans

Incorrect Parameters and Connection to the Database

The transport tools tp and R3trans must work correctly when processing a queue. If errors occur here, the system shows the following error message: `TP_CANNOT_CONNECT_TO_SYSTEM`. The cause is usually an error in the configuration of transports in Transport Management System (transaction STMS). You can call a detail check for more precise information on the errors and the possible causes. To do so, choose **Utilities > Check Transport Tool**. Remove the error and continue the process.

Minimum Version of the Transport Tools

Some functions of the transport tools and the OCS packages themselves require minimum versions of the transport tools tp and R3trans. If the required minimum versions of the transport tools are not installed, the system displays this in a dialog window. Load at least the minimum required versions (or newer) of the tools from SAP Support Portal and install them (see SAP Note [19466](#)). Start the process again.

Check for the software component version

This check determines whether other installed software component versions require the software components to be deleted. If this is the case, the software components cannot be deleted. Any prerequisite relationships within the software components in question are ignored.

Check for open transport requests

This phase checks whether the import queue in Transport Management System (TMS) contains requests that need to be imported before the uninstallation. If this is the case, the system displays the transport requests in a dialog box. You can jump directly to the TMS using the *TMS - Import Queue* pushbutton and start the import of the transport requests. If you are sure that the transport requests that are still to be imported are independent from the system state and the deletion package to be imported, you can ignore the check with the *Skip* pushbutton and continue with the import.

Check for prerequisite note corrections

This check examines whether certain note corrections are implemented in the system. This helps, for example, to avoid import errors caused by known and resolved software errors. If this is the case, the system lists the SAP Notes in question in a dialog box. You can access Note Assistant directly from here and implement the specified SAP Notes.

Check for roles and authorization profiles in use

Roles and authorization profiles from the add-on can only be deleted once the assignments to any other authorization profiles, roles, and users have been removed. The system displays the usages in a dialog box from which you can switch directly to the relevant transaction to edit the assignments. You can continue the process once all usages have been removed.

Check for objects in use

You can only delete objects in the deletion package that are used by other development objects or belong to software components other than the one to be deleted if these usages have been removed. The system displays the objects in use in a dialog box, from which you can switch directly to the relevant transaction to edit the object. Once you have removed all usages of these objects, you can continue the deletion process.

Check for inactive objects

If objects in the deletion package are inactive, the system displays them in a dialog box. By double-clicking on the object name, you can open the object display directly and activate the object (provided that you have the required authorization and are logged on in the relevant client). Once you have activated all of the inactive objects, you can continue with the deletion.

Check for add-on conflicts

If an imported support package has a higher version than specified by the import prerequisites for the add-on, conflicts can arise. Conflicts can also arise between installed add-ons and support packages included as import prerequisites or between the objects of a new add-on and the objects of installed add-ons.

If conflicts occur, cancel the process by choosing *Back*. Review the following options:

- Conflict between installed add-on and new add-on
 - Ask the vendor whether a version of the new add-on is available that is compatible with the installed add-on. If this is the case, start the process again with the compatible version.
 - Check whether the installed add-on can be uninstalled. If this is the case, uninstall it and start the process again.

- Conflict between installed support package and new add-on
Check whether an appropriate CRT is available. If this is the case, load it into your system and start the process again. The CRT is included automatically.

If the conflict cannot be resolved, the add-on cannot be installed.

Check for locked objects

If objects in a deletion package in a transport request are locked, the system displays them in a dialog box. By double-clicking the object names or the associated transport request, you can switch directly to the transport request and release it, as long as you are authorized to do so. Once you have released the transport requests for all locked objects, you can continue the deletion.

Check the Available Background Work Processes

The import process can run in the foreground or be started as a background process. Various import steps (for example, DDIC activation) are always executed as a background process. For the import to be successful, a minimum number of free background work processes is required:

- 1 - If the import process is running in the foreground
- 2 - If the import process is started as a background process

If there are fewer background work processes available than this minimum number, the system tells you how to solve the problem. Follow the instructions. Then continue the installation process.

Check the status of the user DDIC

The system executes individual transport steps under the control of the user DDIC. For this to happen, the user DDIC must exist and not be locked. If this is not the case, the system shows a message that informs you how you can solve the problem. Follow the instructions. Then continue the deletion.

Since user DDIC can pose a security threat, it is possible to set a different user to process the import steps via the configuration page in the transport system. For more information, see the section dealing with the transport system in the SAP NetWeaver Security Guide, under <https://help.sap.com/nw> ► *SAP NetWeaver Platform* ► *<your release version>* ► *Security* ► *SAP NetWeaver Security Guide* ►. In this case, deactivate the check for user DDIC.

Check for open data extraction and V3 update requests

If changes are made to DDIC structures by the deletion process, it is possible that open data extractions and V3 update requests can no longer be processed. The processing must therefore take place before the deletion of the objects in the deletion package is started. If the system finds open requests in the check phase, it displays these in a dialog box, from which you can switch directly to the request display. Process the open requests and then continue the deletion process.

For more information about data extraction requests, see SAP Notes [1081287](#), [1083709](#), and [328181](#).

4.3 Optional: Including Modification Transports in the Installation Queue

If you have created an adjustment transport for a modification adjustment, you can integrate this into the follow-up systems.

Prerequisites

- The system prompts you to decide whether to include the modification adjustment transports in the installation queue.

ⓘ Hinweis

You can suppress this prompt in the [SAP Add-On Installation Tool Settings \[page 8\]](#).

- You have already executed the modification adjustment for the same queue (see [Adjusting Modifications \[page 31\]](#)).

Procedure

1. Confirm that you want to include modification adjustment transports.

A dialog box appears, containing a list of existing modification adjustment transports. You have the following options:

- If no adjustment transports are displayed in the list, you need to notify the system of the transports. To do this, choose [Find Adjustment Transports](#).
The system searches for adjustment transports in the Transport Management System import queue and in the transport directory on the application server. The system lists the transport requests that you have selected as [Modification Adjustment Transports](#) and released in the export system.
- For each adjustment transport listed, the *Status* field shows whether or not it fits the current queue and can be included.
Adjustment transports that match the queue are already selected in the table. An adjustment transport "matches" the queue if the target package level of the current queue is the same as the one in the export system when the modification adjustment transport is exported.
You can use the [Details](#) pushbutton to go to a detail view in which the state of the export system is compared with the state of the current system for each software component. Differences are displayed at the top of the list and are marked accordingly.
You can use this information to check whether the objects contained in the adjustment transport are part of the software components with different states. If this is not the case, you can ignore the differences and include the transport anyway. To do this, select the [Ignore differences in component vector](#) checkbox and select the transport as an adjustment transport.
- If required, change the adjustment transport selection.
You cannot select adjustment transports that do not match the queue. To hide adjustment transports that do not match the queue, choose [Activate Filter](#).

2. To continue adding the adjustment transports to the queue, choose [Continue](#).

Achtung

When a modification adjustment transport is imported as part of an installation queue, it is deleted from the normal transport flow for workbench requests. Requests are not forwarded to follow-on systems automatically. If you are working with the classic three-system landscape comprising a development system (DEV), quality assurance system (QAS) and production system (PRD), the modification adjustment transport is put into the QAS import queue after being exported from the DEV system. If you include the adjustment transport in an installation queue in system QAS, it is deleted from the QAS import queue. Since no transport forwarding takes place when importing an installation queue, the adjustment transport is not forwarded to the PRD system's import queue. You then need to import the adjustment transport into the PRD system as part of an installation queue, using the same procedure as in the QAS.

4.4 Running the Combined Import and Uninstallation Process

You can run the combined import and uninstallation of add-ons in a test scenario or a standard scenario.

Prerequisites

- You have defined the required target state of your system in Maintenance Planner and created a stack XML file. This file is located on your front end.
- You have called SAP Add-On Installation Tool (transaction SAINT).

Context

The combined process is performed in a defined order, which is described in detail under [General Description of the Combined Import and Uninstallation Process \[page 56\]](#). SAP Add-On Installation Tool provides two scenarios for this:

- **Test scenario**
Use the test scenario to detect any conflicts or problems before the actual change process and then remove them. It also enables you to estimate (and possibly minimize) the time and effort required by the process. If errors occur, you can also choose to continue the process without correcting the errors. No data or objects in your SAP system are modified or deleted.
You must choose the test scenario explicitly.

Hinweis

Once you have run the test scenario, you must select the standard scenario explicitly.

- **Standard scenario**

In the standard scenario, the combined import and uninstallation process runs in full. If errors occur, you can only continue and complete the process after you have removed the errors.

SAP Add-On Installation Tool starts the process only after it has guided you through a series of decisions. You go to the next step by pressing the *Continue* button. You can return to the previous step with the *Back* button.

Running the Combined Process in the Test Scenario

Procedure

1. To set the test scenario, choose ► *Extras* ► *Settings* ►.
2. On the *Import Queue* tab page, choose *Test*.
3. Start the combined process as described under *Running the Combined Process in the Standard Scenario*.

You can [Defining the Start Options \[page 23\]](#) in the test scenario too.

4. After starting the combined process, SAP Add-On Installation Tool runs through a set series of phases. If errors occur in any of these phases, the process stops and a description of the error is provided. Make sure that you can resolve the error in the standard scenario, if necessary. You can resume the process in the test scenario by choosing *Skip*.

Running the Combined Process in the Standard Scenario

Procedure

1. To set the standard scenario, choose ► *Extras* ► *Settings* ►.
2. On the *Import Queue* tab page, choose *Standard*.
3. To start the change process, choose ► *Start* ► *Stack XML File* ► in SAP Add-On Installation Tool and select the required stack XML file.

ⓘ Hinweis

Alternatively, you can choose the *Stack XML File* button on the *Uninstallable Components* directly.

This loads the stack XML file from the front end to the system and interprets it. SAP Add-On Installation Tool checks whether the configuration in this file is compatible with your system. If so, it is applied automatically and you can no longer change it. You can, however, undo the preconfigured selection by choosing *Reset Selection*. If the configuration in the stack XML file is not compatible, an error message appears. Follow the instructions in this message.

4. To start the queue calculation, choose *Continue*.

SAP Add-On Installation Tool uses the stack XML file and the current system state to calculate a combined import and uninstallation queue and displays it as a list. This list shows all installable deletion and installation packages and support packages in the system. It also indicates whether the configuration in the stack XML file was modified to match the required target state.

5. To include any (optional) modification adjustment transports, choose *Continue* and select the required transports (see [Optional: Including Modification Transports in the Installation Queue \[page 22\]](#)).
6. Choose *Continue*.

A dialog box appears that prompts you to read notes assigned to the components that you want to modify. Each of these notes contains specific information and informs you about any preparations you need to make before you start the change process in SAP Add-On Installation Tool. To display the notes, follow the links in question.

7. Read through all notes and perform any activities required before selecting the start options of the modules for the combined change process.

You can define start options for the individual modules according to your system requirements. If you confirm the dialog field without changing any settings, the import tool uses the default start options of the regular import procedure.

For more information, see [Defining the Start Options \[page 23\]](#).

8. Achtung

Note that, once started, you can only interrupt the combined change process and cancel it if errors occur.

To start the combined change process, choose *Continue*. SAP Add-On Installation Tool starts to make changes.

The selected start options determine when the change process starts. For example, if you have selected the option *Immediate Start* for the *Preparation* module, then the process starts directly after you have confirmed the start options.

If any errors are encountered during the preparation or check phases at the start of the change process, SAP Add-On Installation Tool interrupts the operation and prompts you to remove the errors. You can resume the change process as soon as you have removed the errors. The terminated phase is automatically repeated and, if no more errors occur, the tool continues with the next phase.

Alternatively, if you encounter errors you cannot correct in the preparation and check phases, you can also cancel the change process by choosing *Back*.

For more information, see [Phases of the Combined Import and Uninstallation Process \[page 57\]](#) and [Checks in the Combined Import and Uninstallation Process \[page 61\]](#).

9. When the change process is finished, complete it by choosing *Exit*.

Next Steps

Check the logs (see [Logs in the Import Process and the Combined Process \[page 33\]](#)).

4.5 Adjusting Modifications

If you have modified SAP objects from the add-on that you want to install, you need to adjust these objects when importing them. This ensures that your modifications are not overwritten by SAP objects. Transaction `SPDD` adjusts dictionary objects and transaction `SPAU` adjusts repository objects.

Context

You should always perform a modification adjustment if you have not integrated any adjustment transports, or if the integrated adjustment transports do not cover all the objects to be adjusted. SAP Add-On Installation Tool has prompted you to adjust your modifications.

If you have already performed the modification adjustment in a system (in a development system for example), you do not need to perform it manually in the follow-on systems (quality assurance and production systems). You can include the transport requests that you created for the modification adjustment (modification adjustment transports) in the queue. The modification adjustment then takes place automatically when the queue is imported. For more information, see [Installing and Upgrading Add-Ons \[page 17\]](#).

Depending on which type of object modifications you want to adjust, you have different options:

- Running a Modification Adjustment for Dictionary Objects - Transaction `SPDD`:
Complete all modification adjustments before continuing with the import. If you do not do this, modifications to dictionary objects will be lost. This can lead to data loss. To do this, perform all the steps as described below:
- Running a Modification Adjustment for Repository Objects - Transaction `SPAU`:
 - Adjust all modifications before continuing with the import.
This is recommended if you only need to adjust a small number of objects. To do this, perform all the steps as described below:
 - Perform the modification adjustment and the remaining phases in parallel.
This is recommended if you need to adjust a large number of objects.
This procedure is intended in particular for using [Import Mode: Downtime-minimized \[page 28\]](#). In the subsequent phases, SAP Add-On Installation Tool deletes all versions of program code and program texts that have become obsolete. Since this can be a lengthy process, you can save time by adjusting your modifications in parallel (at the same time).
If you want to perform the import in parallel, choose *Continue* on the screen that prompts you to perform a modification adjustment. Then carry out steps 1 through 3 as described below.

Procedure

1. To enable your development team to adjust modifications, go to the Transport Organizer and create one or more requests that include tasks for individual members of the development team.

⚠ Achtung

If you want to include the transport requests from the import queue in the follow-on systems, create them as transportable workbench requests. If you do not do this, they cannot be exported from the system and cannot be used in follow-on systems.

→ Empfehlung

We recommend that you create one transport request for adjusting dictionary objects and another for adjusting repository objects.

2. If you want to include the created requests in the queue in the follow-on systems for automatic modification adjustment, you need to mark them as adjustment transports.

- a. To do this, call transaction `SPDD` or `SPAU` and choose **Utilities > Select for Transport**.

This function is also used to select modification adjustment transports for the system upgrade. If you have already performed a system upgrade, the system might prompt you to decide whether to select the adjustment transport for use in the upgrade or for use in importing an add-on installation queue (OCS). Choose `OCS`.

- b. On the selection screen, choose the request you created previously and confirm your selection.

The transport request is now selected for use as a modification adjustment transport.

⚠ Achtung

To select a workbench request as a modification adjustment transport, assign it to the predefined CTS project `SAP_ADJUST`. This means that a workbench request selected as a modification adjustment transport cannot be assigned to a customer-defined CTS project. This assignment would always be overwritten by the project `SAP_ADJUST` when the selection is made.

- c. If you have created multiple transport requests, repeat the process for all of them.

3. Ask the development team to adjust the modifications for its objects.

If you have not yet confirmed the installation, the transaction `SPDD` or `SPAU` can be called by choosing **Extras > Adjust Modifications** on the initial screen of SAP Add-On Installation Tool.

Once the adjustment is complete, the development team must release its tasks and inform you. Modifications can be adjusted in any client.

4. If you have not yet continued with the installation after being prompted for a modification adjustment, perform the following steps:

- a. Call SAP Add-On Installation Tool (transaction `SAINT`).
- b. View the status of the queue. To do this, choose **Goto > Status > Installation Queue**.

A screen appears, prompting you to perform a modification adjustment.

- c. Choose **Confirm Adjustment** and confirm the prompt.
- d. To continue importing the queue, choose **Continue**.

Results

SAP Add-On Installation Tool continues the process (transaction `SPDD`) or completes it (transaction `SPAU`), and displays the status.

If you have created a modification adjustment transport, you can release and export it in Transport Organizer after importing the queue.

⚠ Achtung

The modification adjustment transport is a regular workbench request, which means it is placed automatically in the import queue of the follow-on system during the export process, where it can be imported as normal. However, performing this import only makes sense if the corresponding add-ons and support packages have been imported into the follow-on system. For this reason, make sure the import is not performed too early. To do this, use the mechanisms and functions contained in the Transport Management System, such as project management, QA mechanisms, and deleting the request from the import queue.

4.6 Logs in the Import Process and the Combined Process

SAP Add-On Installation Tool contains various types of logs. When you define the queue, you can use the [queue calculation log](#) for troubleshooting purposes. After successfully importing the queue, you should always check the [import log](#) and the [action log](#).

- **Queue Calculation Log**

The queue calculation log displays detailed information for queue calculation. The log is structured hierarchically. The highest package occupies the highest position. This log provides you with various details, including the prerequisites for importing the package. You helps you determine which prerequisites have not been met, so preventing successful queue calculation.

If analyzing the log does not solve your problem, you can save it using the print function. You can then send a problem message to SAP and include the log as an attachment.

- **Import Log**

The import log display logs for phases in the SAP Add-On Installation Tool that use the transport control program `tp`.

Assignment of Phases to Log Files

Phase	Log File
DISASSEMBLE_PATCH	Create cofile
IMPORT_OBJECT_LIST	Command file import
EXPORT_DELETION	Export (only in the combined process)
CREATE_VERS_BEFORE	Object versioning

Phase	Log File
DDIC_IMPORT	Dictionary import
DDIC_ACTIVATION	Dictionary activation
INACTIVE_IMPORT	Inactive import of program code and program texts (only for import mode <i>downtime-minimized</i>).
IMPORT_PROPER	Import; transport steps that are independent of requests (dictionary distribution, activation of inactive runtime objects, and so on)
XPRA_EXECUTION or AIM_EXECUTION	XPRA/method execution
ABAP_GENERATION	ABAP/dynpro generation

Meaning of the Return Codes

Return Code	Meaning
0 or 4	System information and warnings. Warnings are generally not critical for the system. You should still check them, however, as they can sometimes cause further errors.
Greater than 4	Serious errors that must be corrected before you can successfully import the support package.

- **Action Log**

The action log contains information about the actions that take place during the individual phases when importing an installation queue. It also includes information about the point at which a phase was stopped, as well as detailed error information.

To call the log display, choose **▢ Goto > <menu option> ▢** on the initial screen of SAP Add-On Installation Tool.

Menu Options for the Logs

Function	Menu Option
Queue calculation log	<i>Queue Calculation Log</i>
Import logs	▢ Import Log > Queue ▢
Action log	<i>Action Log</i>

5 Importing a SPAM/SAINT Update

A SPAM/SAINT update (abbreviated to SPAM update) provides enhancements and improvements for the Support Package Manager (transaction code `SPAM`) and the SAP Add-On Installation Tool (transaction code `SAINT`).

Prerequisites

You can only import a SPAM update if there are no terminated packages in the system.

A dialog box informs you if there are any terminated packages. You then have two options:

- Import the entire queue to begin with and then the SPAM update.
- Delete the queue, import the SPAM update, then import the queue.

ⓘ Hinweis

You can only delete the queue if module *Import 1* has not yet started (up to phase `SCHEDULE_RDDIMPDP`).

Context

There is always one SPAM update for each release. This update is updated accordingly. To find out which version you are using, look at the following in your system:

- Short description
 , for example: *SPAM/SAINT Update - Version <REL>/0001*
- in the package name, for example: *SAPKD<REL>01*

The latest SPAM update is also available on SAP Support Portal, under <https://support.sap.com/swdc>.

→ Empfehlung

Make sure you always have the most recent SPAM update before importing support packages or installation packages.

ⓘ Hinweis

All of the functions and menu paths specified in this document relate to the Support Package Manager (transaction code `SPAM`). You can only import a SPAM/SAINT update with this transaction.

Procedure

1. Check if the SPAM update offered is newer than the one in your system. (The current SPAM/SAINT version is displayed in the title bar of the Support Package Manager.)
2. To import the most recent SPAM update, choose ► *Support Package* ► *Import SPAM/SAINT Update* ▾. SPAM/SAINT updates are automatically confirmed once they have been imported.

6 Importing CRM Support Packages

The import process with SAP Add-On Installation Tool contains CRM-specific phases that run only if the package to be imported contains CRM-relevant data and is to be imported into a CRM system.

ⓘ Hinweis

If you want to import CRM Support Packages into a CRM system, you can use SAP Add-On Installation Tool (transaction `SAINT`) instead of CRM Add-On Manager (transaction `ADDON_MANAGER`).

The steps described in the following are executed only in the CRM scenario. They run automatically in phases of the module *Import 2*, however the process stops when user interaction is required. This means that the full import process for CRM support packages takes place during downtime.

For a complete description of all phases of the import process, see *the Phases* section in this documentation.

CRM-Specific Preparation Steps

- Inbound queues are logged off.
- Replication and realignment queues are stopped.
- It is checked whether there are unprocessed BDoc messages. If there are BDoc messages that have not been processed completely, you are prompted to switch directly to the corresponding maintenance transaction to process these messages completely.
- CRM runtime objects are locked.



CRM-Specific Postprocessing Steps

- The generation of runtime objects is unblocked.
- You are prompted to adjust the CRM Adapter Repository tables.
- If there are inconsistent BDoc messages, you need to adjust the corresponding BDoc message manually.
- Changed runtime objects are regenerated. If you have not yet planned a job for regenerating runtime objects, the import process is stopped and you have the option of starting the regeneration of runtime objects manually or creating a job.
- The replication and realignment queues are started again.
- The inbound queue is logged on again.

Ausschlussklauseln und rechtliche Aspekte

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