Teamcenter Gateway Migration Guide
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Preface

This documentation cannot be used as a substitute for consulting advice, because it can never consider the individual business processes and configuration. Despite our best efforts it is probable that some information about functionality and coherence may be incomplete.

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1. Introduction

This guide should be used to determine the steps necessary for migrating mapping files and other Teamcenter Gateway settings from an earlier installation.

The specifics depend on the circumstances and the details of the mapping already in place. Therefore, this guide is meant to provide a list of steps to take along with hints regarding the specifics of those steps. In addition, this guide provides information about the migration tool provided to assist with migrating mapping files and corresponding Teamcenter preferences.

Thorough testing of the resulting configuration is highly recommended to ensure that T4x works properly in the new environment.

The license for a T4x product is included in the Teamcenter license file. You just need to make sure that the Siemens PLM license server is configured correctly using the BGS Admin GUI. The Upgrade is applicable for different scenarios:

1. T4x is upgraded when Teamcenter is upgraded
2. Upgrade T4x without upgrading Teamcenter

In order to take advantage of new features in the latest T4x version, it might be required to upgrade T4x without upgrading Teamcenter. Of course this only works if both the T4x versions (the one that has been used already and the one to upgrade to) are compatible with the used Teamcenter version.
2. Teamcenter Gateway Upgrade Steps

- Backup of the existing installation and configuration.
- Cleanup of your existing Teamcenter installation (optional).
- Migration of the Configuration
- Update of the existing Teamcenter Gateway installation (optional).
3. Preparation of the Upgrade

Basic Preparations

Please follow the checklist:

• Create Backups of your Teamcenter Workflows that include T4x Handlers.

• Create a Backup of all of your Teamcenter Preferences.

• Open the Teamcenter Gateway Admin GUI (BGS and GS separately). Make screen shots of the existing settings.

• Stop the T4x processes.

• If T4x processes are started as a Service stop them as well.

• Make a copy of the existing T4x installation directories.

• For proper T4x Admin GUI handling, be sure to use a supported web browser (see Teamcenter Gateway - Installation Guide), enable JavaScript, delete the web browser cache and cookies, then restart the web browser.

• In case you have customer specific T4S dll’s or other custom T4S functions installed, please ask first how to handle them for the T4S upgrade. Maybe they have to be upgraded for the new T4S version (needs to be done by T4S software development), maybe they are not needed anymore because that specific functionality had been implemented in the T4S standard functionality.

• Copy your additional files that are not part of the OOTB Package (e.g. for SAP JCO, SAPftp, SAPhttp, sapnwrfc.ini, additional customer dll’s...) from the old to the new t4x directories or import new versions of these files if necessary.

Additional Steps to Update an Existing Teamcenter Installation

• Be sure all Teamcenter processes including TAO and Poolmanager (Servermanager) are stopped before proceeding. The database and FMS services do not matter.

• Run clearlocks -verbose in a Teamcenter or T4x command shell.

• Delete the local RAC cache, e.g. %USERPROFILE%\Teamcenter\RAC (this is the default location)

• Delete all the old T4x .jar files in <TC_ROOT>/portal/plugins. Same with the language dependent T4x error message files in <TC_ROOT>/lang/textserver.
Acquiring the T4x Configuration

Teamcenter Gateway Mapping Files

Caution:
In previous versions, the Mapping files may have been directly stored in the directory <T4x_GS_ROOT>/var/mmap. Now this directory contains sub folders.

There is a directory <T4x_GS_ROOT>/var/mmap/t4x_mapping_config for product independent mapping source files. We recommend doing the following steps:

- Create the corresponding sub-directories t4s_mapping_config and t4x_mapping_config under <T4x_GS_ROOT>/var/mmap.
- Copy the template files from <T4x_GS_ROOT>/var/template/mmap/t4x_mapping_config to <T4x_GS_ROOT>/var/mmap/t4x_mapping_config.
- Move the existing files from <T4x_GS_ROOT>/var/mmap to the corresponding sub-directories.
- Remove all statements beginning with source -relax t4x from the product specific mapping config file <t4x>_mapping_config.sd because now they belong into the T4x product independent mapping config file t4x_mapping_config.sd
- Remove all statements beginning with source -relax <t4x>_mapping_config from the product specific mapping config file <t4x>_mapping_config.sd. Such settings were used in special T4x installations only, not by default, and now they are not needed anymore at all because T4x loads all existing files *_mapping_config.sd automatically.
- Adapt the T4x mapping config source file <T4x_GS_ROOT>/var/mmap/t4x_mapping_config/t4x_mapping_config.sd to your needs. Especially the statements source -relax ...

Teamcenter Gateway Preferences

In many cases there will be a backup XML file with the T4x Preferences Configuration, that is managed by the customer. Preferably this configuration file will be used for the migration.

If this is not the case, you may export the T4x Preferences from Teamcenter. The Teamcenter Gateway Preferences can be found under the category Teamcenter Gateway. Please check if all Preferences starting with 'T4*' are managed under that category. If not, you may want to export all Teamcenter Preferences and edit the XML file, so that only T4x Preferences remain and are assigned to the correct category.

1 <t4x> should be replaced with product specific prefix t4ea, t4o or t4s etc.
Teamcenter Gateway Workflows

Export all Teamcenter Workflows that contain T4x Handlers to one or multiple .XML files.

Teamcenter Gateway Teamcenter Queries

Export Teamcenter Queries that are used by T4x.

Get Latest Teamcenter Gateway Version Packages

Acquire the latest Teamcenter Gateway installation package from GTAC along with the PL4x Installer.

Manual Data Backup and Fresh Installation of Teamcenter Gateway

- Rename the existing T4x directories (just to be sure they are not used anymore).

- Create new T4x directories (BGS and GS separately): they may be named the same as before, but in order to find the different directories more easily, we recommend putting the T4x version number in the directory name, e.g. T4x_V11_BGS.

- If you do not want to start with a new installation of T4x again, keep your directories as is and use the update function of the installer (see Teamcenter Gateway - Installation Guide). The installer will update the files in your existing installation, keep your data and try to migrate your BGS and GS settings as far as possible. Check the output of the installer for warnings.

- For proper T4x Admin GUI handling, be sure to use a supported web browser (see Teamcenter Gateway - Installation Guide), enable JavaScript, delete the web browser cache and cookies, then restart the web browser.

- Start and configure T4x using the Teamcenter Gateway Admin GUI (BGS and GS separately).

Caution:

Every new T4x version will use the same port numbers 11300, which was introduced in order to avoid conflicts. So if you install a new T4x version make sure that the old one is stopped before, else there will be problems because they will wrongly communicate together because of the same port numbers!

- In case you have customer specific T4S DLLs or other custom T4S functions installed, please ask first how to handle them for the T4S upgrade. Maybe they have to be upgraded for the new T4S version (needs to be done by T4S software development), maybe they are not needed anymore because that specific functionality had been implemented in the T4S standard functionality.

- If any customer specific mapping code is used that replaces a standard T4x function by overriding its original mapping code, be sure to check if it is needed any more at all. If yes, adapt it to the new T4x version. These functions can be found by checking their namespaces.
• Copy your additional files (e.g. for SAP JCo, SAPftp, sapnwrfc.ini, additional customer DLLs...) from the old to the new t4x directories or import new versions of these files if necessary.

• Adapt your T4x installation according to the adaptations of the old installation, e.g. the settings in t4xcust.bat

• Import your migrated mapping files and remake the compiled mapping.

• There is a directory <T4x_GS_ROOT>/var/mmap/t4x_mapping_config for product independent mapping source files. In order to handle it well, we recommend doing the following steps:
  
  • create the corresponding sub-directories t4s_mapping_config t4x_mapping_config and t4x_mapping_config under <T4x_GS_ROOT>/var/mmap.
  
  • copy the files from <T4x_GS_ROOT>/var/template/mmap/t4x_mapping_config template to <T4x_GS_ROOT>/var/mmap/t4x_mapping_config.
  
  • move the existing files from <T4x_GS_ROOT>/var/mmap to the corresponding sub-directories.
  
  • remove all statements beginning with source –relax t4x from the product specific mapping config file <t4x>_mapping_config.sd because now they belong into the T4x product independent mapping config file t4x_mapping_config.sd
  
  • remove all statements beginning with source –relax <t4x>_mapping_config from the product specific mapping config file <t4x>_mapping_config.sd. Such settings were used in special T4x installations only, not by default, and now they are not needed anymore at all because T4x loads all existing files *_mapping_config.sd automatically.
  
  • adapt the T4x mapping config source file <T4x_GS_ROOT>/var/mmap/t4x_mapping_config/_mapping_config.sd to your needs, i.e. especially the statements source –relax ...

• Delete all the old T4x jar files in <TC_ROOT>/portal/plugins. They do not have to be pasted manually there; instead this is done by the TEM tool during T4x installation. Same with the language dependent T4x error message files in <TC_ROOT>/lang/textserver.

• Replace the <T4x_GS_ROOT> directory names in the scripts using them, especially T4x_shell.bat and the adapted Teamcenter scripts (e.g. portal.bat, start_TcServer1.bat) with the new created <T4x_GS_ROOT> directory name.

• Install the T4x template using Teamcenter Environment Manager (TEM).

• If required, adapt the data model as desired using Teamcenter BMIDE (only needed in special cases, e.g. for implementing new functionality using Teamcenter BMIDE settings). In order to incorporated changes to the Teamcenter data model, please follow the instructions in the Teamcenter Gateway - Installation Guide.

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2 <t4x> should be replaced with product specific prefix t4ea, t4o or t4s etc.
• Restart Teamcenter and import your migrated preferences.

• Stop Teamcenter and all its processes again.

• Regenerate the Portal registry XML files by executing `<TC_ROOT>\portal\registry\genregxml`.

• Restart Teamcenter and T4x with it; fine-tune the T4x settings (mappings etc.) until it works as desired.
3. Preparation of the Upgrade
4. Teamcenter Gateway Migration Tool

General Information

T4x provides a tool facilitating the migration from earlier T4x versions. This tool can help you, but it is not able to perform all of the necessary steps. You will have to test the results thoroughly in the new environment. Therefore, you should have read the previous chapters before using the tool and fine-tune its results appropriately, especially the Workflow handlers.

Caution:

• The oldest T4x version supported by the current T4x migration tool is T4x 10.1

• This tool only handles T4x configuration files. It does nothing with the Teamcenter database. Therefore, you can even use it on a system without Teamcenter installed.

How to Use the Teamcenter Gateway Migration Tool

This describes how to use the T4x Migration Tool in the most convenient way.

• Create a migration directory (e.g. C:\T4x\_migration).

• Copy the file <t4x>_migtool of your GS installation (<T4x_GS_ROOT>\var\script\<t4x>_migtool) into this new directory.

• Copy the Mapping files from your existing T4x installation into this new directory.

• Copy the Teamcenter Gateway Preferences in the default XML format in the migration directory.

• Copy the Workflow Templates who contain T4x Handler into the migration directory.

• Create a sub-directory to store the result files (e.g. C:\<T4x>_migration\new). Only the contents of this directory will be modified by the T4x Migration Tool.

• Set up a T4x command shell with the new T4x environment (See also chapter Setting Up a T4x Command Shell in the Teamcenter Gateway - Generic Configuration Guide). Change to the migration source directory (in our example, C:\<T4x>_migration).

• Run the T4x Migration Tool with the command tps t4x_migtool -l automig.log -o new.

This will process all files with the following patterns:

• *.sd
Your files in the source directory (in our example, \C:\T4x\migration\) will not be changed and therefore no existing data will be corrupted. The processed results will be stored in the target directory stated with the \-o\ option in the current directory (in our example \C:\T4x\migration\new). In order to have the Migration Tool writing every single modification into log files, use the additional parameter \-l. This will write the log files \automig.log.diff\ and \automig.log.txt\ into the current directory (not the new directory stated with \-o) allowing you to check every modification.

The whole process may take a few minutes. It will show a progress bar for every single file it processes.

Please note that:

• The Migration Tool can be called from anywhere and the input files may be located in any directory (specify with the option \-i\ like input), but it is recommended to use the way described here. Thereby all the input files are collected and processed in one step instead of using the tool from the mapping directory, from the preferences export directory and from the Workflow export directory separately.

• Use the help parameter \-h\ for more details on the options.

• If there should be an error message be sure to start it from the correct (new) T4x environment and that no T4x process from the same installation is running. Then try again.

Caution:
The Migration Tool does not only replace preferences and preference values, but it also deletes obsolete ones.

Creating Style Sheets

The T4x Migration Tool can create the style sheets for the T4x transfer window and the corresponding preferences as well. In earlier T4x versions, preferences \<T4x\>_<object_type>ListOfDisplAttributes4* defined the data to show in the T4x transfer window. Now this is done using style sheets. See chapter Teamcenter GUI Extensions in the Teamcenter Gateway - Generic Configuration Guide for details on how to set it up and use it. If one of your input files is a preferences export file containing such preferences, call the Migration Tool with the additional option \-stylesheets\ (may be abbreviated as \-ss\) as in the following example

tps <t4x>_migtool \-l\ automig.log \-o new \-f \-ss new_stylesheets

The options \-l\ and \-f\ in this example are optional, but \-o\ is mandatory with and without style sheets. In this example, the Migration Tool will create the style sheet files (the actual style sheet XML files and a style sheet preferences file) in the directory \new_stylesheets\, and the same output as in the previous examples.
As from version 10.0 upwards, Teamcenter modified some details regarding the preferences handling, the T4x Migration Tool must reflect that difference. Therefore the new parameter \texttt{-tc} has been introduced. This allows values 10 or higher (two digits) with or without decimals. In the current version, the Migration Tool does not care about the decimals (so for example \texttt{-tc 10} is handled in the same way as \texttt{-tc 10.1}), but if Teamcenter will introduce more version specific differences, this difference may become important in later T4x versions.

A correct call with Teamcenter 10 could be:

\begin{verbatim}
tps t4s_migtool -l automig.log -o new -tc 10
\end{verbatim}

The main difference is that since Teamcenter 10.0 each preference needs a non-empty element preference_description as well as protectionScope and envEnabled. So if the Migration Tool is invoked with the option \texttt{-tc 10}, it will do the following:

- If a \texttt{<preference>} element in the input file does not contain a \texttt{<preference\_description>} element it will be added with the value “No description available for this preference”. If the element \texttt{<preference\_description>} exists but is empty the same value will be inserted into the element.

- If a \texttt{<preference>} element in the input file does not contain a \texttt{<protection\_Scope>} attribute it will be inserted with the value Site.

- If a \texttt{<preference>} element in the input file does not contain a \texttt{<env\_Enabled attribute>} it will be inserted with the value false.

**Fine-tune the Results of the Teamcenter Gateway Migration Tool**

After the automatic processing, you have to check the results thoroughly:

- Be sure that the preferences file is in correct XML style. This may be checked with any XML editor or with the standard Teamcenter tool preferences_manager (adding the option \texttt{-preview} will only display the result of the preference modifications without doing an update to the database), e.g.

\begin{verbatim}
prefere\_smanager -u=infodba -p=<pw> -g=dba \ 
-mode=import -file=t4s.xml -scope=S\_ITE \ 
-preview -action=OVERRID\_E
\end{verbatim}

- Check the workflow template XML files according to the above description.

- If you want to rerun the T4x Migration Tool, you may notice that it will not write any files if one or more of the target files already exist. Then you may
  - delete the contents of the target directory,
  - use another target directory, or
• force the T4x Migration Tool to overwrite the files by adding the option `-f`:
  tps t4s_migtool -l automig.log -o new -f

Caution:
Here are common pitfalls to be avoided:

• If the migration replaced a function, make sure that the parameters of the function are replaced correctly.

• If customer specific mapping code is used that replaces a standard T4x function by overriding its original mapping code, be sure to check if it is still needed. If true, adapt it to the new T4x version. These functions can be found by checking their namespaces.

• It is recommended that you replace custom JCO calls with Netweaver calls.

• Carefully read the contents of the `automig.log.diff` file and act accordingly to the comments.
5. Migration of the Installation

Using the Installer to Upgrade an Existing Installation

When upgrading PL4x using the installer, the files of your existing installation will be edited. This will keep your existing data (shared memory, log files, jobs) and try to migrate as much of your installation settings as possible. Follow these steps to upgrade your PL4x using the installer:

• Fulfill the preconditions described in Basic Preparations.

• Check your customer specific T4S4 dll's or functions and customer specific mapping as described in Manual Data Backup and Fresh Installation of Teamcenter Gateway.

• Run the installer with the update option (see Active Integration (PL4x) Installer Introduction in the Teamcenter Gateway - Installation Guide) and check the output text file of the installer for errors or warnings.

• Import your migrated mapping files and remake the compiled mapping as described in Manual Data Backup and Fresh Installation of Teamcenter Gateway.

• Follow the remaining steps as described in Manual Data Backup and Fresh Installation of Teamcenter Gateway.

• When starting PL4x check your migrated settings in the Admin UI.

Shared Memory Migration and Integrity Check

Due to internal changes of the data format of shared memory files, files created in version T4x < 11.3 are no longer compatible with T4x >= 11.3 and have to be migrated before starting T4x.

When updating your T4x installation using the installer, your existing shared memory files will be backed up and automatically be converted to the new format. If everything works as expected you should find a file <T4x_root>/var/pef/share.ca in your updated installation directory and T4x should start as expected.

In some rare cases it could happen that the migration of the shared memory fails, if your existing shared memory is broken and the integrity cannot be guaranteed. In that case the installer will not do any conversion, but dump all readable entries of your existing shared memory to a text file in T4x. You can edit the file with a text editor and - after finishing your installation - import it again following these steps:

• Execute <T4x_root>/bin64/tpshell.

• Type in source tmp/shm.dump and hit enter.
Teamcenter Workflow Migration

Due to clearing up deprecated T4x functionality some T4x workflow handlers are no longer available and therefore Teamcenter workflows using this workflow handlers have to be migrated. This can be done with the Teamcenter workflow utility **migrate_wf_handlers**. T4x provides the `wf_t4x_handler_migration.xml` mapping input file to convert handler names and arguments via this utility as part of the `<t4x>` feature. Call the Teamcenter workflow utility like this:

```
migrate_wf_handlers -v -mapping_file=%TC_ROOT%\install\<t4x>\wf_handler_migration\wf_t4x_handler_migration.xml
```

More details about the **migrate_wf_handlers** utility can be found in the Teamcenter documentation (Administering > Teamcenter > Utilities Reference > Workflow utilities).
6. Post Migration Steps

- Adapt your T4x installation according to the adaptations of the old installation. E.g. the settings in `t4xcust.bat`

- Import your migrated Mapping files and recompile and deploy the migrated Mapping.

- If applicable, replace the `<T4x_GS_ROOT>` directory names in the scripts using them, especially `T4x_shell.bat` and the adapted Teamcenter scripts (e.g. `portal.bat`, `start_TcServer1.bat`) with the new created `<T4x_GS_ROOT>` directory name.

- Install the T4x template using Teamcenter Environment Manager (TEM).

- Migrate all Teamcenter workflows which are using deprecated T4x workflow handlers.

- If required, adapt the data model as desired using Teamcenter BMIDE (only needed in special cases, e.g. for implementing new functionality using Teamcenter BMIDE settings). In order to incorporated changes to the Teamcenter data model, please follow the instructions in the Teamcenter Gateway - Installation Guide.

- Restart Teamcenter and import your migrated Teamcenter Gateway preferences.

- Stop Teamcenter and all its processes again.

- Regenerate the Portal registry XML files by executing `<TC_ROOT>\portal\registry\genregxml`.

- Restart Teamcenter and T4x.

- Retest and fine tune the T4x configuration. All use-cases and functionalities need to be retested.
A. Glossary

B

BGS
Basic Gateway Service.

BMIDE
Teamcenter Business Modeler IDE (Integrated Development Environment).

E

EA
stands for Enterprise Application, any software or set of computer programs used by business users to perform various business functions in context of current integration's portfolio with Teamcenter.

R

RAC
stands for Rich Application Client also referred to as rich client or portal.

T

TAO
The ACE ORB is a open-source and standards-compliant real-time C++ implementation of CORBA based upon the Adaptive Communication Environment (ACE).

TEM
Teamcenter Environment Manager.
Siemens Industry Software

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