TEAMCENTER

Teamcenter Update Using Deployment Center

Teamcenter 2412

SIEMENS

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Siemens Digital Industries Software is a global leader in the growing field of product lifecycle management (PLM), manufacturing operations management (MOM), and electronic design automation (EDA) software, hardware, and services. Siemens works with more than 100,000 customers, leading the digitalization of their planning and manufacturing processes. At Siemens Digital Industries Software, we blur the boundaries between industry domains by integrating the virtual and physical, hardware and software, design and manufacturing worlds. With the rapid pace of innovation, digitalization is no longer tomorrow’s idea. We take what the future promises tomorrow and make it real for our customers today. Where today meets tomorrow. Our culture encourages creativity, welcomes fresh thinking and focuses on growth, so our people, our business, and our customers can achieve their full potential.

Support Center: **support.sw.siemens.com**

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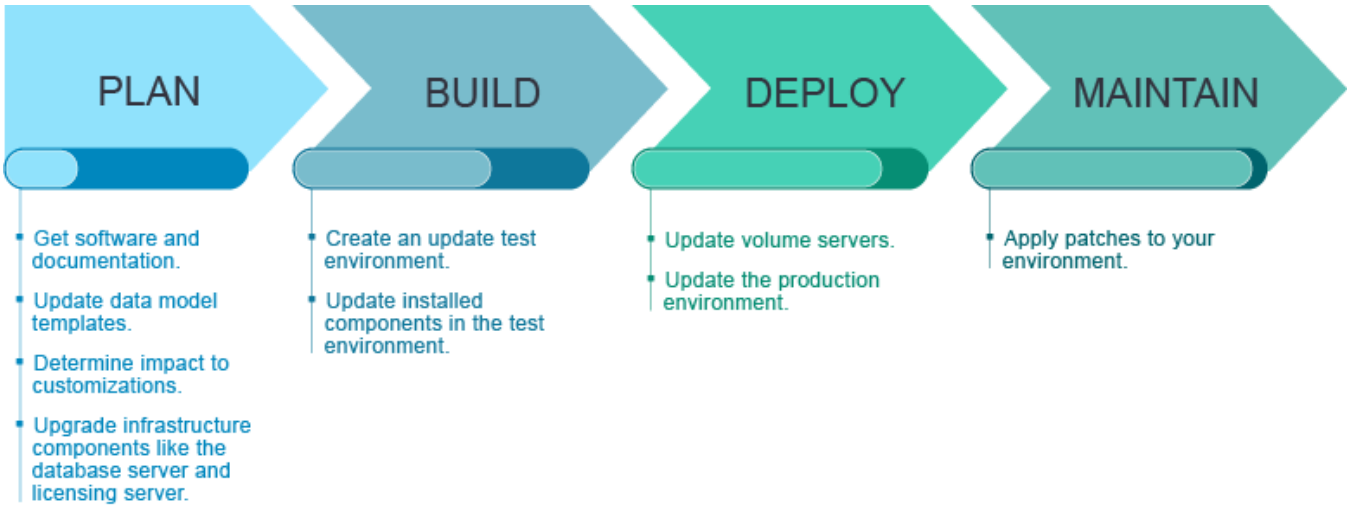
Contents

1. Updating Teamcenter

Updating Teamcenter with Active Workspace follows a similar four-phase process as installing the Teamcenter environment with Active Workspace.



Proceed to the stages of the upgrade process:

- **Plan** your upgrade process.
- **Build** an upgrade test system and perform a test upgrade.
- **Deploy** the upgrade to your production environment.
- **Maintain** your environment with patches between upgrades.

This process applies when you update to any new version of Teamcenter.

If you do not use Active Workspace, but you use the Teamcenter *rich client*,[1] you can update rich clients at the same time as you update Teamcenter servers, or update them after.

Where do I go from here?

You can begin with *Plan the Teamcenter update*, or proceed to one of the following common update tasks:

1 The Teamcenter rich client is a Java-based desktop client that is an alternative to Active Workspace.

Administrator	
Downloading software and documentation, learning about upgrading templates	See *Plan the Teamcenter update*.
Upgrading database, updating licenses	See *Build a Teamcenter update test environment*.
Upgrading a rich client	See the appropriate Teamcenter rich client installation guide for Windows or Linux.
Upgrading a production environment	See *Create an update test environment*.
Applying Teamcenter updates	See *Apply updates to your environment*.

Part I: Plan the Teamcenter update

Plan your Teamcenter upgrade in consideration of all software components in your environment, including infrastructure components like database servers and license server, which may need upgrading before you perform the Teamcenter upgrade.

Plan to perform an upgrade on a test environment to identify and resolve potential issues before you upgrade production systems.

The *Teamcenter Deployment Reference Architecture*, available from the Teamcenter downloads page on Support Center, is an essential resource during upgrade. It provides information such as:

- Guidelines for copying a Teamcenter environment for upgrade testing.
- Detailed examples of Teamcenter and Active Workspace deployments.
- Sample configurations and scripts to use with Deployment Center.

Use the *Teamcenter Deployment Reference Architecture* to help plan your upgrade of Teamcenter with Active Workspace. Then proceed to building a test environment for upgrade.

2. Where to start

Get documentation

Teamcenter documentation is available from two sources:

- **Internet: Support Center**

  This is Siemens Digital Industries Software's comprehensive support portal, which provides documentation for all Siemens software products and versions.

  You require a Webkey account to access Support Center. However, you can avoid this requirement by installing the *Siemens Documentation Proxy*, which provides secure documentation access using a personalized API key, with no need to log on. Teamcenter clients can be configured to access help through the Documentation Proxy.

- **Intranet: Siemens Documentation Server**

  This is a locally installed server that can host documentation for all your Siemens Digital Industries Software products. No Internet access is required. You can configure the server for single-machine use or network-wide access with no Webkey or API key required.

  Teamcenter clients can be configured to access the help on the Siemens Documentation Server.

For an orientation to Support Center, see Siemens Software **Support Center videos** on YouTube.

Install the Documentation Proxy or the Documentation Server

Log on to Support Center and open the **Siemens Documentation Server Downloads** page:

Products→Siemens Documentation Server→Downloads

Choose how you want to access documentation, and then install the Documentation Proxy or the Documentation Server.

Installing Siemens Documentation Proxy	Installing Siemens Documentation Server
1. Under **Select a Version**, choose **Documentation Proxy 3**, and then click the tile for the latest **Documentation Proxy 3.***x* release. 2. Download the Documentation Proxy installer: **Windows: DocumentationProxy.***version***.exe**	1. Under **Select a Version**, choose **Siemens Documentation Server 3**, and then click the tile for the latest **Siemens Documentation Server 3.***x* release. 2. Download the Documentation Server installer:

Installing Siemens Documentation Proxy	Installing Siemens Documentation Server
Linux: DocumentationProxy.*version*.aol 3. Install the Documentation Proxy according to the *Documentation Proxy Installation Guide* for Windows or Linux, available under **Release Documentation** on the software download page. Installing the Documentation Proxy requires generating an API key at the **Siemens Support Center account site**. This may require you to obtain your Siemens site ID from your Teamcenter administrator.	**Windows: HelpServer.*version*.exe** **Linux: HelpServer.*version*.aol** 3. Install the Documentation Proxy according to the *Siemens Documentation Server Installation Guide* for Windows or Linux, available under **Release Documentation** on the software download page.

Note the machine and port on which you configured the Documentation Proxy or Documentation Server. These are required to configure help access from Teamcenter clients.

Install the Teamcenter 2412 documentation kit

If you installed the Siemens Documentation Proxy, skip this section.

Teamcenter documentation is delivered in *documentation kits*. Each kit contains documentation content and an installation wizard that automatically installs documentation onto your Documentation Server.

1. Log on to Support Center and open the **Teamcenter Downloads** page:

   Products→Teamcenter→Downloads

2. Under **Select a Version**, choose **Teamcenter 2412**, and then click the **Teamcenter 2412** tile.

3. Install the Teamcenter 2412 documentation onto the Documentation Server:

   Windows: Double-click the **docs-teamcenter-2412-*locale*.exe** file.

   Linux: Enter the following commands:

   ```
   sudo chmod 777 docs-teamcenter-2412-locale.aol
   sudo teamcenter-2412-locale.aol
   ```

   These commands require administrative privileges.

For more information about installing documentation kits and managing the Documentation Server, see the *Siemens Documentation Server Installation Guide* for Windows or Linux.

Verify documentation access

Open the Teamcenter 2412 documentation from your preferred source:

- Support Center (Webkey logon):

  https://docs.sw.siemens.com/en-US/doc/282219420/PL20240523460057788.tc_doc_home

- Support Center (via Documentation Proxy):

  http://*doc-proxy-host***:***doc-proxy-port***/en-US/doc/282219420/PL20240523460057788.tc_doc_home**

- Siemens Documentation Server:

  http://*doc-server-host***:***doc-server-port***/en-US/doc/282219420/PL20240523460057788.tc_doc_home**

Enable help access in Teamcenter clients

Configure help in the rich client

If you use the rich client, configure the **Help** button in the client to open Teamcenter help from your preferred source.

During installation:

When prompted in the installation tools (Deployment Center or TEM), enter your preferred documentation URL in the **Documentation server URL** box.

After installation:

Configure help access in the rich client as described in the appropriate rich client installation guide for Windows or Linux.

Configure help in Active Workspace

Configure the **Help** button in the client to open Teamcenter help from your preferred source.

During installation:

The Active Workspace **Help** button links to Support Center by default and cannot be changed during installation. Accessing help directly on Support Center requires a Webkey account.

After installation:

If you use the Documentation Proxy or the Documentation Server, set the **TC_Help_Documentation_Link** preference to the path to your preferred documentation source. This configures the Active Workspace **Help** button to link to that source.

If you use Support Center via the Documentation Proxy, set this preference to **http://***doc-proxy-host***:***doc-proxy-port***/en-US/doc/282219420/PL20240523460057788.**

If you use Siemens Documentation Server, set the preference to **http://***doc-server-host***:***doc-server-port***/en-US/doc/282219420/PL20240523460057788.**

Get software

Updating Teamcenter requires the Teamcenter software kit, which includes microservice framework and Active Workspace software.

1. Log on to Support Center and open the **Teamcenter Downloads** page:

   Products→Teamcenter→Downloads

2. Under **Select a Version**, choose **Teamcenter 2412**, and then click the **Teamcenter 2412** tile.

3. Download the Teamcenter 2412 software kit for your platform:

   - Windows: **Tc2412_wntx64.zip**
   - Linux: **Tc2412_lnx64.zip**

4. Extract its contents to a local directory.

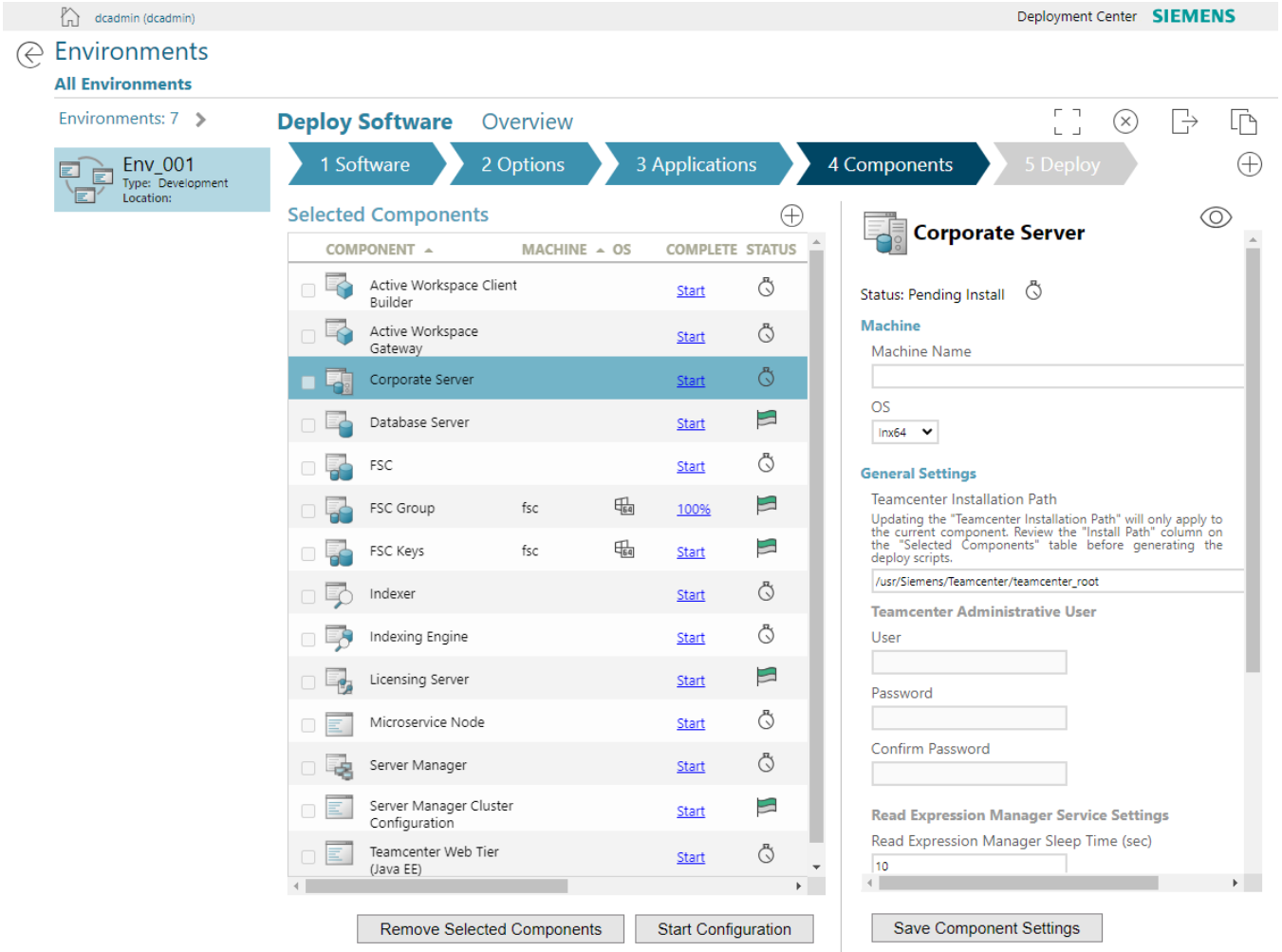
If an update (patch) to Teamcenter 2412 is available, for example, Teamcenter 2412.0001, you can additionally download the update, and apply it during the Teamcenter update.

Can I place the software in a remote location?

Your primary repository in Deployment Center must be a local path. However, you can specify additional repository locations, and these may be UNC paths or local file system paths. Mapped drives are not supported for any software repositories in Deployment Center. For more information, see *Deployment Center — Usage*.

Get Deployment Center

Deployment Center is a centralized web application for deploying software to Teamcenter environments.[1] Using Deployment Center, you can create and manage multiple environments from a single location and can install and update Teamcenter software.



Upgrade Deployment Center

If you are familiar with Deployment Center, locate the Deployment Center software kit in the Teamcenter 2412 software kit. Then, upgrade to Deployment Center 2412 *before* you update your Teamcenter environment to Teamcenter 2412.

> Note:
>
> Your version of Deployment Center must be equal to or later than the version of Teamcenter you install.

If you are new to Deployment Center, prepare to update to Teamcenter 2412 using Deployment Center:

1. **Learn how Deployment Center differs from TEM.**

1 Deployment Center is an alternative installation tool to Teamcenter Environment Manager (TEM) for installing Teamcenter. TEM is deprecated and will be discontinued in the next release of Teamcenter.

2. Learn how Deployment Center manages Teamcenter environments, described in *Deployment Center — Usage*.

3. Locate the Deployment Center software kit in the Teamcenter 2412 software kit as described in *Deployment Center — Usage*.

4. Install Deployment Center 2412 as described in *Deployment Center — Usage*.

5. Register your environment created through TEM in Deployment Center 2412 as described in *Deployment Center — Usage*.

At a glance: Deployment Center vs. TEM

These two Teamcenter deployment tools use distinct approaches to building and maintaining Teamcenter environments.

- **Deployment Center**

  Deployment Center manages environments from a central machine, and generates scripts and software packages for multiple machines. Deployment Center tracks the software applications and components installed on each machine.

  In Deployment Center, selecting Teamcenter software to install primarily involves selecting *applications*, packages of administration data, software modules, and parameters that add specialized functionality to the Teamcenter environment. When you select applications, Deployment Center automatically selects the *components* required to support the selected applications. Components are the architectural pieces of Teamcenter, such as servers, services, and databases.

  You select applications in the **Applications** tab. You select and configure components in the **Components** tab.

  You can designate which machines host each component from a single instance of the Deployment Center web application. Deployment scripts supply machine information to components that communicate with each other.

- **Teamcenter Environment Manager**

  Teamcenter Environment Manager (TEM) is run on individual machines, and the Teamcenter administrator tracks what software components are installed on each machine.

  In TEM, applications and components are called *features*. Some feature groups like **Base Install** and **Server Enhancements** contain components.

  You select features (applications and components) in the **Features** panel.

TEM refers to a collection of features that share a common Teamcenter data directory as a *configuration*. You can install multiple configurations on a single machine that share the same Teamcenter application root directory.

Run TEM on every machine where you install components. Record information about each machine to enter in configurations on other machines to enable components to communicate.

An environment created using TEM can be imported into Deployment Center by registering the environment in Deployment Center.

Table 2-1. Comparison: Installing applications

Step	Deployment Center	TEM
1. Select applications.	Select in the **Applications** tab.	Select in the **Features** panel.
2. Select dependent components.	Selected automatically.	Select dependent components to enable features for selection.
3. Enter parameter values.	Enter values in the **Components** tab.	Enter values in the sequence of panels.
4. Deploy software.	Generate deploy scripts in the **Deploy** tab, and then run scripts on affected machines.	Click **Start** in the **Confirmation** panel. Repeat steps on other affected machines.

Table 2-2. Comparison: Installing components

Step	Deployment Center	TEM
1. Select components.	Select in the **Components** tab.	Select in the **Features** panel.
2. Enter parameter values.	Enter values in the **Components** tab.	Enter values in the sequence of panels.
3. Deploy software.	Generate deploy scripts in the **Deploy** tab, and then run scripts on affected machines.	Click **Start** in the **Confirmation** panel. Repeat steps on other affected machines.

System requirements

Verify system software requirements

1. Log on to Support Center and open the **Support White Papers Certifications** page:

   a. Open **Products→Teamcenter→Downloads**.

   b. Under **Select a Version**, choose **Support White Papers→Support White Papers Certifications**, and then click the **Support White Papers Certifications** tile.

2. Download the following support documents:

Software Certifications Matrix (Tc2412PlatformMatrix-*date*.xlsx)

Contains information about system software certified for Teamcenter, such as operating systems and Java runtime environments (JREs).

Teamcenter Interoperability Matrix (Teamcenter Interoperability Matrix *date*.xlsx).

Lists supported Teamcenter versions that can be updated to Teamcenter 2412. Also lists versions of Siemens Digital Industries Software products that are compatible with Teamcenter 2412.

The Teamcenter Interoperability Matrix also correlates versions of Deployment Center with compatible versions of Teamcenter, and shows supported paths for upgrading Deployment Center. For information about upgrading Deployment Center, see *Deployment Center — Usage*.

Make sure you install versions of the required software that are listed in the Software Certifications Matrix and the Teamcenter Interoperability Matrix.

Supported updates

See the Teamcenter Interoperability Matrix for versions of Teamcenter that can be updated to Teamcenter 2412.

If your current Teamcenter version is earlier than those supported for update, you must update to a supported version before you update to Teamcenter 2412.

Platforms

Determine from the following table which Teamcenter 2412 components are supported on your operating system. Check marks (√) indicate components supported on the given operating system.

Operating system	Corporate server	Web tier	Active Workspace	Rich Client	Business Modeler IDE client	TCCS
Microsoft Windows (desktop platforms)			✓	✓	✓	✓
Microsoft Windows Server	✓	✓			✓	
SUSE Linux	✓	✓	✓	✓	✓	✓
Red Hat Linux	✓	✓	✓	✓	✓	✓

Microsoft Windows

- On Windows platforms, disable Windows User Account Control (UAC) before you install Teamcenter. This option is available in the **Control Panel→User Accounts** dialog box.

Windows UAC can interfere with Teamcenter installation programs. Siemens Digital Industries Software recommends turning off UAC for administrative users only.

For more information, see Microsoft Windows documentation.

- If you use a non-English language operating system version of Windows, you must install and enable the Multilingual User Interface (MUI) pack to ensure the language font is displayed properly.

  1. Download and install the MUI pack for Windows from Microsoft.
  2. Open the **Regional and Language Options** dialog box in the Windows Control Panel.
  3. In the **Languages** tab, set the required language for the menus and dialogs.
  4. In the **Advanced** tab and the **Regional Options** tab, set the required language.

Linux

- Linux hosts must have graphics capabilities to run Teamcenter installation tools.

  For operating system requirements, see the Hardware and Software Certifications knowledge base article on Support Center.

- Linux hosts must have the **nslookup** utility available to ensure operation of the license server.

- Make sure Linux host names do not exceed 31 characters in length. Host names longer than 31 characters cause Teamcenter corporate server installation to fail during saving of the POM schema file in the *TC_DATA* directory.

  Teamcenter installation tools do not require fully qualified domain names for host names. If your fully qualified domain name exceeds 31 characters, use the server short host name instead.

  For more information, see the solutions document 002-7004480 on Support Center.

- Teamcenter Environment Manager (TEM) and Web Application Manager require the ISO8859-1 character set. Make sure this character set is available on your host.

Database

Teamcenter requires a relational database management system (RDBMS) for storing Teamcenter data. Before you install Teamcenter, you must install an Oracle database server or a Microsoft SQL Server database server.

If your database server is not a supported version, upgrade your database server to a supported version before you install Teamcenter.

Choose a database management system that suits the platforms of your Teamcenter servers and clients, and make sure your Teamcenter corporate server host has access to the database server.

If you use Oracle, set system parameters to recommended values to ensure adequate database performance.

Java Runtime Environment

Teamcenter Environment Manager (TEM) requires a supported 64-bit Java Runtime Environment (JRE) or Java Development Kit (JDK). If a certified JRE is not available on the host, TEM cancels installation.

> Note:
>
> If you use open-source Java, you must use a JDK, as some open-source JREs do not contain all required libraries.

Before you launch TEM to install Teamcenter:

1. Download and install a certified 64-bit JRE or JDK.

   For certified Java versions, see the Software Certifications Matrix on Support Center.

2. Set the **JRE_HOME** environment variable to the location of the supported JRE or JDK. After installation is complete, TEM no longer requires this variable.

   Alternatively, you can launch TEM in a command prompt and specify the JRE location using the **-jre** argument:

   ```
   tem -jre JRE-path
   ```

   For example:

   ```
   tem -jre c:\apps\jre1.8
   ```

Web tier support

Install the required software for the Teamcenter web tier you use:

- **Java EE web tier**

  Java Runtime Environment (JRE)

  Install a supported JRE on the host where you build Teamcenter web applications.

  Java EE application server

Install a supported application server on the host where you deploy Teamcenter web applications.

- **.NET web tier**

  Microsoft Internet Information Server (IIS)

  Install IIS on your Teamcenter corporate server host and add the required role services.

  Microsoft .NET framework

  Install the .NET framework on all Teamcenter hosts.

If you use the Teamcenter Java EE web tier, install the following software:

Java Runtime Environment (JRE)

Install a supported JRE on the host where you build Teamcenter web applications.

Java EE application server

Install a supported Java EE application server on the host where you deploy Teamcenter web applications.

Some web application servers require special configuration for use with Teamcenter.

Web browser

A web browser is required if you use the following:

- Teamcenter online help
- Active Workspace
- Deployment Center

For these products, Teamcenter supports the following web browsers:

- Windows systems: Microsoft Edge, Mozilla Firefox, and Google Chrome
- Linux systems: Mozilla Firefox and Google Chrome

For supported browser versions, see the Software Certifications Matrix on the **Support White Papers Certifications** page on Support Center.

3. Upgrading templates

Templates

A *template* is a container that holds data model definitions. A template can contain any number of business objects, classes, lists of values, and business rules. Any Teamcenter feature that adds definitions to the data model has an associated template. In addition, templates can be supplied to you from another Teamcenter site, partner, or third party.

> Caution:
>
> You *must* have access to all templates used at your site before beginning the upgrade of the corporate server. This is very important. During the corporate server upgrade, you load all templates used by your site. Templates can only be loaded during the upgrade of the corporate server. They cannot be loaded after the upgrade. Failing to load all templates your site depends on causes problems in managing the data model and can result in loss of data, time, and money.

How templates are supplied

Templates are supplied by:

- The Teamcenter software kit
- Software kits for asynchronous Teamcenter releases and integrations
- Other Teamcenter sites, partners, or third parties

Templates supplied on the Teamcenter software kit

Teamcenter supplies templates to organize sets of definitions for specific industries, applications, or functional areas. Examples of templates provided by Teamcenter are Teamcenter Foundation and Wire Harness Configuration.

These templates are available in the software kit (the installation DVD or downloaded software). For example, the Teamcenter Foundation feature and the Wire Harness Configuration feature are both installed using the software kit, both add definitions to the data model, and both have associated templates found in the software kit.

Templates supplied by asynchronous Teamcenter releases

Some Teamcenter features are released asynchronously and are distributed separately from the Teamcenter software kit (the installation DVD or downloaded software) and are found on their own software kit. An example is the CATIA integration.

Templates supplied by other Teamcenter sites, partners, or third parties

You can use templates created by other sites, partners, or third parties.

Business Modeler IDE

The Business Modeler Integrated Development Environment (IDE) is a tool for customizing the data model of your Teamcenter installation. Use the IDE to create business objects, classes, attributes, lists of values (LOVs), and rules.

The Business Modeler IDE is built on top of the Eclipse platform. Eclipse is a generic platform for tool development that is extended via its plug-in and extension point technology.

You can install the Business Modeler IDE two ways:

- As a stand-alone application

  This method installs the Eclipse platform.

- As part of an existing Eclipse environment

4. Using the Upgrade Assistant

Teamcenter provides a tool, the *Upgrade Assistant* utility, to help you determine impact to your server side customization extension applications when you upgrade to a target release. It evaluates whether custom code needs to be reworked before upgrade. You can evaluate the tool's recommended remediation, for example, ensuring API stability or removing calls to deprecated or obsolete APIs.

This tool currently reports only the usage of deprecated and obsolete ITKs in server side customization applications. The utility takes server side customization application libraries (**dll**s) as input and runs a **dumpbin** report on the library looking for import symbols. The import symbols are then analyzed with the deprecated and obsoleted API in the target release to produce a **csv** file report indicating whether rework is needed immediately (if the application is using an obsolete ITK) or future rework should be planned (if the application is using a deprecated ITK).

The *What's changed in Teamcenter APIs* reference on Support Center identifies replacements for deprecated and obsolete APIs. This reference also provides replacement information for other deprecated and obsolete artifacts like functions and macros. Use this reference when updating your customizations in preparation for upgrade.

Run the Upgrade Assistant as part of your upgrade planning, to help identify and correct customization problems before you begin upgrading your Teamcenter environment. You can run this utility before you download your target upgrade version of Teamcenter.

Download the Upgrade Assistant

1. Log on to Support Center and browse to the Teamcenter 2412 downloads page.

2. Browse to **Additional Downloads→ Tools for Teamcenter→ Tools for Teamcenter Upgrade Assistant**.

3. In the resulting list of downloads, find the Upgrade Assistant, and then download the **Tc2412_UpgradeAssistantITKReporter.zip** package for your platform (Windows or Linux).

Install the Upgrade Assistant (Windows)

1. Make sure a supported version of Microsoft Visual Studio is installed on your local machine. For certified versions of Visual Studio, see the Hardware and Software Certifications knowledge base article on Support Center.

2. Make sure the following system environment variables are set:

   MSDEV_HOME

   Set to the Visual Studio installation directory, for example, **set MSDEV_HOME=C:\apps\MVS16\VC**.

   PATH

Make sure this value includes your Teamcenter Perl install directory, for example, **set PATH=C:\apps\tc\tc2412\TR\perl\bin;%PATH%**.

3. Expand the **Tc2412_UpgradeAssistantITKReporter.zip** package to a local directory.

4. Open a Teamcenter command prompt from the Windows program list by choosing **Teamcenter→***Tc-config-name* **Command Prompt**.[1]

5. Change to the directory in which you expanded the Upgrade Assistant package:

   `cd` *upgrade-assistant-dir*

6. Type the following command to launch the Upgrade Assistant and view its arguments and options:

   ```
   Tc2412_UpgradeAssistantITKReporter\ITKReporter\bin\TcUpgradeAssistant
   ITKReporter.bat -h
   ```

Install the Upgrade Assistant (Linux)

1. Expand the **Tc2412_UpgradeAssistantITKReporter.zip** package to a local directory.

2. Change to the directory in which you expanded the Upgrade Assistant package:

   `cd` *upgrade-assistant-dir*

3. Run the following command to launch the Upgrade Assistant and view its arguments and options:

   ```
   ./ITKReporter/bin/TcUpgradeAssistantITKReporter.sh -h
   ```

Generate an Upgrade Assistant report

The Upgrade Assistant utility accepts the following arguments:

Argument	Description
apps	Specifies a single path or a sequence of comma-separated file paths, or a text file containing a list of custom applications (absolute path of one application per line) or a directory path containing a list of custom applications.
from_release	Specifies your current Teamcenter version, for example, **2412**. This argument is optional. If this argument is not provided, the utility reads the Teamcenter version from the environment variables in the Teamcenter command prompt.
out	Specifies the output file (**csv** format) and path for the Upgrade Assistant report. For example:

1 Alternatively, you can set Teamcenter environment variables in a standard command prompt by typing *TC_DATA***tc_profilevars**, replacing *TC_DATA* with the path to your Teamcenter data directory.

Argument	Description
	D:\Temp\mycustom_13_2412.csv
h	Displays help for the utility.

To generate an Upgrade Assistant report, perform the following steps:

1. Open a Teamcenter command prompt from the Windows program list by choosing **Teamcenter→***Tc-config-name* **Command Prompt**.

2. Change to the *upgrade-assistant-dir***\Tc2412_UpgradeAssistantITKReporter\ITKReporter\bin** directory (on Windows systems) or *upgrade-assistant-dir***/Tc2412_UpgradeAssistantITKReporter/ITKReporter/bin** (on Linux systems).

3. Type the following command:

   - **Windows:**

     TcUpgradeAssistantITKReporter.bat -apps=*custom-path* **-from_release=***current-ver* **-out=***report-path*

   - **Linux:**

     TcUpgradeAssistantITKReporter.sh -apps=*custom-path* **-from_release=***current-ver* **-out=***report-path*

   In the appropriate command, replace *custom-path* with the path or paths to your custom application **dll** files. Replace *current-ver* with your current Teamcenter version. (This argument is optional.[2]) Replace *report-path* with the location in which to generate the report, in **csv** format.

Examples (Windows):

- To generate an Upgrade Assistant report in the current directory:

```
TcUpgradeAssistantITKReporter.bat -apps=D:\\myDir\\MyCustom
```

- To generate an Upgrade Assistant report into a specific directory:

```
TcUpgradeAssistantITKReporter.bat -apps=D:\\myDir\\MyCustom -out=D:\
\Temp\\mycustom_13_2412.csv
```

- To generate an Upgrade Assistant report for a Teamcenter version other than the version specified in the Teamcenter command prompt:

2 If **from_release** is not specified, the Teamcenter version is read from the environment variables in the Teamcenter command prompt.

```
TcUpgradeAssistantITKReporter.bat -apps=D:\\myDir\\MyCustom
-from_release=13.0 -out=D:\\Temp\mycustom_13_2412.csv
```

Examples (Linux):

- To generate an Upgrade Assistant report in the current directory:

```
TcUpgradeAssistantITKReporter.sh -apps=/home/myusername/myDir/
MyCustom.so -from_release=11.0 -out=<output directory>\
\mycustom_13_2412.csv
```

- To generate an Upgrade Assistant report into a specific directory:

```
TcUpgradeAssistantITKReporter.sh -apps=/home/myusername/myDir
-from_release=11.0 -out=<output directory>\\mycustom_13_2412.csv
```

- To generate an Upgrade Assistant report for a Teamcenter version other than the version specified in the Teamcenter command prompt:

```
TcUpgradeAssistantITKReporter.sh -apps=/home/myusername/myfile.txt
-from_release=11.0 -out=<output directory>\\mycustom_13_2412.csv
```

5. Install the Siemens License Server

Before you upgrade Teamcenter, you must download and install the **Siemens License Server** to distribute licenses to Teamcenter hosts. Even if you already use the Siemens License Server with your current version of Teamcenter, you must install the version of the License Server supported by the version of Teamcenter to which you upgrade.

For the version of the Siemens License Server certified with Teamcenter 2412, see the Hardware and Software Certifications knowledge base article on Support Center.

Download and install the Siemens License Server:

1. Open Support Center:

   https://support.sw.siemens.com

2. Under **Product Centers**, find **Siemens License Server**.

   > Caution:
   >
   > Make sure you download **Siemens License Server**, *not* **Siemens PLM Licensing**.[1]

3. In the Siemens License Server product center, click **Downloads**, and then download the certified version of the Siemens License Server.

4. Install the License Server according to the *Siemens Digital Industries Software License Server Installation Instructions* available from the Siemens License Server downloads page.

5. On your designated Teamcenter corporate server host, set the following system environment variables:

   SPLM_LICENSE_SERVER

   Set to the location of the Siemens License Server:

   port@host

   Replace *port* with the port number and *host* with the machine name of the License Server, for example, **29000@tchost**.

   The value of this variable is designated as the default local license server during corporate server upgrade.

1 Siemens PLM Licensing is no longer supported by Teamcenter. The Siemens License Server is the currently supported license server.

If you upgrade Teamcenter using TEM, TEM verifies that the specified license server exists and is running a supported version of the Siemens License Server. If the configured license server is not valid, the upgrade is stopped until a valid license server is installed.

TCP_NODELAY

Set to a value of **1** on the License Server host. This helps optimize logon time when launching Teamcenter.

6. Install Teamcenter licenses on the License Server according to the information provided to you by Siemens Digital Industries Software support.

The **Siemens License Server downloads page** contains additional links to documentation, Knowledge Base articles, and videos about installing and maintaining the License Server.

Caution:

The License Server must be running and two or more seats must be available on that license server during Teamcenter server installation. Otherwise, database creation fails because the **make_user** utility cannot create the required users in the database.

6. Upgrading database servers

Supported database server versions

If your database server version is not a version certified for Teamcenter 2412, you must upgrade your database server before you upgrade Teamcenter.

Siemens Digital Industries Software supports Teamcenter 2412 with Oracle and Microsoft SQL Server databases. For supported versions of Oracle and Microsoft SQL Server, see the Hardware and Software Certifications knowledge base article on Support Center.

Configuring character settings in non-English locales

To ensure correct display and processing of Teamcenter data, you must set required values in your system environment and your Teamcenter configuration.

If your Teamcenter servers run Linux and use the Unicode UTF-8 character set, you must configure your operating system and your Teamcenter configuration to use Unicode UTF-8, observing the following considerations during Teamcenter upgrade:

- An existing Teamcenter installation must not configure Unicode UTF-8 character set support with an upgrade to Teamcenter 2412. An existing Teamcenter installation is required to complete an upgrade to Teamcenter 2412 under its existing database character set encoding.

- After upgrade is completed, you must contact your database vendor for processes and tools to convert your existing database character set encoded data to Unicode UTF-8 character set encoded data for storage to a new database.

For more information about environment settings for your locale, platform, and character set, see UTF-8 settings for Windows or Linux systems, or non-UTF-8 settings for Windows or Linux systems in the Teamcenter installation guides.

Set shell limits and parameters for Oracle on Linux

Overview of shell limits and parameters

Oracle RDBMS uses extensive Linux resources such as shared memory, swap memory, and semaphore for interprocess communication. Inadequate parameter settings cause problems during installation and startup. Increasing the volume of data stored in memory reduces disk I/O activity and improves database performance.

The Oracle RDBMS installation program displays warnings if kernel parameters are not adequate. To avoid warnings and errors during or after installation, make sure kernel parameters meet the recommended settings for typical environments described in the following topics.

Before you install Oracle RDBMS, set initial parameters as described in Oracle documentation, and then adjust parameters according to available system memory. Set the **ulimit** parameter to **unlimited**.[1] Then, set the **kernel parameters** to recommended Teamcenter values for your operating system.

If you previously tuned kernel parameters for other installed applications to levels that meet or exceed the values recommended for Teamcenter, keep those existing values.

The parameter settings recommended herein are *minimum* values. For production database systems, Oracle recommends you tune values to optimize system performance. For information about performance tuning, see:

- Documentation for your operating system
- Teamcenter installation documentation on Support Center

Set SUSE Linux shell limits

1. Increase shell limits for the **oracle** user to the minimum values listed in the following table by adding the following lines to the **/etc/security/limits.conf** file:

```
oracle              soft    nproc   2047
oracle              hard    nproc   16384
oracle              soft    nofile  1024
oracle              hard    nofile  65536
```

   Do not change the shell limit values if they were set for another program and the values are greater than the levels Oracle requires.

SUSE Linux shell limit	Item in limits.conf	Minimum hard limit
Maximum number of open file descriptors	**nofile**	65536
Maximum number of processes available to a single user	**nproc**	16384

2. Add or edit the following lines in the **/etc/pam.d/login** file:

```
session required /lib64/security/pam_limits.so
session required pam_limits.so
```

3. Change the **oracle** user default shell startup file:

   - For the Bourne, Bash, or Korn shell, add the following lines to the **/etc/profile.local** file:

1 The **ulimit** parameter specifies a maximum number of processes per user.

```
if [ $USER = "oracle" ]; then
        if [ $SHELL = "/bin/ksh" ]; then
              ulimit -u 16384
              ulimit -n 65536
        else
              ulimit -u 16384 -n 65536
        fi
fi
```

- For the C shell (csh or tcsh), add the following lines to the **/etc/csh.login.local** file:

```
if ( $USER == "oracle" ) then
        limit maxproc 16384
        limit descriptors 65536
endif
```

Upgrade an Oracle server and database

Export an Oracle database

Windows systems:

1. Log on to the Oracle server as an administrator user.

2. Export the contents of your Teamcenter Oracle database to the dump file:

   ORACLE_HOME`\bin\expdp` *db-user/password* `full=y dumpfile=`*file-name*`.dmp logfile=`*export*`.log`

   Replace *db-user* with the Teamcenter database user account name; replace *password* with the database user account password; replace *file-name* with the full path and name of the dump file to contain the exported data; replace *export* with the name of the log file to contain export output.

3. Store the dump file in a safe place.

Linux systems:

1. Either log on to the Oracle server as **oracle** or switch the user to **oracle**:

   ```
   su - oracle
   ```

2. Set the **PATH** environment variable to include the Oracle **bin** directory:

   `export PATH=$PATH:`*ORACLE_HOME*`/bin`

3. Manually set the shared library path for Linux:

```
export LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:${ORACLE_HOME}/lib
```

4. Export the contents of the Teamcenter Oracle database to the dump file:

   ```
   ORACLE_HOME/bin/exp db-user/password full=y file=file-name.dmp
   log=export.log
   ```

   Replace *db-user* with the Teamcenter database user account name; replace *password* with the database user account password; replace *file-name* with the name of the dump file to contain the exported data; replace *export* with the name of the log file to contain export output.

5. Store the dump file in a safe place.

If you have multiple databases, repeat this procedure for each database.

> Caution:
>
> Siemens Digital Industries Software strongly recommends backing up the dump file on tape or another disk. If the dump file becomes corrupted or lost, all data from the existing database is lost.

Terminate Oracle sessions on Windows systems

Stop the listener process

1. Log on to the operating system as a user with administrator privileges.
2. Open the **Services** dialog box in the Windows Control Panel.
3. Select the Oracle TNS listener services (**Oracle***release-ID***TNSListener**) and click **Stop**.

Shut down an Oracle database

Shut down Oracle using Windows Control Panel

1. Log on to the operating system as a user with administrator privileges.
2. Open the **Services** dialog box in the Windows Control Panel.

   Windows displays the Services window.

3. Select the **OracleService***SID* service.

   Replace *SID* with the system identifier of the database instance.

4. Click **Stop**.

Shut down Oracle using SQL*Plus

1. Log on to the operating system as a user with administrator privileges.
2. Start the Oracle SQL*Plus utility:

   ```
   sqlplus sys/password@Oracle-SID as sysdba
   ```

   Replace *password* with the password for the **sys** user account.

   Oracle starts the Oracle SQL*Plus utility.

   The **sys** user must be in the Oracle **sysdba** group for the Oracle system identifier (SID) used by Teamcenter. To connect as internal (without a password), the account must be part of the **ORA_DBA** local group in Windows.
3. Shut down the database instance by typing the following command:

   ```
   shutdown
   ```
4. Exit SQL*Plus:

   ```
   exit
   ```

Terminate Oracle sessions on Linux systems

Before installing a new version of Oracle, you must terminate all Oracle sessions and Oracle processes.

1. Either log on to the Oracle server as **oracle** or switch the user to **oracle** as follows:

   ```
   su - oracle
   ```
2. Set the **ORACLE_HOME** environment variable to point to the location of the Oracle files. For example:

   ```
   export ORACLE_HOME=/u01/app/oracle/product/oracle-version
   ```

   Replace the path with the system path to the Oracle files.
3. Define **ORACLE_HOME/bin** in the **PATH** variable:

   ```
   export PATH=${PATH}:${ORACLE_HOME}/bin
   ```
4. Manually set the shared library path or Linux:

   ```
   export LD_LIBRARY_PATH=${LD_LIBRARY_PATH}:${ORACLE_HOME}/lib
   ```

5. If a **tnslsnr** listener process is running, terminate it. For example:

   ```
   $ORACLE_HOME/bin/lsnrctl stop listener-name
   ```

   Replace *listener-name* with the name of the listener process.

6. Shut down all Oracle database instances using the **dbshut** utility. Shut down database instances listed in the **oratab** file:

   ```
   $ORACLE_HOME/bin/dbshut
   ```

Back up an Oracle installation

If you are upgrading to the certified Oracle version, back up the existing Oracle installation.

Backing up your Oracle installation before upgrading is strongly recommended. Failure to back up existing data could result in loss of data if problems occur during the upgrade process.

Back up the following files and directories:

- The Oracle home directory on each installed workstation.
- The directories containing database files for each configured database.
- The Oracle Net **listener.ora** and **tnsnames.ora** configuration filesin the **/etc** directory.

These are the only Teamcenter directories affected by Oracle installation. If you created other directories containing data used by Oracle, such as an administration script directory, you should also back up these directories.

Upgrading an Oracle server

Upgrade the Oracle server

Upgrade your Oracle server by one of the following methods:

- *Upgrade using the Oracle installer*
- *Upgrade by uninstalling/reinstalling Oracle*

Upgrade using the Oracle installer

1. Launch the Oracle installer to install a certified version of Oracle server.
2. When the Oracle installer prompts you to upgrade existing databases, enter the required information about the databases you want to upgrade.

Installing an Oracle server is described in the Teamcenter installation guides for Windows and Linux.

Upgrade by uninstalling/reinstalling Oracle

1. Remove existing Oracle databases.

2. Uninstall all existing Oracle server software.

3. Install a certified version of Oracle server.

   Installation of an Oracle server is described in the Teamcenter installation guides for Windows or Linux.

4. After Oracle installation is complete, import your Teamcenter database from the Oracle dump file into the new Oracle database. Enter the following command on a single line:

   ORACLE_HOME`\bin\imp` *db-user/password* `fromuser=`*db-user* `touser=`*db-user* `file=`*file-name*`.dmp log=`*import*`.log`

   Replace *db-user* with the Teamcenter database user account name, *password* with the database user account password, *file-name* with the full path and name of the dump file that contains the exported data, and *import* with the name of the log file.

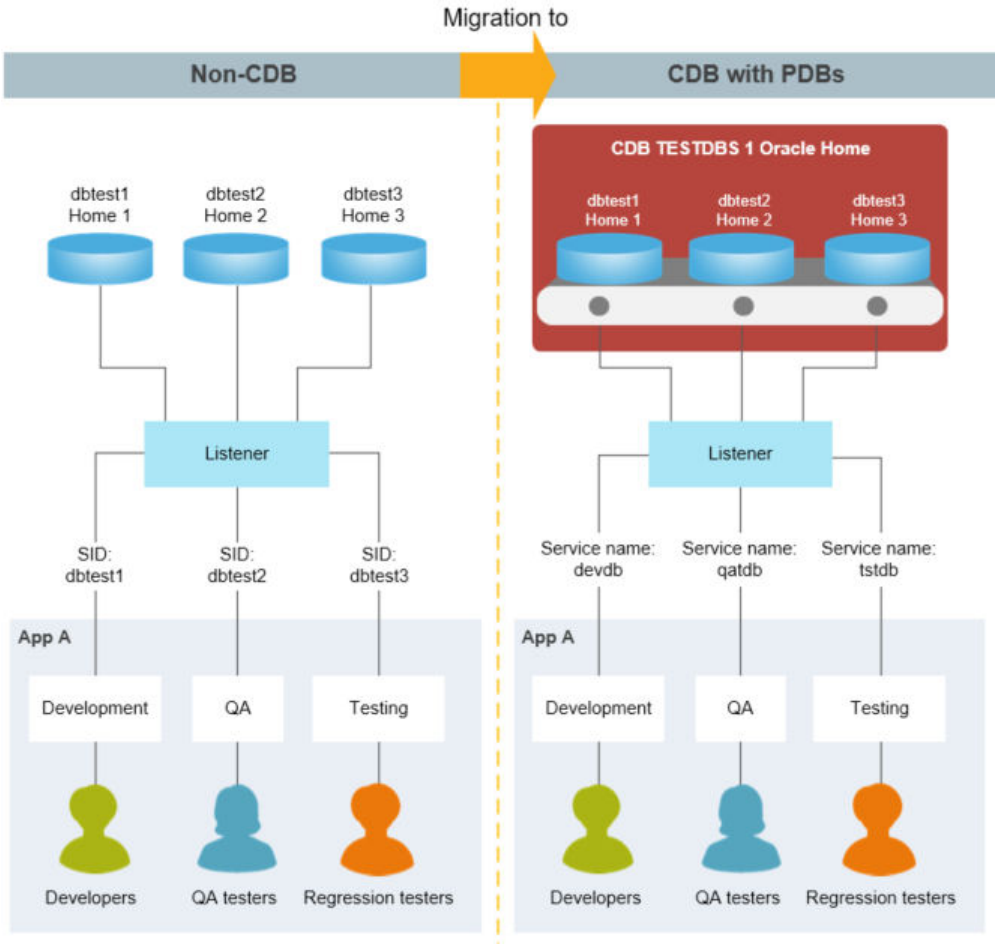
Migrate a non-CDB database to a CDB database

Teamcenter supports Oracle's **multitenant database architecture** if you use Oracle 12c or later. A multitenant architecture is deployed as a Container Database (CDB) with one or more Pluggable Databases (PDB).

A *Container Database* (CDB) is similar to a conventional (non-CDB) Oracle database, with familiar concepts like control files, data files, undo, temp files, redo logs, and so on. It also houses the data dictionary for objects owned by the root container and those that are visible to databases in the container.

A *Pluggable Database* (PDB) contains information specific to the database itself, relying on the container database for its control files, redo logs and so on. The PDB contains data files and temp files for its own objects, plus its own data dictionary that contains information about objects specific to the PDB. From Oracle 12.2 onward a PDB can and should have a local undo tablespace.

You can **migrate a non-CDB database to a CDB database** using Oracle tools. The following example illustrates the database architectures before and after migration.



Teamcenter supports CDB and non-CDB databases. Be aware that **Oracle has deprecated support for non-CDB databases** and may discontinue support after Oracle 19c.

If you migrate a non-CDB Teamcenter database to a CDB database, you must perform the migration *after* you upgrade to Teamcenter 2412.

Upgrade Microsoft SQL Server databases

Upgrading a Microsoft SQL Server database server with an existing Teamcenter database requires exporting the contents of the existing database, installing the new Microsoft SQL Server database server, and importing the database into the new server.

Microsoft describes several methods for transferring databases between servers an the article titled *How to move databases between computers that are running SQL Server* at **https://support.microsoft.com**.

Siemens Digital Industries Software recommends a backup and restore method for transferring an existing Teamcenter database to a new Microsoft SQL Server server. One advantage of this method is the simplicity of a single backup file, rather than multiple files (**.mdf**, **.ndf**, and so on), as with an attach/detach method. A single backup file also minimizes potential compatibility mode issues between versions of Microsoft SQL Server.

Using Data Transformation Services (DTS) for transferring a database is the least recommended method because is relatively more time-consuming and requires communication between the old and new database servers. In contrast, other methods for database transfer require only a means to move export files from one server to the other.

Siemens Digital Industries Software recommends creating the Teamcenter database user in the new target database *before* importing the existing database into the new server.

For transferring logins and passwords to a new Microsoft SQL Server instance, Microsoft provides an article titled *How to transfer logins and passwords between instances of SQL Server* at **https://support.microsoft.com**.

To ensure the owner of the database is the new server's Teamcenter database user account rather than the old server's Teamcenter database user account,[2] enter the following commands:

```
exec sp_changedbowner 'sa'
exec sp_changedbowner 'Tc-db-user'
```

2 Internal integer IDs used by SQL Server can differ between sites.

Part II: Build a Teamcenter update test environment

Create a copy of your production environment for update testing. Update your data model to the current data model format, and then upgrade the test environment.

7. Pre-update tasks

Install C Shell on Linux servers

Before upgrading a corporate server that is hosted on a Linux machine, you must verify that C Shell is installed.

If it is not installed, the Pre-Upgrade Diagnostic test fails at the Volume Access Check step with an error similar to the following:

```
Name: Volume Access Check
Description:
Test whether the FSC is up and running
Analysis:
An attempt to contact the FSC running at http://SERVER:4544 failed.
Check that the FSC is running and configured correctly.
```

If you see this error, install C Shell and rerun the Pre-Upgrade Diagnostic test.

Verify required groups and roles

Before you begin upgrade, verify the following groups exist in your database:

dba
system
Project Administration
Validation Administration

Also, verify the following roles exist in the specified groups.

Role	Group
Project Administrator	**Project Administration**
Validation Administrator	**Validation Administration**

Upgrade may fail if these groups and roles are not present.

Verify required character set

You must have the same locale installed on your Teamcenter host as you use to communicate with your database server, and the database server must support this locale as well.

On Linux systems, Teamcenter installation tools, verify that the required character set is loaded by running the **locale -a** command in a shell. If the output does not list the required character set, you must add this character set before you upgrade Teamcenter.

1. Set or export the **LC_ALL** environment variable by typing **LC_ALL=***character-set* or the equivalent command for your platform.

2. Verify the setting using the **echo** command or equivalent. Make sure the correct value for **LC_ALL** is displayed.

3. Run the **locale** command and make sure the **LANG** variable and all the **LC_***x* variables are set the same as **LC_ALL**.

4. If **LANG** is still set to **C**, manually export **LANG** to be the same value as **LC_ALL**.

5. Launch Teamcenter Environment Manager (**tem.sh**) from the current shell.

Alternatively, your system administrator may modify the date file (named **TIMEZONE** in the **etc** directory), which can preset this environment, so every time you log on and launch a shell, the environment is preset.

The recommended method, however, is to log on to the system using the Common Desktop Environment (CDE) with the minimum required locale by choosing **Option→Language→***character-set* during logon.

If the required character set is not loaded on your machine, contact your system administrator to have it installed before you install the GM Overlay.

This requirement is necessary because current Teamcenter versions use XML files rather than **.dat** files and associated scripts. Because of this, GM Overlay data is transformed from **.dat** files into XML files.

To read and parse the XML files correctly, the system must be able to process non-English (non-ASCII) locale characters. To facilitate this, the system must be first loaded with the fonts for that locale.

Terminate Teamcenter sessions

Prior to upgrade, you must terminate Teamcenter sessions if:

- You are reinstalling or upgrading Teamcenter executables by overwriting an existing Teamcenter data directory. The Teamcenter installation procedure cannot overwrite files when they are in use.

- You are upgrading a Teamcenter database.

- You are migrating an Oracle database to a Windows database server.

1. Instruct all users to check in all Teamcenter business objects, and then close and log off of Teamcenter sessions, including **tcserver** processes.

2. Open a Teamcenter command prompt.

3. Use the **clearlocks** utility to check for nodes connected to the database and remove locks on the database:

   Windows systems:

   ```
   %TC_BIN%\clearlocks -u=Tc-Oracle-user -p=Tc-Oracle-user-password -g=dba
   -assert_all_dead
   ```

   Linux systems:

   ```
   $TC_ROOT/bin/clearlocks -node_names
   ```

4. On Linux systems, note the node names returned, and then type the following command for each node name returned:

   ```
   $TC_ROOT/bin/clearlocks -assert_dead node-name
   ```

   Replace *node-name* with a returned node name.

5. Stop all Teamcenter services, including FMS.

Back up existing Teamcenter data

If you upgrade a Teamcenter database, back up existing Teamcenter data.

> Caution:
>
> Back up the database, Teamcenter data directory, and all Teamcenter volume directories to an external backup device before performing an upgrade. This provides a safeguard against data loss in case problems occur during the upgrade.

Back up the following directories:

- The Teamcenter application root directory on each installed workstation
- The Teamcenter data directory for each configured database
- The Teamcenter volume directories for each configured database

These are the only directories affected by Teamcenter installation. If you created other directories that contain data used by your existing Teamcenter installation, such as a separate POM transmit schema

directory, Siemens Digital Industries Software recommends that you back up these directories as a precautionary measure.

Clean unused columns from the database

If you use an Oracle database, upgrade performance may decrease when dropping columns from a large Teamcenter class. This can affect overall upgrade time.

To minimize overall upgrade time, you can mark a column to be dropped as unused by typing the following SQL statement:

```
ALTER TABLE table-name SET UNUSED column-name
```

This statement marks the column as unused and hides it from any SQL used on that table. Commands like **DESCRIBE** *table_name* or **SELECT * from** *table-name* will not show the column. Any column that is marked as unused is not displayed in queries or data dictionary views and its name is removed so that a new column can reuse the same name. All constraints, indexes, and statistics defined on the column are also removed.

To physically clean up unused columns and reclaim space, use the **install** utility with the **clean_unused_columns** argument:

```
install -clean_unused_columns Tc-Oracle-user password dba
```

Depending on the number of unused columns in the database and size of their related tables, this command may generate large **redo** logs, especially if large tables are involved. Siemens Digital Industries Software recommends you adjust the size of the **redo** logs appropriately before attempting to use this utility, and make sure you have exclusive access to the schema, for example, during the maintenance window.

Upgrade a template project to the current data model format

If you have installed a new version of the Business Modeler IDE, you can use a project from the previous version. But first you must upgrade the project to the new data model format. This upgrade is necessary because the XML format used for data model files can change between product releases, and the project must be adjusted to fit the new XML format.

> Caution:
>
> After a template project is upgraded, it cannot be used for installation or upgrade in a previous version of Teamcenter. To find the version the template has been upgraded to, open the **dependency.xml** file in the **extensions** folder of the template project and view the **currentTemplateVersion** value.

You can upgrade a project three ways:

Welcome window

When you first open the Business Modeler IDE after installing it, the **Welcome** window is displayed. Click the **Upgrade your BMIDE template from a previous Teamcenter release** link in this window to run the import wizard. This imports your template into the new version of the Business Modeler IDE.

Import wizard

If your template project is not already in the workspace, use the Import wizard to import it into the new version of the Business Modeler IDE.

1. Choose **File**>**Import**.

2. In the **Import** dialog box, choose **Business Modeler IDE**>**Import a Business Modeler IDE Template Project**.

   While importing the project, the Business Modeler IDE automatically upgrades the project to the new data model format.

Re-run Template Project Upgrade wizard

If your template project is already in the workspace, upgrade it to the new version of the Business Modeler IDE:

1. On the menu bar, choose **BMIDE**>**Upgrade Tools**>**Re-run Template Project Upgrade Wizard**.

   The wizard runs.

2. In the **Template Project Upgrade** dialog box, click the arrow in the **Project** box to select the project to upgrade.

3. Click **Finish**.

   The project is upgraded to the new data model format. The **Console** view displays success or failure messages for the upgrade.

   After upgrade, open the **Project Files** folder and check for any error or warning messages in the log in the **output\upgrade** folder.

Upgrade the custom template when you upgrade to the latest version of Teamcenter

1. Import the older project into the latest version of the Business Modeler IDE. This updates the data model to the latest data model version.

2. If your project contains custom code, you must treat it as though it were new code. Perform the following steps:

a. Clean up the **output** and **source** folders.

b. Generate Code for the project.

c. Perform these steps in stages to aid in troubleshooting:

A. Insert your old source code into the new files.

B. Build the project.

3. Package the template in the Business Modeler IDE.

4. Install the packaged template to the upgraded server.

8. Update a test environment

Create an update test environment

Export the existing production environment

1. Export the production environment to an XML configuration file using the Deployment Center interface or the quick deploy utility.

   - **Using the Deployment Center interface**

     On the **Environments** page, choose the environment from the list, and click **Export Environment**. Select the **Export all component properties** check box. Save the exported file

   - **Using the quick deploy utility**

     - Use the quick deploy utility (**dc_quick_deploy**) in export mode. Type the following command:

       dc_quick_deploy.bat|sh -dcusername=*DC-user* **-dcpassword=***DC-password* **-mode=export -exportType=Full -environment=***env-name* **-dcurl=***DC-URL*

2. Open the exported XML configuration file and edit values:

   - Update all instances of **REPLACEME** with the correct passwords.

   - Locate the **fnd0_tcdbserver** component and add the following property:

     ```
     <property id="fnd0_dbStateOptions"
     value="dbAlreadyExistPopulateDataDirectory"/>
     ```

   - Edit the machine names in the exported XML configuration file to match the machines that will host the new Teamcenter binaries in the test environment. If you skip this step, you will need to update the machine names in the Deployment Center UI after the test environment is created.

     Update any connections, accounts, or UNC paths to reference the target machines as well.

Create a test environment

1. Install a new instance of Deployment Center of the same version as your existing Deployment Center instance that hosts your production environment. Apply any migration hotfixes to the Deployment Center instance.

2. If your environment contains multiple servers, determine whether you want your test environment to include all servers from the original environment or a subset of the servers. If you want to test

a subset of the original environment, modify the configuration XML file to remove components you want to omit.

This approach can be helpful when you want to test the production migration in stages, validating each stage, and then adding more components until you import the entire environment.

For a complex environment, if you only need to validate data model related changes, you can remove other components from the configuration XML file, for example, multiple FSCs.

3. Import the configuration XML file into Deployment Center using the quick deploy utility:

   dc_quick_deploy.bat|sh -dcusername=*DC-user* **-dcpassword=***DC-password* **-inputFile=***config-XML-file* **-dcurl=***DC-URL*

Copy production data

Create a copy of the Teamcenter Database and Volume from the production environment.

1. If your current production environment is Teamcenter 14.3 or later, before you export Teamcenter Database, set the FMS keys to default. After you export the Teamcenter Database, the keys will be reconfigured to their original values.

   To set the FMS keys to default, perform the following steps:

   a. Export the existing non-default FMS keys using one of the following commands, depending on whether symmetric or asymmetric keys are configured:

      Symmetric Keys:

      ```
      install_encryptionkeys.exe -u=Tc-admin -p=Tc-admin-pw -f=list
      ```

      Replace *Tc-admin* with the Teamcenter administrative user, and *Tc-admin-pw* with the password for that account.

      > Note:
      >
      > Make sure you keep a copy of the exported key, similar to the following example (in **bold**):
      >
      > ```
      > Key_Bits ---- Rijndael Key
      > 128 ---- CFBD7EAA2A90377651E217EF5CC248C7
      > ```

      Asymmetric Keys:

```
install_fms_keys.exe -u=Tc-admin -p=Tc-admin-pw -g=dba
-f=exp_pubkey -file_password=export-file-password
```

Replace *Tc-admin* with the Teamcenter administrative user, and *Tc-admin-pw* with the password for that account.

b. Delete the existing key configuration:

- **Symmetric Keys:**

```
install_encryptionkeys.exe -u=Tc-admin -p=Tc-admin-pw -f=delete
```

- **Asymmetric Keys:**

```
install_fms_keys.exe -u=Tc-admin -p=Tc-admin-pw -g=dba -delete
```

c. Install the default FMS keys:

```
install_encryptionkeys.exe -u=Tc-admin -p=Tc-admin-pw -f=install
```

2. Export the Teamcenter database from the original environment.

3. Reset the FMS keys back to their original configuration:

- **Symmetric Keys:**

```
install_encryptionkeys.exe -u=Tc-admin -p=Tc-admin-pw -f=modify
-key=FMS-key
```

- **Asymmetric Keys:**

```
install_fms_keys.exe -u=Tc-admin -p=Tc-admin-pw -g=dba -f=import
-file_name=PKCS-file
```

Replace *PKCS-file* with the file path and name of the exported PKCS12 file containing the key pair.

4. Zip the **volume(s)** directory from the original environment.

5. Zip the *TC_DATA***/gs_info** directory from the original environment.

6. In the new environment, create the same database user from the original environment.

7. Import the Teamcenter database to the database in the new environment.

8. Unzip the **volume(s)** directory and note the location.

9. Unzip the *TC_DATA***/gs_info** directory into the new *TC_DATA* directory on the machine where the environment will be hosted.

Duplicate the environment in Test

> Warning:
>
> Use the copied Teamcenter database, *not* the original production database, when you enter the volume information.

- Under **Database Creation Settings**, make sure the **Copy Environment using existing populated database** option is selected.

- Add the volume information in the respective fields, adding the unzipped **volume(s)** path you entered in **Copy production data**.

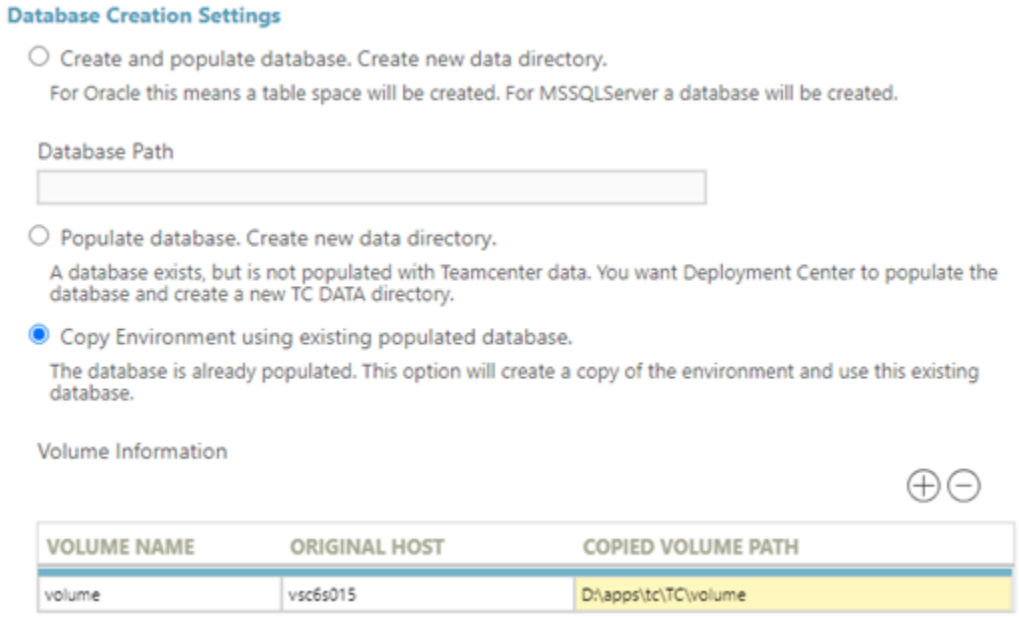
  The **COPIED VOLUME PATH** should point to the *new* copied and unzipped database, *not* the database from the original production environment.

- It is possible to add multiple volumes using Quick Deploy. To add multiple volumes to the **Volume Information** table, add the following property to the **fnd0_tcdbserver** component in the XML configuration file. The format for the volume information is:

  *volume-name***;***original-host***;***copied-volume-path***;***volume-name***;***original-host***;***copied-volume-path*

  For example:

```
<property id="fnd0_migratedVolumeInfo"
value="volume1;vsc6s015;C:\apps\TC,volume2;vsc6s015;C:\apps\TC"\>
```



Update environment details

Update the environment site ID to the value of the original production system, which can be found in the Environment **Overview** page for your environment in Deployment Center, as well as the machine names where the new Teamcenter binaries will be placed with the existing database.

1. If you are using Deployment Center 14.3.0.8 or later, navigate to **Overview** page for the test environment. Click **Start Edit** to edit the site ID.

2. If you did not update the machine names in the XML configuration file when you imported the test environment, modify the machine names in the Deployment Center interface to match the machine names that will host the new Teamcenter binaries.

Update the test environment

Upgrade Deployment Center

After the deployment of the test environment is successful, upgrade Deployment Center to Deployment Center 2412.

For more information, see *Upgrade Deployment Center* in *Deployment Center — Usage*.

Migrate BMIDE custom templates

After you upgrade Deployment Center to Deployment Center 2412, install the standalone Business Modeler IDE (BMIDE) and migrate custom software.

1. Create a new environment that contains only the standalone Business Modeler IDE

For more information, see *Install the Business Modeler IDE using Deployment Center - standalone* in *Teamcenter Installation Using Deployment Center*.

2. Use the BMIDE client to migrate the existing custom template to the new Teamcenter version and generate a software package.

Update the Software Repository

1. Add the Teamcenter 2412 software kit:

   a. Expand the Teamcenter 2412 software kit. Copy the unzipped contents to the *software* subdirectory in one of your registered repository locations.

   b. In Deployment Center, click **SOFTWARE REPOSITORIES**.

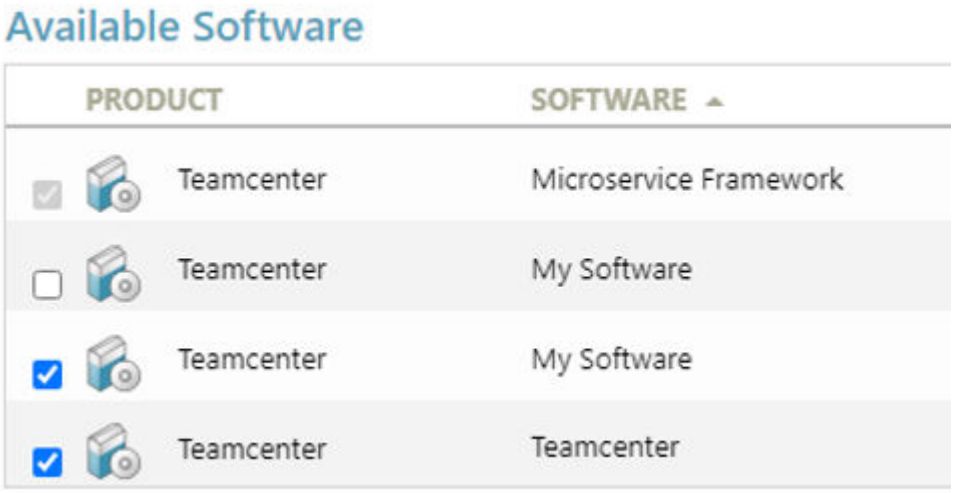
      The **Software Repositories** page opens the **Active Media** tab of the repository and displays the **Software Media** table.

   c. Verify that the Teamcenter 2412 software appears in the list of available software. The list may take a few minutes to update.

      If the software does not appear in the **Software Repositories** page, inspect the repository log files for repository scanning issues or software file problems. The repository log files are in the **webserver\repotool\logs** directory on the Deployment Center server.

2. Add the updated BMIDE package to the software repository.

   Make sure the **Available Software** list includes the new Teamcenter software and your updated custom software.



Update the test environment

After the test environment is successfully created, update the test environment to Teamcenter 2412 with the custom template, including generating and running deploy scripts. For more information, see *Update or patch your environment* in *Deployment Center — Usage*.

Review Deployment Center logs for errors or issues recorded during the update of the test environment. Logs are located in the **webserver\logs** directory on the Deployment Center machine.

9. Post-update tasks

Run the postinstallation tasks script (Linux systems)

On Linux systems, if you installed the corporate server without root privileges, a user with root privileges must run the root postinstallation tasks scripts. These scripts register daemons and perform other installation actions that require root privileges.

Run all scripts in the *TC_ROOT*/**install** directory that have names of the following form:

root_post_tasks/*ID*.**ksh**

Replace *ID* with the unique part of each script name.

Enable a UTF-8 database

If you converted your Teamcenter database from non-UTF-8 to UTF-8 before you upgraded Teamcenter, update the **uTF8Enabled** setting in the **configuration.xml** file:

1. Locate the *TC_ROOT***install****configuration.xml** file in your upgraded environment and open the file.

2. Locate the **uTF8Enabled** parameter in the file and set its value to **true**:

   ```
   <uTF8Enabled value="true" />
   ```

3. Save the changes to the file.

Configure units of measure

The units of measure capability in Teamcenter changed in Teamcenter 2406 from the legacy Business Modeler IDE units of measure to the *unit management system* (UMS), which uses the **ums_mapping** utility. The utility links legacy units to unit definitions in the UMS.

If you are updating from a Teamcenter version earlier than Teamcenter 2406, you can migrate legacy units of measure to the unit management system as described in *Teamcenter Administration*.

Resolve Schedule Manager model errors

In current Teamcenter versions, the **Schedule**, **Schedule Task**, **Schedule Revision**, **Schedule Task Revision** and the associated forms (**Scheduling**, **Execution**, **SchMgtCostForm**) are re-parented from **Item** and **Item Revision** to **Workspace Object**.

In the default template, all references from **Schedule** and associated objects to **Item** and **Item Revision** have been corrected. However, for custom templates containing Schedule Manager customizations, the following steps must be performed to resolve any model errors during the Business Modeler IDE template migration.

Associated forms (**Scheduling**, **Execution**, **SchMgtCostForm**), **Schedule Revision** and **ScheduleTaskRevision** are not used by Schedule Manager and will be deprecated in a future release of Teamcenter.

Examine model errors during migration of custom template to Teamcenter 2412

Study the model errors reported in the console of Business Modeler IDE during migration of the Business Modeler IDE custom template. These errors are typically in the **extensions/default.xml** and **extensions/lang/en_US/default_en_US.xml** files. Look for errors similar to the following examples:

- `Property "pv5_MFK_Prop1" is not attached to Business Object "PV5_MFK_SchdTsk1" in TcTypeConstantAttach element.`
- `Invalid type found in constant attach element. "PV5_MFK_SchdTsk1" is not a subtype of any constant scope definition`
- `Incompatible MFK Definition: The property named "pv5_MFK_Prop1" on MFK definition "PV5_MFK_Require" is not valid on the business object "PV5_MFK_SchdTsk1".`
- `The OperationInputType "PV5_MFK_SchdTsk1RevisionRevI" cannot be loaded because the parent Type "ScheduleTaskRevisionRevI" does not exist.`
- `Property "pv5_MFK_Prop1" is not attached to Business Object "PV5_MFK_SchdTsk1" in TcPropertyConstantAttach element.`
- `Property "items_tag" is not attached to Business Object "Mr9a_SSJbTsk1Revision" in pathToSource element.`
- `Invalid type found in constant attach element. "Mr9a_SSJbTsk1" is not a subtype of any constant scope definition.`
- `Property "mr9a_jobact2prop" is not attached to Business Object "Mr9a_SSJbTsk1Revision" in Property{::}Mr9a_SSJbTsk1Revision{::}mr9a_jobact2prop element`
- `Attaching a Naming Rule to the "item_id" property on the "ScheduleTask" Business Object is not supported.`

Resolve the model errors

1. Open the XML file in a text editor, XML editor, or the Business Modeler IDE text editor.

2. Find the line number where the error is reported and delete the invalid element at that line number in the XML file.

3. Save the XML file.

4. Reload the custom template in BMIDE again and ensure there are no model errors being reported in the custom template.

> Caution:
>
> Do not remove **TcStandardType** and **TcClass** model statements for any subtypes of **Schedule** and **ScheduleTask** business objects.

After the upgrade process in TEM is complete, the custom **Schedule** and **ScheduleTask** business objects are automatically re-parented to **WorkspaceObject**.

Upgrade Access Manager rules

Special steps are required to upgrade the Access Manager rule tree. These steps are required to ensure the rule tree in your upgraded system contains any new rules added by Teamcenter and also any custom rules you added to your previous installation. You can upgrade rules in two ways. Choose the appropriate method depending on how many custom rules are in your Access Manager rule tree.

- If you have many custom rules, migrate your legacy rule tree and then manually add new Teamcenter-supplied rules:

  1. Create a backup of your existing rule tree using the Access Manager **Export** action.

  2. Upgrade your Teamcenter configuration to Teamcenter 2412. During Teamcenter upgrade, TEM automatically imports your legacy rule tree to Teamcenter 2412.

  3. Identify changes in the rule tree by comparing the **..***TC_DATA***tc_am_rule_tree.default** file in your previous environment to the same file in your Teamcenter 2412 environment.

  4. Start Access Manager and add rules introduced to Teamcenter since your previous version.

- If you have few or no custom rules, use the standard Teamcenter 2412 rule tree and then manually add your custom rules.

  1. Create a backup of your existing rule tree using the Access Manager **Export** action.

  2. Identify your custom rules in order to add them after upgrade.

  3. Upgrade your Teamcenter configuration to Teamcenter 2412. During Teamcenter upgrade, TEM automatically imports your legacy rule tree to Teamcenter 2412.

  4. Import the standard Teamcenter 2412 rule tree using the **am_install_tree** utility. Use the **mode=replace_all** argument to overwrite the legacy rule tree with the Teamcenter 2412 rule tree. The utility automatically creates ACLs and privileges during import.

  5. Manually add your custom rules into the rule tree in the appropriate locations.

The Access Manager supports localization. This includes locale-specific display names of access control list (ACL) objects, privilege names, and accessor type values such as group names and role names. This localization capability is provided using text server XML files. The rule tree import/export functionality supports XML format input files.

The **am_install_tree** utility supports both ASCII text format and XML format rule tree files. However, export in the Access Manager application generates the output file only in XML format. This allows exported ACL name translations to be migrated to other sites.

An XML Access Manager rule tree resembles the following example.

```
<?xml version="1.0" encoding="UTF-8"?>
<Tc_data_access_config>
  <privileges>
    <priv_name>READ</priv_name>
    <priv_name>WRITE</priv_name>
    <priv_name>COPY</priv_name>
    <priv_name>CHANGE</priv_name>
    <priv_name>DELETE</priv_name>
  </privileges>

  <named_acls>
    <named_acl>
      <acl_name>Working</acl_name>
      <acl_name language="fr_FR">working_fr</acl_name>
      <acl_name language="de_DE">working_de</acl_name>
      <acl_name language="jp_JP">working_jp</acl_name>
      <ace_entry>
     <accessor_type>group</accessor_type>
     <accessor>dba</accessor>
     <grant>
        <p>READ</p>
        <p>WRITE</p>
        <p>COPY</p>
     </grant>
     <revoke>
        <p>DELETE</p>
        <p>CHANGE</p>
         </revoke>
      </ace_entry>
      <ace_entry>
     <accessor_type>Owning Group</accessor_type>
     <accessor> </accessor>
     <grant>
        <p>READ</p>
        <p>WRITE</p>
        <p>COPY</p>
     </grant>
     <revoke>
        <p>DELETE</p>
        <p>CHANGE</p>
         </revoke>
       </ace_entry>
    </named_acl>
    <named_acl>
       <acl_name>In Project ACL</acl_name>
       <acl_name language="fr_FR">In Project ACL fr</acl_name>
       <acl_name language="de_DE">In Project ACL de</acl_name>
       <acl_name language="jp_JP">In Project ACL jp</acl_name>
       <ace_entry>
         <accessor_type>group</accessor_type>
         <accessor>dba</accessor>
```

Access Manager rule tree example (Continued)

```
      <grant>
         <p>READ</p>
         <p>WRITE</p>
         <p>COPY</p>
      </grant>
          <revoke>
         <p>DELETE</p>
         <p>CHANGE</p>
          </revoke>
        </ace_entry>
        <ace_entry>
          <accessor_type>Owning Group</accessor_type>
          <accessor> </accessor>
         <grant>
         <p>READ</p>
         <p>WRITE</p>
         <p>COPY</p>
      </grant>
         <revoke>
         <p>DELETE</p>
         <p>CHANGE</p>
          </revoke>
        </ace_entry>
    </named_acl>
  </named_acls>
<rule_tree>
    <tree_node>
       <rule_name>Has Class</rule_name>
       <rule_argument>POM_object</rule_argument>
       <acl_name></acl_name>
       <tree_node>
          <rule_name>Has Bypass</rule_name>
          <rule_argument>true</rule_argument>
          <acl_name>Bypass</acl_name>
       </tree_node>
       <tree_node>
          <rule_name>Has Status</rule_name>
          <rule_argument></rule_argument>
          <acl_name>Vault</acl_name>
       </tree_node>
       <tree_node>
          <rule_name>Has Class</rule_name>
          <rule_argument>POM_application_object</rule_argument>
          <acl_name>Working</acl_name>
          <tree_node>
             <rule_name>Has Class</rule_name>
            <rule_argument>Dataset</rule_argument>
         <acl_name>Dataset ACL</acl_name>
       </tree_node>
        </tree_node>
    </tree_node>
  </rule_tree>
</Tc_data_access_config>
```

Access Manager rule tree example

Maintain default scope rules

Default scope rules (transfer modes, closure rules, filter rules, and so on) are maintained in XML files in the *TC_DATA* directory (for example, **defaultTransfermodes.xml**). The file is imported to Teamcenter using the **tcxml_import** command line utility during the database installation and upgrade.

The transfer mode **.xml** files are imported in overwrite mode as part of the upgrade. You need not manually import the files. To reload the latest changes from the **.xml** file, you can run the **tcxml_import** utility in overwrite mode to ensure that the updates to existing scope rules are also imported to the database. For example:

```
$TC_ROOT/bin/tcxml_import -u=user -p=password -g=group -file=$TC_DATA/
defaultTransfermodes.xml -scope_rules -scope_rules_mode=overwrite
```

Siemens Digital Industries Software recommends that you do not modify the default scope rules. If necessary, you can create a copy of the default rules and modify the copy as needed.

> Caution:
>
> All references to obsolete attributes and classes must be removed from custom closure rules or property sets. Additionally, remove any deprecated attributes and classes from custom closure rules or property sets.
>
> For information about deprecated and obsolete classes and attributes, see the latest Teamcenter **README** file in the **Downloads** area on Support Center.

Set the time zone

Some Teamcenter applications including Schedule Manager and Workflow utilize calendars. When creating new calendars, Teamcenter determines the default time zone as follows:

1. Teamcenter checks the **Time Zone** property on the default calendar. If this property is set, its value is used.

2. If that property is not set, Teamcenter checks the **SiteTimeZone** preference. If this preference is set, its value is used.

3. If neither of these are set, Teamcenter uses GMT as the time zone.

If Teamcenter is using GMT and that is not the correct time zone for your site, you may encounter unexpected behavior. Therefore, Siemens Digital Industries Software recommends that you set both the **Time Zone** property on the default calendar using the Organization application and the **SiteTimeZone** preference.

Update Active Workspace components

Remerge Solr and Teamcenter schemas and update the index

After moving to the target Active Workspace and Teamcenter versions, the Teamcenter and Solr schemas are not synchronized. You can merge the schemas and then choose the method for updating the index. You must determine if you need a full index or delta reindex of your data before planning your index update.

Evaluate the delta of object data changes

If your indexing changes are additions, modifications, and deletions for types and properties, you can perform a delta indexing update rather than a complete reindex.

1. Merge the Teamcenter and Solr schemas.

2. Stop synchronization by the indexer if it's running.

   ```
   runTcFTSIndexer -stop
   ```

3. Determine the scope of the changes between the last indexing schema and the current schema.

   Run the **awindexerutil** utility using **-delta -dryrun** to get a report of the expected delta of changes. For example:

   ```
   awindexerutil -u=adminuser -p=password -g=group -delta -dryrun
   ```

   The differences are output to the command window as well as to a log file.

4. After you evaluate the report, determine whether you want to use the delta of changes for reindexing. If so, run **awindexerutil** to index the changes from the report:

   ```
   awindexerutil u=adminuser -p=password -g=group -delta
   ```

5. Test indexer connectivity by running the indexer test flow.

   ```
   runTcFTSIndexer -task=objdata:test
   ```

6. Restart the synchronization flow using the **runTcFTSIndexer** utility:

   ```
   runTcFTSIndexer -task=objdata:sync -interval=seconds
   ```

Reindex your data if needed

Your index may have a high number of changes or other kinds of changes that are outside the scope of delta changes. If that is the case, reindex your data instead:

1. Merge the Teamcenter and Solr schemas.

2. Test indexer connectivity by running the indexer test flow.

```
runTcFTSIndexer -task=objdata:test
```

3. Reindex the data.

Additional Active Workspace postupdate steps

Import table column configuration

If you have configured any custom table columns other than those available by default, perform the following after upgrading or patching:

1. Update the custom column information in the **Awb0ContentTableUiConfigCots.xml** file.

2. Run the **import_uiconfig** utility to import the column configuration.

Reindex classification data

If you are new to classification and want to search for classification data in Active Workspace using classification standard taxonomy, your first step is to create a classification hierarchy.

If you already use traditional classification and want to search for classification data in Active Workspace or Teamcenter Manufacturing Access, perform the following steps:

1. Create search index views and specify facetable properties.

2. Update and merge the schema file.

3. Index or reindex your data. If your data is already indexed, it is sufficient to index only the modified classification data.

These steps are described in *Advanced Classification — Deployment and Administration*

Set up a custom template after patching

If you have a custom template that is dependent on the Active Workspace template (**aws2**) and other Active Workspace templates, you must follow a special procedure to set up this template after patching Active Workspace.

1. Add the Active Workspace template (**aws2**) any other needed Active Workspace templates to the Business Modeler IDE by selecting **Add/Update Templates for working within the Business Modeler IDE Client** in the **Feature Maintenance** panel of Teamcenter Environment Manager (TEM).

2. Run TEM and re-patch Active Workspace.

   This copies the required Business Modeler IDE *.jar* files for Active Workspace into the installation.

3. In the Business Modeler IDE, import your custom template. To add the Active Workspace template (**aws2**) and the other dependent Active Workspace templates:

   a. Right-click your custom template project and choose **Properties**.

   b. In the left pane, choose **Teamcenter→BMIDE**.

   c. In the **Dependent Templates** pane, select the **aws2** template and the other Active Workspace templates previously added using the **Add/Update Templates for working within the Business Modeler IDE Client** option in TEM.

   d. Click **OK**.

      The template is now ready to be deployed.

Restart Teamcenter Process Manager

After completing updates to Active Workspace, ensure the updates made to the Teamcenter GraphQL Service take effect:

1. Stop the Teamcenter Process Manager service in the **Services** dialog of the Windows Control Panel.

2. Wait for all affected processes to stop, at least 15 seconds.

3. Restart the Teamcenter Process Manager service.

Some Active Workspace features such as Discussions (Active Collaboration) and Reports rely on updates to the Teamcenter GraphQL Service in order to function properly. This restart process ensures the updates are implemented for those features.

Additional postupgrade steps

- **Transfer access rules for Classification Admin objects**

  If you created classification access rules for admin objects that resided in the **Has Class(POM_object)** area, you must move these rules manually to the **Has Application(Any)** area of the rule tree after upgrade.

In current versions of Teamcenter, access to classification administrative objects is restricted to dba users, but you can grant other users access to classification objects by creating a rule for each of these users or groups of users in the **Has Application(Any)** group in the rule tree.

- **Add new Classification units**

  When you upgrade Teamcenter, new Classification units are not added because they may conflict with other units created by Teamcenter administrators. Update unit definitions manually as described in *Basic Classification — Deployment and Administration*.

- **Set variant rule preference**

  If you already use classic variants, you can use your existing variability data with the Product Configurator. You can now use variant rules to store variant configuration criteria and optional validation records. They are attached to the product item revision or the application model (collaborative design) by GRM relationships.

  Variant rules perform the same function as stored option sets (SOSs), which will be deprecated in a future version. Siemens Digital Industries Software encourages customers who use classic variants to transition to variant rules by setting the **DisableSaveSos** preference to **TRUE**. This setting prevents users from saving SOSs, thereby forcing them to create variant rules.

  Existing modular variant customers should not change the default preference setting of **false**.

- **Transfer HTTPS certificates**

  If you use HTTPS transports, you must transfer all the HTTPS certificate information to the upgraded Teamcenter installation.

Part III: Deploy the Teamcenter update

After you successfully upgrade a test environment, deploy the upgrade to your production system by upgrading your volume servers and production environment.

10. Update volume servers

If you have volume servers (Teamcenter configurations that contain an FSC separate from the corporate server), you must update those configurations *before* you update the corporate server.

This is because Teamcenter utilities that run during the corporate server update are not compatible with FSCs from other Teamcenter versions. Deployment Center updates the FSC for the corporate server during update of the corporate server.

11. Update the production environment

Update your production environment using Deployment Center.

> Caution:
>
> Make sure you **back up your Teamcenter data** before you update your production environment.

After you up verify that you successfully updated your test environment and you have resolved any issues found during the test update, update your production environment using the same procedure you used to update your test environment. Generate and run deploy scripts to complete the update.

For more information, see *Update or patch your environment* in *Deployment Center — Usage*.

Part IV: Maintain Teamcenter between updates

If you use Deployment Center, apply patches to your environment as described in *Deployment Center — Usage*.

If you maintain your environment using Teamcenter Environment Manager (TEM), you apply software patches to your environment using the Updates Manager, an option in TEM when run in maintenance mode.

Patches to the Teamcenter Java EE web tier you install using the Web Application Manager.

Teamcenter updates (minor releases and patches) are posted for download on Support Center when available:

https://support.sw.siemens.com

12. Apply updates to your environment

Deployment Center software updates follow a process that is similar to installation. When you want to update your environment, choose the target version of software you want to apply, for example, Teamcenter 2412.0001. Deployment Center determines what to update based on what is required by the selected target release and selected applications.

Before you perform an update, you must download, unzip, and put the software update or patch kits in the Deployment Center repository. Check the repository for software dependencies and messages about missing software.

Import a configuration from TEM

Deployment Center can update or patch software in a registered Teamcenter environment. If the environment you want to update originated in TEM, run the **send_configuration_to_dc** script on the target servers to send the latest environment configuration information to Deployment Center.

You may not be required to put source release software kits in the repository. Deployment Center constructs source to target release mapping using the environment's current configuration files sent in the report from *send_configuration_to_dc*. Deployment Center analyzes the target release information to construct the mapping at the time you choose to update. Sometimes, Deployment Center may require the source software if the target release doesn't provide adequate mapping information. If there is missing software that is required, Deployment Center displays messages telling you about the dependency and how to proceed.

Perform updates or patches

The procedure for updating an environment is similar to creating an environment.

1. Open the **Environments** page and choose the environment where you want to update software. Choose **Deploy Software** to begin the process.

2. **Software**

   Choose the target update software from the **Available Software** list. The **Selected Software** list displays currently installed versions and latest pending versions for the environment. If the software you need is not available, check whether it was listed in the repository.

   If missing software is required, Deployment Center tells you about the dependency and how to proceed.

3. **Options**

   Either Single Box or Distributed is selected for **Environment Type**. If you previously had a **Single Box** environment, you can choose **Distributed**; however, you will need to update the server information for components.

If an environment is already deployed on multiple servers, **Single Box** is not available.

The **Architecture Type** for your environment is automatically selected and can't be changed.

4. **Applications**

   Applications that are already installed are automatically included for update. You can add other applications from the list. Applications that display a **Pending Install** status are waiting for deployment. Applications that are installed but need updates display the **Pending Update** status.

   See *Application names changed in Deployment Center* for additional information about application names.

5. **Components**

   Components that are not yet installed display the **Pending Install** status. Components that are installed but need updates to support your selected applications display the **Pending Update** status.

   It is possible that a selection from the current update may cause a previously configured component to need more information.

   Components display the **%** configured. If it's less than **100%**, complete the required parameter values. Components that are not impacted can be ignored (showing **100%** configured).

6. **Deploy**

   Generate deployment scripts for the update. This tab is available when the **Components** tab is complete.

   Deployment scripts contain the information you configured in Deployment Center for the selected environment.

7. Run the deployment scripts

   After the scripts and software ZIP files are generated, copy them to each target machine and run them.

Part V: Appendices

Supplemental procedures and references for updating Teamcenter and Active Workspace.

13. Troubleshooting

Using the upgrade log viewer

At the end of the upgrade process, the **Upgrade Features** panel in TEM displays the results of each step in the upgrade process. Clicking the **Navigate Logs** button in this panel opens the upgrade log viewer.

The upgrade log viewer is a dynamic interface that includes:

- Results of each step in the upgrade process.
- Links to log files for each step.
- Detailed contents of log files.

Use the upgrade log viewer to diagnose and address upgrade failures:

1. In the **Pre-Upgrade** and **Upgrade** sections in the top pane, find the description of a step that failed during the upgrade process.

2. In the **Navigate Logs** pane, locate the step in the list, with the names of the logs generated by that step.

3. Click a link to one of the logs.

   The upgrade log viewer displays the contents of the selected log in the **Log Details** pane.

4. Review the log contents to find details about the step that failed and the steps that preceded it.

Finding help for resolving upgrade failures

Depending on the type of error, the log file contents may provide sufficient information to help you resolve the problem, or direct you to other Teamcenter documentation for help. For further help, see the following resources:

- **Teamcenter Upgrade Guide**

  Contains troubleshooting information in *Troubleshooting Teamcenter upgrade*.

- **Support Center**

  Provides support resources for all Siemens Digital Industries Software products.

  Submit information from the upgrade log viewer about specific upgrade failures to Siemens Digital Industries Software support on Support Center:

  https://support.sw.siemens.com

- **Packaged upgrade logs**

  Contains all logs generated during the upgrade process.

  When an upgrade fails, TEM automatically packages the upgrade logs into a ZIP archive you can submit to Siemens Digital Industries Software support for review and analysis. The archived upgrade logs are in the following location:

  Windows systems:

  *TC_ROOT***install\upgrade_logs\install_upgrade_logs_***package-ID**.zip*

  Linux systems:

  TC_ROOT/**install/upgrade_logs/install_upgrade_logs_***package-ID*.zip**

Note:

To access the upgrade log viewer outside TEM, open the following location in a Web browser:

Windows systems:

*TC_ROOT***install\upgrade_display_results.html**

Linux systems:

TC_ROOT/**install/upgrade_display_results.html**

Troubleshooting Microsoft SQL Server

Microsoft SQL Server 2014 performance is poor

If you migrate a database application to Microsoft SQL Server 2014 from a previous version, the database server may consume excessive CPU resources and cause poor performance.

To correct this problem, change the SQL Server 2014 Compatibility Level setting from SQL Server 2014 (**120**) to SQL Server 2012 (**110**).

For more information about this issue, see the following Microsoft support article:

https://msdn.microsoft.com

Teamcenter update fails with ODBC error

When upgrading a Microsoft SQL Server server, an error similar to the following can occur:

```
++++++++++++++++++++++++++++++++++
ODBC error. SQLSTATE: 42000 Native error: 5074
Message: [Microsoft][ODBC SQL Server Driver][SQL Server]The column '***'
is
dependent on column '***'.
ODBC error. SQLSTATE: 42000 Native error: 4922
Message: [Microsoft][ODBC SQL Server Driver][SQL Server]ALTER TABLE
ALTER COLUMN
<name> failed because one or more objects access this column.
++++++++++++++++++++++++++++++++++
```

This error occurs when the upgrade process attempts to modify a column that has a dependent column with an index. Microsoft SQL Server does not allow changes to columns with indexes. Also, local DBA indexes may exist that don't match the standard OOTB template for indexes, so it was not anticipated.

This problem can happen because columns that have manually-created statistics attached cannot have their properties modified without first dropping the statistics object. This to ensure the statistics object accurately reflects the content of the column. Manual creation of statistics objects is important to ensuring query performance if you set `AUTO_CREATE_STATISTICS = OFF`.

An auto-created statistics object does not prevent a modify action to a column because auto-created statistics objects can be removed automatically. But, if the system encounters a manually-created statistics object, it cannot be removed automatically, and may result in an access error.

To resolve this problem, perform the following steps:

1. Delete the index ***.
2. Delete the dependent column ***.
3. Continue the upgrade.
4. Run the **index_verifier** utility to re-create standard OOTB indexes:

   ```
   index_verifier -u=tc-admin -p= -g=dba -o=DO_IT
   ```

   Replace *tc-admin* with the Teamcenter administrative user.

Troubleshooting Teamcenter upgrade

Possible solutions to upgrade issues

Locate possible solutions to problems you may encounter during Teamcenter upgrade.

Problem	Possible cause	Solution
Errors when uploading or downloading files	**FMS_HOME** environment variable does not point to the location of the File Management System (FMS) client executables Incomplete installation of FMS client cache executables	Uninstall the rich client as described in the appropriate client installation instructions (for Windows or Linux). Then reinstall the rich client. Caution: Always uninstall a rich client using this procedure before installing a new rich client.
	Incompatible configurations of FMS	If two rich clients are installed on the workstation, report the errors to the Teamcenter administrator. When two rich clients are installed on the same workstation, FMS uses the **FMS_HOME** value set during the first installation. The configuration of the file client cache (FCC) to a file server cache (FSC) must support both deployments, especially if the second deployment is to a different database.
Teamcenter displays an error message when you attempt to access Teamcenter online help	The Teamcenter administrator did not include online help when configuring your rich client	Contact the Teamcenter administrator.
Unable to view or to search Teamcenter online help	The Web browser you are using does not meet requirements to view and search Teamcenter online help	Make sure you are using a Siemens Digital Industries Software-supported Web browser. For information about supported Web browsers, see the Siemens Digital Industries Software Certification Database.
Teamcenter upgrade fails with custom types	A custom data type has the same name as the parent class.	If you have a custom type name with the same name as the parent class, the custom type is identified and added to the custom templates, but the upgrade fails. For example, you have a custom **storage_media** type that belongs to the **storage_media** class. Before upgrading Teamcenter, rename the custom type name to anything other than the parent class. For example, rename the **storage_media** type to **storage_media_custom** before you upgrade.
Teamcenter upgrade fails with large database issues	The database is not sized properly.	If your upgrade changes or deletes a large number of records, it can fail if the database is not sized properly. Oracle displays an error similar to the following: `ORA-01652: unable to extend temp segment by 128 in tablespace TEMP` The following upgrade examples can lead to this error: `install -mod_attr` *tc-admin* `$ {TC_USER_PASSWD} dba POM_application_object owning_user POM_attr_no_pom_backpointer +`

Problem	Possible cause	Solution

```
install -mod_attr tc-admin $
{TC_USER_PASSWD}
    dba POM_application_object
last_mod_user
    POM_attr_no_pom_backpointer +
```

Replace *tc-admin* with the Teamcenter administrative user.

These commands update many rows in the **pom_backpointer** table. The number of rows updated is approximately three times the size of the **ppom_application_object** table. You can determine the table size with the following SQL command:

```
SELECT COUNT(puid) FROM
ppom_application_object;
```

To resolve this issue, you must have a large undo or rollback tablespace and a large **TEMP** tablespace. Increase the size of both the **TEMP** and undo tablespaces to at least 5 GB each.

1. Use the following SQL command to determine where the data files reside:

```
SELECT tablespace_name,file_name
FROM dba_data_files;
```

The results may resemble the following:

TABLESPACE-_NAME	FILE_NAME
SYSTEM	D:\ORACLE\ORADATA\SYSTEM01.DBF
UNDOTBS1	D:\ORACLE\ORADATA\UNDOTBS01.DBF
SYSAUX	D:\ORACLE\ORADATA\SYSAUX01.DBF
IDATA	D:\ORACLE\ORADATA\IDATA01.DBF
ILOG	D:\ORACLE\ORADATA\ILOG01.DBF
INDX	D:\ORACLE\ORADATA\INDX01.DBF

In this case, all data files are located in the **D:\ORACLE\ORADATA** directory.

2. Add a data file to the **TEMP** tablespace:

Problem	Possible cause	Solution

```
ALTER TABLESPACE TEMP ADD tempfile
  D:\ORACLE\ORADATA\temp2.dbf' size
5000M;
```

3. Add a data file to the undo tablespace:

```
ALTER TABLESPACE UNDOTBS01 ADD
datafile
'D:\ORACLE\ORADATA\' undotbs2.dbf
size 5000M;
```

To help ensure the upgrade is successful, make sure the redo logs are sized properly (100M each) and reside on a separate disk from the data. If necessary, resize the redo logs.

1. Set the **ORACLE_SID** environment variable.

2. Log on to Oracle:

```
sqlplus /nolog
connect system/password as
sysdba;
```

3. Find the list of the redo log groups and see where the files reside.

```
SELECT
GROUP#,TYPE,STATUS,MEMBER
FROM V$LOGFILE;
```

The results may look like this:

```
3 ONLINE  STALE
E:\ORACLE\ORADATA\DPVPERF\REDO03.LOG
2 ONLINE
E:\ORACLE\ORADATA\DPVPERF\REDO02.LOG
1 ONLINE  STALE
E:\ORACLE\ORADATA\DPVPERF\REDO01.LOG
```

4. Create the new redo logs as follows. You can change the drive where you can create these, but redo logs should reside on a separate disk from the data.

```
ALTER DATABASE ADD LOGFILE
GROUP 4

('E:\ORACLE\ORADATA\DPVPERF\
   REDO04.LOG') SIZE 100M;
```

Problem	Possible cause	Solution
		`` ALTER DATABASE ADD LOGFILE GROUP 5 ('E:\ORACLE\ORADATA\DPVPERF\ REDO05.LOG') SIZE 100M; ALTER DATABASE ADD LOGFILE GROUP 6 ('E:\ORACLE\ORADATA\DPVPERF\ REDO06.LOG') SIZE 100M; ``` 5. Run the following command to force the log switch: ``` ALTER SYSTEM SWITCH LOGFILE; ``` 6. (Optional) Drop redo log groups 1, 2, and 3: ``` ALTER DATABASE DROP LOGFILE GROUP 1; ALTER DATABASE DROP LOGFILE GROUP 2; ALTER DATABASE DROP LOGFILE GROUP 3; ``` Note: If the group number is the current group and you cannot drop it, run the command to force the log switch to make group 4, 5, or 6 current.
Rich client startup performance is slow	Wait time for hierarchy tree checked-out icon display.	Set the **TC_show_checkedout_icon** preference to **FALSE**. Note: Users and administrators can set the **TC_show_checkedout_icon** preference to **TRUE** to enhance usability or to **FALSE** to enhance rich client startup performance. For more information, see the *Teamcenter Environment Variables*.