

TEAMCENTER

# Easy Plan 2412 — Deployment and Administration

Software Version Teamcenter 2412

**SIEMENS**

Unpublished work. © 2024 Siemens

This Documentation contains trade secrets or otherwise confidential information owned by Siemens Industry Software Inc. or its affiliates (collectively, "Siemens"), or its licensors. Access to and use of this Documentation is strictly limited as set forth in Customer's applicable agreement(s) with Siemens. This Documentation may not be copied, distributed, or otherwise disclosed by Customer without the express written permission of Siemens, and may not be used in any way not expressly authorized by Siemens.

This Documentation is for information and instruction purposes. Siemens reserves the right to make changes in specifications and other information contained in this Documentation without prior notice, and the reader should, in all cases, consult Siemens to determine whether any changes have been made.

No representation or other affirmation of fact contained in this publication shall be deemed to be a warranty or give rise to any liability of Siemens whatsoever.

If you have a signed license agreement with Siemens for the product with which this Documentation will be used, your use of this Documentation is subject to the scope of license and the software protection and security provisions of that agreement. If you do not have such a signed license agreement, your use is subject to the Siemens Universal Customer Agreement, which may be viewed at <https://www.sw.siemens.com/en-US/sw-terms/base/uca/>, as supplemented by the product specific terms which may be viewed at <https://www.sw.siemens.com/en-US/sw-terms/supplements/>.

SIEMENS MAKES NO WARRANTY OF ANY KIND WITH REGARD TO THIS DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, AND NON-INFRINGEMENT OF INTELLECTUAL PROPERTY. SIEMENS SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, CONSEQUENTIAL OR PUNITIVE DAMAGES, LOST DATA OR PROFITS, EVEN IF SUCH DAMAGES WERE FORESEEABLE, ARISING OUT OF OR RELATED TO THIS DOCUMENTATION OR THE INFORMATION CONTAINED IN IT, EVEN IF SIEMENS HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

**TRADEMARKS:** The trademarks, logos, and service marks (collectively, "Marks") used herein are the property of Siemens or other parties. No one is permitted to use these Marks without the prior written consent of Siemens or the owner of the Marks, as applicable. The use herein of third party Marks is not an attempt to indicate Siemens as a source of a product, but is intended to indicate a product from, or associated with, a particular third party. A list of Siemens' Marks may be viewed at: <https://www.plm.automation.siemens.com/global/en/legal/trademarks.html>. The registered trademark Linux® is used pursuant to a sublicense from LMI, the exclusive licensee of Linus Torvalds, owner of the mark on a world-wide basis.

## About Siemens Digital Industries Software

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: <https://support.sw.siemens.com>

Send Feedback on Documentation: [https://support.sw.siemens.com/doc\\_feedback\\_form](https://support.sw.siemens.com/doc_feedback_form)

# Table of Contents

---

<b>What's new in Teamcenter Easy Plan for administrators.....</b>	<b>1-1</b>
What's new in Teamcenter Easy Plan 2412 Deployment.....	1-1
<b>What is Teamcenter Easy Plan Deployment?.....</b>	<b>2-1</b>
<b>Installing with Teamcenter Environment Manager.....</b>	<b>3-1</b>
Teamcenter Environment Manager installation overview.....	3-1
<b>Add Teamcenter components to an Active Workspace installation.....</b>	<b>3-1</b>
Use TEM to copy data into the environment.....	3-2
Select and install features.....	3-2
<b>Updating with Teamcenter Environment Manager.....</b>	<b>4-1</b>
Teamcenter Environment Manager update overview.....	4-1
Update with Teamcenter Environment Manager.....	4-1
<b>Installing or updating with Deployment Center.....</b>	<b>5-1</b>
Install or update with Deployment Center.....	5-1
<b>Completing a Teamcenter Manufacturing Access installation.....</b>	<b>6-1</b>
Teamcenter Manufacturing Access installation tasks.....	6-1
Complete a Teamcenter Manufacturing Access installation.....	6-1
Update Teamcenter Manufacturing Access components with TEM.....	6-3
Add Teamcenter Manufacturing Access Study Manager to a rich client.....	6-4
Configure Process Simulate and NX for Teamcenter Manufacturing Access.....	6-4
Classification search prerequisites.....	6-5
Index the classification server.....	6-6
<b>Additional installation tasks.....</b>	<b>7-1</b>
Test the connection to the Teamcenter database.....	7-1
Install Opcenter for use in Easy Plan.....	7-1
Updating Easy Plan using the epw_update_stx_elements utility.....	7-2
Run the epw_update_stx_elements utility.....	7-3
Set up integrated plant BOM prerequisites.....	7-4
Set up plant locations.....	7-4
Set up Revision rules.....	7-5
<b>Installing or updating TCM Visualization.....</b>	<b>8-1</b>
TCM Visualization prerequisites.....	8-1
Add or update TCM Visualization using TEM.....	8-1

Update TCM Visualization with TEM.....	8-3
<b>Add or update TCM Visualization with Deployment Center.....</b>	<b>8-3</b>
<b>Configuring access by groups and roles in Teamcenter Easy Plan.....</b>	<b>9-1</b>
Configuring user access.....	9-1
Groups and roles.....	9-1
Preferences.....	9-2
<b>Configuring Teamcenter Easy Plan.....</b>	<b>10-1</b>
<b>Configuring common Easy Plan options.....</b>	<b>10-1</b>
Common Easy Plan configuration options.....	10-1
Active Workspace Search capability.....	10-2
Auto-predict source for parts in the Work Instructions Editor.....	10-2
Limits for object type and subtype lists.....	10-2
Relation types and file types.....	10-5
Add an MBOM to a work package by mirroring an EBOM structure.....	10-5
Change management.....	10-6
Datasets and occurrence types.....	10-7
Other key preferences.....	10-9
OpenTeamcenter Easy Plan applications from Manufacturing Process Planner.....	10-9
Reports.....	10-10
Report definitions.....	10-11
Install prerequisites for PDF reports.....	10-11
Configure a custom report.....	10-12
Table columns.....	10-13
Variant rules.....	10-15
Configure manufacturing time.....	10-15
<b>Configure Electronic Work Instructions.....</b>	<b>10-23</b>
<b>Configure Manufacturing-BOM Manager.....</b>	<b>10-23</b>
<b>Configure Next Generation Planning.....</b>	<b>10-23</b>
<b>Configuring Process Planning for BTO/BTS/CTO.....</b>	<b>10-24</b>
Cloning rules for objects.....	10-24
Collaboration context properties.....	10-25
Structures.....	10-25
Line balancing.....	10-26
Stations.....	10-30
Bill of Equipment authoring.....	10-31
Operations.....	10-31
MBOM items.....	10-32
Process resources.....	10-32
Configure taxonomy for classification.....	10-32
<b>Configuring Teamcenter Manufacturing Access.....</b>	<b>10-33</b>
Hosting preferences.....	10-33
Client-side preferences.....	10-34
Cloning preferences.....	10-35
Manufacturing features search preferences.....	10-36
Resource search preferences.....	10-36

Study-related preferences.....	10-37
Study Manager preferences.....	10-38
Classification search.....	10-38
Study conversion workflow.....	10-39
Ensure that the configuration context of shared studies in a CC matches that of the BOP..	10-39
<b>Configuring Process Planning for ETO.....</b>	<b>10-40</b>
Relation types.....	10-40
Populate or update PMI using a Teamcenter utility.....	10-40
Compound operation preferences.....	10-41
Viewer preferences.....	10-42
<b>Create custom manufacturing validation tests with Teamcenter Easy Plan.....</b>	<b>10-43</b>
Custom manufacturing validation tests overview.....	10-43
Prerequisites.....	10-44
Manufacturing validation test components overview.....	10-45
Installing and verifying sample validation tests.....	10-46
Customizing manufacturing validation tests.....	10-49
Add a new manufacturing validation test to the library.....	10-50
<b>Troubleshooting.....</b>	<b>11-1</b>
Troubleshoot installation, configuration, and deployment.....	11-1
Home page does not have a New Work Package tile .....	11-2
Home page does not fully load.....	11-2
Open with Study Manager command is unavailable.....	11-2
When trying to connect to Process Simulate or NX, an error message is displayed...	11-3
<b>Reference.....</b>	<b>12-1</b>
Full features list for an installation on Active Workspace .....	12-1
Database templates summary.....	12-3



# 1. What's new in Teamcenter Easy Plan for administrators

---

## What's new in Teamcenter Easy Plan 2412 Deployment

Easy Plan 2412 delivers new features and enhancements. There are also certain issues and workarounds.

### Installation

The Teamcenter Easy Plan kit is fully merged into the Teamcenter installation kit. Changes to the installation include:

- The Easy Plan *war* file is deprecated.  
Starting with version 6.2, Easy Plan fully migrated to Active Workspace and its installation. You no longer need to configure the *EasyPlan.war* file during Easy Plan installations or updates.
- Easy Plan no longer uses workspaces.  
Starting with version 6.2, you can use **preferences, groups, and roles to grant users access to Easy Plan solutions**.
- Easy Plan is installed in a single pass during the Teamcenter installation.
- Easy Plan compatibility matches Active Workspace compatibility.

#### Caution

If you use work instructions authoring, you must install the Teamcenter database with UTF-8 encoding. If you install any other encoding, garbage characters display in the Work Instructions pane within Easy Plan and in Electronic Work Instructions.

### General enhancements

- To define locations and revision rules specific to an integrated plant BOM, you must set up **integrated plant BOM prerequisites**.
- When a text library object changes, you can now use the **epw\_update\_stx\_elements** utility to find and update HTML preview datasets attached to process or operation revisions.
- Using the **EP\_AllowDropResourceOnTarget** preference, you can now **allow Easy Plan users to populate resources at the process station level** and define the object types onto which users can drag resources.
- Using the **MESetPhysicalAttachmentInContextOfCommonParent** preference, you can now **define how mount and attach relations are stored** at the robot package level during cloning.

- Using the `TCMA_EnableVariantOnStudyManager` preference, you can now **enable the variants feature in Study Manager**.
- Using the `EP_CreateSubtypesForType_Mfg0ProcResource` preference, you can now **create a cobot as a process resource**.
- Using the `EP_LineBalancingUseBottleneckTime` preference, you can now **define whether process resource utilization is displayed in takt time or in bottleneck mode**. The default value for this preference is `false`. Set this preference to `true` to display utilization in bottleneck mode.
- Using the `EP_LineBalancingProcessResourcesTypesForOverview` preference, you can now **define the process resource types are displayed in the Overview tab. You can set the following values for this preference:**
  - **Cobot**
  - **Human**
  - **Machine**
- Using the `EP_LineBalancingProcessResourcesTypesForUtilization` preference, you can now **define which process resource types are in the utilization list**. The end user can then add a value range for each process resource type. You can set the following values this preference:
  - **Cobot**
  - **Human**
  - **Machine**
- Using the `EP_LineBalancingDashboardInformation` preference, you can now **define which information tiles display on the Line Balancing page dashboard**.
- Using the `EP_LineBalancingProductVariantsFilterValues` preference, you can now **control whether to show the Weighted and Maximum product variants in the Line Balancing Product Variant list**. The default values for this preference are `WEIGHTED:true` and `MAXIMUM:true`. To hide the **Weighted** and **Maximum** variants, set the preference values to `WEIGHTED:false` and `MAXIMUM:false`.
- Using the `EP_LineBalancingCycleTimeIgnoreExternal` preference, you can now **define whether to ignore or include external operations when cycle time is computed during line balancing**. The default for this preference is `false`, which means that external operations are included when cycle time is computed. Set this value to `true` to ignore external operations when computing cycle time.
- Using the `EP_LineBalancingProcessResourceTypesForTotalWaitTime` preference, you can now **calculate the total wait time for all process resource types in the preference value**. The default value for this preference is `human`. This preference has the following valid values:
  - **Cobot**
  - **Human**
- Using the `EP_ProcessPlanningViewModeForRoleME` preference, you can now **define role configuration for the Process Planning page**. The default value for this preference is `false`, which configures the page for industrial engineers. Set the preference value to `true` to configure the page for manufacturing engineers.

- Using the **EP\_TaktTimeForProductionProgramDefinition** preference, you can now **define whether to display the takt time based on the production line, or based on the product variant in the production program definition**. The default value for this preference is **Line**. To display the takt time based on the product variant, set the default value for this preference to **ProductionProgramDefinition**.
- Using the **EP\_ShowCloneIndication** preference, you can now **identify the source of cloned objects so that changes are propagated with a full traceability view during cloning**.
- Using the **EP\_hasMixedProductionWPAuthoringPermissions** preference, you can now **author work package content that supports a mixed production solution**.
- Using the **EP\_OperationPageActivitiesTabActivitiesGridAreaColumnConfiguration** preference, you can now **customize the column configuration of the Time Management panel**.
- Using the **EP\_TimeStudiesTableColumnConfiguration** preference, you can now **customize the column configuration of the Time Study table in the Process Planning page**.
- Using the **EP\_TimeStudyTreeColumnConfiguration** preference, you can now **customize the time study tree in the Time Study page**.
- Using the **EP\_TimeStudyPlantBopColumnConfiguration** preference, you can now **customize the column configuration of the plant BOP tree in the Time Study page**.
- Using the **Mfg0MEPlantBOP.Mfg0TimeStudy.CopyPasteTemplate** preference, you can now **control what data is created in a time study**.
- Using the **IsolatedStudySyncPublish** preference, you can now **control the closure rule that is used to publish study objects**.
- Using the **StudyPlanningTimeBasedPublishRule** preference, you can now **control the information that is published from the planning time study to the plant bill of process (BOP)**.
- Using the **TC\_CLONE\_CREATE\_BASED\_ON** preference, you can now **define how the Based On relation is created between masters and clones. For clones with this specific relation, propagation is enabled**.

## Teamcenter Manufacturing Access configuration

Before you can use Teamcenter Manufacturing Access, you must configure the correct hosting preferences for your environment.

### Note

Starting in version 6.2, the **ActiveWorkspaceHosting.PS.URL** is deprecated.

If you use the **ActiveWorkspaceHosting.PS.URL** preference, end users cannot connect to NX or use the MFG Search in Process Simulate.

**Study Manager hosting preferences**

To connect to Study Manager (Teamcenter Manufacturing Access) from...	Configure this hosting preference	Additional information (if applicable)
Teamcenter rich client	<b>TCMAccessHosting.RAC.URL</b>	For a server named <b>hostname</b> on port <b>3000</b> , type: <b>http://localhost:3000</b> .
Process Simulate and NX	<b>TCMAHosting.PS.URL</b>	The format for this preference is <b>http://&lt;serverhost&gt;:&lt;gatewayport&gt;</b> .
Plant Simulation	<b>ActiveWorkspaceHosting.PLAN T.URL</b>	

## 2. What is Teamcenter Easy Plan Deployment?

---

The installation and configuration information for all Teamcenter Easy Plan solution workspaces and components is contained in a single deployment deliverable.

- Common installation steps for all workspaces and components using Teamcenter Environment Manager (TEM).
- Workspace-specific and component-specific installation steps using TEM.
- Common installation steps for all workspaces and components using the Deployment Center.
- Workspace-specific and component-specific installation steps using the Deployment Center.
- Configuration information specific to each workspace and component.



# 3. Installing with Teamcenter Environment Manager

---

## Teamcenter Environment Manager installation overview

Teamcenter Easy Plan is a solution that contains several workspaces and generic components. You can install everything, or you can install just what your end users need. This documentation provides installation instructions for everything in the Teamcenter Easy Plan and Electronic Work Instructions solution. In places where information is workspace-specific or component-specific, instruction options are presented in a table format, to indicate which options you should select.

### Key installation tasks

1. Add Teamcenter Easy Plan **to an installation**.
2. If you are installing Teamcenter Easy Plan, **test the connection** to the Teamcenter database.
3. If you are installing Teamcenter Easy Plan, **configure common options**, and then configure options for workspaces that you installed.

## Add Teamcenter components to an Active Workspace installation

Beginning with version 6.2, Teamcenter Easy Plan, Electronic Work Instructions, and Next Generation Planning are fully integrated with the Active Workspace installation kit. You do not need to perform any extra steps to install these products.

You perform the installation on Teamcenter Environment Manager (TEM) in stages.

- Use TEM to copy data into the environment.
- Select and install the features you need in your environment.

### Note

Teamcenter Environment Manager (TEM) is deprecated and will be obsolete in a future version of Teamcenter. We recommend using Deployment Center to install Easy Plan or Electronic Work Instructions. For further information, please see the following Active Workspace documentation:

- Installing Teamcenter using TEM (Linux)
- Installing Teamcenter using TEM (Windows)
- Installing Teamcenter Using Deployment Center

## Use TEM to copy data into the environment

Perform this procedure first, to copy data from the Active Workspace kit into the correct locations in an environment.

### Procedure

1. Open the operating system **Services** dialog box, and stop all Teamcenter services except the Teamcenter FSC Service.
2. In the operating system **Services** dialog box, verify that these services have a status of **Started**.
  - **Teamcenter Process Manager**—this service is only listed if you installed the Microservice Framework kit.
  - **OracleOraDb11g\_home2TNSListener**
  - **OracleServiceGEOLUSDB**
  - **OracleServiceTC**
3. To install Easy Plan or Electronic Work Instructions, download the Active Workspace kit file from the Support Center to your Active Workspace server.
  - **Tc2412\_wntx64.zip**
  - **Tc2412\_Inx64.zip**
4. To install Easy Plan or Electronic Work Instructions on the Active Workspace server, unzip the downloaded ZIP file to a temporary folder, such as **C:\temp**.

The location where you unzip the file is your *kit\_location*.
5. On the Active Workspace server, choose **Start** → **All Programs** → **Teamcenter** → **Environment Manager**.
6. In the **Maintenance** panel of the **Teamcenter Environment Manager** dialog box, click **Updates Manager** and then click **Next**.
7. In the **Update kit location** field, browse to the Active Workspace kit location and click **Open**.
8. Click **Next** and follow the instructions to complete this part of the installation.

When you complete the update, click **Close**.

## Select and install features

Now use Teamcenter Environment Manager to select features to install.

## Procedure

1. On the Active Workspace server, choose **Start** → **All Programs** → **Teamcenter** → **Environment Manager**.
2. In the **Maintenance** panel of the **Teamcenter Environment Manager** dialog box, click **Configuration Manager** and then click **Next**.
3. In the **Configuration Maintenance** panel, click **Perform maintenance on an existing configuration** and then click **Next**.
4. In the **Feature Maintenance** panel, click **Add/Remove Features** and then click **Next**.
5. In the **Features** panel, browse through the list and expand **Extensions**.
6. In the **Features** panel, expand **Active Workspace Server**.

When you select a workspace or component, the TEM automatically selects all dependencies for that workspace.

See [Full features list](#) for a detailed list of available features.

The following table lists optional features:

### Note

The optional features listed in this table do not apply to Electronic Work Instructions.

To install this workspace or component	Select this feature
Teamcenter Easy Plan—Integrated Manufacturing bill of materials (BOM)	Integrated Manufacturing BOM Integrated Manufacturing BOM Client
Process Planning for BTO/BTS/CTO	(Optional) Easy Plan—Electronics Process Planner  <div data-bbox="768 1318 1516 1499" style="border: 1px solid black; padding: 5px;"> <p><b>Note</b></p> <p>Select <b>Easy Plan—Electronics Process Planner</b> to integrate with Valor Electronics Manufacturing Solutions software.</p> </div> (Optional) Teamcenter Easy Plan—Product Configurator  <div data-bbox="768 1575 1516 1785" style="border: 1px solid black; padding: 5px;"> <p><b>Note</b></p> <p>Select <b>Easy Plan—Product Configurator Client</b> to support Product Configurator in your environment. Product Configurator allows you to enable definitions for variant formulas on operations.</p> </div>

Please see the *Product Configurator (Administrator)* documentation for installation details.

7. Click **Next**, and then click **OK** to verify that the specified services are not running.
8. Follow the instructions on the screen to complete this phase of the installation.  
Click **Close** to exit **Teamcenter Environment Manager**.
9. In the **Confirmation** panel, click **Start** to begin the installation.  
During the installation, you are prompted to provide the *kit\_location* where you saved the Active Workspace zip files, for example, *C:\temp*.
10. Navigate to the *kit\_location*, select the requested zip files from folder and click **Open**.
11. After you complete the installation, click **Close** to exit **Teamcenter Environment Manager**.

# 4. Updating with Teamcenter Environment Manager

---

## Teamcenter Environment Manager update overview

Teamcenter Easy Plan is a solution that contains several workspaces and generic components. This documentation provides update instructions for everything in the Easy Plan solution. In places where information is workspace-specific or component-specific, instruction options are presented in a table format, to indicate which options you should select.

This documentation also provides update instructions for everything in Electronic Work Instructions. In places where information is workspace-specific or component-specific, instruction options are presented in a table format, to indicate which options you should select.

1. Verify that your Teamcenter environment meets requirements before you begin.
2. Update Teamcenter Easy Plan or Electronic Work Instructions on an installation.
3. **Test the connection** to the Teamcenter database.

### Note

If you are installing Teamcenter Easy Plan, this step is not required for Teamcenter Manufacturing Access.

## Update with Teamcenter Environment Manager

Teamcenter Easy Plan is fully integrated with the Active Workspace installation kit. You do not need to perform any extra installation steps.

### Note

Teamcenter Environment Manager (TEM) is deprecated and will be obsolete in a future version of Teamcenter. We recommend using Deployment Center to install Easy Plan or Electronic Work Instructions. For further information, please see the following documentation:

- Installing Teamcenter using TEM (Linux)
- Installing Teamcenter using TEM (Windows)
- Installing Teamcenter Using Deployment Center

## Procedure

1. In the operating system **Services** dialog box, stop all Teamcenter services except FSC services.
2. (Optional) In the operating system **Services** dialog box, verify that these services have a status of started.
  - **Teamcenter Process Manager**—this service is only listed if you installed the Microservice Framework kit.
  - **OracleOraDb11g\_home2TNSListener**
  - **OracleServiceGEOLUSDB**
  - **OracleServiceTC**
3. If you are installing Teamcenter Easy Plan or Electronic Work Instructions, download the Active Workspace kit file from Support Center to your Active Workspace server.
  - **Tc2412\_wntx64.zip**
  - **Tc2412\_Inx64.zip**
4. If you are installing Teamcenter Easy Plan or Electronic Work Instructions, on the Active Workspace server, unzip the downloaded ZIP file to a temporary folder, such as **C:\temp**. This is your *kit\_location*.
5. On the Active Workspace server, choose **Start** → **All Programs** → **Teamcenter** → **Environment Manager**.
6. In the **Maintenance** panel of the **Teamcenter Environment Manager** dialog box, click **Updates Manager** and then click **Next**.
7. In the **Update kit location** field, browse to the Active Workspace kit location and click **Open**.
8. Click **Next**.
9. Verify that the services listed in the dialog box are not running, and click **Close**.
10. In the **Optional Configuration Enhancements** panel, select **Yes**, and then click **Next**.
11. In the **Operating System User** panel, type the operating system administrator user name and password and then click **Next**.

### Note

This is the same ID used to install Teamcenter.

12. In the **Diagnostics** panel, type in a working directory where log files can be created and click **Run**.
13. In the **Teamcenter Administrative User** panel, type the password and then click **Next**.
14. In the **Confirmation** panel, click **Start** to begin the update.

After completing the update, click **Close** to exit Teamcenter Environment Manager.

# 5. Installing or updating with Deployment Center

---

## Install or update with Deployment Center

You can use Deployment Center to perform an installation or an update. For instructions about using Deployment Center, see the Deployment Center documentation available on the Support Center.

Use these instructions if you already have Teamcenter foundation and Active Workspace installed on the target machine onto which you are installing the kit. If you do not have any software installed on the target machine, follow the *Installing and Using Deployment Center* instructions in the Deployment Center documentation. After you perform those tasks, you can perform this procedure.

### Procedure

1. On the target machine, map a drive to the Deployment Center software repository.

For example, if the Deployment Center is installed on `C:\apps`, on the target machine, map a drive to `C:\apps\deployment_center\repo\software`.

#### Caution

You must map a drive to the Deployment Center software repository, or the installation will fail.

2. Log onto the Deployment Center to scan and send the current configuration of your existing environment to the Deployment Center.

#### Note

See *Register Environments* in the Deployment Center documentation to send the current configuration to the Deployment Center.

3. Download the Active Workspace software kit from the Support Center and copy it to the Deployment Center software repository.

#### Note

Teamcenter Easy Plan is fully integrated with the Active Workspace installation kit. You do not need to perform any extra steps to install these products.

4. Refer to *Deploy Software* in the Deployment Center documentation. When you reach the **Applications** tab, scroll through the list and select the workspaces that you want to install or update.  
When you select a workspace or component, the Deployment Center automatically selects all dependencies associated with that workspace.
5. (Optional) If you are installing Teamcenter Easy Plan, you can install the following optional features in your environment:

- **Electronics Process Planner**—integrates Teamcenter Easy Plan with Valor Electronics Manufacturing Solutions software.
  - **Easy Plan—Integrated Manufacturing BOM**—supports Integrated Manufacturing bill of materials (BOMs) in your environment.
  - **Product Configurator Extension for Easy Plan**—supports Product Configurator in your environment.  
Product Configurator allows you to enable definitions for variant formulas on operations. Please see the *Product Configurator (Administrator)* documentation for installation details.
6. Refer to *Deploy Software* in the Deployment Center documentation. When you reach the **Components** tab, click **Show all parameters** ⓘ and type a unique value in the **Port Settings** field.

**Caution**

You must change the port number for before you install or update software Teamcenter Easy Plan, Electronic Work Instructions, or Next Generation Planning on the Deployment Center. If you do not change this value, the Deployment Center fails during future installations and updates.

Each kit that you install must use a unique port number for the Deployment Center.

7. Follow the steps in *Run the deployment scripts* in the Deployment Center documentation to run the scripts for Active Workspace.
8. **Test the connection to the Teamcenter database.**
9. **Configure common** Teamcenter Easy Plan options, and then configure options for workspaces that you installed.

# 6. Completing a Teamcenter Manufacturing Access installation

## Teamcenter Manufacturing Access installation tasks

When you install or update Teamcenter Manufacturing Access, you do not perform several tasks required for other Teamcenter Easy Plan workspaces. Depending on your environment, you do need to complete some or all of the following tasks.

Task title	Complete this task to...
<b>Complete a Teamcenter Manufacturing Access installation</b>	Install and configure Teamcenter Manufacturing Access
<b>Update Teamcenter Manufacturing Access components using TEM</b>	Finish updating Teamcenter Manufacturing Access using the Teamcenter Environment Manager (TEM)
<b>Add Teamcenter Manufacturing Access Study Manager to a rich client</b>	Install Teamcenter Manufacturing Access Study Manager onto a four-tier Teamcenter rich client.
<b>Configure Process Simulate and NX for Teamcenter Manufacturing Access</b>	Configure communication between Process Simulate or NX and Teamcenter Manufacturing Access.  <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><b>Note</b> This task is required for all environments.</p> </div>
<b>Classification search prerequisites</b>	Verify that your environment meets all requirements to enable classification search.
<b>Indexing the classification server</b>	Index the server so that end users can locate classification data.

### End user configuration tasks

Before end users can work in Teamcenter Manufacturing Access, you must complete the following tasks

1. **Configure common Teamcenter Easy Plan options.**
2. **Configure Teamcenter Manufacturing Access.**

## Complete a Teamcenter Manufacturing Access installation

Perform the tasks in this topic to properly install and configure Teamcenter Manufacturing Access.

### Note

The **MFG Search** page and **TcMA Study Manager** are in a Beta state. We are working to have it fully functional in future Active Workspace patch releases.

Process Simulate now supports the Edge browser, and Active Workspace no longer supports Internet Explorer.

Due to these changes, make sure your environment meets the following requirements:

- You must run Tecnomatix 2206.

### Warning

Previous versions of Tecnomatix are not compatible with Teamcenter Manufacturing Access 2412.

- Tecnomatix 2206 requires a special hotfix for Microsoft Edge support.
  - You must install Microsoft Edge on the client machine.
1. Use the Teamcenter Environment Manager (TEM) to install Microservices and Active Workspace gateway.
    - **Client** → **Active Workspace Gateway**
    - **Microservices** → **Microservices Framework**
    - **Microservices** → **Declarative Artifact Service**
    - **Microservices** → **File Repository Service**
    - **Microservices** → **Teamcenter GraphicQL Service**
  2. Install these components on the Active Workspace server:
    - **Server Extensions** → **Active Workspace**
    - **Server Extensions** → **Teamcenter Manufacturing Access**
    - **Server Extensions** → **Active Content Structure**
    - **Server Extensions** → **Reuse and Standardization** → **Classification Server**
  3. Install these components on the Active Workspace client:
    - **Client** → **Active Workspace Client**
    - **Client** → **Teamcenter Manufacturing Access Client**
    - **Client** → **Reuse and Standardization** → **Classification Client**
  4. Install these components on the indexing solution server:
    - **Active Workspace** → **Indexing Server** → **Active Workspace Indexer**
    - **Active Workspace** → **Indexing Server** → **Active Workspace Indexing Engine**

## Configure hosting preferences

Before you can use Teamcenter Manufacturing Access, you must configure the correct hosting preferences for your environment.

### Note

Starting in version 6.2, the **ActiveWorkspaceHosting.PS.URL** is deprecated.

If you use the **ActiveWorkspaceHosting.PS.URL** preference, end users cannot connect to NX or use the MFG Search in Process Simulate.

### Study Manager (Teamcenter Manufacturing Access) hosting preferences

To connect to Study Manager (Teamcenter Manufacturing Access) from...	Configure this hosting preference	Additional information (if applicable)
Teamcenter rich client	TCMAccessHosting.RAC.URL	For a server named <b>hostname</b> on port <b>3000</b> , type: <b>http://localhost:3000</b> .
Process Simulate and NX	TCMAHosting.PS.URL	The format for this preference is <b>http://&lt;serverhost&gt;:&lt;gatewayport&gt;</b> .
Plant Simulation	ActiveWorkspaceHosting.PLAN T.URL	

## Update Teamcenter Manufacturing Access components with TEM

### Note

Before version 2.7, this product was named Teamcenter Manufacturing Access Server. In version 2.7 and later, this product is named Teamcenter Manufacturing Access. These are two different products. During installation, if necessary, the Teamcenter Environment Manager (TEM) automatically deselects the Teamcenter Manufacturing Access Server product for you.

1. Navigate to the `TC_ROOT\install` directory and run the **TEM.bat** file.
2. In **Configuration Maintenance**, select **Perform maintenance on an existing configuration**, and click **Next**.
3. In the **Feature Maintenance** panel, click **Add/Remove Features** and then click **Next**.
4. Browse through the list and expand **Extensions**, and then expand **Active Workspace Server**.
5. Select Teamcenter Manufacturing Access, and click **Next** several times to complete the installation.

The TEM installation automatically selects all dependencies for the workspace.

## Add Teamcenter Manufacturing Access Study Manager to a rich client

Complete these steps to add Teamcenter Manufacturing Access Study Manager to a four-tier Teamcenter rich client.

### Note

You must complete this task to enable full functionality on a four-tier rich client. This task displays the **Open with Study Manager** command, which allows end users to locate and modify study data in Manufacturing Process Planner, and then send the data directly to Teamcenter Manufacturing Access Study Manager.

1. From the *kit\_location*, navigate to the **tc** folder.

### Tip

You defined the *kit\_location* when you **installed** or **updated** Teamcenter Easy Plan.  
For example, you might have downloaded the Active Workspace kit to *C:\Temp*.

2. Unzip **tca0tcmaccess\_rac.zip** into a temporary folder such as *kit\_location\tc\tca0tcmaccess\_rac*.
3. Navigate to the *kit\_location\tc\tca0tcmaccess\_rac\plugins* folder.
4. Copy all JAR files to the *TC\_ROOT\portal\plugins* folder.

## Configure Process Simulate and NX for Teamcenter Manufacturing Access

After you install Teamcenter Manufacturing Access, you can install the required version of Process Simulate or NX. Next, you can configure Process Simulate or NX for Teamcenter Manufacturing Access.

### Configure Process Simulate for Teamcenter Manufacturing Access

When you install Process Simulate on Teamcenter, you must select the **Set Teamcenter Connection information** check box and enter your Teamcenter web server information. This allows Teamcenter Manufacturing Access commands to display in Process Simulate.

### Note

For more information, see the *Tecnomatix Installation* documentation.

In the Tecnomatix- InstallShield Wizard dialog box, select an option:

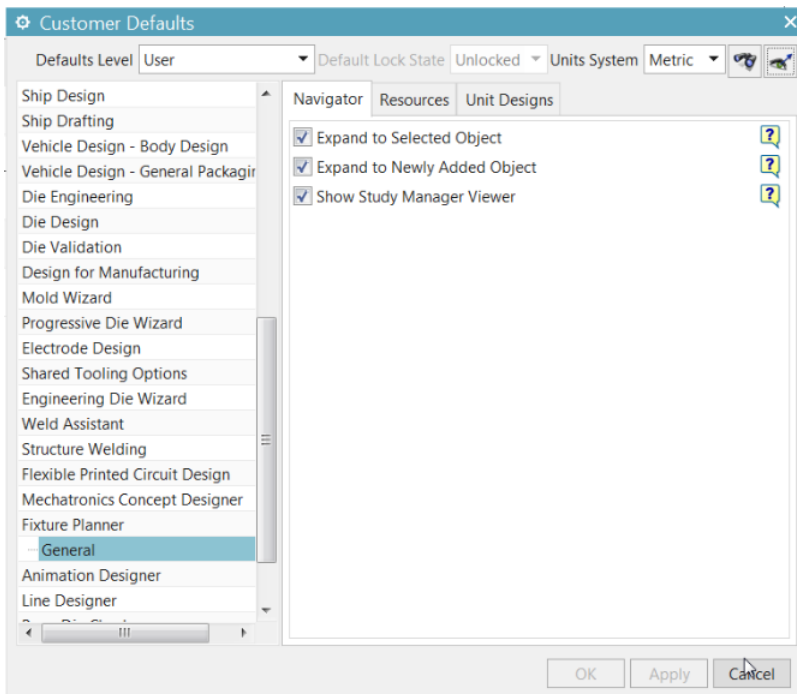
- **Teamcenter Web Server URL**—Enter the complete URL of your Teamcenter server.
- **TCCS Environment**—Enter a Teamcenter environment.

For information on how to configure Teamcenter environments, refer to the *TCCS* sections in the *Teamcenter* documentation. TCCS enables you to select from a list of preconfigured Teamcenter environments.

## Configure NX for Teamcenter Manufacturing Access

After you install the required version of NX, you must activate the Study Manager. For more information about this task, see the *NX Fixture Planner* documentation.

1. Launch NX Fixture Planner.
2. Open the **Customer Defaults** dialog box.
3. Select the **Show Study Manager Viewer** check box and click **OK**.



## Classification search prerequisites

Before you install components to enable classification search, verify that your environment meets these requirements.

## Teamcenter server requirements

### Note

Teamcenter server and Solr database must be installed on the same machine.

You must install the following features on the Teamcenter server:

- Active Content Structure  
This feature is installed with the Active Workspace installation kit.
- Classification Server
- Active Workspace Indexer (TcFTSIndexer)
- Active Workspace Indexing Engine (Solr database)

## Teamcenter Rich Client requirements

1. Navigate to `TC_DATA\fts\solr_schema_files` and verify that `TC_ACE_SOLR_SCHEMA.xml` is installed.
2. Verify that classified data is available in the database.
  - a. Launch a Teamcenter Rich Client and open the **Classification** application.
  - b. View the Classification classes to confirm that they contain data.
3. In the Teamcenter Rich Client, set the `ICS_searchindex_view_visible` preference to **true**.
4. Create an indexing view for each classification class.

Open a Teamcenter command prompt and execute the following command: `sm1utility -create_indexing_views -u=<Tc-admin-user> -p=<password> -g=dba`.

### Note

This utility must be run by a user with Teamcenter administration privileges.

### Tip

To confirm indexing view creation, open the **Classification Admin** dialog and verify that *search index view* is listed below each classification class.

## Index the classification server

After you verify that your environment meets all prerequisites, you can index the classification search data.

**Caution**

If you use grouping or non-storage classes and those classes contain subclasses, please contact the Siemens Digital Industries Software **Support Center** for help with this procedure.

1. (Optional) Test the connection between the Teamcenter server and the Solr database.

Open a Teamcenter command prompt and execute the following command: `runTcFTSIndexer -task=objdata:test`.

2. Select one of the following methods to index the classification search data.
  - Open a Teamcenter command prompt and execute the following command: `runTcFTSIndexer -task=objdata:index`
  - If you use the Dispatcher for indexing, open a Teamcenter command prompt and execute the following command: `runTcFTSIndexer -dispatcher -task=objdata:index`

**Tip**

You can review data logs to troubleshoot any issues. Each time you index data, new logs are generated in `C:\apps\TC12x\TC_Root\TcFTSIndexer\working\TcFtsIndexer_objdata`.

3. Select one of the following methods to restart the indexing search engine.
  - Open a Teamcenter command prompt and execute the following command: `runTcFTSIndexer -task=objdata:sync -interval=25`
  - If you use the Dispatcher for indexing, open a Teamcenter command prompt and execute the following command: `runTcFTSIndexer -dispatcher -task=objdata:sync -interval=25`

**Note**

If the indexer is running as a Windows service, enable the service.

## Recover indexed classification search data

- Open a Teamcenter command prompt and execute the following command: `runTcFTSIndexer -task=objdata:recover`.

**Note**

Only perform this step when classification search indexing fails.

## Configure the environment for traditional Classification when Next Generation Classification is installed

Beginning with Teamcenter Manufacturing Access 5.1, Next Generation Classification is installed. If you want to continue using traditional Classification, you must change some BMIDE values.

1. Change BMIDE values to match the default values required for traditional Classification.

Open a Teamcenter command prompt and execute the following

```
command: business_model_updater -u=<Tc-admin-user> -p=<password> -g=dba  
-file=C:\Users\Administrator\Desktop\BO_type_constant.xml -update=all  
-mode=upgrade
```

**Note**

This utility must be run by a user with Teamcenter administration privileges.

2. Verify that the BMIDE values were updated so that the default value is **false**.

Open a Teamcenter command prompt and execute the following

```
command: gettypeconstantvalue -u=<Tc-admin-user> -p=<password> -g=dba  
-typename=Cls0ClassBase -constantname=Awp0SearchIsClassifyDataIndexed
```

**Note**

This utility must be run by a user with Teamcenter administration privileges.

3. Complete changes to the BMIDE values.

Open a Teamcenter command prompt and execute the following command:

```
bmide_modeltool.bat -u=<Tc-admin-user> -p=<password> -g=dba -tool=all  
-mode=upgrade -target_dir="%TC_DATA%".
```

**Note**

This utility must be run by a user with Teamcenter administration privileges.

**Caution**

You must always execute this command after you make changes to the BMIDE or Classification Admin.

If you do not execute this command, Teamcenter does not complete your changes.

## 7. Additional installation tasks

---

### Test the connection to the Teamcenter database

**Note**

You do not need to perform this procedure when you install Teamcenter Manufacturing Access.

**Procedure**

1. Open an HTML5 certified web browser.

**Note**

Teamcenter Easy Plan does not support Internet Explorer or Edge legacy because these browsers are not compatible with key components of Process Planning for ETO. Siemens Digital Industries Software recommends using the Google Chrome or Firefox browsers.

2. Unless you are installing Next Generation Planning, in the address bar of the web browser, type `http://hostname:Port </>`.

If you are installing Next Generation Planning, in the address bar of the web browser, type `http://hostname:Port/`.

**Example**

```
http://localhost:3000/
```

3. Enter a valid Teamcenter database user ID and password.
4. Click **Login**.

If your logon is successful, you can exit Teamcenter. If you cannot log on, contact Product Lifecycle Management Support to correct the problem.

### Install Opcenter for use in Easy Plan

Manually install Opcenter integration for Easy Plan. This allows you to connect product lifecycle management (PLM) to automation, and to better connect product development and production.

**Procedure**

1. Change the file `<TC_ROOT>/microservices/gateway/config.json`.

- a. Add a route to the routes section of *config.json*.

### Example

```
"opcenterPreview": {  
  "path": "/opcenterPreview",  
  "target": "<BASE_URL>"  
}
```

- b. Add a valid value to the security `csrfExclusions` entry: `/opcenterPreview`.
2. Change the value of the preference `EP_OpenInOpcenterUrl` to define the remaining URL.

### Example

If the Opcenter preview URL is `http://myhost:5555/preview/index.html`, then:

- The `<BASE_URL>` in the route should be `http://myhost:5555`.
- The preference value should be `preview/index.html`.

### Note

If you change the value of the preference `EP_OpenInOpcenterUrl`, the **Open in EWI** command is hidden.

## Updating Easy Plan using the epw\_update\_stx\_elements utility

When an individual standard text library object changes, you can use the command line `epw_update_stx_elements` utility to find and update HTML preview datasets attached to process or operation revisions.

Preview datasets impacted by changes to a single, selected standard text object are updated when you run the utility.

### Requirements

After a standard text library object has been revised, updated and approved, it is a valid candidate for the HTML bulk update utility.

- You must run the utility from a Teamcenter server.
- To provide controlled and predictable results, it is strongly recommended that you update only a single standard library object prior to executing the bulk update. Because an individual HTML document may contain references to multiple standard library elements, all standard library elements referenced within a HTML document are regenerated within the updated HTML document.

- You should run the utility at a time when users are not authoring HTML documents, and you should prenotify users of expected changes. The HTML documents may be in a working or released state.

## Caveats

The following are not part of the **epw\_update\_stx\_elements** utility process and must be addressed separately:

- Manufacturing Execution System (MES) integration.
- Change management.

Teamcenter recommends that you set a single manufacturing change notice (MCN) on a single standard text library object. An in-depth understanding of the nature of changes made by the **update\_stx\_elements** utility is essential to successful results. The TWI preview dataset used by TWI and Electronic Work Instructions (EWI) supports HTML, based on the Teamcenter preference **MEWiPreviewFormat**. Changes made to the TWI preview dataset attached to an **Process/OP** item revision are absolute and datasets have no revision history.

- The utility does not support standard symbol library objects.
- If an HTML library object change requires additional changes to the BOP, such as changes to the number of operations or changes to consumed parts, this is not a valid use of the bulk update utility.

## Run the epw\_update\_stx\_elements utility

The **epw\_update\_stx\_elements** utility lets you systematically find the operation and process revisions that contain work instructions that reference a specific HTML element in Teamcenter, and then update the preview files offline rather than singly online.

### Prerequisites

### Procedure

1. In My Teamcenter, create a change notice and add the standard HTML element revisions to the change notice's **Problem Items** folder.
2. Apply the release status to the change notice revision.
3. Create or identify a saved revision rule that will configure the released revision of the standard HTML elements.
4. Identify or create one or more saved revision rules that will configure the revisions of the operations and processes whose work instructions need to be updated.

You may use more than one rule, such as a latest working rule and a rule for the most recently released and exported revisions.

5. Run the utility to search for processes and operations, specifying as input the change notice ID, the revision rule names, logon credentials, and the **findImpacted** argument.

Upon completion of the search, the change item's **Impacted Items** folder contains any process and operation revisions whose work instructions need to be updated. If necessary, you can review and modify the list.

- a. Run the utility again to update the textual work instruction preview files, this time using the **updateImpacted** argument.
- b. Send the updated process and operation revisions in the **Impacted Items** folder to downstream applications for export.

## Set up integrated plant BOM prerequisites

For users to be able to create a plant bill of materials (BOM) for a specific geographic location in Easy Plan, you must set up plant locations and location codes in Teamcenter. If you are creating multiple plant manufacturing bills of materials (MBOMs), you must define a local revision rule for each.

### Note

On the Teamcenter **Preferences** page, use the site preference **EP\_IntegratedBOMsupportedMBOM\_types** to specify which type of integrated MBOM is available in Easy Plan. Valid values are **GlobalMBOM** or **PLANTBOM**. The default is **GlobalMBOM**.

Plant BOMs require the value **PLANTBOM**.

## Set up plant locations

Log into Active Workspace as a Teamcenter administrator and do the following to add each plant.

### Procedure

1. On the Home page, click **Add** ⊕.
2. In the **Add** dialog box, from the **Type** list, select **Plant Location**, type a **Name** and a **Location Code**, and click **Add**.

The plant BOMs you added are now available to Easy Plan users.

## Set up Revision rules

Open a Teamcenter command prompt to the bin location of the Teamcenter root directory, and use the utility **imb\_create\_plant\_revrule** to create a revision rule for each plant, as in the following example.

```
imb_create_plant_revrule -u=tcadmin -p=tcadmin -g=dba -plant=BERLIN  
-locationcode=BERLIN -revrules="Working; Any Status"
```



# 8. Installing or updating TCM Visualization

## TCM Visualization prerequisites

The Teamcenter Manufacturing (TCM) Visualization kit installs the required services for 3D visualization in Teamcenter Easy Plan workspaces. You can use the Teamcenter Environment Manager (TEM) or the Deployment Center to install TCM Visualization in your environment.

### Note

TCM Visualization for Teamcenter Easy Plan is supported on Process Planning for ETO and on the work instructions page for process stations in the Process Planning for BTO/BTS/CTO workspace. The prerequisites are only required to install and use TCM Visualization for Teamcenter Easy Plan in these workspaces.

Before you install or update TCM Visualization on Teamcenter Easy Plan, complete the following steps:

1. Download the following kits from Support Center:

- Teamcenter 13.x or 14.x base installation
- Teamcenter Active Workspace 2406
- Microservice Framework
- TCM Visualization

The TCM Visualization software kit is available from the Teamcenter downloads page on Support Center. Select **Additional Downloads** → **Manufacturing Visualization**. Download the version that matches your versions of Active Workspace and Microservice Framework.

2. Install Teamcenter with Active Workspace and Microservice Framework as described in the Teamcenter installation guides for Windows and Linux.
3. **Add Teamcenter Easy Plan components to Active Workspace.**

## Licensing disclaimer

The TCM Visualization kit is in a Beta phase for the Teamcenter Easy Plan 2406 release, and does not require an additional license. In future releases, a separate license will be defined for TCM Visualization.

## Add or update TCM Visualization using TEM

You can use the Teamcenter Environment Manager (TEM) or the **Deployment Center** to install Teamcenter Manufacturing (TCM) Visualization. This topic provides instructions to add or update TCM Visualization with TEM.

### Note

Teamcenter Environment Manager (TEM) is deprecated and will be obsolete in a future version of Teamcenter. We recommend using Deployment Center to install Easy Plan or Electronic Work Instructions. For further information, please see the following documentation:

- Installing Teamcenter using TEM (Linux)
- Installing Teamcenter using TEM (Windows)
- Installing Teamcenter Using Deployment Center

### Procedure

1. Add TCM Visualization features to TEM:

- a. Click **Start**→**All Programs**→**Teamcenter**→**Environment Manager**.

Alternatively, launch TEM in Maintenance mode from the Teamcenter command prompt. Next, change to the **install** directory from the Teamcenter root directory, and then run the **tem.bat** file (on Windows systems) or the **tem.sh** script (on Linux systems).

- b. In the **Maintenance** panel, click **Updates Manager** and then click **Next**.
- c. In the **Update kit location** field, browse to the Active Workspace kit location and click **Open**.
- d. Click **Next** and follow the instructions on the remaining panels to complete this part of the installation.

When you complete this part of the installation, click **Close**.

2. Install TCM Visualization features:

- a. Launch TEM in Maintenance mode.
- b. In the **Maintenance** panel, choose **Configuration Manager**.
- c. In the **Configuration Maintenance** panel, choose **Perform maintenance on an existing configuration**.
- d. In the **Old Configuration** panel, select the configuration you want to modify.
- e. In the **Feature Maintenance** panel, select **Add/Remove Features**.
- f. In the **Features** panel, select the following features:
- **TCM Vis — Easy Plan Service**
  - **TCM Vis — Visualization Service**

- g. In the **TCM Visualization Service** panel, **Teamcenter Web Tier URL** box, enter the URL to the Teamcenter web tier, for example, **http://myHost:7001/tc**.
  - h. Proceed through the remaining panels to complete the TCM Visualization installation, then exit TEM.
3. To complete the TCM Visualization installation, update the microservice framework master node and redeploy the Teamcenter web tier as described in the Teamcenter installation guides for Windows and Linux.
  4. Proceed through the remaining panels to complete the TCM Visualization update, then exit TEM.

## Update TCM Visualization with TEM

### Procedure

1. Launch TEM in Maintenance mode.
2. In the **Maintenance Panel** of the Teamcenter Environment Manager dialog box, click **Updates Manager**.
3. In the **Update kit location** field, browse to the Active Workspace kit location and click **Open**.
4. Click Next and follow the instructions to update TCM Visualization, then exit TEM.

## Add or update TCM Visualization with Deployment Center

You can use the Deployment Center or the **Teamcenter Environment Manager (TEM)** to perform an installation or an update in your environment. Use these instructions install or update TCM Visualization with the Deployment Center.

### Procedure

1. Add the TCM Visualization software kit to the Deployment Center software repository as described in *Manage Repositories* in the *Deployment Center Guide*.

#### Note

If you created your Teamcenter environment using TEM, register your environment in Deployment Center as described in *Register environments* in the *Deployment Center Guide*.

Make sure the Active Workspace software kit is in the software repository. Easy Plan applications are included in the Active Workspace software kit.

Teamcenter Manufacturing Access is installed during the Active Workspace installation process. You do not need to download a separate kit for configuration.

2. In Deployment Center, select your existing environment.
3. In the **Applications** task, click **Edit Selected Applications** to add applications. The **Available Applications** panel displays the available applications.

- In **Available Applications**, choose Easy Plan applications:

**(Optional) Product Configurator Extension for Easy Plan**

Supports Product Configurator in your environment. Product Configurator allows you to enable definitions for variant formulas on operations. See the Product Configurator (Administrator) documentation for installation details.

**(Optional) Electronics Process Planner**

Integrates Process Planning for BTO/BTS/CTO with Valor Electronics Manufacturing Solutions software.

- Click Update **Selected Applications** to add applications to the **Selected Applications** list. The added applications show **Pending Install** status in the **Selected Applications** list.
- Proceed to the **Components** task. Select the **Microservice Node** component and click **Show all parameters**. Type a unique value in the **Port Settings** field.

**Caution**

You must change the port number before you install or update Easy Plan on the Deployment Center. If you do not change this value, the Deployment Center fails during future installations and updates.

Each kit that you install must use a unique port number for the Deployment Center.

Note any components whose configuration status is not **100%**. Update each component's required values, and then click **Save Component Settings** until all components show a configuration status of **100%**.

- Proceed to the **Deploy** task. Click **Generate Install Scripts** to generate deployment scripts to update affected machines. When script generation is complete, note any special instructions in the Deploy Instructions panel.
- Locate deployment scripts, copy each script to its target machine, and run each script on its target machine.

For more information about running deployment scripts, see the *Deployment Center Guide*.

- To complete the TCM Visualization installation, update the microservice framework master node and redeploy the Teamcenter web tier (*tc.war*) as described in the Teamcenter installation guides for Windows and Linux.

# 9. Configuring access by groups and roles in Teamcenter Easy Plan

---

## Configuring user access

Starting with version 6.2, Easy Plan no longer uses workspaces to define what end users see upon login. Now end users are all part of the same workspace, and the solutions in which they work are based on preferences. Those preferences are part of the installation process.

## Groups and roles

Preferences are defined by groups and roles, and you can use those groups and roles to grant end users access to the data and solutions they need.

### Caution

Teamcenter Easy Plan does not provide a set of default groups and roles, such as the ones listed in this topic. The groups and roles listed in this topic are examples only.

You must create the groups and roles that meet your organization's requirements.

## Groups

You can define groups based on the solutions required in your environment. Here are some examples of groups that you can define:

- Automotive (Auto)
- Component manufacturing (ComponentMFG)
- Consumer packaged goods (CPG)
- Large engineer to order (LargeETO)
- Small ETO (SmallETO)
- White goods (WhiteGoods)

## Roles

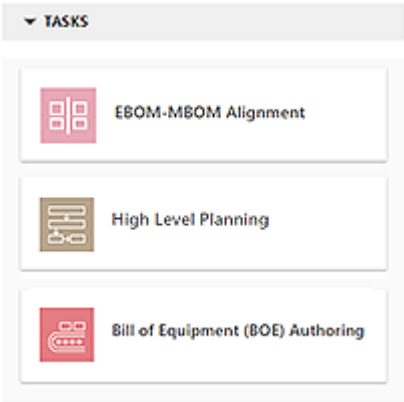
You can assign one or more roles to a group. Here are some examples of roles that you can create, define, and assign to a group:

- **Planner**—these end users have read and write access to process planning pages and related data.

- **Operator**—these end users have read and write access to Electronic Work Instructions data.
- **ME**—these end users have read and write access to EBOM-MBOM alignment data.

## Preferences

Preferences are defined by groups and roles, and there is a different configuration for each preference. When an end user logs in with the correct preference, they get the solution or pages they need.

Preference name	Specifies	Values
<b>EP_WorkPackageContentType</b>	<p>Which structures are allowed in work packages on the <b>Manage Work Package</b> page.</p> <div style="border: 1px solid yellow; padding: 5px; margin: 10px 0;"> <p><b>Note</b></p> <p>You must configure this preference to ensure that the correct <b>Tasks</b> tiles display on the <b>Manage Work Package</b> page.</p> </div> 	<p>Product</p> <p>PlantBOP</p> <p>ProductBOP</p> <p>EBOM:PSBOMViewRevision</p> <p>MBOM:PSBOMViewRevision</p> <p>Plant:PSBOMViewRevision</p> <p>BOP:PSBOMViewRevision</p>
<b>EP_hasMixedProductionWorkPackageAuthoringPermissions</b>	<p>Whether users can author work package content that supports a mixed production solution. Set this preference to <b>true</b> to enable mixed production work package authoring for users.</p>	<p>true</p> <p>false</p>
<b>EP_PlanningForSmallProduct</b>	<p>Users work with small products in your environment.</p>	<p>true</p> <p>false</p>

	<p><b>Note</b></p> <p>If you enable this preference, the <b>High Level Planning</b> page and related features do not display.</p>	
<b>EP_ShowOnlyEWI</b>	Work packages created by this preference can only be opened in Electronic Work Instructions.	true false
<b>EP_ProductVariantsTiles</b>	Which tiles are displayed for variants on the <b>Manage Work Package</b> page.	ConfiguratorContext ProductionProgram
<b>EP_EnableLineBalancing</b>	Line balancing features are enabled.  You can enable this preference during installation.	true false
<b>EP_TimeAnalysisMode</b>	Which time analysis mode is applied to data.	TICON  ACTIVITIES  CLASSIC_ACTIVITIES



# 10. Configuring Teamcenter Easy Plan

## Configuring common Easy Plan options

### Common Easy Plan configuration options

Easy Plan workspaces and components share several common configuration options. Use the matrix to determine shared configuration options.

Options	Process Planning for BTO/BTS/CTO	Process Planning for ETO	TCMA
Active Workspace Search capabilities	✓	✓	✓
Autocomplete source for parts in the Work Instructions Editor	✓	✓	X
Configure change management	✓	✓	X
Limits for object type and subtype lists	✓	✓	✓
Open Teamcenter Easy Plan applications from Manufacturing Process Planner	✓	✓	✓
Other key preferences	✓	✓	✓
Reporting capabilities	✓	✓	X

Table column preferences	✓	✓	✓
Time analysis	✓	✓	X
Time unit properties	✓	✓	X
Time analysis priority	✓	X	X

## Active Workspace Search capability

Active Workspace indexing provides the basis for full-text search from the Active Workspace client and Easy Plan workspaces. To search any product structure, you must first index it.

See *Indexing* in the *Active Workspace Deployment* documentation for details on the installation and configuration of this search mechanism.

## Auto-predict source for parts in the Work Instructions Editor

The **EP\_AutoPredictForPartsSource** preference defines the source that automatically predicts and completes parts in the **Work Instructions Editor**. You can use this preference in Process Planning for BTO/BTS/CTO and Process Planning for ETO.

The accepted values for this preference are:

- **Assignments**—auto-predict list includes the parts that are assigned to the selected operations.
- **Associated**—auto-predict list includes the first-level children of the associated assembly.

The default protection scope for this preference is **SITE** and the category is **EasyPlan**.

## Limits for object type and subtype lists

When you create a new object in Teamcenter Easy Plan, you must select a type from the list. By default this list displays the object and all associated subtypes. You can limit object subtypes to match your business environment.

### Note

If the preference does not exist for a type or is empty, all available subtypes are displayed. There are no default values for these preferences. If there is only one valid subtype defined for one of these preferences, that subtype is automatically selected.

There are preferences for several object types.

For a plant:

- **EP\_CreateSubtypesForType\_MEWorkarea**—defines the list of work area types (subtypes) for the root plant node in Process Planning for BTO/BTS/CTO or Process Planning for ETO.
- **EP\_CreateSubtypesForRootType\_MEWorkarea**—defines the list of work area types (subtypes) within a plant structure in Process Planning for BTO/BTS/CTO or Process Planning for ETO.

For a plant bill of process (BOP):

- **EP\_CreateSubtypesForRootType\_MfgOMEPlantBop**—defines the list of plant bill of process (BOP) types (subtypes) that end users can define in a work package in Process Planning for BTO/BTS/CTO. The base type is **MfgOMEPlantBop**.
- The **EP\_CreateSubtypesForType**—preference defines the subtypes listed when end users create a work package. The default value is **Type**.
- **EP\_CreateSubtypesForType\_MEProcess\_InProductBop**—defines the subtypes listed when end users create a functional group in a product BOP. The default value is **MbcOFuncGroup**. If you need to maintain compatibility with data created in Teamcenter Manufacturing Process Planner (or add any other data derived from MEProcess), change this value to **MEProcess**.

#### Note

A functional group is an object used to group operations in the product BOP. In Teamcenter Manufacturing Process Planner, the MEProcess object type is used as the functional group.

- **EP\_SearchInBOEPropertyNames**—allows users to search in the **Resources** tree, also known as the Bill of Equipment (BOE), on the **Process Planning** page. This preference value must be the "User Entry Name" of the property in the query.

#### Note

You must also include the properties listed in this preference in the query that you specify in the **EP\_SearchInBOEByPropertyQueryName** preference.

- **EP\_SearchInBOEByPropertyQueryName**—defines the query that is used to search in the **Resources** tree, or the BOE in the **Process Planning** page.
- **EP\_ShowFullBOEInResources**—enables Easy Plan to display the full BOE structure in the **Resources** tab on the **Process Planning** page. When this preference is enabled, users can select objects in the BOE and assign them to a process or operation by dragging them to the **Resources** tab for the selected object.

You must set this preference to **True** to enable the feature. In addition, you must add **EP\_ShowFullBOEInResources** to the **AWC\_Startup\_preference** in the Teamcenter rich client.

- **MfgMEPlantBOP.MfgOMEPlantBOP.PasteDuplicateTemplate**—enables Easy Plan users to clone existing functional groups in the **Product BOP Authoring** and **Process Planning** pages into process areas, process stations and process lines based on cloning rules.

For a product BOP:

- **MEProductBOP.MEProductBOP.PasteDuplicateTemplate**—enables Easy Plan users to clone existing functional groups in the **Product BOP Authoring** and **Process Planning** pages into process areas, process stations and process lines based on cloning rules.

For a process resource:

- **EP\_CreateSubtypesForType\_Mfg0ProcResource**—generates a list of values to display when end users create a process resource. The default values for this preference are:
  - **Mbc0HumanPR**
  - **Mbc0MachinePR**
  - **Mbc0CobotPR**

For a process area:

- **EP\_CreateSubtypesForType\_Mfg0MEProcArea**—limits the types of process areas in Process Planning for BTO/BTS/CTO (for example, process line, process station, and process area).

For a process station:

- **EP\_AllowDropResourceOnTarget**—allows Easy Plan users to populate resources at the process station level, and defines the object types onto which users can drag resources. This preference supports multiple values separated by commas using the add value function. The default values for this preference are:
  - **Mfg0BvrOperation**
  - **Mfg0BvrProcess**
  - **Mfg0BvrProcessResource**

For an engineering bill of materials (BOM, EBOM) or a manufacturing bill of materials (MBOM):

- **EP\_SearchSubtypesForEbom**—defines the subtypes listed when end users create work packages. Ensure that you set this preference so that people can configure EBOMs in your environment.
- **EP\_SearchSubtypesForMbom**—defines the subtypes listed when end users create work packages. Ensure that you set this preference so that people can configure MBOMs in your environment.

For an MEProcess:

- **EP\_CreateSubtypesForRootType\_MEProcess**—defines the list of process types (subtypes) for the root process.
- **EP\_CreateSubtypesForType\_MEProcess**—defines the list of process types (subtypes) within a process structure.
- **Ics\_classifiable\_types**—enables the classification of processes and operations. Set the value of this preference to **MEProcess**, **MEProcessRevision**, **MEOP**, and **MEOPRevision**.

For an operation (MEOP):

- **EP\_CreateSubtypesForType\_MEOP**—defines the list of operation types (subtypes) within an operation structure in Process Planning for BTO/BTS/CTO or Process Planning for ETO.
- **EP\_CreateSubtypesForType\_MEOP\_InProductBop**—defines the list of operation types (subtypes) within an operation structure in a product BOP Process Planning for BTO/BTS/CTO or Process Planning for ETO. The default value for this preference is **MEOP**.
- **Ics\_classifiable\_types**—enables the classification of processes and operations. Set the value of this preference to **MEProcess**, **MEProcessRevision**, **MEOP**, and **MEOPRevision**.

## Relation types and file types

You can use these preferences to configure relation types and file types in your environment.

### Note

If you modify any of these preferences, you must restart the server for the changes to take effect.

- The **EP\_LayoutRelation** preference defines how relation types are set for process areas and line layouts in Teamcenter Easy Plan. This is a single value. The default value is **Mbc0LayoutRelation**.
- The **EP\_FileTypesForLayoutDataset** preference controls which file types end users can upload as process area and line layouts. Only 2D image file types are supported. Default file values include **bmp**, **jpeg**, **jpg**, **pdf** and **png**.
- The **DRAG\_AND\_DROP\_default\_dataset\_type** preference controls the relation type assigned to a process area or line layout when end users upload it into Teamcenter Easy Plan. The format for each value is **FileExtension:DatasetType**. For example, **jpeg:Image**.

## Add an MBOM to a work package by mirroring an EBOM structure

In the manufacturing bill of materials (**MBOM**) panel on the **Manage Work Package** page, the option **Add MBOM using Mirror** is available when users click **Add** ⊕. Based on existing Teamcenter preferences, the **Add MBOM using Mirror** command adds a linked MBOM to your work package by mirroring an engineering bill of materials (EBOM) structure.

In accordance with existing Teamcenter MBOM mirror preferences, the **Add MBOM using Mirror** command is enabled for the specified EBOM structure.

- If an MBOM with an expected ID already exists in the database, that MBOM is added to the work package.
- If such an MBOM does not exist, a new MBOM is created.

To enable this option, you must define correct values for the following Teamcenter preferences:

- **MEMBOM\_Mirror\_TypePrefixSuffix = Item,M\_**

- **MEMBOM\_Mirror\_MakeRules** = **KEY:Usage\_ArchitectureId,VALUE:H | VALUE:L**

### Note

The above **KEY** values are examples.

Additional MBOM mirroring preferences that you can use include:

- **MEMBOM\_Mirror\_AlignProperties**
- **MEMBOM\_Mirror\_IgnoreRules** (Value: **KEY:GCS CP,VALUE:SKIP,ACTION:Skip | VALUE:TRAVERSE,ACTION:Traverse**)
- **MEMBOM\_Mirror\_MakeRules** (**KEY:GCS CP,VALUE:Make | VALUE:Phantom**)
- **MEMBOM\_Mirror\_TypePrefixSuffix**

### Note

- If you also want to copy EBOM attributes from an EBOM to an MBOM, according to property type, you can align properties using the preference **MEAlignedPropertiesList** or the preference **MEMBOM\_Mirror\_AlignProperties**.
- If you create a mirrored MBOM from a source EBOM, later remove that MBOM from your work package, and then try again to create a mirrored MBOM, the source EBOM is mirrored again unless you or your administrator change the value of the preference **MEMBOM\_Mirror\_TypePrefixSuffix**.

## Change management

Change Management preferences are also used by Teamcenter Manufacturing Process Planner. For more information, see the *Teamcenter Manufacturing Process Planner* documentation.

- The **MEReleaseStatusListForAutoRevise** preference contains a list of valid release status names. The default values are **TCM Released** and **PlanningSyncState**. Replace these values to match your business needs.

### Note

This preference also controls revisioning on stasured objects. If a user has revision rights and attempts to modify a stasured object, Teamcenter Easy Plan prompts the user to create a new revision.

### Example

A user moves an operation to another station. If one of the stations is released, Teamcenter Easy Plan revises it.

- The **MEMCN\_change\_notice\_mandatory\_types** preference requires Process Planning for BTO/BTS/CTO and Process Planning for ETO users to create a manufacturing change notice before they can edit certain types of BOPs.

#### Note

This preference is shared with Teamcenter Manufacturing Process Planner. For more information, see the *Manufacturing Process Planner* and *Administering Manufacturing Planning* documentation.

- The **MEMCN\_management\_enabled** preference enables ChangeNoticeRevision-related commands to display in Teamcenter Manufacturing Process Planner application. The default value is **false**. Set this preference to **true** to display the commands.
- The **MEMCN\_release\_statuses** preference defines the list of mutually exclusive release statuses for a ChangeNoticeRevision. A ChangeNoticeRevision is associated to a Bill of Material (BOM) window, and only one release status may be associated to the ChangeNoticeRevision at any stage. The default values are **Pending** and **TCM Released**. Replace these values to match your business needs.

## Datasets and occurrence types

You can specify these dataset and occurrence type preferences in your environment.

- **EP\_AssignedDocumentsItemType**—defines the list of object types that Teamcenter Easy Plan displays and that end users can paste into the **Document** tab.

You can define the object type from either the **Item** or **Document** type. The value for this preference is the internal object name, for example, **Document** or **custom\_type**.

- **EP\_ProductBopPlantBopAccountabilityCheckDataset**—Configures the dataset name to use for the partial match check in **Show indication information** mode. This preference is only available in Process Planning for BTO/BTS/CTO.
- **MBC\_RelationTypeAssignedDocuments**—Contains a list of occurrence types that identify the assigned items that are handled as document items. Those occurrence types display on the **Documents** subtab. The default value is in the format <relation\_type>:<dataset\_type>.

You can define the object type from either the **Item** or **Document** type. The value for this preference is the internal object name. The default value is **MbcOEPDocument**.

- **MBC\_VisibleDatasetTypes**—Specifies which datasets display in the **Files** tab. The default value is in the format <relation\_type>:< dataset\_type>.
- **MEDisplayOccurrenceType**—Defines the conditions in which occurrence types display. The value for this preference is in the format <relation\_type>:< dataset\_type>. Some of the default values are:
  - **MEOP:Document:MBC\_RelationTypeAssignedDocuments**
  - **MEProcess:Document:MBC\_RelationTypeAssignedDocuments**

### Note

The list of occurrence types for consumed parts is only populated from the **MEDisplayOccurrenceType** preference.

- **MEReleaseStatusList**—Adds the **Attach** file command on the **Information** tab. This command is only available for dataset types that you specify in this preference. The values for this preference follows the format <relation type>:<dataset type>.

## Process area nodes

You can use the following preferences to specify which datasets attach to process area nodes.

### Note

You must configure both the **DRAG\_AND\_DROP\_default\_dataset\_type** and **MBC\_AllowedDatasetTypes** preferences before end users can attach movies, such as MP4 files, to an operation in your environment.

- **DRAG\_AND\_DROP\_default\_dataset\_type**—Contains a list of default dataset types associated to files dragged in Teamcenter.

The default value is in the format <file\_extension>:<dataset\_type>. For example: **doc:MSWord**.

### Note

To attach movies such as MP4 files to an operation, add **mp4:CAEAnalysisDS** to the list of values.

- **EP\_FileDatasetRelations**—Contains a list of default dataset types associated to files dragged in Teamcenter. This preference must be set so users can drag parts and files onto the **Editor** in the **Work Instructions Authoring** page. Set the preference to include the following relation type values:
  - IMAN\_specification
  - IMAN\_reference
  - IMAN\_Rendering
  - TC\_Attaches
  - IMAN\_UG\_altrep
  - IMAN\_UG\_scenario
  - IMAN\_Simulation
- **MBC\_AllowedDatasetTypes**—Contains a list of allowed dataset types for the **Create dataset** and **Quick overview** dialog boxes. The default value is in the format <relation\_type>:< dataset\_type>.

**Note**

To attach movies such as MP4 files to an operation, add **IMAN\_reference:CAEAnalysisDS** to the list of values.

## Other key preferences

You may want to set these other key preferences in your environment.

- **AWS\_SearchPreFilter\_Property2**—Configures the list of search types on the main page. Active Workspace also uses this preference.
- **<class name>.CellProperties**—Configures the cell properties for each object type. This preference controls the data displayed in search results and in the breadcrumb.

**Note**

You can also configure the **Details** tab for each object page. This tab shows the summary style sheet for the open object. You can modify these style sheets to configure properties:

- **<class name>easyplan.CREATERENDERING**—Configures rendering preferences. This preference activates the create style sheets option in Teamcenter Easy Plan application **Create** dialog boxes. For example, to use a rendering style sheet for MEOP, you create a preference named **MEOPeasyplan.CREATERENDERING**.

**Note**

You must register style sheets in Active Workspace or Teamcenter before your end users can use style sheets. For more information, see the *Active Workspace* and *Teamcenter* documentation.

## OpenTeamcenter Easy Plan applications from Manufacturing Process Planner

**Note**

This functionality is optional.

Use the Teamcenter rich client to add the following application commands to Teamcenter Manufacturing Process Planner:

- **Open with Process Planning for BTO/BTS/CTO**, used in Process Planning for BTO/BTS/CTO.
- **Open with Study Manager**, used in Teamcenter Manufacturing Access
- **Open with Easy Plan Process Planning for ETO**, used in Process Planning for ETOProcess Planning for ETO.

Use the **EP\_domainUrl** preference to point to the Active Workspace application server. For example, if your server name is **hostname** and the port is **3000**, type **http//:localhost:3000**.

**Note**

To add the **Open with Study Manager** command for Teamcenter Manufacturing Access, set the **EP\_domainUrl** preference to point to the Active Workspace application server. For example, if your server name is **localhost** and the port is **3000**, type **http://:localhost:3000**.

## Reports

End users can generate reports in either Microsoft Excel or PDF file format. As an administrator, you can add, remove, or modify default reports. For each report you modify, you must define these settings:

- A display name, which is shown in the *Create Reports* dialog box.
- The report output format (Excel or PDF).

### Excel format

Easy Plan provides out-of-the-box templates to generate reports in Microsoft Excel format. You can also define reports specific to your environment. When you define Excel reports, you must include the display name, the report output format, and the Excel template used to create the report. Use this format for Excel reports:

```
<report type>:EXCEL:<TemplateDatasetName>
```

For example, **EPExcelPAREport:EXCEL:ExcelReportTemplate**

**Note**

Reports generated in Excel rely on Excel reporting capabilities in the Teamcenter rich client. For information, see the Teamcenter rich client documentation about *Exporting Data to Microsoft Excel*.

### PDF format

You can define PDF reports specific to your environment. When you define PDF reports, include the display name and report output format. In addition, include:

- An XSL style sheet to determine the page layout.
- An Apache formatting objects processor (FOP) configuration data set to determine the output file format.
- The object types that are applicable for this report type.

Use this format for PDF reports:

```
<report type>:<output format>:<transfer mode>:<stylesheet dataset>:
<Logo icon for the report>:<FOP configuration dataset>
```

For example, **SFPMaterialReport:PDF:SFP\_OperationReportTM:SFP\_MaterialReportFormatDataset:SFP\_ReportLogoDataset:SFP\_ReportFOPConfigurationDataset**

## Report definitions

The **Mbc0Report** Teamcenter preference contains report definitions and defines report properties. Each entry in the **Mbc0Report** preference represents a report type and the details needed to generate the report. Each object type contains a list of relevant reports for that type. Edit this preference file to add, remove, or modify reports.

Each report type is related to an object type. To relate a report type to an object type, use these Teamcenter preferences:

- **MBC\_REPORT\_Mfg0BvrOperation**, which provides a list of report types for operations. The default values are:
  - **SFPOperationReport:Operation Report**
  - **SFPMaterialReport:Material Report**
- **MBC\_REPORT\_Mfg0BvrProcess**, which lists reports for process objects.
- **MBC\_REPORT\_Mfg0BvrProcessStation**, which provides a list of report types for process stations. The default values are:
  - **SFPStationReport:Station Report**
  - **SFPMaterialReport:Material Report**

### Note

The format for these Teamcenter preferences entries is `<<report type (string identifier for the report)>:<report display name>>`. For example, the entry **SFPMaterialReport:Material Report** tells you that when a user selects the **Material Report** from the **Create Report** dialog box, the **SFPMaterialReport** runs.

## Install prerequisites for PDF reports

You must install the Apache Formatting Objects Processor (FOP) to generate PDF reports.

1. Verify that Java is installed on the server machine, and that the **JAVA\_HOME** environment variable points to the location where Java is installed.

### Note

Java must be installed before you can install Apache FOP.

2. Browse to the Apache FOP page (<http://xmlgraphics.apache.org/fop/download.html>) and download version 2.7 or earlier for your operating system:

### Caution

Apache FOP version 2.8 is not compatible with Teamcenter reporting capabilities.

- For a Windows operating system: *fop-n.n-bin.zip*
- For a Linux operating system: *fop-n.n-bin.tar.gz*

3. Extract the ZIP or GZ file on the server machine into the install folder you want to use.

Apache FOP creates a folder when it is extracted. For example, if you extract the file into the **C:\apps**, Apache FOP creates the **C:\apps\fop-n.n** folder.

### Tip

This path cannot contain any spaces.

4. Browse to the **fop** subfolder.

For example, browse to **C:\apps\fop-n.n\fop**.

5. Create or edit a system environment variable named **TC\_FOP\_HOME**, and set its value to the **fop** folder.

The path you specify should contain the *fop.bat* file. For example, type **C:\apps\fop-n.n\fop**.


6. Edit the *fop.bat* file to support files containing large amounts of data:

- Locate the **JAVAOPTS** definition in the file.
- Add the **-Xss4m** parameter to the end of the definition.

7. Save and close the file.

## Configure a custom report

You can add, delete, or modify the list of out-of-the-box reports to fit your environment.

1. Start Teamcenter rich client and log in as an administrator.
2. In Teamcenter, choose **Edit → Options**  and click the **Search** tab at the bottom.
3. In the **Options** dialog box, locate the **Mbc0Report** preference.
4. Edit the Teamcenter **Mbc0Report** preference to add a new report.

**Note**

You can also modify or delete an existing report on the list.

5. Exit the Teamcenter rich client.

If you create a PDF report, you must also do the following:

- Open a Teamcenter command window.
- Add a new style sheet data set. For example, in the Teamcenter command window, type:

```
import_file -u=<Tc-admin-user> -p=<password> -g=dba -f=c:/temp/
MaterialReport.xsl
-d=My_CustomReportFormatDataset -ref=XSL -type=XMLReportFormatter -de=r
```

In this command, **-f** is the full path and file name of the XSL file, and **-d** is the new data set name.

**Note**

This utility must be run by a user with Teamcenter administration privileges.

## Table columns

On the **Process Planning** page, you can configure which table columns are displayed. Each table uses a preference to control the properties displayed in it. Each preference has the format: **EP\_<<tab name>><grid name>>ColumnConfiguration**. Each column is one property of the objects displayed in the table.

**Tip**

The preferences listed here control how data is displayed in the Process Planning for BTO/BTS/CTO and Process Planning for ETO workspaces. See the *Active Workspace Installation* for details about the properties associated with the preferences.

The **EP\_AssignedWorkareaTabColumnConfiguration** preference defines properties in Process Planning for BTO/BTS/CTO and Process Planning for ETO tables. This preference controls the **Workarea** table columns that display objects assigned to a selected operation. Values for **EP\_AssignedWorkareaTabColumnConfiguration** include:

- **ImanItemBOPLine.object\_string**
- **ImanItemBOPLine.bl\_rev\_object\_name**
- **ImanItemBOPLine.bl\_rev\_object\_desc**

Here is a list of preferences you can use to control properties displayed in Process Planning for BTO/BTS/CTO tables:

- **EP\_BoeTreeTableColumnConfiguration**—controls the bill of equipment (BOE) items that are displayed in table columns on the **Resources** tab.
- **EP\_StationPagePlanningTabOperationsColumnConfiguration**—controls the operation table columns in the process station object **Planning** tab.
- **EP\_ProcessAreaPageProcessAreaGridColumnConfiguration**—controls the columns of the **Area** table on the process area object page.
- **EP\_ProcessPageTabProcessAssignedToolsAreaColumnConfiguration**—controls the columns of the **Assigned Resources** table on the process area object page. Values include **ImanItemBOPLine.bl\_rev\_fnd0lcsClassNames** and **ImanItemBOPLine.bl\_occ\_type**.
- **EP\_PartAssignmentTabProductAreaColumnConfiguration**—controls the columns of the **Product** table on the **Part Assignment** subtab.
- **EP\_ProductTabTreeGridColumnConfiguration**—controls the column configuration of the **Product** panel on the **Process Area** page.

#### Note

Set the **EP\_ProductTabTreeGridColumnConfiguration** preference if you have any version earlier than Teamcenter 12.4.0.2 installed. The application will display the entire manufacturing bill of materials (MBOM) in the **Product** panel on the **Process Area** page.

- **EP\_TargetAssembliesTabTableColumnConfiguration**—controls the column configuration in the **Target Assembly** tab on the **Process Sequence** panel. The **Process Sequence** panel is displayed when end users perform high-level scoping for an MBOM at a specific level in the plant BOP.

#### Note

This feature requires Teamcenter 12.4.0.2 or later. You can use the **EP\_TargetAssembliesTabTableColumnConfiguration** preference to set properties in the **Target Assembly** tab.

If you are running an earlier version of Teamcenter, you can set the **EP\_ProductTabTreeGridColumnConfiguration** preference.

You can use this list of preferences to control columns displayed in Process Planning for ETO tables:

- **EP\_ProcessPageTabProcessDetailsAreaColumnConfiguration** controls the process and operations table columns.
- **EP\_PartAssignmentTabProductAreaColumnConfiguration** controls the product table columns.
- **EP\_ProcessTreeAssemblyPlanningColumnConfiguration** enables the **Classification** column on the **Process** tree table. To display this column, add the **ImanItemBOPLine.bl\_rev\_fnd0lcsClassNames** value to the preference.

## Variant rules

Starting in Teamcenter Easy Plan 2406, end users can save global or local variant rules while working in the **EBOM-MBOM Alignment**, **High Level Planning**, and **Process Planning** pages within Teamcenter Easy Plan.

The **EP\_SVROwningItemAllowedTypes** preference defines the object types on which end users can save a local variant rule in Teamcenter Easy Plan.

This preference is passed as a string property and accepts multiple values delimited by colons (:) in the following format: *MfgOBvrObjectType*.

The default value is **MfgOBvrProcessLine**.

End users can save variant rules on objects in the following structures:

- Manufacturing bill of materials (MBOM)
- Plant bill of process (BOP)
- Classic BOP
- Custom object types

### Note

We recommend defining types that represent a project or an order, for example a process line or a process zone, and not common types like an operation or a process.

In addition, you must add **EP\_SVROwningItemAllowedTypes** to the **AWC\_Startup\_preference** in the Teamcenter rich client.

See the *Preferences* section in the *Active Workspace Administration* documentation for a description of preferences and how to set them.

## Configure manufacturing time

### Add the MTM data card to Teamcenter Easy Plan

The MTM data card performs time analysis in Teamcenter Easy Plan workspaces.

#### Procedure

1. Browse to the kit location `\tc` folder.
2. Unzip the `ept0timeanalysis_install.zip` file.

3. Browse to the `ept0timeanalysis_install\install\ept0timeanalysis\jar` folder.
4. Copy the `*mtmdatacardutility*.jar` file to the `TC_ROOT\portal\plugins` folder.
5. Unzip the `MTMDataCard.zip` file.
6. Copy the `MTMDataCard` folder to a location on the Teamcenter server, such as `C:\Program Files\Siemens\MTMDataCard`.

**Tip**

- You can also copy the `MTMDataCard` folder to a mapped network drive on the Teamcenter server.  
You must copy the `MTMDataCard` folder to a mapped network drive. Teamcenter Easy Plan does not support Universal Naming Convention (UNC) file paths.
- Note the path to the `index.html` file in this folder. You need this information to **configure time analysis capabilities for end users**.

7. (Optional) Run the `TC_ROOT\portal\registry\genregxml.bat` file to ensure that the `*mtmdatacardutility*.jar` file is loaded into the Teamcenter rich client, and ready for time analysis configuration.

**What to do next**

**Note**

Before end users can perform time analysis, you must **configure a preference for the MTM data card**.

**Add custom MTM data cards to Easy Plan**

You can add custom MTM data cards to Teamcenter Easy Plan, and then manufacturing engineers can add the MTM codes as activities for a specific operation. All custom MTM data cards used in your environment must meet the following requirements when you add them to Teamcenter Easy Plan.

Requirement	Details
MTM data cards	Each MTM data card must be standalone. You cannot group multiple data cards into a single HTML file.

<p>&lt;script&gt; tag with empty function</p>	<p>You must create an HTML file for each data card. The HTML file must contain a script tag, and inside that tag there must be an empty function.</p> <pre data-bbox="857 327 1516 596"> &lt;script&gt;  function MTMnavigate() {}  &lt;/script&gt;</pre>
<p>Activity element</p>	<p>For every HTML element &lt;?&gt; that represents an activity</p> <p>No href attribute (if using &lt;a&gt; tag)</p> <p>Add onClick attribute:</p> <pre data-bbox="857 884 1516 974"> onclick="MTMnavigate(0, &lt;CODE&gt;, ', ', &lt;TIME&gt;, &lt;DESC&gt;);"</pre>
<p><i>customDataCardsFolder</i></p>	<p>Add the <i>customDataCardsFolder</i> folder in the <i>assets\cards</i> directory.</p> <p>The <i>customDataCardsFolder</i> contains the custom MTM data cards (<i>customDataCard1.html</i>, <i>customDataCard2.html</i>, etc.).</p>
<p><i>assets\cards.html</i> file</p>	<p>Edit the <i>assets\cards.html</i> file:</p>

	<p>In the &lt;body&gt; element – add the section for the custom data cards</p> <pre data-bbox="857 296 1515 415">&lt;span class="parent" onClick="toggleExpansion('brn_CUSTO M', 'img_CUSTOM')"&gt;</pre> <pre data-bbox="857 464 1515 541">&lt;img src="icons/plus.gif" id="img_CUSTOM"&gt;Custom&lt;br&gt;</pre> <pre data-bbox="857 590 1515 638">&lt;/span&gt;</pre> <pre data-bbox="857 695 1515 772">&lt;span class="branch" id="brn_CUSTOM"&gt;</pre> <pre data-bbox="857 831 1515 930">&lt;img src="icons/card.gif"&gt;&lt;a style="text-decoration:none" target="content"</pre> <pre data-bbox="857 989 1515 1108">href="cards/customDataCardsFolder/ customDataCard1.html"&gt;Custom 1&lt;/ a&gt;&lt;br&gt;</pre> <pre data-bbox="857 1167 1515 1266">&lt;img src="icons/card.gif"&gt;&lt;a style="text-decoration:none" target="content"</pre> <pre data-bbox="857 1325 1515 1444">href="cards/customDataCardsFolder/ customDataCard2.html"&gt;Custom 2&lt;/ a&gt;&lt;br&gt;</pre> <pre data-bbox="857 1493 1515 1541">&lt;/span&gt;</pre>
<p>custom data cards section</p>	<p>You can add the custom data cards section anywhere in the &lt;body&gt; element of the file.</p>



## Configure time analysis

You can perform time analysis in the Process Planning for BTO/BTS/CTO and Process Planning for ETO workspaces.

**Note**




You must **install the MTM Data card** to configure time analysis for your workspace.

Perform this procedure on the Teamcenter rich client.

1. Log on to the Teamcenter rich client.
2. On the Teamcenter server, browse to where you pasted the *MTMDataCard* folder during the install or update, such as *C:\Program Files\Siemens\MTMDataCard*.
3. In Teamcenter, choose **Edit** → **Options**  and select the **Search** tab at the bottom.
4. In the **Options** dialog box, click **Create New Preference** .
5. For the **Name**, type **EP\_MTMDataCardPaths**.
6. Set the following:  
**Protection Scope = Site**  
**Category = General**
7. For the **Description**, type **This is the path to the <Workspace name> data card**.
8. For the **Value**, type the location where you stored the data card.

**Example**

*C:\Program Files\Siemens\MTMDataCard\index.html*

9. Click **Save** .
10. From the **Navigation** pane, choose **Manufacturing Process Planner** .
11. In the **Manufacturing Process Planner** toolbar, choose **Add** .  
The data card is imported into Teamcenter.
12. Delete the **\*mtmdatacardutility\*.jar** file from the *TC\_ROOT\portal\plugins* folder.

**Note**

You no longer need this command shown in Teamcenter.

13. Reindex your site. See the *Active Workspace Deployment* documentation to install and configure this mechanism.

Entries from the data card can now be used in your workspace for time analysis.

## Time unit properties

Default time unit measurements are supported in the Process Planning for BTO/BTS/CTO and Process Planning for ETO workspaces.

### Note

If you need to use runtime properties to retrieve times of operations and the properties must consider the currently set time (not just the internal database time), then use properties with the suffix **Converted** attached to the name.

These properties consider the value currently set (for example, 1), then calculate and apply the value to the selected time unit (for example, minutes).

### Example

If user A sets the units to minutes and user B sets the units to seconds, user A will see 1 minute and user B will see 60 seconds.

Use the following properties to view default time information:

- **Mfg0AllocatedTimeConverted** – View the allocated time for an operation considering the time that is currently set.
- **Mfg0EstimatedTimeConverted** – View the estimated time for operations, considering the time that is currently set.

## Time analysis preferences

You can use these preferences to manage time analysis and time analysis priorities in your environment.

### Time system preferences

You can use the **EP\_TimeAnalysisMode** preference to define time detailing for operations in your environment.

Valid values for this preference are:

### Note

The default value for this preference is **ACTIVITIES**.

The default value for this preference is **ACTIVITIES**.

- **ACTIVITIES**—defines if time detailing is done using Teamcenter activities and data card activities.

- **CLASSIC\_ACTIVITIES**—defines that activities are automatically created per process or operation. Activities cannot be created manually; they can only be authored.
- **CLASSIC\_ACTIVITIES\_CREATE**—defines that activities are manually created and authored in Teamcenter, per operation.
- **TICON**—defines TICON integration with the MTM data card as the time system used in your environment.

#### Note

You must also complete the task to [Add the MTM data card to Teamcenter Easy Plan](#) when you use the **ACTIVITIES** value for this preference

### Time analysis priorities

You can use the **EP\_TimeAnalysisPropForOperationTime** preference to create custom time properties specific to your environment. You can use the **EP\_TimeAnalysisPropForOperationTime** preference to define:

- How to calculate line balancing time.
- Which time elements to consider for operations.
- The priority order of time elements for operations.

Default values for this preference are **Mfg0allocated\_time** and **Mfg0EstimatedTime**. You can create custom properties using the format: **<element name>**, such as **ClockTime**.

#### Tip

Define all custom properties before you modify the **EP\_TimeAnalysisPropForOperationTime** preference.

Valid values for this preference are numeric properties that represent time units, for example, the number of seconds or minutes. The operation time is set according to the property order, from lowest to highest numeral. Process Planning for BTO/BTS/CTO skips properties with a value of **0** and considers the next element for time analysis.

For example, if **Mfg0allocated\_time** has a value of **0** and **Mfg0EstimatedTime** has a value of **>0**, the operation time is calculated using estimated time.

## Configure time study preferences

You can use these preferences to manage time study preferences in your environment.

## Define estimated activity times for operations

You must add each preference you use to the **AWC\_Startup\_preference** in the Teamcenter rich client. See the *Preferences* section in the *Active Workspace Administration* documentation for a description of preferences and how to set them.

- **EP\_OperationPageActivitiesTabActivitiesGridAreaColumnConfiguration**—controls the column configuration of the **Time Management** panel.
- **EP\_TimeStudiesTableColumnConfiguration**—controls the column configuration of the **Time Study** table on the **Process Planning** page. This table shows the properties of the object revision, and not those of the BOM line.
- **EP\_TimeStudyTreeColumnConfiguration**—controls the column configuration of the time study tree on the **Time Study** page.
- **EP\_TimeStudyPlantBopColumnConfiguration**—controls the column configuration of the plant BOP tree on the **Time Study** page.
- **IsolatedStudySyncPublish**—controls the closure rule that is used to search the objects that are used for publishing.
- **Mfg0MEPlantBOP.Mfg0TimeStudy.CopyPasteTemplate**—controls what data is created in a time study.
- **StudyPlanningTimeBasedPublishRule**—controls what information is published from the Planning Time Study to the plant BOP.

## Define estimated activity times for operations

In Process Planning for BTO/BTS/CTO and Process Planning for ETO, you can use the **EP\_ActivitiesColumnConfiguration** preference to configure the properties that display in the **Time Management Activities** table. You can add properties for operations and activities to the table.

The manufacturing engineer uses the **Time Management Activities** table to define time estimates for activities during process planning.

The **EP\_ActivitiesColumnConfiguration** preference accepts multiple string values delimited by colons (:) in the following format: **<identifier>:<value>**.

By default, the following values are defined:

- **Mfg0BvrOperation.bl\_rev\_object\_name**
- **Mfg0BvrOperation.bl\_sequence\_no**
- **CfgActivityLine.object\_string**
- **CfgActivityLine.al\_activity\_work\_time**

## Configure Electronic Work Instructions

For instructions about configuring this workspace, see the Electronic Work Instructions Deployment documentation available on the Support Center.

## Configure Manufacturing-BOM Manager

Manufacturing-BOM Manager uses these preferences, which are defined in Manufacturing Process Planner, for configuration:

- The **MEAlignedPropertiesList** preference allows engineering bill of materials (EBOM) parts to be assigned to a manufacturing BOM (MBOM) with the **Assign Parts Selected in EBOM** command. You can configure the item properties that are carried over to the MBOM upon assignment. See the *Teamcenter Manufacturing Process Planner* documentation on the Support Center for preference details.
- The **MBMEnableStructureSearch** preference allows end users to search for parts and assemblies in an engineering bill of materials (EBOM) or a manufacturing bill of materials (MBOM). To activate the **Find** command in the **EBOM-MBOM Alignment** window and enable structure searches in Manufacturing-BOM Manager, you must add the **MBMEnableStructureSearch** preference to the **AWC\_Startup\_preference** in Teamcenter.
- The **MEIdGenerationPropertySetting** and **MEIdGenerationOnAssignEnabled** preferences ensure that in-context IDs (IDICs) and smart IDIC configuration are honored for parts between the EBOM and MBOM. See the *Administering Manufacturing Planning* documentation on the Support Center for preference details.
- The **MEEffectivityAssignmentMode** and **MEAlignedPropertiesList** preferences allow for occurrence effectivity in the EBOM to carry over to the MBOM. If the parent of a line in the EBOM that is getting assigned to the MBOM has a occurrence effectivity applied, that effectivity is carried over to the MBOM. See the *Administering Manufacturing Planning* documentation on the Support Center for preference details.
- The **Rollup\_Variant\_Feature** and **MEAlignedPropertiesList** preferences allow for variant formulas in the EBOM to carry over to the MBOM. If the parent of a line in the EBOM that is getting assigned to the MBOM has a variant formula applied, that formula is carried over to the MBOM. See the *Teamcenter Manufacturing Process Planner* and *Administering Manufacturing Planning* documentation on the Support Center for preference details.

## Configure Next Generation Planning

For instructions about configuring this workspace, see the Next Generation Planning Deployment documentation available on the Support Center.

# Configuring Process Planning for BTO/BTS/CTO

## Cloning rules for objects

You must add each of the preferences you use to the **AWC\_Startup\_preference** in the Teamcenter rich client. See the *Preferences* section in the *Active Workspace Administration* documentation for a description of preferences and how to set them.

### Note

Starting in version 2406, the **EP\_BOP.Template** preference is deprecated. This preference is replaced by the **Process.Template** preference.

- **EP\_ShowCloneIndication**—allows users to identify the source of cloned objects so that changes can be propagated with a full traceability view during cloning. Set this preference value to **true** to enable the clone indication feature.
- **EP\_CloningSupportedProcessTypes**—determines whether consumed parts and assigned resources are carried forward to the new plant Bill of Process (BOP) when a new plant bill of process (BOP) is created by cloning an existing plant BOP.

By default, cloning rules ignore consumed parts and assigned resources from the existing plant BOP.

The default value for this preference is **Process.Template.Mapping\_Consume**. You must set this preference and add it to the **AWC\_Startup\_preference** in the Teamcenter rich client before this feature is enabled.

- **EP\_PlanningForSmallProduct**—allows users to clone a BOP for a full product and modify it to use in small product mode. Set this value to **true** to enable this feature. In addition, you must add the **EP\_PlanningForSmallProduct** and **Process.Template** preferences to the **AWC\_Startup\_preference** in the Teamcenter rich client.
- **MECreateIdInContextforAssignedchildlines**—defines the level of in-context IDs (IDICs) data that is copied when you clone assembly objects in context . The protection scope for this preference is **USER**. The valid value for this preference is an integer, which defines how many levels of IDICs are cloned in an assembly. For example, to copy three levels of IDICs for an in-context assembly, set this preference to **3**.
- **MEProcess.MEProcess.PasteDuplicateTemplate**—allows users to clone existing processes from the same or a different work package.

This preference supports users working in a classic BOP on the **Process Planning** page.

- To use this preference in a product BOP, set the value to **MEProductBOP.MEProductBOP.PasteDuplicateTemplate**.
- To use this preference in a plant BOP, set the value to **Mfg0MEPlantBOP.Mfg0MEPlantBOP.PasteDuplicateTemplate**.
- **Process.Template**—defines which cloning rule process template is used to clone items in a process structure. This preference is passed as a string property. Values for this preference are:

- **Process.Template.Mapping\_Consume**—clones the existing process and maps all objects consumed in the original process into the cloned process.
- **Process.Template.Referencing\_Consume**—clones the existing process and references the objects consumed by the cloned process. Parts and revision IDs in the cloned process are identical to the parts and revision IDs in the original structure.
- **Process.Template.Ignoring\_Consume**—clones the existing process and does not map or reference any objects consumed in the original process.
- **TC\_CLONE\_CREATE\_BASED\_ON**—defines how the Based On relation is created between masters and clones in the Manufacturing Process Planner (MPP) application. For this specific relation, the feature handles propagation. If the preference value is true, the Based On relation between the clone and original objects is created for objects in all levels.

The default value for this preference is **false**. Set this preference value to **true** to enable the clone indication feature.

## Collaboration context properties

You can change properties on the CCOBJECT to display the master collaboration context (CC) for an alternative CC, or to display alternative CCs for a master CC.

### Note

These are existing properties in the default, out-of-the-box stylesheet of a CC. You can add them to your stylesheet, or any other customizations you create in your environment:

- **mbc0masterCC** shows the master CC for a given CC
- **mbc0alternatives** shows the alternative CCs for a master CC

## Structures

### Configuring structures with effectivity

You can use the **EP\_EffectivityMode** preference to set the effectivity type, which the planner uses to configure structures in Process Planning for BTO/BTS/CTO and Process Planning for ETO. The default value is **UNIT**. You can also set it to **DATE**, to work with date-based effectivity.

### Configuring structures with a different effectivity

You must configure the **EP\_WorkareaPopupTableColumnConfiguration** preference before end users can use this feature.

End users can define a structure configuration on the **EBOM-MBOM alignment**, **BOE Authoring**, or **plant BOP** pages.

### Note

You cannot define a structure by date range on the **EBOM-MBOM alignment page**, because Active Workspace does not support it. This feature will be fully supported in a later release.

## Configuring structures with variants

Process Planning for BTO/BTS/CTO supports classic variants and Product Configurator variants. By default, Process Planning for BTO/BTS/CTO is set to use Product Configurator variants. To use classic variants, you set the Teamcenter **PSEVariantsMode** preference to **legacy**.

### Note

To use Product Configurator variants, you must be in Teamcenter 11.5 or later.

On the station **Balancing** and **Operation** tabs, operations are displayed according to the product variants they belong to (or their variant applicability). Applicability of an operation to a product variant is based on whether an operation applies to a specific product variant.

To configure an operation out based on the variant applicability of its consumed parts, you configure it using these Teamcenter preferences:

- **typeAndRuleForProcessConfiguration**
- **controllingOccsForProcessConfiguration**

By default, only operations with the base **MEOP** type and part assignment of type **MEConsumed** are considered for configuring out. If any other operation subtypes and occurrence types should be considered, you must modify these preferences. See the *Teamcenter Manufacturing Process Planner* or *Teamcenter Environment Variables Reference* documentation for details.

## Line balancing

You can use line balancing preferences to manage object properties in the **Line Balancing** page.

### Note

You must add each preference you use to the **AWC\_Startup\_preference** in the Teamcenter rich client.

See the *Preferences* section in the *Active Workspace Administration* documentation for a description of preferences and how to set them.

## Line Balancing dashboard preferences

The **EP\_LineBalancingDashboardInformation** preference defines which tiles are displayed in the **Line Balancing** dashboard.

Some of the informational tiles are displayed by default, and cannot be removed. You can add the listed optional values to the **EP\_LineBalancingDashboardInformation** preference to display more tiles in the **Line Balancing** dashboard.

Value	Description	Default or optional tile
taktTime	Displays the takt time for the assembly line.	Default
cycleTime	Displays the average time it takes to finish one unit of production.	Default
waitTime	Displays the amount of time an item waits for processing or inspection, or to move to the next operation on the assembly line.	Default
unassignedTime	Displays the amount of time a process resource is unassigned on the assembly line.	Default
humanResources	Displays the number of human resources on the assembly line.	Default
cobotResources	Displays the number of cobot resources on the assembly line.	Optional
humanResourcesAndBTI	Displays the number of human resources and the balance time index (BTI) for human resources.	Optional
cobotResourcesAndBTI	Displays the number of cobot resources and the BTI for cobot resources.	Optional
overallEquipmentEffectiveness	Displays overall equipment effectiveness.	Optional
piecesPerShift	Displays the rate at which completed products are produced on the assembly line.	Optional
piecesPerPersonPerHour	Displays the calculation for parts per person, per hour, produced on the assembly line.	Optional
allowance	Displays the extra time that is added to a schedule for delays, unexpected events, or additional tasks. This value is displayed in a percentage.	Optional

### Manufacturing time preferences

- The **EP\_LineBalancingUseBottleneckTime** preference defines whether the line balancing calculation is displayed in takt time or in bottleneck mode. The default value is **false**. Set this preference to **true** to display the calculation in bottleneck mode.

- The **EP\_TaktTimeForProductionProgramDefinition** preference controls whether to display the takt time chip based on the production line, or based on the product variant in the production program definition (the takt time is defined by the production program definition). The takt time chip is displayed in the **Line Balancing** dashboard. The default value for this preference is **Line**.

To display the takt time chip based on the product variant, set the default value for this preference to **ProductionProgramDefinition**.

- The **EP\_LineBalancingProcessResourceTypesForTotalWaitTime** preference calculates the total wait time for all process resource types in the preference value. The default value for this preference is **human**. You can set the following valid values for this preference:
  - **Human**
  - **Cobot**
- The **EP\_LineBalancingCycleTimeIgnoreExternal** preference defines whether to ignore or include external operations when computing the cycle time during line balancing. The default value for this preference is **false**, which means that external operations are included when computing cycle time. Set this value to **true** to ignore external operations when computing cycle time.

### Process resource preferences

- The **EP\_LineBalancingProcessResourceUtilization** preference controls whether process resource utilization displays as a nominal value or a percentage of takt time in the **Line Balancing** page.

The default value for this preference is **false**, which displays utilization as a nominal value. Set this preference to **true** to display utilization as a percentage.
- The **EP\_ProcessResourceCapacityValues** preference controls the values in the user interface to set operator capacity. The default values are **50** and **100**. You can customize these values for your environment.
- The **EP\_LineBalancingProcessResourcesTypesForOverview** preference defines which process resource types are displayed in the **Overview** tab. You can set the following values for this preference:
  - **Human**
  - **Cobot**
  - **Machine**

#### Note

If the **EP\_LineBalancingProcessResourcesTypesForOverview** preference does not exist in your environment, or the values for the preference are empty, all of the process resource types display in the **Overview** tab.

- The **EP\_LineBalancingProcessResourcesTypesForUtilization** preference defines which process resource types are in the utilization list. The user can then add a value range for each process resource type. You can set the following values for this preference:
  - ♦ **Human**
  - ♦ **Cobot**

## ◇ Machine

### Note

If the **EP\_LineBalancingProcessResourcesTypesForUtilization** preference does not exist in your environment, or the values for the preference are empty, all process resource types display in the utilization list.

- The **EP\_useProcessResource** preference allows planners to monitor and manage process resource interactions, which helps reduce resource wait time in production plans.

### Note

The process resource interaction feature is active by default. If your environment does not use process resources, set the **EP\_useProcessResource** preference to **false** to hide this feature.

## Process station preferences

The **EP\_StationDisplayProperty** preference determines the station property that displays in the station tile in the **Line Balancing** page. You can customize this value for your environment.

The default value is **bl\_rev\_object\_name**, where **object\_name** refers to the revision name. This preference is passed as a string property, and it must be a single value.

To display a different property, change the value for that property to **object\_string**.

### Note

If this preference value is missing or incorrect, Teamcenter Easy Plan displays the **bl\_rev\_object\_name** value in the station tile.

## Product variant preferences

- The **EP\_LineBalancingAllowVariantConfigurationWithProductVariantFiltering** preference allows users to configure a plant bill of process (BOP) tree with variant rules or to load a tree that is preconfigured with variant rules. Then you can filter the plant BOP tree according to product variants.

The default value is **false**. Set this value to **true** to enable this feature.

### Note

This preference applies only in the **Line Balancing** page.

- The **EP\_LineBalancingProductVariantsFilterValues** preference controls whether to show or hide the **Weighted** and **Maximum** product variants in the **Line Balancing Product Variant** list. The default values for this preference are **WEIGHTED:true** and **MAXIMUM:true**. To hide the **Weighted** and **Maximum** product variants, set the preference values to **WEIGHTED:false** and **MAXIMUM:false**.

## Process Planning page role preference

The **EP\_ProcessPlanningViewModeForRoleME** preference defines role configuration for the **Process Planning** page.

The default value for this preference is **false**, which leaves the role set for industrial engineers. Set the value of the preference to **true** to configure the role for manufacturing engineers.

The **Process Planning** page displays data for each role as follows:

- **Industrial Engineers**—Data in the **Process Planning** page displays process resources and the assigned operations under them.
- **Manufacturing Engineers**—Data in the **Process Planning** page displays directly under process stations, and process resources do not display on the page.

## Stations

You can use these preferences to manage station properties in your environment.

The **EP\_StationDisplayProperty** preference determines the station property that displays in the station tile on the line balancing page. You can customize this value for your environment.

The default value is **bl\_rev\_object\_name**, where **object\_name** refers to the revision name. This preference is passed as a string property, and it must be a single value.

To display a different property, change the value for that property to **object\_string**.

### Note

If this preference value is missing or incorrect, Process Planning for BTO/BTS/CTO displays the **bl\_rev\_object\_name** value in the station tile.

## Configuring twin station sync behavior

You can use these preferences to manage sync behavior between the plant bill of process (BOP) and the BOE when one of these objects is created as a twin station in your environment.

- The **MEBOPTtoBOEObjectTypeMap** preference supports the **BOEPlantBOPTTypeAndPropertyMap** XML dataset, which is used to create a bill of equipment (BOE) structure from a plant bill of process (BOP) or vice versa.
- The **EP\_RemoveObsoleteOnSyncTwin** preference determines whether to remove obsolete elements during a twin station sync.

The default value is **false**.

## Bill of Equipment authoring

You can use these preferences to improve the user experience while authoring bills of equipment (BOE) in your environment.

- The **AWC\_MEPlantRevision.SUMMARYRENDERING** preference registers the summary stylesheet for Plant Revision objects in the ACE page.

The default value is **MEWorkareaRevSummary**.

- The **AWC\_MEPlantRevision.showObjectLocation.OccurrenceManagementSubLocation.SUMMARYRENDERING** preference registers the summary stylesheet for these Plant Revision objects in the ACE page:

- **ShowObject Location**
- **OccurrenceManagement SubLocation**

The default value is **MEWorkareaRevSummary**.

- The **AWC\_MEPlantRevision.showObjectLocation.SUMMARYRENDERING** preference registers the summary stylesheet for the Plant Revision **ShowObject Location** object in the ACE page.

The default value is **Awb0ItemRevSummaryForShowObjectLocation**.

## Operations

You can use these preferences to manage operations in your environment.

### Operation types

The **EP\_OperationsTypes** preference defines operation types for each operation-persistent type, including sub-types. This preference helps differentiate between human and machine operations.

Type	Default value
None	MEOP
Human	Mbc0HumanOp
Machine	Mbc0MachineOp

The format of each value is **OperationClass:TypeEnum**. For example: **Mbc0HumanOp:Human**.

### Operation capabilities

End users can now set capabilities for operations. To enable operation capabilities, you must add the **CLS\_is\_presentation\_hierarchy\_active** preference to the **AWC\_Startup\_preference** in Teamcenter.

**Note**

Each operation can have multiple capabilities.

Operation capabilities are classified.

## MBOM items

The **EP\_ProductScopeTabTreeGridColumnConfiguration** preference controls column configuration of data on the **Parts** subtab of the **Planning** tab when end users assign items from the manufacturing bill of materials (MBOM) to the plant bill of process (BOP).

The default value is **ImanItemBOPLine.object\_string**, which refers to the revision name.

To display a different property, change the value for that property to **object\_string**.

## Process resources

You can use these preferences to manage process resources in your environment.

- The **EP\_LineBalancingProcessResourceUtilization** preference controls whether process resource utilization displays as a nominal value or a percentage of takt time in the **Line Balancing** page.  
The default value for this preference is **false**, which displays utilization as a nominal value. Set this preference to **true** to display utilization as a percentage.
- The **EP\_ProcessResourceCapacityValues** preference controls the values in the user interface to set operator capacity. The default values are **50** and **100**. You can customize these values for your environment.
- The **EP\_useProcessResource** preference allows planners to monitor and manage process resource interactions, which helps reduce resource wait time in production plans.

**Note**

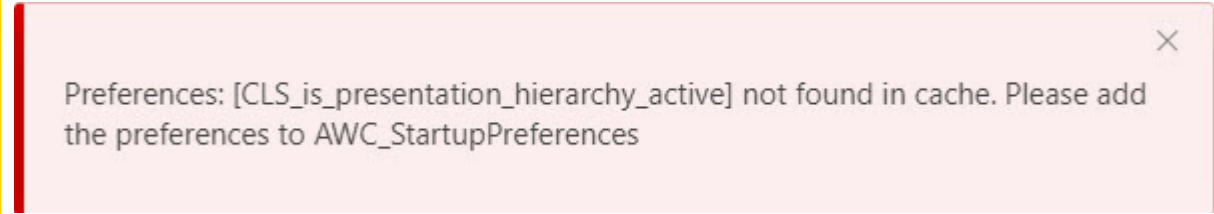
The process resource interaction feature is active by default. If your environment does not use process resources, set the **EP\_useProcessResource** preference to **false** to hide this feature.

## Configure taxonomy for classification

Before end users can use taxonomy for classification, you must add the **CLS\_is\_presentation\_hierarchy\_active** preference to the **AWC\_Startup\_preference** in the Teamcenter rich client.

**Note**

If you do not add this preference to the **AWC\_Startup\_preference** and end users open the product bill of process (BOP) page, the following error message may be displayed.



## Configuring Teamcenter Manufacturing Access

### Hosting preferences

Before you can use Teamcenter Manufacturing Access, you must configure the correct hosting preferences for your environment.

**Caution**

Starting in version 6.2, the **ActiveWorkspaceHosting.PS.URL** is deprecated.

If you use the **ActiveWorkspaceHosting.PS.URL**, your end users cannot connect to NX or use the MFG Search feature in Process Simulate.

### Study Manager (TcMA) hosting preferences

To connect to Study Manager (Teamcenter Manufacturing Access) from...	Configure this hosting preference	Additional information (if applicable)
Teamcenter rich client	<b>TCMAccessHosting.RAC.URL</b>	For a server named <b>hostname</b> on port <b>3000</b> , type: <b>http://localhost:3000</b> .
Process Simulate and NX	<b>TCMAHosting.PS.URL</b>	The format for this preference is <b>http://&lt;serverhost&gt;:&lt;gatewayport&gt;</b> .
Plant Simulation	<b>ActiveWorkspaceHosting.PLAN T.URL</b>	

## Client-side preferences

You can modify defaults for client-side preferences. However, end users can override some default preferences in Teamcenter Manufacturing Access. For example, end users can choose which columns are displayed in some dialog boxes, and the order in which those columns display.

### Tip

Correctly spelling property names is critical. If you do not know how to spell a property name, open a Teamcenter Manufacturing Access dialog box that contains the property and verify the value of the related preference.

- **CCObject.CellProperties**—Lists property name and values to display in the object cell for a collaboration context object. The format for a value of this property is **<property internal name>**.
- **Default\_StructureContext\_Type**—Specifies which type of structure context is the default item type for a study. You can add multiple lines to this preference as string values in the **<item\_type>:<StructureContext\_type>** format.

### Note

To enable Study Manager, you must replace the existing line for an **Mfg0MEStudy** item type with this line: **Mfg0MEStudy:Mfg0StudyStructureContext**.

Valid values for this preference are:

**Process:MEProcessContext**

**OP:MEProcessContext**

**WorkArea:MEPlantContext Item:MEProductContext**

**MEGenericBOP:MEProcessContext MEProductBOP:MEProcessContext**

**Mes0MESTXLibrary:MEProcessContext**

**Mfg0MEProdPrgCol:Mfg0MEProdPrgContext**

**Mfg0MEStudy:Mfg0StudyStructureContext**

- **TCMA\_EditStudyProcessColumnProperties**—Lists columns available in the **Process** area of the **Edit Study** dialog box.
- **TCMA\_EditStudyPlantGrid\_Column**—Lists the column properties overridden by the end user in the **Plant** area of the **Edit Study** dialog box.
- **TCMA\_EditStudyPlantColumnProperties**—Lists columns available in the **Plant** area of the **Edit Study** dialog box. End users can configure column display in the user interface.
- **TCMA\_StudyElementsColumnProperties**—Lists columns available in the **Elements** area of the **Edit Study** dialog box.

- **TCMA\_StudyMgrStudyGrid\_Column**—Lists default columns shown in the **Study Manger** view. The format for a value of this property is **<object type>.<property internal name>.<column width>**.
- **TCMA\_StudyMgrStudyColumnProperties**—Filters the list of properties shown in the **Columns Configuration** dialog box in **Study Manager**. The format for a value of this property is **<object type>.<property internal name>**.

#### Note

The study revision type inherits all properties from the item revision type. This properties list is a subset of the total properties of the study object, and is used to filter which properties can be shown in the **Study Manager** view. If this preference is empty, all properties of the study object can be shown.

- **TCMA\_StudySavedColumnConfigurations**—Saves the column configuration when an end user overrides the default Study Manager column layout. The **TCMA\_StudySavedColumnConfigurations** preference saves and populates the column configuration each time the user launches Teamcenter Manufacturing Access. This preference saves one configuration option per user. The default value for this preference is **False**.
- **TCMA\_CreateSubtypesForType\_MfgOMESTudy**—Lists subtypes to show when the planner creates a study.
- **TC\_Set\_Current\_Project**—Supports default project settings for end users. The default value for this preference is: **True**.

After you set the preference, use the BMIDE package to enable and deploy the **autoAssignToProject** extension and propagation rules. The extension and propagation rules ensure that when a planner creates a study or an object under a study, all created objects are automatically assigned to the selected project. See *Configure your Business data model in BMIDE* in the Teamcenter Help collection for more information about using the BMIDE package.

## Cloning preferences

Use this preference to configure cloning in your environment.

The **MESetPhysicalAttachmentInContextOfCommonParent** preference defines how mount and attach relations are stored at the robot package level.

#### Example

Typically, a weld gun is mounted on a robot and the robot is attached to the base plate. As a simulation or layout engineer, you can now retain the mount and attachment relations when you clone the robot package.

Valid values for this preference are:

- **True**—Stores the mount and attach relations at the least parent level.
- **False**—Stores the mount and attach relations at the plant level.

The default value for this preference is **false**.

## Manufacturing features search preferences

Use these preferences to configure manufacturing feature searches in your environment.

- **TCMA\_MFGSearch\_WeldTypes**—Defines supported types for a weld category search. This preference controls the content in the **Type** list of values (LOV) during a **Discrete** operation query.

Default values include

Resistance Spot	Arc Spot
Dollop	Clinch
Weld Nut	Weld Stud
Rivet	Sonic
Laser Spot	

You can modify this preference to customize the LOV for your environment.

- **TCMA\_MFGSearchResult\_Column**—Lists default columns shown in the **Mfg Search** dialog box search results. The format for a value of this property is **<object type>.<property internal name>.<column width>**.
- The **TCMA\_MFGSearchResult\_ConfigurationColumn** preference controls the list of properties that are available in the **Column** configuration for manufacturing features search results. You can remove properties from this list to customize it for your environment.

## Resource search preferences

Use these preferences to configure resource searches in your environment.

**TCMA\_Resource\_Types**—Controls the resource types that Teamcenter Manufacturing Access displays in the resources browser view. Valid values are object type names. The default value is:

MfgOMEResourceRevision

The system shows all objects of type **MfgOMEResourceRevision** and its subtypes in the view.

### Note

You can add multiple resource search preference types.

If you have classified **MEResources** instead of **MEResourceRevsions**, you can add **MfgOMEResource**. If your environment requires custom types, you can also add them in this preference.

## Study-related preferences

You can configure these study preferences for your environment.

- **CCObject\_DefaultChildProperties**—Specifies a list of properties that can be used as children for the study type.

By default, **MfgOCCStudyRel** is added to the list to show all studies in the collaboration context tree and in **My Teamcenter**.

### Note

To improve performance and hide the study objects attached to the collaboration context, remove the **MfgOCCStudyRel** relation from this preference.

- **CO\_FOR\_EDIT**—Enables the check out feature in **Study Manager** so that end users can verify that no one else is editing a study before the study gets loaded. Checking out a study prevents anyone else from modifying the data. Set the preference value to **True**, and add the **CO\_FOR\_EDIT** preference to the **AWC\_Startup\_preference** in the Teamcenter rich client.
- **Study\_allow\_process\_context\_rev\_rule**—Indicates whether the Study Manager is enabled. You can use this preference to apply a revision rule to the collaboration context structure.

Valid values for this preference are:

- **True**—Applies the revision rule from the process context in the collaboration context structure. **True** is the default value for this preference.
- **False**—Applies the default revision rule, which is read from the **TC\_config\_rule\_name** preference.
- **TCMA\_CreateSubtypesForType\_MfgOMESTudy**—Lists subtypes to show when creating a study.
- **TCMA\_EditStudyProcessGrid\_Column**—Lists the column properties overridden by the end user in the **Process** table of the **Edit Study** dialog box. End users can configure column display in the user interface. The format for a value of this preference is **<object type>.<property internal name>.<column width>**.
- **TCMA\_EnableStructureSearch**—Enables end users to search process and plant structures in the **Study Manager Edit** page. The default value for this preference is **True**.
- **TCMA\_StudyElementsGrid\_Column**—Lists the column properties overridden by the end user in the **Study Elements** table in the **Edit Study** dialog box. End users can configure column display in the user interface. The format for a value of this preference is **<object type>.<property internal name>.<column width>**.
- **TC\_Set\_Current\_Project**—Supports default project settings for end users. The default value for this preference is **True**.

### Note

After you set the **TC\_Set\_Current\_Project** preference, use the BMIDE package to enable and deploy the `autoAssignToProject` extension and propagation rules. The extension and propagation rules ensure that when a planner creates a study or an object under a study, all created objects are automatically assigned to the selected project. See *Configure your Business data model in BMIDE* in the Teamcenter Help collection for more information about using the BMIDE package.

## Study Manager preferences

To use the Teamcenter Manufacturing Access Study Manager, configure these preferences in a Teamcenter rich client.

- **MEWorkflowsToAddAndRemoveStudiesFromBriefcaseExport**—Defines the workflows Teamcenter Manufacturing Access uses to add and remove study objects during a briefcase export of a collaboration context. The format for a value of this property is **Approved.<workflow\_add\_name>:Remove Approved.<workflow\_remove\_name>**. These workflows add and remove the maturity statuses specified in the **MEStudyMaturityStatusforBriefcaseExport** preference.
- **MEStudyMaturityStatusforBriefcaseExport**—Defines the study object maturity statuses used during a briefcase export of a collaboration context. The default value is **Approved**, which means that all the studies in a collaboration context with a status of **Approved** are exported.
- **TCMA\_EnableVariantOnStudyManager**—Enables the variants feature in Study Manager. Set the preference value to **true** to enable the variants feature. The default value for this preference is **false**.

### Note

The variants feature in Study Manager is supported on Process Simulate version 2502 and later.

The variants feature in Study Manager only supports Product Configurator variants. You cannot use this feature with classic variants.

## Classification search


Before end users can perform a Classification search, you must install and configure the Classification server.

See *Configure search for traditional Classification* in the Active Workspace help for details about installing and configuring this search mechanism.

Use the **TCMA\_ClassificationSearch\_URLParams** preference to specify which parameters to append onto a new classification search URL. The format for this preference is **parameterName.value**.

## Study conversion workflow

If end users have legacy studies, those studies must be converted via workflow before Teamcenter Manufacturing Access can read them.

You can configure the **Attach\_studies\_to\_cc** workflow for your end users. This workflow connects legacy studies  to a collaboration context object so they can be viewed in Teamcenter Manufacturing Access and Teamcenter **Study Manager**.

Each converted study is placed in a new structure context object within the collaboration context. The **MfgOCCStudyRel** relation creates the link between studies and the structure context object.

You can change the following values when you configure the workflow.

- If the user does not specify a configuration context, the **TCA0\_attach\_studies\_to\_cc** action handler uses the value of the **-revision rule** argument. By default, this argument is set to **Latest Working**.
- By default, the workflow creates one configuration context for each study structure context. To share a configuration context between multiple study structure contexts, set the **-config context** argument to a value of **share**.

## Ensure that the configuration context of shared studies in a CC matches that of the BOP

In Teamcenter Manufacturing Access, you can ensure that shared studies and the classic or plant bill of process (BOP) share the same configuration context. This is vital especially when you save the study as a new configuration context (CC) so that the BOP and shared studies in the new CC have the same configuration context.

### Note

This option does not apply to isolated studies.

1. Make sure you or your administrator have set the value of the preference **MEShareConfigurationContextToStudy** to **Mfg0MEShdStudy**.
2. Load your working CC to Manufacturing Process Planner and configure the configuration context of the BOP to a desired revision.
3. Select **File** → **Collaboration Context** → **Save as New Collaboration Context**.
4. In the **Save as New Collaboration Context** dialog box, type a name for your new CC, and from the **Include Studies** list, select **All** to include all shared studies, or **Released** to include only released studies.
5. Save the shared study and load the new CC to Manufacturing Process Planner.

6. In the **Collaboration Context Tree** dialog box, right-click the top line of the shared study CC and choose **Open with** → **Study Manager**.

The shared studies have the same configuration context as the BOP.

## Configuring Process Planning for ETO

### Relation types

You can use these preferences to configure relation types in your environment.

- The **EWI\_InstructionRelationsInfo** preference allows Process Planning for ETO to present work instructions as HTML. You must set this preference to **EpwOWIRelation** to make this feature available.

This preference supports multiple values, and the order of the values defines the sequence in which Process Planning for ETO searches for work instructions to display. If the first value points to a work instruction, it is presented and no other values are considered. If the first value does not point to a work instruction, the preference checks remaining values and presents the first work instruction as HTML.

- The **WI\_ImageRelationsInfo** preference defines the properties and relations data displayed in the Process Planning for ETO Image viewer.

The format for this preference is **<property/relation name>[:<type names>**. Property or relation is the name of the step object or sub-type of the bill of materials (BOM) line. The type name is a comma-separated list of internal type names to display for the secondary object of the property or relation. This argument is optional. If type names are not provided, all secondary object information is displayed.

- The **MEAssignCustomizedOccurrenceType** preference defines the occurrence types that are displayed by default in the **Assigned Resources** table. The end user can set an occurrence type for one or multiple resources, and those resources do not have to be of the same type. For example, the user could set an occurrence type for Robot and Conveyor.

### Populate or update PMI using a Teamcenter utility

You can use the Teamcenter utility *populate\_pmis\_info.exe* on a machine with NX and Teamcenter installed to populate or update product manufacturing information (PMI) objects in your Teamcenter Easy Plan database for use in Process Planning for ETO.

Another option is to use the preference **MciImportPMIWorkflowName** with a value of **PMI Characteristics Extractor** to populate objects into Teamcenter whenever a CAD model is saved from NX. However, if you don't use this preference, then use *populate\_pmis\_info.exe*.

#### Procedure

1. In NX, modify the PMI information associated with the JT files that you want to add or update in Process Planning for ETO.

- Open a Teamcenter prompt at the server's root location.

#### Example

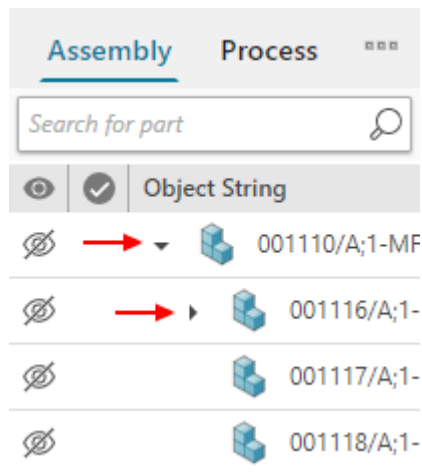
```
C:\Siemens\Teamcenterx\tcroot
```

- Run the utility `populate_pmis_info.exe` and specify the following:
  - The main structure root ID, which is the top node assembly ID
  - The item ID, which is the ID of the subassembly in which PMIs to be added or updated are present

#### Example

This command populates or updates PMI objects in this root and subassembly structure in the **Work Instructions Authoring** page of Process Planning for ETO:

```
populate_pmis_info.exe -u=me -p=mypassword -g=dba -root=001110
-itemid=001116
```



#### Tip

For help with specific utility parameters, at the prompt, type `populate_pmis_info.exe -h`.

## Compound operation preferences

Unlike a standard operation, which can define only a single activity, a compound operation can contain multiple execution steps that break that operation into specific steps to be executed. End users employ compound operations in the same way as standard operations in a work flow or work instructions authoring process. For example, for each compound operation, they can edit summary properties, assign documents and other attachments, capture and save images, set effectivity, and validate occurrence effectivity.

Compound operations and execution steps can include custom object types. Preferences include the following.

- **EP\_CreateSubtypesForType\_MfgOMECmpOP** defines the types of compound operation available when users create compound operations (**EP\_CreateSubtypesForType\_** + value). Default: **MfgOMECmpOP**.
- **EP\_CreateSubtypesForType\_MfgOMESTep** defines the types of execution steps available for each compound operation (**EP\_CreateSubtypesForType\_** + value). Default: **MfgOMESTep**.

## Viewer preferences

You can use these preferences to configure the viewer in your environment.

### Notes formatting settings

The **WI\_SavedPresets** preference defines formatting options for notes that display in the graphics viewer. This preference is added by default when Teamcenter Easy Plan is installed on the Teamcenter server.

This preference accepts multiple string values delimited by colons (:) in the following format:

**<identifier>:<value>**

The default protection scope for this preference is **ROLE** and the category is **EPWI**.

By default, the following values are defined:

- "color": "#0000ff", "font-size": "30px"
- "color": "#FF0000", "font-family": "Courier New"
- "color": "#008000"

#### Note

You can add values and customize notes for your environment.

### Product View settings

The **TCVIS\_PV\_CAPTURE\_PRECISE** preference defines whether all children under an operation are considered when creating a Product View. When this preference value is set to **True**, all children below an operation are captured in the Product View for both precise and non-precise structures. The default value is **True**.

## Selection color settings

The **EP\_GraphicsSelectionColor** preference defines a custom selection color for end users in the viewer. This preference requires a single string value. The default protection scope for this preference is **SITE** and the category is **EasyPlan**.

To define this preference, you must begin the string with the characters **0x**, and then append the hexadecimal value for the custom color you want to use. For example, you can use the following characters to define the preference:

- **0xFF0000** for red
- **0xffffffff** for white
- **0x0000ff** for blue

The default value is **0xFFFF00**, for yellow.

# Create custom manufacturing validation tests with Teamcenter Easy Plan

## Custom manufacturing validation tests overview

This process includes tasks for people in two roles:

- Teamcenter developers write the test cases.
- Teamcenter administrators set Teamcenter preferences and register the test cases in the environment.

Where applicable, we indicate which role completes a task. Reference information is intended for all audiences.

Your end users can use Teamcenter Easy Plan and the manufacturing validation tests you create to verify whether manufacturing processes and operations are ready to be released. If a manufacturing test validation fails, the end user can resolve any errors before releasing data.

### Note

Teamcenter Easy Plan provides a framework for you to create tests specific to your environment. Teamcenter Easy Plan does not provide complete tests that you can use out-of-the-box in your environment, but the installation files contain sample validation tests.

You can create, build, install, and verify a custom manufacturing validation test library that is executable from the EasyPlan web application.

## Prerequisites

Before you create manufacturing validation tests, verify that your environment meets the requirements listed here.

Requirement	For more details see this documentation
Teamcenter client configured with the Teamcenter Easy Plan web application, connected to a standard four-tier Teamcenter environment.	Teamcenter Easy Plan Deployment
<p>The Teamcenter Easy Plan application configured with at least:</p> <ul style="list-style-type: none"> <li>• <b>Work Instructions</b> or <b>Process Planning</b> page. You can open the <b>Validations</b> command panel on either of these pages.</li> <li>• A work package for testing that contains: <ul style="list-style-type: none"> <li>◦ Assembly</li> <li>◦ Bill of Process (BOP)</li> </ul> </li> </ul>	<p>Teamcenter Easy Plan Process Planning for ETO</p> <p>Teamcenter Easy Plan Process Planning for BTO/BTS/CTO</p>

If you need more assistance with these prerequisites, contact Product Lifecycle Management Support or your Teamcenter customer account team.

### Build component requirements

Although you can install the build components on any compatible machine that can run the required build components, for now we assume the build components are installed on the Teamcenter Server machine. In addition, we provide details for a Windows server, but you can complete a similar setup for a Linux server.

The required build components are:

- Teamcenter Server installation  
After you install Teamcenter Server, keep the Teamcenter installation kit directories.
- A compatible version of Microsoft Visual Studio or Linux C++ Development Environment.
  - For Teamcenter 12.4 and its patches this is Microsoft Visual Studio 2017.

#### Note

For supported compilers, including supported versions of Microsoft Visual Studio, see the Hardware and Software Certifications knowledge base article on Support Center.

## Manufacturing validation test components overview

You use these components to create and validate custom manufacturing validation tests:

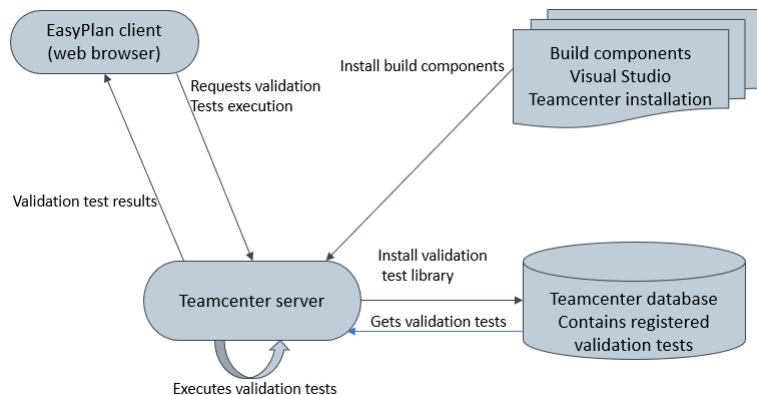
- **EasyPlan Web browser**—also referred to as the client machine.  
The EasyPlan Web Application requires the client machine.
- **Teamcenter Server**—install the build components on this machine.  
The server-side execution of the manufacturing validation tests requires the Teamcenter Server. The Teamcenter server can also serve as the build machine for custom manufacturing validation test libraries. This is a standard four-tier Teamcenter server machine.
- **Teamcenter database**—install the manufacturing validation test libraries on the same computer where you install the Teamcenter database.

### Note

For convenience, install the build components on the Teamcenter server. You can install these components on a separate machine, but then you must copy the components to the Teamcenter server.

The build components are:

- Teamcenter server installation
- Either Microsoft C++ Visual Studio or Linux C++ Development Environment



## Installing and verifying sample validation tests

### Install sample validation tests on the Teamcenter server

#### Note

The Teamcenter administrator performs this task.

#### Procedure

1. On the Teamcenter server, navigate to the directory where the manufacturing validation test samples are installed.  
For example, `$CD_ROOT/additional_applications/mfg_validation_test_sample/samples`.
2. Copy the entire directory, and then navigate to a local directory and paste the contents there.  
For example, `c:/apps/mfg_validation_test_sample/samples`. This is your *validation samples directory*.
3. Open a Teamcenter command prompt.
4. Build the sample code and in the `TC_ROOT\bin` folder, use the resulting `.dll` file.  
For more information, see [Build customized manufacturing validation tests](#) and [Install and verify customized manufacturing validation tests](#).
5. Change to the validation samples directory and execute the following command:  
`mfgValidationTestCallbackInstaller.bat <user> create`.

#### Note

The `.bat` file is written so that `<user>==<passwd>`. Update the `.bat` file if this is not true.

The console displays a `Successfully Registered` message.

6. Start the Teamcenter Rich Client and log on as an administrator.
7. In Teamcenter, choose **Edit** → **Options**, and click the **Search** tab at the bottom.
8. In the **Options** dialog box, locate the following preferences:
  - **MfgValidationTestFramework\_Client\_EP\_ValidationTestTypes**
  - **MfgValidationTestFramework\_Client\_MBM\_ValidationTestTypes**
  - **MfgValidationTestFramework\_Client\_MBM\_ClosureRules**

The first preference defines test types for validation checks in the **Process** panel or tab in the **Process Planning** or **Work Instructions Authoring** pages. The last two preferences define test types and closure rule names for validation checks in the **EBOM-MBOM Alignment** page.

#### Example

`MfgValidationTestFramework_Client_MBM_ClosureRules=AccountabilityAll` expands a top assembly line along with assigned child lines.

9. Add the -type argument value from the *mfgValidationTestCallbackInstaller.bat* file that you just registered to this preference.
10. Save changes to the preference, and exit out of the **Options** dialog box.

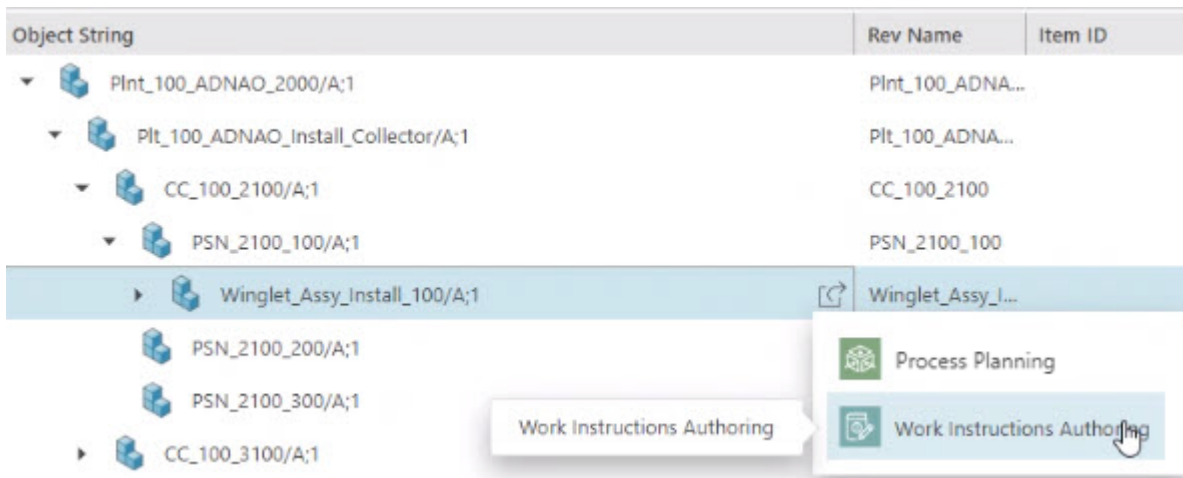
## Run and validate the sample tests with Teamcenter Easy Plan



After you install the sample tests, you can run and validate the tests to verify that they operate correctly in your environment.

### Note

The Teamcenter administrator performs this task. This process works only for classic bill of process (BOP) structures.

1. Start the Teamcenter Easy Plan application.
2. Search for and open an existing work package and navigate to the **High Level Planning** page.
3. Expand the structure, select an assembly, and click **Work Instructions Authoring**.



4. In the **Process** tab, select a process or operation and in the page toolbar, click **Open Validation Checks** .
- The **Validation Checks** panel opens.
5. In the **Process** panel, select a process or operation to be validated and in the **Validation Checks** panel, click **Run Validation Checks** .
6. Select a line in the **Validation Checks** table to view additional information in the **Details** section.

Validation Results for Proc_Winglet_Assy_Install/B;1							
BOM Line	Summary	Has Release Status	Specification Attac...	Has WorkArea	Find Number Size	Upper Effectivity Li...	Has
Surfaces_Winglet_In...	✓	✓	✓	✓	✓	✓	
Preparation_Op_100...	●	●	✓	●	✓	✓	
Surfaces_Winglet_In...	✓	✓	✓	✓	✓	✓	
Rib_Winglet_Install_...	✓	✓	✓	✓	✓	✓	
Skeleton_Winglet_A...	✓	✓	✓	✓	✓	✓	
Skeleton_Winglet_F...	●	●	✓	✓	✓	✓	
Proc_Winglet_Assy_I...	✓	✓	—	—	—	✓	

Details for Preparation_Op_100/C;1		
Test Name	Message Type	Message
Has Release Status	Error	Object Preparation_Op_100/C;1 does not have release status.
Specification Attach...	Info	Preparation_Op_100/C;1 has correct number of related IMAN_specification objects.
Has WorkArea	Error	Operation Preparation_Op_100/C;1 has incorrect Workarea count = 0.
Find Number Size	Info	Operation Preparation_Op_100/C;1 has correct find number size = 10.
Upper Effectivity Li...	Info	
Has Document	Info	Operation Preparation_Op_100/C;1 has the following Documents: AS Standards/A;1,Winglet_Assy_Guidelines/A;1.

### Note


Information in **Details** includes the following.

- **Test Name**—lists the names of tests run on that line.
- **Message Type**—lists the types of messages generated for the tests.
  - **Info**—The test results contain benign information. You do not need to resolve **Info** message types.
  - **Error**—The test failed. You must resolve all errors for the process or operation before you release data.
- **Message**—lists detailed information about the test results. Use this information to resolve any failed validations.

### 7. Review and analyze the results, and perform one of the following actions:

- If all validation checks pass, you do not need to perform any further action. The process or operation is ready for release.
- If one or more validation checks fail, you must resolve the failed items for each line.

If you still do not get the correct validation results, contact Product Lifecycle Management Support or your Teamcenter account team for assistance.

8. Click **Close Validation Checks** .
9. (Optional) Select the original object and run validation checks again to confirm that you have resolved all failed tests.

When all validation checks pass, the assembly is ready for release.

## Customizing manufacturing validation tests

### Build customized manufacturing validation tests

After you verify that the sample validation tests provided with the installation are working, use these instructions to build a new sample validation test library and verify that it works in your environment.

#### Note

You perform this task on the Teamcenter server where you installed the build components.

1. Open a Teamcenter command prompt.
2. Set the following environmental variables, if they are not already set.

Environmental variable	Setting and comments
MSDEV_HOME	Set to the local directory path for MS Visual Studio. For example: <i>c:\Program Files\Microsoft Visual Studio 15.0\VC</i>
TC_INCLUDE	<i>\$TC_ROOT/include</i>
TC_INCLUDE_CPP	<i>\$TC_ROOT/include_cpp</i>
TC_LIBRARY	<i>\$TC_ROOT/lib</i>

3. Execute the following command to compile the validation sample code: `compile_validations.bat`  
`MfgValidationTestSuiteUtils.cxx MfgValidationTestSuiteA.cxx`  
`MfgValidationTestSuiteAA.cxx MfgValidationTestSuiteAA_Tests.cxx`  
`MfgValidationTestSuiteA_Tests.cxx`
4. Execute the following command to link the sample validation code: `link_validations.bat`.
5. Verify that you created the `libmfgvalidationssamples.dll` file, which is the sample validation library.

## Install and verify customized manufacturing validation tests

Now you can remove the validation test sample library, and replace it with the customized library that you built.

### Note

The Teamcenter developer performs this task.

1. Open a Teamcenter command prompt and change the directory to the validation samples directory.
2. Execute the following command: `Run mfgValidationTestCallbackInstaller.bat <user> remove.`

### Note

The .bat file is written so that `<user>==<passwd>`. Update the .bat file if this is not true.

3. Execute the following command: `mfgValidationTestCallbackInstaller.bat <user> create.`
4. Use Teamcenter Easy Plan to **run and validate sample tests** in your environment.

Next, you can **add customized validation tests to the library**.

## Add a new manufacturing validation test to the library

After you create customized manufacturing validation tests, you must add them to the library before end users can run them.

### Note

This procedure shows how to implement a test case that would fail any operation without an item description.

1. Use a text editor such as Notepad++ to open the new test file, *MfgValidationTestSuiteA\_Tests.hxx*.
2. Type the following text to add a new method to the test.  

```
void operationHasDesc(tag_t lineTag);
```
3. Use a text editor such as Notepad++ to open the sample test file, *MfgValidationTestSuiteA\_Tests.cxx*, and search for the names section.
4. Type the following text to add a name to the test case.  

```
static const std::string OperationHasDesc("Has Desc");
```
5. Search for the registration section of the file. For example, search for **RegisterValidationTest**.
6. Type the following text to register the new validation test.

```
registerValidationTest(OperationHasDesc_Test,
(generic_validation_test_callback_fn_type)&MfgValidationTestSuiteA_Tests::
operationHasDesc_Test);
```

7. Search for the ValidationSuiteTestNames section of the file, and type the following text to register the new validation test.

```
validationSuiteTestNames.push_back(OperationHasDesc_Test);
```

8. Type the following text to implement the test case.

```
// test if operation has an item description
void MfgValidationTestSuiteA_Tests::operationHasDesc_Test(tag_t lineTag)
{
    if (!testSuiteUtils.isTypeOf(MEOPRevisionType.c_str(), lineTag))
    {
        populateValidationResults(lineTag, OperationHasDesc_Test,
ValidationTestResult_NotApplicable, ValidationTestResultMessageType_Info, "");

        return;
    }

    scoped_smptr<char> desc;
    AOM_ask_value_string(lineTag, "bl_item_object_desc", &desc);
    std::string tempStr = desc.getString();

    if (tempStr.empty())
    {
        statusMessage = "Operation " + testSuiteUtils.getName(lineTag) + " has
no Object Description.";
        populateValidationResults(lineTag, OperationHasDesc_Test,
ValidationTestResult_Fail, ValidationTestResultMessageType_Error,
statusMessage);
        return;
    }
    else
    {
        statusMessage = "Operation " + testSuiteUtils.getName(lineTag) + " has
the following Object Desc: " + tempStr ;
        populateValidationResults(lineTag, OperationHasDesc_Test,
ValidationTestResult_Pass, ValidationTestResultMessageType_Info,
statusMessage);
    }
}
```

9. Save the file, and close Notepad++.

## Rebuild, install, and validate the validation tests library

### Note

The Teamcenter administrator performs this task.

Perform this procedure before you release the customized tests into your production environment.

1. **Build customized manufacturing validation tests.**
2. **Install and verify customized manufacturing validation tests.**
3. **Run and validate the customized test.**
4. Verify that the test case contains customizations that you created. For example, this test case should:
  - Contain a new column named **Has Desc**.
  - Display a passed test for operations that have an item description.

### Note

The **Details** panel displays an item description for the operation, if one exists.

- Displays a failed test for any operation that is without an item object description.

### Tip

If you do not see the new validation test, review the procedure and perform the steps again. If you are still unsuccessful, contact Product Lifecycle Management Support or your customer account team.

# 11. Troubleshooting

---

## Troubleshoot installation, configuration, and deployment

This section contains known installation, configuration, and deployment issues, and actions you can take to resolve these issues.

**Note**

If these solutions do not resolve your issue, contact the Siemens Digital Industries Software Support Center for additional help.

- **Home page does not fully load.**
- **The `Open with Study Manager` command is not available in `Manufacturing Process Planner` .**
- **When trying to connect to `Process Simulate` or `NX`, an error message is displayed.**

## Home page does not have a New Work Package tile

If end users log into a workspace and the **Home** page does not have a **New Work Package** tile, you can run the following command to configure Teamcenter Easy Plan.

```
aws2_install_tilecollections -u=Tc-admin-user -pf=${TC_USER_PASSWD_FILE}  
-g=dba -mode=add -file=${TC_INSTALL_DIR}/mbc0mfgbvrcore/data/  
Mbm0mbmGatewayTilesCots_Install.xml
```

For details about running scripts, see the *Configuring Active Workspace* help.

## Home page does not fully load

If end users log into a workspace and the **Home** page does not fully load, or some tiles display a large X instead of an icon, you need to initialize the Active Workspace command line environment.

You can run the following scripts to configure the command line variables you need to work in Active Workspace, and initialize the environment.

For details about these scripts, see the *Configuring Active Workspace* help.

1. Open a Teamcenter command prompt
2. Run the **initEnv.cmd** script.
3. If you are on a Windows server, run the **awbuild.cmd** script, and close the command prompt window.  
If you are on a Linux server, run the **awbuild.sh** script, and close the command prompt window.

## Open with Study Manager command is unavailable

If the **Open with Study Manager** menu command is not listed in Manufacturing Process Planner (MPP), you need to perform an additional configuration task.

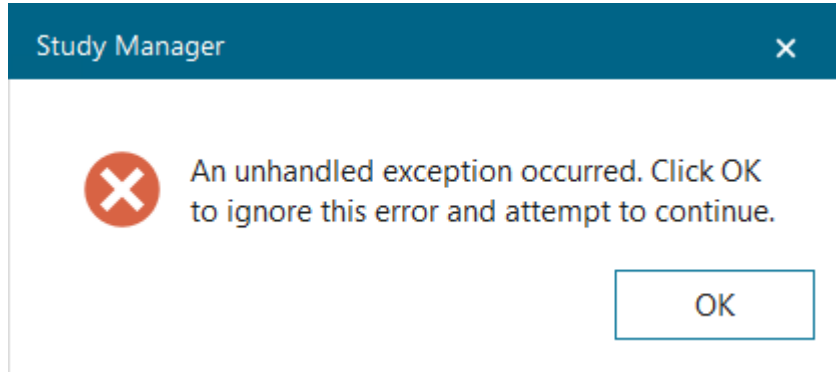
See [Add Teamcenter Manufacturing Access Study Manager to a rich client](#) for details.

### Note

This problem occurs only when you add Teamcenter Manufacturing Access Study Manager to a four-tier Teamcenter rich client.

## When trying to connect to Process Simulate or NX, an error message is displayed

If this error message is displayed and end users cannot connect to Process Simulate or NX, you need to perform an additional configuration task.



### Set the hosting preference to connect to Process Simulate and NX

To connect to Study Manager (Teamcenter Manufacturing Access) from Process Simulate and NX, you must configure the **TCMAHosting.PS.URL** preference.

The format for this preference is **http://<serverhost>:<gatewayport>**.

When trying to connect to Process Simulate or NX, an error message is displayed

## 12. Reference

### Full features list for an installation on Active Workspace

The following table contains features you can select during an installation on Active Workspace.

To install this workspace or component	Select this feature
Electronic Work Instructions Client	Electronic Work Instructions
Electronic Work Instructions Change Management	<p>Electronic Work Instructions—Change Management</p> <p>This feature adds support for Change Management in Electronic Work Instructions.</p> <div style="border: 1px solid yellow; padding: 5px;"> <p><b>Note</b></p> <p>This feature requires corresponding Teamcenter Change Management features.</p> </div>
Electronic Work Instructions Execution	<p>Electronic Work Instructions—Execution</p> <p>This feature adds support to</p> <ul style="list-style-type: none"> <li>• Capture shop floor data</li> <li>• Require or allow personnel to record and edit serial and lot numbers</li> <li>• Record work in progress</li> <li>• Allow personnel to attach documents</li> </ul>
Electronic Work Instructions Visualization Server Manager	<p>Electronic Work Instructions—Visualization Server Manager (VIS-HOST)</p> <p>This feature supports 3D visualization for snapshots in Electronic Work Instructions.</p>
Teamcenter Easy Plan-Process Planning for BTO/BTS/CTO	Easy Plan-Electronics Process Planner

	<p><b>Note</b></p> <p>(Optional) Install this feature to integrate with Valor Electronics Manufacturing Solutions software.</p>
	Easy Plan-Process Planning for BTO/BTS/CTO
	<p>Teamcenter Easy Plan-Product Configurator (optional)</p> <p>Select <b>Easy Plan—Product Configurator</b> to support Product Configurator in your environment. Product Configurator allows you to enable definitions for variant formulas on operations. Please see the <i>Product Configurator (Administrator)</i> documentation for installation details.</p> <p>To use Product Configurator variants, you must be in Teamcenter 11.5 or later.</p>
Manufacturing-BOM Manager	Manufacturing-BOM Manager
Next Generation Planning	Next Generation Planning Client
Teamcenter Manufacturing Access	Teamcenter Manufacturing Access
Teamcenter Easy Plan-Process Planning for ETO	Process planning and work instructions authoring for ETO

### Caution

Verify that you select the following features during Process Planning for BTO/BTS/CTO and Electronic Work Instructions installations.

### Active Workspace client features

- Change management
- Product configurator → Change management

### Client/server features

- Active collaboration
- Active content
- Classification
- Process Planning for BTO/BTS/CTO → Product configurator client

- Workflow

### Enterprise knowledge foundation

- Change management

### Extensions

- Product configurator

### Server extensions

- Product configurator

## Database templates summary

The following table lists the templates that are installed in the database with each workspace during installation.

Workspace	Templates
Electronic Work Instructions	<ul style="list-style-type: none"> <li>• Active Content Structure (<i>activeworkspacebom_template.xml</i>)</li> <li>• Active Workspace Document Management (<i>dma1docmgmtaw_template.xml</i>)</li> <li>• Manufacturing Characteristics Information (<i>mci0mfgcharacteristics_template.xml</i>)</li> <li>• MRO Core (<i>Mrocore_template.xml</i>)</li> <li>• Visualization Extension for Active Workspace (<i>awv0activeworkspacevis_template.xml</i>)</li> <li>• Work Instructions (<i>cmtmes_template.xml</i>).</li> </ul>
Manufacturing-BOM Manager	<ul style="list-style-type: none"> <li>• Active Content Structure (<i>activeworkspacebom_template.xml</i>)</li> </ul>

	<ul style="list-style-type: none"> <li>• Core services for manufacturing on BVR (<i>mbc0mfgbvrcore_template.xml</i>)</li> </ul>
Next Generation Planning	<ul style="list-style-type: none"> <li>• 4th Generation Process Planning/Data Model (<i>cmtprocess_template.xml</i>).</li> <li>• 4th Generation Process Planning/Data Model (<i>ngp0ngpclient_template.xml</i>).</li> <li>• Manufacturing 4G Core/Data Model (<i>mac0mfgapcore_template.xml</i>).</li> <li>• Manufacturing Change Management/Data Model (<i>mpc0mprcm_template.xml</i>).</li> </ul>
Process Planning for BTO/BTS/CTO	<ul style="list-style-type: none"> <li>• Manufacturing core for BVR/Data Model (<i>mbc0mfgbvrcore_template.xml</i>)</li> <li>• Process Planning for BTO/BTS/CTO Change Management/ Data Model (<i>epc0mfgbvrmaturity_template.xml</i>)</li> <li>• Process Planning for BTO/BTS/CTO Line Balancing/Data Model (<i>elb0linebalancing_template.xml</i>)</li> <li>• Process Planning for BTO/BTS/CTO Time Analysis/Data Model (<i>ept0timeanalysis_template.xml</i>)</li> </ul>
Teamcenter Manufacturing Access	<ul style="list-style-type: none"> <li>• Teamcenter Manufacturing Access/Data Model (<i>tca0tcmaccess_template.xml</i>).</li> </ul>
Teamcenter Easy Plan - Process Planning for ETO	<ul style="list-style-type: none"> <li>• Manufacturing core for BVR/Data Model (<i>mbc0mfgbvrcore_template.xml</i>)</li> <li>• Process Planning for BTO/BTS/CTO Change Management/ Data Model (<i>epc0mfgbvrmaturity_template.xml</i>)</li> <li>• Process Planning for BTO/BTS/CTO Time Analysis/Data Model (<i>ept0timeanalysis_template.xml</i>)</li> </ul>