



Windchill® Creo® Data Management Performance Benchmark Test

Enterprise Deployment Resource

**Windchill 13.0.2.5 Windchill PDMLink® Windchill
ProjectLink™**

Creo 10.0.8.0

November 2025

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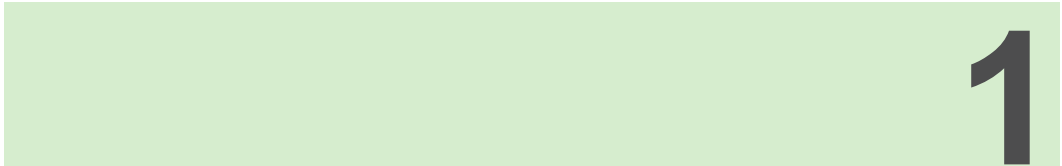
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About This Document

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Audience

This document is intended for managers, system administrators, system implementers, and Windchill Creo users.

The document assumes that the reader has some working knowledge of the technology and concepts associated with the following:

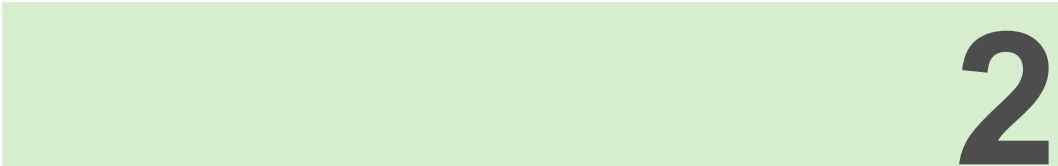
- Creo Fundamentals
- Windchill Creo data management
- Windchill system administration
- Windchill business administration
- Operating systems, relational databases, LDAP, web servers, application servers, platforms, servers, storage, and networking

Support Policy for Enterprise Deployment Resources

This document is a resource that PTC has created to assist customers with implementation and systems integration on specified system configurations. The document is not PTC product documentation, and it may not be updated in the same way as PTC product documentation. Before using this document, verify that this document is applicable to the versions of PTC products that you are using. Because of the almost infinite variety of system configurations that customers can have, PTC cannot and does not guarantee that this document will be entirely accurate for your particular configuration. Using the information in this document may require specific knowledge, skills, or expertise with PTC or third-party products. If incorrectly implemented, some of the information provided can have significant negative consequences.

Should you need consulting help with this document, you may be able to engage the PTC Professional Services organization or a PTC services partner who can assist your company with its deployment of Windchill. If you require such assistance, contact your PTC sales representative or authorized reseller.

If you would like to provide feedback to PTC on this document or have a specific technical question about this document or about a PTC product, contact PTC Technical Support for assistance. Support for this document is provided in English. PTC Technical Support will endeavor to reply within two business days to requests for support with this document.



Introduction

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Goal

The goal of this document is to provide the information needed to conduct a performance benchmark test for Creo data management operations using the Windchill family of products (PDMLink, and ProjectLink). It provides a means to assess the performance of customer implementations and to identify critical factors that affect performance.

The benchmark package consist of:

- PTC modeled Creo dataset - 00008_asm_1.asm
- PTC modeled Creo dataset - ptc-edc-worldcar.asm
- Test cases encompassing the most frequently used Creo data management operations
- Instructions for executing the benchmark test
- Performance Benchmark Data Sheet (Microsoft Excel spreadsheet)
- Reference Performance Results

Note

In this document the term Creo is used to include the supported releases of Creo Elements/Pro. Where all releases are not supported, the individual releases are called out.

Benefits

The Windchill Creo Data Management Performance Benchmark Test enables customers and PTC to measure and assess single user performance for a particular implementation of Windchill. In executing the test, customers can determine with reasonable accuracy whether their system is performing within expected limits.

While it is understood that performance numbers at a customer site will not exactly match the numbers obtained by PTC testing, any large deviations can be immediately identified and analyzed for potential problems.

Operations which involve upload and download are sensitive to network conditions and the time of day. As a result, performance may vary. Performance numbers provided in Benchmark should be considered as reference points rather than precise expectations.

Required Benchmark Documents and Datasets

In addition to reviewing this document, download and review the following spreadsheet and datasets from the PTC Reference Documents web site before starting the Windchill Creo Data Management Performance Benchmark Test:

- [Performance Benchmark Data Sheet-Windchill 13.0.2.5 & Creo 10.0.8.0 for North Europe \(NEU\)](#)
- [Performance Benchmark Data Sheet-Windchill 13.0.2.5 & Creo 10.0.8.0 for Southeast Asia \(SEA\)](#)
- [Performance Benchmark Data Sheet-Windchill 13.0.2.5 & Creo 10.0.8.0 for Japan East \(JPN\)](#)
- [Windchill Creo Data Management Performance Benchmark Test – Preliminary Dataset \(82 KB\)](#)
- [Windchill Creo Data Management Performance Benchmark Test – World Car Dataset \(295 MB\)](#)

The chapters that follow describe how to use the spreadsheet and datasets to perform the benchmark test. NOTE: For Instructions on Upload & CheckIn of WorldCar Dataset, review the steps listed under Dataset Instructions and Troubleshooting.

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Test Information

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This chapter contains detailed information on the test such as:

- Test Data
- Test Flow
- Test Functionality
- Test Prerequisites

 **Note**

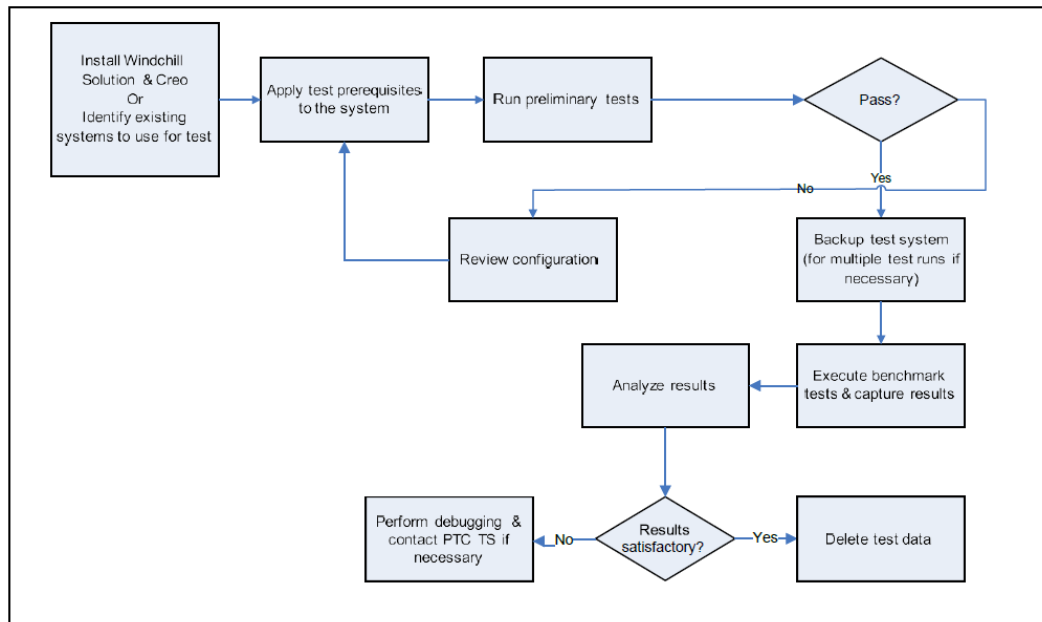
On the System Specifications tab of the Excel spreadsheet for the respective regions, one can find the details of which releases of Creo and the Windchill family of products (PDMLink and ProjectLink) PTC used to capture its results.

Test Data

The test uses a dataset developed by PTC known as the World Car. For more information on the dataset, review the section titled “Test Data Description” in [Appendix A](#).



Test Flow



Test Functionality

The test functionality includes the following:

1. Assembly Retrieval From Disk
2. Save Assembly to Disk

-
3. Upload
 4. Initial Checkin
 5. Remove from workspace
 6. Add to Workspace as a Link
 7. Workspace Refresh
 8. Rename
 9. Workspace Sync
 10. Set Compare Status View
 11. CheckOut
 12. Edit Attributes
 13. CheckIn
 14. Undo CheckOut
 15. Add to workspace with content download
 16. Assembly Retrieval from Common space
 17. Delete Assembly

Test Prerequisites

The following sections describe the prerequisite actions that you must perform before starting the test. Additionally, note the following:

- If your goal is to assess or validate a system for production use, then the test should be run on the production system or a clone of the production system (identical hardware and configuration).

 **Note**

The results of running the test on a test system cannot be considered representative of the results you will have on a production system unless the test system is a clone of the production system – including identical hardware and configuration.

- In addition to the prerequisite actions in the following sections, the tests run by PTC also include server and client settings that are described in [Appendix C on page .](#)

Attributes (IBAs)

As an administrator, create the following IBAs using the Type and Attribute Manager utility:

IBA	Type
VF1_INT_LIST	Integer
VF2_INT_LIST	Integer
VF3_INT_LIST	Integer
VF1_BOOL	Boolean
VF2_BOOL	Boolean
VF3_BOOL	Boolean
VF1_STRING_LIST	String
VF2_STRING_LIST	String
VF3_STRING_LIST	String
VF3_FLOAT_LIST	RealNumber

If you are not permitted to create these IBAs on the customer system, refer to [Appendix B, on page](#) which explains how to map parameters to existing IBAs.

Product

As an administrator, create a Windchill product in your Windchill PDMLink system. The benchmark test uses this product. All test transactions are executed within this product and no test data is created outside of this product.

Users

As an administrator, create two test users and add them to the team for the product created in the previous section. These user identities are used to perform the test. Alternately, if test users already exist on the system, add them to the team for the product created. In both cases, ensure that the users are added to the product as Product Manager.

Preliminary Tests

This section lists preliminary tests that should be performed before actual test execution using the PTC World Car dataset. These preliminary tests not only serve to verify the test cases listed in the accompanying Performance Benchmark Data Sheet (Excel spreadsheet), but also ensure that the test system has been adequately warmed up.

Ensure that the following functionality works before starting the test. PTC provides a simple assembly to execute this test. It is contained in a ZIP file that can be downloaded from the [Windchill Creo Data Management Performance](#)

[Benchmark Test – Preliminary Dataset \(82 KB\)](#) link on the PTC Reference Documents web site. The ZIP file is called 8_3comp.zip and the top-level assembly to use is called 00008_asm_1.asm.

1. Logon to the server being tested.
2. Using an embedded browser in Creo, ensure that the test users are able to:
 - 2.1 Register the Windchill PDMLink server being tested.
 - 2.2 Create a Workspace on the server being tested using the product created previously as the context.
 - 2.3 Set the Workspace/Server combination above to be the primary server.
 - 2.4 Perform the following actions using the file 00008_asm_1.asm:
 - 2.4.1 Assembly Retrieval From Disk
 - 2.4.2. Save Assembly to Disk
 - 2.4.3. Upload
 - 2.4.4. Initial Checkin
 - 2.4.5. Remove from Workspace
 - 2.4.6. Add to Workspace as a Link
 - 2.4.7. Workspace Refresh
 - 2.4.8. Rename
 - 2.4.9. Workspace Sync
 - 2.4.10. Set Compare Status View
 - 2.4.11. Workspace Sync
 - 2.4.12. CheckOut
 - 2.4.13. Edit Attributes
 - 2.4.14. CheckIn
 - 2.4.15. Undo CheckOut
 - 2.4.16. Add to ws with content download
 - 2.4.17. Assembly Retrieval from Commonsplace
 - 2.4.18. Delete Assembly

 **Note**

All of the above tests should be passed before executing the Windchill Creo Data Management Performance Benchmark Test. If they do not pass, address the problems and run the above tests again.

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Test Execution

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This chapter provides details for executing the Windchill Creo Data Management Performance Benchmark Test.

The test cases are listed on the tabs in the accompanying [Performance Benchmark Data Sheet-Windchill 13.0.2.5 & Creo 10.0.8.0 for North Europe \(NEU\)](#) show the recorded time from Windchill + environments when using the following versions of the products:

- The “13.0.2.5_10.0.8.0_NEU_NEU” tab shows the time using Windchill 13.0.2.5 in Windchill + in NorthEurope Region and Creo Parametric 10.0.8.0 on client VM in NorthEurope Region in Azure
- The “13.0.2.5_10.0.8.0_NEU_CzRP” tab shows the time using Windchill 13.0.2.5 in Windchill + in NorthEurope Region and Creo Parametric 10.0.8.0 on client VM in Czech Republic Region in Azure

The test cases are listed on the tabs in the accompanying [Performance Benchmark Data Sheet-Windchill 13.0.2.5 & Creo 10.0.8.0 for Southeast Asia \(SEA\)](#) show the recorded time when using the following versions of the products:

- The “13.0.2.5_10.0.8.0_SEA_SEA” tab shows the time using Windchill 13.0.2.5 in Windchill + in SouthEast Asia Region and Creo Parametric 10.0.8.0 on a client VM in SouthEast Asia Region in Azure
- The “13.0.2.5_10.0.8.0_JPE_SEA” tab shows the time using Windchill 13.0.2.5 in Windchill + in SouthEast Asia Region and Creo Parametric 10.0.8.0 on a client VM in Japan East Region in Azure

The test cases are listed on the tabs in the accompanying [Performance Benchmark Data Sheet-Windchill 13.0.2.5 & Creo 10.0.8.0 for Japan East \(JPN\)](#) show the recorded time when using the following versions of the products:

- The “13.0.2.5_10.0.8.0_JPE_JPE” tab shows the time using Windchill 13.0.2.5 in Windchill + in Japan East Region and Creo Parametric 10.0.8.0 on a client VM in Japan East Region in Azure
- The “13.0.2.5_10.0.8.0_JPE_JPW” tab shows the time using Windchill 13.0.2.5 in Windchill + in Japan East Region and Creo Parametric 10.0.8.0 on a client VM in Japan West Region in Azure

The tests uses the [Windchill Creo Data Management Performance Benchmark Test – World Car Dataset \(295 MB\)](#).

Since the PTC tests used the out-of-the-box values for Workspace preferences and Table Display, ensure that you are using the out-of-the-box values.

Test Execution Steps

Execute the test cases listed in the accompanying Performance Benchmark Data Sheet Excel spreadsheet and capture the following results in the table:

- # of Objects Displayed (Actual)
- Time Actual (seconds)
- Perform the actual benchmark testing for three rounds and take Average of response times from Run1 and Run2 ignoring the first round as warmup run.

If you have problems executing the test, review the Troubleshooting section.

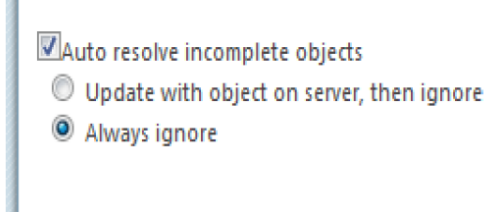
Analyzing Results

After the results have been captured, perform the following analysis:

- Review the test case datasheet to check if all the operations were executed successfully. If any of them fail, perform analysis to check if they fail because of a misconfiguration of the system or because of an issue.
 - In case of a misconfiguration, make the appropriate changes and re-execute the test cases.
 - In case of issues, contact PTC Technical Support to file a call.
- Compare # of Objects Displayed (Expected) with # of Objects Displayed (Actual) to see if there are differences. If there are differences, contact PTC Technical Support to file a call.
- Compare Time Expected (seconds) with Time Actual (seconds) to see if there are differences. If there is a large difference between the two, perform an analysis to check if they are different because of a misconfiguration of the system or because of an issue:
 - In case of a misconfiguration, make the appropriate changes and re-execute the test cases.
 - In case of issues, contact PTC Technical Support to file a call.
- Operations such as "Add to WS" are done both "as Link" and with Content Download, latencies between Creo and Windchill could affect the results when using "with content download".

Troubleshooting

It is possible that users would run into issues when executing the test using the PTC World Car dataset. The issues could be:

Symptoms	Solution
1. Wrong version of Creo used to execute the test. This might cause an inability to retrieve the dataset into Creo.	The PTCWorld Car dataset was created using Pro/ ENGINEER Wildfire 3.0 M190. This is the minimum release level that should be used to perform the test.
2. Uniqueness issues when attempting to Checkin the PTC World Car dataset into a customer database.	The PTCWorld Car dataset has been named so as to be unique. In the unlikely event that the user runs into uniqueness issues when attempting to check in the PTCWorld Car dataset, rename the assembly and all its sub-components to a unique name prior to Checkin.
Ghost objects when trying to Upload/Checkin the PTC World Car dataset.	<p>Check the following options in the UI when performing Upload/Checkin of the PTCWorld Car dataset:</p> <ul style="list-style-type: none"> • Auto resolve incomplete objects • Ignore objects on server 

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Test Data

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Test Data Description

The assembly used in the Windchill Creo Data Management Performance Benchmark Test is the World Car. This assembly was developed by PTC. The following section provides a few high level details of this assembly.

Assembly Structure

World Car

- Drive System
 - Air Filter
 - Drive Train
 - Engine
 - ◆ Engine Mechanism
 - ◆ Gear Box
- Chassis
 - Frame
 - Radiator Assembly
 - Seat and Support
 - Steering
 - Wheel
- Cab

World Car Assembly Details

Name	File Name	Type	Details
World Car	ptc-edc-worldcar.asm	Top Level Assembly	Physical file size: 488 MB Consists of 3 main sub-assemblies: <ul style="list-style-type: none">• Drive System• Chassis• Cab Assembly
Drive System	ptc-edc_01-10000.asm	Sub-assembly of top level assembly	Consists of 4 sub-assemblies:

Name	File Name		Type	Details
				<ul style="list-style-type: none"> • Air Filter • Drive Train • Engine • Gear Box
	Air Filter	ptc-edc_01-31000.asm	Sub-assembly of Drive System assembly	8 objects: <ul style="list-style-type: none"> • 8 Parts
	Drive Train	ptc-edc_01-70000.asm	Sub-assembly of Drive System assembly	56 objects: <ul style="list-style-type: none"> • 50 Parts • 6 Sub-assemblies
	Engine	ptc_edc_01-2_engine.asm	Sub-assembly of Drive System assembly	473 objects: <ul style="list-style-type: none"> • 398 Parts • 75 Sub-assemblies
	Gear Box	ptc-edc_01-50000.asm	Sub-assembly of Drive System assembly	497 objects: <ul style="list-style-type: none"> • 470 Parts • 27 Sub-assemblies

Name	File Name		Type	Details
Chassis	ptc-edc_4901000.asm		Sub-assembly of top level assembly	Consists of 6 sub-assemblies: <ul style="list-style-type: none"> • Frame • Radiator • Seat & Support • Steering • Wheel Front • Wheel Rear
	Frame	ptc-edc_4902000.asm	Sub-assembly of Chassis assembly	111 objects: <ul style="list-style-type: none"> • 106 Parts • 5 Sub-

Name	File Name		Type	Details
				assemblies
	Radiator	ptc- edc_ 4906000.asm	Sub-assembly of Chassis assembly	42 objects: • 38 Parts • 4 Sub- assemblies
	Seat and Support	ptc- edc_ 4907000.asm	Sub-assembly of Chassis assembly	233 objects: • 207 Parts • 26 Sub- assemblies
	Steering	ptc- edc_ 4905000.asm	Sub-assembly of Chassis assembly	98 objects: • 89 Parts • 9 Sub- assemblies
	Front Wheel	ptc- edc_ 4904000.asm	Sub-assembly of Chassis assembly	353 objects: • 332 Parts • 21 Sub- assemblies
	Rear Wheel	ptc- edc_ 4903000.asm	Sub-assembly of Chassis assembly	197 objects: • 192 Parts • 5 Sub- assemblies
Cab		ptc- edc_ 8111000.asm	Sub-assembly of top level assembly	107 objects: • 96 Parts • 11 Sub- assemblies

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Dataset Instructions

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World Car with IBAs Dataset Instructions

The following steps and screenshots show how to create the following IBAs using the Type and Attribute Manager utility in Windchill 12.1:

- VF1_INT_LIST(integer)
- VF2_INT_LIST(integer)
- VF3_INT_LIST(integer)
- VF1_BOOL (Boolean)
- VF2_BOOL (Boolean)
- VF3_BOOL (Boolean)
- VF3_FLOAT_LIST(real number)
- VF1_STRING_LIST(string)
- VF2_STRING_LIST(string)
- VF3_STRING_LIST(string)

Note

It is not mandatory to create or type these IBAs. You can use IBA mapping to map the Creo parameter values defined in the models to existing IBAs. See step 4 for instructions.

1. As an administrator, select **Type** and **Attribute Management** from **Site Utilities**:

PTC® Windchill®
Administrator

Site

Search | Browse

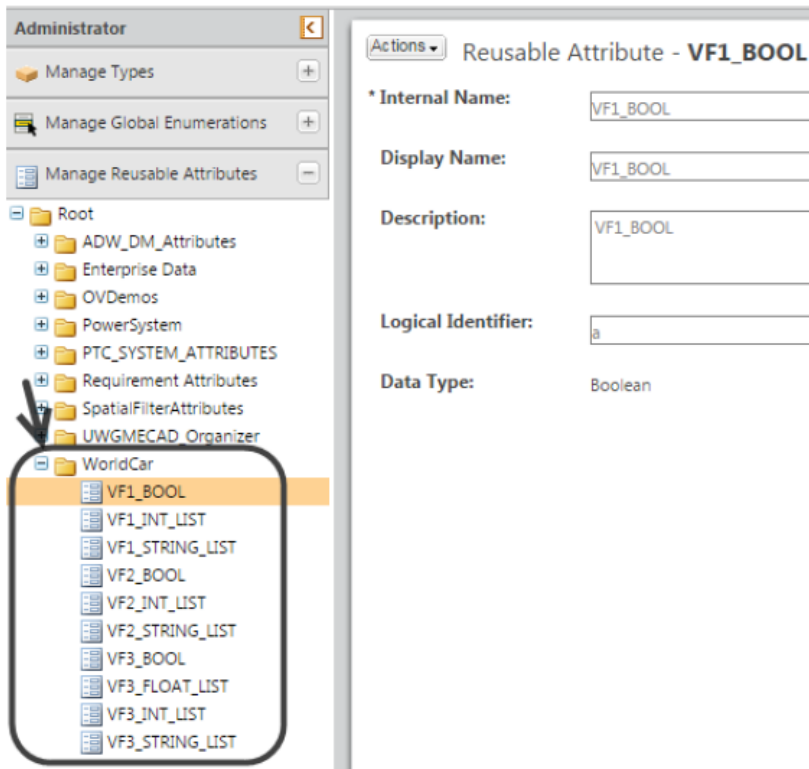
System Administration

Calendar Management	Provide the ability to schedule non-working days and delegate work.
Adapters Administration	Manage life cycle templates state mapping for the Requirements Management integration.
File Server Administration	Set up file server sites, vaults, and folders, create/update replication rules, and schedule replication.
Import/Export Management	Manage the exchange of file data and metadata with other systems via XML files.
Info*Engine Administration	View, create and modify directory service entries.
Mapping Management	Manage mappings to be used during package import.
Personal Cabinets Administration	List the set of personal cabinets whose users have been deleted and delete those personal cabinets.
Performance Advisor for PTC Windchill	Configure and review data sent by Performance Advisor for PTC Windchill.
Purge Management	Create and manage purge jobs.
Queue Management	Manage background queues and queue entries.
Server Status	Provides an overview of the status of key server processes.
System Configuration Collector	Gather existing information from your Windchill environment and optionally send the gathered information to Technical Support.
Task Delegate Administration	Create and manage task delegates and delegate repositories.
Worker Agent Administration	Display the status of WVS workers and allow you to start, stop and configure them.

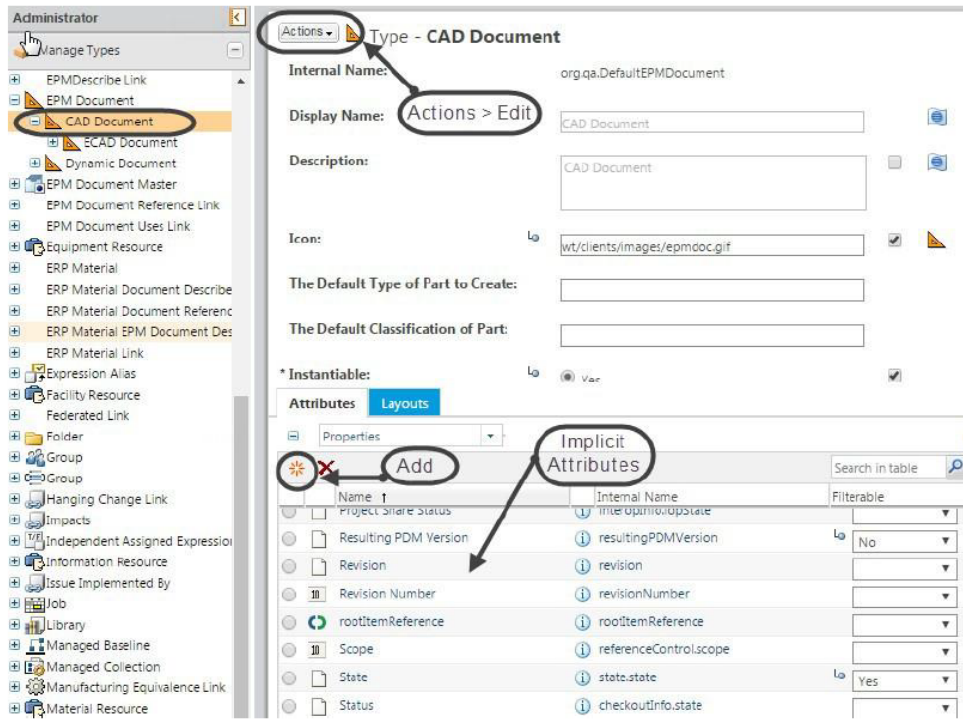
Business Administration

Business Rules	View the business rules.
Indexing Administration	View the indexing status.
Introduction to Numbering Schemes	View information on how to control numbers generated for objects.
Introduction to Versioning Schemes	View information on how to control identifiers generated for object versions.
Life Cycle Template Administration	Create and manage life cycle templates used for defining the phases and transitions of a life cycle.
Object Initialization Rules Administration	Create and manage XML rules for object initialization that set default values for attribute values.
Participant Administration	Support creation and modification of Windchill business objects describing users, groups, and roles.
Policy Administration	Manage administrative domains and the access control, indexing, and notification policies.
Preference Management	View and set preferences.
Promotion Preference Management	View, create, and edit promotion preferences.
Publish and Thumbnail Control	Controls WVS publishing.
Report Management	Create, update, and delete reports using the QueryBuilder tool. A report is the output of a query.
Team Administration	Create and manage team templates. When creating a life cycle-managed object, you can assign it to a team.
Type and Attribute Management	Manage type definitions, attribute definitions, measurement systems, and quantities of an object. You can also manage type definitions with type definitions, and constrain the values of those attributes.

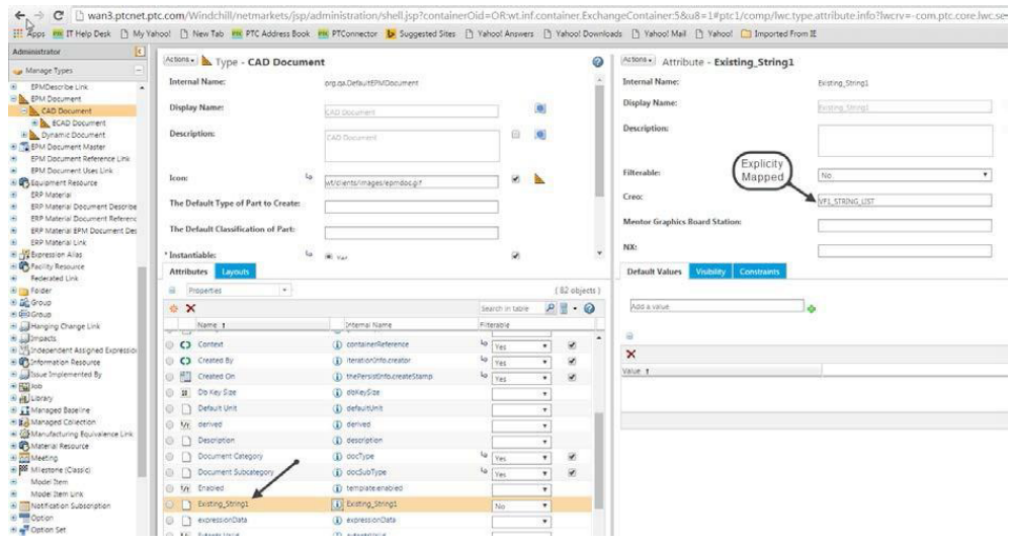
2. From the **Type and Attribute Manager**, click the **Manage Global Attributes** icon.
 - a. Create a new Attribute Organizer named Worldcar.
 - b. Create the attributes under this organizer as shown:



3. Return to the **Type and Attribute Manager** and select **Manage Types** to expand the lists of types shown. Perform the following steps:
 - a. Expand **EPM Document**.
 - b. Select **CAD Document** from the expanded list.
 - c. In the right hand pane of the **CAD Document** view, select **Edit** from the **Actions** menu.
 - d. In the lower half of the right hand pane, select **Add** and add the attributes that were created in step 2 as global attributes.



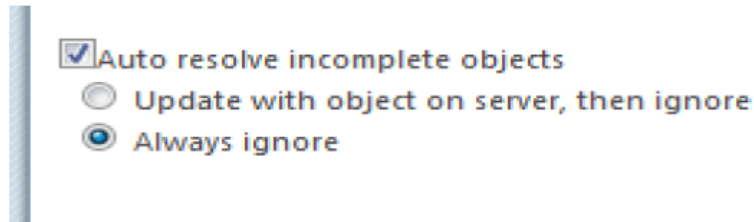
4. If IBAs were not created, map parameters to existing IBAs as shown:



 **Note**

Setting up an explicit attribute to parameter mapping (if necessary) is also documented in the Windchill Help Center. For example, in the 10.1 help center, look under **Specialized Administration ► Tailoring Business Objects ► Type and Attribute Management ► Managing Types ► About Attribute Mapping**.

5. Create a folder in a Library or Product.
6. Create a workspace.
7. Edit the workspace property setting the CAD Document and WTPart Target folders to the New folder.
8. Extract the files from the archive.
9. Start Creo, connect to the server, and set the new workspace as primary.
10. Open `ptc-edc-worldcar.asm` from disk; save and verify family tables when prompted.
11. From the workspace, select all objects and select **File ► Check In**. Then complete the following actions on the Check In page:
 - a. On the **Collect Objects** step, click **Next**.
 - b. On the **Set Options** step, select **Auto resolve incomplete objects** and choose the **Always ignore** sub-option.



- c. Click **Finish**.
12. Restart Creo and test the following instructions in the spreadsheet.

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Server and Client Setup

The server and client details are documented in the respective Excel sheet under the **System Specifications** sheet.

For additional configuration options on the client side for Creo, please refer to the relevant page on the Windchill Help Center for recommended settings.

[Windchill Help Center](#)

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