TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft User's Guide

Software Release 7.0.1
November 2019

Important Information

This software may be available on multiple operating systems. However, not all operating system platforms for a specific software version are released at the same time. Please see the readme.txt file for the availability of this software version on a specific operating system platform.

Contents

TIBCO Documentation and Support Services

How to Access TIBCO Documentation

Documentation for TIBCO products is available on the TIBCO Product Documentation website, mainly in HTML and PDF formats.

The TIBCO Product Documentation website is updated frequently and is more current than any other documentation included with the product. To access the latest documentation, visit https://docs.tibco.com.

Product-Specific Documentation

Documentation for TIBCO products is not bundled with the software. Instead, it is available on the TIBCO Documentation site at https://docs.tibco.com/products/tibco-activematrix-businessworks-plug-in-for-peoplesoft. To directly access documentation for this product, double-click the following file:

`TIBCO_HOME/release_notes/TIB_bwpluginpeoplesoft_version_docinfo.html`

where *TIBCO_HOME* is the top-level directory in which TIBCO products are installed. On Windows, the default *TIBCO_HOME* is `C:\Program Files\tibco\bw`. On UNIX systems, the default *TIBCO_HOME* is `/opt/tibco/bw`.

The following documents for this product can be found on the TIBCO Documentation site:

- *TIBCO ActiveMatrix BusinessWorks Plug-in for PeopleSoft Installation*
- *TIBCO ActiveMatrix BusinessWorks Plug-in for PeopleSoft User's Guide*
- *TIBCO ActiveMatrix BusinessWorks Plug-in for PeopleSoft Release Notes*

How to Contact TIBCO Support

You can contact TIBCO Support in the following ways:

- For an overview of TIBCO Support, visit http://www.tibco.com/services/support.
- For accessing the Support Knowledge Base and getting personalized content about products you are interested in, visit the TIBCO Support portal at https://support.tibco.com.
- For creating a Support case, you must have a valid maintenance or support contract with TIBCO. You also need a user name and password to log in to https://support.tibco.com. If you do not have a user name, you can request one by clicking Register on the website.

How to Join TIBCO Community

TIBCO Community is the official channel for TIBCO customers, partners, and employee subject matter experts to share and access their collective experience. TIBCO Community offers access to Q&A forums, product wikis, and best practices. It also offers access to extensions, adapters, solution accelerators, and tools that extend and enable customers to gain full value from TIBCO products. In addition, users can submit and vote on feature requests from within the TIBCO Ideas Portal. For a free registration, go to https://community.tibco.com.

Product Overview

TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft serves as a gateway to PeopleSoft applications from TIBCO ActiveMatrix BusinessWorks™ applications. With the plug-in, you can invoke PeopleSoft Component Interfaces.

TIBCO ActiveMatrix BusinessWorks is a leading integration platform that can integrate a wide variety of technologies and systems within enterprise and on cloud. TIBCO ActiveMatrix BusinessWorks includes an Eclipse-based graphical user interface (GUI) provided by TIBCO Business Studio™ for design, testing, and deployment. If you are not familiar with TIBCO ActiveMatrix BusinessWorks, see the TIBCO ActiveMatrix BusinessWorks documentation for more details.

TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft extends the palette functionality provided by TIBCO ActiveMatrix BusinessWorks. After installing the plug-in, a PeopleSoft configuration shared resource and a PeopleSoft palette becomes available in TIBCO Business Studio. You can add the plug-in activities to the business processes you are designing, and integrate them into the process flow. At run time, the plug-in activities are executed as part of the TIBCO ActiveMatrix BusinessWorks™ process execution.

The TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft provides the following activites:

- CI Request
- CI Request Response

Comparison between Adapter and Plug-in

This section is useful for users that have previously used the TIBCO ActiveMatrix ® Adapter for PeopleSoft to help understand differences in the plug-in where supported features have overlap with adapter.

Feature	TIBCO ActiveMatrix® Adapter for PeopleSoft	TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft
Services Provided	CI Publication service, Message Publication service, Message Subscription service, Request-Response invocation service, Request-Response service, Subscription service.	The plug-in is a replacement of the PeopleSoft Adapter and AE Palette available in TIBCO BusinessWorks. CIRequest activity is equivalent to PeopleSoft adapter's CI subscription service with "Publish to adapter" activity. CIRequestResponse activity is equivalent to PeopleSoft adapter's CI Request-Response service with "Invoke an Adapter Request-Response Service" activity.
Transport Type	JMS and RV	The plug-in is native to TIBCO BusinessWorks and no longer requires messaging.
TRA Properties	TRA properties are maintained in TIBCO Administrator and/or adpsft8.tra file.	TRA properties are not applicable in plug-in.
Reply Schema, Request Schema, and Custom AESchema	Custom schema supported.	Custom schema not supported.
Design time adapter (DTA)	Needed in the adapter to establish connection and download schema.	Not present in the plugin as connection and schema download functionality is part of PeopleSoft Configuration shared resource.
DTA transport	RV and JMS	As DTA itself is not needed, its transport is not present.
PeopleTools version	This drop down was present under "Configuration" tab to select PeopleTools version.	Plugin supports PeopleTools version 8.56 and above. It does not provide drop down.

Feature	TIBCO ActiveMatrix® Adapter for PeopleSoft	TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft
Number of Threads	Used for spawning that many of connections with PeopleSoft.	One connection per activity is used.
Logging	Configured in the "Logging" tab.	Plugin uses BW6 logging.
Number of reconnect attempts before suspending impacted services	Used in adapter in the reconnection logic.	As there is no service concept in the plugin, this is not present.
Connection	Connection configuration is from the Adapter service.	Connection configuration is from the PeopleSoft configuration shared resource.
Direction column from schema tab	It indicates whether field is input parameter or output parameter for Request-Response service.	As there is no service concept in plugin and there is output tab in case of CIRequestResponse activity, this is not present.
FINDKEYS_SEQ in the schema tab	Present in schema tab of adapter for Request-Response service.	Plugin shows this in the output tab when user performs find keys operation.
Errors from PeopleSoft Server	Reply message contains information on error from PeopleSoft Server.	Fault message is created.

Preparing PeopleSoft

This chapter explains how to prepare PeopleSoft Component Interfaces in your PeopleSoft system, and also how to prepare PeopleSoft components for publishing through the plug-in. Information is also provided that you should have ready before starting plug-in configuration.

This chapter explains the following:

- PeopleSoft Integration Technology Overview
- Loading the PeopleSoft Project
- Preparing PeopleSoft Component Interfaces

PeopleSoft Integration Technology Overview

PeopleSoft is a leading provider of ERP software solutions that meet the changing business needs of enterprises worldwide. It offers a complete suite of enterprise solutions for accounting, material management, distribution, manufacturing, and human resources.

PeopleSoft Integration Technologies

The internet architecture introduced with PeopleSoft supports powerful functionality for internet access, integration of external applications with PeopleSoft applications, and the integration of both into the enterprise.

Component Interface

The PeopleSoft integration technology, which PeopleSoft internet architecture makes use of, is Component Interfaces. These are object-oriented software devices that allow external applications to invoke PeopleSoft business logic. Component Interfaces are ideal for use in PeopleSoft environments that require tightly coupled integration, where data must be transmitted in real time.

Configuring PeopleSoft

Before you use TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft, do the following preparation with PeopleSoft:

1. Load the TIBCO resources:

    - Loading the PeopleSoft Project

      Finish this step to load a pre-built PeopleSoft project into PeopleTools.

2. Prepare the PeopleSoft integration technology you use:

    - Preparing PeopleSoft Component Interfaces

Loading the PeopleSoft Project

The software includes a pre-built PeopleSoft project (TIB_PEOPLESOFT_PLUGIN) that contains the server side code, to be used in PeopleTools 8.56. The project also contains Component Interfaces, components, fields, menus, pages and records. For more information, see PeopleSoft Project.

You must set up the project in your PeopleSoft database before using the plug-in. The `TIB_PEOPLESOFT_PLUGIN` project to be imported into PeopleTools is located in the `BW\PALETTES\PEOPLESOFT\7.0\samples\TIB_PEOPLESOFT_PLUGIN` folder. For more information on loading the project, see Loading the TIB_PEOPLESOFT_PLUGIN Project.

PeopleSoft Project

The following table describes all the items in the TIB_PEOPLESOFT_PLUGIN project.

Type of Item	Name	Description
Component Interface	TIB_CI_COMPINTFC	Used by the plug-in to retrieve the list of Component Interfaces in the database.
	TIB_MQUEUE_DATA_CI	Used by the plug-in to retrieve queue records.
	TIB_MQUEUE_SRCH_CI	Used by the plug-in to retrieve queue records.
	TIB_PUB_COMPINTFC	Used by the plug-in to store data back into PeopleSoft. Applicable only to integration scenarios.
	TIB_MSGVER_CI	Used by the plug-in to retrieve names and versions of messages.
	TIB_MSGREC_CI	Used by the plug-in to retrieve the details of a particular message.
	TIB_MSGDET_CI	Used by the plug-in to retrieve the details of a particular message.
Component	TIB_CI_GROUP	Used by TIB_CI_COMPINTFC.
	TIB_MQUEUE_DATA_COMP	Used by TIB_MQUEUE_DATA_CI.
	TIB_MQUEUE_SRCH_COMP	Used by TIB_MQUEUE_SRCH_CI.
	TIB_PUB_COMP	Used by TIB_PUB_COMPINTFC.
	TIB_MSGVER_COMP	Used by TIB_MSGVER_CI.
	TIB_MSGREC_COMP	Used by TIB_MSGREC_CI.
	TIB_MSGDET_COMP	Used by TIB_MSGDET_CI.

Type of Item	Name	Description
Field	TIB_ATTRIBUTE_NAME	Name of the field.
	TIB_BCITEMPARENT	Name of the parent field.
	TIB_BCNAME	Name of the Business Event
	TIB_DESCRIPTION	Description of the field.
	TIB_EVENT_NAME	Stores name of the event.
	TIB_FIELDNAME	Name of the field.
	TIB_FIELDTYPE	Type of the field.
	TIB_GUID	Stores GUID - Unique identifier for the message.
	TIB_IS_MSG_TRIGGER	Stores TRUE or FALSE. Purpose is to determine whether to trigger the publisher if this field changes.
	TIB_ISKEY	Key field.
	TIB_ISKEY_FLAG	Stores TRUE or FALSE key field.
	TIB_LENGTH	Length of the field.
	TIB_LEVELNUM	
	TIB_MENUACTION	
	TIB_MODE	TIB_MODE has the following values: A - Add. U - Update. L - Update All. C - Correction.
	TIB_MSG_DATA	Content of this field.
	TIB_MSG_FIELDID	
	TIB_MSG_ORIGIN	

Type of Item	Name	Description
	TIB_MSG_TIMESTAMP	Stores Timestamp corresponding to the message.
	TIB_MSG_TYPE	
	TIB_OBJECT_NAME	
	TIB_OPERATION	
	TIB_PARENT_RECNAME	Field Parent Record Name.
	TIB_PARENTRECNAME	Field Parent Record Name.
	TIB_PNLGRPNAME	
	TIB_RECNAME	
	TIB_SEQUENCE_NO	Stores Sequence number of message.
	TIB_SERIALIZEDATA	
	TIB_STATUS	TIB_STATUS can have any of the following values: N - Not processed. I - Intermediate stage. P - Processed successfully. E - Error.
	TIB_MSGNAME	Name of the Application Messaging component.
	TIB_APMSGVER	Version of Application Messaging.
	TIB_RECDNAME	Name of the Record.
	TIB_FLDNAME	Name of the Field.
	TIB_FLDTYPE	Type of the Field.
	TIB_PRNTRECNAME	Name of the parent record name.
	TIB_RECALIAS	Name of the record alias name.

Type of Item	Name	Description
	TIB_FLDALIAS	Name of the field alias.
Menu	TIBCO_MAINT_MENU	
Page	TIB_CI_ADAPTER_WRK	Page that has all the PeopleCode used to capture data from PeopleSoft and store it in the MQUEUE table.
	TIB_CI_MQUEUE_PGE	
	TIB_CI_PUBLISHER	
	TIB_COMP_INTERFACE	
	TIB_MQUE_DATA_PGE	
	TIB_MQUE_SRCH_PGE	
	TIB_MSGVER_PG	
	TIB_MSGREC_PG	
	TIB_MSGDET_PG	
Record	TIB_BCITEM_VW	
	TIB_CI_BUS_DTL	Stores the details of the component to be captured.
	TIB_CI_BUS_HDR	Stores the events to be published and in what mode.
	TIB_CI_DTLWRK	
	TIB_CI_GET_VW	
	TIB_CI_MQUEUE	Stores the data to be published.
	TIB_CI_MSG_VW	
	TIB_CI_PARNT_VW	
	TIB_CI_SEQUENCE	Stores the sequence number of the published event.
	TIB_CI_TIDLOG	Has the PeopleCode required for capturing data to be published.

Type of Item	Name	Description
	TIB_MQUEUE_SRCH	
	TIB_PUB_WRK	
	TIB_MSGVER_VW	
	TIB_MSGREC_VW	
	TIB_MSG_VW_TBL	
SQL	TIB_BCITEM_VW	
	TIB_CI_GET_VW	Captures the GETKEYS for a particular Component Interface.
	TIB_CI_MSG_VW	Captures the details of the fields and records to be published.
	TIB_CI_PARNT_VW	Captures the parent-child relationship for Component Interfaces.
	TIB_MQUEUE_SRCH	Captures the range of sequence numbers for TIB Events and groups them by the status (processed/ unprocessed).
	TIB_MSGVER_VW	
	TIB_MSGREC_VW	
	TIB_MSG_VW_TBL	

Type of Item	Name	Description
PeopleCode	TIB_CI_TIDLOG.RowInit	This event is fired for all the records the first time a row of data is encountered. This is usually used to set the initial state of a component or a page. The plug-in uses this particular record's RowInit event to host the PeopleCode to perform the following: Check if the panel is invoked online. Call a function to get the data to be captured from the TIB tables, only if the panel is invoked online and not via the Component Interface.
	TIB_CI_TIDLOG.SavePreChange	This event is fired just before the data is updated in the database by the PeopleSoft component processor. It gives you one last chance to manipulate the data before it is saved to the database. The plug-in uses this particular record's SavePreChange event to host the PeopleCode to perform the following: Set the various global variables. Calls a function to start the processing of an event. Calls a function to write the message to the MQUEUE table after an event has been processed.
	TIB_CI_TIDLOG.FieldFormula	This event is fired in more than one context but primarily it is used to declare and store functions to be used to by PeopleCode of other events. Hence the plug-in uses this particular record's FieldFormula event to host the PeopleCode defining various functions, which do the processing required to capture and write the data to the MQUEUE table.

Loading the TIB_PEOPLESOFT_PLUGIN Project

To load the project to the PeopleSoft server, you need to finish these tasks in sequence:

- Back Up and Delete the Existing TIB_PEOPLESOFT PLUGIN Project in the PeopleSoft Database
- Copy the TIB_PEOPLESOFT_PLUGIN Project
- Oracle Only: Create a Tablespace for Records
- Build the TIB_PEOPLESOFT_PLUGIN Project
- Grant Permissions for Working with CI

For more information on PeopleSoft configuration, see PeopleSoft (Enterprise PeopleTools) Documentation Library.

Back Up and Delete the Existing TIB_PEOPLESOFT_PLUGIN Project in the PeopleSoft Database

Before loading the TIB_PEOPLESOFT_PLUGIN project, you need to check whether the project is already in the PeopleSoft database. If there is an existing TIB_PEOPLESOFT_PLUGIN project in the database, you must delete it and load the project from the plug-in with the version you want to use.

To check whether the TIB_PEOPLESOFT_PLUGIN project is already in PeopleSoft Database:

Procedure

1. Open PeopleTools Application Designer and log in to the server where you want to add the project.
2. Verify that there is no existing TIB_PEOPLESOFT_PLUGIN project already in the database:
   a) From the menu, select **File** > **Open**.
   b) In the Open Definition dialog, open the **TIB_PEOPLESOFT_PLUGIN** project.
3. Check the listed projects:
   - If there is no existing TIB_PEOPLESOFT_PLUGIN project, skip to, Copy of TIB_PEOPLESOFT_PLUGIN Project
   - If there is an existing TIB_PEOPLESOFT_PLUGIN project, continue to step 4.
4. Back up any contents of the TIB_CI_MQUEUE table associated with the project.
5. Delete the existing TIB_PEOPLESOFT_PLUGIN project.
6. From the menu, select **File** > **Delete**. In the Delete Definition dialog, delete all of the items in the TIB_PEOPLESOFT_PLUGIN project in the following order:
   a) Menus
   b) Component Interfaces
   c) Components
   d) Pages
   e) Records
   f) Fields
7. Delete the TIB_PEOPLESOFT_PLUGIN project itself and close the Delete Definition dialog.
8. If necessary, also delete the cache.
9. Exit PeopleTools Application Designer.

Copy the TIB_PEOPLESOFT_PLUGIN Project

To load the project:

Procedure

1. Open PeopleTools Application Designer and log in to the server where you want to add the project.
2. From the menu, select **Tools** > **Copy Project > From File**.
3. In the displayed dialog, browse to the following directory: `BW\PALETTES\PEOPLESOFT\7.0\samples\TIB_PEOPLESOFT_PLUGIN`.
4. Select the `TIB_PEOPLESOFT_PLUGIN` project from the displayed list and click **Select**.
5. In the Copy From File dialog, select all the Definition Types, then click **Copy**.
6. Save the project and exit PeopleTools Application Designer.

Oracle Only: Create a Tablespace for Records

If you are using an Oracle database, you need to create a separate tablespace for the following records:

- TIB_CI_BUS_DTL
- TIB_CI_BUS_HDR
- TIB_CI_MQUEUE
- TIB_CI_SEQUENCE
- TIB_CI_TIDLOG

To create a tablespace and assign records:

Procedure

1. Create a tablespace in the Oracle database exclusively for records. The recommended size for the tablespace is 50MB. If you want to increase the tablespace size, contact your database administrator.
2. Open PeopleTools Application Designer and log in to the target server where you added the project.
3. Open a record(s) to be allocated to the new tablespace.
4. From the menu, select **Tools** > **Data Administration > Set Tablespace**.
5. Select **Oracle** from the Platform drop-down list.
6. Select the created tablespace from Available Space Name-DB Name drop-down list. Change the original setting if required.
7. Click **OK**.
8. Save the record(s). A new tablespace is added to the record(s).
9. Repeat step 3 to step 8 to add the tablespace to the five records.
10. Save the project and exit PeopleTools Application Designer.

Build the TIB_PEOPLESOFT_PLUGIN Project

To build the project:

Procedure

1. Open PeopleTools Application Designer and log in to the target server where you added the project.
2. Open the TIB_PEOPLESOFT_PLUGIN project using PeopleTools Application Designer.
3. From the menu, select **Build** > **Project**.

4. In the Build dialog, configure the following settings and options.
   a) Click the **Settings** button and in the displayed Build Settings dialog, select all the options that regenerate tables, views, and indexes, and click **OK**.
   b) In the Build Options group box, check the **Create Tables** checkbox and the Create Views checkbox.
   c) In the Build Execute Options group box, select **Execute And Build Script** radio button.
5. Click **Build** to build the project.
6. Save the project and exit PeopleTools Application Designer.

Grant Permissions for Working with CI

To grant permissions for an plug-in working with CI

Procedure

1. Restart the PeopleSoft application server where you added the project.
2. Log in to PIA and navigate to **PeopleTools** > **PeopleTools > Security > Permissions & Roles > Permission Lists**.
3. Find the permission list with a description containing "all pages" and open it. The name of the permission list is different for varied PeopleSoft applications. For example, find HCCPCSSA1000 CS Administration - All Pages in the Permission List
4. Click to open the page and set the permissions:
   a) Click the **Pages** tab, add or find the **TIBCO_MAINT_MENU** menu and grant all permissions to the related components. Then save the change.
   b) Click the **Component Interfaces** tab, grant **Full Access** permissions for the following Component Interfaces. If they do not exist, insert them into the Component Interfaces list first.

      - TIB_CI_COMPINTFC
      - TIB_MQUEUE_DATA_CI
      - TIB_MQUEUE_SRCH_CI
      - TIB_MSGDET_CI
      - TIB_MSGREC_CI
      - TIB_MSGVER_CI
      - TIB_PUB_COMPINTFC
5. Save all the changes.
6. Restart the PeopleSoft application server.

Preparing PeopleSoft Component Interfaces

TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft uses PeopleSoft component interfaces as schemas and as APIs for formatting and processing data between a PeopleSoft application and the

TIBCO environment. You must prepare PeopleSoft component interfaces so the plug-in can download them inside the studio.

- Use the Test Component Interface tool in PeopleTools Application Designer to determine which fields are required and what values are valid for sending into PeopleSoft.
- Eliminate any unnecessary records and fields from a component interface. The simpler the component interface, the easier it is to set up and test the plug-in. Component interfaces containing fields from derived records are likely to cause errors.
- The package inside the CI.jar should be `PeopleSoft.Generated.CompIntfc`

Procedure

Before configuring the plug-in, complete the following tasks in your PeopleSoft system:

- Develop Component Interfaces
- Build PeopleSoft Component Interface Java APIs
- Compile the Built PeopleSoft Component Interface Java APIs
- Grant Permissions for the Required Component Interfaces

Develop Component Interfaces

To develop the required component interfaces, you need to create or change the required component interfaces by using PeopleTools Application Designer. Make sure the component interfaces have all the records and fields you need for the type of data the plug-in is processing.

Build PeopleSoft Component Interface Java APIs

To build PeopleSoft Java APIs:

Procedure

1. Open the component interface you want to use from PeopleSoft Application Designer.
2. From the menu, select **Build** > **PeopleSoft APIs**.
3. In the Build PeopleSoft API Bindings dialog:
   a) Uncheck the **Build** checkbox for COM Type Library.
   b) Uncheck the **Build** checkbox for C Header Files.
   c) Check the **Build** checkbox for Java Classes. Navigate to open your **Target Directory** and select the following from the **PeopleSoft APIs to Build** list:

   - PeopleSoft.*
   - CompIntfc.CompIntfc*
   - APIs for required component interfaces: For example, for the COUNTRY component interface, select `CompIntfc.COUNTRY` and `CompIntfc.COUNTRYCollection`.
   - Click OK in the Build PeopleSoft API Bindings dialog to build the APIs.

Compile the Built PeopleSoft Component Interface Java APIs

Compile all the sources which we get after building Component Interfaces in the above step and make a Jar (CI.jar) file from it.

Grant Permissions for the Required Component Interfaces

To grant permissions for the component interfaces:

Procedure

1. Log in to PIA and navigate to **PeopleTools** > **Security > Permissions & Roles > Permission Lists**.
2. Find the permission list which includes the required component interfaces and open it.
3. Click the **Component Interfaces** tab and find the desired component interfaces. For example, if you want to work with the Country component interface, make sure it is in the list.
4. Edit each component interface and grant **Full Access** permissions to all its methods.

Getting Started

This tutorial is designed to get users started with TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft in TIBCO Business Studio.

All operations are performed in TIBCO Business Studio. Refer to *TIBCO ActiveMatrix BusinessWorks™ Concepts Guide* to familiarize yourself with TIBCO Business Studio.

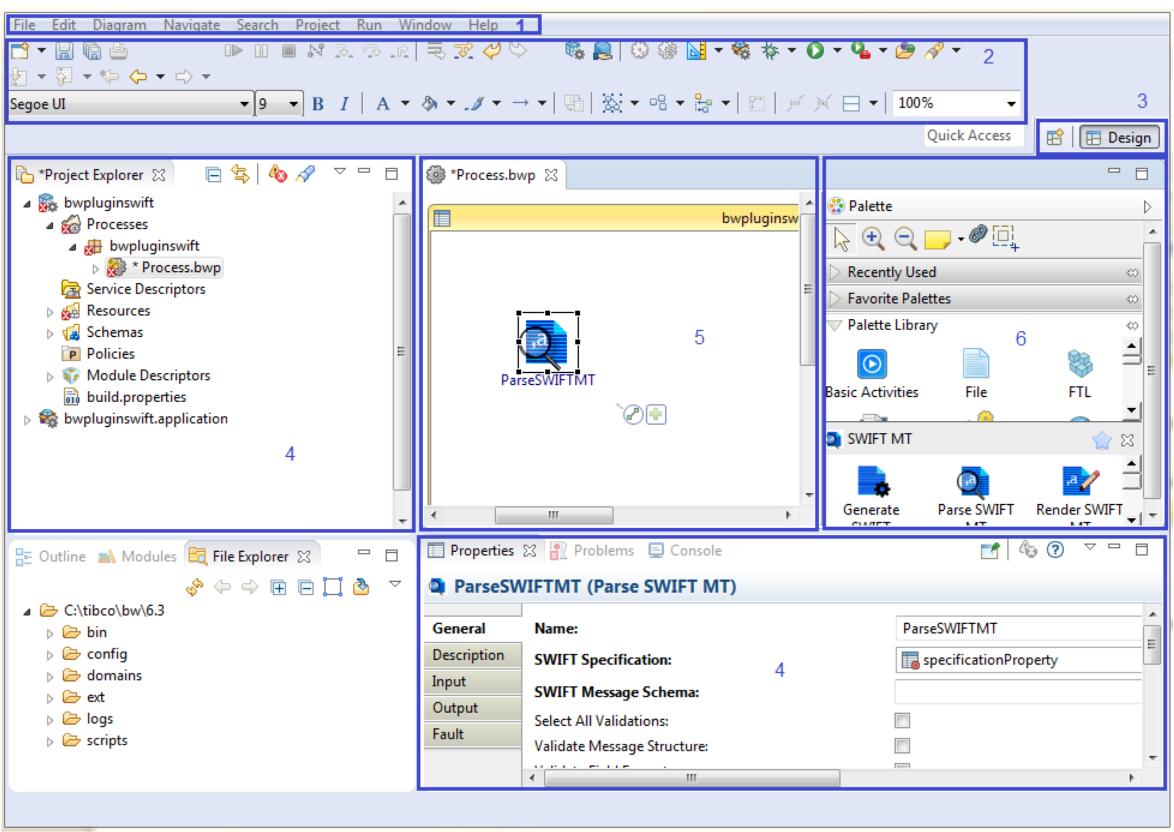
Steps to create and deploy an application by using ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft are as follows:

1. TIBCO Business Studio Overview
2. Creating a Project
3. Creating a PeopleSoft Configuration Shared Resource
4. Configuring a Process
5. Testing a Process
6. Deploying an Application

TIBCO Business Studio Overview

TIBCO Business Studio is an Eclipse-based integration development environment that is used to design, develop, and test ActiveMatrix BusinessWorks applications.

TIBCO Business Studio provides a workbench in which you can create, manage, and navigate resources in your workspace. A *workspace* is the central location on your machine where all data files are stored.



The workbench consists of:

- **Menu**: contains menu items such as File, Edit, Diagram, Navigate, Search, Project, Run, Window, and Help.

- **Toolbar**: contains buttons for frequently used commands such as New, Save, Enable/Disable Business Studio Capabilities, Create a new BusinessWorks Application Module, Create a new BusinessWorks Shared Module, Debug, Run, and so on.
- **Perspective**: contains an initial set and layout of views that are required to perform a certain task. TIBCO Business Studio launches the Modeling perspective by default. You can change the perspective from the menu **Window** > **Open Perspective** > ***Perspective_Name***.
- **View**: displays resources. For example, the Project Explorer view displays the ActiveMatrix BusinessWorks applications, modules, and other resources in your workspace, and the Properties view displays the properties for the selected resource. You can open a view from the menu **Window** > **Show View** > ***View_Name***.
- **Editor**: provides a canvas to configure, edit, or browse a resource. Double-click a resource in a view to open the appropriate editor for the selected resource. For example, double-click an ActiveMatrix BusinessWorks process `MortgageAppConsumer.bwp` in the Project Explorer view to open the process in the editor.
- **Palette**: contains a set of widgets and a palette library. A *palette* groups activities that perform similar tasks, and provides quick access to activities when configuring a process.

Creating a Project

To use the plug-in, the first task is to create the project. You can add resources and processes after creating a project.

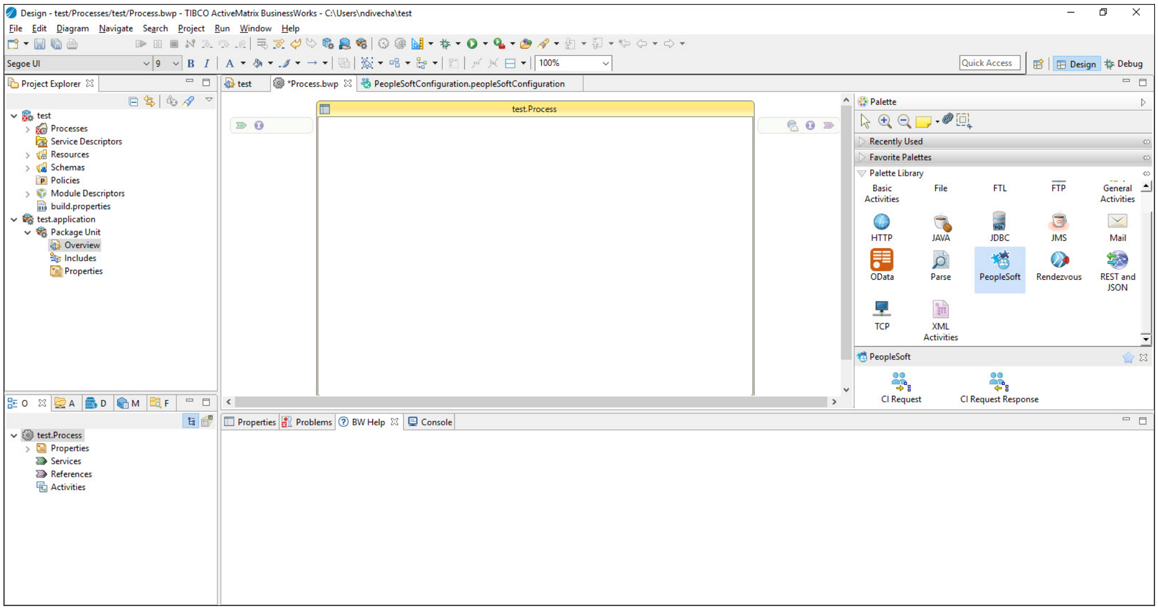
An Eclipse project is an application module configured for TIBCO ActiveMatrix BusinessWorks. The Eclipse project is named, versioned, and packaged as part of the application.

Procedure

1. Start TIBCO Business Studio:
   - Microsoft Windows: Click **Start** > **All Programs** > **TIBCO** > ***TIBCO_HOME*** > **TIBCO Business Studio *version_number*** > **Studio for Designers**.
   - Linux: Run the TIBCO Business Studio executable file located at`TIBCO_HOME/studio/version_number/eclipse` directory.
2. On the **File** menu, click **New** > **BusinessWorks Resources**. The BusinessWorks Resource wizard is displayed.
3. On the "Select a wizard" page, click **BusinessWorks Application Module**, and click **Next**.
4. On the Project page, enter the following details and click **Finish**:
   a) In the **Project name** field, enter a project name.
   b) By default, the created project is located in the workspace current in use. If you do not want to use the default location for the project, clear the **Use default location** check box, and click **Browse** to select a new location.
   c) Use the default version of the application module, or enter a new version in the **Version** field.
   d) Keep the **Create empty process** and **Create Application** check boxes selected to automatically create an empty process and an application when creating the project.
   e) Select the **Use Java configuration** check box if you want to create a Java module.
   A Java module provides Java tooling capabilities.

Result

The project with the specified settings is displayed in the Project Explorer view.



Creating a PeopleSoft Configuration Shared Resource

After you create a project, you create a PeopleSoft Configuration Shared Resource to connect to PeopleSoft application server and download the schema.

Prerequisites

Before creating the PeopleSoft Configuration Shared Resource, make sure a project is created. See Creating a Project for more details.

Procedure

1. Expand an existing project in the Project Explorer view.
2. Right-click the `Resources` folder, and click **New** > **PeopleSoft Configuration**.
3. In the PeopleSoft Configuration wizard, the resource folder, package name, and resource name of the PeopleSoft configuration are provided by default. If you do not want to use the default configurations, change them accordingly. Click **Finish**.
4. Configure the connection in the **Connection** tab of PeopleSoft Configuration shared resource. The PeopleSoft Configuration has two tabs, Connection and Schema. For more details see, PeopleSoft Configuration Shared Resource section.
5. Click **Test Connection** to validate the connection.
6. Click **File** > **Save** to save the process.

Result

A configuration resource is created: *`PeopleSoftConfiguration`*`.peopleSoftResource`. The configuration resource is saved in the `Resources\`*`package_name`* directory by default or the directory you specified.

Configuring a Process

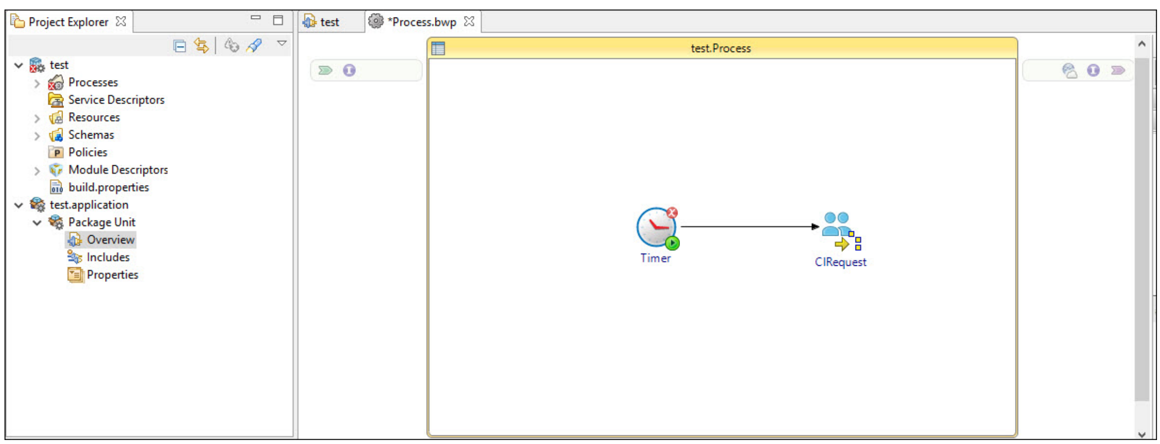
When you create a project, an empty process is created by default. You can add activities to the empty process to complete a task.

Prerequisites

Ensure that you have created an empty process when creating a project. For more information, see Creating a Project.

Procedure

1. In the Project Explorer view, click the created project, and open the empty process from the `Processes` folder.
2. Select activities from the Palette view, and drag them in it in the Process editor.
   For example, you can drag the Timer activity from the General Activities palette, and the CI Request activity from the PeopleSoft palette, to the process editor.



3. Click an activity in the Process editor and drag the icon to create a transition between the added activities.
4. Configure the activities as described in PeopleSoft Palette.

   A PeopleSoft connection is required when configuring the PeopleSoft activities. See Creating a PeopleSoft Configuration Shared Resource for more details about how to create a PeopleSoft connection.

5. To save the process, click **File** > **Save**.

Result

The process with configured activities is saved: `*process_name*.bwp`. The process is saved in the `Processes\*package_name*` directory by default or the directory you specified.

Testing a Process

After configuring the process, you might want to debug or test the process.

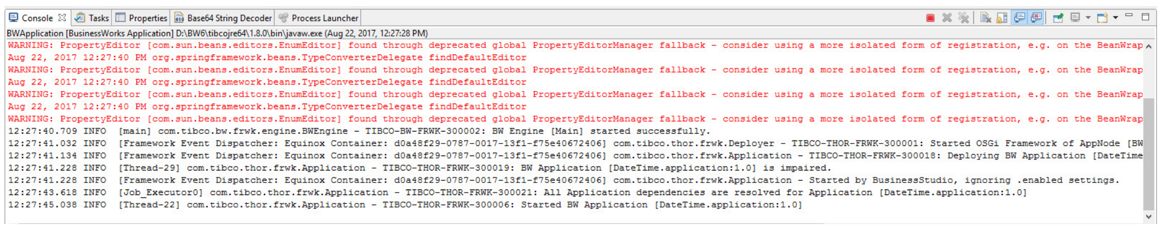
Prerequisites

Ensure that you have configured the process. For more information, see Configuring a Process.

Procedure

1. In TIBCO Business Studio, navigate to the process that you want to test.
2. On the toolbar, click  and select **Debug** > **Debug Configurations**
3. Click **BusinessWorks Application** > **BWApplication** in the left panel of the opened dialog. By default, all applications in the current workspace are selected on the **Applications** tab. Ensure that only the application you want to debug is selected in the right panel of the **Applications** tab.
4. Click **Debug** to test the process in the selected application.

   TIBCO Business Studio switches to the Debug perspective. The debug information is displayed in the Console view, as shown in the following figure.

5. In the **Debug** tab, expand the debugged process and click an activity.
6. In the upper-right corner, click the **Job Data** view, and then click the **Output** tab to check the activity output.

Deploying an Application

After testing the process, if the configured process works as expected, you can deploy the application that contains the configured process into a runtime environment, and then use the **`bwadmin`** utility to manage the deployed application.
Before deploying an application, generate an application archive, which is an enterprise archive (EAR) file in TIBCO Business Studio.

Deploying an application involves:

1. Uploading an application archive.
2. Deploying an application archive.
3. Starting an application.

See TIBCO ActiveMatrix BusinessWorks Administration for more details about how to deploy an application.

PeopleSoft Configuration Shared Resource

The **PeopleSoft Configuration** shared resource contains the required information to establish a connection at runtime to the PeopleSoft server and is used by the activities to connect with the server. The **PeopleSoft Configuration** has two tabs, **Connection** and **Schema**. On the **Connection** tab, you can connect to the PeopleSoft server, and the **Schema** tab is used to fetch the Component Interfaces from the PeopleSoft server and view the schema details.

Connection Tab

On the **Connection** tab, you can provide the necessary information to connect the plug-in with the PeopleSoft server

The **Connection** tab contains the following fields:

General

On the **General** panel, you can specify the package that stores the PeopleSoft Configuration shared resource and the shared resource name.

The **General** panel contains the following fields:

Field	Module Property?	Description
Package	No	The name of the package where the new shared resource is added.
Name	No	The name to be displayed as the label for the shared resource in the process. The default is `PeopleSoftConfiguration`.
Description	No	A short description of the shared resource.

Configuration

On the **Configuration** panel, you can provide the information about the PeopleSoft server to which the plug-in connects.

The **Configuration** panel contains the following fields:

Field	Module Property?	Description
Application Server	Yes	The IP address and port number to connect to the PeopleSoft server, which is provided in the following format: **`<Host>:<Port>`** For example, **`10.97.106.89:9033`**
Login Name	Yes	The user name of a PeopleSoft application server used to access PeopleSoft.

Field	Module Property?	Description
Password	Yes	The password of a PeopleSoft application server used to access PeopleSoft.
Use Domain Password	No	By selecting this checkbox, the **Domain Password** field appears and you can enter the domain password.
Domain Password	Yes	The **Domain Password** field is only visible after the **Use Domain Password** field is checked. The Domain Password is used to protect the domain for more security.
Test Connection	No	Used to test whether the connection to PeopleSoft can be established.

Advanced

The **Advanced** panel contains the following fields:

Field	Module Property?	Description
Maximum Reconnect Attempts	Yes	The maximum number of reconnection attempts to make after a connection is lost. The default value is `-1`. This indicates, the plug-in attempts to reconnect to PeopleSoft indefinitely when a connection fails.
Reconnect Intervals (milliseconds)	Yes	The time interval in milliseconds to elapse between reconnection attempts. The default value is `100`.

Schema Tab

On the **Schema** tab, you can download the schemas from the PeopleSoft server and view the schema details.

Only one schema can be added at a time for every connection.

To add a schema,

1. Click the **Add** button or right click and select **Add** in the **Schema Types** panel.
2. On clicking **Add**, the Fetch Component Interface window opens. Click the **Fetch** button and a list of all available Component Interfaces appears. You can use a partial name or full name of the Component Interface that are present in the top-down list when you click the **Fetch** button. If you provide a partial name, then the Component Interfaces beginning with that string is displayed. If you provide a full name of the Component Interface, only the paticular Component Interface is displayed.

While fetching schemas no regular expression or wildcard is allowed. Only substrings is allowed.

3. Select a schema and click **OK**. The schema is added to the list on **Schema Types** panel.

To delete a schema,

1. Select the schema and click the **Remove** button or right-click on the schema and select **Remove**.

The Schema details are as follows:

Field	Description
Name	The name of the record fields.
Field Type	The data type of the record fields.
Key	This column indicates whether the field is a key in a PeopleSoft database.
Runtime Input	This column indicates whether the field should be included in the runtime input. The **Runtime Input** check box is unavailable for fields that are identified as a**Key** in the PeopleSoft database.

PeopleSoft Palette

The PeopleSoft palette contains two activities to be integrated with PeopleSoft.

- CI Request
- CI Request Response

CI Request

In the CI Request activity, the plug-in recieves messages from the TIBCO environment, parses the request and performs specified operations on the message data in the PeopleSoft database through Component Interface.

General Tab

On the **General** tab, you must specify the required parameters before you can use this activity. The **General** tab contains the following fields:

Field	Module Property?	Description
Name	No	The name to be displayed as the label for the activity in the process.
Connection	Yes	The reference to PeopleSoft Configuration Shared Resource. It is used to get connection and the schema details.
Schema	No	The name of the schema to be used in the activity. The search results list all the schemas downloaded for the particular connection selected in the **Connection** field.

Description Tab

On the **Description** tab, you can enter a short description for the CI Request activity.

Input Tab

On the **Input** tab, you can view the input data for the CI Request activity. The values in the **Input** tab are populated based on the schema selected in the **Schema** field.

Operation Code

The input data of CI Request contains a field called operation code (OPRN_CODE) if the Component Interface contains records that are level 1 and above. The value in the operation code field determines the mode of operation carried out on child records in the PeopleSoft database. The values that can be specified in the input data for OPRN_CODE are:

- Insert (I) - For inserting a new record.
- Update (U) - For inserting a record if the record does not exist or for updating a record if it exists. The Update operation inserts the value for the fields that are defined in the schema if the record does not exist, and updates the value for the fields if the record exists.
- Delete (D) - For deleting an existing record.
- Null - If no operation code is specified an update is carried out.

For more information on Operation Code, see Implemention of Keys in TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft

Fault Tab

The **Fault** tab, has the following exceptions:

- **PeopleSoftPluginException**
- **PeopleSoftOperationException**

PeopleSoftPluginException throws an error and cause the activity to stop. This exception is caused for all cases other than PeopleSoftOperation exception.

Field	Type	Description
msg	string	The error message description returned by the plugin.
msgCode?	string	The error code returned by the plugin.

PeopleSoftOperationException throws an error and cause the activity to stop. This exception is caused when any error occurs during an API invoke for Operation processing on the PeopleSoft Server.

Field	Type	Description
msg	string	The error message description returned by the plugin.
msgCode?	string	The error code returned by the plugin.

CI Request Response

The CI Request Response activity receives requests from the TIBCO environment, parses the request, performs specified operation on the input fields, and then returns output fields using the Component Interface.

General Tab

On the **General** tab, you can specify the required parameters before you can use this activity. The **General** tab contains the following fields.

Field	Module Property?	Description
Name	No	The name to be displayed as the label for the activity in the process.
Connection	Yes	The reference to PeopleSoft Configuration Shared Resource. It is used to get connection and the schema details.
Schema	No	The name of the schema to be used in the activity. On clicking the search symbol, a dialog box opens which lists downs all the schema downloaded for the particular connection selected in the **Connection** field.

Description Tab

On the **Description** tab, you can enter a short description for the CI Request Response activity.

Input Tab

On the **Input** tab, you can view the input data for the CI Request Response activity. The values in the **Input** tab are populated based on the schema selected in the **Schema** field.

Operation Code

The input data received by CI Request Response contains a field called operation code (OPRN_CODE) if the Component Interface contains records that are level 1 and above. The value in the operation code field determines the mode of update carried out on child records in the PeopleSoft database. The values that can be specified in the input data for OPRN_CODE are:

- Insert (I)- For inserting a new record.
- Update (U)- For inserting a record if the record does not exist or for updating a record if it exists. The Update operation inserts the value for the fields that are defined in the schema if the record does not exist, and updates the value for the fields if the record exists.
- Delete (D)- For deleting an existing record.
- Null - If no operation code is specified an update is carried out.

For more information on Operation Code see, Implementation of Keys in TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft

Output Tab

The values on the Output tab are populated based on the values passed to the fields in the **Input** tab and the operation performed on the server. If the process executes successfully, output data gets displayed in the **Output** tab.

If the process fails a **Fault** is generated. The error or an exception is displayed in the **Fault** tab.

Fault Tab

The **Fault** tab, has the following exceptions:

- **PeopleSoftPluginException**
- **PeopleSoftOperationException**

PeopleSoftPluginException throws an error and cause the activity to stop. This exception is caused for all cases other than PeoplSoftOperation exception.

Field	Type	Description
msg	string	The error message description returned by the plugin.
msgCode?	string	The error code returned by the plugin.

PeopleSoftOperationException throws an error and cause the activity to stop. This exception is caused when any error occurs during API invoke for Operation processing on the PeopleSoft Server.

Field	Type	Description
msg	string	The error message description returned by the plugin.
msgCode?	string	The error code returned by the plugin.

Implementation of Keys in TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft

The PeopleSoft component interfaces become schemas in the plug-in. When applying a PeopleSoft Component Interface to a CI Request and CI Request Response in the plug-in, the fields in the CREATEKEYS (if applicable), GETKEYS and FINDKEYS buckets in every Component Interfaces definition hold a special significance.

GETKEYS

The plug-in primarily uses `GETKEYS` to update a particular record in PeopleSoft. For CI Request Response activity, if the `FINDKEYS` values are not specified in the incoming request, the plug-in looks for `GETKEYS` values. For a CI Request activity, the plug-in by default looks for `GETKEYS` and ignores the `FINDKEYS` completely.

If the `GETKEYS` values are specified, the plug-in queries PeopleSoft to check if the record exists. If the record exists, the plug-in updates that record in PeopleSoft fields with values specified under the `PROPERTIES` keys.

The `GETKEYS` keys should be a subset of the `FINDKEYS` keys. This is to avoid an error scenario wherein the plug-in tries to search for a record with a key that is not a part of the `FINDKEYS` in the CI definition.

If the record does not exist, the plug-in looks for `CREATEKEYS`.

FINDKEYS

The `FINDKEYS` functionality of PeopleSoft Component Interface is a feature that can be used with the plug-in's CI Request-Response activity. If the `FINDKEYS` values are specified in the incoming request, they take precedence over any `GETKEYS` or `CREATEKEYS` values specified. The plug-in's CI Request-Response activity uses the same to query PeopleSoft and return a sequence of `FINDKEY` keys with values, which satisfy the query criterion, as a reply. Please note that any other part of the incoming request (`GETKEYS`, `CREATEKEYS` or `PROPERTIES`) is ignored.

Fields in `FINDKEYS` should be a superset of fields in `GETKEYS()` as the fields under these decide the query criterion.

CREATEKEYS

The plug-in primarily uses `CREATEKEYS` to create a record in PeopleSoft. If neither `GETKEYS` nor `FINDKEYS` are specified in the incoming requests (or due to the conditions arising out of the two scenarios described in `GETKEYS`), the plug-in looks for `CREATEKEYS` in the incoming request.

If specified, the plug-in queries PeopleSoft to check if the record already exists. If the record is not found, the plug-in creates a new record with the `CREATEKEYS` fields as primary fields and `PROPERTIES` keys as values for the non-primary fields. If the record already exists, an error is thrown by the plug-in saying `CREATEKEYS` failed.

The `CREATEKEYS` should be a subset of the `FINDKEYS` keys. This is to avoid an error scenario wherein the plug-in is trying to search a record with a key which is not a part of `FINDKEYS` in the CI definition.

Each CI can have multiple levels up to Level 3. In this case, the plug-in mandates the occurrence of key fields at all levels in this scenario for performing the `CREATE`, `UPDATE`, or `DELETE` operations successfully at all levels.

For `NULLKEYS`, if user does not provide any values in the `FINDKEYS`, `GETKEYS`, and `CREATEKEYS` and provides value in the `PROPERTIES` a new record gets created. But user is not recommended to use `NULLKEYS`, as this differs from CI to CI, as some CI allow blank records to be added at child level while some CI do not allow this, and therefore the operation fails. Therefore it is recommended to use `CREATEKEYS`, to create a new record.

Valid Operation Codes for the Plug-in

PeopleSoft Component Interface can have multiple levels up to level 3. The plug-in can `INSERT` or `UPDATE` the records at all these levels. The `DELETE` operation can be performed only at level 1 and above. In these case, the key fields should be present at all levels and the user needs to provide the operation code at all levels.

Valid values for `OPRN_CODE` for `CREATEKEYS` and `GETKEYS` scenario are:

- `UPDATE - U`
- `INSERT - I`
- `DELETE- D`

CREATEKEYS Scenarios

For all `CREATEKEYS` scenarios, specify `I` as the value for `OPRN_CODE` for all the records in the request.

GETKEYS Scenarios

1. To update details of an existing record, specify `U` as the value for `OPRN_CODE` at all levels.
2. To insert a new record under an existing record, specify `I` as the `OPRN_CODE` for the record to be inserted. If the new record to be inserted is not a Level1 record, specify `U` as the `OPRN_CODE` for the parent records under which the new record is inserted in the following format:
   - Level1 record - 'U'
     – Level2 record - 'I'
3. To delete a record under an existing record, specify `D` as the `OPRN_CODE` for the record to be deleted. If the record to be deleted is not a Level1 record, specify `U` as the `OPRN_CODE` for the parent record(s) from which the record is to be deleted in the following format:
   - Level1 record - 'U'
     – Level2 record - 'D'
4. While inserting a new Level1 record with Level2 and Level3 records under it, specify the value for the `OPRN_CODE` in the following format:
   - Level1 record - 'I'
     – Level2 record - 'I'
       – Level3 record - 'I'

   For some CIs, PeopleSoft by default creates child records while inserting a new record. For example, while inserting a new Level1 record for some CIs, PeopleSoft creates Level2 and Level3 records by default. In such a scenario specify the value for the `OPRN_CODE` in the following format:
   - Level1 record - 'I'
     – Level2 record - 'U'
       – Level3 record - 'U'

Sample Project Overview

The sample projects help to understand how TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft operates.

TIBCO ActiveMatrix BusinessWorks™ Plug-in for PeopleSoft is packaged with sample projects. After installing the plug-in, the following sample projects can be found in `TIBCO_HOME\bw\palettes\peoplesoft\version_number\samples\Examples` directory.

This plug-in provides the following sample project:

- Bargaining Unit

If the example throws an exception related to missing classes, update the CI jar with the jar containing the classes for the required Component Interface.

Prerequisites of Running the Examples

This section explains the prerequisits of running the examples:

- The Plug-in Examples Files
- Importing Sample Projects

The Plug-in Examples File

The plug-in software includes the following files that are required when you run the examples:

- The PeopleSoft Project file:

  The plug-in includes pre-built PeopleSoft project (TIB_SAMPLE) that contain the component interfaces to be used in PeopleTools 8.56.

  The TIB_SAMPLE project to be imported into PeopleTools 8.56 is located in `BW\PALETTES\PEOPLESOFT\7.0\samples\TIB_EXAMPLES_PT85x` folder.

  You must set up the projects in your PeopleSoft database before running the examples. See Loading the PeopleSoft Project for Examples

- The ZIP archives:

  The example ZIP files are included in the plug-in installation. After installation, the files are installed in the following directories:

  - Component Interface examples:

    `BW\PALETTES\PEOPLESOFT\7.0\samples\Examples\BARGAINING_UNIT`

You cannot directly open a ZIP archive in Studio for Designer and make modifications to the configurations. To work with a ZIP file, see Importing Sample Projects

Loading the PeopleSoft Project for Examples

To import the TIB_SAMPLE project into PeopleTools:

Procedure

1. Open PeopleTools Application Designer and log into the server where you want to add the project.
2. Verify that there is no existing TIB_SAMPLE project in the database:
   a) Select **File** > **Open**.
   b) In the Open Definition dialog, select **Project** from the Definition drop-down list and enter TIB_SAMPLE in the Name field of the Selection Criteria area. If there is no existing **TIB_SAMPLE** project, skip to step 3.
   c) Open the existing TIB_SAMPLE project and delete all the component interfaces.
   d) Delete the TIB_SAMPLE project itself.
   e) If necessary, also delete the cache.
   f) Exit PeopleTools Application Designer and then log in again.
3. Import the project:
   a) In PeopleTools 8.56, select **File** > **Copy Project from File**.
   b) In the displayed Copy From File: Select Project dialog, browse to locate the `BW\PALETTES\PEOPLESOFT\7.0\samples\TIB_EXAMPLES_PT85x` directory. The TIB_SAMPLE project is displayed in the list. Select the TIB_SAMPLE project to open it.
   c) In the displayed Copy From File dialog, make sure all the definition types are selected, then click **Copy**.

4. Grant permissions to work on the component interfaces:
   a) Log in to PIA and navigate to **PeopleTools** > **Security > Permission & Roles > Permission Lists**.
   b) Choose the appropriate permission list for the account used by the plug-in.
   c) Grant permissions to work on the component interfaces you have just imported. Make sure full access is given to all the component interfaces for the account being used by the plug-in.

Importing Sample Projects

Before running a sample project, you have to import it to TIBCO Business Studio™.

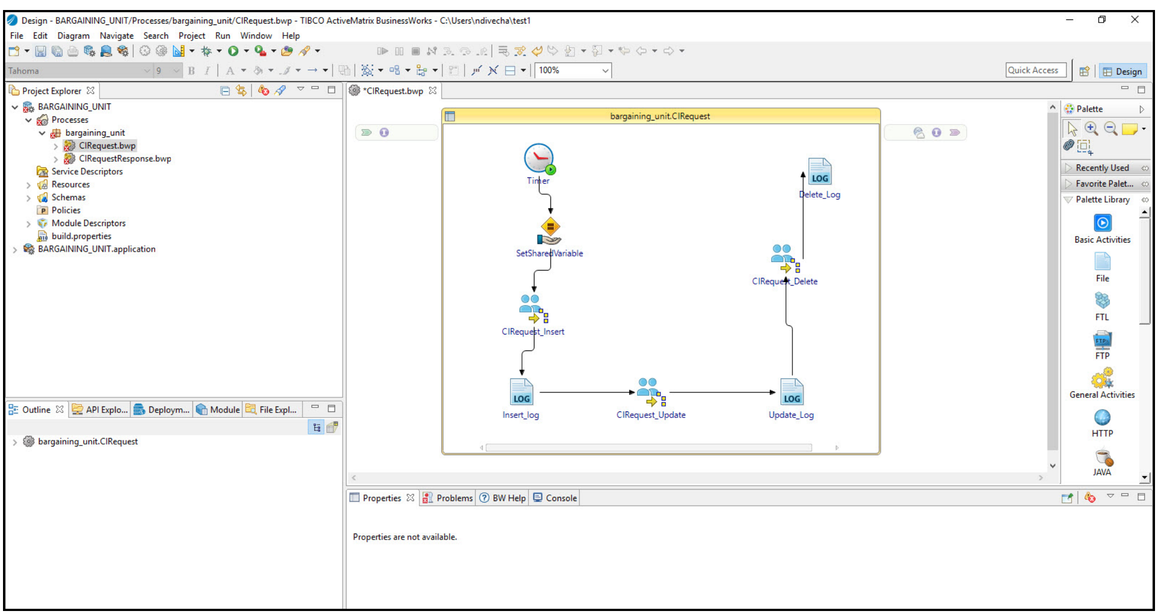
Procedure

1. Start TIBCO Business Studio.
2. From the menu bar, click **File** > **Import**.
3. In the Import dialog, expand the **General** folder, and then click **Existing Studio Projects into Workspace**. Click **Next.**
4. In the Import Projects dialog, click **Select archive file**, and then click **Browse** next to it to locate a sample project. For example, select the `BARGAINING_UNIT.zip` file, and then click **Open**.

   The sample projects are located in the *`TIBCO_HOME`*`/bw/palettes/peoplesoft/`*`version_number`*`/samples/Examples` directory.
5. Click **Finish**.

Result

The `BARGAINING_UNIT` project is imported to TIBCO Business Studio.

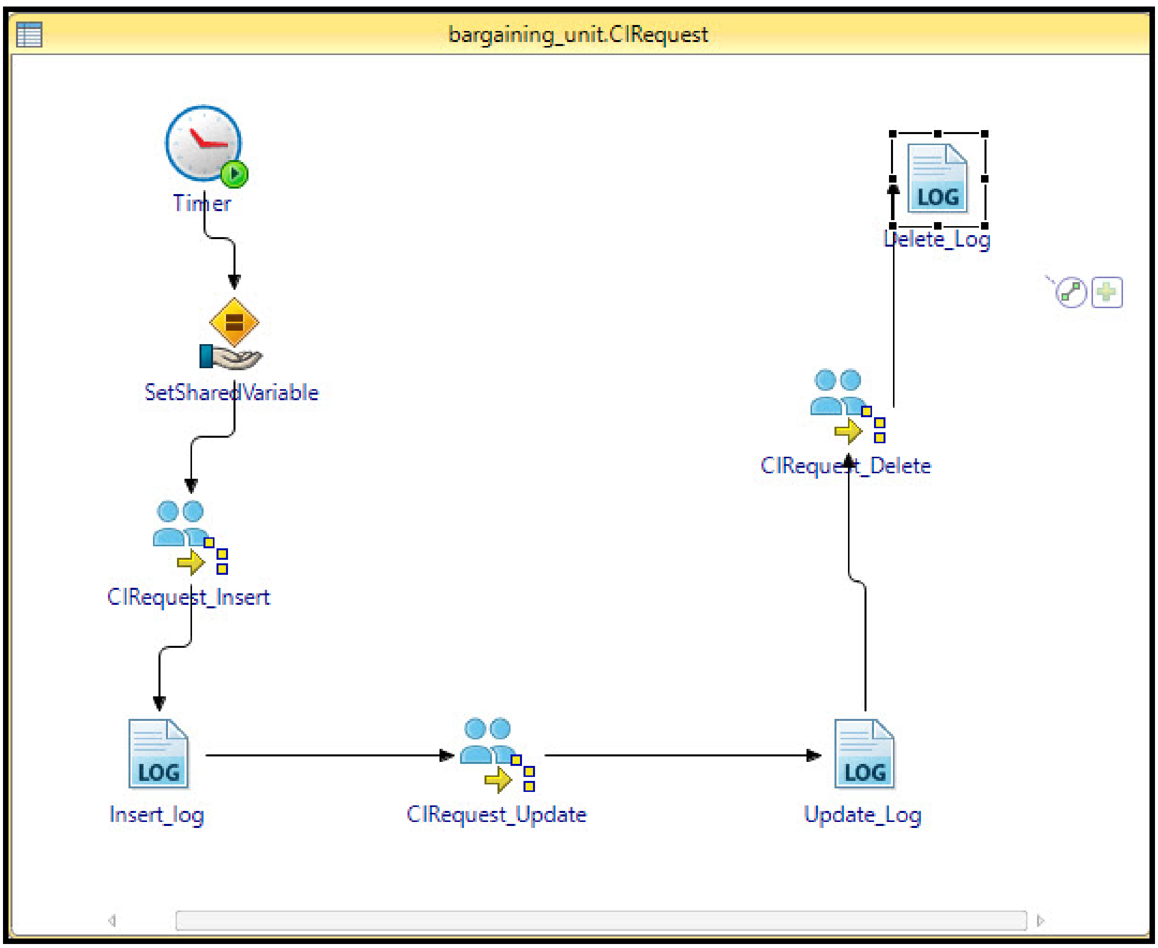


Bargaining Unit Project

The Bargaining Unit project contains two processes: CIRequest.bwp and CIRequestResponse.bwp. These example projects show how the CI Request and CI Request Response activities behave. The example shows the Insert, Update, and Delete on these activities.

CI Request process

The following figure describes the CI Request activity process:



The CI Request activity process performs the following operations:

- The CIRequest_Insert operation inserts the value for the fields that are defined in the schema.
- The CIRequest_Update operation updates the value for the fields that are defined in the schema.
- The CIRequest_Delete operation deletes the value for the fields that are defined in the schema.

Setting Up the Project

Before running the project, you have to set it up.

Prerequisites

You have to import the Bargaining Unit example before setting it up. For more information, see the Importing Sample Projects topic.

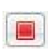
Procedure

1. Expand the imported project in the Project Explorer view.
2. Expand the **Module Descriptors** resource, and then double-click **Module Properties**.
3. The values are stored here. You can modify the values if needed.
4. From the menu bar, click **File** > **Save** to save the project.

Running the Project

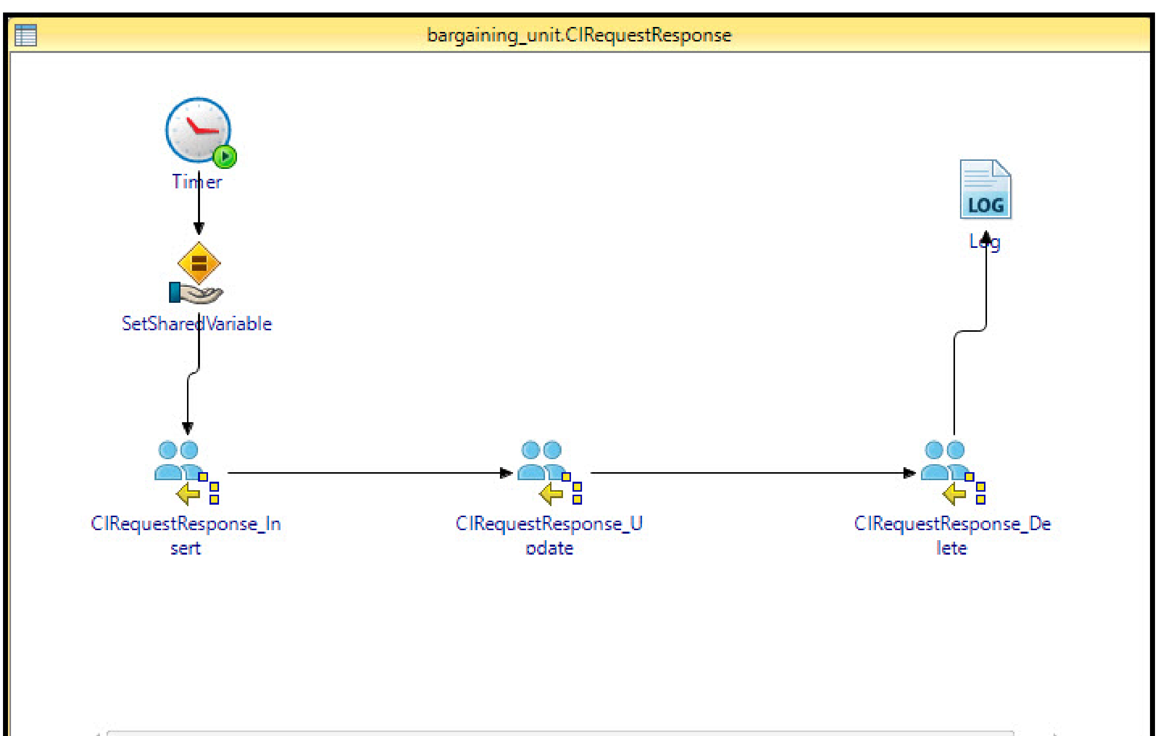
To run the project for the CI Request activity process, perform the following steps:

Procedure

1. In the Project Explorer view, expand the **Processes** > **bargaining unit** resource, and then double-click **CIRequest.bwp**.
2. Click **Run** > **Debug Configurations...**
   The Debug Configurations dialog opens.
3. Expand the **BusinessWorks Application** option and select **BWApplication**.
4. In the **Applications** tab, all processes are selected. Click the **Deselect All** button and select the **bargaining_unit.CIRequest** option.
5. Click the **Apply** button and click the **Debug** button.
6. Click **Debug** to run the process.
7. Click the  icon to stop the process.

CI Request Response process

The following figure describes the CI Request Response activity process:



The CI Request Response activity process performs the following operations:

- The CIRequestResponse_Insert operation inserts the value for the fields that are defined for the schema in the Input tab .
- The CIRequestResponse_Update operation updates the value for the fields that are defined for the schema in the Input tab.
- The CIRequestResponse_Delete operation deletes the value for the fields that are defined for the schema in the Input tab

Setting Up the Project

Before running the project, you have to set it up.

Prerequisites

You have to import the Bargaining Unit example before setting it up. For more information, see the Importing Sample Projects topic.

Procedure

1. Expand the imported project in the Project Explorer view.
2. Expand the **Module Descriptors** resource, and then double-click **Module Properties**.
3. The values are stored here. You can modify the values if needed.
4. From the menu bar, click **File** > **Save** to save the project.

Running the Project

To run the project for the CI Request Response activity process, perform the following steps:

Procedure

1. In the Project Explorer view, expand the **Processes** > **bargaining unit** resource, and then double-click **CIRequestResponse.bwp**.
2. Click **Run** > **Debug Configurations...**
   The Debug Configurations dialog opens.
3. Expand the **BusinessWorks Application** option and select **BWApplication**.
4. In the **Applications** tab, all processes are selected. Click the **Deselect All** button and select the **bargaining_unit.CIRequestResponse** option.
5. Click the **Apply** button and click the **Debug** button.
6. Click **Debug** to run the process.
7. Click the  icon to stop the process.

Troubleshooting

When you encounter problems with the project, ensure that you have cleaned up the project.
If errors occur when you run a process in TIBCO Business Studio, you can do a cleaning first. Cleaning deletes all the old files and reorganizes the project.

Procedure

1. Right-click the project in the Project Explorer view and click **Refresh**.
2. Select **Project** > **Clean** to start the cleaning.

Log Management

When an error occurs, you can check logs to trace and troubleshoot plug-in exceptions.

By default, error logs are displayed in the Console view when you run a process in Debug Mode. You can change the log level of the plug-in to trace different messages and export logs to a file. Different log levels correspond to different messages, as described in Log Levels.

Log Levels

Different log levels include different information.

The plug-in supports the following log levels:

Log Level	Description
Trace	Includes all information regarding the running process.
Debug	Indicates a developer-defined tracing message.
Info	Indicates normal plug-in operations. No action is required. A tracing message tagged with Info indicates that a significant processing step is reached, and logged for tracking or auditing purposes. Only info messages preceding a tracking identifier are considered as significant steps.
Warn	Indicates that an abnormal condition occurred. Processing continues, but special attention from the administrator is recommended.
Error	Indicates that an unrecoverable error occurred. Depending on the severity of the error, the plug-in might continue with the next operation or might stop.

Setting Up Log Levels

You can configure a different log level for the plug-in and plug-in activities to trace different messages.

By default, the plug-in uses the default log level of TIBCO ActiveMatrix BusinessWorks. The default log level of TIBCO ActiveMatrix BusinessWorks is `Error`.

Procedure

1. Navigate to the `*TIBCO_HOME*\bw\*version_number*\config\design\logback` directory, and open the `logback.xml` file.
2. Add the following node in the **BusinessWorks Palette and Activity loggers** area to specify a log level for the plug-in:

   ```
   <logger name="com.tibco.bw.palette.peoplesoft.runtime">
      <level value="DEBUG"/>
   </logger>
   ```

   The value of the **`level`** element can be **Error**, **Info**, **Debug** or **Trace.**

   If you set the log level to `Debug`, the input and output for the plug-in activities are also displayed in the Console view. See Log Levels for more details regarding each log level.
3. Optional: Add one of the following nodes in the **BusinessWorks Palette** and **Activity Loggers** area to specify a log level for the activity.

- For example, to control the debug log level for the CI Request activity, set the following parameters:

```
<logger name="com.tibco.bw.palette.peoplesoft.CIRequestActivity">
   <level value="DEBUG"/>
</logger>
```

- For example, to control the debug log level for the CI Request Response activity, set the following parameters:

```
<logger name="com.tibco.bw.palette.peoplesoft.CIRequestResponseActivity">
   <level value="DEBUG"/>
</logger>
```

- For example, to control the debug log level for the PeopleSoft Configuration shared resource, set the following parameters:

```
<logger name="com.tibco.bw.sharedresource.peoplesoft.runtime">
   <level value="DEBUG"/>
</logger>
```

The activities that are not configured with specific log levels use the default log level of the plug-in.

4. Save the file.

Exporting Logs to a File

You can update the `logback.xml` file to export plug-in logs to a file.

Procedure

1. In Windows system, navigate to *TIBCO_HOME*\bw*version_number*\config\design\logback directory, and open the `logback.xml` file.

   After deploying an application in TIBCO Enterprise Administrator, navigate to the *TIBCO_HOME*\bw*version_number*\domains*domain_name*\appnodes*appspace_name**appnode_name* directory and locate the `logback.xml` file.

2. Add the following node to specify the file to which the log is exported:

```
<appender name="FILE" class="ch.qos.logback.core.FileAppender">
   <file>c:/bw6-peoplesoft.log</file>
      <encoder>
        <pattern>%d{HH:mm:ss.SSS} [%thread] %-5level %logger{36}-%msg%n</pattern>
      </encoder>
</appender>
```

   The value of the **`file`** element is the absolute path of the file that stores the exported logs.

3. Add the following node to the `root` node at the end of the `logback.xml` file:

```
<root level="DEBUG">
   <appender-ref ref="STDOUT" />
   <appender-ref ref="FILE" />
</root>
```

4. Save the file.

Error Codes

The following table lists the error codes, detailed explanation of each error, where applicable, and ways to solve different errors.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-PEOPLESOFT-100001 `Startup Error. Unable to create a connection with the target application using connection parameters : ID {0}, server and port {1}.`	Trace	BW-Plug-in	Message is shown when there is problem in connecting with PeopleSoft server	This is a trace message and resolution is not applicable
TIBCO-BW-PALETTE-PEOPLESOFT-100002 `Processing failed for event {0} with message {1}.`	Trace	BW-Plug-in	Message is shown when save operation is not successful on PeopleSoft server	This is a trace message and resolution is not applicable
TIBCO-BW-PALETTE-PEOPLESOFT-100003 `In Sequence Collection of setProperties()->getCollection() returned NULL.`	Trace	BW-Plug-in	Message is shown when collection is returned as null	This is a trace message and resolution is not applicable
TIBCO-BW-PALETTE-PEOPLESOFT-100004 `In Sequence Collection of setProperties()->getElementByIndex() returned NULL`	Trace	BW-Plug-in	Message is shown when element is returned as null for given index	This is a trace message and resolution is not applicable
TIBCO-BW-PALETTE-PEOPLESOFT-100005 `Deleted`	Trace	BW-Plug-in	Message is shown when element is deleted	This is a trace message and resolution is not applicable

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-PEOPLESOFT-100006 `In Sequence Collection of setProperties()->deleteItem() Failed.`	Trace	BW-Plug-in	Message is shown when delete operation is failed	This is a trace message and resolution is not applicable
TIBCO-BW-PALETTE-PEOPLESOFT-200001 `Incoming event has both GET and CREATE Keys specified, GETKEYS will take precedence.`	Debug	BW-Plug-in	Message is shown when input has both GET and CREATE Keys specified, GETKEYS will take precedence..	This is a debug message and resolution is not applicable
TIBCO-BW-PALETTE-PEOPLESOFT- 200002 `Setting GETKEYS.`	Debug	BW-Plug-in	Message is shown while setting get keys	This is a debug message and resolution is not applicable
TIBCO-BW-PALETTE-PEOPLESOFT-200003 `Incoming Message has CREATEKEYS as NULL.`	Debug	BW-Plug-in	Message is shown when user does not specify create keys	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200004 `Setting CREATEKEYS.`	Debug	BW-Plug-in	Message is shown while setting create keys	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200005 `Call to CreateKeys API successful..`	Debug	BW-Plug-in	Message is shown while create keys are generated successfully.	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200006 `Incoming Message has GETKEYS as NULL.`	Debug	BW-Plug-in	Message is shown when user does not specify get keys	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200007 `Calling Set on Fields.`	Debug	BW-Plug-in	Message is shown when fields are getting set	This is a debug message and resolution is not applicable

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALLETTE-PEOPLESOFT-200008 `Calling Set Data for {0} and value is {1}.`	Debug	BW-Plug-in	Message is shown when fields are getting set and their values are also displayed	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200009 `No keys Specified for Level(s)`	Debug	BW-Plug-in	Message is shown when no keys are specified	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200010 `keyExists() componentInterfaceName is NULL.`	Debug	BW-Plug-in	Message is shown when component interface name is null inside keyExists() method	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200011 `IncomingData = {0}, ParsedData ={1}.`	Debug	BW-Plug-in	Message is shown to display file name for component interface	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200012 `Finished processing event {0}`	Debug	BW-Plug-in	Message is shown to when save api call on peoplesoft returns true	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200013 `Caught Base Error {0}`	Debug	BW-Plug-in	Message is shown to when an exception is thrown from peoplesoft but plug-in proceed towards processing rest of the data	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200014 `Operation code cannot be empty for CI {0}`	Debug	BW-Plug-in	Message is displayed in case operation code is empty	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200015 `About to call API getPropertyByName({0 }).`	Debug	BW-Plug-in	Message is shown before getPropertyByName api call with record name ()	This is a debug message and resolution is not applicable

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALLETTE-PEOPLESOFT-200016 `Reconnect attempt {0}.`	Debug	BW-Plug-in	Message is shown when reconnect attempts are made and shows reconnect count	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200017 `Reconnect succeeded on attempt {0}`	Debug	BW-Plug-in	Message is shown when reconnect attempts is successful and shows reconnect count	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200018 `{0}. Output:\n{1}`	Debug	BW-Plug-in	Message is shown with output for ci request response activity	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200018 `{0}. Output:\n{1}`	Debug	BW-Plug-in	Message shows the output of both activities	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-200019 `{0}. Input:\n{1}`	Debug	BW-Plug-in	Message shows the input of both activities	This is a debug message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-400001 `Setting default oprn_code to "U" at {0} as oprn_code is empty`	Warn	BW-Plug-in	Message is shown when user leaves oprn_code empty	This is a warning message and resolution is not applicable
TIBCO-BW-PALLETTE-PEOPLESOFT-500001 `Failed to Connect to Application Server with Following Parameters {0}:{1}, OprID {2}.`	Error	BW-Plug-in	Message is shown when connection parameters are not correct	Provide correct parameters for connection to the PeopleSoft server.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALLETTE-PEOPLESOFT-500002 `CI Request/Response error. CI Request/ response Activity for {0} threw an Exception. The event Name is {1}.`	Error	BW-Plug-in	Message is shown when there is an exception in activity	Check errors listed in the error message, and take an appropriate action.
TIBCO-BW-PALLETTE-PEOPLESOFT-500003 `Input properties are NULL.`	Error	BW-Plug-in	Message is shown when properties are not specified	Provide input values to the child elements of Properties in the input tab.
TIBCO-BW-PALLETTE-PEOPLESOFT-500004 `Processing of the event {0} failed.`	Error	BW-Plug-in	Message is shown when processing is failed for an activity	Check errors listed in the error message, and take an appropriate action.
TIBCO-BW-PALLETTE-PEOPLESOFT-500005 `Primary Key field {0} cannot be NULL.`	Error	BW-Plug-in	Message is shown when primary key is not specified	Enter a value for the primary key field.
TIBCO-BW-PALLETTE-PEOPLESOFT-500006 `Call to CreateKeys API failed.. {0}`	Error	BW-Plug-in	Message is shown when processing of create keys is failed	Check errors listed in the error message, and take an appropriate action.
TIBCO-BW-PALLETTE-PEOPLESOFT-500007 `Error while setting values for {0} for event {1}`	Error	BW-Plug-in	Message is shown when set value api call fails	Check errors listed in the error message, and take an appropriate action.
TIBCO-BW-PALLETTE-PEOPLESOFT-500008 `Error while fetching component interface object for {0}`	Error	BW-Plug-in	Message is shown when retrieval of CI object fails	Check connection with PeopleSoft server and confirm that your CI jar has the required component Interface.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALLETTE-PEOPLESOFT-500009 `getPropertyByName({0}) operation Failed on {1}`	Error	BW-Plug-in	Message is shown when getPropertyByName api call fails	Check errors listed in the error message, and take an appropriate action.
TIBCO-BW-PALLETTE-PEOPLESOFT-500010 `{0} operation Failed on {1}`	Error	BW-Plug-in	Message is shown when setProperty api call fails	Check errors listed in the error message, and take an appropriate action.
TIBCO-BW-PALLETTE-PEOPLESOFT-500011 `getPropertyByName({0}) operation Failed on {1}`	Error	BW-Plug-in	Message is shown when getPropertyByName api call fails	Check errors listed in the error message, and take an appropriate action.
TIBCO-BW-PALLETTE-PEOPLESOFT-500012 `{0} operation Failed on {1}`	Error	BW-Plug-in	Message is shown when invokeMethod api call fails	Check errors listed in the error message, and take an appropriate action.
TIBCO-BW-PALLETTE-PEOPLESOFT-500013 `{0} operation Failed on {1}`	Error	BW-Plug-in	Message is shown when getElementByCollection api call fails	Check errors listed in the error message, and take an appropriate action.
TIBCO-BW-PALLETTE-PEOPLESOFT-500014 `Method not Found {0}.{1}({2})`	Error	BW-Plug-in	Message is shown when an api call cannot find the method invoked	Check errors listed in the error message, and take an appropriate action.
TIBCO-BW-PALLETTE-PEOPLESOFT-500015 `{0}.{1}({2}) in setProperty(), unknown Data Type {2}`	Error	BW-Plug-in	Message is shown when unknown data type is received	Enter the correct datatype value for field specified in error message.
TIBCO-BW-PALLETTE-PEOPLESOFT-500017 `Caught Base Error {0}`	Error	BW-Plug-in	Message is shown when base error is caught at the time of peoplesoft api call	Check errors listed in the error message, and take an appropriate action.