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

Software Release 6.0
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Two-Second Advantage®

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Important Information

Contents

TIBCO Documentation and Support Services

Documentation for this and other TIBCO products is available on the TIBCO Documentation site. This site is updated more frequently than any documentation that might be included with the product. To ensure that you are accessing the latest available help topics, please visit:

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Product-Specific Documentation

Documentation for TIBCO products is not bundled with the software. Instead, it is available on the TIBCO Documentation site. To directly access documentation for this product, double-click the following file:

TIBCO_HOME/release_notes/TIB_bwpluginworkday_*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. On UNIX systems, the default *TIBCO_HOME* is /opt/tibco.

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

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

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- For an overview of TIBCO Support, and information about getting started with TIBCO Support, visit this site:

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Product Overview

TIBCO ActiveMatrix BusinessWorks™ Plug-in for Workday provides several web services implemented by Workday cloud applications, and bridges TIBCO ActiveMatrix BusinessWorks™ and Workday cloud applications.

Workday is a leading provider of unified enterprise cloud applications for human resources and finance. Workday delivers various on-demand cloud-based applications designed for the way people work in organizations, and provides a comprehensive approach to manage and synchronize work-related data within your organization. A number of companies, ranging from medium-sized businesses to large enterprises, have selected Workday to make their human capital management and financial management more efficient. Workday cloud applications provide the following enterprise services:

- Human resources
- Notification
- Payroll
- Staffing
- Financial management
- Time tracking
- Procurement
- Employee expense management

For more information, visit the Workday website: http://www.workday.com.

You can use TIBCO ActiveMatrix BusinessWorks Plug-in for Workday to invoke the following web services implemented by Workday cloud applications:

- Human resources
- Payroll
- Staffing

You can also use the notification processes to listen to user data changes on Workday cloud applications. For more information, see Working with Notification Processes.

The plug-in developed on the basis of Workday Web Service (WWS) version 26.0 contains the Workday palette, which includes the WorkdayInvoke Activity.

Getting Started

This tutorial is designed for the beginners who want to use TIBCO ActiveMatrix BusinessWorks Plug-in for Workday in TIBCO Business Studio™.

All the operations are performed in TIBCO Business Studio. See TIBCO Business Studio Overview to get familiar with TIBCO Business Studio.

A basic procedure of using TIBCO ActiveMatrix BusinessWorks Plug-in for Workday includes:

1. Creating a Project
2. Downloading a WSDL File
3. Configuring a Process
4. Testing a Process
5. Deploying an Application

Creating a Project

The first task using the plug-in is creating a project. After creating a project, you can add resources and processes.

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

Procedure

1. Start TIBCO Business Studio using one of the following ways:

   - Microsoft Windows: click **Start** > **All Programs** > **TIBCO** > *TIBCO_HOME* > **TIBCO Business Studio** *version_number* > **Studio for Designers**.
   - Mac OS and Linux: run the TIBCO Business Studio executable file located in the *TIBCO_HOME/* studio/*version_number*/eclipse directory.

2. From the menu, click **File** > **New** > **BusinessWorks Resources** to open the BusinessWorks Resource wizard.

3. In the "Select a wizard" dialog, click **BusinessWorks Application Module** and click **Next** to open the New BusinessWorks Application Module wizard.

4. In the Project dialog, configure the project that you want to create:
   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 the Java tooling capabilities.
   f) Click **Finish** to create the project.

Result

The project with the specified settings is displayed in the Project Explorer view.
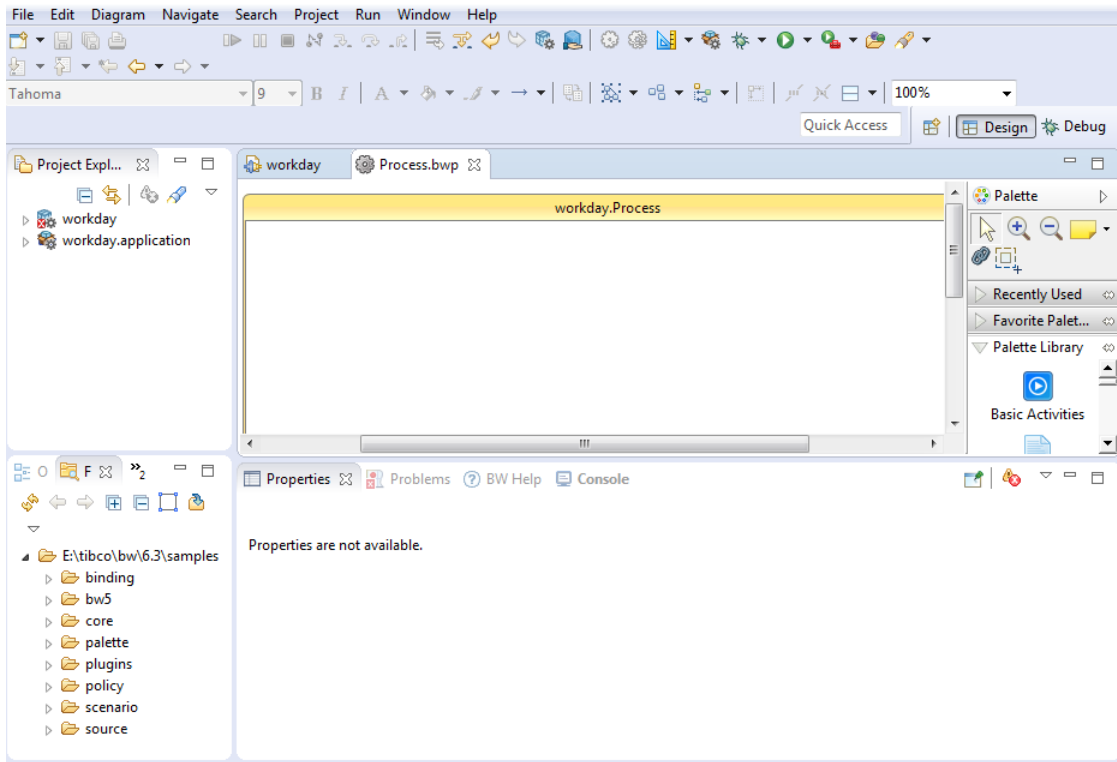
Downloading a WSDL File

After creating a project, you have to download a WSDL file by using the Workday tool to connect to inbound operations implemented by Workday.

Prerequisites

Ensure that you have created a project, as described in Creating a Project.

Use the WSDL files that are downloaded with your own account. The value of the location attribute in the soapbind:address element in the WSDL file must contain the host URL, so the WorkdayInvoke activity works correctly.

Procedure

1. Right-click the project that you just created in the Project Explorer view, and select **Workday Tools** > **Download WSDL**.

2. In the Download WSDL dialog, enter the URL that the WSDL file is located in the **WSDL URL** field.

   > The Workday download tool supports the HTTP and HTTPS protocols. The HTTPS protocol does not support self-signed HTTPS website.

3. Optional: If you have downloaded the WSDL file from the Workday website and want to access the WSDL file in your intranet, select the **Authentication** check box to authenticate your right to access the intranet where the WSDL file is saved. Enter the values in the **User Name** and **Password** fields to access the intranet.

4. Click **OK**.

5. In the Download WSDL dialog, click **OK** to download the WSDL file. Click **OK** when the download is completed.
   The WSDL file is downloaded under *Project_Name* > **Service Descriptors**.

6. From the menu, click **Project** > **Clean** to clean the project. In the Clean dialog, click **OK**.

Configuring a Process

After creating a project, an empty process is created. You can add activities to the empty process to complete a task. For example, invoke a Workday web service.

Prerequisites

Ensure that you have created an empty process when Creating a Project, and downloaded the corresponding Workday WSDL file when Downloading a WSDL File.

Procedure

1. In the Project Explorer view, click the created project and open the empty process from the **Processes** folder.

2. From the General Activities palette, select and drop a Timer activity to the process editor. From the Workday palette, select and drop a WorkdayInvoke activity to the process editor.

3. Drag the 🕭 icon to create a transition between the added activities.
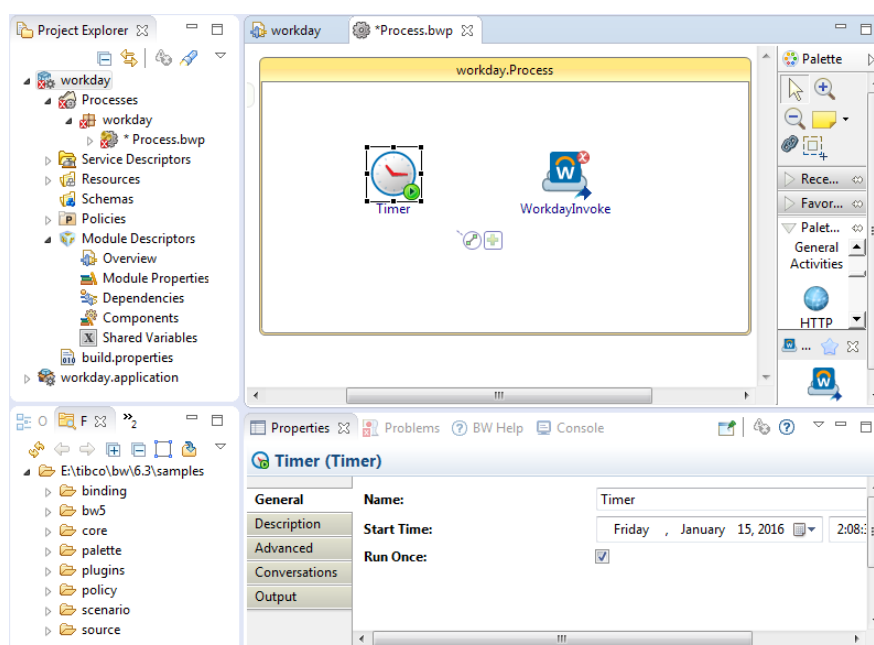
4. Configure the added WorkdayInvoke activity, as described in WorkdayInvoke Activity.
   After configuring the WorkdayInvoke activity, the shared resources and module properties are automatically generated.

5. Expand **Module Descriptors** > **Module Properties** to update the module properties used in the project.

6. Optional: In the Project Explorer view, expand *Project_Name* > **Resources** > *project_name*.**wday** to edit the following shared resources:

   • HTTP Client Shared Resource

   • SSL Client Shared Resource

   • Keystore Provider Shared Resource

   These shared resources can be used by all modules.

7. Optional: Expand **Resources** > *project_name*.**wday**.*Module_Name* to edit the Identity Provider Shared Resource.

8. Click **File** > **Save All** to save the project.

Testing a Process
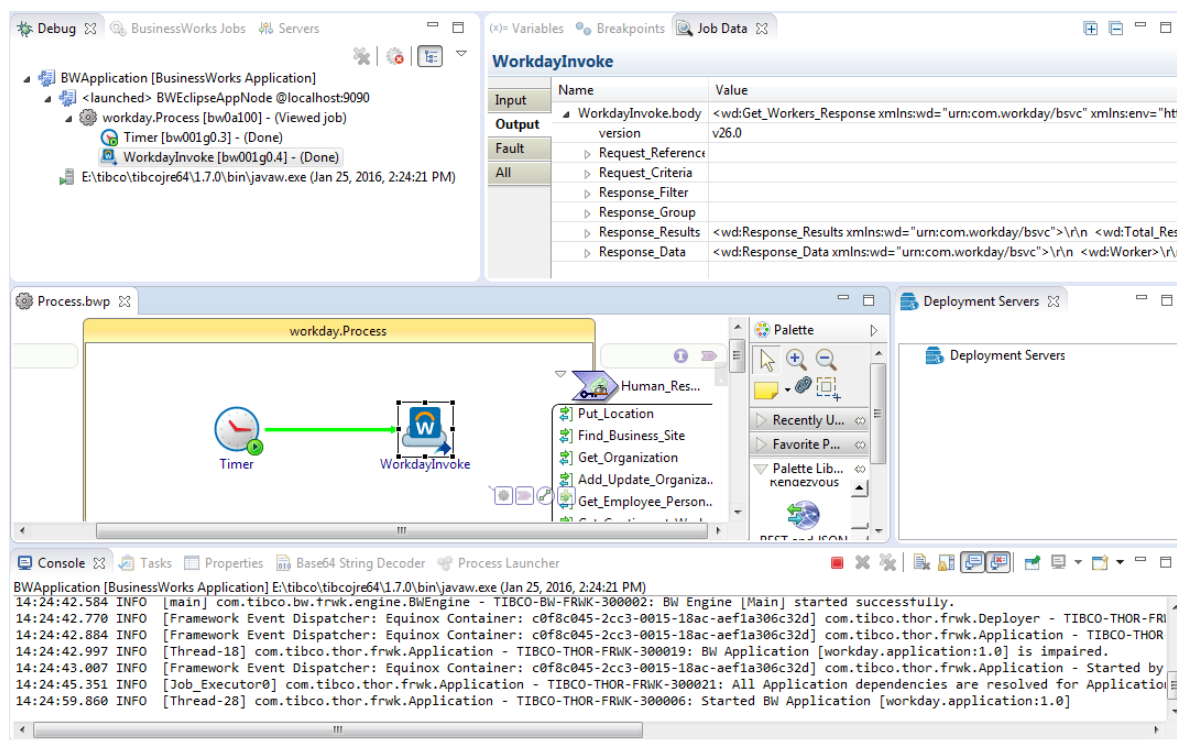
After configuring a process, you can test the process to check if the process completes your task.

Prerequisites

Ensure that you have configured a process when Configuring a Process.

Procedure

1. On the toolbar, click [icon] **Debug** > **Debug Configurations**.
2. Click **BusinessWorks Application** > **BWApplication** in the left panel.
   By default, all the applications in the current workspace are selected in the **Applications** tab. Ensure that only the application you want to debug is selected in the **Applications** tab in the right panel.
3. Click **Debug** to test the process in the selected application.
   TIBCO Business Studio changes to the Debug perspective. The debug information is displayed in the Console view.
4. In the **Debug** tab, expand the running process and click an activity.
5. In the upper-right corner, click the **Job Data** tab, and then click the **Output** tab to check the activity output.

Deploying an Application

After testing, 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, you must generate an application archive, which is an enterprise archive (EAR) file that is created in TIBCO Business Studio.

Deploying an application involves the following tasks:

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.

If policies are used in your project, complete the tasks in Enabling the Governance Agent using the Admin UI to enable governance agent in *TIBCO ActiveMatrix BusinessWorks Administration*.

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.
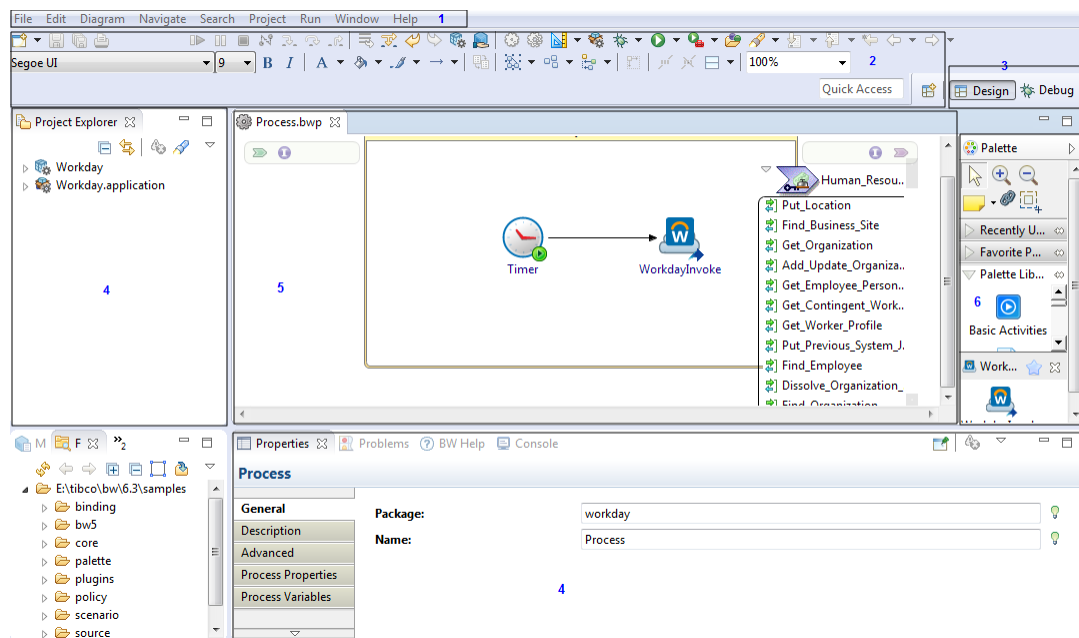
The workbench consists of:

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

2. **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.

3. **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*.

4. **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*.

5. **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.

6. **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.

HTTP Client Shared Resource

You can use the HTTP Client shared resource to create an HTTP connection to invoke the Workday web services.

General

In the **General** panel, you can specify the general information of the HTTP Client shared resource.

The following table lists the configurations in the **General** panel of the HTTP Client shared resource:

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.
Description	No	A short description for this shared resource.

HTTP Client

In the **HTTP Client** panel, you can specify the connection pooling, detailed connection configurations, default host and port, and so on.

The following table lists the configurations in the **HTTP Client** panel of the HTTP Client shared resource:

Field	Module Property?	Description
Implementation Library	No	The implementation library to be used: • **Apache Commons(Supported by HTTP and SOAP)**: must be used for SOAP binding. • **Apache HttpComponents(Supported by HTTP and REST)**: must be used for REST binding. The default value is `Apache Commons(Supported by HTTP and SOAP)`. Use **Apache Commons(Supported by HTTP and SOAP)** for Workday.
Disable Connection Pooling	Yes	The single or multi-threaded connection manager to be used. This check box is not selected by default.
Maximum Total Connections	Yes	The maximum number of simultaneous active connection that this resource instance uses. Increase the value for the application that creates many long-lived connections. The default value is `200`.

Field	Module Property?	Description
Idle Connection Timeout (ms)	Yes	Keep-alive time in milliseconds for idle HTTP connection in the persistent connection pool.
Maximum Total Connections Per Host/Route	Yes	The maximum number of simultaneous active connections to the same host or on the same route that this resource instance uses. The default value is 20. ⬚ This number cannot be greater than the value in the **Maximum Total Connections** field.
Stale Check	Yes	The stale connection check. Selecting this check box determines whether the stale connection check is to be used or not. Not using the stale connection check can result in slight performance improvement at the risk of getting an I/O error, when executing a request over a connection that has been closed at the server side.
Default Host	Yes	The name of the host that accepts the incoming requests. For machines that have only one network card, the default local host specifies the current machine. For machines with more than one network card, this field specifies the host name of the card used to accept the incoming HTTP requests.
Default Port	Yes	The port number on which to invoke outgoing HTTP requests.
Thread Pool	No	A queue of threads available to run a queue of tasks. Thread pools are used to improve performance when executing large numbers of asynchronous tasks by reducing each task invocation overhead, provide a means of bounding, and managing the resources consumed when executing a collection of tasks.

Advanced

In the **Advanced** panel, you can specify timeout, retry, HTTP proxy, and so on.

The following table lists the configurations in the **Advanced** panel of the HTTP Client shared resource:

Field	Module Property?	Description
Socket Timeout (ms)	Yes	The amount of time in milliseconds to wait for data transfer before disconnecting the socket.
Connection Timeout (ms)	Yes	The amount of time in milliseconds to wait for the HTTP server to respond.

Field	Module Property?	Description
Accept Redirect	Yes	HTTP redirects followed by the HTTP method.
		Select this check box when client connection receives the redirect responses from server like moved permanently, moved temporarily, temporary redirect, and so on.
		This check box is not selected by default.
Retry Count	Yes	The maximum number of retry attempts for connecting to the server if an exception occurs.
Use Single Cookie Header	Yes	A single non-repeating Cookie header element to be used.
		Select this check box if multiple name/value pairs must be sent in a single non-repeating Cookie header element for outgoing HTTP requests.
		This check box is not selected by default.
Use Non-Preemptive Authentication	Yes	Non-preemptive authentication to be used.
		Select this check box if you want to use non-preemptive authentication.
		This check box is not selected by default.
HTTP Proxy	No	The HTTP proxy server to be used to gain access outside of a firewall.

Security

In the **Security** panel, you can specify timeout, retry, HTTP proxy, and so on.

The following table lists the configurations in the **Security** panel of the HTTP Client shared resource:

Field	Module Property?	Description
Authentication	No	The authentication of messages to be used.
		Authentication can be performed with user names and passwords.
		Identity Provider: provides user name and password credentials encapsulated in an Identity Provider shared resource. Select this check box activates the Identity Provider shared resource.
		This check box is not selected by default.
		This function is only supported in TIBCO ActiveMatrix BusinessWorks.

Field	Module Property?	Description
Confidentiality	No	Encryption or decryption of messages to be used.
		Select this check box when encrypting or decrypting messages. When you select this check box, the **SSL Client Configuration** field is displayed.
		This check box is selected by default.
SSL Client Configuration	No	SSL parameters for the HTTP Client shared resource.
		This field is only displayed when you select the **Confidentiality** check box.
		For details, see SSL Client Shared Resource.

SSL Client Shared Resource

You can specify SSL parameters for the HTTP Client shared resource.

General

In the **General** panel, you can specify the general information of the SSL Client shared resource.

The following table lists the configurations in the **General** panel of the SSL Client shared resource:

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.
Description	No	A short description for this shared resource.

Basic SSL Client Configuration

In the **Basic SSL Client Configuration** panel, you can specify the basic configurations of the SSL Client shared resource.

The following table lists the configurations in the **Basic SSL Client Configuration** panel of the SSL Client shared resource:

Field	Module Property?	Description
Keystore Provider as Trust Store	No	The name of a keystore provider resource instance that maintains a keystore that confirms an identity. For details, see Keystore Provider Shared Resource.
Enable Mutual Authentication	No	Authentication of the client to the server in the SSL connection. Select this check box when authenticating messages. When you select this check box, the configurations of identity provider fields are displayed. This check box is not selected by default.
Identity Store Provider	No	The name of keystore provider resource that maintains a keystore used to assert an identity. This field is only displayed when you select the **Enable Mutual Authentication** check box. For details, see Identity Provider Shared Resource.
Key Alias Name	Yes	The name of the alias used to access the identity. This field is only displayed when you select the **Enable Mutual Authentication** check box.

Field	Module Property?	Description
Key Alias Password	Yes	The password for the alias. This field is only displayed when you select the **Enable Mutual Authentication** check box.

Advanced SSL Client Configuration

In the **Advanced SSL Client Configuration** panel, you can specify the advanced configurations of the SSL Client shared resource.

The following table lists the configurations in the **Advanced SSL Client Configuration** panel of the SSL Client shared resource:

Field	Module Property?	Description
SSL Security Provider	Yes	Optional. The SSL security provider.
SSL Protocol	No	The SSL protocol to be used in the SSL connection: • **TLSv1** • **TLSv1.1** • **TLSv1.2** • **SSLv3**: it is not good practice to use this protocol. Selecting a protocol implies the support of higher versions. The default value is `TLSv1`.
SSL Cipher Class	No	The number of bits in the key used to encrypt data: • **No Exportable Ciphers** • **All Ciphers** • **At Least 128 Bit** • **More Than 128 Bit** • **At Least 256 Bit** • **FIPS Ciphers** • **Explicit Ciphers** The greater the number of bits in the key (cipher strength), the more possible key combinations and the longer it takes to break the encryption. The default value is `At Least 128 Bit`.

Field	Module Property?	Description
Explicit Cipher List	Yes	A list of ciphers. Use the Java Secure Socket Extension (JSSE) format for ciphers names. This field is only displayed when you select **Explicit Ciphers** from the **SSL Cipher Class** list.
Verify Remote Host Name	No	The verification of the name on the certificate of the server against the host name of the server. If the host name of the server is different than the name on the certificate, the SSL connection fails. The name on the certificate can be verified against another name by specifying the value in the **Expected Remote Hostname** field. This check box is not selected by default. When you select this check box, the **Expected Remote Hostname** field is displayed.
Expected Remote Hostname	Yes	Optional. The expected name of the remote host. This field is only displayed when you select the **Verify Remote Host Name** check box.

Keystore Provider Shared Resource

You can use the Keystore Provider shared resource to provide an access to a keystore.

General

In the **General** panel, you can specify the general information of the Keystore Provider shared resource.

The following table lists the configurations in the **General** panel of the Keystore Provider shared resource:

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.
Description	No	A short description for this shared resource.

Keystore

In the **Keystore** panel, you can specify the provider, URL, password, type of the keystore, and refresh interval.

The following table lists the configurations in the **Keystore** panel of the Keystore Provider shared resource:

Field	Module Property?	Description
Provider	No	The name of the keystore provider: • **SUN** • **IBMJCE** The default value is SUN.
URL	Yes	The location of the external keystore. For example, on Windows, the default value is C:/temp/certs/workday.jks. You have to generate your own .jks file.
Password	Yes	The password for the keystore file.
Type	No	The type of the keystore: • **JCEKS** • **JKS** • **PKCS#12** The default value is JKS.

Field	Module Property?	Description
Refresh Interval	Yes	Refresh interval, greater than 0. If the keystore provider is accessed after the refresh interval has expired: • The refresh timer is reset to zero. • The operations on the keystore provider are performed on the refreshed copy. The default value is `3600000`.

Identity Provider Shared Resource

You can reference the Identity Provider shared resource from the WSS Consumer policy resource to provide Username token based credential mapping with fixed credential mechanism.

General

In the **General** panel, you can specify the general information of the Identity Provider shared resource.

The following table lists the configurations in the **General** panel of the Identity Provider shared resource:

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.
Description	No	A short description for this shared resource.

Identity Provider

In the **Identity Provider** panel, you can specify the user name and password to access the Workday web services.

The following table lists the configurations in the **Identity Provider** panel of the Identity Provider shared resource:

Field	Module Property?	Description
Username	Yes	The user name to access the Workday web services.
Password	Yes	The password to access the Workday web services.

WSS Consumer Policy Resource

You can use the WSS Consumer policy resource to enforce confidentiality, integrity, timestamp, and credential mapping.

General Configurations

You can specify the general information of the WSS Consumer policy resource.

The following table lists the general configurations of the WSS Consumer policy resource:

Field	Module Property?	Description
Package	No	The name to be displayed as the label of the policy resource package.
Name	No	The name of the policy resource.
Description	No	A description of the policy resource.

Shared Resource for WSS Processing

In the **Shared Resource for WSS Processing** panel, you can specify the WSS Authentication shared resource.

The following table lists the configuration in the **Shared Resource for WSS Processing** panel of the WSS Consumer policy resource:

Field	Module Property?	Description
WSS Authentication	No	The WSS Authentication shared resource that the WSS Consumer policy references.
		This function is only supported in TIBCO ActiveMatrix BusinessWorks.

Service Provider Details

In the **Service Provider Details** panel, you can specify parameters in the **Confidentiality** tab, the **Integrity** tab, the **Timestamp** tab, and the **Credential Mapping** tab.

Confidentiality

In the **Confidentiality** tab, you can configure the policy for an outbound request to be encrypted and an inbound response to be decrypted at its endpoint.

The following table lists the configurations in the **Confidentiality** tab:

Field	Description
Encrypt Request	The outbound request required to be encrypted.
	When you select this check box, you can configure the following parameters:
	• **Trust Provider**: select a Trust Provider shared resource.
	• **Key Alias**: specify a key alias.
	• **Algorithm Suite**: specify the algorithm suite required for performing cryptographic operations with symmetric or asymmetric key based security tokens. An algorithm suite specifies actual algorithms and allowed key lengths.
	The default value is `Basic128`. You can also select a different algorithm suite from the list.
	• **Encrypt Parts**: select the **Body** or **Header** check box, or both.
	The **Body** check box is selected by default.
Decrypt Response	The inbound response required to be decrypted.

Integrity

In the **Integrity** tab, you can sign an outbound request and verify the signature of an inbound response.

The following table lists the configurations in the **Integrity** tab:

Field	Description
Sign Request	The outbound request required to be signed. When you select this check box, you can configure the following parameters: • **Subject Provider**: select a Subject Provider shared resource. • **Digest Algorithm for Signature**: select a digest algorithm for signature. The algorithm takes as input a message of arbitrary length and produces as output a 128-bit "fingerprint" or "message digest" of the input. The default value is `SHA-256`. You can also select a different type from the list. • **Algorithm Suite**: specifies the algorithm suite required for performing cryptographic operations with symmetric or asymmetric key based security tokens. An algorithm suite specifies actual algorithms and allowed key lengths. The default value is `Basic128`. You can also select a different algorithm suite from the list. • **Sign Parts**: select the **Body** or **Header** check box, or both. The **Body** check box is selected by default.
Verify Signature on Response	The signature of an inbound response required to be verified. Select an option from the **Verify parts that are Signed** list: • `Entire message` • `Message header` • `Message body`

Timestamp

In the **Timestamp** tab, you can insert a timestamp in an outbound request and verify a timestamp in the inbound response.

The following table lists the configurations in the **Timestamp** tab:

Field	Description
Set Timestamp on Request	Time-to-live in seconds for an outbound request. You can specify this value in the **Specify Time-To-Live Value (sec)** field.
Verify Timestamp on Response	The timestamp to be verified in the inbound response.

Credential Mapping

In the **Credential Mapping** tab, you can select either Username token credential mapping or SAML token credential mapping to map credentials to the outbound request.

The following table lists the configurations in the **Credential Mapping** tab:

Field	Description
No Credentials	Credential mapping is not enforced.

Username Token based Credential Mapping	Two options can be selected for the credential mechanism:
	
	• **Fixed**: specify an Identity Provider resource in the **Identity Provider** field.
	
	This check box is selected by default.
	
	• **Conditional**: specify the types of users your application maps credentials for. You can choose to map credentials for authenticated users with roles, authenticated users, and anonymous users.
	
	Credentials are mapped for authenticated users if the request comes from an authenticated service. Credentials are mapped for anonymous users if the request comes from unauthenticated service.
	
	   • **Role based Identity Providers**: type roles for authenticated users and associate an identity provider with each role. You can reuse the same identity provider for multiple roles.
	
	   • **Authenticated Identity Provider**: select an Identity Provider shared resource for authenticated users.
	
	   • **Anonymous Identity Provider**: specify an identity provider for anonymous users to access your secure application. If you do not want anonymous users to access, do not specify an identity provider.
	
	     Application logic can also affect how credentials are mapped for anonymous users. For example, application logic might require that anonymous requests are redirected to specific entry points. If an anonymous request is directed to an enforced entry point, the request is rejected.

Field	Description
SAML Token based Credential Mapping	The following parameters can be configured for the SAML token based credential mapping: • **SAML Token Profile**: select a token type, either `SAML 1.1 Token 1.1` or `SAML 2.0 Token 1.1`. • **Sign SAML Assertion**: if you select this option, specify a subject provider, a digest algorithm for signature, and an algorithm suite. • **SAML Issuer Name**: type a SAML issuer name. • **SAML Assertion Validity**: select **SAML Assertion Validity (forever)** to ensure that the SAML assertion is valid indefinitely. Optionally, you can enter a value in the **Specify Validity Period (sec)** field to specify the number of seconds the SAML assertion is valid.

Workday Palette

The Workday palette only includes the WorkdayInvoke activity.

WorkdayInvoke Activity

You can use the WorkdayInvoke activity to perform a distinct function by invoking a predefined operation.

General

In the **General** tab, you can specify the name of the activity in the process, and select an operation you want to perform in the module.

The following table lists the configurations in the **General** tab of the WorkdayInvoke activity:

Field	Module Property?	Description
Name	No	The name to be displayed as the label for the activity in the process.
Module Name	No	The name of a module you want to access.
		Each module is predefined with multiple operations of various categories. Every module corresponds to a particular web service implemented by Workday.
		ActiveMatrix BusinessWorks Plug-in for Workday supports the following modules:
		Human_Resources
		The Human_Resources module integrates multiple categories of operations that expose Workday human capital management business services data, including employee, contingent worker and organization information.
		Payroll
		The Payroll module integrates multiple categories of operations that expose Workday payroll business services data.
		Staffing
		The Staffing module integrates multiple categories of operations that expose Workday human capital management business services and data. These services pertain to staffing transactions for both employees and contingent workers, such as bringing employees and contingent workers on board.
		After selecting the module name, the shared resources and module properties of the WorkdayInvoke activity are automatically generated.

Field	Module Property?	Description
Operation Filter	No	The category of an operation. If you select **Select All** from the **Operation Filter** list, all operations on the selected module become available in the **Select Operation** list.
Select Operation	No	The operation to be performed.

Description

In the **Description** tab, you can enter a short description for the WorkdayInvoke activity.

Advanced

In the **Advanced** tab, you can specify the WorkdayInvoke activity timeout in seconds.

The following table lists the configurations in the **Advanced** tab of the WorkdayInvoke activity:

Field	Module Property?	Description
Activity Timeout (seconds)	Yes	The WorkdayInvoke activity timeout in seconds. You can either select a preset timeout or specify a custom timeout in seconds. The preset timeout options are: **Default Timeout**, **30**, **60**, and **120** seconds.

Conversations

In the **Conversations** tab, you can click **Add New Conversation** 🖼 to initiate a conversation. A conversation represents two or more related message exchanges in the same process that are correlated by the BusinessWorks engine.

See *TIBCO ActiveMatrix BusinessWorks Application Development* for more details about how to use conversation.

Input

In the **Input** tab, you can specify the required input of the activity depending on the specific operation type you select in the **General** tab.

The following table lists the input elements in the **Input** tab of the WorkdayInvoke activity:

Input Item	Data Type	Description
`input message`	complex	The input message of the operation. This element contains all the input message information for the operation.

Output

In the **Output** tab, the output of the activity varies depending on the specific operation type you select in the **General** tab.

The following table lists the output elements in the **Output** tab of the WorkdayInvoke activity:

Output Item	Data Type	Description
output message	complex	The output message for the operation. This element contains all the output message information for the operation.

Fault

In the **Fault** tab, you can find the error information of the WorkdayInvoke activity.

The following table lists error schema elements in the **Fault** tab of the WorkdayInvoke activity:

Error Schema Element	Data Type	Description
ActivityTimeOutException		
msg	String	Displays the error message.
msgCode	String	Displays the error code.
Validation_Fault		
Message	String	Displays the validation error message.
Detail_Message	String	Displays the details of the validation error message.
Xpath	String	Displays the XML path of specific nodes in an XML document.
Processing_Fault		
Detail_Message	String	Displays the details of the processing error message.

Working with Notification Processes

You can use the notification processes to listen to user data changes on Workday cloud applications.

You can use the notification processes to listen to various user events triggered on a specified record in Workday cloud applications, for example, the add, update records, along with other user events.

Before you use the notification processes, you must complete the following operations:

- Configure the notification processes to actively listen on a server with a public IP address to receive notification messages sent from Workday cloud applications.

  For example, a server hosted in a DMZ on a public network, or a server on a public cloud with a public IP address. You can set the configurations with the module properties.

  See Running the Notification Processes for more details.

- Set the value in the **Notification URL** field in the **External Endpoints** area to the actual server address and port on the Workday cloud platform to ensure the Workday applications can send notification messages to the exact server host.

  See Adding Notification URL Information to Workday Cloud Applications for more details.

- Configure the HTTP communication mode between the notification processes and the Workday applications for receiving user event notification messages for the notification processes.

To monitor data changes on Workday cloud applications, you have to complete the following tasks:

1. Importing the Notification Project
2. Downloading the Notification WSDL File
3. Running the Notification Processes
4. Adding Notification URL Information to Workday Cloud Applications

Importing the Notification Project

Before running the notification project, you must import the project to TIBCO Business Studio.

Procedure

1. Start TIBCO Business Studio using one of the following ways:

   - Microsoft Windows: click **Start** > **All Programs** > **TIBCO** > *TIBCO_HOME* > **TIBCO Business Studio** *version_number* > **Studio for Designers**.
   - Mac OS and Linux: run the TIBCO Business Studio executable file located in the *TIBCO_HOME/*`studio/`*version_number*`/eclipse` directory.

2. From the menu, click **File** > **Import**.

3. In the Select dialog, expand the **General** folder and select the **Existing Studio Projects into Workspace** item. Click **Next.**

4. In the Import Projects dialog, click **Browse** next to the **Select archive file** field to locate the notification project. Click **Finish.**

   The notification project is located in the *TIBCO_HOME*`/bw/palettes/workday/`*version_number*`/``studio_projects_archive` directory.

Result

The notification project is imported to TIBCO Business Studio.
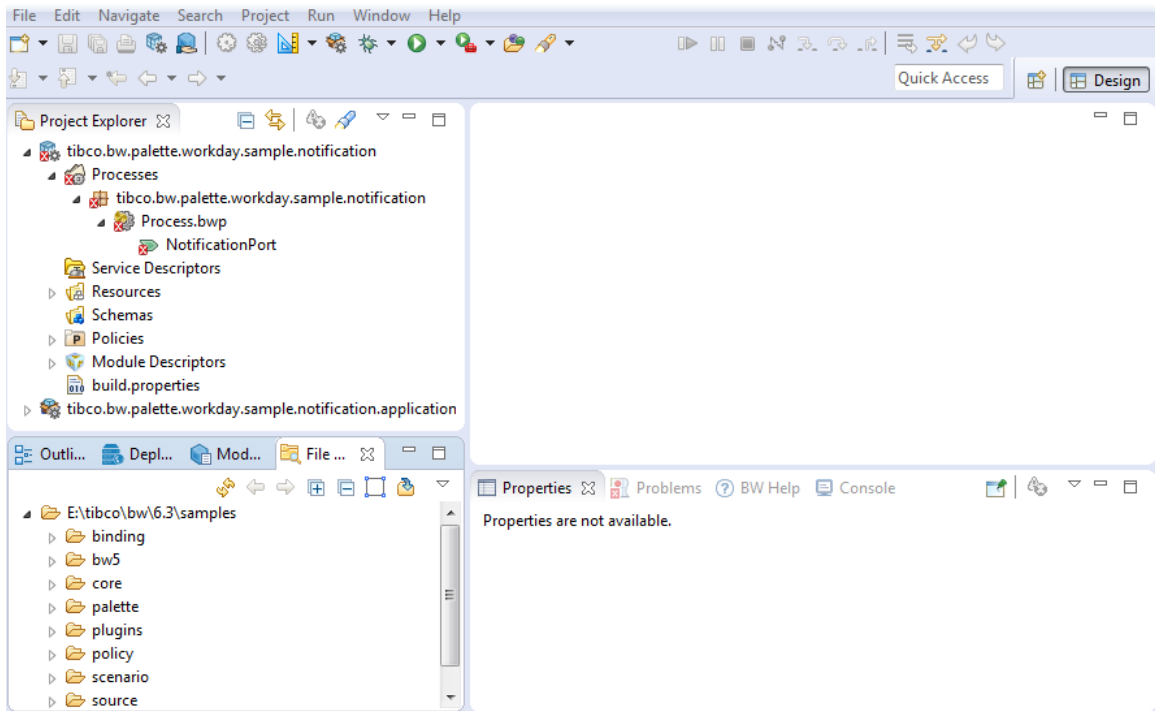
Downloading the Notification WSDL File

After importing the notification project, you have to download the notification WSDL file from Workday.

Prerequisites

Ensure that you have imported the notification project, as described in Importing the Notification Project.

Use the WSDL files that are downloaded with your own account. The value of the `location` attribute in the `soapbind:address` element in the WSDL file must contain the host URL, so the WorkdayInvoke activity works correctly.

Procedure

1. Right-click the notification project that you just imported in the Project Explorer view, and select **Workday Tools** > **Download WSDL**.

2. In the Download WSDL dialog, enter the URL that the WSDL file is located in the **WSDL URL** field. Download the notification WSDL file for the notification processes.

   > The Workday download tool supports the HTTP and HTTPS protocols. The HTTPS protocol does not support self-signed HTTPS website.

3. Optional: If you have downloaded the WSDL file from the Workday website and want to access the WSDL file in your intranet, select the **Authentication** check box to authenticate your right to access the intranet where the WSDL file is saved. Enter the values in the **User Name** and **Password** fields to access the intranet.

4. Click **OK**.

5. In the Download WSDL dialog, click **OK** to download the WSDL file. Click **OK** when the download is completed.
   The WSDL file is downloaded under *Project_Name* > **Service Descriptors**.

6. From the menu, click **Project** > **Clean** to clean the project. In the Clean dialog, click **OK**.

Running the Notification Processes

After importing the notification project and downloading the notification WSDL file, you can run the processes to see how the notification project works.

Prerequisites

Ensure that you have imported the notification project to TIBCO Business Studio, as described in Importing the Notification Project, and downloaded the notification WSDL file from the Workday website, as described in Downloading the Notification WSDL File.

Procedure

1. In the Project Explorer view, click **Module Descriptors** > **Module Properties** to update the module properties used in the notification project.

   > Ensure that the host and port are consistent with the actual public IP address that you use as the server.

2. In the Project Explorer view, click **Resources** > *companyname*.**bw.palette.workday.sample.notification**. Double-click the following shared resources and XML files to edit:

   - **HTTPConnectorResource.httpConnResource**
   - **WssProvider_AuthenticationProvider.authxml**
   - **WssProvider_WSSAuthProvider.wssResource**
   - **XmlUsers.xml**

   > The user name and password must be consistent with the configurations in the **External Endpoints** area on the Workday cloud platform.

   See HTTP Connector in *TIBCO ActiveMatrix BusinessWorks Bindings and Palettes Reference*, and policy in *TIBCO ActiveMatrix BusinessWorks Concepts* for more details.

3. Create a new project that includes a new process to receive and process the notification message, which is sent by the process in the imported project.

   See Running the Notification Sample Processes for an example.

   > The project name must be consistent with the basic structure of the `componentName` property of the imported process. For example: *companyname*.bw.palette.workday.sample.notification.serviceprovider.
   >
   > The host must be consistent with the HTTP connector configurations in the imported project, and the port must be different.

4. Download the notification WSDL file for this new project.
   See Downloading the Notification WSDL File for more details.

5. On the toolbar, click the 📋 icon to save your changes.

6. From the menu, click **Run** > **Run Configurations** to run the two processes.

7. In the "Create, manage, and run configurations" dialog, expand **BusinessWorks Application** and click **BWApplication**. In the right panel, click the **Applications** tab, ensure that the check boxes next to the two processes are selected.

8. Click **Run** to run the processes.

Adding Notification URL Information to Workday Cloud Applications

After running the notification processes on a server with a public IP address, you must add server information to Workday cloud applications.

Workday cloud applications can send an event notification message to TIBCO ActiveMatrix BusinessWorks Plug-in for Workday to inform the plug-in of any data change in Workday.

Prerequisites

Ensure that you have run the notification processes in TIBCO Business Studio, as described in Running the Notification Processes.

Procedure

1. Log on to the Workday website as an administrator.

2. Navigate to the Edit Subscriptions page.

3. On the Edit Subscriptions page, find the **External Endpoints** area, ensure that you complete the following operations:

   - Do not select the **Disable Endpoint** check box.

   - Enter the actual IP address and port number of the server, plus the endpoint URI of the notification process as the value in the **Notification URL** field.

   - Enter the values in the **Notification User Name** and **Notification Password** fields to the same values as in the `XmlUsers.xml` file.

4. Click **OK**.
   The notification URL of the external endpoint connecting to Workday cloud applications is updated. Therefore, after the notification processes start and any data change occurs in Workday cloud applications, a notification message is sent to the notification processes which are installed on the server with a public IP address.

Working with Sample Projects

The plug-in packages four sample projects with the installer. The sample projects show how TIBCO ActiveMatrix BusinessWorks Plug-in for Workday works.

After installing the plug-in, you can locate the sample projects in the *TIBCO_HOME*/bw/palettes/workday/*version_number*/samples directory. This sample directory contains subdirectories that contain processes. Each process corresponds to a task.

- CreateEditNamedProfessorship

  This project shows how to use TIBCO ActiveMatrix BusinessWorks Plug-in for Workday to create and edit a named professorship in Workday cloud application.

- GetUpdateEmployeeInfo

  This project shows how to use TIBCO ActiveMatrix BusinessWorks Plug-in for Workday to retrieve and update employee information, and receive the updated information from Workday cloud application.

- Notification

  This project shows how to listen to various user events triggered on a specified record in Workday cloud application.

- PutGetWorkerTaxTreaty

  This project shows how to use TIBCO ActiveMatrix BusinessWorks Plug-in for Workday to add tax treaty data to Workday cloud application, and retrieve the data from Workday cloud application.

To use the sample projects, you have to complete the following tasks:

1. Importing the Sample Project
2. Downloading the Required WSDL Files
3. You can run the following processes:

   - Running the Example Processes
   - Running the Notification Sample Processes

Importing the Sample Project

Before running the project, you must import the sample project to TIBCO Business Studio.

Procedure

1. Start TIBCO Business Studio using one of the following ways:

   - Microsoft Windows: click **Start** > **All Programs** > **TIBCO** > *TIBCO_HOME* > **TIBCO Business Studio** *version_number* > **Studio for Designers**.
   - Mac OS and Linux: run the TIBCO Business Studio executable file located in the *TIBCO_HOME*/studio/*version_number*/eclipse directory.

2. From the menu, click **File** > **Import**.

3. In the Select dialog, expand the **General** folder and select the **Existing Studio Projects into Workspace** item. Click **Next.**

4. In the Import Projects dialog, click **Browse** next to the **Select archive file** field to locate the sample. Click **Finish.**

The sample projects are located in the *TIBCO_HOME*/bw/palettes/workday/*version_number*/ `samples` directory. Samples are included in different directories within this main directory:

- `CreateEditNamedProfessorship`

- `GetUpdateEmployeeInfo`

- `Notification`

- `PutGetWorkerTaxTreaty`

Result

The GetUpdateEmployeeInfo sample is imported to TIBCO Business Studio.
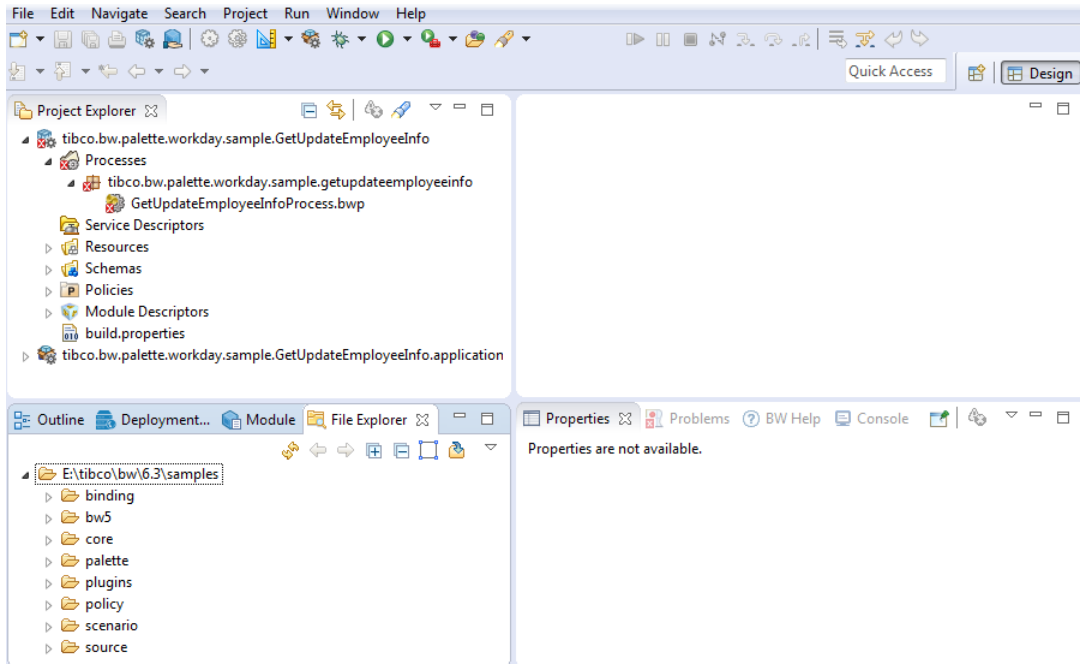
Downloading the Required WSDL Files

After importing the sample project, you have to download the required WSDL files from Workday.

Prerequisites

Ensure that you have imported the sample project, as described in Importing the Sample Project.

Use the WSDL files that are downloaded with your own account. The value of the `location` attribute in the `soapbind:address` element in the WSDL file must contain the host URL, so the WorkdayInvoke activity works correctly.

Procedure

1. Right-click the sample that you just imported in the Project Explorer view, and select **Workday Tools** > **Download WSDL**.

2. In the Download WSDL dialog, enter the URL that the WSDL file is located in the **WSDL URL** field.

   Download the human resources WSDL file for the CreateEditNamedProfessorshipProcess.bwp and GetUpdateEmployeeInfoProcess.bwp, the notification WSDL file for the notification processes, and payroll WSDL file for the PutGetWorkerTaxTreatyProcess.bwp.

> The Workday download tool supports the HTTP and HTTPS protocols. The HTTPS protocol does not support self-signed HTTPS website.

3. Optional: If you have downloaded the WSDL file from the Workday website and want to access the WSDL file in your intranet, select the **Authentication** check box to authenticate your right to access the intranet where the WSDL file is saved. Enter the values in the **User Name** and **Password** fields to access the intranet.

4. Click **OK**.

5. In the Download WSDL dialog, click **OK** to download the WSDL file. Click **OK** when the download is completed.
   The WSDL file is downloaded under *Project_Name* > **Service Descriptors**.

6. From the menu, click **Project** > **Clean** to clean the project. In the Clean dialog, click **OK**.

Running the Example Processes

After importing the sample project and downloading the required WSDL files, you can run the processes to see how TIBCO ActiveMatrix BusinessWorks Plug-in for Workday works.

Prerequisites

Ensure that you have imported the sample project to TIBCO Business Studio, as described in Importing the Sample Project, and downloaded the required WSDL files from the Workday website, as described in Downloading the Required WSDL Files.

Procedure

1. In the Project Explorer view, click **Module Descriptors** > **Module Properties** to update the module properties used in the example project.

   > Some common properties are used for all modules in the example project, such as the host and port of the HTTP Client shared resource, and the URL and password of the Keystore Provider shared resource. For each module, you can also configure the user name and password of the Identity Provider shared resource, and the endpoint URI used for transport.

2. On the toolbar, click the 🔳 icon to save your changes.

3. From the menu, click **Run** > **Run Configurations** to run the selected process.

4. In the "Create, manage, and run configurations" dialog, expand **BusinessWorks Application** and click **BWApplication**. In the right panel, click the **Applications** tab, select the check box next to *companyname*.**bw.palette.workday.sample.***Sample_Name*.**application**.

5. Click **Run** to run the process.

6. Click the 🔳 icon to stop the process.

Running the Notification Sample Processes

After importing the sample project and downloading the required WSDL file, you can run the processes to see how the notification project works.

Prerequisites

Ensure that you have imported the sample project to TIBCO Business Studio, as described in Importing the Sample Project, and downloaded the required WSDL file from the Workday website, as described in Downloading the Required WSDL Files.

Procedure

1. In the Project Explorer view, complete the following operations to update the module properties used in the notification project:

   - Click *companyname*.**bw.palette.workday.sample.notification** > **Module Descriptors** > **Module Properties**.

     > Ensure that the host and port are consistent with the actual public IP address that you use as the server.

   - Click *companyname*.**bw.palette.workday.sample.notification.serviceprovider** > **Module Descriptors** > **Module Properties**.

     > Ensure that the host is consistent with the actual public IP address that you use as the server, and the port must be different.

2. In the Project Explorer view, click **Resources** > *companyname*.**bw.palette.workday.sample.notification**. Double-click the following shared resources and XML files to edit:

   - **HTTPConnectorResource.httpConnResource**
   - **WssProvider_AuthenticationProvider.authxml**
   - **WssProvider_WSSAuthProvider.wssResource**
   - **XmlUsers.xml**

     > The user name and password must be consistent with the configurations in the **External Endpoints** area on the Workday cloud platform.

   See HTTP Connector in *TIBCO ActiveMatrix BusinessWorks Bindings and Palettes Reference*, and policy in *TIBCO ActiveMatrix BusinessWorks Concepts* for more details.

3. On the toolbar, click the ▣ icon to save your changes.

4. From the menu, click **Run** > **Run Configurations** to run the two processes.

5. In the "Create, manage, and run configurations" dialog, expand **BusinessWorks Application** and click **BWApplication**. In the right panel, click the **Applications** tab, select the *companyname*.**bw.palette.workday.sample.notification.application** and *companyname*.**bw.palette.workday.sample.notification.serviceprovider.application** check boxes to run the two notification processes.

6. Click **Run** to run the processes.
   The processes run successfully only after adding the URL information to Workday cloud applications, see Adding Notification URL Information to Workday Cloud Applications for more details.