

TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions

User's Guide

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Plug-in Overview

TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions provides the interoperability between TIBCO ActiveMatrix BusinessWorks™ and the SAP system. The plug-in was formerly known as TIBCO ActiveMatrix® Adapter for SAP. With the plug-in, you can manage and transfer IDocs, and manage and perform the RFC/BAPI invocation.

TIBCO ActiveMatrix BusinessWorks is a leading integration platform which 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.

This product has certified integration with SAP NetWeaver® and SAP® S/4HANA, on-premises edition.

SAP® Certified
Integration with SAP® S/4HANA

SAP® Certified
Integration with SAP NetWeaver®

TIBCO ActiveMatrix BusinessWorks Plug-in *for SAP Solutions* extends TIBCO ActiveMatrix BusinessWorks, and adds an SAP Connection shared resource, an SAP TIDManager shared resource, and an SAP palette to TIBCO Business Studio:

- [SAP Connection](#)

Use the SAP Connection shared resource to establish bidirectional connections with the SAP system and download schemas at design time. The Message Source Configuration connection is added where the Kafka or JMS Server Configurations are maintained.

- [SAP TIDManager](#)

Use the SAP TIDManager shared resource to manage the check of duplicate IDoc messages published from the SAP system.

- [SAP Palette](#)

- [Dynamic Connection](#)

Use the Dynamic Connection activity to establish a dynamic connection for invoking RFC/BAPIs.

- [IDoc Acknowledgment](#)

Use the IDoc Acknowledgment activity to update the IDoc status in the SAP system.

- [IDoc Confirmation](#)

Use the IDoc Confirmation activity to confirm the status of the IDocs posted to the SAP system.



The IDoc Confirmation activity requires TIBCO Enterprise Message Service. For confirming IDocs without using TIBCO Enterprise Messaging Service, see [IDoc Processing Without Messaging](#)

- [IDoc Converter](#)

Use the IDoc Converter activity to convert a raw IDoc into XML output. For more information on this activity, see [IDoc Processing Without Messaging](#)

- [IDoc Listener](#)

Use the IDoc Listener activity to receive the IDocs published from the SAP system.



The IDoc Listener activity can be configured to use either the TIBCO Enterprise Messaging Service or Apache Kafka. This activity can also be configured without using messaging. For more information on using the IDoc Listener activity without messaging, see [IDoc Processing Without Messaging](#)

– [IDoc Parser](#)

Use the IDoc Parser activity to retrieve the IDocs processed by the IDoc Listener activity, and then parse the IDocs as the activity output.



The IDoc Parser activity requires the TIBCO Enterprise Messaging Service.

– [IDoc Reader](#)

Use the IDoc Reader activity to post the IDocs to the SAP system.



The IDoc Reader activity requires the TIBCO Enterprise Messaging Service.

– [Post IDoc to SAP](#)

Use the Post IDoc to SAP activity to post the IDocs to the SAP system without the need to use the messaging service like TIBCO Enterprise Messaging Service .

– [IDoc Renderer](#)

Use the IDoc Renderer activity to receive the IDoc in XML format and provide output in raw IDoc format.

– [RFC BAPI Listener](#)

Use the RFC BAPI Listener activity to listen on the SAP system and receive RFC/BAPI requests from the SAP system.

– [Invoke RFC BAPI in SAP](#)

Use the Invoke RFC BAPI in SAP activity to invoke RFC/BAPIs in the SAP system.

– [Reply from RFC BAPI in SAP](#)

Use the Reply from RFC BAPI in SAP activity to receive the return message from the SAP system when the invocation of the RFC/BAPI is completed.

The plug-in supports the following SAP integration interfaces:

- [Business Application Programming Interface \(BAPI\)](#)

BAPIs are the methods exposed by SAP business objects. This interface is best used with the plug-in for performing real-time queries and updates to and from the SAP system. BAPIs are the SAP recommended integration interfaces over Remote Function Calls (RFCs).

- [RFC](#)

By using the RFC interface, non-SAP and SAP applications can execute SAP Advanced Business Application Programming (Advanced Business Application Programming) functions, which have been RFC-enabled. They are similar to BAPIs in functionality, but are not attached to SAP business objects.

- [Application Link Enabling/Intermediate Documents \(ALE/IDoc\)](#)

IDocs are document containers for business transactional data, such as sales orders (for example: ORDERS01) and order invoices (for example: INVOIC02). ALE helps achieve cross-business functionality and facilitates the event driven, asynchronous exchange of information directly out of business transactions.

Getting Started

This tutorial is designed for the beginners who want to use TIBCO ActiveMatrix BusinessWorks Plug-in for SAP Solutions 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 SAP Solutions includes:

1. [TIBCO Business Studio Overview](#)
2. [Creating a Project](#)
3. [Creating and Configuring an SAP Connection](#)
4. [\(Optional\) Creating and Configuring an SAP TIDManager Shared Resource](#)
5. [Configuring a Process](#)
6. [Testing a Process](#)
7. [Deploying an Application](#)

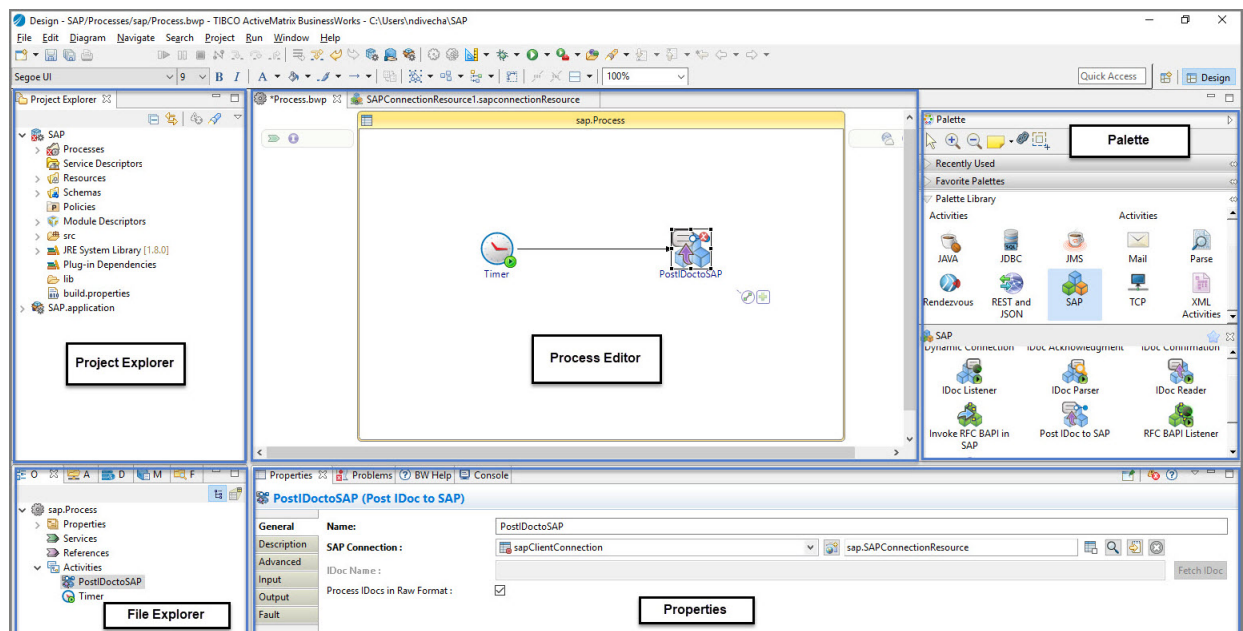


When configuring the shared resources or activities, you might find that some fields inherit the module properties. To specify those fields, you have to specify the corresponding module properties in the **Module Properties** tab of the Module Properties editor.







TIBCO Business Studio Overview

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

TIBCO Business Studio provide 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 following table introduces the workbench UI elements highlighted in the image:

Sl. No.	UI Element	Description
1.	Menu	Contains menu items such as File, Edit, Navigate, Search, Project, Run, Window, and Help.
2.	Toolbar	<p>Contains buttons for frequently used commands such as:</p> <ul style="list-style-type: none"> • New  • Save  • Enable/Disable Business Studio Capabilities  • Create a new BusinessWorks Application Module  • Debug  • Run 
3.	Perspectives	Contains an initial set and layout of views must perform a certain task. TIBCO Business Studio opens the Design perspective by default. Use the DESIGN perspective when designing a process and the Debug perspective when testing and debugging a process. To change the perspective, select Window > Open Perspective > <i>perspective_name</i> from the main menu. Or, you can click the icon at the upper right-hand side of the workbench and select the perspective to open.
4.	Views	Displays resources and allow for navigation in the workbench. 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. To open a view, select Window > Show View > <i>view_name</i> from the main menu.
5.	Editors	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 on a process (<code>MortgageAppConsumer.bwp</code>) in the Project Explorer view to open the process in the editor.
6.	Palette	Contains a set of widgets and a palette library. A <i>palette</i> groups activities that perform similar tasks and provide quick access to activities when configuring a process.

Creating a Project

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

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



When you import an existing project to the current workspace of TIBCO Business Studio, if you click **Select root directory** in the Import Projects dialog, you must select the **Copy projects into workspace** check box.

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.

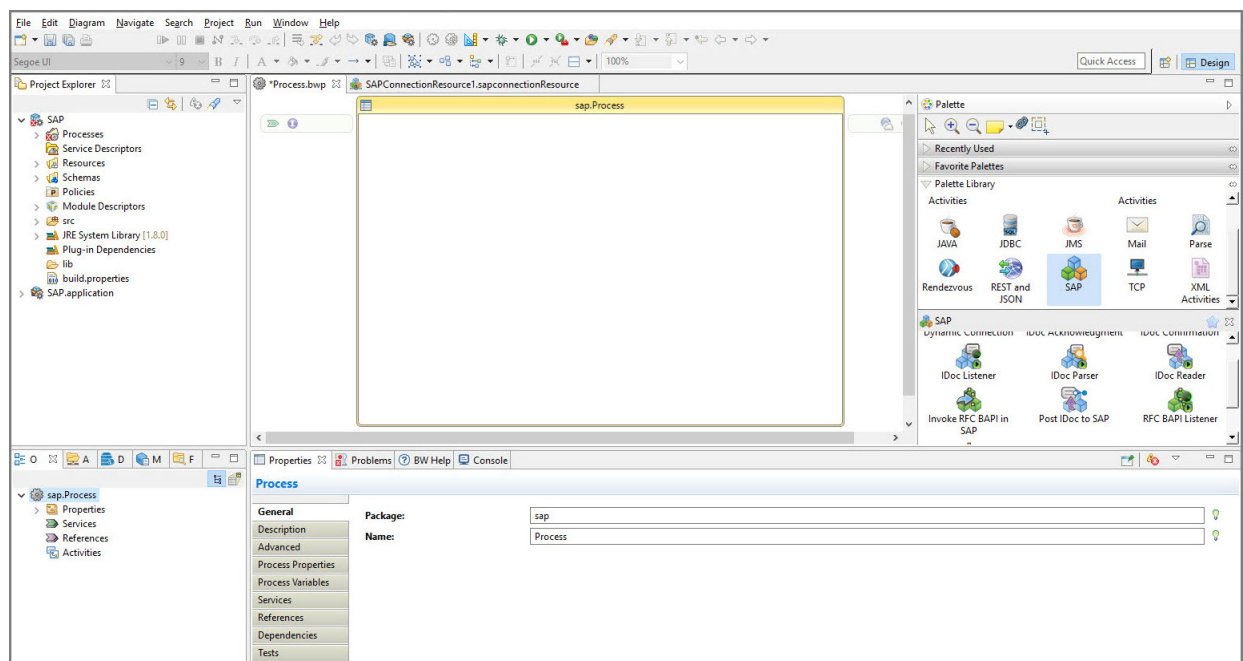


On macOS, to load the environment variables in the `launchd.conf` file correctly, ensure that the shell is `bash` when you start TIBCO Business Studio on a command line.

2. From the menu, click **File > New > BusinessWorks Resources** to open the BusinessWorks Resource wizard.
3. In the Select a wizard dialog box, click **BusinessWorks Application Module** and click **Next** to open the New BusinessWorks Application Module wizard.
4. In the Project dialog box, 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.



Creating and Configuring an SAP Connection

After creating a project, you can add an SAP Connection shared resource to establish connections between the plug-in and the SAP system.

Prerequisites

The SAP Connection shared resource is available at the **Resources** level. Ensure that you have created a project. See [Creating a Project](#) for details.

Procedure

1. In the Project Explorer view, expand the created project.
2. Right-click the **Resources** folder, and then click **New > SAP Connection** to open the SAP Connection wizard.
3. In the New SAP Connection dialog, the resource folder, package name, and resource name of the SAP connection are provided by default. If you do not want to use the default configurations, change them accordingly. Click **Finish** to open the SAP Connection editor.



- In a project, all the SAP Connection shared resources cannot use the same name, even if the shared resources belong to different packages.
- When the SAP Connection shared resource is created for the first time in a TIBCO ActiveMatrix BusinessWorks project, predefined module properties starting with SAP* are created. The predefined module properties must not be deleted.

4. In the Client Connection panel, select a client connection type from the **Connection Type** list.
5. In the Project Explorer view, expand the **Module Descriptors** folder under the created project, and then double-click **Module Properties** to open the Module Properties editor.
6. Specify the corresponding module properties inherited by the basic parameters of the client connection. See [Client Connection](#) for details. Click **Save**.
7. Return to the SAP Connection editor, and then click **Test Connection** to validate the client connection in the **Client Connection Configuration** tab.
8. If you want to establish an outbound connection with the SAP system, click the **Server Connection Configuration** tab to configure the server connection:
 - a) In the Server Connection panel, select the **Enabled** check box.
 - b) From the **Connection Type** list, select a connection type.
 - c) In the Module Properties editor, specify the corresponding module properties inherited by the basic parameters of the server connection. See [Server Connection](#) for details.

9. In the **Message Source Configuration** tab, the configurations for Kafka, JMS, or NoMessaging can be added. For Kafka, the configurations need to be added at the shared resource level. For JMS and NoMessaging, it can be added at the activity level or the shared resource level.
10. Click **Save**

Creating and Configuring an SAP TIDManager Shared Resource

To manage the check of duplicate IDoc messages published from the SAP system, create an SAP TIDManager shared resource.

The SAP TIDManager shared resource is only used in the IDoc Listener activity.

Prerequisites

The SAP TIDManager shared resource is available at the **Resources** level. Ensure that you have created a project. See [Creating a Project](#) for details.

Procedure

1. Expand the created project in the Project Explorer view.
2. Right-click the **Resources** folder and click **New > SAP TIDManager** to open the SAP TIDManager wizard.
3. In the SAP TIDManager dialog, the resource folder, package name, and resource name of the SAP TIDManager shared resource are provided by default. If you do not want to use the default configurations, change them accordingly. Click **Finish** to open the SAP TIDManager editor.



In a project, all the SAP TIDManager shared resources cannot use the same name, even if the shared resources belong to different packages.

4. From the **TID Management resource** list, select a mode:
 - **None:** the check of duplicate IDoc messages is disabled. The database table is not required.
If the system or application that receives the IDocs can handle the duplicate IDoc messages, select **None** from the **TID Management resource** list.
 - **Active:** the check of duplicate IDoc messages is enabled. The database table is required to store the TID information.
For the supported databases, see the readme file.

5. If you select **Active** from the **TID Management resource** list, configure the SAP TIDManager shared resource to do the check of duplicate IDoc messages:
 - a) From the **Database Driver** list, select a JDBC driver according to the type of the database to be connected.
 - b) Specify values for the following fields:
 - **Database URL:** the URL of the database to be connected.
 - **Username:** the valid user name used to connect to the database.
 - **Password:** the valid password corresponding to the user name.
 - c) Click **Test Connection** to validate the connection.
6. Click **Save**.

Configuring a Process

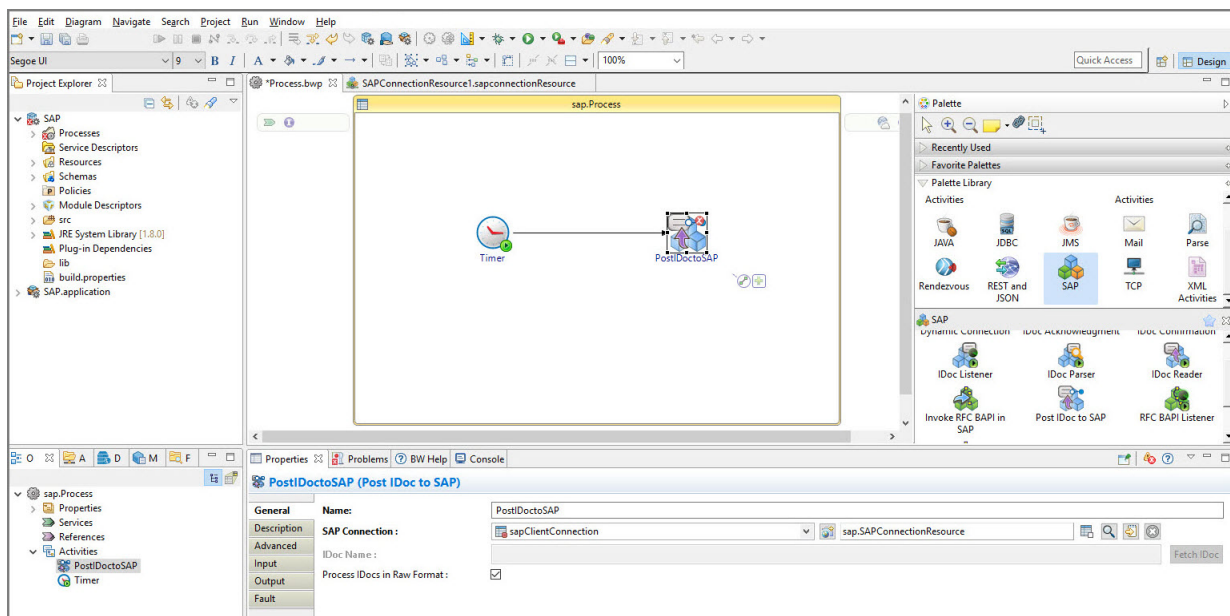
After creating a project, an empty process is created. You can add activities to an empty process to complete a task.


Prerequisites

Ensure that you have created an empty process when creating a project. See [Creating a Project](#) for details.

Procedure

1. In the Project Explorer view, click the created project and open the empty process from the **Processes** folder.
2. Select an activity from the Palette view and drop it in the Process editor. For example, select and drop the RFC BAPI Listener, the Invoke RFC BAPI in SAP, and the Reply from RFC BAPI in SAP activities from the SAP palette.



3. Drag the  icon to create a transition between the added activities.
4. Configure the added SAP activities. See [SAP Palette](#) for details.



When mapping the output of the previous activity as the input of the current activity, choose the **AutoMap** option.

5. Click **File > Save** to save the project.


Testing a Process

After configuring a process, test the process to check whether the process completes your task.

Prerequisites

Ensure that you have configured a process. See [Configuring a Process](#) for details.

Procedure

1. On the toolbar, click  **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, 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 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.

Preparing the SAP System

Before using the plug-in, you have to ensure that your SAP account and your SAP system meet the following requirements, and you must enable the SAP system for messaging with the TIBCO environment.

No modifications of code are required in the SAP system itself.

SAP Account Requirements

An SAP account is required to connect to the SAP system to communicate with the plug-in.

Before configuring the plug-in at design time, ensure that your SAP account and your SAP system meet the following requirements:

- Your SAP account has access to a dedicated SAP application server and has permission to extract metadata for BAPIs, RFCs, and IDocs by using TIBCO Business Studio.
- Your SAP account has authorization from the SAP system administrator to execute RFCs and access tables in the SAP system.
- If you want to use different connections between design-time and runtime inbound activities, obtain the relevant connection information.
- If you want to configure a load-balanced inbound activity, obtain the parameters used to connect to a messaging server for a specific logon group from the SAP Connection shared resource.
- To download SAP schema correctly, the SAP user ID defined in the SAP Connection shared resource must have access to the following function modules through RFC. Ensure that the security authorization profiles assigned to the SAP user ID have either the appropriate function group or function module.
 - IDOCTYPES_LIST_WITH_MESSAGES
 - IDOCTYPE_READ_COMPLETE
 - RFC_GET_STRUCTURE_DEFINITION_P
 - RFC_FUNCTION_SEARCH
 - RFC_GET_FUNCTION_INTERFACE_P
 - DDIF_FIELDINFO_GET
 - SWO_QUERY_OBJTYPES
 - SWO_QUERY_ATTRIBUTES
 - SWO_QUERY_METHODS



IDocs/RFCs/BAPIs specific to a particular language cannot be retrieved if you log on to the SAP system from the SAP GUI or TIBCO Business Studio with a different language.

Enabling Outbound Messaging

To enable outbound messaging at run time, ensure that you implement the configurations of invoking BAPIs/RFCs and publishing IDocs from the SAP system.

Implementing Configurations of Invoking BAPIs/RFCs from the SAP System

To enable outbound messaging at run time, you have to implement the configurations of invoking BAPIs/RFCs from the SAP system.

Procedure

1. Define an RFC destination in the SAP system.

After creating an RFC destination, map it to a program ID. The outbound activity is registered on the SAP gateway with this program ID. Therefore, the outbound activity can receive BAPIs/RFCs invoked on the RFC destination.

For details, see "Defining Logical Systems and RFC Destinations" at http://help.sap.com/saphelp_srm70/helpdata/en/9f/9925413fabef23e1000000a155106/content.htm.

2. Ensure that your SAP account is authorized to execute BAPIs and RFCs.

Implementing Configurations of Publishing IDocs from the SAP System

To enable outbound messaging, you have to implement the configurations of publishing IDocs from the SAP system.

Procedure

1. Create a logical system for the plug-in.

For details, see "Defining/Setting Up a Logical System" at http://help.sap.com/saphelp_nw73/helpdata/en/aa/b4b13b00ae793be1000000a11402f/content.htm.

2. Create a distribution model.

For details, see "Creating the ALE Distribution Model" at https://help.sap.com/saphelp_erp60_sp/helpdata/en/56/b1b13bb3acef3ce1000000a11402f/content.htm.

3. Configure RFC communication.
4. Test the SAP ALE configuration.
5. In the SAP system, run transaction code BD12 to send IDocs to any logical system.

Enabling Inbound Messaging

To enable inbound messaging at run time, ensure that you implement the configurations of invoking BAPIs/RFCs and transferring IDocs from the TIBCO environment in the SAP system.

Implementing Configurations of Invoking BAPIs/RFCs from the TIBCO Environment

To use the plug-in to invoke BAPIs/RFCs in the SAP system, ensure that your account has the authorization to invoke BAPIs/RFCs.

Authorization for each business activity has to be given to the SAP client when that activity is performed by using the plug-in. For example, if the inbound activity is configured to create sales orders in the SAP system, the SAP client requires all the required permissions to create a sales order.

Validate the authorizations in the SAP GUI by executing the BAPI/RFC through the transaction code SE37 without specifying a destination.

Implementing Configurations of Transferring IDocs from the TIBCO Environment

To enable inbound messaging, you have to implement the configurations of transferring IDocs from the TIBCO environment to the SAP system.

Procedure

1. Create a logical system for the plug-in.

For details, see "Defining/Setting Up a Logical System" at http://help.sap.com/saphelp_nw73/helpdata/en/aa/b4b13b00ae793be10000000a11402f/content.htm.

2. Create a distribution model.

For details, see "Creating the ALE Distribution Model" at https://help.sap.com/saphelp_erp60_sp/helpdata/en/56/b1b13bb3acef3ce10000000a11402f/content.htm.

3. Define a partner profile.

For details, see "Configuring the Port and Partner Profile" at http://help.sap.com/saphelp_erp60_sp/helpdata/en/88/bac79fd384c64ea61983dd93af507e/frameset.htm.

Implementing Configurations for Acknowledging Outbound IDocs from the TIBCO Environment

To enable the IDoc Acknowledgment feature, you want to acknowledge IDocs in the TIBCO environment sent by the SAP system.

Procedure

1. Modify the inbound partner profile for the sending partner on the outbound IDoc with the message type of ALEAUD and process of AUD1.
2. Maintain accordingly as required configuration maintained in SAP transactions WE47 - Process IDoc Status Values and WELI - Process Status Groups.

Working with Secure Communication

The Secure Network Communication (SNC) component secures communication between TIBCO ActiveMatrix BusinessWorks Plug-in for SAP Solutions and the SAP system.

SNC Introduction

You can use the SNC component for secure communication between TIBCO ActiveMatrix BusinessWorks Plug-in for SAP Solutions and the SAP system.

SNC provides the following levels of security protection between the plug-in and the SAP system:

- Authentication
- Integrity
- Privacy

For more information about SNC, see "Secure Network Communications (SNC)" at http://help.sap.com/saphelp_nw70ehp1/helpdata/en/e6/56f466e99a11d1a5b00000e835363f/frameset.htm.

SAP Cryptographic Library for SNC

The SAP Cryptographic Library is the default security product for performing encryption functions in SAP systems. For example, you can use it for providing SNC.

The SAP Cryptographic Library provides the entire functionality defined in the standard interface of Generic Security Services Application Programming Interface Version 2 (GSS-API V2).

Setting Up SNC

You can set up SNC in the SAP system and the plug-in.

Procedure

1. Install the SAP Cryptographic Library.
For details, see "Installing the SAP Cryptographic Library on the AS ABAP" at https://help.sap.com/saphelp_nw70/helpdata/en/96/709b3ad94e8a3de1000000a11402f/frameset.htm.
2. Set the trust manager profile parameters.
For details, see "Setting the Trust Manager Profile Parameters" at https://help.sap.com/saphelp_nw70/helpdata/en/3d/bf463c6796e61ce1000000a114084/content.htm?frameset=/en/96/709b3ad94e8a3de1000000a11402f/frameset.htm¤t_toc=/en/6a/44b2420e71c511e1000000a1550b0/plain.htm&node_id=813.
3. Create a SNC PSE.
For details, see "Creating the SNC PSE" at http://help.sap.com/saphelp_nw73ehp1/helpdata/en/07/03473cbff75b01e1000000a114084/content.htm.
4. Set the SNC parameters.
For details, see "Setting the SNC Profile Parameters" at http://help.sap.com/saphelp_nw73ehp1/helpdata/en/19/164442c1a1c353e1000000a1550b0/content.htm.
5. Install the SAP Cryptographic Library on the plug-in.
For details, see [Installing the SAP Cryptographic Library on the Plug-in](#).
6. Configure SNC for the connection between AS Java and AS ABAP.
For details, see "Configuring SNC: AS Java to AS ABAP" at http://help.sap.com/saphelp_nw73ehp1/helpdata/en/c3/d2281db19ec347a2365fba6ab3b22b/content.htm.

7. Set the SNC parameter specific to an inbound or outbound activity.
For details, see "Configuring SNC: External Programs to AS ABAP Using RFC" at http://help.sap.com/saphelp_nw73/helpdata/en/d9/e8a740bbaa4d8f8bee6f7b173bd99f/content.htm or "RFC: TCP/IP Connection - Registered Program" at http://help.sap.com/saphelp_nw73/helpdata/en/4d/a8410336831f8de10000000a15822b/content.htm.
8. Set SNC in TIBCO Business Studio for the plug-in.
For details, see [Setting SNC in TIBCO Business Studio for the Plug-in](#).

Installing the SAP Cryptographic Library on the Plug-in

To set up SNC, you have to install the SAP Cryptographic Library on the plug-in.

Procedure

1. Obtain the SAP Cryptographic Library installation package, and extract it to a temporary directory.
2. Copy the SAP Cryptographic Library file to a specific folder.
Ensure that you specify the path of this folder in the **SNC Lib** field in the Client Connection panel of the **Client Connection Configuration** tab or the Server Connection panel of the **Server Connection Configuration** tab.
3. Create the SEC directory.
4. Set the **SECUDIR** environment variable to point to the sec directory.

Setting SNC in TIBCO Business Studio for the Plug-in

To set SNC in TIBCO Business Studio for the plug-in, you have to perform the configurations for both the outbound and inbound activities.

1. To perform the SNC connection configuration for the outbound activity, you have to perform the SNC configurations in the Server Connection panel of the **Server Connection Configuration** tab of the SAP Connection shared resource. For details, see [Server Connection](#).
2. To perform the SNC connection configuration for the inbound activity, you have to perform the SNC configurations in the Client Connection panel of the **Client Connection Configuration** tab of the SAP Connection shared resource. For details, see [Client Connection](#).
3. The plug-in supports additional properties as the part of the SNC connectivity, but these properties are only available to the Dynamic Connection activity. For details, see [Dynamic Connection](#).

Enabling Trace for the SAP JCo Libraries

You can use Java properties and environment variables to enable trace for the SAP JCo libraries used by the plug-in.

For more information about the Java properties, see [SAP Help Portal](#) or the SAP JCo documentation.

- Java properties used to enable the JCo trace in the SAP JCo libraries
 - `jco.trace_level`: the trace level for JCo. The value range is 0 - 10.
 - `jco.trace_path`: the location of the path for JCo trace files.
- Java property used to enable the JCo trace at the JNI middleware layer in the SAP JCo libraries
 - `jrfc.trace`: the switch of the RFC trace. Set the value to 1 to enable the RFC trace.
- Environment variables used to enable the CPIC trace between the SAP JCo libraries and the SAP gateway
 - `CPIC_TRACE`: the level of the CPIC trace. The value range is 0 - 3.
 - `CPIC_TRACE_DIR`: the location of the path for CPIC trace files.

You can configure the Java properties and environment variables in the following ways:

- TIBCO Business Studio

You can configure the Java properties as VM arguments in the ActiveMatrix BusinessWorks application. In the case of the environment variables, you have to export the variables before starting TIBCO Business Studio. The JCo trace and CPIC trace messages are stored in the trace files specified.
- AppNodes in TIBCO ActiveMatrix BusinessWorks

If the ActiveMatrix BusinessWorks application is deployed to an AppNode, you can configure the Java properties and environment variables in the configuration file `config.ini`.
- TIBCO® Enterprise Administrator

With the web based GUI, you can configure the Java properties as the user-defined properties maintained at the AppNode level.

Enabling Java Property for the SAP Activities

If the IDoc data contains one or more end of line characters, then the Java property `com.tibco.bw.palette.sap.IDocCustomDelimiter` must be specified.

The value of the java property is of type string and is printed after each IDoc data as a part of the raw IDoc received by IDoc Listener, IDoc Parser, and IDoc Reader activities.



If the TIBCO ActiveMatrix BusinessWorks™ application containing the IDoc Listener, IDoc Parser, and IDoc Reader activities are running on separate appnodes ensure the java property `com.tibco.bw.palette.sap.IDocCustomDelimiter` is set to the same value for each appnode.

For example, `com.tibco.bw.palette.sap.IDocCustomDelimiter=_tibsap_`

SAP Connection

You can use the SAP Connection shared resource to establish bidirectional connections with the SAP system and download schemas at design time.



- When the SAP Connection shared resource is created for the first time in a TIBCO ActiveMatrix BusinessWorks project, predefined module properties starting with SAP* are created. The predefined module properties must not be deleted.
- The SAP connection created in the shared module does not set to default, when SAP Plug-in activities are created in the application module. User needs to manually select the SAP connection from the shared module.
- The configuration property **RFC/BAPI No of Threads** is available in the Advanced section of the Client Connection for SAP Connection shared resource. The default value is 8 but it should be maintained accordingly based on the number of BW engine threads available for your SAP application.

General

In the General panel, specify the package where the shared resource is stored in the **Package** field, and provide a short description for this shared resource in the **Description** field. The panel also shows the share resource name, which you defined when creating the shared resource.



If an SAP Connection shared resource is referenced by an activity and has downloaded schema, you cannot rename this connection.

The General panels in the **Client Connection Configuration**, **Server Connection Configuration**, and the **Message Source Configuration** tabs are the same.

Client Connection








You can configure the client connection to establish an inbound connection with the SAP system.





In the Client Connection panel of the **Client Connection Configuration** tab, specify the basic and advanced options of the client connection.


After specifying the client connection, you have to click **Test Connection** to validate the connection.


The following table lists the configurations in the Client Connection panel:

Field	Module Property?	Description
Connection Type	No	<p>The client connection type.</p> <p>The plug-in provides the following client connection types:</p> <ul style="list-style-type: none"> • Dedicated Application Server • Load Balancing • SNC • SNC with Load Balancing <p>The default type is Dedicated Application Server.</p>

Field	Module Property?	Description
Application Server	Yes	<p>The network name of the machine where the SAP system exists.</p> <p> This field is displayed only when you select Dedicated Application Server or SNC from the Connection Type list.</p>
System Number	Yes	<p>The SAP system number.</p> <p> This field is displayed only when you select Dedicated Application Server or SNC from the Connection Type list.</p>
System Name	Yes	<p>The SAP system ID.</p> <p> This field is displayed only when you select Load Balancing and SNC with Load Balancing from the Connection Type list.</p>
Msg Server	Yes	<p>The message server of the SAP system.</p> <p> This field is displayed only when you select Load Balancing and SNC with Load Balancing from the Connection Type list.</p>
Logon Group Name	Yes	<p>The SAP logon group server to be used with the load balancing and SNC load balancing connection.</p> <p>The default value is PUBLIC.</p> <p> This field is displayed only when you select Load Balancing and SNC with Load Balancing from the Connection Type list.</p>
SNC Mode	Yes	<p>Whether to enable the SNC connection.</p> <ul style="list-style-type: none"> • The value of 1 indicates that the SNC connection is enabled. • The value of 0 indicates that the SNC connection is disabled. <p>For more information about SNC, see Working with Secure Communication.</p> <p> This field is displayed only when you select SNC and SNC with Load Balancing from the Connection Type list.</p>
SNC Partnername	Yes	<p>The SNC name of the communication partner.</p> <p> This field is displayed only when you select SNC and SNC with Load Balancing from the Connection Type list.</p>

Field	Module Property?	Description
SNC QOP	Yes	<p>The protection quality of the SNC connection.</p> <ul style="list-style-type: none"> • The value of 1 indicates that only authentication is applied. • The value of 2 indicates that the integrity protection is applied. • The value of 3 indicates that the privacy protection is applied. • The value of 8 indicates that the default protection is applied. • The value of 9 indicates that the maximum protection is applied. <p> This field is displayed only when you select SNC and SNC with Load Balancing from the Connection Type list.</p>
SNC Lib	Yes	<p>The library path of the external security product.</p> <p> This field is displayed only when you select SNC and SNC with Load Balancing from the Connection Type list.</p>
Client	Yes	An SAP client number.
Username	Yes	The valid user name used to log on to an SAP client.
Password	Yes	<p>The valid password corresponding to the user name.</p> <p> This password is not required when you log on by using the SNC connection type.</p>
The following advanced options are displayed when you click Show/Hide Advanced Options :		
Language	No	<p>The language used to connect to the SAP system.</p> <p>The default language is English.</p>
Code Page	Yes	<p>The character set used by the SAP system.</p> <p>The default value is blank.</p> <p> This field can only be specified in the special cases.</p>

Field	Module Property?	Description
Maximum Number of Reconnect Attempts	Yes	<p>The maximum number of times that the plug-in can retry to establish a connection before sending an IDoc message or RFC/BAPI request to the SAP system.</p> <p>The default value is -1, which indicates that the plug-in can retry indefinitely.</p> <div style="display: flex; align-items: center;">  <p>For the IDoc Reader activity, if an IDoc message is persisted on the JMS destination where the activity retrieve messages, the attempt can continue infinitely regardless of the configured number of retries.</p> </div>
Interval between Reconnect Attempts(ms)	Yes	<p>The time interval in milliseconds between two successive attempts to establish a connection before sending an IDoc message or RFC/BAPI request to the SAP system.</p> <p>The default value is 30000.</p>
Max Connections	Yes	<p>The number of SAP connections in the client connection.</p> <p>The default value is 1, and the value range is 1 - 99.</p>
Disable Connection Pooling	No	<p>Whether to disable connection pooling.</p> <p>If you want to close the connection automatically after the RFC/BAPI call is completed, select this check box.</p> <p>This check box is cleared by default.</p>
RFC Trace	Yes	<p>Whether to enable the RFC trace.</p> <ul style="list-style-type: none"> • The value of 1 indicates that the RFC trace is enabled. • The value of 0 indicates that the RFC trace is disabled. <p>The default value is 0.</p>
USE SAP GUI	Yes	<p>Whether to enable the SAP GUI.</p> <ul style="list-style-type: none"> • The value of 1 indicates that the SAP GUI is enabled to carry out debugging of RFCs. • The value of 2 indicates that the SAP GUI is enabled to carry out debugging of RFCs until it is used by the invocation of an RFC. • The value of 0 indicates that the SAP GUI is disabled to carry out debugging of RFCs. <p>The default value is 0.</p>

Field	Module Property?	Description
RFC/BAPI No. of Threads	Yes	<p>Specifies the number of threads in the thread pool provided by SAP Connection Shared Resource.</p> <p>The default value is 8.</p>  <ul style="list-style-type: none"> This property controls the number of concurrent threads used for invoking a RFC/BAPI in SAP and returning the reply back to the RFC/BAPI Listener activity. The maximum effective number for the number of threads is 99. If a number larger than 99 is given, at run time considers the default value which is 8.

Server Connection

You can specify the server connection to establish an outbound connection with the SAP system.

Server Connection

In the Server Connection panel of the **Server Connection Configuration** tab, you can specify the basic and advanced options of the server connection.






If you want to enable the server connection, select the **Enabled** check box and specify the fields in the Server Connection panel.





When the SAP Connection shared resource is referenced, you cannot do any operations on the **Enabled** check box. Therefore, ensure that you have configured the server connection accordingly before using it in the plug-in activities.

The following fields are available in the Server Connection panel when you select the **Enabled** check box:

Field	Module Property?	Description
Connection Type	No	<p>The server connection type.</p> <p>The plug-in provides the following server connection types:</p> <ul style="list-style-type: none"> Default SNC <p>The default type is Default.</p>

Field	Module Property?	Description
Program ID	Yes	<p>The program ID that identifies the RFC server program for the SAP system. The ProgramID is required by the plug-in but it is up to you to define the Program ID based on the requirements.</p> <p>The program ID is case sensitive.</p> <p> An RFC destination corresponding to the program ID must exist in the SAP system.</p> <p> If a server connection is not used by an activity, the program ID is ignored and not registered in the SAP system.</p>
Gateway Service	Yes	<p>The SAP gateway service.</p> <p>The default service is sapgw00.</p> <p> <ul style="list-style-type: none"> When specifying a value as a service name, the service name must exist in the services file maintained at the operating system level. To avoid having to maintain the services file, the TCP/IP port number such as 33xx, where xx is the range from 00 to 99, depending on the instance number of the SAP server can be specified as a value instead. </p>
Gateway Host	Yes	<p>The Gateway host name, IP address, or router string.</p> <p>If no machine exists as a gateway host, this field is specified as the application server.</p>
SNC Mode	Yes	<p>Whether to enable the SNC connection.</p> <ul style="list-style-type: none"> The value of 1 indicates that the SNC connection is enabled. The value of 0 indicates that the SNC connection is disabled. <p> This field is displayed only when you select SNC from the Connection Type list.</p>
SNC QOP	Yes	<p>The protection quality of the SNC connection.</p> <ul style="list-style-type: none"> The value of 1 indicates that only authentication is applied. The value of 2 indicates that the integrity protection is applied. The value of 3 indicates that the privacy protection is applied. The value of 8 indicates that the default protection is applied. The value of 9 indicates that the maximum protection is applied. <p> This field is displayed only when you select SNC from the Connection Type list.</p>

Field	Module Property?	Description
SNC Myname	Yes	The SNC name of the initiator.  This field is displayed only when you select SNC from the Connection Type list.
SNC Lib	Yes	The library path of the external security product.  This field is displayed only when you select SNC from the Connection Type list.
The following advanced options are displayed when you click Show/Hide Advanced Options :		
Maximum time between two startup attempts in case of failures(secs)	Yes	The maximum time interval in seconds between two successive attempts to establish a connection to the gateway host. If the connection cannot be established after the maximum time interval, the server connection is suspended. The default value is 60.
Max Connections	Yes	The number of SAP connections in the server connection. The default value is 1, and the value range is 1 - 99.
RFC Trace	Yes	Whether to enable the RFC trace. <ul style="list-style-type: none"> • The value of 1 indicates that the RFC trace is enabled. • The value of 0 indicates that the RFC trace is disabled. The default value is 0.

Message Source


You can provide the message source related configuration.

In the Messaging Source Configuration panel of the **Message Source Configuration** tab, specify the Messaging Source as JMS or Kafka or No Messaging.

After specifying the Kafka Connection, click the **Validate Bootstrap Servers** button to check the availability of host and port.

The following table lists the configurations in the Messaging Source Configuration panel:

Field	Module Property?	Description
Messaging Source	No	Select the messaging source from the list where the received IDocs are persisted. The following are the options for the messaging source: <ul style="list-style-type: none"> • JMS • Kafka • No Messaging

Field	Module Property?	Description
JMS Connection	No	<p>This field is available when JMS is selected in the Messaging Source field.</p> <p>Click  to select a JMS Connection shared resource. The JMS Connection shared resource establishes connections between the plug-in and the EMS server.</p> <p>If no matching JMS Connection shared resources are found, click Create Shared Resource to create one. For more details, see the <i>TIBCO ActiveMatrix BusinessWorks</i> documentation.</p>
Bootstrap Servers	Yes	<p>This field is available when Kafka is selected in the Messaging Source field.</p> <p>A list of host or port pairs to use for establishing the initial connection to the Kafka cluster. Multiple hosts and ports can be added by using the comma separator (,)</p>

SAP TIDManager

You can use the SAP TIDManager shared resource to manage the check of duplicate IDoc messages published from the SAP system or check for duplicate tRFC or qRFC calls from the SAP system.

The SAP TIDManager shared resource is used in **IDoc Listener** and **RFC BAPI Listener** activities.



The SAP TIDManager created in the shared module does not set to default, when SAP Plugin activities are created in the application module. User needs to manually select the SAP TIDManager from the shared module.

General



In the General panel, specify the package where the shared resource is stored in the **Package** field, and the name to be displayed as the label for the shared resource in the process in the **Name** field. You can also provide a short description for this shared resource in the **Description** field.



Basic Configuration

In the Basic Configuration panel, select the TID management mode, and specify the related parameters.

If you select **Active** from the **TID Management resource** list, you have to click **Test Connection** to validate the database connection after specifying the SAP TIDManager shared resource.

The following table lists the configurations in the Basic Configuration panel:

Field	Module Property?	Description
TID Management resource	No	<p>The TID management mode.</p> <p>The plug-in provides the following modes:</p> <ul style="list-style-type: none"> • None: the check of duplicate IDoc messages is disabled. <p>If the system or application that receives the IDocs can handle the duplicate IDoc messages, you can select the None mode.</p> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;">  When running a process that contains an IDoc Listener activity configured with the None mode, if the EMS server does not start, the IDoc transaction is still confirmed after it is rolled back. </div> <ul style="list-style-type: none"> • Active: the check of duplicate IDoc messages is enabled. When an IDoc is published from the SAP system, the SAP TIDManager shared resource checks if the activity receives a duplicate TID. If the TID is a duplicate, the shared resource does not store its information in the database table and the corresponding message is not processed. Otherwise, the TID information is stored in the database table. <p>The following TID information is stored in the database table:</p> <ul style="list-style-type: none"> – TID – status: CREATED, COMMITTED, and CONFIRMED – creationDate – updateDate <p>For more information, see <i>TIBCO ActiveMatrix BusinessWorks Plug-in for SAP Solutions Installation</i> for details about how to create a database table required in active mode.</p> <p>In the case of bgRFC, when a row of data where the TID is the same as the last 24 characters of the unit ID and the status is COMMITTED is available in the database table, no transaction confirmation operation is performed in the SAP system.</p> <p>The default mode is Active.</p>
The following fields are displayed when you select Active from the TID Management resource list:		
Database Driver	Yes	<p>The JDBC driver.</p> <p>For the supported databases, see the <code>readme</code> file.</p>
Database URL	Yes	<p>The URL of the database to be connected to store the TID information.</p> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;">  While configuring the Database URL and specifying the port along with the service name, use the appropriate delimiter / or : according to the database being used. </div>
Login Timeout(msec)	Yes	<p>The timeout value in milliseconds for logging in to the database.</p> <p>The default value is 30000.</p>

Field	Module Property?	Description
Maximum Connections	Yes	<p>The maximum number of connections that the plug-in can use in the database connection pool.</p> <p>The default value is 1.</p> <p> You have to configure the maximum number of connections according to the number of messages being processed concurrently by the IDoc Listener activities.</p>
Retry Count	Yes	<p>The number of times that the shared resource can retry to establish a connection with the database.</p> <p>The default value is 3.</p>
Retry Interval(msec)	Yes	<p>The time interval in milliseconds between two successive attempts to establish a connection with the database.</p> <p>The default value is 30000.</p> <p> The actual retry interval is longer than the configured interval, because the JDBC driver need time to establish connections and return errors.</p>
Username	Yes	The valid user name used to log on to the database.
Password	Yes	The valid password corresponding to the user name.



To support the bgRFC protocol for the IDoc Listener activity, the SAP TIDManager shared resource is modified to handle the unit ID instead of the TID. The unit ID is sent with the transaction by the SAP system. Because the unit ID is longer than the TID and the TID is used as a key for the database used by the SAP TIDManager shared resource, the last 24 characters of the unit ID are used.

SAP Palette

A palette groups the activities that connect the same external applications together. A SAP palette is added after installing TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions.

The SAP palette contains the following activities:

- [Dynamic Connection](#)
- [IDoc Acknowledgment](#)
- [IDoc Confirmation](#)
- [IDoc Converter](#)
- [IDoc Listener](#)
- [IDoc Parser](#)
- [IDoc Reader](#)
- [IDoc Renderer](#)
- [Post IDoc to SAP](#)
- [Invoke RFC BAPI in SAP](#)
- [RFC BAPI Listener](#)
- [Reply from RFC BAPI in SAP](#)



The bgRFC protocol of type T is supported for the IDoc Listener activity.

Dynamic Connection

Use the Dynamic Connection activity to create dynamic connections at run time for invoking RFC/BAPIs, which include RFC/BAPIs as part of a transaction and also posting IDocs using the Post IDoc to SAP activity.






The Dynamic Connection activity cannot be used to create dynamic connections for invoking RFC/BAPIs in load-balancing mode.

General Tab

On the **General** tab, maintain a reference to the SAP Connection shared resource and configure the activity accordingly to either create a dynamic connection or close an existing dynamic connection.

The following table lists the configurations on the **General** tab of the Dynamic Connection activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.

Field	Module Property?	Description
SAP Connection	Yes	<p>Click  to select an SAP Connection shared resource. The SAP Connection shared resource establishes connections between the plug-in and the SAP system.</p> <p>If no matching SAP Connection shared resources are found, click Create Shared Resource to create one. For more details, see Creating and Configuring an SAP Connection.</p> <div style="border-left: 1px solid black; padding-left: 10px; margin-top: 10px;">  The SAP Connection shared resource is used to provide default settings for any connection parameters not defined in the input of the activity. </div>
Terminate Connection	No	<p>Select this check box to terminate the dynamic connection when it is no longer required.</p> <p>This check box is the same as the Context End check box in the Advanced tab of the Invoke RFC BAPI in SAP activity. When a dynamic connection with the selected Transactional check box is used, if you want to end the transaction, you must select both the Terminate Connection check box and Transactional check box instead of selecting the Context End check box.</p>
Transactional	No	<p>Select this check box to enable the dynamic connection to be used with one or more RFC/BAPIs as part of a transaction.</p> <div style="border-left: 1px solid black; padding-left: 10px; margin-top: 10px;">  <ul style="list-style-type: none"> As part of the same ActiveMatrix BusinessWorks process, using a dynamic connection with RFC/BAPIs running as a transaction or non-transaction is not supported. The Transactional check box is not applicable for the Post IDoc to SAP activity. </div>

Description Tab

On the **Description** tab, enter a short description for the Dynamic Connection activity.

Input Tab

On the **Input** tab, specify detailed information for the dynamic connection you want to configure for invoking RFC/BAPIs.

The following table lists the input elements on the **Input** tab of the Dynamic Connection activity:

Input Item	Data Type	Description
sessionID	String	<p>Enter the session ID of the dynamic connection that is used for invoking RFC/BAPIs and for posting IDocs using Post IDoc to SAP activity.</p> <p>The session ID has to be mapped when you are terminating an existing dynamic connection.</p>

Input Item	Data Type	Description
contextTimeout	Long	<p>Enter the timeout value in milliseconds for the activity to wait for the subsequent activity to be invoked.</p> <p>The default value is 30000. This field is used only when the dynamic connection is used as part of a transaction.</p> <p>This input element is the same as the Commit Expiry(ms) field in the Advanced tab of the Invoke RFC/BAPI activity, and can be overwritten by the Commit Expiry(ms) field.</p> <ul style="list-style-type: none"> The module property of the long type cannot be left blank, and its value range does not include negative numbers. If you set the value of this input item to negative numbers or zero, the default value of 30000 is used automatically at run time.
The following input elements are under the DynamicConnections node:		
connectionType	String	<p>Specify the type of the dynamic connection.</p> <p>The value of this input element is not case-sensitive.</p> <ul style="list-style-type: none"> The value of 1 or <i>dedicated</i> indicates the dedicated connection. The value of 2 or <i>logongroup</i> indicates the SAP logon group connection. The value of 3 or <i>snc</i> indicates the SNC connection. For more information about SNC, see Working with Secure Communication. The value of 4 or <i>sncwithlogongroup</i> indicates the SNC with Load Balancing connection.
appServer	String	Specify the SAP application server by using either the host name or IP address.
systemNumber	String	Specify the system number of the SAP system.
client	String	Specify the client number of the SAP system.
userName	String	Specify the user ID used to log on to the SAP system.
password	String	<p>Specify the password for logging on to the SAP system.</p> <p>The password attribute is part of the XSD schema. You have to define a module property as the password type, and map the defined module property to the password.</p> <ul style="list-style-type: none"> This password is not required when you log on by using the SNC connection type.

Input Item	Data Type	Description
systemName	String	Specify the ID of the SAP system. This field is required when using the connections of the logon group and sncwithlogongroup type.
msgServer	String	Specify the SAP message server used for load balancing. This field is required when using the connections of the logon group and sncwithlogongroup type.
groupName	String	Specify the name of the SAP logon group. This field is required when using the connections of the logon group and sncwithlogongroup type.
snc_mode	String	Specify whether to enable SNC connectivity. <ul style="list-style-type: none"> To disable SNC connectivity, set the value to 0 . To enable SNC connectivity, set the value to 1.
snc_partnername	String	Specify the SNC name of the communication partner, which is an application server, when you set snc_mode to 1.
snc_qop	String	Specify the SNC quality of protection if you set snc_mode to 1. <ul style="list-style-type: none"> To apply only authentication, set the value to 1. To apply integrity protection, set the value to 2. To apply privacy protection, set the value to 3. To apply the default protection, set the value to 8. To apply the maximum protection, set the value to 9.
snc_lib	String	Specify the path of the crypto libraries on the machine where the ActiveMatrix BusinessWorks process is running.
snc_bSSO		Specify whether to enable Single Sign-On (SSO). <ul style="list-style-type: none"> Set the value to 0 to disable SSO. Set the value to 1 to enable SSO.
snc_SS0recv	String	Specify the string of the SSO logon ticket.
snc_x509	String	Specify the X.509 certificate that the SNC connection uses for authentication.
codePage	String	Specify the character sets used by SAP and databases. The default value is blank.

Input Item	Data Type	Description
language	String	Specify the language used to log on to the SAP system. You can only specify a 1-character value for this field. If the value is not populated, the default value is E, indicating English.
rfcTrace	String	Specify whether to enable RFC trace as part of the connection. <ul style="list-style-type: none"> To disable RFC trace, set the value to 0, OFF, or false. To enable RFC trace, set the value to 1, ON, or true.
useSAPGUI	String	Specify whether to enable SAP GUI as part of the connection. <ul style="list-style-type: none"> To disable SAP GUI from carrying out debugging of RFCs, set the value to 0. To enable SAP GUI to carry out debugging of RFCs, set the value to 1. To enable SAP GUI to carry out debugging of RFCs until used by an invocation of an RFC, set the value to 2.

Output Tab

The **Output** tab displays the detailed information about the dynamic connection.

The following table lists the output elements on the **Output** tab of the Dynamic Connection activity:

Output Item	Data Type	Description
sessionID	String	Displays the session ID associated with the dynamic connection. This is the same session ID that is mapped to the input schema of the Invoke RFC/BAPI in SAP activity or posting IDocs in Post IDoc to SAP activity or the Dynamic Connection activity where the connection is being terminated.
CPIC_ID	String	Displays the CPIC ID associated with the dynamic connection as part of a transaction. The CPIC ID is provided only for information purposes.
The following input elements are under the DynamicConnections node:		

Output Item	Data Type	Description
connectionType	String	<p>Displays the type of the dynamic connection.</p> <p>The value of this output element is not case sensitive.</p> <ul style="list-style-type: none"> • The value of 1 or <code>dedicated</code> indicates the dedicated connection. • The value of 2 or <code>logongroup</code> indicates the SAP logon group connection. • The value of 3 or <code>snc</code> indicates the SNC connection. • The value of 4 or <code>sncwithlogongroup</code> indicates the SNC with Load Balancing connection.
appServer	String	Displays the SAP application server specified by using either the host name or IP address.
systemNumber	String	Displays the system number of the SAP system.
client	String	Displays the client number of the SAP system.
userName	String	Displays the user ID used to log on to the SAP system.
password	String	Displays the password for logging on to the SAP system.
systemName	String	Displays the ID of the SAP system.
msgServer	String	Displays the SAP message server used for load balancing.
groupName	String	Displays the name of the SAP logon group.
snc_mode	String	Displays whether to enable SNC connectivity.
snc_partnername	String	Displays the SNC name of the communication partner, which is an application server, if you set snc_mode to 1.
snc_qop	String	Displays the SNC quality of protection if you set snc_mode to 1.
snc_lib	String	Displays the path of the crypto libraries on the machine where the ActiveMatrix BusinessWorks process is running.
snc_bSSO		Displays whether to enable SSO.
snc_SS0recv	String	Displays the string of the SSO logon ticket.
snc_x509	String	Displays the X.509 certificate that the SNC connection uses for authentication.
codePage	String	Displays the character sets used by SAP and databases.
language	String	Displays the language used to log on to the SAP system.

Output Item	Data Type	Description
rfcTrace	String	Displays the string to enable RFC trace as part of the connection.
useSAPGUI	String	Displays the string to enable SAP GUI as part of the connection.

Fault Tab

On the **Fault** tab, you can find the error codes and error messages of the Dynamic Connection activity. See [Error Codes](#) for more detailed explanation of errors.

The following table lists error schema elements on the **Fault** tab of the Dynamic Connection activity:

Error Schema Element	Data Type	Description
msg	String	Displays the error message.
msgCode	String	Displays the error code.

IDoc Acknowledgment


Use the IDoc Acknowledgment activity to update the IDoc status in the SAP system. The IDoc status can be updated for either positive or negative acknowledgments.

The ALEAUD message type along with the basic ALEAUD01 type is used for updating the IDoc status in the SAP system. Even though the ALEAUD01 IDoc supports the sending of multiple IDoc status updates, an ALEAUD01 IDoc is sent for each IDoc, which has to be updated in the SAP system.

General Tab

On the **General** tab, establish a connection to the SAP system.

The following table lists the configurations on the **General** tab of the IDoc Acknowledgment activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.
SAP Connection	Yes	Select the SAP Connection shared resource when you click  . The SAP Connection shared resource establishes connections between the plug-in and the SAP system. If no matching SAP Connection shared resources are found, click Create Shared Resource to create one. For more details, see Creating and Configuring an SAP Connection .

Description Tab



On the **Description** tab, enter a short description for the IDoc Acknowledgment activity.

Input Tab

On the **Input** tab, specify detailed information about the IDoc status that you want to update in the SAP system.

The following table lists the input elements on the **Input** tab of the IDoc Acknowledgment activity:

Input Item	Data Type	Description
idocStatus	String	(Optional) The status of the IDoc that you want to update. If the value is not populated, the default value is 39 and it can be used for both negative and positive acknowledgments. Other statuses can be used at your discretion or according to the SAP system requirements. For details, see Implementing Configurations for Acknowledging Outbound IDocs from the TIBCO Environment .
statusCode	String	(Optional) The status code of the IDoc that you want to update. If the value is not populated, the default value is TIB.
idocNumber	String	(Required) The number of the IDoc that you want to update.
msgType	String	(Required) The message type of the IDoc that needs to be updated in the SAP system.
client	String	(Optional) The client in the SAP system for posting the status to the IDoc. If the value is not populated, the default value of client is the client associated with the specified SAP Connection shared resource.
senderPort	String	(Required) The IDoc number that has to be updated in the SAP system.
senderPartnerNumber	String	(Required) The sender partner number in the IDoc control record for posting the ALEAUD IDoc to the SAP system.
receiverPort	String	(Required) The receiver port in the IDoc control record for posting the ALEAUD IDoc to the SAP system.
receiverPartnerNumber	String	(Required) The receiver partner number in the IDoc control record for posting the ALEAUD IDoc to the SAP system.

Input Item	Data Type	Description
successMessage	String	<p>(Optional) The success message.</p> <p>If successMessage is mapped to a value, a positive acknowledgment is sent to the SAP system.</p> <p> If the success message specified in this field has more than 150 characters, only the first 150 characters of the success message are displayed in the SAP system.</p>
errorMessage	String	<p>(Optional) The error message.</p> <p>If errorMessage is mapped to a value, a negative acknowledgment is sent to the SAP system.</p> <p> If the error message specified in this field has more than 150 characters, only the first 150 characters of the error message are displayed in the SAP system.</p>

- If you specify values for both the **successMessage** and **errorMessage** input elements at run time, a negative acknowledgment is sent to the SAP system.
- If you do not specify values for both the **successMessage** and **errorMessage** input elements at run time, no acknowledgment is sent to the SAP system, and the IDoc status in the SAP system is not updated.

Output Tab

On the **Output** tab, find the IDoc acknowledgment results.

The following table lists the output elements on the **Output** tab of the IDoc Acknowledgment activity:

Output Item	Data Type	Description
TID	String	Displays the TID corresponding to the ALEAUD IDoc used for updating the IDoc status in the SAP system.

Fault Tab

In the **Fault** tab, you can find the error codes and error messages of the IDoc Acknowledgment activity. See [Error Codes](#) for more detailed explanation of errors.

The following table lists error schema elements on the **Fault** tab of the IDoc Acknowledgment activity:

Error Schema Element	Data Type	Description
msg	String	Displays the error message.
msgCode	String	Displays the error code.

IDoc Confirmation

Use the IDoc Confirmation activity to confirm the status of the IDoc posted to the SAP system.

Before using the IDoc Confirmation activity, you have to select the **IDoc Confirmation** check box and specify a destination in the **Confirm IDoc Destination** field in the **Advanced** tab of the IDoc Reader activity.





- The IDoc Confirmation activity requires TIBCO Enterprise Message Service. For confirming IDocs without using TIBCO Enterprise Messaging Service, see [IDoc Processing without Messaging](#)
- When the IDoc Confirmation activity is processing messages, if an EMS server restarts, this activity occasionally generates duplicate confirmation messages for the same IDoc.
- The IDoc Confirmation activity does not support the job tuning property, `FlowLimit`.

See [Job Tuning](#) for details.

General Tab

On the **General** tab, establish connections to the SAP system and the EMS server separately.

The following table lists the configurations on the **General** tab of the IDoc Confirmation activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.
SAP Connection	Yes	<p>Click  to select an SAP Connection shared resource. The SAP Connection shared resource establishes connections between the plug-in and the SAP system.</p> <p>If no matching SAP Connection shared resources are found, click Create Shared Resource to create one. For more details, see Creating and Configuring an SAP Connection.</p>
Messaging Source	No	<p>Specify the transport used by the activity.</p> <p>Only the JMS type is supported.</p>
JMS Connection	Yes	<p>Click  to select a JMS Connection shared resource. The JMS Connection shared resource establishes a connection between the plug-in and the EMS server where the activity retrieves the IDoc to be posted.</p> <p>The JMS Connection shared resource is used for reading messages containing IDoc data that has to be confirmed.</p> <p>If no matching JMS Connection shared resources are found, click Create Shared Resource to create one. For more details, see the TIBCO ActiveMatrix BusinessWorks documentation.</p>

Field	Module Property?	Description
Max Session	Yes	The number of IDoc messages to be processed concurrently. The default value is 1. If you set the value of this field to negative numbers or zero, the value of 1 is used automatically at run time. See Job Tuning for details.

Description Tab

On the **Description** tab, enter a short description for the IDoc Confirmation activity.

Advanced Tab

On the **Advanced** tab, specify the destination used for reading messages containing IDoc data that has to be confirmed.

The following table lists the configurations on the **Advanced** tab of the IDoc Confirmation activity:



Field	Module Property?	Description
Sequence Key	No	This field contains an XPath expression that specifies the order in which the process runs. Process instances with sequencing keys that have the same value are executed sequentially in the order in which the process instances were created.
Custom Job Id	No	This field contains an XPath expression that specifies a custom job ID for the process instance. This ID is displayed in the TIBCO Administrator View Service dialog, and it is also available in the <code>\$_processContext</code> process variable.
Confirm IDoc Destination	Yes	The destination is used for reading messages containing IDoc data that has to be confirmed. This destination has to match the value of the Confirm IDoc Destination field in the Advanced tab of IDoc Reader activity.

Output Tab

On the **Output** tab, you can find the IDoc confirmation results.

The following table lists the output elements on the **Output** tab of the IDoc Confirmation activity:

Output Item	Data Type	Description
TID	String	Displays the TID populated in the message from the IDoc Reader activity.
correlationID	String	Displays the correlation ID populated in the message from the IDoc Reader activity.

Output Item	Data Type	Description
errorMessage	String	<p>Displays the error message from either the IDoc Reader or IDoc Confirmation activity during processing.</p> <p>If the IDoc Reader activity generates an error, no further processing takes place in the IDoc Confirmation activity, and the error message reflects error information returned by the IDoc Reader activity.</p>
successMessage	String	<p>Displays the success message only populated in the case where the IDoc to be confirmed is sent to the SAP system by using qRFC.</p> <p>Because the IDoc number cannot be retrieved in that case, no call is made to the SAP system for the IDoc number and status. The value of the successMessage output item is populated in the following format:</p> <p>IDoc sent to SAP via qRFC. IDoc number is unavailable. The original TID is <i>TID</i>.</p>
idocNumber	String	<p>Displays the IDoc number populated by the IDoc Confirmation activity by retrieving the information from the SAP system.</p> <p> The IDoc number is populated only when the IDoc is posted to SAP by using the tRFC protocol.</p>
idocStatus	String	<p>Displays the IDoc status populated by the IDoc Confirmation activity by retrieving the information from the SAP system.</p> <p> The IDoc status is populated only when the IDoc is posted to SAP by using the tRFC protocol.</p>

IDoc Converter



Use the IDoc Converter activity to convert a raw IDoc received by the IDoc Listener activity from the SAP system.

- To use the raw IDoc from the IDoc Listener activity as input, in the Doc Listener activity on the **General Tab** select the **NoMessaging** option in the **Messaging Source** field.
- When the IDoc is fetched from the IDoc Converter activity, the XPath expression on the transition is set and condition type changes to *Success with Condition* automatically based on the **IDOCTYP** and **CIMTYP** fields from the SAPIDOC element provided on output from the IDoc Listener activity. However, additional fields can be added as needed.
- To ensure the XPath expression is generated successfully, you need to specify the **idocListenerStatusListNOMSG** schema and map to the IDoc Converter activity.
- If an IDoc is received by the IDoc Listener activity and there is no matching transition to the IDoc Converter activity, then no further processing occurs for that IDoc. If notification or any required step is needed then ensure that there is a transition from the IDoc Listener activity where the **Condition Type** on the transition is set to *Success with No Matching Condition*.

General Tab

On the **General** tab, establish a connection to the SAP system for downloading the IDoc Schema.

The following table lists the configurations on the **General** tab of the IDoc Converter activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.
SAP Connection	Yes	<p>Click  to select an SAP Connection shared resource. The SAP Connection shared resource establishes an inbound connection between the plug-in and the SAP system.</p> <p>If no matching SAP Connection shared resources are found, right-click the Resources folder, and then click New > SAP Connection to create a new connection. For more information, see Creating and Configuring a SAP Connection for details.</p> <p> The connection to SAP system is only used for downloading the IDoc schema during configuration of project.</p>

Field	Module Property?	Description
IDoc Name	No	<p>Click Fetch IDoc to download the schema of the IDoc</p> <p>In the Search IDoc dialog box, complete the following tasks:</p> <ol style="list-style-type: none"> Specify the IDoc filter to filter out the required IDoc types with the basic IDoc type name. <p>The IDoc filter supports the wildcard search. The default value of the IDoc Filter field is . *, and the value of this field is case sensitive.</p> Select an IDoc type. <ul style="list-style-type: none"> Basic Type: select Basic Type if you want to download the IDoc schema of the basic type. Only the basic IDoc types matching the IDoc filter can be filtered out. Extended Type: select Extended Type if you want to download the IDoc schema of the extended type. The extended IDoc type name includes the name of the basic IDoc type that it is extended from. Therefore, the extended IDoc types can be filtered out by using the corresponding basic IDoc type name. Click Fetch IDoc. Select the IDoc type that you want to download and click OK. <p>Ensure that the selected IDoc type and the associated segments have been released in the SAP system.</p> <p>You must clear the Download IDoc specific to SAP release check box to filter those IDocs that have been released, but do not have a release number assigned.</p> <p>When the IDoc schema is downloaded, an XSD file is created. The XSD file cannot be visible in the project, but it can be picked from the activity if required.</p> <ul style="list-style-type: none"> When an IDoc schema is downloaded to the plug-in, if new segment definitions are added to the IDoc schema because of the upgrade of the SAP system, you have to refresh the IDoc schema in the plug-in. You must specify the correct version for the Seg. release in IDoc type field in the outbound partner profile so that the version of the segment definition in the downloaded IDoc schema matches the version of the IDoc type from the SAP system. If the IDoc schema requires to be refreshed from the SAP system, then ensure that the Download IDoc specific to SAP release check box is configured accordingly. The Download IDoc specific to SAP check box is by default always selected whenever the user clicks the Fetch IDoc button.

Field	Module Property?	Description
IDoc Output Mode	No	Specify the output of the IDoc Converter activity. Default value is XML.

Description Tab

On the **Description** tab, enter a short description for the IDoc Converter activity.

Input Tab

On the **Input** tab, map the data being outputted from the IDoc Listener activity or Start activity (if using a subprocess).

The following table lists the input elements on the **Input** tab of the IDoc Converter activity:

Input Item	Data Type	Description
SAPIDoc	Complex	Map the SAPIDOC element outputted from the IDoc Listener or Start activity (if using a subprocess)
IDoc	Complex	Map the IDOC element outputted from the IDoc Listener or Start activity (if using a subprocess)

Output Tab

The **Output** tab of the IDoc Converter activity shows the parsed IDoc in the XML format.

The output of the IDoc Converter activity follows the following rules:

- Any space characters at the beginning of the output item value are preserved.
- Any space characters at the end of the output item value are removed.
- When space characters at the end of the output item value are removed, and if the output item has no value left, then the corresponding output item is not displayed in the activity output.

Fault Tab

On the **Fault** tab, you can find the error codes and error messages of the IDoc Converter activity. See [Error Codes](#) for more detailed explanation of errors.

The following table lists error schema elements on the **Fault** tab of the IDoc Converter activity:

Error Schema Element	Data Type	Description
msg	String	Displays the error message.
msgCode	String	Displays the error code.

IDoc Listener

Use the IDoc Listener activity to receive IDocs published from the SAP system.

The IDoc Listener activity can process different IDoc messages using the same program ID, including extended and customized basic IDocs.

The IDocs are persisted to the TIBCO transport, for example, EMS, and confirmed in the SAP system. The IDoc Listener activity serializes the IDoc data to the transport by using the raw IDoc format.

IDocs of SAP port type 4x are only supported using the tRFC, qRFC, and bgRFC (Type T only) protocols.



- The IDoc Listener activity is configured to use either the TIBCO Enterprise Messaging Service or Apache Kafka. This activity can also be configured without using messaging service. For more information on using the IDoc Listener activity without messaging service, see [IDoc Processing Without Messaging](#)
- In a project, the IDoc Listener activities cannot use the same SAP connection or the SAP connections with the same combination of the gateway host, the gateway service, and the program ID.
- You need to delete the JMS Connection property from the process properties file if you are switching from JMS Message Resource to NoMessaging or Kafka.

If you want to control the number of messages being processed concurrently by the activity, choose one of the following configurations:

- Configure the **Max Connections** field of the referenced server connection according to the number of all the IDoc Listener and RFC BAPI Listener activities and whether the TID management mode is *Active*.
- Configure the RFC destination accordingly by using the SAP transaction code, *SMQS*.





The IDoc Listener activity does not support the job tuning property, *FlowLimit*.




See [Job Tuning](#) for details.

General Tab

On the **General** tab, establish connections to the SAP system and the messaging source separately, and choose an SAP TIDManager shared resource to manage the check of the duplicate IDoc messages.

The following table lists the configurations on the **General** tab of the IDoc Listener activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.
SAP Connection	Yes	<p>Click  to select an SAP Connection shared resource. The SAP Connection shared resource establishes connections between the plug-in and the SAP system at run time.</p> <p>Ensure that you have created an SAP Connection shared resource accordingly first. For more details, see Creating and Configuring an SAP Connection.</p> <div style="border-left: 1px solid black; padding-left: 10px; margin-top: 10px;">  <ul style="list-style-type: none"> • The server connection created by clicking Create Shared Resource cannot be enabled. • When the server connection of an SAP Connection shared resource is not enabled, you still can select this shared resource by selecting the corresponding process property. Therefore, if you want to select the SAP Connection shared resource by selecting the corresponding process property, ensure that the server connection of the shared resource has been enabled. </div>

Field	Module Property?	Description
SAP TID Manager	Yes	<p>Click  to select an SAP TIDManager shared resource. The SAP TIDManager shared resource can manage the check of duplicate IDoc messages for the activity.</p> <p>If no matching SAP TIDManager shared resources are found, click Create Shared Resource to create one. For more details, see Creating and Configuring an SAP TIDManager Shared Resource.</p>
Messaging Source	No	<p>The following are the options for messaging source:</p> <ul style="list-style-type: none"> • JMS • Kafka • NoMessaging <div style="border-left: 1px solid #ccc; padding-left: 10px; margin-left: 20px;">  When a messaging option is selected at the activity level, it takes precedence over the SAP Connection Shared Resource. </div> <p>Select the messaging source where the received IDocs are persisted from the list.</p> <p>If the transport type is JMS, the control fields are passed as JMS properties. The property name consists of the SAPIDOC_ prefix and the IDoc control record field. For example, if the control field is DOCNUM, the corresponding JMS property is SAPIDOC_DOCNUM.</p> <p>If the transport type is Kafka, the control fields are passed as Kafka header parameters.</p> <p>For the IDoc Listener activity, except for the preceding JMS properties, you can also use the SAPJCO_ JMS properties to route IDoc messages to a specific receiver.</p> <p>If the messaging source is selected as NoMessaging then the IDoc received from the SAP system is outputted as a raw IDoc. If the raw IDoc needs to be converted into XML format then process the output from the IDoc Listener activity using the IDoc Converter activity. For more information, see IDoc Processing Without Messaging.</p>
JMS Connection	Yes	<p>This field is available only when JMS is selected in the Messaging Source field.</p> <p>Click  to select a JMS Connection shared resource. The JMS Connection shared resource establishes connections between the plug-in and the EMS server where the activity saves the IDocs received from the SAP system.</p> <p>If no matching JMS Connection shared resources are found, click Create Shared Resource to create one. For more details, see the TIBCO ActiveMatrix BusinessWorks documentation.</p>

Field	Module Property?	Description
Producer Properties	Yes	You can provide the Kafka Producer properties for this field. This field is available only when Kafka is selected in the Messaging Source field. Multiple properties can be provided in <code>key:value</code> format and the properties can be separated using the comma separator (,)



Description Tab

On the **Description** tab, you can enter a short description for the IDoc Listener activity.

Advanced Tab

On the **Advanced** tab, specify the destination used to persist the IDoc received from the SAP system.

The following table lists the configurations on the **Advanced** tab of the IDoc Listener activity:

Field	Module Property?	Description
Sequence Key	No	This field contains an XPath expression that specifies the order in which the process runs. Process instances with sequencing keys that have the same value are executed sequentially in the order in which the process instances were created.
Custom Job Id	No	This field contains an XPath expression that specifies a custom job ID for the process instance. This ID is displayed in the TIBCO Administrator View Service dialog, and it is also available in the <code>\$_processContext</code> process variable. The custom job ID for the process instance.
IDoc Destination	Yes	<p>This field is available only when JMS is selected in the Messaging Source field on the General Tab.</p> <p>The destination is used to persist the IDocs received from the SAP system.</p> <div style="display: flex; align-items: center;">  <p>When Kafka is selected in the Messaging Source field on the General Tab, this field is not displayed and the Kafka Topic is created by the plug-in with the IDoc Name.</p> </div>
IDoc Expiration (ms)	Yes	<p>This field is available only when JMS is selected in the Messaging Source field on the General Tab.</p> <p>This field allows for messages to be deleted from the EMS queue if not processed by the mentioned time message will be removed from EMS Queue.</p> <div style="display: flex; align-items: center;">  <p>This field is maintained in milliseconds (ms) and the default is 0 where messages will not expire from EMS queue.</p> </div>

Output Tab

On the **Output** tab, find the information of the received IDocs.

The following table lists the output elements on the **Output** tab of the IDoc Listener activity:

Output Item	Data Type	Description
IDocNumber	String	Displays the number of the received IDoc.
TID	String	Displays the TID of the transaction used to publish the IDoc from the SAP system.
MessageID	String	This output is available only when JMS is selected in the Messaging Source field on the General Tab . Displays the message ID of the received IDoc.
TopicName	String	This output is available only when Kafka is selected in the Messaging Source field on the General Tab . Displays the topic name where the IDoc is published.
PartitionID	Integer	This output is available only when Kafka is selected in the Messaging Source field on the General Tab . The sequence ID of the partition to which a IDoc is sent within a topic.
Offset	Integer	This output is available only when Kafka is selected in the Messaging Source field on the General Tab . The sequence ID number assigned to each IDoc within a partition.
SAPIDoc	Element	This output is only available when No Messaging is selected in the Messaging Source field on the General Tab . Displays the IDoc Control record in XML format.
IDoc	Element	This output is only available when No Messaging is selected in the Messaging Source field on the General Tab . Displays the raw IDoc in text format where the IDoc Control record and all the IDoc Data records are displayed separately.

IDoc Parser

Use the IDoc Parser activity when the XML output is required from the IDoc messages received by the IDoc Listener activity.

Different IDoc types require different IDoc Parser activities to perform the parse process.




- The IDoc Parser activity requires the TIBCO Enterprise Message Service.
- The IDoc Parser activity does not support the job tuning property, `FlowLimit`.

See [Job Tuning](#) for details.


General Tab

On the **General** tab, establish connections to the SAP system and the messaging source separately, and download the schema of the IDoc to be parsed by the IDoc Parser activity.

The following table lists the configurations on the **General** tab of the IDoc Parser activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.
SAP Connection	Yes	<p>Click  to select an SAP Connection shared resource. The SAP Connection shared resource establishes an inbound connection between the plug-in and the SAP system. The inbound connection is only used to download the IDoc schema at design time.</p> <p>If no matching SAP Connection shared resources are found, right-click the Resources folder, and then click New > SAP Connection to create a new connection. See Creating and Configuring an SAP Connection for details.</p>

Field	Module Property?	Description
IDoc Name	No	<p>Click Fetch IDoc to download the schema of the IDoc to be parsed.</p> <p>In the Search IDoc dialog box, complete the following tasks:</p> <ol style="list-style-type: none"> Specify the IDoc filter to filter out the required IDoc types with the basic IDoc type name. <p>The IDoc filter supports the wildcard search. The default value of the IDoc Filter field is . *, and the value of this field is case sensitive.</p> Select an IDoc type. <ul style="list-style-type: none"> Basic Type: select Basic Type if you want to download the IDoc schema of the basic type. Only the basic IDoc types matching the IDoc filter can be filtered out. Extended Type: select Extended Type if you want to download the IDoc schema of the extended type. The extended IDoc type name includes the name of the basic IDoc type that it is extended from. Therefore, the extended IDoc types can be filtered out by using the corresponding basic IDoc type name. Click Fetch IDoc. Select the IDoc type that you want to download and click OK. <p>Ensure that the selected IDoc type and the associated segments have been released in the SAP system.</p> <p>You need to clear the Download IDoc specific to SAP release checkbox to filter those IDocs that have been released, but do not have a release number assigned.</p> <p>When the IDoc schema is downloaded, an XSD file is created. The XSD file cannot be visible in the project, but it can be picked from the activity if required.</p> <ul style="list-style-type: none"> When an IDoc schema is downloaded to the plug-in, if new segment definitions are added to the IDoc schema because of the upgrade of the SAP system, you have to refresh the IDoc schema in the plug-in. You must specify the correct version for the Seg. release in IDoc type field in the outbound partner profile so that the version of the segment definition in the downloaded IDoc schema matches the version of the IDoc type from the SAP system. When the IDoc Parser activity is in the same process as the JMS Send Message activity, if you refresh the IDoc schema, it might cause TIBCO Business Studio to be unresponsive. If the IDoc schema has to be refreshed, temporarily remove the reference of the IDoc schema in the JMS Send Message activity before refreshing the IDoc schema. If the IDoc schema requires to be refreshed from the SAP system, then ensure that the Download IDoc specific to SAP release check box is configured accordingly. The

Field	Module Property?	Description
		Download IDoc specific to SAP check box is by default always selected whenever the user clicks the Fetch IDoc button.
Messaging Source	No	The messaging source where the activity retrieves the IDocs to be parsed. Only the JMS type is supported.
JMS Connection	Yes	Click  to select a JMS Connection shared resource. The JMS Connection shared resource establishes a connection between the plug-in and the EMS server where the activity retrieves the IDocs to be parsed. If no matching JMS Connection shared resources are found, click Create Shared Resource to create one. For more details, see the TIBCO ActiveMatrix BusinessWorks documentation.
Max Session	Yes	Specify the number of IDoc messages to be processed concurrently. The default value is 1. If you set the value of this field to negative numbers or zero, the value of 1 is used automatically at run time. See Job Tuning for details.

Description Tab



On the **Description** tab, enter a short description for the IDoc Parser activity.

Advanced Tab

On the **Advanced** tab, specify the destination used to retrieve the IDocs to be parsed, and the message selector.

The following table lists the configurations on the **Advanced** tab of the IDoc Parser activity:

Field	Module Property?	Description
Sequence Key	No	This field contains an XPath expression that specifies the order in which the process runs. Process instances with sequencing keys that have the same value are executed sequentially in the order in which the process instances were created.
Custom Job Id	No	This field contains an XPath expression that specifies a custom job ID for the process instance. This ID is displayed in the TIBCO Administrator View Service dialog, and it is also available in the <code>\$_processContext</code> process variable. The custom job ID for the process instance.

Field	Module Property?	Description
Receive IDoc Destination	Yes	<p>This field is used to retrieve the IDoc to be parsed.</p>  <p>This destination must be the one that the IDoc Listener activity uses to persist IDocs.</p>
Acknowledge Mode	No	<p>This field is used to control the acknowledgment of the message from the Receive IDoc Destination Queue. The possible values are:</p> <ul style="list-style-type: none"> • Auto for automatic acknowledgment. • Client for Client acknowledgment. <p>The default value is automatic acknowledgment</p>  <p>When using Client Acknowledgment, you must confirm the message using the Confirm activity from the General Activities palette. In terms of error handling, to capture the exception generated by the activity during processing the message, the CatchAll should be used.</p>
Message Selector	No	<p>The message selector is used to select a specific IDoc message from the receive IDoc destination.</p> <p>The default value is <code>SAPIDOC_IDOCTYP = 'IDoc_Type' AND SAPIDOC_CIMTYP = 'Cim_Type'</code>.</p> <p>You can also use other JMS properties, for example, <code>SAPIDOC_OUTMOD</code>, <code>SAPIDOC_STATUS</code>, and <code>SAPIDOC_CREDAT</code>.</p> <p>If a syntax error occurs, you can click Reset Syntax next to the Message Selector field to reset this field.</p>

Output Tab

The **Output** tab of the IDoc Parser activity shows the parsed IDoc in the XML format.

The output of the IDoc Parser activity follows the following rules:

- Any space characters at the beginning of the output item value are preserved.
- Any space characters at the end of the output item value are removed.
- When space characters at the end of the output item value are removed, if the output item has no value left, the corresponding output item is not displayed in the activity output.

Fault Tab

On the **Fault** tab, you can find the error codes and error messages of the IDoc Parser activity. See [Error Codes](#) for more detailed explanation of errors.

The following table lists error schema elements on the **Fault** tab of the IDoc Parser activity:

Error Schema Element	Data Type	Description
msg	String	Displays the error message.
msgCode	String	Displays the error code.
IDocNumber	String	Displays the number of the received IDoc.

IDoc Reader

Use the IDoc Reader activity to post IDocs to the SAP system.

The IDoc Reader activity retrieves the XML message persisted on a messaging source, converts the message into an IDoc, and then posts the IDoc to the SAP system.

IDocs of SAP port type 4x are only supported using tRFC and qRFC protocols.




- The IDoc Reader activity requires the TIBCO Enterprise Messaging Service.
- The IDoc Listener activity does not support the job tuning property, `FlowLimit`.
- In IDoc Reader activity, while reconnecting if SAP exhausted, the client connection exception is caught by the `IDocReaderFault` exception and the IDoc messages remain in queue.

See [Job Tuning](#) for details.



General Tab

On the **General** tab, establish connections to the SAP system and the messaging source separately, and download the schema of the IDoc to be posted to the SAP system.

The following table lists the configurations on the **General** tab of the IDoc Reader activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.
SAP Connection	Yes	<p>Click  to select an SAP Connection shared resource. The SAP Connection shared resource establishes connections between the plug-in and the SAP system.</p> <p>If no matching SAP Connection shared resources are found, click Create Shared Resource to create one. For more details, see Creating and Configuring an SAP Connection.</p>

Field	Module Property?	Description
IDoc Name	No	<p>Click Fetch IDoc to download the schema of the IDoc to be posted.</p> <p>In the Search IDoc dialog box, complete the following tasks:</p> <ol style="list-style-type: none"> Specify the IDoc filter to filter out the required IDoc types with the IDoc type name. <ul style="list-style-type: none"> The IDoc filter supports the wildcard search. The default value of the IDoc Filter field is . *, and the value of this field is case sensitive. Select an IDoc type. <ul style="list-style-type: none"> Basic Type: select Basic Type if you want to download the IDoc schema of the basic type. Only the basic IDoc types matching the IDoc filter can be filtered out. Extended Type: select Extended Type if you want to download the IDoc schema of the extended type. The extended IDoc type name includes the name of the basic IDoc type that it is extended from. Therefore, the extended IDoc types can be filtered out by using the corresponding basic IDoc type name. Click Fetch IDoc. Select the IDoc type that you want to download and click OK. <ul style="list-style-type: none"> Ensure that the selected IDoc type and the associated segments have been released in the SAP system. You need to clear the Download IDoc specific to SAP release checkbox to filter those IDocs that have been released but do not have a release number assigned. <p>When the IDoc schema is downloaded, an XSD file is created. The XSD file cannot be visible in the project, but it can be picked from the activity if required.</p> <div style="border-left: 1px solid #ccc; padding-left: 10px; margin-top: 10px;"> <ul style="list-style-type: none"> When an IDoc schema is downloaded to the plug-in, if new segment definitions are added to the IDoc schema because of the upgrade of the SAP system, you have to refresh the IDoc schema in the plug-in. If the IDoc schema requires to be refreshed from the SAP system, then ensure that the Download IDoc specific to SAP release check box is configured accordingly. The Download IDoc specific to SAP check box is by default always selected whenever user clicks the Fetch IDoc button. </div>

Field	Module Property?	Description
Messaging Source	No	Select the messaging source where the activity retrieves messages from the list. Only the JMS type is supported.
JMS Connection	Yes	Click  to select a JMS Connection shared resource. The JMS Connection shared resource establishes a connection between the plug-in and the EMS server where the activity retrieves the IDoc to be posted. If no matching JMS Connection shared resources are found, click Create Shared Resource to create one. For more details, see the TIBCO ActiveMatrix BusinessWorks documentation.  When the fault-tolerant operation is not configured on the EMS server and the server goes down, if the server is restarted, the IDoc Reader activity might retrieve a duplicate IDoc message.
Max Session	Yes	Enter the number of IDoc messages to be processed concurrently. The default value is 1. If you set the value of this field to negative numbers or zero, the value of 1 is used automatically at run time. See Job Tuning for details.
Receive IDocs in Raw Format	No	Specify whether to receive IDocs in a raw format. If you select this check box, the IDoc Name field and Fetch IDocs button becomes unavailable because the IDoc schema is not required for the raw IDoc format.

Description Tab



On the **Description** tab, enter a short description for the IDoc Reader activity.


Advanced Tab

On the **Advanced** tab, specify the destination used to retrieve IDocs to be posted, and the protocol used to post IDocs.

The following table lists the configurations on the **Advanced** tab of the IDoc Reader activity:

Field	Module Property?	Description
Sequence Key	No	This field contains an XPath expression that specifies the order in which the process runs. Process instances with sequencing keys that have the same value are executed sequentially in the order in which the process instances were created.

Field	Module Property?	Description
Custom Job Id	No	This field contains an XPath expression that specifies a custom job ID for the process instance. This ID is displayed in the TIBCO Administrator View Service dialog, and it is also available in the <code>\$_processContext</code> process variable. The custom job ID for the process instance.
Post IDoc Destination	Yes	This destination is used to retrieve the IDoc to be posted. For more information on how to create IDoc in XML format, please refer Mapping Data for SAP Palette activities
IDoc Error Destination	Yes	This destination is used to forward the IDoc when an exception occurs in the SAP system.  If the value of the IDoc Error Destination or Confirm IDoc Destination field is invalid, the IDoc Reader activity fails to be initialized during startup, and no IDoc messages are read from the destination specified in the Post IDoc Destination field for processing.
IDoc Error Msg Expiration (ms)	Yes	This field allows for messages on the IDoc Error Destination to be deleted from EMS Server if not processed by the time mentioned. This field is maintained in milliseconds (ms) and the default is 0 where messages will not expire.
IDoc Input Mode	No	This protocol is used to post IDocs. The plug-in supports the following protocols: <ul style="list-style-type: none"> • tRFC: select tRFC if the message delivery in sequence is not required. • qRFC: select qRFC if the message delivery in sequence is required. If you select qRFC from the IDoc Input Mode list, the <code>queueName</code> attribute in the message sent to the destination specified in the Confirm IDoc Destination field contains the value of the SAP Queue Name field. The default protocol is qRFC .
SAP Queue Name	Yes	The name of the queue is to be used when posting IDocs by the qRFC protocol.  This field becomes available only when you select qRFC from the IDoc Input Mode list.
IDoc Confirmation	Yes	This check box indicates whether IDoc confirmation is enabled. Select this check box if you want to get information about the IDoc after it is posted.

Field	Module Property?	Description
Confirm IDoc Destination	Yes	<p>This destination is used to confirm the posted IDocs.</p> <p>This field is displayed only when you select the IDoc Confirmation check box.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  <p>If the value of the IDoc Error Destination or Confirm IDoc Destination field is invalid, the IDoc Reader activity fails to be initialized during startup, and no IDoc messages are read from the destination specified in the Post IDoc Destination field for processing.</p> </div>

Output Tab

On the **Output** tab, find the information of the posted IDoc.

The following table lists the output elements on the **Output** tab of the IDoc Reader activity:

Output Item	Data Type	Description
MessageID	String	Displays the message ID of the posted IDoc.
TID	String	Displays the TID of the transaction that the SAP system uses to receive the posted IDoc.
Dynamic Properties	Complex	<p>Displays the JMS dynamic properties received in the JMS message.</p> <p>In case of any error posting in the IDoc, SAPPLUGIN_ERROR_MSG and SAPPLUGIN_ERROR_MSGID are generated in the output of dynamic properties.</p>

Fault Tab

On the **Fault** tab, you can find the error codes and error messages of the IDoc Reader activity.

See [Error Codes](#) for more detailed explanation of errors.

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

IDocReaderFault

The **IDocReaderFault** generates an exception and causes the activity to stop.

Error Schema Element	Data Type	Description
msg	String	Displays the error message.
msgCode?	String	Displays the error code.

Post IDoc to SAP

The **Post IDoc to SAP** activity is used to post IDocs to the SAP system without the need to use TIBCO Enterprise Message Service where the IDoc would be passed as input to the activity.




When using this activity, exceptions must be caught and handled accordingly in the catch process.

General Tab

On the **General** tab, establish connections to the SAP system and download the schema of the IDoc to be posted to the SAP system.

The following table lists the configurations on the **General** tab of the Post IDoc to SAP activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.
SAP Connection	Yes	<p>Click  to select a SAP Connection shared resource. The SAP Connection shared resource establishes connections between the plug-in and the SAP system.</p> <p>If no matching SAP Connection shared resources are found, click the Create Shared Resource to create one. For more details, see Creating and Configuring an SAP Connection.</p>

Field	Module Property?	Description
IDoc Name	No	<p>Click Fetch IDoc button to download the schema of the IDoc to be posted.</p> <p>In the Search IDoc dialog box, complete the following tasks:</p> <ol style="list-style-type: none"> Specify the IDoc filter to filter out the required IDoc types with the IDoc type name. <p>The IDoc filter supports the wildcard search. The default value of the IDoc Filter field is . *, and the value of this field is case sensitive.</p> Select an IDoc schema type. <ul style="list-style-type: none"> Basic Type: Select Basic Type if you want to download the IDoc schema of the basic type. Only the basic IDoc types matching the IDoc filter can be filtered out. Extended Type: Select Extended Type if you want to download the IDoc schema of the extended type. The extended IDoc type name includes the name of the basic IDoc type, from which it is extended. Therefore, the extended IDoc types can be filtered out by using the corresponding basic IDoc type name. Click Fetch IDoc button. Select the IDoc type that you want to download and click OK. <p>Ensure that the selected IDoc type and the associated segments have been released in the SAP system.</p> <p>You need to clear the Download IDoc specific to SAP release checkbox to filter those IDocs that have been released but do not have a release number assigned.</p> <p>After the IDoc schema is downloaded, an XSD file is created. The XSD file cannot be visible in the project, but it can be picked from the activity if required.</p> <div style="border-left: 1px solid #ccc; padding-left: 10px; margin-top: 10px;"> <ul style="list-style-type: none"> After an IDoc schema is downloaded to the plug-in, if new segment definitions are added to the IDoc schema because of the upgrade of the SAP system, you have to refresh the IDoc schema in the plug-in. If the IDoc schema requires to be refreshed from the SAP system then ensure that the Download IDoc specific to SAP release check box is configured accordingly. The Download IDoc specific to SAP check box is by default always selected when user clicks the Fetch IDoc button. </div>



Field	Module Property?	Description
Process IDocs in Raw Format	No	Specify whether to process IDocs in a raw format. If you select this check box, the IDoc Name field and Fetch IDocs button becomes unavailable because the IDoc schema is not required to post raw IDoc format. The user provides the raw IDoc in the fixed schema in the Input tab.


Description Tab



On the **Description** tab, enter a short description for the Post IDoc to SAP activity.

Advanced Tab

On the **Advanced** tab, specify the posting of the IDoc to SAP confirmation mode, confirmation destination, the messaging source, and the protocol used to post IDocs.

The following table lists the configurations on the **Advanced** tab of the Post IDoc to SAP activity:


Field	Module Property?	Description
IDoc Input Mode	No	This protocol is used to post IDocs. The plug-in supports the following protocols: <ul style="list-style-type: none"> • tRFC: Select tRFC if the message delivery in sequence is not required. • qRFC: Select qRFC if the message delivery in sequence is required. If you select qRFC from the IDoc Input Mode list, the queueName attribute in the message sent to the destination specified in the Confirm IDoc Destination field contains the value of the SAP Queue Name field. <p>The default protocol is tRFC.</p>
SAP Queue Name	Yes	The name of the queue is to be used when posting IDocs by the qRFC protocol.  This field becomes available only when you select qRFC from the IDoc Input Mode list.
IDoc Confirmation Mode	Yes	This mode is used for IDoc Confirmation. There are three modes for IDoc Confirmation: <ul style="list-style-type: none"> • None: No action is taken for IDoc Confirmation. • JMS: This posts information about the IDoc after it is posted to SAP on the JMS destination queue. • NoMessaging: After the IDoc is posted to SAP, a confirmation report is provided on the output of the activity. <p>The default mode for IDoc Confirmation is None.</p>

Field	Module Property?	Description
JMS Connection	Yes	<p>Click  to select a JMS Connection shared resource. The JMS Connection shared resource establishes a connection between the plug-in and the EMS server where the activity retrieves the IDoc to be posted.</p> <p>If no matching JMS Connection shared resources are found, click Create Shared Resource to create one. For more details, see the TIBCO ActiveMatrix BusinessWorks documentation.</p> <p> This field is displayed only when you select JMS in the IDoc Confirmation Mode field.</p>
Confirm IDoc Destination	Yes	<p>This destination is used to confirm the posted IDocs.</p> <p>This field is displayed only when you select JMS in the IDoc Confirmation Mode field.</p>

Input Tab

On the **Input** tab, specify the IDoc data for the selected IDoc.

The following table lists the input elements on the **Input** tab of the Post IDoc to SAP activity:

Input Item	Data Type	Description
ProcessInput	Complex	<p>Enters the data for the IDoc to be posted.</p> <p> Data for IDoc can be posted when IDocs are received in XML and Raw format.</p>
sessionID	String	<p>(Optional) Enters the sessionID of the previous activity for the use of Dynamic Connection instead of SAP connection, which is configured in the General Tab.</p>



For information on how to create IDoc in XML format, please refer to [Mapping Data for SAP Palette Activities](#)

Output Tab

On the **Output** tab, find the information of the posted IDoc.

The following table lists the output elements on the **Output** tab of the Post IDoc to SAP activity:

Output Item	Data Type	Description
TID	String	Displays the TID of the transaction that the SAP system uses to receive the posted IDoc.
sessionID	String	Displays the sessionID provided in the Input tab for the use of Dynamic Connection.

Output Item	Data Type	Description
CPIC_ID	String	Displays the CPIC_ID associated with SAP Connection created for a dynamic connection
correlationID	String	This output is available only when NoMessaging is selected in the IDoc Confirmation Mode field on the Advanced Tab .
errorMessage	String	This output is available only when NoMessaging is selected in the IDoc Confirmation Mode field on the Advanced Tab .
successMessage	String	<p>This output is available only when NoMessaging is selected in the IDoc Confirmation Mode field on the Advanced Tab.</p> <p>Displays the success message only populated in the case where the IDoc to be confirmed is sent to the SAP system by using qRFC.</p> <p>Because the IDoc number cannot be retrieved in that case, no call is made to the SAP system for the IDoc number and status. The value of the successMessage output item is populated in the following format:</p> <p>IDoc sent to SAP via qRFC. IDoc number is unavailable. The original TID is <i>TID</i>.</p>
idocNumber	String	<p>This output is available only when NoMessaging is selected in the IDoc Confirmation Mode field on the Advanced Tab.</p> <p>Displays the IDoc number populated by the IDoc Confirmation activity by retrieving the information from the SAP system.</p> <p> The IDoc number is populated only when the IDoc is posted to SAP by using the tRFC protocol.</p>
idocStatus	String	<p>This output is available only when NoMessaging is selected in the IDoc Confirmation Mode field on the Advanced Tab.</p> <p>Displays the IDoc status populated by the IDoc Confirmation activity by retrieving the information from the SAP system.</p> <p> The IDoc status is populated only when the IDoc is posted to SAP by using the tRFC protocol.</p>

Fault Tab


On the **Fault** tab, you can find the error codes and error messages of the Post IDoc to SAP activity and any element for logging the posted IDoc.

See [Error Codes](#) for more detailed explanation of errors.

The **Fault** tab has the following exception:

SAPPluginException

The **SAPPluginException** generates an exception and causes the activity to stop.

Error Schema Element	Data Type	Description
msg	String	Displays the error message.
msgCode?	String	Displays the error code.
any element	-	Displays the input IDoc data at run time.  The IDoc data is available only when the IDoc is not malformed.

IDoc Renderer

The **IDoc Renderer** activity receives IDoc in XML format and provides output in raw IDoc format. The raw IDoc format is the same as IDoc sent to the SAP system but no IDoc would be posted to SAP system.





The IDoc Renderer activity does not support Adapter to Plug-in migration.

General Tab

On the **General** tab, establish connections to the SAP system and download the schema of the IDoc to be used to prepare raw IDoc.

The following table lists the configurations on the **General** tab of the IDoc Renderer activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.
SAP Connection	Yes	<p>Click  to select a SAP Connection shared resource. The SAP Connection shared resource establishes connections between the plug-in and the SAP system.</p> <p>If no matching SAP Connection shared resources are found, click the Create Shared Resource to create one. For more details, see Creating and Configuring an SAP Connection.</p> <p> The SAP Connection is used only for design time.</p>


Field	Module Property?	Description
IDoc Name	No	<p>Click Fetch IDoc button to download the schema of the IDoc to be posted.</p> <p>In the Search IDoc dialog box, complete the following tasks:</p> <ol style="list-style-type: none"> 1. Specify the IDoc filter to filter out the required IDoc types with the IDoc type name. <p>The IDoc filter supports the wildcard search. The default value of the IDoc Filter field is . *, and the value of this field is case sensitive.</p> 2. Select an IDoc schema type. <ul style="list-style-type: none"> • Basic Type: Select Basic Type if you want to download the IDoc schema of the basic type. Only the basic IDoc types matching the IDoc filter can be filtered out. • Extended Type: Select Extended Type if you want to download the IDoc schema of the extended type. The extended IDoc type name includes the name of the basic IDoc type, from which it is extended. Therefore, the extended IDoc types can be filtered out by using the corresponding basic IDoc type name. 3. Click Fetch IDoc button. 4. Select the IDoc type that you want to download and click OK. <p>Ensure that the selected IDoc type and the associated segments have been released in the SAP system.</p> <p>You need to clear the Download IDoc specific to SAP release checkbox to filter those IDocs that have been released but do not have a release number assigned.</p> <p>After the IDoc schema is downloaded, an XSD file is created. The XSD file cannot be visible in the project, but it can be picked from the activity if required.</p> <div style="border-left: 1px solid #ccc; padding-left: 10px; margin-top: 10px;"> <ul style="list-style-type: none"> • After an IDoc schema is downloaded to the plug-in, if new segment definitions are added to the IDoc schema because of the upgrade of the SAP system, you have to refresh the IDoc schema in the plug-in. • If the IDoc schema requires to be refreshed from the SAP system, then ensure that the Download IDoc specific to SAP release check box is configured accordingly. The Download IDoc specific to SAP check box is by default always selected when the user clicks the Fetch IDoc button. </div>

Description Tab

On the **Description** tab, enter a short description for the IDoc Renderer activity.

Advanced Tab

On the **Advanced** tab, specify the input mode that use tRFC or qRFC. No queue names are taken. The following table lists the configurations on the **Advanced** tab of the Post IDoc to SAP activity:

Field	Module Property?	Description
IDoc Input Mode	No	<p>The plug-in supports the following protocols:</p> <ul style="list-style-type: none"> • tRFC: Select tRFC if the message delivery in sequence is not required. • qRFC: Select qRFC if the message delivery in sequence is required. If you select qRFC from the IDoc Input Mode list, the <code>queueName</code> attribute in the message sent to the destination specified in the Confirm IDoc Destination field contains the value of the SAP Queue Name field. <p>The default protocol is tRFC.</p> <p> While using the raw IDoc output with a subsequent PostIDoc activity the IDoc Input Mode field across these activities should match.</p>

Input Tab

On the **Input** tab, specify the IDoc data for the selected IDoc.

The following table lists the input elements on the **Input** tab of the IDoc Renderer activity:

Input Item	Data Type	Description
IDocRendererInput	Complex	Enters the data to prepare the IDoc data into raw format.

For information on how to create IDoc in XML format, please refer to [Mapping Data for SAP Palette Activities](#)

Output Tab

On the **Output** tab, find the information of the posted IDoc.

The following table lists the output elements on the **Output** tab of the IDoc Renderer activity:

Output Item	Data Type	Description
data	String	Displays the raw IDoc data that was prepared by the input IDoc XML data.

Fault Tab

On the **Fault** tab, you can find the error codes and error messages of the IDoc Renderer activity.

See [Error Codes](#) for more detailed explanation of errors.

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

- **SAPPluginException**

The **SAPPluginException** throws an exception and causes the activity to stop.

Error Schema Element	Data Type	Description
msg	String	Displays the error message.
msgCode?	String	Displays the error code.

Invoke RFC BAPI in SAP




Use the Invoke RFC BAPI in SAP activity to invoke RFC/BAPIs in the SAP system.

Only request/reply requests are supported. Asynchronous requests are not supported.

General Tab

On the **General** tab, establish connections to the SAP system, and download the schema of the RFC/BAPI to be invoked in the SAP system.

The following table lists the configurations on the **General** tab of the Invoke RFC BAPI in SAP activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.
SAP Connection	Yes	<p>Click  to select an SAP Connection shared resource. The SAP Connection shared resource establishes connections between the plug-in and the SAP system.</p> <p>If no matching SAP Connection shared resources are found, click Create Shared Resource to create one. For more details, see Creating and Configuring an SAP Connection.</p> <p> When a process contains multiple Invoke RFC BAPI activities, if you want the activities to use different SAP Connection shared resources, you have to create process properties for the shared resources to be used, and then choose the corresponding process property for the activity. If you choose different SAP Connection shared resources for the Invoke RFC BAPI activities in a process by clicking , the activities use the same shared resource.</p>

Field	Module Property?	Description
RFC/BAPI	No	<p>Click Fetch Function Module to download the schema of the RFC/BAPI to be invoked in the SAP system.</p> <p>In the Fetch Function Module dialog, you can use the RFC/BAPI tab or BOR tab to download the schema of the RFC/BAPI to be invoked in the SAP system.</p> <p>The RFC/BAPI tab is useful when the name of the function module, function group, or both are known. The BOR tab is useful for browsing SAP business objects based on application objects.</p> <p>In the RFC/BAPI tab, complete the following tasks:</p> <ol style="list-style-type: none"> 1. Specify the RFC/BAPI filter or the RFC/BAPI group filter to filter out the required RFC/BAPI types with the RFC/BAPI type name. <ul style="list-style-type: none"> Both the RFC/BAPI filter and the RFC/BAPI group filter support the wildcard search. 2. Click Fetch RFC/BAPIs. 3. Select the RFC/BAPI type that you want to download and click OK. <ul style="list-style-type: none"> Ensure that the selected RFC/BAPI type has been released in the SAP system. <p>In the BOR tab, complete the following tasks:</p> <ol style="list-style-type: none"> 1. Specify values for the Object Type Filter, Object Name Filter, and Object Text Filter fields to filter out the required business objects. <ul style="list-style-type: none"> All the object type filter, object name filter, and object text filter support the wildcard search. The values of the preceding three fields are case sensitive. 2. Click Fetch Object Types. 3. Expand an object type in the Object Type column, select the method that you want to download, and click OK. <p>After the RFC/BAPI schema is downloaded, an XSD file is created. The XSD file is intentionally invisible in the project, but it can be picked from the activity if required.</p> <div style="border-left: 1px solid black; padding-left: 10px; margin-top: 10px;"> <ul style="list-style-type: none"> • The plug-in does not support basXML and class-based exceptions. • When you download more than one page of the RFC/BAPI schema spanning, only the first page is cached for subsequent activities. • If an RFC/BAPI function group is inactive in the SAP system, the RFC/BAPIs in the function group are still displayed in the search result. • If a business object does not contain any released key attributes, non-key attributes, or methods, the business object is still displayed in the object type search result. • In a process, you cannot associate the same RFC/BAPI with multiple Invoke RFC BAPI in SAP activities. If you want to use the Invoke RFC BAPI in SAP activities with </div>



Field	Module Property?	Description
		<p>the same RFC/BAPI, create different processes for the activities.</p> <ul style="list-style-type: none"> If the schema for an RFC/BAPI activity is refreshed, then the other RFC/BAPI activities in the same process that are using the same schema may not be refreshed.


Description Tab

On the **Description** tab, enter a short description for the Invoke RFC BAPI in SAP activity.

Advanced Tab

On the **Advanced** tab, select the **Transactional** check box to support one or more RFC/BAPI calls to be executed as a transaction or logical unit of work in the SAP system.

The following configurations are displayed on the **Advanced** tab of the Invoke RFC BAPI in SAP activity when you select the **Transactional** check box:



Field	Module Property?	Description
Invocation Protocol	No	<p>Specify the invocation protocol for the activity. They are:</p> <ul style="list-style-type: none"> Request/Reply If Request/Reply is selected, the Transactional check box is available. tRFC If tRFC is selected, the support for asynchronous request is enabled. <p>The default value is Request/Reply.</p> <p> For one way invocation protocol, the confirmation report following the invocation is not available.</p>
Context End	No	<p>If you want to end the RFC/BAPI transaction at this activity, select this check box.</p> <p>This check box is cleared by default.</p> <p>This check box is the same as the Terminate Connection check box in the Advanced tab of the Dynamic Connection activity. When a dynamic connection with the selected Transactional check box is used, if you want to end the transaction, you must select the Terminate Connection check box instead of selecting the Context End check box.</p>
Auto Commit	No	<p>If you want the transaction or logical unit of work to be committed automatically when the transaction or logical unit of work consists of only one RFC/BAPI call and the RFC/BAPI call does not return any errors, select this check box.</p> <p>This check box is cleared by default.</p>

Field	Module Property?	Description
Commit Expiry(ms)	No	Specify the timeout value in milliseconds for the activity to wait for the subsequent activity to be invoked. The default value is 30000. This field is the same as the contextTimeout input item in the Input tab of the Dynamic Connection activity, and can overwrite the contextTimeout input item.

Input Tab

On the **Input** tab, enter the request of the RFC/BAPI to be invoked, the session ID of the previous activity, and the timeout value for the activity to wait for invoking the RFC/BAPI.

The following table lists the input elements on the **Input** tab of the Invoke RFC BAPI in SAP activity:

Input Item	Data Type	Description
sessionID	String	Enter the session ID of the previous activity when the Transactional check box in the Advanced tab is selected.  If the Invoke RFC BAPI in SAP activity invokes the first RFC/BAPI in the context of the transaction, leave this element blank.
timeout	Long	Enter the timeout value in milliseconds for the activity to wait for invoking the RFC/BAPI. The default value is 600000.  The module property of the long type cannot be left blank, and its value range does not include the negative numbers.
RfcRequest	Complex	Enter the request of the RFC/BAPI to be invoked.

Output Tab

The **Output** tab shows the session ID of the activity and the response of the invoked RFC/BAPI . It also shows the CPIC_ID associated to the SAP connection. If the invocation protocol of tRFC is selected, the output shows SessionID, CPIC_ID and TID.

Fault Tab

On the **Fault** tab, you can find the error codes and error messages of the Invoke RFC BAPI in SAP activity and the SAP system. The SAP system exceptions are returned by the RFC/BAPI invoked in the SAP system.

See [Error Codes](#) for more detailed explanation of errors of the Invoke RFC BAPI in SAP activity.

- If you want to catch the SAP system exception in a process, it is good practice to use the Catch fault handler, instead of the Catch ALL fault handler.
- If the exception that is sent back to the SAP system has more than 50 characters, then the SAP system can only retrieve the first 50 characters.
- If you catch a SAPSystemException, then the schema is inline with the Invoke RFC BAPI in SAP activity, which will cause issues if the corresponding RFC or BAPI changes in terms of exceptions.

The following table lists error schema elements in the **Fault** tab of the Invoke RFC BAPI in SAP activity:

Error Schema Element	Data Type	Description
msg	String	Displays the error message.
msgCode	String	Displays the error code.

RFC BAPI Listener

Use the RFC BAPI Listener activity to listen to the SAP system and receive RFC/BAPI requests from the SAP system.

The RFC BAPI Listener supports the Request/Reply and one way invocation protocols tRFC and qRFC.

In a project, RFC BAPI Listener activities cannot have the following configurations:

- The same RFC/BAPI and use the same SAP Connection shared resource.
- The same RFC/BAPI and use the SAP Connection shared resources with the same combination of the gateway host, the gateway service, and the program ID.

If you want to control the number of messages being processed concurrently in the activity, choose one of the following configurations:

- Configure the **Max Connections** field of the referenced server connection according to the number of all the IDoc Listener and RFC BAPI Listener activities.
- Configure the RFC destination accordingly by using the SAP transaction code, SMQS.

The RFC BAPI Listener activity does not support the job tuning property, *FlowLimit*.


See [Job Tuning](#) for details.

General Tab

On the **General** tab, establish connections to the SAP system, and download the schema of the RFC/BAPI to be retrieved.


The following table lists the configurations on the **General** tab of the RFC BAPI Listener activity:

Field	Module Property?	Description
Name	No	Specify the name to be displayed as the label for the activity in the process.

Field	Module Property?	Description
SAP Connection	Yes	<p data-bbox="667 268 1495 365">Click  to select an SAP Connection shared resource. The SAP Connection shared resource establishes connections between the plug-in and the SAP system.</p> <p data-bbox="667 401 1495 491">Ensure that you have first created an SAP Connection shared resource accordingly. See Creating and Configuring an SAP Connection for details.</p> <div data-bbox="667 527 1495 848" style="border-left: 1px solid #ccc; padding-left: 10px;"> <ul style="list-style-type: none"> <li data-bbox="781 548 1487 611">• The server connection created by clicking Create Shared Resource cannot be enabled. <li data-bbox="781 632 1495 848">• When the server connection of an SAP Connection shared resource is not enabled, you still can select this shared resource by selecting the corresponding process property. Therefore, if you want to select an SAP Connection shared resource by selecting the corresponding process property, ensure that the server connection of the shared resource has been enabled. </div>

Field	Module Property?	Description
RFC/BAPI	No	<p>Click Fetch Function Module to download the schema of the RFC/BAPI to be received from the SAP system.</p> <p>In the Fetch Function Module dialog, you can use the RFC/BAPI tab or BOR tab to download the schema of the RFC/BAPI to be invoked in the SAP system.</p> <p>The RFC/BAPI tab is useful when the name of the function module, function group, or both are known. The BOR tab is useful for browsing SAP business objects based on application objects.</p> <p>In the RFC/BAPI tab, complete the following tasks:</p> <ol style="list-style-type: none"> 1. Specify the RFC/BAPI filter or the RFC/BAPI group filter to filter out the required RFC/BAPI types with the RFC/BAPI type name. Both the RFC/BAPI filter and the RFC/BAPI group filter support the wildcard search. 2. Click Fetch RFC/BAPIs. 3. Select the RFC/BAPI type that you want to download and click OK. Ensure that the selected RFC/BAPI type has been released in the SAP system. <p>In the BOR tab, complete the following tasks:</p> <ol style="list-style-type: none"> 1. Specify values for the Object Type Filter, Object Name Filter, and Object Text Filter fields to filter out the required business objects. All the object type filter, object name filter, and object text filter support the wildcard search. The values of the preceding three fields are case sensitive. 2. Click Fetch Object Types. 3. Expand one object type in the Object Type column, select the method that you want to download, and click OK. <p>After the RFC/BAPI schema is downloaded, an XSD file is created. The XSD file is intentionally invisible in the project, but it can be picked from the activity if required.</p> <div style="border-left: 1px solid black; padding-left: 10px; margin-top: 10px;"> <ul style="list-style-type: none"> • The plug-in does not support basXML and class-based exceptions. • When you download more than one page of the RFC/BAPI schema spanning, only the first page is cached for subsequent activities. • If one RFC/BAPI function group is inactive in the SAP system, the RFC/BAPIs in the function group are still displayed in the search result. • If a business object does not contain any released key attributes, non-key attributes, or methods, the business object is still displayed in the object type search result. • If the SAP system publishes the request of an RFC/BAPI that is not configured in the RFC BAPI Listener activity, </div>



Field	Module Property?	Description
		<p>an exception occurs in the SAP system, but no error or exception occurs in the plug-in.</p> <ul style="list-style-type: none"> If the schema for one RFC/BAPI activity is refreshed, then the other RFC/BAPI activities in the same process that using are using the same schema may not be refreshed.
Invocation Protocol	No	<p>There are three types of Invocation Protocols:</p> <ul style="list-style-type: none"> Request/Reply tRFC qRFC <p>The default value is Request/Reply.</p>
SAP TID Manager	Yes	<p>This field is available only when tRFC or qRFC is selected in the Invocation Protocol field</p> <p>Click  to select an SAP TIDManager shared resource. The SAP TIDManager shared resource can manage the check of duplicate tRFC or qRFC calls from SAP system.</p> <p>If no matching SAP TIDManager shared resources are found, click Create Shared Resource to create one. For more details, see Creating and Configuring an SAP TIDManager Shared Resource.</p>
Acknowledgment Mode	No	<p>When tRFC and qRFC are selected in the Invocation Protocol field, the following types of Acknowledgment Modes are displayed:</p> <ul style="list-style-type: none"> Auto Client <p>The default value is Auto.</p> <p>When Auto is selected, the activity automatically acknowledges the transaction in SAP system when the output is successfully sent.</p> <p>When Client is selected, the activity does not automatically acknowledge the transaction in SAP system and waits for the confirmation from the Confirm activity.</p> <ul style="list-style-type: none"> When the TID Manager Shared Resource is configured as Active, Client can be used as the Acknowledgment Mode. If the TID Manager Shared Resource is configured as None, then the acknowledgment mode is defaulted to Auto. When a fault occurs prior to the Confirm activity, the RFC BAPI Listener activity times out and the transaction is rolled back. If transactions are pending in the RFC BAPI Listener activity, then those transactions need to be completed prior to the stopping of the application.

Description Tab

On the **Description** tab, you can enter a short description for the RFC BAPI Listener activity.

Advanced Tab

On the **Advanced** tab, you can specify the timeout value for the activity to wait for a response to be sent to the SAP system.

The following table lists the configurations on the **Advanced** tab of the RFC BAPI Listener activity:

Field	Module Property?	Description
Sequence Key	No	This field contains an XPath expression that specifies the order in which the process runs. Process instances with sequencing keys that have the same value are executed sequentially in the order in which the process instances were created.
Custom Job Id	No	This field contains an XPath expression that specifies a custom job ID for the process instance. This ID is displayed in the TIBCO Administrator View Service dialog, and it is also available in the <code>\$_processContext</code> process variable. The custom job ID for the process instance.
Response Timeout(ms)	Yes	<p>The timeout value in milliseconds for the activity to wait for a response to be sent to the SAP system.</p> <p>The default value is 300000.</p> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> <ul style="list-style-type: none"> • When the value of the Response Timeout(ms) field inherits a module property, if you set the module property to 0 or a negative number, the value of the field defaults to 300000. • When setting the log level to debug or trace, you have to adjust the value of the Response Timeout(ms) field accordingly. </div>
Confirmation Timeout (ms)	Yes	<p>This field is available only when tRFC or qRFC is selected in the Invocation Protocol field and Client is selected in the Acknowledgment Mode field on the General tab.</p> <p>The timeout value in milliseconds waiting to commit the transaction.</p> <p>The default value is 300000.</p> <div style="border-left: 1px solid black; padding-left: 10px; margin-left: 20px;"> <p>While configuring Confirmation Timeout(ms) for tRFC or qRFC, define the value in milliseconds, which should be large enough to allow the subsequent activities prior to the Confirm activity to complete. If the value is not sufficient, then timeout would occur and the transaction would roll back.</p> </div>

Output Tab

The **Output** tab shows the request of the RFC/BAPI.

The following table lists the output elements on the **Output** tab of the RFC BAPI Listener activity:

Output Item	Data Type	Description
SAPJCO_RFCDDESTINATION	String	Displays the RFC destination that connects an ABAP system to an external system.
SAPJCO_CLIENT	String	Displays the SAP client number.
SAPJCO_CPICCONVID	String	Displays the low-level CPIC conversion ID for the SAP connection.
SAPJCO_HOST	String	Displays the SAP application server used for dispatching the call from the SAP system.
SAPJCO_SYSID	String	Displays the SAP system ID.
SAPJCO_USER	String	Displays the valid user name used to log on to the specified SAP client.

Reply from RFC BAPI in SAP

Use the Reply from RFC BAPI in SAP activity to receive the return message from the SAP system when the invocation of an RFC/BAPI is completed.

General Tab

On the **General** tab, you can select a RFC BAPI listener to retrieve the return message from the SAP system.

The following table lists the configurations on the **General** tab of the Reply from RFC BAPI in SAP activity:

Field	Module Property?	Description
Name	No	The name to be displayed as the label for the activity in the process.
Reply For	No	The RFC BAPI listener used to retrieve the return message from the SAP system.

Description Tab

On the **Description** tab, you can enter a short description for the Reply from RFC BAPI in SAP activity.

Input Tab

On the **Input** tab, you can enter the response of the invoked RFC BAPI, the timeout value for the Reply from RFC BAPI in SAP activity to wait for the response from the RFC BAPI Listener activity, and the error code and message of the SAP system.

The following table lists the input elements on the **Input** tab of the Reply from RFC BAPI in SAP activity:

Input Item	Data Type	Description
timeout	Long	Enter the timeout value in milliseconds for the Reply from RFC BAPI in SAP activity to wait for the response from the RFC BAPI Listener activity.
msg	String	Enter the error message of the SAP system.
msgCode	String	Enter the error code of the SAP system.
RfcResponse	Complex	Enter the response of the invoked RFC BAPI.

Fault Tab

On the **Fault** tab, you can find the error codes and error messages of the Reply from RFC BAPI in SAP activity and the SAP system. The SAP system exceptions are returned by the RFC BAPI invoked in the SAP system.

See [Error Codes](#) for more detailed explanation of errors.

The following table lists error schema elements on the **Fault** tab of the Reply from RFC BAPI in SAP activity:

Error Schema Element	Data Type	Description
msg	String	Displays the error message.
msgCode	String	Displays the error code.

IDoc Processing without Messaging Service

This section contains information on how to use the TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions IDoc activities without using messaging service, such as TIBCO Enterprise Message Service or Apache Kafka.



The default behavior of the ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions for IDoc processing is to use messaging.

This behavior can be changed based on requirements and the information provided from the below sections:

- **Outbound IDoc Processing**

For receiving IDocs from the SAP system, the IDoc Listener activity is used.

If no messaging service is used, then the **Messaging Source** field on the **General** tab of the IDoc Listener activity must be configured to **NoMessaging**.

When the IDoc is received from the SAP system, the raw IDoc is provided as output.



- When multiple IDocs are received in batch, a job is created for each IDoc.
- Confirmation to SAP is given only when the output from the IDoc Listener activity is successful. After the output is successful, to avoid any loss of IDoc data in subsequent processing, TIBCO recommends that you configure the project accordingly to make it resilient if there is any disruption or errors during the processing.

If the IDoc received requires to be transformed to XML, then the IDoc Converter activity is required. The transformation to XML by the IDoc Converter activity is consistent to that of the IDoc Parser activity.

For more information on how to receive and process IDocs without the need for TIBCO Enterprise Message Service or Apache Kafka, see the below example processes included in ActiveMatrix BusinessWorks Plug-in for SAP Solutions

- [ReceiveIDocsFromSAPNoMessaging](#)
- [ProcessCustomerMasterIDocsNoMessaging](#)
- [ProcessVendorMasterIDocsNoMessaging](#)

- **Inbound IDoc Processing**

To post IDocs to the SAP system without requiring TIBCO Enterprise Message Service, the Post IDoc to SAP activity is used.

The Post IDoc to SAP activity receives IDoc in XML as input or raw IDoc format and sends the IDoc to the SAP system. The processing and posting of IDoc to SAP system is consistent to the IDoc Reader activity that requires TIBCO Enterprise Message Service.

If IDoc Confirmation mode is required to post IDoc to SAP system then the **IDoc Confirmation Mode** field in the **Advanced** tab of Post IDoc to SAP activity must be configured to **NoMessaging**, for IDoc Confirmation Mode to provide confirmation of the IDoc as part of the output activity.

For more information on how to post IDocs without the need for TIBCO Enterprise Message Service for IDoc Confirmation Mode, see the below example process included in ActiveMatrix BusinessWorks Plug-in for SAP Solutions.

- [PostVendorMasterIDocsNoMessaging](#)

Mapping Data for SAP Palette Activities

For Populating IDoc Data to SAP System

This section contains information on how to populate IDoc Data in XML format for the following SAP activities:

- IDoc Reader
- Post IDoc to SAP
- IDoc Renderer

To prevent the IDoc recognition error in the SAP system when invoking the Post IDoc to SAP activity, you have to configure the SEGNAME property in different ways based on the protocol types. Depending on whether you use tRFC or qRFC as the protocol, you need to map the segment name for an IDoc differently. Run the we31 transaction in the SAP system to check a segment. The E1MARM segment type contains multiple segment definitions. The property for the segment name in the **Input** tab of the activity is SEGNAME that shows the SEGNAME property of one IDoc in the **Input** tab.

The screenshot shows the SAP WE31 transaction interface. The title bar reads "Development segments: Initial screen". Below the title bar, there is a toolbar with various icons. The main area displays the segment type "E1MARM" and its description "Master material general data (MARA)". Below this, there is a table titled "Definitions" with the following data:

Version	Segm. definition	Release	Release	Appl. Rel.	No. of f...	Lgth	Date of last ch.
007	E2MARAM007	<input checked="" type="checkbox"/>	700	603	120	876	06.06.200...
006	E2MARAM006	<input checked="" type="checkbox"/>	700	600	118	856	05.04.200...
005	E2MARAM005	<input checked="" type="checkbox"/>	620		109	829	03.06.200...
004	E2MARAM004	<input checked="" type="checkbox"/>	46C		103	771	11.01.200...
003	E2MARAM003	<input checked="" type="checkbox"/>	46A		100	757	15.04.199...
002	E2MARAM002	<input checked="" type="checkbox"/>	45A		99	709	23.03.199...
001	E2MARAM001	<input checked="" type="checkbox"/>	40A		91	689	22.08.199...
000	E2MARAM	<input checked="" type="checkbox"/>	30C		74	552	09.04.199...

The screenshot shows the SAP GUI configuration for the 'PostIDocToSAP (Post IDoc to SAP)' plug-in. The 'XPath Expression' field is populated with the following XML structure:

```

PostIDocToSAP-input
├── RequestInput
│   └── ProcessInput
│       ├── CREMAS01?
│       │   └── IDOC?
│       │       ├── EDI_DC40?
│       │       ├── E1LFA1M
│       │       └── EDI_DD40?
│       │           ├── @type?
│       │           ├── SEGNAME?
│       │           ├── MANDT?
│       │           ├── DOCNUM?
│       │           ├── SEGNUM?
│       │           ├── PSGNUM?
│       │           ├── HLEVEL?
│       │           ├── SDATA?
│       │           ├── MSGFN?
│       │           ├── LIFNR?
│       │           └── ANRED?

```

- **tRFC**

If the SEGNAME property is left blank, the plug-in automatically specifies the property by using the IDoc XSD.



- The attributes inside the EDI_DD40 data record do not need to be mapped unless below criteria is met.
- When sending an empty IDoc segment to the SAP system, at least one attribute must be mapped.

- **qRFC**

If the SEGNAME property is left blank, the Segment type value is derived by the plug-in using the IDoc XSD.




When populating the IDoc Control Record Data - EDI_DC40, the DOCNUM attribute is not required to be mapped


Job Tuning



You can configure the SAP activities to control the number of messages being processed concurrently. For more information, see "Engine and Job Tuning" in the *TIBCO ActiveMatrix BusinessWorks Administration* guide for related information about job tuning.

To control the number of messages being processed concurrently, you can choose the required configuration:

- IDoc Listener and RFC BAPI Listener activities
 - Configure the **Max Connections** field of the referenced server connection according to the number of all the IDoc Listener and RFC BAPI Listener activities.

 For the IDoc Listener activity, you not only have to consider the number of all the IDoc Listener and RFC BAPI Listener activities, but also the case of the TID management is Active.
 - Configure the RFC destination accordingly by using the SAP transaction code, SMQS.

 The IDoc Listener and RFC BAPI Listener activities do not support the job tuning property, FlowLimit.
- IDoc Parser and IDoc Reader activities
 - Configure the **Max Session** field in the activity.

 The priority of the **Max Session** field is higher than the job tuning property, Flow Limit.
- Invoke RFC/BAPI in SAP, Reply from RFC/BAPI in SAP, and Post IDoc to SAP activities
 -  Configure the RFC/BAPI No. of Threads property accordingly in the SAP Connection shared resource being used to control the number of concurrent sessions between plug-in and SAP. The number of threads configured must match the number of SAP connections configured in **Max Connections** field of the referenced client connection. The Asynchronous Timeout property maintained in TIBCO ActiveMatrix BusinessWorks™ needs to be maintained accordingly to avoid timeouts.
- Kafka Message Source

By default, only one partition is created. However, if more than one partition needs to be created, you can add it using the Kafka command.

Migration

You can migrate TIBCO ActiveMatrix® Adapter for SAP projects created on TIBCO ActiveMatrix BusinessWorks™ 5.x or 6.x to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions on ActiveMatrix BusinessWorks™ 6.x. You can also migrate TIBCO ActiveMatrix® Adapter for SAP projects created on ActiveMatrix BusinessWorks 5.x to ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions on TIBCO BusinessWorks™ Container Edition.

Migrating Adapter Projects Created on TIBCO ActiveMatrix BusinessWorks™ 5.x to Plug-In Projects

You can migrate a SAP Adapter and TIBCO ActiveMatrix BusinessWorks 5.x project created in TIBCO Designer™ to ActiveMatrix BusinessWorks™ 6.x or TIBCO BusinessWorks™ Container Edition by using the migration tool in TIBCO Business Studio™ for BusinessWorks™.



- In addition to the notes mentioned, it is a good practice to review the *TIBCO ActiveMatrix BusinessWorks 6.x Migration* guide for additional information such as naming conventions, and more.
- Migration is based on the information received from the AE activities. All the activities get migrated as it is besides the Adapter Request Response Server, Respond to Adapter Request, Adapter Subscriber, Invoke an Adapter Request-Response Service, and Publish to Adapter activities.

Prerequisite

- For databases using native drivers in ActiveMatrix BusinessWorks 6.x, the JAR files must be added to the `<TIBCO_HOME>` directory before the migration is initiated.

Projects Supported for Migration

Migration is provided for the following project specifications:

Project Specification	Supported for Migration To
Projects created in ActiveMatrix® Adapter for SAP	<ul style="list-style-type: none"> • ActiveMatrix BusinessWorks 6.x
ActiveMatrix BusinessWorks 5.x projects created in TIBCO Designer	<ul style="list-style-type: none"> • TIBCO BusinessWorks Container Edition

Migration Restriction

- You can migrate ActiveMatrix® Adapter for SAP projects created on ActiveMatrix BusinessWorks 5.x to ActiveMatrix BusinessWorks Plug-in for SAP Solutions. However, vice versa is not possible.
- Migration of SNC Client and Server Connections is not supported and after migration the required connections must be created manually.

Considerations when migrating projects

- Due to TIBCO ActiveMatrix BusinessWorks 5.x project structure and the migration process, there are some files in the TIBCO ActiveMatrix BusinessWorks 5.x project migrated to TIBCO ActiveMatrix BusinessWorks 6.x, but are not used and must be ignored. For example, - ae folder and ae2xsd.xsd under Schemas folder, AESchemas folder, etc.
- An EMF validation error occurs in the migrated TIBCO ActiveMatrix BusinessWorks™ 6.x project when one TIBCO ActiveMatrix BusinessWorks™ 5.x project is saved with another name and these two projects are migrated to the plug-in. To resolve this issue, delete the Namespaces/Imports from **Process > Dependencies**.

- After Migrating a TIBCO ActiveMatrix BusinessWorks™ 5.x project to TIBCO ActiveMatrix BusinessWorks™ 6.x project, in the JMS shared connection resource, if the **Auto-generate ClientID** field is checked, the **ClientID** field will be disabled, which means no value can be added for **ClientID**. Also if the **Auto-generate ClientID** field is unchecked, the **ClientID** field will be enabled, which means a particular value can be added for **ClientID**.
- If there is a TIBCO ActiveMatrix BusinessWorks™ 5.x generic activity that uses the SAP adapter AE schema in TIBCO ActiveMatrix BusinessWorks™ 5.x project, after migration the TIBCO ActiveMatrix BusinessWorks 6.x generic activities would need to be manually fixed to use the plug-in activity schema.
- If you want to use the SAP schemas from the migrated TIBCO ActiveMatrix BusinessWorks™ 6.x project, the project needs to be cleaned using the **Project > Clean** option from Business Studio. Once the project is cleaned, the schemas can be selected from the `.SAP` folder. The schema can be re-fetched using the Fetch IDoc or Fetch Function button, which will make it available in the `.SAP` folder and in the schema picker.
- Ensure the value of the **Operation** field for the Respond to Adapter Request activity is available for the `ae.aepalette.aeOpClientReqActivity.ops` field in the TIBCO ActiveMatrix BusinessWorks™ 5.x process file.
- After migration, in TIBCO ActiveMatrix BusinessWorks™ 6.x project the shared resource created will always be at the root level even if it is at a resource folder level in TIBCO ActiveMatrix BusinessWorks™ 5.x project
- In TIBCO ActiveMatrix BusinessWorks™ 5.x project, the **Subject** and **Destination** fields configured in the transport tab must have the same value for service and activity.
- For migration the command line data option should be used and the user workspace directory and TIBCO ActiveMatrix BusinessWorks™ 6.x target directory should be the same. For example, `bwmigrator.exe -data <user workspace> -projectDir <BusinessWorks 6.x target directory> <BusinessWorks 5.x project location>`.
- For migration of TIBCO ActiveMatrix BusinessWorks 5.x projects to TIBCO ActiveMatrix BusinessWorks 6.x projects, there are a few projects that need to be manually fixed after migration. For example, in TIBCO ActiveMatrix BusinessWorks 5.x project any schemas where attributes are a SAP predefined ABAP type like string, etc. Also in the TIBCO ActiveMatrix BusinessWorks 5.x project, the schema contains a double underscore (`__`) while in TIBCO ActiveMatrix BusinessWorks 6.x project it is underscore (`_`).
- Migration supports online schema migration, which means it retrieves the schema from the SAP server during migration for the respective activity. Before migrating a project, ensure that the connection parameters provided are correct in the project or in JSON reference file, otherwise errors might occur post migration.
- Module property will get migrated to TIBCO ActiveMatrix BusinessWorks 6.x project only if it is created in TIBCO ActiveMatrix BusinessWorks 5.x project and is referred in one of the TIBCO ActiveMatrix BusinessWorks 5.x projects or it should be referred in JSON file.

Migrating projects from Adapter to Plug-in

You can migrate TIBCO ActiveMatrix® Adapter for SAP projects created in TIBCO Designer™ to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions in the following manner



Before migration, backup the original TIBCO ActiveMatrix BusinessWorks™ 5.x projects.

Procedure

1. Start **TIBCO Business Studio**.
2. Click **Project** tab and select **Migrate BW Projects**.
3. In the Project Migration Wizard, click **Browse** in the **Select Project(s) to be Migrated** field and select the project you want to migrate.

The default selection is **Migrate Single BusinessWorks 5.x Project**.

4. Click **Migrate Multiple BusinessWorks 5.x Projects** to migrate multiple 5.x projects.



During migration if the **Migrate as Shared Module** check-box is selected it can be applied only for shared resources and schema files. It is not applicable for event source activities.

5. Click **Migrate Project > Start Migration**. After the migration is complete, click **Finish**.

Migrating R3 adapter configuration to SAP Connection Resource in Plug-in

You can migrate R3 adapter configuration from TIBCO ActiveMatrix® Adapter for SAP projects created in TIBCO Designer™ to SAP connection resource in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions in the following manner

Procedure

1. Start **TIBCO Business Studio**.
2. Click **Project** tab and select **Migrate BW Projects**.
3. In the **Migration Project Type** section, the default selection is **Migrate Single BusinessWorks 5.x Project**. Select the **Migrate as Shared Module** check box to migrate the 5.x projects as a shared resource.



During migration if the **Migrate as Shared Module** check-box is selected it can be applied only for shared resources and schema files. It is not applicable for event source activities.

4. Click **Migrate Project > Start Migration**. After the migration is complete, click **Finish**.



The migration of adapter configurations of TIBCO ActiveMatrix BusinessWorks 5.x projects to a shared resource in TIBCO ActiveMatrix BusinessWorks 6.x projects is based on the **Connection Type** selected in the TIBCO ActiveMatrix BusinessWorks 5.x project. For more information, see [Connection Type for Adapter Configuration](#)

Connection Type for Adapter Configuration

When a new adapter configuration is created in TIBCO ActiveMatrix BusinessWorks 5.x project a client connection reference and server connection reference is created under **R3Connections** folder in the adapter. This reference, points to the actual client or server connection in the adapter. If there are multiple client or server connection references in **R3Connections** folder, the first reference is always selected.

Depending on the **Connection Type** selected in the adapter configuration, the connection reference is created.

- **Connection Type > Inbound**

The inbound connection type uses the client connection reference. For each adapter configuration, an equivalent shared resource is created in TIBCO ActiveMatrix BusinessWorks 6.x project. If the preference file is present in projects root folder, values from the preference file will override values from TIBCO ActiveMatrix BusinessWorks 5.x project. If there are multiple client connection references, the first reference is used for migration. The server connection details are not migrated unless specified in preference file.

- **Connection Type > Outbound**

The outbound connection type uses the server connection reference. For each adapter configuration, an equivalent shared resource is created in TIBCO ActiveMatrix BusinessWorks 6.x project. In outbound connection type the details for client connection will be fetched from design time connection in adapter. If the preference file is present in projects root folder, values from the preference file will override values from TIBCO ActiveMatrix BusinessWorks 5.x project. If there are multiple server connection references, the first reference is used for migration.

- **Connection Type > Both**

In the **Connection Type > Both**, both the client and server connection reference is used. For each adapter configuration, an equivalent shared resource is created in TIBCO ActiveMatrix BusinessWorks 6.x project. If the preference file is present in projects root folder, values from the preference file will override values from TIBCO ActiveMatrix BusinessWorks 5.x project. If there are multiple client and server connection references, the first reference is used for migration.

Migrating projects with Adapter Request Response Server Activity and Request-Response Invocation Adapter Service

You can migrate your projects that use the Adapter Request Response Server Activity from ActiveEnterprise Adapter palette and Request-Response Invocation Service of TIBCO ActiveMatrix® Adapter for SAP to RFC/BAPI Listener Activity in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions

An additional mapper activity is created after RFC/BAPI Listener activity. This mapper activity is configured with Schema from ActiveEnterprise Adapter palette. The mapper activity acts as a wrapper and helps retain input mappings in the following activities. You need to manually provide inputs for the mapper activity.

Procedure

1. Start **TIBCO Business Studio**.
2. Click **Project** tab and select **Migrate BW Projects**.
3. In the Project Migration Wizard, the default selection is **Migrate Single BusinessWorks 5.x Project** in the **Migration Project Type** section. Click **Migrate Multiple BusinessWorks 5.x Projects** to migrate multiple 5.x projects.
4. In the **Select Project Location** section, click **Browse** in the **Select Project(s) to be Migrated** field and select the project you want to migrate.
5. Click **Migrate Project**.
6. Click **Start Migration**.
7. Click **Finish** after the migration is complete.
All the migrated projects are displayed in the Project Explorer view at the parent level.

All the schemas defined under AESchemas folder of the TIBCO ActiveMatrix BusinessWorks 5.x project do not get migrated. In the **Configuration** tab of the Adapter Request Response Server activity in TIBCO ActiveMatrix® Adapter for SAP, an **Adapter Service** should be mentioned for migration. Only the schema that is referenced by the Adapter Request Response Server activity is refetched from the SAP system. At a time the activity supports only a single schema.



If the schema for one RFC/BAPI activity is refreshed, then the other RFC/BAPI activities in the same process that using are using the same schema may not be refreshed.

All the configurations of the Adapter Request Response Server activity is migrated to respective fields of RFC/BAPI Listener activity under **General** and **Advanced** tab. In the **General** tab of the migrated RFC/BAPI Listener activity, the migrated shared resource will be mapped to shared resource field. The schema selected in the Adapter Request Response Server activity is mapped to the migrated RFC/BAPI Listener activity.



In the migrated activity, the fields not present in the Adapter Request Response Server activity, but are present in the RFC/BAPI Listener activity will have default values. These fields can be configured through JSON preference file. For more information, see [Working with Preference File \(JSON\) for migration](#).

8. To run the migrated project, from the menu bar click **Run > Debug Configurations**.

- In the Debug Configurations window, click **Debug**.

Migrating projects with Respond to Adapter Request Activity

You can migrate your projects that use the Respond to Adapter Request activity from ActiveEnterprise Adapter Palette to Reply from RFC/BAPI in SAP activity in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions in the following manner

Procedure

- Start **TIBCO Business Studio**.
- Click **Project** tab and select **Migrate BW Projects**.
- In the Project Migration Wizard, the default selection is **Migrate Single BusinessWorks 5.x Project** in the **Migration Project Type** section. Click **Migrate Multiple BusinessWorks 5.x Projects** to migrate multiple 5.x projects.
- In the **Select Project Location** section, click **Browse** in the **Select Project(s) to be Migrated** field and select the project you want to migrate.
- Click **Migrate Project > Start Migration**. After the migration is complete, click **Finish**. All the migrated projects are displayed in the Project Explorer view at the parent level.

All the schemas defined under AESchemas folder of the TIBCO ActiveMatrix BusinessWorks 5.x project do not get migrated.



If the schema for one RFC/BAPI activity is refreshed, then the other RFC/BAPI activities in the same process that using are using the same schema may not be refreshed.

All the configurations of the Respond to Adapter Request activity is migrated to respective fields of Reply from RFC/BAPI in SAP activity under **General** and **Advanced** tab.



In the migrated activity, the fields not present in the Respond to Adapter Request activity, but are present in the Reply from RFC/BAPI activity will have default values. These fields can be configured through JSON preference file. For more information, see [Working with Preference File \(JSON\) for migration](#).

- To run the migrated project, from the menu bar click **Run > Debug Configurations**.
- In the Debug Configurations windows, click **Debug**.

Adapter Request Response Server Activity fields not supported for Migration

When migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions, there are some fields in the Adapter Request Response Server and Respond to Adapter Request activity of the SAP Adapter Configuration that are default or are not supported during migration are listed in the following tables:

Adapter Request Response Server Activity

Fields not supported on the **Transport** tab of the Adapter Request Response Server activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- Transport Type**
- Subject**
- Service**
- Network**
- Daemon**
- SSL**

Fields not supported on the **Miscellaneous** tab of the Adapter Request Response Server activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Sequencing key**
- **Custom Id**

Fields not supported on the **Error Output** tab of the Adapter Request Response Server activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Error/Exceptions**

Respond to Adapter Request Activity

Fields not supported on the **Error Output** tab of the Respond to Adapter Request activity in TIBCO ActiveMatrix® Adapter for SAP during migration.

- **Error/Exceptions**

Migrating projects with Adapter Subscriber activity and Publication Service

You can migrate your projects that use the Adapter Subscriber Activity from ActiveEnterprise Adapter palette and Publication Service of TIBCO ActiveMatrix® Adapter for SAP to IDoc Listener or IDoc Parser Activity in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions.

An additional mapper activity is created after the IDoc Parser activity. This mapper activity is configured with the schema from the ActiveEnterprise Adapter palette. The mapper activity acts as a wrapper and helps retain input mappings in the activities that come after Adapter Subscriber activity. You need to manually provide inputs for the mapper activity.

Procedure

1. Start **TIBCO Business Studio**.
2. Click **Project** tab and select **Migrate BW Projects**.
3. In the Project Migration Wizard, the default selection is **Migrate Single BusinessWorks 5.x Project** in the **Migration Project Type** section. Click **Migrate Multiple BusinessWorks 5.x Projects** to migrate multiple 5.x projects.
4. In the **Select Project Location** section, click **Browse** in the **Select Project(s) to be Migrated** field and select the project you want to migrate.
5. Click **Migrate Project**.
6. Click **Start Migration**.
7. Click **Finish** after the migration is complete.
All the migrated projects are displayed in the Project Explorer view at the parent level.



This release of TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions does not support migration of Custom AESchema.

All the configurations of the Publication Service is migrated to respective fields of IDoc Listener or IDoc Parser activity under **General** and **Advanced** tab. The activities are generated based on the **Publishing Mode** selected in the Publication Service. For more information on publishing mode, see [Publishing mode for Adapter Subscriber Activity](#).

In the **General** tab of the migrated activities, the migrated shared resource will be mapped to shared resource field. The schema selected in the Publication Service is mapped to IDoc Name of migrated activities.



In the migrated activity, the fields not present in the Publication Service but are present in the IDoc Listener or IDoc Parser will have default values. These fields can be configured through JSON preference file. For more information, see [Working with Preference File \(JSON\) for migration](#).

8. To run the migrated project, from the menu bar click **Run > Debug Configurations**.
A default JMS connection is created after migration if the TIBCO ActiveMatrix® Adapter for SAP project does not have any JMS connection resource.

If a JMS connection is present, it is migrated. If there are multiple Adapter Subscriber activities or Publish to Adapter AE activities with using different transports, then value of JMS properties overwrite the last process created. If the JSON preference file is present the value from JSON file is used.

If the **Transport** tab has JNDI lookups and the SSL configurations enabled, a JNDI connection will be created and the SSL configuration is migrated.

9. In the Debug Configurations windows, click **Debug**.

Publishing mode for Adapter Subscriber activity

Depending on the publishing mode selected the adapter subscriber activity is replaced by the IDOC Parser or IDOC Listener activity in TIBCO ActiveMatrix BusinessWorks™ SAP Solutions projects

- **Publishing mode > None**

For adapter subscriber activity, the **None** publishing mode is not supported for migration. Although if the publication mode is selected as **None**, the IDoc Parser activity is replaced with an empty activity. IDoc Listener activity is not created.

- **Publishing mode > IDoc Format**

For adapter subscriber activity the IDoc Parser activity is replaced with an empty activity. An additional process is created with IDoc Listener activity. The IDoc Listener activity is created per adapter configuration. TIDManager Resource is also created. By default, the status of the TIDManager Resource is set to **None**.

- **Publishing mode > Explode/Explode Batch**

An IDoc Parser activity is created that replaces the Adapter Subscriber activity. An additional mapper activity is created which refers to the adapter schema. The IDoc Listener activity is created per adapter configuration. TIDManager Resource is also created. By default, the status of the TIDManager Resource is set to **None**.

Publication Service fields not supported for Migration

When migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions there are some fields in the adapter services (Publication Service) of the SAP Adapter Configuration that may default or are not supported during migration are listed in the following tables.

Fields not supported on the **Configuration** tab of the Publication Service in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Wire Format**
- **Quality of Service or Delivery Mode**
- **Delivery Mode**

The fields in the **Schema** tab of the Publication Service in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.

Fields not supported on the **Advanced** tab of the Publication Service in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Endpoint Reference**
- **Class Reference**
- **Destination**
- **Format**
- **Log IDoc To Directory**

Adapter Subscriber Activity fields not supported for Migration

When migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions there are some fields in the Adapter Subscriber activity of the SAP Adapter Configuration that may default or are not supported during migration are listed in the following tables.

Fields not supported on the **Configuration** tab of the Adapter Subscriber Activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Adapter Service**
- **Custom AESchema**
- **Custom AESchema Reference**

The **Transport** tab of the Adapter Subscriber Activity in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.



The **Transport Type** field in the adapter service and the adapter subscriber activity of the **Transport** tab should be the same.

Fields not supported on the **Miscellaneous** tab of the Adapter Subscriber Activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Sequencing Key**
- **Custom ID**

The **Output** tab of the Adapter Subscriber Activity in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.

Fields not supported on the **Fault** tab of the Adapter Subscriber Activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Error Output**

Migrating projects with Invoke an Adapter Request-Response Service Activity and Request-Response Service

You can migrate your projects that use the Invoke an Adapter Request-Response Service activity of from ActiveEnterprise Adapter palette and Request-Response Service of TIBCO ActiveMatrix® Adapter for SAP to Invoke RFC/BAPI in SAP Activity in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions

An additional mapper activity is created after the Invoke RFC/BAPI activity. This activity is configured with schema from the ActiveEnterprise Adapter palette. The mapper activity acts as a wrapper and helps retain input mappings in the following activities. You need to manually provide inputs for the mapper activity.

Procedure

1. Start **TIBCO Business Studio**.
2. Click **Project** tab and select **Migrate BW Projects**.
3. In the Project Migration Wizard, the default selection is **Migrate Single BusinessWorks 5.x Project** in the **Migration Project Type** section. Click **Migrate Multiple BusinessWorks 5.x Projects** to migrate multiple 5.x projects.
4. In the **Select Project Location** section, click **Browse** in the **Select Project(s) to be Migrated** field and select the project you want to migrate.
5. Click **Migrate Project > Start Migration**. After the migration is complete, click **Finish**
All the migrated projects are displayed in the Project Explorer view at the parent level.

All the schemas defined under AESchemas folder of the TIBCO ActiveMatrix BusinessWorks 5.x project do not get migrated. In the **Configuration** tab of the Invoke Adapter Request Response Service activity in TIBCO ActiveMatrix® Adapter for SAP, an **Adapter Service** should be mentioned for migration. Only the schema that is referenced by the Invoke Adapter Request Response Service activity is re-fetched during migration.

All the configurations of the Invoke an Adapter Request Response Service activity is migrated to respective fields of Invoke RFC/BAPI activity under **General** and **Advanced** tab. In the **General** tab of the migrated Invoke RFC/BAPI activity, the migrated shared resource will be mapped to shared resource field. The schema selected in the Invoke an Adapter Request Response Service activity is mapped to RFC/BAPI of the migrated Invoke RFC/BAPI in SAP activity.



In the migrated activity, the fields that are not present in the Invoke Adapter Request Response Service activity but are present in the Invoke RFC/BAPI in SAP activity will have default values. These fields can be configured through JSON preference file. For more information, see [Working with Preference File \(JSON\) for migration](#).

6. To run the migrated project, from the menu bar click **Run > Debug Configurations**.
7. In the Debug Configurations windows, click **Debug**.

Invoke an Adapter Request-Response Service Activity fields not supported for migration

While migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions there are some fields in the Invoke an Adapter Request-Response Service activity of the SAP Adapter Configuration that may default or are not supported during migration are listed in the following tables.

The following tabs of the Invoke an Adapter Request-Response Service activity are not supported for migration:

- **Transport** tab
- **Input** tab
- **Output** tab
- **Error Output** tab

Migrating projects with Publish to Adapter activity and Subscription Service

You can migrate your projects that use the Publish to Adapter from ActiveEnterprise Adapter palette and Subscription Service in TIBCO ActiveMatrix® Adapter for SAP to IDoc Reader or JMS Send Message Activity in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions in the following manner:

Procedure

1. Start **TIBCO Business Studio**.
2. Click **Project** tab and select **Migrate BW Projects**.
3. In the Project Migration Wizard, the default selection is **Migrate Single BusinessWorks 5.x Project** in the **Migration Project Type** section. Click **Migrate Multiple BusinessWorks 5.x Projects** to migrate multiple 5.x projects.
4. In the **Select Project Location** section, click **Browse** in the **Select Project(s) to be Migrated** field and select the project you want to migrate.
5. Click **Migrate Project > Start Migration**. After the migration is complete, click **Finish**. All the migrated projects are displayed in the Project Explorer view at the parent level.

All the schemas defined under AESchemas folder of the TIBCO ActiveMatrix BusinessWorks 5.x project do not get migrated. In the **Configuration** tab of the Publish to Adapter activity in TIBCO ActiveMatrix® Adapter for SAP, an **Adapter Service** should be mentioned for migration. Only the schema that is referenced by the Publish to Adapter activity is re-fetched during migration.



This release of TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions does not support migration of RequestReply and Custom AESchema.

All the configurations of the Subscription service is migrated to respective fields of IDoc Reader or JMS Send Message activity under **General** and **Advanced** tab. In the **General** tab of the migrated activity, the migrated shared resource will be mapped to shared resource field. The schema selected in the Subscription service is mapped to IDoc Name of the migrated activity. The destination of these activities is the same for both and it refers to the destination in the **Transport** tab of the subscription service in TIBCO ActiveMatrix® Adapter for SAP.

In the migrated activity, the fields that are not present in the Subscription Service but are present in the IDoc Reader activity will have default values. After migration, you need to manually provide the values for the **Confirm IDoc Destination** field in the **Advanced** tab of the IDoc Reader activity. This is required when the **IDoc Confirmation** check box is selected in the IDoc Reader activity. Also, the **IDoc Error Destination** field in the **Advanced** tab of the IDoc Reader activity.



- In the migrated activity, the fields that are not present in the Subscription Service but are present in the IDoc Reader will have default values. These fields can be configured through JSON preference file. For more information, see [Working with Preference File \(JSON\) for migration](#).
- After migration, the JMS send activity must be recreated with IDoc Schema input as they have different schema structures for ActiveMatrix BusinessWorks 5.x adapter and ActiveMatrix BusinessWorks 6.x plug-in activities.

6. To run the migrated project, from the menu bar click **Run > Debug Configurations**. A default JMS connection is created after migration if the TIBCO ActiveMatrix® Adapter for SAP project does not have any JMS connection resource.

If a JMS connection is present, it is migrated. If there are multiple Adapter Subscriber activities or Publish to Adapter AE activities with using different transports, then value of JMS properties overwrite the last process created. If the JSON preference file is present the value from JSON file is used.

If the **Transport** tab has JNDI look ups and the SSL configurations enabled, a JNDI connection will be created and the SSL configuration is migrated.

7. In the Debug Configurations windows, click **Debug**.

Subscription Service fields not supported for Migration

When migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions there are some fields in the adapter services (Subscription Service) of the SAP Adapter configuration that may default or are not supported during migration are listed in the following tables.

Fields not supported on the **Configuration** tab of the Subscription Service in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Wire Format**
- **Quality of Service or Delivery Mode**
- **Receive IDocs in Explode Batch Mode**

The fields in the **Schema** tab of the Subscription Service in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.

Fields not supported on the **Advanced** tab of the Subscription Service in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Endpoint Reference**
- **Class Reference**
- **Destination**
- **Format**
- **Log IDoc To Directory**
- **Client Connection Reference**

Publish to Adapter Activity fields not supported for migration

When migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions there are some fields in the Publish to Adapter Activity of the SAP Adapter Configuration that may default or are not supported during migration are listed in the following tables.

Fields not supported on the **Configuration** tab of the Publish to Adapter Activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Adapter Service**
- **Custom AESchema**
- **Custom AESchema Reference**
- **RequestReply**

The **Transport** tab of the Publish to Adapter Activity in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.



The **Transport Type** field in the adapter service and the publish to adapter activity of the **Transport** tab should be the same.

The **Output** tab of the Publish to Adapter Activity in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.

Fields not supported on the **Fault** tab of the Publish to Adapter Activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Error Output**

Working with Preference File (JSON) for migration

When a user wants to migrate a TIBCO ActiveMatrix BusinessWorks 5.x project to a TIBCO ActiveMatrix BusinessWorks 6.x project or TIBCO BusinessWorks™ Container Edition project and if they want to use the feature of preferences, then a `adapter2plugin.json` file would need to be created in the root folder of TIBCO ActiveMatrix BusinessWorks 5.x project.

A template of the preference file would be installed in the tools folder of the plug-in in the following location:

```
$TIBCO_HOME/bw/palettes/sap/version/tools/adapter2plugin.json_template
```

A Preference file (JSON format) can be used in the following manner:

- To override configuration defined in the TIBCO ActiveMatrix BusinessWorks 5.x project and the adapter services carried over to the plug-in.
- To provide the configuration available in the plug-in but not available in TIBCO ActiveMatrix BusinessWorks 5.x project.
- The JSON preference file template should be used for reference only and should not be modified or used as it is. The preference file should be edited with the necessary properties and their corresponding values.
- The file created under the root folder of the TIBCO ActiveMatrix BusinessWorks™ 5.x projects will not just contain SAP but also other plug-ins that supports adapter migration.

In terms of values, the values can either be literals or references to module properties, which would pertain to global variables from TIBCO ActiveMatrix BusinessWorks 5.x project.

To configure as a Literal Value:

To set the value of `client` of `clientConn` object of `sapConnection` or `SAPConnectionResource` to 800 in JSON file, set the values as

```
"client" : "800"
```

To configure as a Module Property:

To use a global variable in JSON file, the user needs to have a same global variable declared with a value in the corresponding TIBCO ActiveMatrix BusinessWorks™ 5.x project. Then the user can add the global variable in JSON file.

To set the value of `client` of `clientConn` object of `sapConnection` or `SAPConnectionResource` to 800 using JSON file as a global variable, add a global variable in TIBCO ActiveMatrix BusinessWorks™ 5.x project as `Client` and set the value as 800. Now in the JSON file, set the value as

```
"client" : "%Client%"
```

Below notes should be considered prior to using the JSON preference files for a TIBCO ActiveMatrix™ 5.x project.

- The location and filename of the `adapter2plugin.json` preference file is not configurable.
- The usage of the preference file does not support the creation of new module properties in migrated projects. For example, we should not specify a module property `%%test%%` in the preferences if it does not exist in the TIBCO ActiveMatrix BusinessWorks 5.x project.
- The usage of preference file is applicable to all adapter configurations in the TIBCO ActiveMatrix BusinessWorks 5.x project during migration.
- Since the module properties in TIBCO ActiveMatrix BusinessWorks 6.x project are case sensitive, the module properties in the preference file should have the same case as the TIBCO ActiveMatrix BusinessWorks 5.x project.
- When any value is applied from the preference file, the `MigrationReport.log` contains logs with key and value in uppercase.
- The password used in the JSON file should be obfuscated. The `bwobfuscator` utility in the `<TIBCO_HOME>/bw/version/bin` folder should be used to obfuscate the password. Any other password obfuscators will not work. For more information about how to use the `bwobfuscator`, see *TIBCO ActiveMatrix™ BusinessWorks Application Development* guide.
- If the value of IDoc error destination is not specified in the TIBCO ActiveMatrix BusinessWorks™ 5.x project, then it should be specified in the JSON preference file.
- If you have different client connection types defined in ActiveMatrix BusinessWorks 5.x, then you need to set `connType` as empty string to migrate the different connections to the ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions



Migrating Adapter Projects Created on TIBCO ActiveMatrix BusinessWorks™ 6.x to Plug-In Projects

You can migrate a SAP Adapter project created on TIBCO ActiveMatrix BusinessWorks™ 6.x to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions project by using **Refactor > Migrate Adapter to Plug-in** option in TIBCO Business Studio™ for BusinessWorks™.

For migrating a project successfully, the project should have at least one process using at least one of the adapter palette activities.

- Migration from command line is not supported.
- Migration on TIBCO BusinessWorks™ Container Edition is not supported.
- RFC/BAPI containing complex types or table types are not supported.

Prerequisite

- For databases using native drivers in ActiveMatrix BusinessWorks 6.x, the JAR files must be added to the `<TIBCO_HOME>` directory before the migration is initiated.

Projects Supported for Migration

Migration is provided for the following project specifications:

Project Specification	Supported for Migration To
TIBCO ActiveMarix® Adapter for SAP projects created on ActiveMatrix BusinessWorks 6.x in TIBCO Business Studio for BusinessWorks	ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions

Migration Restrictions

- You can migrate ActiveMatrix® Adapter for SAP projects created on ActiveMatrix BusinessWorks 6.x to ActiveMatrix BusinessWorks Plug-in for SAP Solutions. However, vice versa is not possible.

- Migration supports only those ActiveMatrix® Adapter for SAP projects created on ActiveMatrix BusinessWorks 6.x that have no design-time or runtime errors before refactoring. The projects must be validated and processes must be run successfully end to end before migrating to ActiveMatrix BusinessWorks Plug-in for SAP Solutions projects.
- After migration, the project should be imported into a new workspace and the studio should be restarted.
- Migration is based on the information received from the AE activities. All the activities get migrated as it is besides the Adapter Request Response Server, Respond to Adapter Request, Adapter Subscriber, Invoke an Adapter Request-Response Service, and Publish to Adapter activities.
- If all ActiveMatrix® Adapter for SAP 6.x projects are not migrated to ActiveMatrix BusinessWorks Plug-in for SAP Solutions projects, then export the adapter projects, import it to a new into a workspace or TIBCO_HOME, and then perform the migration of the project.
- Migration of SNC Client and Server Connections is not supported and after migration the required connections must be created manually.

Considerations when Migrating Projects

- Due to the structure of ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x and the migration process, there are some files in the project migrated to ActiveMatrix BusinessWorks Plug-in for SAP Solutions, but are not used and must be ignored. For example, - ae folder and ae2xsd.xsd under AESchemas folder, and so on.
- An EMF validation error occurs in the migrated ActiveMatrix BusinessWorks Plug-in for SAP Solutions project when a ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x is saved with another name and these two projects are migrated to the plug-in. To resolve this issue, delete the Namespaces or Imports from **Process > Dependencies**.
- If you want to use the SAP schemas from the migrated ActiveMatrix BusinessWorks 6.x project, the project needs to be cleaned using the **Project > Clean** option from TIBCO Business Studio for BusinessWorks. Once the project is cleaned, the schemas can be selected from the .SAP folder. The schema can be re-fetched using the Fetch IDoc or Fetch Function button, which will make it available in the .SAP folder and in the schema picker.
- In ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x, the **Subject** and **Destination** fields configured in the **Transport** tab must have the same value for service and activity.
- If there is a ActiveMatrix BusinessWorks 6.x generic activity that uses the SAP adapter AE schema in ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x, after migration the ActiveMatrix BusinessWorks 6.x generic activities might need to be manually fixed to use the plug-in activity schema.
- For migration of ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x to ActiveMatrix BusinessWorks Plug-in for SAP Solutions project, there are a few projects that need to be manually fixed after migration. For example, in ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x, any schema where attributes are a SAP predefined ABAP type like string, or if the schema is present in ActiveMatrix® Adapter for SAP activity and not present in the plug-in activities or vice-versa and so on. Also in the such adapter project, the schema contains a double underscore (__) while in ActiveMatrix BusinessWorks Plug-in for SAP Solutions project it is underscore (_).
- Migration supports online schema migration, which means it retrieves the schema from the SAP server during migration for the respective activity. Before migrating a project, ensure that the connection parameters provided are correct in the project or in JSON reference file, otherwise errors might occur post migration.



Migrating projects from Adapter to Plug-in

You can migrate TIBCO ActiveMatrix® Adapter for SAP projects (created in TIBCO Business Studio™ for BusinessWorks™) to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions in the following manner



Before migration, backup the original TIBCO ActiveMatrix® Adapter for SAP project created on TIBCO ActiveMatrix BusinessWorks™ 6.x.

Procedure

1. In TIBCO Business Studio for BusinessWorks, right-click on the project in the Project Explorer and select **Refactor > Migrate Adapter to Plug-in**.
2. In the Migrate Adapter Activities window, select the project to migrate. Review the processes that are displayed for migration and then click **OK**.
3. Open the processes and realign the mapper activity if required. Add mappings in the mapper activity.

Migrating R3 adapter configuration to SAP Connection Resource in Plug-in

You can migrate adr3 model adapter configuration from TIBCO ActiveMatrix® Adapter for SAP projects created on TIBCO ActiveMatrix BusinessWorks™ to SAP connection resource in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions in the following manner

Procedure

1. In TIBCO Business Studio™ for BusinessWorks™, right-click on the project in the Project Explorer and select **Refactor > Migrate Adapter to Plug-in**.
2. In the Migrate Adapter Activities window, select the project to migrate. Review the processes that are displayed for migration and then click **OK**.
3. Open the processes and realign the mapper activity if required. Add mappings in the mapper activity.

Connection Type for Adapter Configuration

When a new adapter configuration is created in TIBCO ActiveMatrix BusinessWorks™ 6.x project a client connection reference and server connection reference is created under R3Connections folder in the adapter. This reference, points to the actual client or server connection in the adapter. If the preference file is present in the root folder, values from the preference file override the values from TIBCO ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks™ 6.x. If there are multiple client or server connection pool references in R3Connections folder, always the first reference is selected.

Migrating projects with Adapter Request Response Server Activity and Request-Response Invocation Adapter Service

You can migrate your projects that use the Adapter Request Response Server Activity from ActiveEnterprise Adapter palette and Request-Response Invocation Service of TIBCO ActiveMatrix® Adapter for SAP to RFC/BAPI Listener Activity in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions

An additional mapper activity is created after RFC/BAPI Listener activity. This mapper activity is configured with Schema from ActiveEnterprise Adapter palette. The mapper activity acts as a wrapper and helps retain input mappings in the following activities. You need to manually provide inputs for the mapper activity.

Procedure

1. In TIBCO Business Studio™ for BusinessWorks™, right-click on the project in the Project Explorer and select **Refactor > Migrate Adapter to Plug-in**.
2. In the Migrate Adapter Activities window, select the project to migrate. Review the processes that are displayed for migration and then click **OK**.
3. Open the processes and realign the mapper activity if required. Add mappings in the mapper activity. In the **Configuration** tab of the Adapter Request Response Server activity in TIBCO ActiveMatrix® Adapter for SAP, an **Adapter Service** should be mentioned for migration. Only the schema that is referenced by the Adapter Request Response Server activity is re-fetched from the SAP system. At a time the activity supports only a single schema.



If the schema for one RFC/BAPI activity is refreshed, then the other RFC/BAPI activities in the same process that using are using the same schema may not be refreshed.

All the configurations of the Adapter Request Response Server activity is migrated to respective fields of RFC/BAPI Listener activity under **General** and **Advanced** tab. In the **General** tab of the migrated RFC/BAPI Listener activity, the migrated shared resource will be mapped to shared resource field. The schema selected in the Adapter Request Response Server activity is mapped to the migrated RFC/BAPI Listener activity.



In the migrated activity, the fields not present in the Adapter Request Response Server activity, but are present in the RFC/BAPI Listener activity will have default values. Some of these fields can be configured through JSON preference file. For more information, see [Working with Preference File \(JSON\) for migration](#).

4. To run the migrated project, from the menu bar click **Run > Debug Configurations**.
5. In the Debug Configurations window, click **Debug**.

Migrating projects with Respond to Adapter Request Activity

You can migrate your projects that use the Respond to Adapter Request activity from ActiveEnterprise Adapter Palette to Reply from RFC/BAPI in SAP activity in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions in the following manner

Procedure

1. In TIBCO Business Studio™ for BusinessWorks™, right-click on the project in the Project Explorer and select **Refactor > Migrate Adapter to Plug-in**.
2. In the Migrate Adapter Activities window, select the project to migrate. Review the processes that are displayed for migration and then click **OK**.
3. Open the processes and realign the mapper activity if required. Add mappings in the mapper activity.



If the schema for one RFC/BAPI activity is refreshed, then the other RFC/BAPI activities in the same process that using are using the same schema may not be refreshed.

All the configurations of the Respond to Adapter Request activity is migrated to respective fields of Reply from RFC/BAPI in SAP activity under **General** and **Advanced** tab.



In the migrated activity, the fields not present in the Respond to Adapter Request activity, but are present in the Reply from RFC/BAPI activity will have default values. Some of these fields can be configured through JSON preference file. For more information, see [Working with Preference File \(JSON\) for migration](#).

4. To run the migrated project, from the menu bar click **Run > Debug Configurations**.
5. In the Debug Configurations windows, click **Debug**.

Adapter Request Response Server Activity fields not supported for Migration

When migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions, there are some fields in the Adapter Request Response Server and Respond to Adapter Request activity of the SAP Adapter Configuration that are default or are not supported during migration are listed in the following tables:

Adapter Request Response Server Activity

Fields not supported on the **Advanced** tab of the Adapter Request Response Server activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Durable**
- **Durable Name**
- **JMS Application Properties**

Migrating projects with Adapter Subscriber activity and Publication Service

You can migrate your projects that use the Adapter Subscriber Activity from ActiveEnterprise Adapter palette and Publication Service of TIBCO ActiveMatrix® Adapter for SAP to IDoc Listener or IDoc Parser Activity in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions.

An additional mapper activity is created after the IDoc Parser activity. This mapper activity is configured with the schema from the ActiveEnterprise Adapter palette. The mapper activity acts as a wrapper and helps retain input mappings in the activities that come after Adapter Subscriber activity. You need to manually provide inputs for the mapper activity.

Procedure

1. In TIBCO Business Studio™ for BusinessWorks™, right-click on the project in the Project Explorer and select **Refactor > Migrate Adapter to Plug-in**.
2. In the Migrate Adapter Activities window, select the project to migrate. Review the processes that are displayed for migration and then click **OK**.
3. Open the processes and realign the mapper activity if required. Add mappings in the mapper activity. In the **Configuration** tab of the Adapter Subscriber activity in ActiveMatrix® Adapter for SAP, an **Adapter Service** should be mentioned for migration. Only the schema that is referenced by the Adapter Subscriber activity is re-fetched from SAP system during migration. At a time the activity supports only a single schema.



This release of ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions does not support migration of Custom AESchema.

All the configurations of the Publication Service is migrated to respective fields of IDoc Listener or IDoc Parser activity under **General** and **Advanced** tab. The activities are generated based on the **Publishing Mode** selected in the Publication Service. For more information on publishing mode, see [Working with Preference File \(JSON\) for migration](#).

In the **General** tab of the migrated activities, the migrated shared resource will be mapped to shared resource field. The schema selected in the Publication Service is mapped to IDoc Name of migrated activities.



In the migrated activity, the fields not present in the Publication Service but are present in the IDoc Listener or IDoc Parser will have default values. Some of these fields can be configured through JSON preference file. For more information, see [Working with Preference File \(JSON\) for migration](#).

4. To run the migrated project, from the menu bar click **Run > Debug Configurations**.

A default JMS connection is created after migration if the ActiveMatrix® Adapter for SAP project does not have any JMS connection resource. If the JSON preference file is present, the value from the JSON file is used.

If there are multiple Adapter Subscriber activities with using different transports, then values of JMS properties overwrites the last process created.

5. In the Debug Configurations windows, click **Debug**.

Publishing mode for Adapter Subscriber activity

Depending on the publishing mode selected the adapter subscriber activity is replaced by the IDOC Parser or IDOC Listener activity in TIBCO ActiveMatrix BusinessWorks™ SAP Solutions projects. If the preference file is present in the projects root folder, the values from the preference file will override values from the TIBCO ActiveMatrix® Adapter for SAP project created on TIBCO ActiveMatrix BusinessWorks™ 6.x.

- **Publishing mode > IDoc Format**

An empty activity is created that replaces the Adapter Subscriber activity. Also, an additional process is created with IDoc Listener activity. The IDoc Listener activity is created per adapter configuration. TIDManager Resource is also created. By default, the status of the TIDManager Resource is set to **None**.

- **Publishing mode > Explode/Explode Batch**

An IDoc Parser activity is created that replaces the Adapter Subscriber activity. An additional mapper activity is created which refers to the adapter schema. The IDoc Listener activity is created per adapter configuration. TIDManager Resource is also created. By default, the status of the TIDManager Resource is set to **None**.

Publication Service fields not supported for Migration

When migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions there are some fields in the adapter services (Publication Service) of the SAP Adapter Configuration that may default or are not supported during migration are listed in the following tables.

Fields not supported on the **Configuration** tab of the Publication Service in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Wire Format**
- **Description**
- **Session Reference**
- **Endpoint Reference**
- **Class Reference**
- **Delivery Mode**

The fields in the **Schema** tab of the Publication Service in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.

Fields not supported on the **Advanced** tab of the Publication Service in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Endpoint Reference**
- **Destination**
- **Format**
- **Log IDoc To Directory**

Adapter Subscriber Activity fields not supported for Migration

When migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions there are some fields in the Adapter Subscriber activity of the SAP Adapter Configuration that may default or are not supported during migration are listed in the following tables.

Fields not supported on the **General** tab of the Adapter Subscriber Activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Adapter Service**
- **Custom AESchema**

The **Description** tab of the Adapter Subscriber Activity in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.



The **Transport Type** field in the adapter service and the adapter subscriber activity of the **Description** tab should be the same.

Fields not supported on the **Advanced** tab of the Adapter Subscriber Activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Sequence Key**
- **Custom ID**
- **Durable**
- **Durable Name**
- **JMS Application Properties**

The **Output** tab of the Adapter Subscriber Activity in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.

Migrating projects with Invoke an Adapter Request-Response Service Activity and Request-Response Service

You can migrate your projects that use the Invoke an Adapter Request-Response Service activity of from ActiveEnterprise Adapter palette and Request-Response Service of TIBCO ActiveMatrix® Adapter for SAP to Invoke RFC/BAPI in SAP Activity in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions.

An additional mapper activity is created after the Invoke RFC/BAPI activity. This activity is configured with schema from the ActiveEnterprise Adapter palette. The mapper activity acts as a wrapper and helps retain input mappings in the following activities. You need to manually provide inputs for the mapper activity.

Procedure

1. In TIBCO Business Studio™ for BusinessWorks™, right-click on the project in the Project Explorer and select **Refactor > Migrate Adapter to Plug-in**.
2. In the Migrate Adapter Activities window, select the project to migrate. Review the processes that are displayed for migration and then click **OK**.
3. Open the processes and realign the mapper activity if required. Add mappings in the mapper activity.

In the **Configuration** tab of the Invoke Adapter Request Response Service activity in ActiveMatrix® Adapter for SAP, an **Adapter Service** should be mentioned for migration. Only the schema that is referenced by the Invoke Adapter Request Response Service activity is re-fetched during migration.

All the configurations of the Invoke an Adapter Request Response Service activity is migrated to respective fields of Invoke RFC/BAPI activity under **General** and **Advanced** tab. In the **General** tab of the migrated Invoke RFC/BAPI activity, the migrated shared resource will be mapped to shared

resource field. The schema selected in the Invoke an Adapter Request Response Service activity is mapped to RFC/BAPI of the migrated Invoke RFC/BAPI in SAP activity.

If **one way** check box is selected in the schema class reference of the Request-ResponseServer adapter service, then after migrating the ActiveMatrix® Adapter for SAP project created on TIBCO ActiveMatrix BusinessWorks™ 6.x to ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions project, the **Invocation Protocol** field of the RFC BAPI Listener activity will have the **trfc** value by default. In this case, the TIDManager Resource is also created. By default, the status of the TIDManager Resource is set to **None**.



In the migrated activity, the fields that are not present in the Invoke Adapter Request Response Service activity but are present in the Invoke RFC/BAPI in SAP activity will have default values. These fields can be configured through JSON preference file. For more information, see [Working with Preference File \(JSON\) for migration](#).

4. To run the migrated project, from the menu bar click **Run > Debug Configurations**.
5. In the Debug Configurations windows, click **Debug**.

Invoke an Adapter Request-Response Service Activity fields not supported for migration

While migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions there are some fields in the Invoke an Adapter Request-Response Service activity of the SAP Adapter Configuration that may default or are not supported during migration are listed in the following tables.

The following tabs of the Invoke an Adapter Request-Response Service activity are not supported for migration:

- **Description** tab
- **Output** tab
- **Fault** tab
- **Advanced** tab

Migrating projects with Publish to Adapter activity and Subscription Service

You can migrate your projects that use the Publish to Adapter from ActiveEnterprise Adapter palette and Subscription Service in TIBCO ActiveMatrix® Adapter for SAP to IDoc Reader or JMS Send Message Activity in TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions in the following manner:

Procedure

1. In TIBCO Business Studio™ for BusinessWorks™, right-click on the project in the Project Explorer and select **Refactor > Migrate Adapter to Plug-in**.
2. In the Migrate Adapter Activities window, select the project to migrate. Review the processes that are displayed for migration and then click **OK**.
3. Open the processes and realign the mapper activity if required. Add mappings in the mapper activity.

In the **Configuration** tab of the Publish to Adapter activity in TIBCO ActiveMatrix® Adapter for SAP, an **Adapter Service** should be mentioned for migration. Only the schema that is referenced by the Publish to Adapter activity is re-fetched during migration.



This release of TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions does not support migration of RequestReply and Custom AESchema.

All the configurations of the Subscription service is migrated to respective fields of IDoc Reader or JMS Send Message activity under **General** and **Advanced** tab. In the **General** tab of the migrated activity, the migrated shared resource will be mapped to shared resource field. The schema selected in the Subscription service is mapped to IDoc Name of the migrated activity. The destination of these activities

is the same for both and it refers to the destination in the **Transport** tab of the subscription service in TIBCO ActiveMatrix® Adapter for SAP.

In the migrated activity, the fields that are not present in the Subscription Service but are present in the IDoc Reader activity will have default values. After migration, you need to manually provide the values for the **Confirm IDoc Destination** field in the **Advanced** tab of the IDoc Reader activity. This is required when the **IDoc Confirmation** check box is selected in the IDoc Reader activity. Also, the **IDoc Error Destination** field in the **Advanced** tab of the IDoc Reader activity.



These fields can be configured through JSON preference file. For more information, see [Working with Preference File \(JSON\) for migration](#).

4. To run the migrated project, from the menu bar click **Run > Debug Configurations**.
A default JMS connection is created after migration if the ActiveMatrix® Adapter for SAP project does not have any JMS connection resource. If the JSON preference file is present, the value from the JSON file is used.
If there are multiple Publish to Adapter activities with using different transports, then values of JMS properties overwrites the last process created.
5. In the Debug Configurations windows, click **Debug**.

Subscription Service fields not supported for Migration

When migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions there are some fields in the adapter services (Subscription Service) of the SAP Adapter configuration that may default or are not supported during migration are listed in the following tables.

Fields not supported on the **Configuration** tab of the Subscription Service in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Wire Format**
- **Receive IDocs in Explode Batch Mode**
- **Description**
- **Session Reference**
- **Endpoint Reference**
- **Class Reference**

The fields in the **Schema** tab of the Subscription Service in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.

Fields not supported on the **Advanced** tab of the Subscription Service in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Destination**
- **Format**
- **Log IDoc To Directory**
- **Client Connection Reference**

Publish to Adapter Activity fields not supported for migration

When migrating projects from TIBCO ActiveMatrix® Adapter for SAP to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions there are some fields in the Publish to Adapter Activity of the SAP Adapter Configuration that may default or are not supported during migration are listed in the following tables.

Fields not supported on the **General** tab of the Publish to Adapter Activity in TIBCO ActiveMatrix® Adapter for SAP during migration

- **Adapter Service**
- **Custom AESchema**
- **RequestReply**

The **Description** tab of the Publish to Adapter Activity in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.



The **Transport Type** field in the adapter service and the publish to adapter activity of the **Advanced** tab should be the same.

The **Output** tab of the Publish to Adapter Activity in TIBCO ActiveMatrix® Adapter for SAP is not supported for migration.

The **Fault** tab of the Publish to Adapter activity in TIBCO ActiveMatrix® Adapter for SAP project is not supported for migration.

Working with Preference File (JSON) for migration

When you want to migrate a TIBCO ActiveMatrix® Adapter for SAP project created on TIBCO ActiveMatrix BusinessWorks™ 6.x to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions project and if you want to use the feature of preferences, then a `adapter2plugin.json` file would need to be created in the root folder of ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks™ 6.x

A template of the preference file would be installed in the tools folder of the plug-in in the following location:

```
$TIBCO_HOME/bw/palettes/sap/version/tools/adapter2plugin.json_template
```

A Preference file (JSON format) can be used in the following manner:

- To override configuration defined in the ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x and the adapter services carried over to the plug-in.
- To provide the configuration available in the plug-in but not available in ActiveMatrix BusinessWorks 6.x project.
- The JSON preference file template should be used for reference only and should not be modified or used as it is. The preference file should be edited with the necessary properties and their corresponding values.
- The file created under the root folder of the ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x will not just contain SAP but also other plug-ins that supports adapter migration.

In terms of values, the values can either be literal's or references to module properties, which would pertain to module property from ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x

To configure as a Literal Value:

To set the value of `client` of `clientConn` object of `sapConnection` or `SAPConnectionResource` to 800 in JSON file, set the values as

```
"client" : "800"
```

To configure as a Module Property:

To use a module property in JSON file, you need to have the same module property declared with a value in the corresponding ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x. Then you can add the module property in JSON file.

To set the value of `client` of `clientConn` object of `sapConnection` or `SAPConnectionResource` to 800 using JSON file as a module property, add a module property in TIBCO ActiveMatrix BusinessWorks™ 6.x project as `Client` and set the value as 800. Now in the JSON file, set the value as

```
"client" : "%Client%"
```

Below notes should be considered prior to using the JSON preference files for a ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x .

- The location and filename of the `adapter2plugin.json` preference file is not configurable.
- The usage of the preference file does not support the creation of new module properties in migrated projects. For example, we should not specify a module property `%%test%%` in the preferences if it does not exist in the ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x .
- The usage of preference file is applicable to all adapter configurations in the ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x during migration.
- Since the module properties in TIBCO ActiveMatrix BusinessWorks 6.x project are case sensitive, the module properties in the preference file should have the same case as the ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x.
- When any value is applied from the preference file, the `RefactoringReport.log` contains logs with key and value in uppercase.
- The password used in the JSON file should be obfuscated. The `bwobfuscator` utility in the `<TIBCO_HOME>/bw/version/bin` folder should be used to obfuscate the password. Any other password obfuscators will not work. For more information about how to use the `bwobfuscator`, see *TIBCO ActiveMatrix™ BusinessWorks Application Development* guide.
- If the value of IDoc error destination is not specified in the ActiveMatrix® Adapter for SAP project created on ActiveMatrix BusinessWorks 6.x, then it should be specified explicitly in the JSON preference file.
- If you have different client connection types defined in ActiveMatrix BusinessWorks 6.x, then you need to set `connType` as empty string to migrate the different connections to the ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions



Migrating projects from SAP ECC to SAP S/4HANA

You can migrate the **Invoke RFC BAPI in SAP** activity of TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions to the **Consume OData Service** activity of TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP S/4HANA projects.

Prerequisites

Before migration, install the TIBCO ActiveMatrix BusinessWorks™ Plug-in for OData Services for SAP S/4HANA 6.2.1 in `<TIBCO_HOME>`.



Before migration, backup the original TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions project.

Procedure

1. Start **TIBCO Business Studio**.
2. Right-click on a new project or an imported project and select **Refactor > Migrate Plugin Activities**
3. In the Migrate Plugin Activities wizard, in the **Select the BusinessWorks Projects:** section select the check box for the project to migrate and for the **Options** select the **Migrate Invoke RFC BAPI in SAP Activity to Consume OData Service Activity** check box. By default these are already selected.

4. Click the **Preview** button to preview the processes to migrate. You can manually select the processes that you want to migrate and click **OK**.
An additional mapper activity is created after the **Consume OData Service** activity. This mapper activity acts as a wrapper between the SAP Schema and the S/4HANA schema. All the migrated projects are displayed in the Project Explorer view at the parent level.

The input fields of the **Invoke RFC/BAPI in SAP** activity are mapped to the input fields of the **Consume OData Service** activity defined in the `sapec2saps4hana.json` file. A new SAP S/4HANA Connection Resource is created when a project is migrated for the first time based on the values provided in the `sapec2saps4hana.json` file.



Before migrating the project, add the JSON template file manually in the project. For more information, see [Working with Preference File \(JSON\) for SAP ECC to SAP S/4HANA migration](#).

Working with Preference File (JSON) for SAP ECC to SAP S/4HANA migration

When you want to migrate a project from TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions to TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP S/4HANA and use the feature of preferences then you must add a `sapec2saps4hana.json` in the root folder of the project before migration.

This converts the Invoke RFC BAPI in SAP activity of the TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions to the Consume OData Service activity of the TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP S/4HANA.

A template of the JSON preference file would be installed in the tools folder of the plug-in, in the following location:

```
$TIBCO_HOME/bw/palettes/sap/version/tools/sapec2saps4hana.json_template
```

You can use the JSON preference file to:

- To provide the properties related to the new Consume OData Service activity. The schema required for the Consume OData Service activity can be fetched using the SAP S/4HANA Cloud Connection Resource. To create the new SAP S/4HANA Cloud Connection Resource, you need to specify its configuration details manually in the JSON preference file.
- To provide the input field mappings of the Invoke RFC/BAPI in SAP activity that are mapped to the input fields of the Consume OData Service activity.

Two types of mappings are supported; Field and Literal mapping.

- **Field mapping**- The fields from Invoke RFC/BAPI in SAP activity are mapped to fields from the Consume OData Service activity in the following manner from the JSON preference file, `<field in Invoke RC/BAPI in Activity>:<field in Consume OData Service activity>`. If the field is part of a hierarchy, the elements are separated by a slash (/).

For example, `<parent1/parent2/child3>:<parent1/child4>`



The type of mapping is preserved as of the original activity.

- **Literal mapping**- The mapping supports literal values in the format, `<value>:<name of field in Consume OData Service activity>` .



Only string field data type is supported for literal mapping in the JSON preference file. For values, the values can only be literals and all the password types must be obfuscated passwords.

The JSON preference file contains a mapping section which maps the input field of the Invoke RFC/BAPI in SAP activity to the Consume OData Service activity. The mappings can contain multiple levels. The value types is preserved in the JSON preferences file. It is not possible to change the value or its type in the JSON preference file.

- You must use the JSON preference file template provided in the tools folder for reference only. Copy the template file from the tools folder and paste in the root directory of the project as `sapecc2saps4hana.json`. Then edit the preference file and provide the necessary properties and their corresponding values.
- The JSON preference file contains a field `service` which is given in the format: `<apiName>/<serviceName>/<operation>`. The migration is based on the combination of these schema name, service name, and process. All the activities referred to the same schema will have the same mapping instructions.
- After migration, the date data type is changed from "YYMMDD" to "YYYY-MM-DDTHH:MM:SS".
- If the authentication type is OAuth 2.0 for On-Premise/Private Cloud environment, you will have to populate parameter "sysPassword" to download the schemas for the SAP S/4HANA Cloud Connection Resource in the JSON preference file.
- When refactoring is performed on the same project a multiple number of times, you should use the same `s4hanaConnection` parameters defined in the `sapecc2saps4hana.json` preference file, and you need to delete the `RefactoringReport.log` file to receive the latest log for the refactoring report.

Note the following points prior to using the JSON preference file for TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions project:

- The location and filename of the `sapecc2saps4hana.json` preference file is not configurable.
- The password used in the JSON preference file should be obfuscated. The `bwobfuscator` utility in the `<TIBCO_HOME>/bw/version/bin` folder should be used to obfuscate the password. Any other password obfuscators will not work. For more information about how to use the `bwobfuscator`, see *TIBCO ActiveMatrix™ BusinessWorks Application Development* guide.
- The JSON preference file is case sensitive.
- While migrating any projects, any open processes are closed and reopened after migration.
- During migration a `RefactoringReport.log` file is created for the project. This log file contains the name of the process, activity, and steps of migration. Any errors that are generated are logged in this file. The `RefactoringReport.log` file is not appended. To receive new log file, you need to delete the existing `RefactoringReport.log` file.

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.

Working with Sample Projects

The plug-in packages sample projects with the installer. The sample projects show how TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions works. After installing the plug-in, you can locate the sample projects in the following directory: `TIBCO_HOME/bw/palettes/sap/version_number/examples`.

The plug-in provides three sample projects, `IDoc_Examples`, `RFC_BAPI_Examples`, and `Migration_Examples`.

The examples mentioned in this section are compatible with only the latest ActiveMatrix BusinessWorks™ version supported. For supported versions, refer to the *readme* file.



- While importing the projects, if any warnings are encountered, use the **Quick Fix** option to resolve the warning.
- The existing `IDoc_Examples` and `RFC_BAP_Examples` samples should not be used for migration from SAP ECC to SAP S/4HANA
- While importing the examples to a new workspace if XSLT errors are observed, select the **Show Check and Repair** option in the mapper to resolve the error and perform automatic fix.

IDoc_Examples

The `IDoc_Examples` project shows how to use the IDoc Listener, IDoc Parser, IDoc Acknowledgment, IDoc Reader, and IDoc Confirmation activities to delivery IDocs between the plug-in and the SAP system.

This project contains the following processes:

- Outbound scenario
 - `ReceiveIDocsFromSAP`

Use an IDoc Listener activity to listen on the SAP system and receive IDocs published from the SAP system where the IDoc is processed by activity using TIBCO Enterprise Message Service.
 - `ProcessVendorMasterIDocs`

Use an IDoc Parser activity to retrieve the CREMAS01 IDocs processed by the IDoc Listener activity, and then parse the IDocs. Then, use an IDoc Acknowledgment activity to acknowledge the parsed CREMAS01 IDocs. The retrieved IDoc number and type are displayed in the console view.
 - `ProcessIDocFromSAPNoXML`

Use a JMS Receive Message activity to read the received CREMAS01 IDocs in a raw format.
 - `ProcessCustomerMasterIDocs`

Use an IDoc Parser activity to retrieve the DEBMAS01 IDocs processed by the IDoc Listener activity, and then parse the IDocs. Then, use an IDoc Acknowledgment activity to acknowledge the parsed DEBMAS01 IDocs. The retrieved IDoc number and type are displayed in the console view.
 - `ReceiveIDocsFromSAPtoKafka`

Use an IDoc Listener activity to listen on the SAP system and receive IDocs published from the SAP system where the IDoc is processed by activity using Apache Kafka.
 - `ReceiveIDocsFromSAPNoMessaging`

Use an IDoc Listener activity to listen on the SAP system and receive IDocs published from the SAP system where the IDoc is processed by activity without the need for TIBCO Enterprise Message Service or Apache Kafka.
 - `ProcessVendorMasterIDocsNoMessaging`

Use the IDoc Converter activity to output the CREMAS01 IDoc outputted by the IDoc Listener activity, and parse the IDoc. Use an IDoc Acknowledgment activity to acknowledge the parsed CREMAS01 IDoc. The retrieved IDoc number and type are displayed on the console view.

- ProcessCustomerMasterIDocsNoMessaging

Use the IDoc Converter activity to output the DEBMAS01 IDoc outputted by the IDoc Listener activity, and parse the IDoc. Use an IDoc Acknowledgment activity to acknowledge the parsed DEBMAS01 IDoc. The retrieved IDoc number and type are displayed on the console view.

- Inbound scenario

- StageVendorMasterIDocs

Use a JMS Send Message activity to send a specified CREMAS01 IDoc to the EMS server.

- PostVendorMasterIDocs

Use an IDoc Reader activity to post the CREMAS01 IDoc sent to the EMS server in the StageVendorMasterIDocs.bwp process to the SAP system. The TID and the message ID of the IDoc are displayed in the console view.

- PostVendorMasterIDocsNoMessaging

Use the Post IDoc to SAP activity to post the CREMAS01 IDoc passed as input to activity to the SAP system. IDoc confirmation information is displayed on the Console view.

- ConfirmVendorMasterIDocs

Use an IDoc Confirmation activity to confirm the CREMAS01 IDoc posted to the SAP system by the IDoc Reader activity.

- PostVendorMasterIDocMultiDestination

Use the IDoc Renderer and the PostIDocToSAP activities to send same generated CREMAS01 raw IDoc data to multiple SAP destinations. Here using Dynamic Connection activity to provide different SAP connections to PostIDocToSAP activity.

RFC_BAPI_Examples

The RFC_BAPI_Examples project shows how to use the Dynamic Connection, RFC BAPI Listener, Invoke RFC BAPI in SAP, and Reply from RFC BAPI in SAP activities to create or terminate dynamic connections, handle the exceptions, control the commit of a transaction externally, and achieve the request/response scenario.

This project contains the following processes:

- DynamicConnection

Use a Dynamic Connection activity to establish a dynamic connection, and an Invoke RFC BAPI in SAP activity to retrieve the entries in the T000 table in the SAP system by invoking the RFC_GET_TABLE_ENTRIES function module. Then, use another Dynamic Connection activity to terminate the dynamic connection.

In this example, the connection managed by the Dynamic Connection activity is not being used as an inbound transaction.



- Before running this example, maintain the module properties used by the input schema of the Dynamic Connection activity to establish a dynamic connection.
- An exception of data conversion might occur depending on the data returned from the SAP system.

- ExceptionHandling

Use an Invoke RFC BAPI in SAP activity to retrieve the entries in the T002 table in the SAP system by invoking the RFC_GET_TABLE_ENTRIES function module.

If an exception occurs in the plug-in, the error code and message are displayed in the console view.

If an exception occurs in the SAP system, the error message is displayed in the console view.



An exception of the data conversion might occur depending on the data returned from the SAP system.

- **InvokeBAPIWithExternalCommit**

Use an Invoke RFC BAPI in SAP activity to create a sales order in the SAP system by invoking the BAPI_SALESORDER_CREATEFROMDAT1 function module.

If the Invoke RFC BAPI in SAP activity fails to create the sales order, the sales order is rolled back by invoking the BAPI_TRANSACTION_ROLLBACK function module. The return message is displayed in the console view.

Otherwise, the sales order is committed by invoking the BAPI_TRANSACTION_COMMIT function module. Then, the delivery date and the number of the created sales order are got by invoking the BAPI_SALESORDER_GETSTATUS function module, and displayed in the console view.

- **Request_Reply**

Use an RFC BAPI Listener activity to receive the request of the BAPI_XBP_EVENT_RAISE RFC/BAPI function module.

If the event ID is **VENDOR**, an Invoke RFC BAPI in SAP activity invokes the BAPI_VENDOR_GETDETAIL function module in the SAP system to check if the vendor number is valid.

- If the vendor number is valid, the returned vendor name and number are displayed in the console view.
- Otherwise, the return message is displayed in the console view.

If the event ID is **CUSTOMER**, an Invoke RFC BAPI in SAP activity invokes the BAPI_CUSTOMER_GETDETAIL2 function module in the SAP system to check if the customer number is valid.

- If the customer number is valid, the returned customer name and number are displayed in the console view.
- Otherwise, the return message is displayed in the console view.

If the event ID is neither **VENDOR** nor **CUSTOMER**, the return message with the content of **Bad EventID** is displayed in the console view.

Migration_Examples

The Migration_Examples project converts the **Invoke RFC/BAPI in SAP** activity of the TIBCO ActiveMatrix BusinessWorks™ Plug-in for SAP Solutions to the **Consume OData Service** activity of the TIBCO ActiveMatrix BusinessWorks™ Plug-in for OData Services for SAP S/4HANA .

This project contains the following process:

- **CheckMaterialFromCustomerPlant**

This process has two invoke activities, **GetPlantFromCustomer** (Invoke RFC BAPI in SAP) and **Material ATP** (Invoke RFC BAPI in SAP). This process retrieves information from the plant associated with the customer using the Customer ID and use the information received from the plant to check availability of the material.

Importing Sample Projects

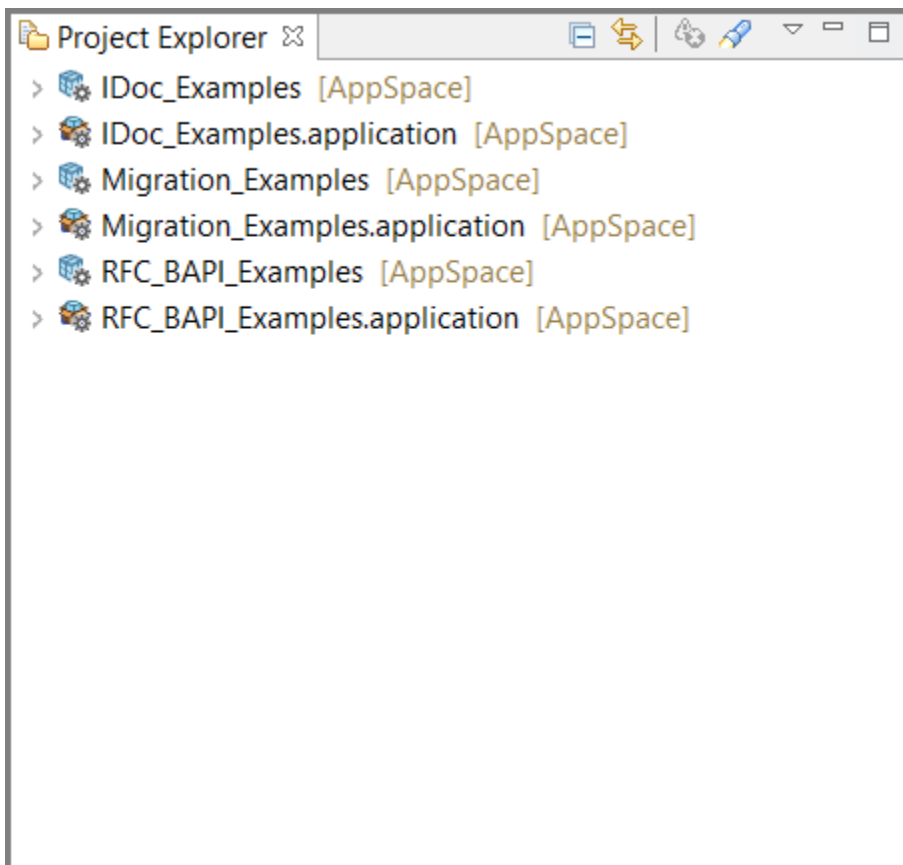
Before running the project, you must import the sample project to TIBCO Business Studio™ for BusinessWorks™.

Procedure

1. Start TIBCO Business Studio for BusinessWorks 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 for BusinessWorks executable file located in the *TIBCO_HOME/studio/version_number/eclipse* directory.
2. From the menu, click **File > Import**.
3. In the Import dialog, expand the **General** folder and select the **Existing Studio Projects into Workspace** item and click **Next**.
4. Click **Select archive file**, and then click **Browse** next to the **Select archive file** field to locate the sample projects.
The sample projects are located in the *TIBCO_HOME/bw/palettes/sap/version_number/examples* directory.
5. In the **Projects** list, all the sample projects are selected. You can clear the sample projects that you do not want to import, and then click **Finish**.

Result

The sample projects are imported to TIBCO Business Studio for BusinessWorks .



Running the Project

After importing the sample project, you can run the project to see how the plug-in works.



When running the sample project, if an exception occurs, you have to refresh the schemas configured in the activities.

Prerequisites

Ensure that you have imported the sample project to TIBCO Business Studio, as described in [Importing Sample Projects](#).

Procedure

1. In the Project Explorer view, expand the **Resources** folder, and then expand the shared resource package.
2. Double-click the following shared resources and configure them in the shared resources editors.
 - IDoc_Examples
 - **JMSConnectionResource.JMSConnectionResource**
 - **SAPConnectionResource.sapconnectionResource**
 - **SAPTIDManagerResource.saptidmanagerResource**
 - **KafkaSAPConnectionResource.sapconnectionResource**
 - RFC_BAPI_Examples
 - **SAPConnectionResource.sapconnectionResource**

See the TIBCO ActiveMatrix BusinessWorks documentation, [SAP Connection](#) and [SAP TIDManager](#) for details.

3. From the menu, click **Run > Run Configurations** to run the sample processes.
4. In the Run Configurations dialog, expand **BusinessWorks Application** and click **BWApplication**.
5. In the **Applications** tab, all the sample applications are selected. You can clear the sample applications that you do not want to run.
6. Click **Run** to run the processes.

Managing Logs

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

By default, error logs are displayed in the Console view when you run a process in the 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. See [Log Levels](#) for details.

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 for best practice, you can contact the administrator to investigate it.
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.

If you do not configure any log levels, the plug-in uses the default log level of TIBCO ActiveMatrix BusinessWorks. The default log level 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.sap.runtime">
  <level value="DEBUG"/>
</logger>
```

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



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 control a log level for the activity.

- For example to control the log level for the IDoc Acknowledgment activity, set the following parameters:

```
<logger name="com.tibco.bw.palette.sap.runtime.idocacknowledgment">
  <level value="TRACE"/>
</logger>
```

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



The activities not configured with specific log levels use the log level configured for the plug-in.

Logger names for each activities are as follows:

- IDoc Acknowledgment
com.tibco.bw.palette.sap.runtime.idocacknowledgment
- IDoc Confirmation
com.tibco.bw.palette.sap.runtime.idocconfirmation
- IDoc Converter
com.tibco.bw.palette.sap.runtime.idocconverter
- IDoc Listener
com.tibco.bw.palette.sap.runtime.idoclistener
- IDoc Parser
com.tibco.bw.palette.sap.runtime.idocparser
- IDoc Reader
com.tibco.bw.palette.sap.runtime.idocreader
- Post IDoc to SAP
com.tibco.bw.palette.sap.runtime.postidoc
- IDoc Renderer
com.tibco.bw.palette.sap.runtime.idocrenderer
- Invoke RFC BAPI in SAP
com.tibco.bw.palette.sap.runtime.activities.InvokeRequestResponseActivity
- RFC BAPI Listener
com.tibco.bw.palette.sap.runtime.activities.RequestResponseServerEventSource
- Reply from RFC BAPI in SAP
com.tibco.bw.palette.sap.runtime.activities.Respond2RequestActivity
- Dynamic Connection
com.tibco.bw.palette.sap.runtime.activities.DynamicConnectionActivity

Logger names for shared resources

- SAP Connection
com.tibco.bw.sharedresource.sapconnection.runtime
- SAP TIDManager
com.tibco.bw.sharedresource.saptidmanager.runtime

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. Navigate to the `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/space_name/node_name` directory to find the `logback.xml` file.

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

```
<appender name="FILE" class="ch.qos.logback.core.FileAppender">
  <file>c:/bw6-sap.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 log.

3. Add the following node to the root node at the bottom 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 tables list error codes, detailed explanation of each error, and where applicable, ways to solve different errors.

SAP Connection Error Codes

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-SR-SAPCONNECTION-200002 Starting Shared Resource {0}.	debug	BW-Plug-in	The SAP Connection shared resource {0} is being started.	None.
TIBCO-BW-SR-SAPCONNECTION-200003 Updating Shared Resource {0}.	debug	BW-Plug-in	The SAP Connection shared resource {0} is being updated.	None.
TIBCO-BW-SR-SAPCONNECTION-200004 Stopping Shared Resource {0}.	debug	BW-Plug-in	The SAP Connection shared resource {0} is being stopped.	None.
TIBCO-BW-SR-SAPCONNECTION-200005 Deleting Shared Resource {0}.	debug	BW-Plug-in	The SAP Connection shared resource {0} is being deleted.	None.
TIBCO-BW-SR-SAPCONNECTION-200006 Set the default value of thread number for SAP Shared Resource {0}, current value is {1}, default is 8.	debug	BW-Plug-in	The invalid value is specified for thread number, instead use the default value.	None.
TIBCO-BW-SR-SAPCONNECTION-200007 Created the thread pool for SAP Shared Resource {0}, thread number is {1}.	debug	BW-Plug-in	Indicates the information on the thread pool for a specific SAP Connection Shared Resource.	None.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-SR-SAPCONNECTION-201001 [{}].	debug	BW-Plug-in	Debug information [{}] is generated when a JCoException is received, a function is being removed from cache, or the server connection status is changed.	None.
TIBCO-BW-SR-SAPCONNECTION-301007 Reconnect attempt {} for connection {}	info	BW-Plug-in	This information is generated to notice that the SAP client or server connection {} is trying to reconnect for the {}th attempt.	None.
TIBCO-BW-SR-SAPCONNECTION-301020 Connection disconnected	info	BW-Plug-in	This information is generated when the SAP client connection starts to be reconnected.	None.
TIBCO-BW-SR-SAPCONNECTION-301021 Activated timer to check connectivity to R/3 for connection-pool {}	info	BW-Plug-in	This information is generated when the SAP client connection starts to be reconnected.	None.
TIBCO-BW-SR-SAPCONNECTION-301022 Using SNC with Logon Groups connection	info	BW-Plug-in	Indicates the current connection type is SNC with Logon Groups connection.	None.
TIBCO-BW-SR-SAPCONNECTION-401004 Server connection {} will not be initialized: {}	warn	BW-Plug-in	The server connection {} cannot be initialized when creating a server connection with the combination of the program ID, gateway host, and gateway service that have already been used by another server connection.	None.
TIBCO-BW-SR-SAPCONNECTION-500001 Creating Shared Resource {0} failed.	error	BW-Plug-in	Creating the SAP Connection shared resource {} fails.	Check the items in the error message.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-SR-SAPCONNECTION-501001 Connection Error. Unable to create a connection with the target application {0} using connection parameters {1} and the target application error is {2}	error	BW-Plug-in	Creating a client connection to the application server {0} fails. The SAP JCo error is {2}.	Check the client connection parameters.
TIBCO-BW-SR-SAPCONNECTION-501003 Client connection {0} is invalid	error	BW-Plug-in	The client connection {0} is invalid.	Check the client connection parameters and the network connectivity.
TIBCO-BW-SR-SAPCONNECTION-501004 Connection Error. {0} stopping due to persistent connection errors to the SAP R/3 system(s)	error	BW-Plug-in	The client or server connection {0} is stopped because of the persistent connection errors.	Check the client or server connection parameters and the network connectivity.
TIBCO-BW-SR-SAPCONNECTION-501007 Server connection {0} is invalid: {1}	error	BW-Plug-in	The server connection {0} is invalid.	Check the server connection parameters and the network connectivity.
TIBCO-BW-SR-SAPCONNECTION-501008 Starting Shared Resource {0} failed.	error	BW-Plug-in	Starting the SAP Connection shared resource {0} fails.	Check the items in the error message.
TIBCO-BW-SR-SAPCONNECTION-501009 Server Error: {0}	error	BW-Plug-in	The server error {0} occurs.	Check the server connection parameters, the network connectivity, and whether the SAP system is shut down.
TIBCO-BW-SR-SAPCONNECTION-501010 Server Exception: {0}	error	BW-Plug-in	The server exception {0} occurs.	Check the items in the error message.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-SR-SAPCONNECTION-501011 Server connection pool: {0} suspended due to exceeded attempts to connect to SAP system	error	BW-Plug-in	The server connection pool is suspended when the server connection cannot be established after the maximum time interval between two successive attempts.	Check the server connection parameters, the network connectivity, and whether the SAP system is shut down.

SAP TIDManager Error Codes

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-SR-SAPTIDMANAGER-200002 Starting Shared Resource {0}.	debug	BW-Plug-in	The SAP TIDManager shared resource {0} is being started.	None.
TIBCO-BW-SR-SAPTIDMANAGER-200003 Updating Shared Resource {0}.	debug	BW-Plug-in	The SAP TIDManager shared resource {0} is being updated.	None.
TIBCO-BW-SR-SAPTIDMANAGER-200004 Stopping Shared Resource {0}.	debug	BW-Plug-in	The SAP TIDManager shared resource {0} is being stopped.	None.
TIBCO-BW-SR-SAPTIDMANAGER-200005 Deleting Shared Resource {0}.	debug	BW-Plug-in	The SAP TIDManager shared resource {0} is being deleted.	None.
TIBCO-BW-SR-SAPTIDMANAGER-500001 Creating Shared Resource {0} failed.	error	BW-Plug-in	Creating the SAP TIDManager shared resource {0} fails.	None.
TIBCO-BW-SR-SAPTIDMANAGER-500002 Starting TIDmanager Shared Resource {0}.	error	BW-Plug-in	Starting the TIDManager shared resource {0} fails.	None.
TIBCO-BW-SR-SAPTIDMANAGER-500003 Can't register JDBC driver {0}.	error	BW-Plug-in	The JDBC driver for the TID management cannot be registered.	None.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-SR-SAPTIDMANAGER-500004 Can't deregistered JDBC driver {0}.	error	BW-Plug-in	The JDBC driver for the TID management cannot be unregistered.	None.
TIBCO-BW-SR-SAPTIDMANAGER-500005 Sql Exception {0}.	error	BW-Plug-in	The SQL exception occurs in the database.	None.
TIBCO-BW-SR-SAPTIDMANAGER-500006 Table TIDManager does not exist in database, the URL is \u201C{0}\u201D, Please create table first!	error	BW-Plug-in	The database table for the TID management does not exist.	None.

SAP Palette Error Codes

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-101015 Using JMS as Messaging Source	debug	BW-Plug-in	Indicates the message source that has been used.	None
TIBCO-BW-PALETTE-SAP-101016 Using Kafka as Messaging Source	debug	BW-Plug-in	Indicates the message source that has been used.	None
TIBCO-BW-PALETTE-SAP-101017 Using No Messaging as Messaging Source	error	BW-Plug-in	Indicates the NoMessaging as current messaging resource.	None
TIBCO-BW-PALETTE-SAP-102011 Received invocation request for {0} with invocation protocol {1}.	trace	BW-Plug-in	Indicates the information on request.	None.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-102021 Completed invocation request for {0} with TID {1}.	trace	BW-Plug-in	Indicates the completion of request.	None.
TIBCO-BW-PALETTE-SAP-104001 Received IDoc(s). RFC Function=[{0}], IDOC Name=[{1}], Number=[{2}], Receiving Partner=[{3}], Count=[{4}].	debug	BW-Plug-in	The information about the request from the SAP system is displayed.	None.
TIBCO-BW-PALETTE-SAP-104002 Start marshaling the IDoc(s), TID:[{0}].	error	BW-Plug-in	Indicates the start of marshaling IDoc(s)	None.
TIBCO-BW-PALETTE-SAP-104003 Finish marshaling the IDoc(s), Elapsed Time: {0} ms, TID: {1}.	error	BW-Plug-in	Indicates the end of marshaling IDoc(s)	None.
TIBCO-BW-PALETTE-SAP-104004 Message has been sent to queue [{0}] successfully. The content of message is {1}	debug	BW-Plug-in	An IDoc message is sent to the queue [{0}] successfully, and the content of the message is {1}.	None.
TIBCO-BW-PALETTE-SAP-104005 Error occurred when processing the IDoc. The error message is [{0}].	error	BW-Plug-in	The error [{0}] occurs when processing the IDoc.	None.
TIBCO-BW-PALETTE-SAP-104006 Message has been sent to Topic [{0}] successfully. The content of message is {1}	debug	BW-Plug-in	An IDoc message is sent to the Topic[{0}] successfully, and the content of the message is {1}.	None

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-104007 Kafka Producer started.	debug	BW-Plug-in	Indicates that the Kafka Producer has been started.	None
TIBCO-BW-PALETTE-SAP-104008 Shutting down Kafka Producer.	debug	BW-Plug-in	Indicates that Kafka Producer has been shutdown.	None
TIBCO-BW-PALETTE-SAP-104009 The content of the output message:\n {0}	error	BW-Plug-in	Indicates the content of the output message	None
TIBCO-BW-PALETTE-SAP-104010 IDOC RFC Function invoked: {0}	error	BW-Plug-in	Indicates the function module invoked by SAP	None
TIBCO-BW-PALETTE-SAP-104011 Received IDOC Name/TID/ Receiving Partner: {0}/{1}/{2}, Count: {3}	error	BW-Plug-in	Indicates the summary of input messages	None
TIBCO-BW-PALETTE-SAP-104012	error	BW-Plug-in	Indicates the information associated with IDoc received from SAP	None
TIBCO-BW-PALETTE-SAP-105001 Received the raw type of IDoc from the queue [{0}]. IDoc Name=[{1}], IDoc Number=[{2}].	debug	BW-Plug-in	The information about the IDoc in raw type received from the queue [{0}] is displayed.	None.
TIBCO-BW-PALETTE-SAP-105002 Output has been generated. The content of the output is {0}	debug	BW-Plug-in	An IDoc message is converted into the XSD format. The converted content is {0}.	None.
TIBCO-BW-PALETTE-SAP-105003 Connection Exception occurred. EventSource will deactivate.	error	BW-Plug-in	The EMS server is not accessible.	Start the EMS server.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-105009 On exception in IDoc Parser from AbstractJmsReceive. Started value is [{0}].	debug	BW-Plug-in	An exception is returned from AbstractJmsReceive.	None.
TIBCO-BW-PALETTE-SAP-105010 On stop in IDoc Parser from AbstractJmsReceive. Started value is [{0}].	debug	BW-Plug-in	The stop method is invoked by AbstractJmsReceive.	None.
TIBCO-BW-PALETTE-SAP-105011 The IDocParser failed to a generate a new event due to schema mismatch. The IDoc set for IDocParser[{}], the IDoc received [{}].	error	BW-Plug-in	The IDoc Parser activity fails to generate a new event due to the schema mismatch.	None.
TIBCO-BW-PALETTE-SAP-105013 Error=[{}], IDoc Name=[{}], IDoc Number=[{}].	error	BW-Plug-in	Indicates the message contains the invalid character. For example, control character.	Remove the invalid character(s) from the message
TIBCO-BW-PALETTE-SAP-107002 Failed to create connection to the JMS server. {}	error	BW-Plug-in	Creating connections to the EMS server fails.	Check the JMS Connection shared resource and whether the EMS server is running.
TIBCO-BW-PALETTE-SAP-107003 Unable to find destination [{}] on JMS server	error	BW-Plug-in	The JMS destination [{}] cannot be found on the EMS server.	Check whether the specified destination exists on the EMS server.
TIBCO-BW-PALETTE-SAP-107004 Error occurred when attempting to create MessageConsumer	error	BW-Plug-in	An error occurs when creating a message consumer.	Check the JMS Connection shared resource and whether the EMS server is running.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-107005 Error occurred when attempting to receive a JMS message	error	BW-Plug-in	An error occurs when receiving a JMS message.	Check the activity configuration, the JMS Connection shared resource, and whether the EMS server is running.
TIBCO-BW-PALETTE-SAP-107006 Error occurred when attempting to send a JMS message	error	BW-Plug-in	An error occurs when sending a JMS message.	Check the activity configuration, input data, JMS Connection shared resource, and whether the EMS server is running.
TIBCO-BW-PALETTE-SAP-107007 Error occurred when attempting to resolve destination	error	BW-Plug-in	An error occurs when resolving the destination.	Check the JMS Connection shared resource and whether the EMS server is running.
TIBCO-BW-PALETTE-SAP-107008 Invalid configuration data. JMS connection reference is not specified.	error	BW-Plug-in	The JMS connection reference is not specified.	Check the activity configuration for the JMS Connection reference.
TIBCO-BW-PALETTE-SAP-108001 Posting the Acknowledgment IDoc to the client. TID=[{0}].	debug	BW-Plug-in	The plug-in is posting an acknowledgment IDoc to the client.	None.
TIBCO-BW-PALETTE-SAP-108002 For IDoc=[{0}] posted the Acknowledgment IDoc to the client. TID=[{1}].	debug	BW-Plug-in	The acknowledgment IDoc with TID=[{1}] for IDoc=[{0}] is posted to the client.	None.
TIBCO-BW-PALETTE-SAP-108003 Error occurred when posting an acknowledgment to IDoc [{0}] to SAP, error message=[{1}]	error	BW-Plug-in	The error [{1}] occurs when posting an acknowledgment to the IDoc [{0}] to the SAP system.	None.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-108005 Both the <code>successMessage</code> and the <code>errorMessage</code> are missing in the input data, will have no acknowledgment sent back to SAP, the Acknowledgment to the IDoc [{0}] will be skipped.	debug	BW-Plug-in	Both the successMessage and the errorMessage items are missing in the input data, and no acknowledgment is sent back to the SAP system. The acknowledgment to IDoc [{0}] is to be skipped.	None.
TIBCO-BW-PALETTE-SAP-109001 Received message from the queue [{0}]. TID = [{1}], The correlationID = [{2}].	debug	BW-Plug-in	The information about the IDoc confirmation message from the queue [{0}] is displayed.	None.
TIBCO-BW-PALETTE-SAP-109002 Successfully invoked function [{0}]. TID = [{1}], IDoc Number = [{2}].	debug	BW-Plug-in	The IDoc number related to the TID = [{1}] is returned by invoking function [{0}] successfully.	None.
TIBCO-BW-PALETTE-SAP-109003 Successfully invoked function [{0}]. IDoc Number = [{1}], IDoc status = [{2}].	debug	BW-Plug-in	The IDoc status for the IDoc with IDoc number being [{1}] is returned by invoking function [{0}] successfully.	None.
TIBCO-BW-PALETTE-SAP-109004 Received message from the queue [{0}]. The correlationID is [{1}]. The error message is [{2}].	debug	BW-Plug-in	The IDoc Confirmation activity receives a confirmation message with the error message [{2}] from the queue [{0}] with JMS correlation ID being [{1}]. The error message includes information related to the reason the IDoc fails to be sent to the SAP server.	Check the structure of the IDoc that fails to be sent to the SAP server.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-109006 On exception in IDoc Confirmation from AbstractJmsReceive. Started value is [{0}].	debug	BW-Plug-in	The status [{0}] of JMS is displayed when an exception is returned from JMS in the IDoc Confirmation activity.	Check the JMS Connection shared resource and whether the EMS server is running.
TIBCO-BW-PALETTE-SAP-109007 Acknowledged the message with the ID [{0}] from the queue [{1}].	debug	BW-Plug-in	The confirmation message is confirmed from the queue [{1}] with JMS correlation ID being [{0}].	None.
TIBCO-BW-PALETTE-SAP-109008 Acknowledged the message with the ID [{0}] from the queue [{1}].	debug	BW-Plug-in	The information about the output of the IDoc Confirmation activity is displayed.	None.
TIBCO-BW-PALETTE-SAP-109009 JMS Exception occurred, the error message is [{0}].	error	BW-Plug-in	The error [{0}] occurs when trying to confirm the message but the JMS is not in an appropriate state.	Check the JMS Connection shared resource and whether the EMS server is running.
TIBCO-BW-PALETTE-SAP-109010 IDoc sent to SAP via qRFC. IDoc number is unavailable. The original TID is [{0}].	debug	BW-Plug-in	The original TID [{0}] is displayed in the IDoc Confirmation activity if the IDoc is sent to the SAP server through qRFC by the IDoc Reader activity.	None.
TIBCO-BW-PALETTE-SAP-109011 RFC function execution failure : {0}; function name : [{1}].	error	BW-Plug-in	The error [{0}] occurs if an exception is returned from the SAP server when invoking the function [{1}].	Check whether the IDoc exists on the SAP server.
TIBCO-BW-PALETTE-SAP-201001 {0}	debug	BW-Plug-in	The input of the Job Data view is displayed.	None.
TIBCO-BW-PALETTE-SAP-201002 {0}	debug	BW-Plug-in	The output of the Job Data view is displayed.	None.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-201003 {0}	debug	BW-Plug-in	The data in the console is displayed.	None.
TIBCO-BW-PALETTE-SAP-201004 JCo Attributes {0}	trace	BW-Plug-in	JCo attributes are displayed.	None.
TIBCO-BW-PALETTE-SAP-201005 Dynamic connection {0} is closed.	trace	BW-Plug-in	The dynamic connection is closed.	None.
TIBCO-BW-PALETTE-SAP-201007 Context timeout for transaction is {0} ms	trace	BW-Plug-in	The context of the transaction times out.	None.
TIBCO-BW-PALETTE-SAP-201008 Context Timeout for transaction context in dynamic connection activity either contains no or invalid value, value defaulted to 30000ms{0}	trace	BW-Plug-in	The context of the transaction times out. No value or an invalid value is specified for the contextTimeout input item of the Dynamic Connection activity. The default value of 30000 milliseconds is used.	None.
TIBCO-BW-PALETTE-SAP-201009 Reply to RFC/BAPI Listener Activity: {0}, Job ID: {1}, CPIC Conversation ID: {2}	debug	BW-Plug-in	Displays the Job ID and CPIC Conversation ID of the RFC/BAPI Listener activity.	None.
TIBCO-BW-PALETTE-SAP-202001 Received a message in the RAW format. IDoc Number = [{0}].	debug	BW-Plug-in	An IDoc message in raw format is received.	None.
TIBCO-BW-PALETTE-SAP-202002 Received a message in the XML format. IDoc Number = [{0}].	debug	BW-Plug-in	An IDoc message in XML format is received.	None.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-202003 Posting the IDoc to the client. TID=[{0}], IDoc Input Mode=[{1}].	debug	BW-Plug-in	An IDoc is being posted to the client.	None.
TIBCO-BW-PALETTE-SAP-202004 Posted the IDoc to the client. TID=[{0}].	debug	BW-Plug-in	An IDoc is posted to the client.	None.
TIBCO-BW-PALETTE-SAP-202005 The transaction is confirmed. The TID is [{0}].	debug	BW-Plug-in	The transaction of posting an IDoc to the SAP system is confirmed.	None.
TIBCO-BW-PALETTE-SAP-202006 Confirmation report has been published on the queue [{0}].	debug	BW-Plug-in	A confirmation report is published in the confirmation queue [{0}].	None.
TIBCO-BW-PALETTE-SAP-203001 Received the message of IDoc from the queue [{0}]. IDoc Name=[{1}], IDoc Number=[{2}]	debug	BW-Plug-in	An IDoc message is received from the queue [{0}].	None.
TIBCO-BW-PALETTE-SAP-203002 Acknowledged the message with the ID [{0}] from the queue [{1}].	debug	BW-Plug-in	The received message with the ID [{0}] is acknowledged.	None.
TIBCO-BW-PALETTE-SAP-203003 Posting the IDoc to the client. TID=[{0}], IDoc Input Mode=[{1}].	debug	BW-Plug-in	An IDoc is being posted to the client.	None.
TIBCO-BW-PALETTE-SAP-203004 Posted the IDoc to the client. TID=[{0}].	debug	BW-Plug-in	An IDoc is posted to the client.	None.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-203005 The transaction is confirmed. The TID is [{0}].	debug	BW-Plug-in	The transaction of posting an IDoc to the SAP system is confirmed.	None.
TIBCO-BW-PALETTE-SAP-203006 On exception in IDoc Reader from AbstractJmsReceive. Started value is [{0}].	debug	BW-Plug-in	An exception is returned from AbstractJmsReceive.	None.
TIBCO-BW-PALETTE-SAP-203007 On stop in IDoc Reader from AbstractJmsReceive. Started value is [{0}].	debug	BW-Plug-in	The stop method is invoked by AbstractJmsReceive.	None.
TIBCO-BW-PALETTE-SAP-203008 Confirmation report has been published on the queue [{0}].	debug	BW-Plug-in	A confirmation report is published in the confirmation queue [{0}].	None.
TIBCO-BW-PALETTE-SAP-203009 Received a message in the RAW format. IDoc Number = [{0}].	debug	BW-Plug-in	An IDoc message in raw format is received.	None.
TIBCO-BW-PALETTE-SAP-203010 Received a message in the XML format. IDoc Number = [{0}].	debug	BW-Plug-in	An IDoc message in XML format is received.	None.
TIBCO-BW-PALETTE-SAP-203011 The connection to EMS server has been established.	debug	BW-Plug-in	The connection to the EMS server has been established.	None.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-203012 The segment instance {0} does not contain attribute {1}	debug	BW-Plug-in	The attribute is absent in the segment instance, see log for details.	None.
TIBCO-BW-PALETTE-SAP-203013 The default values will be used	debug	BW-Plug-in	Show default value is used as attribute is absent in the segment instance.	None.
TIBCO-BW-PALETTE-SAP-203014 Segment name: {0} added	debug	BW-Plug-in	Show the segment name added for EDI_DD40, see log for details.	None.
TIBCO-BW-PALETTE-SAP-204001 Received message IDoc Number = [{0}].	debug	BW-Plug-in	Received message IDoc Number = [{0}].	None.
TIBCO-BW-PALETTE-SAP-204002 Received message IDoc Name = [{0}].	debug	BW-Plug-in	Received message IDoc Name = [{0}].	None.
TIBCO-BW-PALETTE-SAP-204003 Doc XML parsing with Input mode = [{0}].	debug	BW-Plug-in	IDoc XML parsing with Input mode = [{0}].	None.
TIBCO-BW-PALETTE-SAP-204004 Input IDoc XML parsed successfully.	debug	BW-Plug-in	Input IDoc XML parsed successfully.	None.
TIBCO-BW-PALETTE-SAP-206001	debug	BW-Plug-in	Input received message type and IDoc number to IDocConverter after parsing	None
TIBCO-BW-PALETTE-SAP-401001 Unable to convert string "{0}" to {1} for {2} in {3}, data suppressed.	warn	BW-Plug-in	The string {0} in the {2} field cannot be converted to the data type {1} in the {3} tab.	Check the field configuration.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-500001 Invalid SAP Connection reference. SAP Connection is not specified.	error	BW-Plug-in	The SAP connection is not specified for the activity.	Specify the SAP connection for the activity.
TIBCO-BW-PALETTE-SAP-500002 Invalid Server Connection reference or Server Connection is disabled. Please pick a enabled sever connection.	error	BW-Plug-in	The server connection reference is invalid, or the server connection is disabled.	Select an enabled server connection.
TIBCO-BW-PALETTE-SAP-500003 Cannot get server connection {0}	error	BW-Plug-in	Using the server connection {0} fails.	Check the server connection parameter.
TIBCO-BW-PALETTE-SAP-500004 {0}	error	BW-Plug-in	Initializing the RFC BAPI Listener activity fails.	Check the program ID, gateway service, or gateway host in the SAP connection.
TIBCO-BW-PALETTE-SAP-500005 {1}	error	BW-Plug-in	Failed to dump IDoc to file.	Check the specific error message.
TIBCO-BW-PALETTE-SAP-500006 Invalid Client Connection reference. Please check your connection configuration.	error	BW-Plug-in	Invalid Client Connection reference.	Check your connection configuration.
TIBCO-BW-PALETTE-SAP-501002 Context timeout is Zero, cannot continue RFC invoke in context	error	BW-Plug-in	The timeout value of the context is zero.	Reset the timeout value for the context.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-501003 Invalid Connection for pool {0}	error	BW-Plug-in	The connection to the connection pool {0} is invalid.	Check the connection parameters.
TIBCO-BW-PALETTE-SAP-501007 Cannot find transaction with SessionID: {0} to Continue.	error	BW-Plug-in	Finding the transaction with the session ID {0} fails.	Check the session ID.
TIBCO-BW-PALETTE-SAP-501009 Request Response error. ErrorMessage : {0}	error	BW-Plug-in	The error {0} occurs when the RFC/BAPI request fails.	Check the configuration parameters.
TIBCO-BW-PALETTE-SAP-501010 The transaction committed failure for RFC function : {0} errorMessage: {1}	error	BW-Plug-in	The error {1} occurs when the transaction of the function {0} fails to be committed.	Check the configuration parameters.
TIBCO-BW-PALETTE-SAP-501011 RFCBAPI Listener error. Timeout waiting for reply, Function: {0}.	error	BW-Plug-in	The response of the function {0} times out.	Check the configuration parameters.
TIBCO-BW-PALETTE-SAP-501013 Request Response error. errorMessage : {0}	error	BW-Plug-in	The error {0} occurs when failing to find the function in the SAP system.	Check the function configuration.
TIBCO-BW-PALETTE-SAP-501014 RFC error encountered and AutoCommit would be skipped for RFC function : {0} error: {1}	error	BW-Plug-in	The error {1} occurs, and the function module {0} can skip the automatic commit.	Check whether the return TYPE is "S" or " " or "I" in the case of the associated TYPE starting with "BAPIRET" from EXPORT parameters and TABLE parameters on the SAP server.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-501015 Transaction with SessionID: {0} timed out.	error	BW-Plug-in	The transaction with the session ID {0} times out.	Check the earlier error messages in the log file.
TIBCO-BW-PALETTE-SAP-501016 {0}	error	BW-Plug-in	Reconnecting to the SAP system fails.	Check connection parameters and the network connectivity.
TIBCO-BW-PALETTE-SAP-501017 There is an empty string or invalid character at the attribute of connection type. {0}	error	BW-Plug-in	An empty string or invalid character exists in the value of the connectionType input element.	Check the value of the connectionType input element.
TIBCO-BW-PALETTE-SAP-501018 Created Dynamic connection failed. -{0}	error	BW-Plug-in	Creating a dynamic connection fails.	None.
TIBCO-BW-PALETTE-SAP-501020 SessionID Invalid, please check whether mapping it.	error	BW-Plug-in	The session ID of the Dynamic Connection activity is invalid.	Check the value of the seeionID input element.
TIBCO-BW-PALETTE-SAP-501021 Unexpected scene. {0}	error	BW-Plug-in	An unexpected scene happens.	None.
TIBCO-BW-PALETTE-SAP-501022 Connection Error due to Invalid logon credentials. Unable to create a connection with the target application {0} using connection parameters {1} and the target application error is {2}	error	BW-Plug-in	Indicates the error specific to invalid credentials	Indicates the error specific to invalid credentials

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-502001 Error in posting IDOC. ErrorMessage : {0}	error	BW-Plug-in	The error {0} occurs in Post IDoc to SAP activity while posting the IDoc.	None.
TIBCO-BW-PALETTE-SAP-502002 Error occurred when trying to send the confirmation message. The error message is [{0}].	error	BW-Plug-in	The error {0} occurs when trying to send the confirmation message.	None.
TIBCO-BW-PALETTE-SAP-502003 Error occurred when initialization. The error message is [{0}].	error	BW-Plug-in	The error [{0}] occurs when initializing the Post IDoc to SAP activity.	None.
TIBCO-BW-PALETTE-SAP-502004 Error occurred when initialize the confirmation IDoc destination [{0}]. The error message is [{1}].	error	BW-Plug-in	The error {1} occurs when initializing the confirmation IDoc destination [{0}].	Please check that the EMS server is up and running and destinations are allowed to be created on it
TIBCO-BW-PALETTE-SAP-502005 Could not find the mandatory property EDI_DC40 in the message.	error	BW-Plug-in	The mandatory property EDI_DC40 cannot be found in the message.	Provide input to mandatory input field in the EDI_DC40 section of input
TIBCO-BW-PALETTE-SAP-503001 Sent the message to the error destination [{0}], due to the error [{1}].	error	BW-Plug-in	An IDoc is sent to the error destination [{0}] because of the error [{1}].	None.
TIBCO-BW-PALETTE-SAP-503002 Error occurred when initialization. The error message is [{0}].	error	BW-Plug-in	The error [{0}] occurs when initializing the IDoc Reader activity.	None.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-503003 Could not find the mandatory property EDI_DC40 in the message.	error	BW-Plug-in	The mandatory property EDI_DC40 cannot be found in the message.	Provide input to mandatory input field in the EDI_DC40 section of input
TIBCO-BW-PALETTE-SAP-503004 Error occurred when getting JCo attributes. The error message is [{0}].	error	BW-Plug-in	The error {0} occurs when getting JCo attributes.	None.
TIBCO-BW-PALETTE-SAP-503005 Error occurred when initialize the error IDoc destination [{0}]. The error message is [{1}].	error	BW-Plug-in	The error {1} occurs when initializing the error IDoc destination [{0}].	Please check that the ems server is up and running and destinations are allowed to be created on it
TIBCO-BW-PALETTE-SAP-503006 Error occurred when initialize the confirmation IDoc destination [{0}]. The error message is [{1}].	error	BW-Plug-in	The error {1} occurs when initializing the confirmation IDoc destination [{0}].	Please check that the ems server is up and running and destinations are allowed to be created on it
TIBCO-BW-PALETTE-SAP-503007 Error occurred when trying to send the confirmation message. The error message is [{0}].	error	BW-Plug-in	The error {0} occurs when trying to send the confirmation message.	None.
TIBCO-BW-PALETTE-SAP-503008 Application will try to establish the connection in 3 seconds.	error	BW-Plug-in	The plug-in tries to establish the connection in 3 seconds.	None.

Error Code and Error Message	Role	Category	Description	Solution
TIBCO-BW-PALETTE-SAP-503009 Error occurred during the inbound process, the error = [{0}]	error	BW-Plug-in	IDoc Reader generic Error.	None.
TIBCO-BW-PALETTE-SAP-503010 Sent message to the error destination {0}. {1}.	error	BW-Plug-in	Indicates the mismatch error occurs.	None.
TIBCO-BW-PALETTE-SAP-504001 Error in preparing raw IDOC. ErrorMessage : {0}.	error	BW-Plug-in	Unexpected errors while parsing XML IDoc.	Please check the XML data.
TIBCO-BW-PALETTE-SAP-504002 Error occurred when initialization. The error message is [{0}].	error	BW-Plug-in	Error while initializing the IDoc Renderer.	Please check the connection parameters, initialization parameters.
TIBCO-BW-PALETTE-SAP-505001 Failed to create connection to the KAFKA server. Check SAP Connection shared resource's 'Message Source Configuration' tab and if the KAFKA server is running.	error	BW-Plug-in	Indicates that Kafka server is not running.	None
TIBCO-BW-PALETTE-SAP-505002 Error occurred while sending IDoc to Kafka Server. The error message is [{0}].	error	BW-Plug-in	Indicates there was some problem in sending IDoc to Kafka server and detailed error message is: {0}.	None
TIBCO-BW-PALETTE-SAP-506001	error	BW-Plug-in	Throws error when invalid IDoc Received other than configured	Verify and set the correct IDoc xpath expression to process correct IDoc's

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