

# **TIBCO ActiveMatrix® Adapter for SAP (TIBCO Business Studio™) User's Guide**

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# TIBCO Documentation and Support Services

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

<https://docs.tibco.com>

## Product-Specific Documentation

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

`TIBCO_HOME/release_notes/TIB_adr3bs_version_number_docinfo.html`

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

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

- *TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) Installation*
- *TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) User's Guide*
- *TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) Examples*
- *TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) Release Notes*

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

<http://www.tibco.com/services/support>

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Entry to this site requires a user name and password. If you do not have a user name, you can request one.

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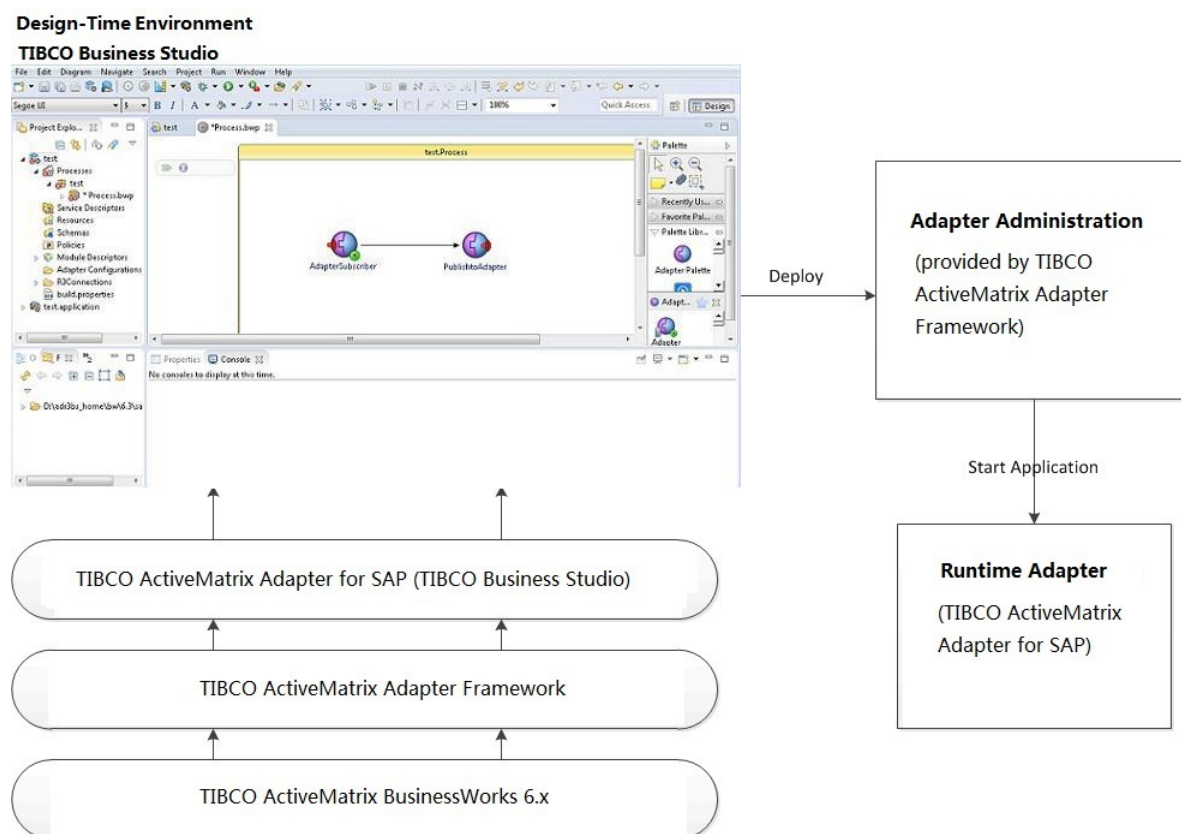
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# Product Overview

TIBCO ActiveMatrix® Adapter for SAP (TIBCO Business Studio™) provides a design-time environment to configure adapter configurations and TIDManager configurations in TIBCO Business Studio™.

The following figure shows how TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) works with other TIBCO products:



- TIBCO ActiveMatrix BusinessWorks™ is an integration product suite for enterprise, web, and mobile applications. You can create services and integrate applications using a visual, model-driven development environment, and then deploy them at run time.
- TIBCO Business Studio is the Eclipse graphical user interface (GUI) used by TIBCO ActiveMatrix BusinessWorks to design business processes, run processes and generate deployable artifacts in the form of archive files.
- TIBCO ActiveMatrix Adapter® Framework provides a visual, model-driven development environment for configuring supported TIBCO Adapters in TIBCO Business Studio and integrating them with TIBCO ActiveMatrix BusinessWorks 6 applications and processes. It also provides administration capabilities for deploying TIBCO Adapters to runtime environments.

- Adapter Administration

Adapter Administration provides a centralized administrative command-line console to manage and monitor the adapter applications deployed in an enterprise.

- Adapter Palette

Adapter Palette provides a set of activities to communicate with the configured TIBCO Adapters.



- TIBCO ActiveMatrix Adapter® for SAP enables SAP systems to seamlessly integrate with the rest of the enterprise in a TIBCO environment, to reach partners beyond the enterprise, and to connect with other enterprises. It is the runtime component of TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio).

After installing TIBCO ActiveMatrix Adapter Framework, the Adapter palette and Adapter Administration component become available. The Adapter palette contains activities for communicating with configured TIBCO Adapter services. You can add activities and design business processes in TIBCO Business Studio. The configurations of all the features are similar to TIBCO ActiveMatrix Adapter for SAP. When you run adapter configurations, activities are executed as part of the TIBCO ActiveMatrix BusinessWorks process execution, and TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) calls for the runtime properties in TIBCO ActiveMatrix Adapter for SAP.



The concept of *adapter configuration* in TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) has the same meaning as that of *adapter instance* in TIBCO ActiveMatrix Adapter for SAP.

# Preparing the SAP System

Before configuring adapter configurations, ensure the SAP adapter gets the authorization to extract metadata from the SAP system at design time, and the SAP system can message with the TIBCO environment at run time.

## Preparing an SAP Account

You must have a valid SAP account to access the SAP system that the SAP adapter integrates with.

To ensure that the SAP adapter can use your SAP account to seamlessly integrate with SAP systems, your SAP account must meet the following requirements:

- The SAP account has the access to a dedicated SAP application server. The valid user name and password of your account are required to extract metadata for BAPIs, RFCs, and IDocs by using TIBCO Business Studio.
- The SAP account has the authorization from the SAP system administrator to execute RFCs and access tables in the SAP system.
- The SAP account has the privilege to execute the following SAP Function Groups:
  - EDIMEXT
  - RFC1
  - SDIFRUNTIME
- If you want to use different connection parameters at design time and run time for an inbound adapter configuration, obtain corresponding connection parameters.



IDoc/RFC/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.

## Preparing Inbound and Outbound Messaging

To enable outbound and inbound messaging with the TIBCO Environment, you have to configure them in the SAP system first.

### Inbound Messaging

To enable inbound messaging at run time, ensure that you implement the following configurations in the SAP system:

- Configurations of Invoking RFC/BAPIs from the TIBCO Environment
  1. To use an adapter configuration to invoke RFC/BAPIs in the SAP system, ensure your account has the authorization to invoke RFC/BAPIs.
 

Authorization for each business activity has to be given to the SAP client if the activity is performed by using an adapter configuration. For example, if you configure an inbound adapter configuration to create sales orders in the SAP system, the SAP client needs all the required permissions to create a sales order.
  2. Validate the authorizations in SAP GUI by running the transaction SE37 without specifying a destination.
- Configurations of Publishing IDocs from the TIBCO Environment
  1. Create a logical system for adapter configurations. See [Create a logical system for the adapter](#) for details.

2. Create a distribution model. See [Create a distribution model](#) for details.
3. Define a partner profile. See [Define a partner profile](#) for details.

## Outbound Messaging

To enable outbound messaging at run time, ensure that you implement the following configurations in the SAP system:

- Configurations of Invoking RFC/BAPIs from the SAP System
  1. Define an RFC destination in the SAP system. See [Define an RFC destination in the SAP system](#) for details.  
 After creating an RFC destination, map it to a program ID. Outbound adapter configurations are registered on the SAP gateway with this program ID. Therefore, outbound adapter configurations can receive RFC/BAPIs invoked on the RFC destination.
  2. Ensure that your SAP account is authorized to execute RFC/BAPIs.
- Configurations of Publishing IDocs from the SAP System
  1. Create a logical system for adapter configurations. See [Create a logical system for the adapter](#) for details.
  2. Establish the customer distribution model. See [Establish the customer distribution model](#) for details.
  3. Configure RFC communication.
  4. Test the SAP ALE configuration. In the SAP system, run a transaction for customer data to send IDocs to the logical system created in [step 1](#).



You can customize all required SAP ALE outbound configurations by running the transaction code. For more detailed information, see *SAP Implementation Management Guide*.

# Getting Started

This tutorial is designed for beginners who want to configure an SAP adapter.

All the operations are done in TIBCO Business Studio. See [TIBCO Business Studio Overview](#) to get familiar with TIBCO Business Studio.

Before using the adapter for development, ensure that you have prepared the SAP system. See [Preparing the SAP System](#) for details.

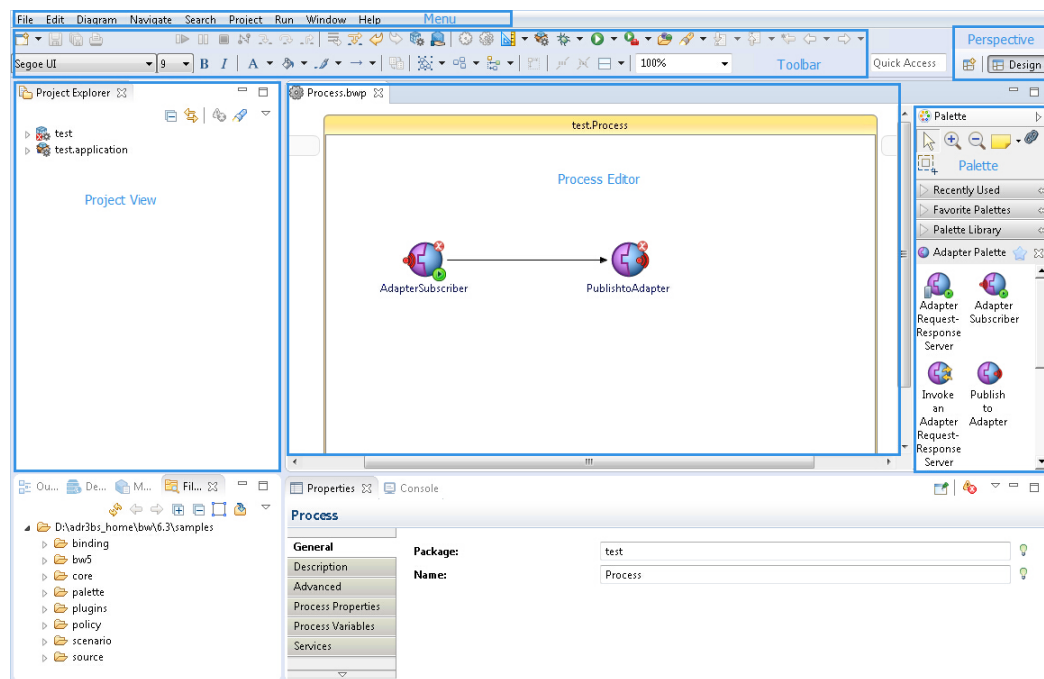
A basic procedure of configuring an SAP adapter is as follows:

1. [Creating a project](#)
2. [Creating and Configuring an Adapter Configuration](#)
3. [Adding an Adapter Service](#)
4. [Starting an Adapter Configuration](#)








## TIBCO Business Studio Overview

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

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



The workbench consists of:

- **Menu:** contains menu items such as File, Edit, Diagram, Navigate, Search, Project, Run, Window, and Help.
- **Toolbar:** contains buttons for frequently used commands such as New , Save , Enable/Disable Business Studio Capabilities , Create a new BusinessWorks Application Module , Create a new BusinessWorks Shared Module , Debug , Run , and so on.

- **Perspective:** contains an initial set and layout of views that are required to perform a certain task. TIBCO Business Studio launches the Modeling perspective by default. You can change the perspective from the menu **Window > Open Perspective > Perspective\_Name**.
- **View:** displays resources. For example, the Project Explorer view displays the ActiveMatrix BusinessWorks applications, modules, and other resources in your workspace, and the Properties view displays the properties for the selected resource. You can open a view from the menu **Window > Show View > View\_Name**.
- **Editor:** provides a canvas to configure, edit, or browse a resource. Double-click a resource in a view to open the appropriate editor for the selected resource. For example, double-click an ActiveMatrix BusinessWorks process (`MortgageAppConsumer.bwp`) in the Project Explorer view to open the process in the editor.
- **Palette:** contains a set of widgets and a palette library. A *palette* groups activities that perform similar tasks, and provides quick access to activities when configuring a process.

## Creating a Project

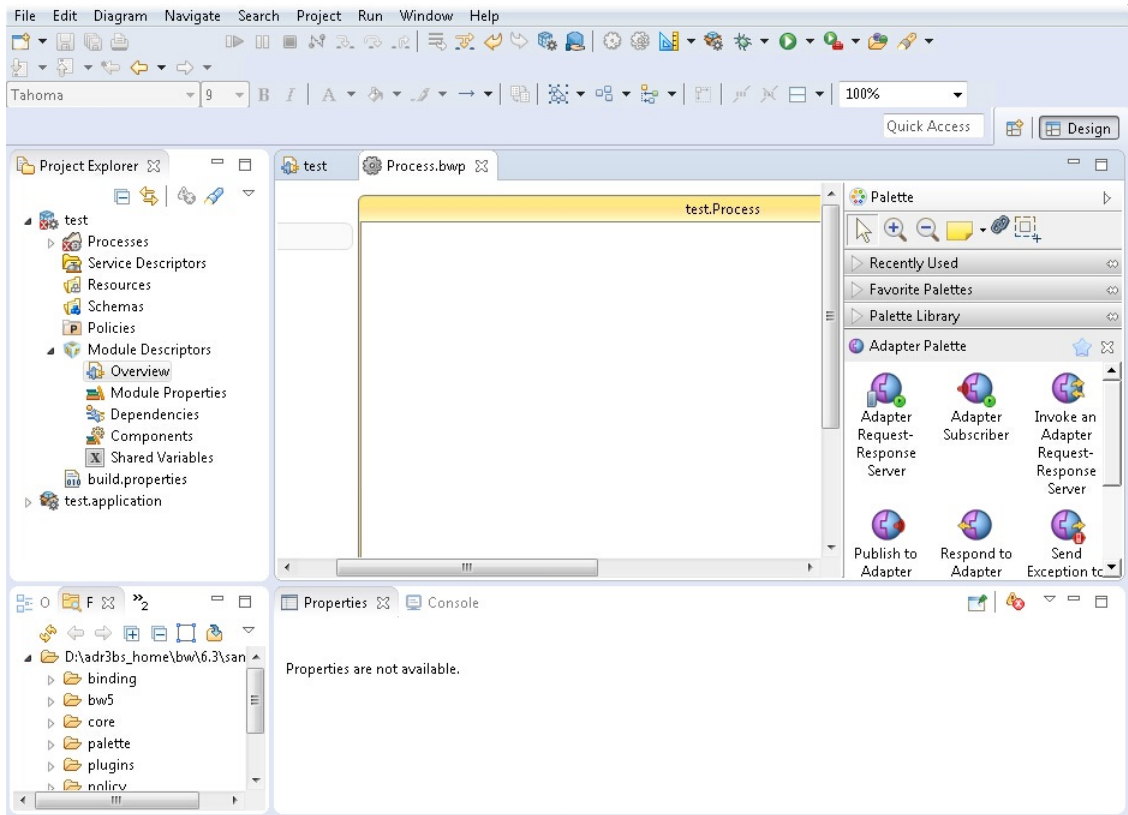
The first task using the adapter is creating a project. After creating a project, you can add adapter configurations, resources, and processes.

### 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**.
  - UNIX: run the TIBCO Business Studio executable file located in the `TIBCO_HOME/studio/version_number/eclipse` directory.
2. From the menu, click **File > New > BusinessWorks Resources** to open the BusinessWorks Resource wizard.
3. In the "Select a wizard" dialog, click **BusinessWorks Application Module** and click **Next** to open the New BusinessWorks Application Module wizard.
4. In the Project dialog, configure the project that you want to create:
  - a) In the **Project name** field, enter a project name.
  - b) By default, the project that is created is located in the workspace, which is currently in use. If you do not want to use the default location for the project, clear the **Use default location** check box and click **Browse** to select a new location.
  - c) Use the default version of the application module, or enter a new version in the **Version** field.
  - d) Keep the **Create empty process** and **Create Application** check boxes selected to automatically create an empty process and an application when creating the project.
  - e) Select the **Use Java configuration** check box if you want to create a Java module.  
A Java module provides Java tooling capabilities.
  - 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 Adapter Configuration

After creating a project, you have to create and configure an adapter configuration to store all the configuration information.

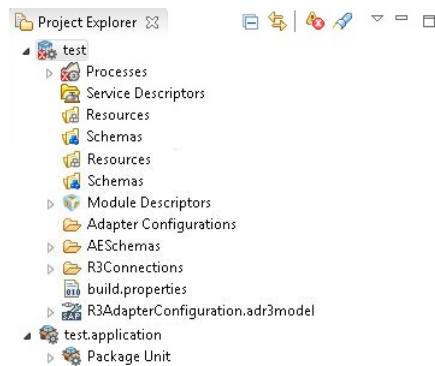
### Prerequisites

Ensure that you have created a project. See [Creating a Project](#) for details.

### Procedure

1. Right-click the project that you created and click **New > Other** to open the New wizard.
2. In the "Select a wizard" dialog, select **TIBCO Adapters > Adapter for SAP > Adapter for SAP Configuration**, and then click **Next**.
3. Optional: In the Create new Adapter for SAP Configuration dialog, specify the adapter configuration name in the **File name** field.
4. Click **Finish**.

An adapter configuration is created in the project. The **Adapter Configurations**, **AESchemas** and **R3Connections** folders are also created automatically in the project.



5. In the Project Explorer view, expand the **Module Descriptors** folder and double-click **Module Properties**.
6. In the Module Properties editor, enter values for the following properties in the **User** tab:
  - **SAPAppServer**  
The network name of the machine that hosts SAP applications
  - **SAPClient**  
The SAP client number
  - **SAPSystemNumber**  
The SAP system number
  - **SAPUserName**  
The user name to log on to a specific SAP client
  - **SAPPassword**  
The valid password corresponding to a user name
7. Click **Save**.
8. In the Adapter for SAP Configuration editor, click **Test Connection** in the Default Client Connection panel to validate the client connection to the SAP system.

## Adding an Adapter Service

After configuring an adapter configuration, you can add an adapter service to communicate with the connected SAP system.

TIBCO ActiveMatrix Adapter for SAP provides the following four types of adapter services:


- Publication Service
- Subscription Service
- Request-Response Invocation Service
- Request-Response Service

In this tutorial, the Publication Service service is used as an example.

## Prerequisites

Ensure that you have created and configured an adapter configuration in the project. See [Creating and Configuring an Adapter Configuration](#) for details.

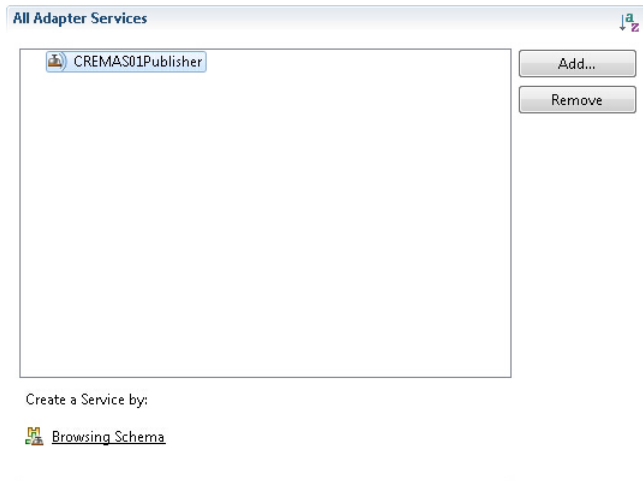
## Procedure

1. In the Adapter for SAP Configuration editor, click the **Adapter Services** tab.
2. In the All Adapter Services panel, click **Add** to open the Create Service wizard.
3. In the Adapter Service General Configuration dialog, select **Publication** from the **Service Type** list. Click **Next**.
4. In the Schema dialog, click  to open the Schema Picker window.
5. In the **Remote Business Object** tab, click **Create a Destination** to open the Created Destination window.
6. Enter values for the following fields:
  - **Destination Name**  
A unique name for the destination
  - **Application Server**  
The network name of the machine that hosts the SAP application server
  - **System Number**  
The SAP system number
  - **Client**  
The SAP client number
  - **User name**  
The valid user name to log on to the specified SAP client
  - **Password**  
The valid password corresponding to the user name
7. Click **Test Connection** to validate the connection to the SAP system, and then click **OK**.
8. From the **Destination** list, select the destination that you created.
9. In the **IDoc Filter** field, specify the IDoc filter to filter out the required schema object from the SAP system.  
  
The IDoc filter is used to restrict the number of IDoc schemas retrieved from the SAP system. The IDoc filter supports wildcard search.
10. Click the corresponding buttons to select the IDoc type and IDoc version.
11. Click **Fetch IDocs** to fetch schema objects from the SAP system.
12. Select the required schema object and click **OK**.
13. In the Schema dialog, click **Next**.
14. In the Transport Session dialog, the default transport session is selected. Click **Finish**.

## Result

A Publication Service service with the specified settings is added to the adapter configuration.





## Starting an Adapter Configuration

After you have completed all configuration work, you can start the adapter configuration to exchange data with the SAP system as designed.

### Prerequisites

Ensure that you have added adapter services for the adapter configuration. See [Adding an Adapter Service](#) for details.



If the adapter configuration uses the JMS transport type, you have to start the Enterprise Message Service (EMS) server first. For how to start the EMS server, see the TIBCO Enterprise Message Server documentation.

### Procedure

1. From the menu, click **Run > Run Configurations** to open the Run Configurations window.
2. Double-click **Adapter Launcher** to create an adapter launcher for the adapter configuration.
3. In the **Adapter Configuration** tab, click **Browse** next to the **Adapter Configuration** field to select the adapter configuration that you want to start.

After you select an adapter configuration that you want to start, the adapter launcher name displayed in the **Name** field is changed to *Project\_Name-AdapterConfiguration\_Name*.

4. Optional: Click **Browse** to select a directory to store the runtime information and support files. The default directory is *Work\_Space/.metadata/.plugins/com.tibco.adr3.ui*.



You can change the default directory by clicking **Windows > Preferences** from the menu, expanding **TIBCO Adapter > Adapter for SAP** in the Preferences window, and then specify the **Working Directory** field in the **General** tab.

5. Optional: Click **Apply** to store the configuration information in this adapter launcher.
6. Click **Run** to start the adapter configuration.

### Result

An adapter configuration is started. You can check the related information in the Console view.

# Working with Adapter Configurations

You can create an adapter configuration with adapter services to communicate with the SAP system.

After [creating an adapter configuration](#) within an application module, you can configure the adapter configuration by [adding adapter services](#), [adding log sinks](#), and [adding a connection](#).

## Adding Adapter Services

To define how an adapter configuration works with the SAP system, add adapter services to the adapter configuration.

When adding an adapter service, you have to select a business object schema to use in the service. You can use the Browsing Schema function to download the schema or select a schema from the remote repository. For details on how to fetch a schema, see [Working with Schemas](#).


### Prerequisites

Ensure that you have created and configured an adapter configuration in the project. See [Creating and Configuring an Adapter Configuration](#) for details.

### Procedure

1. Choose one of the following ways to open the Create Service wizard:
  - In the Adapter for SAP Configuration editor, click the **Adapter Services** tab, and then click **Add** in the All Adapter Services panel.
  - In the Project Explorer view, expand *Project\_Name > AdapterConfiguration\_Name > Adapter Services*, right-click **Adapter Services**, and then click **New Service**.


The default value of fields in the Create Service wizard are specified in the Preference window. For details on how to maintain the default values, see [Default Setting](#).

2. In the Adapter Service General Configuration dialog, select a service type from the **Service Type** list. Click **Next**.
3. In the Schema dialog, click  to select a schema. The SAP Business Object Schema Picker dialog is displayed.
4. If the required schema exists in the local workspace, select it in the **Local Business Object** tab and click **OK**.

In an adapter configuration, the combination of an adapter service and a schema is unique. For example, if you have added a Publication adapter service configured with the MATMA05 schema, you cannot have this same combination in the same adapter configuration.



If a schema that has been downloaded to the local workspace is changed in the SAP system, you have to download it again to update the change.

5. If the required schema does not exist in the local workspace, click the **Remote Business Object** tab to download a business object schema from the remote repository. Follow the steps in [Adding an Adapter Service](#).
6. In the Schema dialog, click **Next**.
7. In the Transport Session dialog, if you do not want to use the default transport session, click  to select a transport session in the Model Select window, and then click **OK**. If no matching transport sessions are found, you can first click **New** in the Model Select window to create one:
  - a) Enter a unique name for a transport session to be created.
  - b) Select a transport type from the **Transport Type** list, and then select a transport session.

c) Click **Finish**.

For more details about transport sessions, see [Sessions and Endpoints](#).



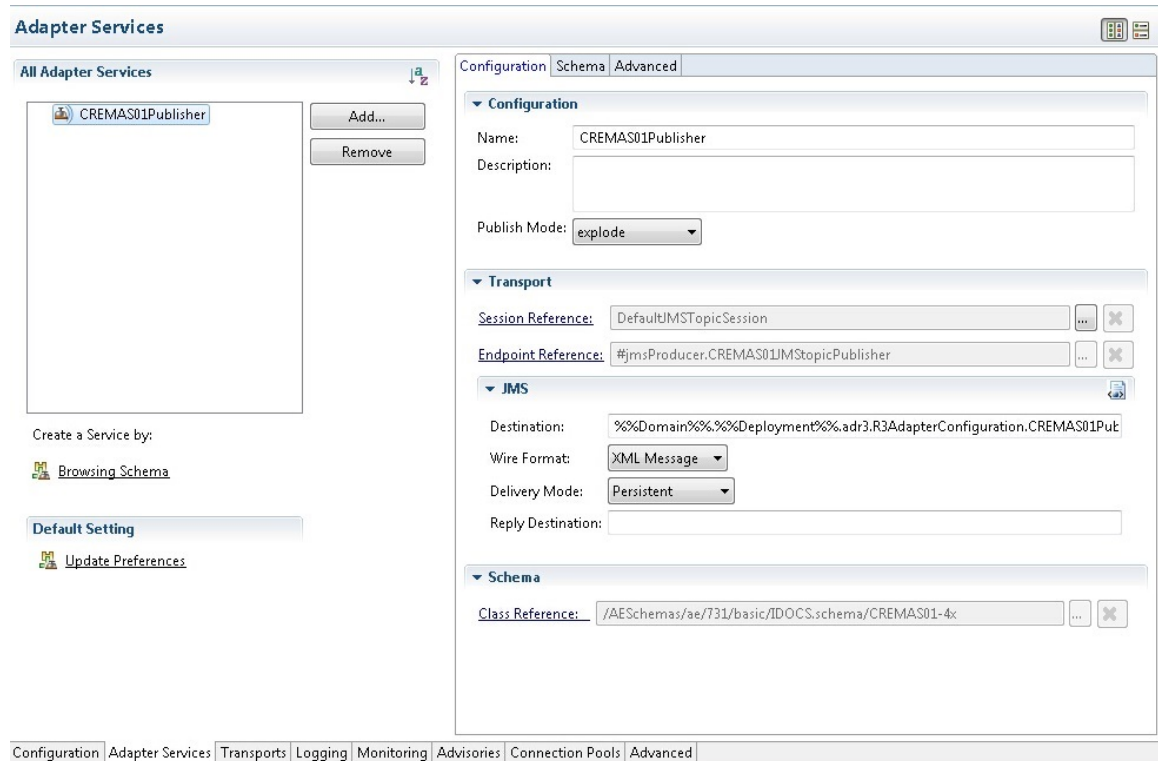
You can also add a required transport session in the [Transports Tab](#) before adding an adapter service.

8. In the Transport Session dialog, click **Finish** to add the configured adapter service.

9. If you want to add more adapter services, repeat steps [Step 2](#) to [Step 8](#).

## Result

The added adapter service is listed in the All Adapter Service panel.



## Adding Log Sinks

You can manage log sinks and their roles in the All Log Sinks panel of the **Logging** tab.

### Procedure

1. In the All Log Sinks panel of the **Logging** tab, click **Add** to open the New Log Sinks window.
2. Select a type of log sink, and then click **OK**.  
A error, a info, and a warn roles are added to the created log sink by default.
3. If you want to add a role to the log sink, select the log sink in the Configuration panel. Click **Add Role**, and then select a role type from the **Role** list.

# Adapter Configuration Reference

An adapter configuration in a project contains all configuration information required by the runtime adapter.

**Adapter for SAP Configuration**

This section describes general information about the adapter

Adapter Name:

Instance Id:

Description:

Message Filter:

**Getting Started**

- [Download Schema from SAP](#)
- [Configure Adapter Services](#)
- [Configure Connection Pools](#)

**Default Client Connection**

☒ Enabled

Connection Type:

Application Server:

System Number:

Client:

Username:

Password:

[Configure Advanced Options](#)

**Default Server Connection**

☒ Enabled

Connection Type:

Program ID:

Gateway Service:

Gateway Host:

[Configure Advanced Options](#)

Configuration | Adapter Services | Transports | Logging | Monitoring | Advisories | Connection Pools | Advanced

An adapter configuration contains the following tabs:

- [Configuration Tab](#)
- [Adapter Services Tab](#)
- [Transports Tab](#)
- [Logging Tab](#)
- [Monitoring Tab](#)
- [Advisories Tab](#)
- [Connection Pools Tab](#)
- [Advanced Tab](#)



The concept of *adapter configuration* in TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) has the same meaning as that of *adapter instance* in TIBCO ActiveMatrix Adapter for SAP.

## Configuration Tab

Use the **Configuration** tab to specify basic information about an adapter configuration, such as the default connections, and the adapter configuration name.

### Adapter for SAP Configuration

In the Adapter for SAP Configuration panel, you can specify an instance ID, a description, and message filter for the adapter configuration.

The following table lists the fields in the Adapter for SAP Configuration panel:

Field	Description
<b>Adapter Name</b>	The adapter name, SAPAdapter.
<b>Instance Id</b>	<p>A unique ID for the adapter configuration.</p> <p>The default ID is the one you specified when creating the adapter configuration.</p> <p>The following are rules when specifying an ID:</p> <ul style="list-style-type: none"> <li>• An instance ID must use alphanumeric characters. You can use underscore (_) characters, but you cannot use the space character. The entire instance name must be less than 80 characters.</li> <li>• An instance ID cannot use module properties.</li> <li>• An instance ID must be unique with respect to other adapter configurations in the same project.</li> </ul> <p>When you create an adapter configuration, TIBCO ActiveMatrix Adapter Framework automatically creates several resources for it. The names of these resources are derived from the ID of the configuration they belong to. Changing the adapter configuration ID results in an automatic regeneration of the resource names. If you manually modify any resource names, that particular name cannot be automatically regenerated when you rename the adapter configuration.</p>
<b>Description</b>	Enter a description for the adapter configuration.
<b>Message Filter</b>	<p>The filter that performs manipulations on incoming and outgoing messages before sending the messages to the network or handing them to a target application.</p> <p>You can write filters by using TIBCO® Adapter SDK. See <i>TIBCO Adapter SDK Programmer's Guide</i> for information about writing a message filter.</p>

## Getting Started

In the Getting Started panel, you can find the following links that bring you to the corresponding configuration panel:

Configuration Link	Description
<b>Download Schema from SAP</b>	<p>This link bring you to the Schema Browser view where you can manage and configure schemas for the adapter configuration.</p> <p>See <a href="#">Working with Schemas</a> for details.</p>
<b>Configure Adapter Services</b>	<p>This link bring you to the <b>Adapter Services</b> tab where you can manage and configure adapter services.</p> <p>See <a href="#">Adapter Service Reference</a> for details.</p>
<b>Configure Connection Pools</b>	<p>This link bring you to the <b>Connection Pools</b> tab where you can manage and configure connection pools.</p> <p>See <a href="#">Working with Connection Pools</a> for details.</p>





## Default Client Connection








In the Default Client Connection panel, you can find the basic settings of the default client connection that the inbound adapter configuration uses to set up connection with the SAP system. The default client connection and the associated connection pool are added by default when creating an adapter configuration and cannot be changed.

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

You can also click **Configure Advanced Options** to configure the related settings of the associated connection pool, such as the reconnecting parameters, the maximum number of SAP connections, and so on, in the **Connection Pools** tab. See [Connection Pools Tab](#) for details.

The following table lists the fields in the Default Client Connection panel:

Field	Description
<b>Enabled</b>	<p>This check box is selected by default, which indicates this client connection is enabled as the default one.</p> <div>  <p>You cannot clear this check box.</p> </div>
<b>Connection Type</b>	<p>The default client connection type. Select a connection type from the list:</p> <ul style="list-style-type: none"> <li>• <b>Dedicated Application Server</b> This option is selected by default.</li> <li>• <b>Load Balancing</b></li> <li>• <b>SNC</b></li> </ul> <p>For the more details about client connections, see <a href="#">Connection Pools Tab</a>.</p> <div>  <p>If you switch default client connection type in the <b>Configuration</b> tab, parameters for the client connection reference in the <b>Connection Pools</b> tab are automatically updated in accordance with the client connection type.</p> </div>
<b>Application Server</b>	<p>The network name of the machine that hosts SAP applications.</p> <div>  <p>This field is displayed only when you select <b>Dedicated Application Server</b> or <b>SNC</b> from the <b>Connection Type</b> list.</p> </div>
<b>System number</b>	<p>The number of the SAP systems that the adapter configuration connects to.</p> <div>  <p>This field is displayed only when you select <b>Dedicated Application Server</b> or <b>SNC</b> from the <b>Connection Type</b> list.</p> </div>

Field	Description
<b>System Name</b>	<p>The SAP/R3 system ID to be used with the load balancing connection.</p> <p>For example, to use the load balancing connection, the client machine initiating the request must have a service named <code>SAPmsSystem_Name</code> defined on the system. The default service value is 3600/tcp.</p> <p> This field is displayed only when you select <b>Load Balancing</b> from the <b>Connection Type</b> list.</p>
<b>Msg Server</b>	<p>The message server to be used with the load balancing connection.</p> <p> This field is displayed only when you select <b>Load Balancing</b> from the <b>Connection Type</b> list.</p>
<b>Logon Group Server</b>	<p>The SAP logon group server to be used with the load balancing connection.</p> <p>In the SAP system, names of logon groups are case sensitive. When starting multiple adapter configurations by using the same SAP logon group, you have to stagger the start times for adapter configurations.</p> <p> This field is displayed only when you select <b>Load Balancing</b> from the <b>Connection Type</b> list.</p>
<b>SNC Mode</b>	<p>The value of 1 indicates that the SNC connection is enabled.</p> <p>The value of 0 indicates that the SNC connection is disabled.</p> <p> This field is displayed only when you select <b>SNC</b> from the <b>Connection Type</b> list.</p>
<b>SNC Partername</b>	<p>The SNC name of the communication partner.</p> <p> This field is displayed only when you select <b>SNC</b> from the <b>Connection Type</b> list.</p>
<b>SNC QOP</b>	<p>The protection quality.</p> <ul style="list-style-type: none"> <li>• The value of 1 indicates that only authentication is applied.</li> <li>• The value of 2 indicates that the integrity protection is applied.</li> <li>• The value of 3 indicates that the privacy protection is applied.</li> <li>• The value of 8 indicates that the default protection is applied.</li> <li>• The value of 9 indicates that the maximum protection is applied.</li> </ul> <p> This field is displayed only when you select <b>SNC</b> from the <b>Connection Type</b> list.</p>
<b>SNC Lib</b>	<p>The library of the external security product.</p> <p> This field is displayed only when you select <b>SNC</b> from the <b>Connection Type</b> list.</p>
<b>Client</b>	The SAP client number.




Field	Description
<b>Username</b>	The valid user name used to log on to a specified SAP client.
<b>Password</b>	The valid password corresponding to the user name.

### Default Server Connection




In the Default Server Connection panel, you can find the basic settings of the default server connection that the outbound adapter configuration uses to set up connection with the SAP system. The default server connection and the associated connection pool are created by default when creating an adapter configuration and cannot be changed.

You can also click **Configure Advanced Options** to configure the related settings of the associated connection pool, such as the reconnecting parameters, the maximum number of SAP connections, and so on, in the **Connection Pools** tab. See [Connection Pools Tab](#) for details.

The following table lists the fields in the Default Server Connection panel:

Field	Description
<b>Enabled</b>	<p>This check box is selected by default, which indicates this server connection is enabled as the default one.</p>  You cannot clear this check box.
<b>Connection Type</b>	<p>The default server connection type.</p> <p>Select a connection type from the list:</p> <ul style="list-style-type: none"> <li>• <b>Default</b> This option is selected by default.</li> <li>• <b>SNC</b></li> </ul> <p>For details about server connections, see <a href="#">Connection Pools Tab</a>.</p>  If you switch default server connection type in the <b>Configuration</b> tab, parameters for the server connection reference in the <b>Connection Pools</b> tab are automatically updated in accordance with the server connection type.
<b>Program ID</b>	The program ID that identifies the RFC Server program for the SAP system.
<b>Gateway Service</b>	<p>The SAP gateway service.</p> <p>The default value is sapgw00.</p>
<b>Gateway Host</b>	The Gateway host name, IP address or router string.
<b>SNC Mode</b>	<p>The value of 1 indicates that the SNC connection is enabled.</p> <p>The value of 0 indicates that the SNC connection is disabled.</p>  This field is displayed only when you select <b>SNC</b> from the <b>Connection Type</b> list.



Field	Description
SNC QOP	<p>The protection quality.</p> <ul style="list-style-type: none"> <li>• The value of 1 indicates that only authentication is applied.</li> <li>• The value of 2 indicates that the integrity protection is applied.</li> <li>• The value of 3 indicates that the privacy protection is applied.</li> <li>• The value of 8 indicates that the default protection is applied.</li> <li>• The value of 9 indicates that the maximum protection is applied.</li> </ul> <p> This field is displayed only when you select <b>SNC</b> from the <b>Connection Type</b> list.</p>
SNC Myname	<p>The SNC name of the initiator.</p> <p> This field is displayed only when you select <b>SNC</b> from the <b>Connection Type</b> list.</p>
SNC Lib	<p>The library path of the external security product.</p> <p> This field is displayed only when you select <b>SNC</b> from the <b>Connection Type</b> list.</p>

## Adapter Services Tab

Use the **Adapter Service** tab to manage and configure adapter services in an adapter configuration.

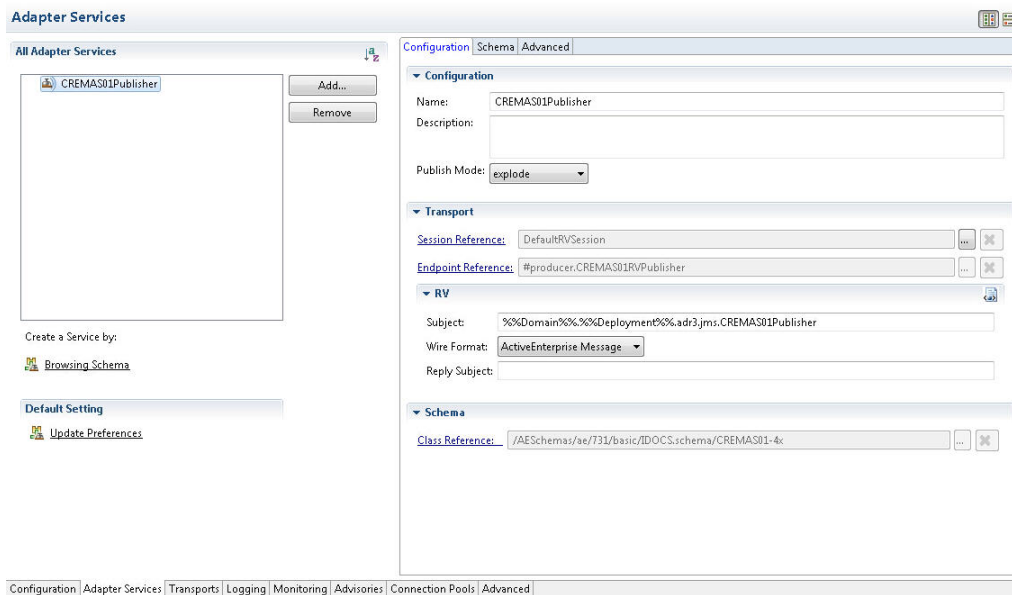
The SAP adapter provides four types of adapter services: Publication Service, Subscription Service, Request-Response Invocation Service, and Request-Response Service.

In the All Adapter Services panel, you can manage adapter services. Click **Add** to add an adapter service or click **Remove** to remove an adapter service. If you want to browse the schemas downloaded to the workspace, click **Browsing Schema**.

In the Default Setting panel, you can click **Update Preferences** to configure the predefined settings for adapter services.

By default, there is nothing in right panel. Only when you click an added adapter service, the configurations of the service are displayed in the right panel. In the displayed panel, you can configure an adapter service in the **Configuration** and the **Advanced** tabs, and browse the schema of the adapter service in the **Schema** tab.

For details on how to manage and configure adapter services, see [Adapter Service Reference](#).



## Transports Tab

Use the **Transports** tab to manage and configure transport sessions and endpoints for an adapter configuration.

### All Adapter Transports Panel

Use the All Adapter Transports panel to manage transport sessions and endpoints for an adapter configuration.

It is good practice to use the session and endpoint that are added by default when adding an adapter service to an adapter configuration, instead of adding new sessions and endpoints manually.

To add a transport session, click **Add**, and then complete the following tasks in the New Transport window:

1. In the **Transport Name** field, specify a unique name for the session to be added.
2. From the **Transport Type** list, select a transport type.
3. Select a connection factory type if the selected transport type is JMS, or select a type of quality of service if the selected transport type is RV.

For more details about transport sessions endpoints, see [Sessions and Endpoints](#).

4. Click **Finish**.

To add a endpoint to a session , you have to select the session and click **Add Endpoint**. In the New Endpoint window, select an endpoint type and click **OK**.

To remove a session or endpoint, select the one that you want to remove and click **Remove**.

## Configuration Panel




Use the JMS Configuration panel or Rendezvous Configuration panel to specify a session.

### JMS Configuration Panel

In the JMS Configuration panel, you can specify a session of the JMS transport type.

If the connection type is **Direct**, you can click **Test Connection** to validate the connection.

The following table lists the fields in the JMS Configuration panel:

Field	Description
<b>Name</b>	The session name.
<b>Description</b>	Enter a description for the session.
<b>Connection Type</b>	<p>The connection type.</p> <p>Select a connection type from the list:</p> <ul style="list-style-type: none"> <li>• <b>Direct</b> The connection is direct. This option is selected by default.</li> <li>• <b>JNDI</b> A JNDI Server is used.</li> </ul>
<b>Use SSL</b>	Not supported.
<b>Provider URL</b>	<p>The server URL.</p> <p> This field is displayed only when you select <b>Direct</b> from the <b>Connection Type</b> list.</p>
<b>Connection Factory</b>	<p>The type of connection factory.</p> <ul style="list-style-type: none"> <li>• For the JMS topic transport session, the type is <code>TopicConnectionFactory</code></li> <li>• For the JMS queue transport session, the type is <code>QueueConnectionFactory</code></li> </ul> <p> This field is displayed only when you select <b>Direct</b> from the <b>Connection Type</b> list.</p>
<b>JNDI Reference</b>	<p>The JNDI server information.</p> <p> This field is displayed only when you select <b>JNDI</b> from the <b>Connection Type</b> list.</p>
<b>Client ID</b>	The client ID.
<b>User Identity</b>	The detailed user information.

### Rendezvous Configuration Panel

In the Rendezvous Configuration panel, you can specify a session of the RV transport type.

The following table lists the fields in the Rendezvous Configuration panel:

Field	Description
<b>Name</b>	The session name.
<b>Description</b>	Enter a description for the session.

Field	Description
<b>Daemon</b>	The TIBCO Rendezvous® daemon.
<b>Network</b>	<p>The network for the transport.</p> <p>By default, the inherited module property is an empty string, which is interpreted as the primary network. When computers have more than one network interface, you must specify the inherited module property.</p>
<b>Service</b>	<p>The service for the transport.</p> <p>By default, the inherited module property is defined to be TIBCO Rendezvous service (7500).</p>
<b>Use SSL</b>	Not supported.
<b>Connection Type</b>	The connection type that you selected when creating the transport session.
The following fields are displayed only when the connection type is <b>Certified</b> :	
<b>CM name</b>	<p>The CM name used to identify the delivery tracking session.</p> <p>It must be unique across the entire network.</p>
<b>Ledger File</b>	The ledger file.
<b>Sync Ledger File</b>	<p>Select this check box to update the ledger file do not return until the changes are written to the storage medium.</p> <p>Clear this check box to write changes to the storage medium asynchronously.</p> <p>This check box is selected by default.</p>
<b>Replay Agent</b>	The relay agent for this transport.
<b>Require Old Message</b>	<p>Select this check box to make this transport require certified senders to retain unacknowledged messages sent to this persistent correspondent if the name attribute is non-null.</p> <p>This check box is selected by default.</p>
<b>Message Timeout (ms)</b>	<p>The maximum time in seconds that the call can be blocked while waiting for a reply.</p> <p>The default value is 0.</p>
The following fields are displayed only when the connection type is <b>Distributed Queue</b> :	
<b>CMQ name</b>	The CMQ name of the queue.

Field	Description
<b>Worker Weight</b>	<p>The relative worker weights that assist the scheduler in assigning tasks.</p> <p>When the scheduler receives a task, it assigns the task to the available listener with the greatest listener weight.</p> <p>The default value is 1.</p>
<b>Worker Tasks</b>	<p>The worker tasks.</p> <p>The default value is 1.</p>
<b>Worker Complete Time (ms)</b>	<p>The worker complete time in milliseconds.</p> <p>If the complete time elapses before the scheduler receives completion from the worker member, the scheduler reassigns the task to another worker member.</p> <p>The default value is 0, which indicates that the scheduler waits for a worker member to complete an assigned task.</p>
<b>Scheduler Weight</b>	<p>The scheduler weight.</p> <p>The value of a scheduler weight represents the ability of this session to fulfill the role of scheduler, relative to other members in the same queue. The queue members use relative scheduler weight values to elect one member as the scheduler. Members with a higher scheduler weight take precedence.</p> <p>The field of all member sessions in the queue must be specified with the same value. The available values are unsigned decimals.</p> <p>The default value is 1.</p>
<b>Scheduler Heartbeat (ms)</b>	<p>The amount of time in milliseconds that a scheduler session can send heartbeat messages.</p> <p>The field of all member sessions in the queue must be specified with the same value. The available values are unsigned decimals.</p> <p>The default value is 1000.</p>
<b>Scheduler Activation (ms)</b>	<p>The amount of time in milliseconds the heartbeat signal from a scheduler can be silent before the scheduler is replaced by the queue member with the greatest scheduler weight .</p> <p>The field of all member sessions in the queue must be specified with the same value. The available values are unsigned decimals.</p> <p>The default value is 3000.</p>

## EndPoint Configuration Panel

Use the EndPoint Configuration panel to configure an endpoint in a session.

For details about the configuration of different endpoints see the following links:



- [Publisher Endpoint Configurations in a JMS Session](#)
- [Subscriber Endpoint Configurations in a JMS Session](#)

- [Client Endpoint Configurations in a JMS Session](#)
- [Server Endpoint Configurations in a JMS Session](#)
- [Publisher Endpoint Configurations in a TIBCO Rendezvous Session](#)
- [Subscriber Endpoint Configurations in a TIBCO Rendezvous Session](#)
- [Client Endpoint Configurations in a TIBCO Rendezvous Session](#)
- [Server Endpoint Configurations in a TIBCO Rendezvous Session](#)

The following table lists the fields in the EndPoint Configuration panel of the Publisher endpoint in a JMS session:

Field	Description
<b>Name</b>	The endpoint name.
<b>Description</b>	Enter a description for the endpoint.
<b>Endpoint Type</b>	The endpoint type, JMS Publisher.
<b>Delivery Mode</b>	<p>The delivery mode for messages. Select a delivery mode from the list:</p> <ul style="list-style-type: none"> <li>• <b>Persistent</b> This option is selected by default.</li> <li>• <b>Non-Persistent</b> For more details about delivery formats, see <a href="#">Delivery Modes</a>.</li> </ul>
<b>Destination</b>	The destination on which the publisher sends out messages.
<b>Reply Destination</b>	The reply destination for the publisher.
<b>Message Priority</b>	<p>The priority of messages The available values are 0 - 9. The default value is 4.</p>
<b>isCompressed</b>	<p>Select this check box to compress the body of a message before sending the message to the server. JMS compression ensures that messages take less memory space in storage. This check box is cleared by default.</p>
<b>Message Timeout (ms)</b>	<p>The amount of time in milliseconds before the message is discarded from the ledger file. The default value is 0, which indicates that the timeout is infinite.</p>

The following table lists the fields in the EndPoint Configuration panel of the Subscriber endpoint in a JMS session:

Field	Description
<b>Name</b>	The endpoint name.
<b>Description</b>	Enter a description for the endpoint.
<b>Endpoint Type</b>	The endpoint type, JMS Subscriber.
<b>Auto Confirm</b>	Select this check box to let TIBCO Adapter SDK automatically confirms events for the Subscriber.  This check box is selected by default.
<b>Destination</b>	The destination on which the subscriber receives messages..
<b>Message Selector</b>	The message selector string that lets a client program specify a set of messages, based on the values of message headers and properties.  A selector matches a message if the string evaluates to true after substituting header and property values from the message into the selector string. Consumers can request that the server deliver only those messages that match a selector.
<b>Delivery Mode</b>	The delivery mode. Select a delivery mode from the list: <ul style="list-style-type: none"> <li>• <b>Durable</b> This option is selected by default.</li> <li>• <b>Non-Durable</b></li> </ul> For more details about delivery formats, see <a href="#">Delivery Modes</a> .   This field is displayed only for the Subscriber endpoint in the JMS Topic sessions.
<b>Durable Name</b>	The name of the durable Subscriber.   This field is displayed only when you select <b>Durable</b> from the <b>Delivery Mode</b> list of the Subscriber endpoint in the JMS Topic sessions.

The following table lists the fields in the EndPoint Configuration panel of the Client endpoint in a JMS session:



Field	Description
<b>Name</b>	The endpoint name.
<b>Description</b>	Enter a description for the endpoint.
<b>Endpoint Type</b>	The endpoint type, JMS RPC Client.

Field	Description
<b>Delivery Mode</b>	<p>The delivery mode for messages.</p> <p>Select a delivery mode from the list:</p> <ul style="list-style-type: none"> <li>• <b>Persistent</b> This option is selected by default.</li> <li>• <b>Non-Persistent</b></li> </ul> <p>For more details about delivery formats, see <a href="#">Delivery Modes</a>.</p>
<b>Destination</b>	The subject name on which the client communicates with servers.
<b>Message Priority</b>	<p>The priority of messages.</p> <p>The available values are 0 - 9.</p> <p>The default value is 4.</p>
<b>isCompressed</b>	<p>Select this check box to compress the body of a message before sending the message to the server.</p> <p>JMS compression ensures that messages take less memory space in storage.</p> <p>This check box is cleared by default.</p>
<b>Invocation Timeout (ms)</b>	<p>The amount of time in milliseconds before the message is discarded from the ledger file.</p> <p>The default value is 0, which indicates that the timeout is infinite.</p>

The following table lists the fields in the EndPoint Configuration panel of the Server endpoint in a JMS session:



Field	Description
<b>Name</b>	The endpoint name.
<b>Description</b>	Enter a description for the endpoint.
<b>Endpoint Type</b>	<p>The endpoint type.</p> <p>For a JMS Subscriber, the type is JMS RPC Server.</p>
<b>Destination</b>	The subject name on which the server communicates with clients.
<b>Message Selector</b>	<p>The message selector string that lets a client program specify a set of messages, based on the values of message headers and properties.</p> <p>A selector matches a message if the string evaluates to true after substituting header and property values from the message into the selector string. Consumers can request that the server deliver only those messages that match a selector.</p>



Field	Description
<b>Delivery Mode</b>	<p>The delivery mode.</p> <p>Select a delivery mode from the list:</p> <ul style="list-style-type: none"> <li>• <b>Durable</b> This option is selected by default.</li> <li>• <b>Non-Durable</b></li> </ul> <p>For more details about delivery formats, see <a href="#">Delivery Modes</a>.</p> <div>  This field is displayed only for the Server endpoint in the JMS Topic sessions. </div>
<b>Durable Name</b>	<p>The name of the durable server.</p> <div>  This field is displayed only when you select <b>Durable</b> from the <b>Delivery Mode</b> list of the Server endpoint in the JMS Topic sessions. </div>

The following table lists the fields in the EndPoint Configuration panel of the Publisher endpoint in a TIBCO Rendezvous session:

Field	Description
<b>Name</b>	The endpoint name.
<b>Description</b>	Enter a description for the endpoint.
<b>Endpoint Type</b>	<p>The endpoint type.</p> <p>Select an endpoint type from the list.</p> <p>The following type is available for the TIBCO Rendezvous Reliable Publisher endpoint:</p> <ul style="list-style-type: none"> <li>• <b>Rv Publisher</b> This option is selected by default. .</li> </ul> <p>The following types are available for the TIBCO Rendezvous Certified Publisher endpoint:</p> <ul style="list-style-type: none"> <li>• <b>Rv Publisher</b></li> <li>• <b>RvCm Publisher</b> This option is selected by default. .</li> </ul>


Field	Description
<b>Wire Format</b>	<p>The wire format in which messages are sent.</p> <p>Select a wire format from the list:</p> <ul style="list-style-type: none"> <li>• <b>ActiveEnterprise Message</b> This option is selected by default.</li> <li>• <b>XML Message</b></li> </ul> <p>For more details about wire formats, see <a href="#">Wire Formats</a>.</p>
<b>Subject</b>	The subject name on which the publisher sends out messages.
<b>Reply Subject</b>	The reply subject for the publisher.
<b>Message Timeout (ms)</b>	<p>The amount of time in milliseconds before the message is discarded from the ledger file.</p> <p>The default value is 0, which indicates that the timeout is infinite.</p> <div>  <p>This field is displayed only when the type of the TIBCO Rendezvous Certified Publisher endpoint is RvCm Publisher.</p> </div>
<b>Pre-registered Listeners</b>	<p>The list of listeners preregistered for this publisher.</p> <p>Listeners in the list must be separated by commas.</p> <p>Refer to each listener by using the CM name of the session.</p> <div>  <p>This field is displayed only when the type of the TIBCO Rendezvous Certified Publisher endpoint is RvCm Publisher.</p> </div>

The following table lists the fields in the EndPoint Configuration panel of the Subscriber endpoint in a TIBCO Rendezvous session:

Field	Description
<b>Name</b>	The endpoint name.
<b>Description</b>	Enter a description for the endpoint.

Field	Description
<b>Endpoint Type</b>	<p>The endpoint type.</p> <p>Select an endpoint type from the list.</p> <p>The following type is available for the TIBCO Rendezvous Reliable Subscriber endpoint:</p> <ul style="list-style-type: none"> <li>• <b>Rv Subscriber</b></li> </ul> <p>This option is selected by default.</p> <p>The following types are available for the TIBCO Rendezvous Certified Subscriber endpoint:</p> <ul style="list-style-type: none"> <li>• <b>Rv Subscriber</b></li> <li>• <b>RvCm Subscriber</b></li> </ul> <p>This option is selected by default.</p> <p>The following types are available for the TIBCO Rendezvous Distributed Queue Subscriber endpoint:</p> <ul style="list-style-type: none"> <li>• <b>Rv Subscriber</b></li> <li>• <b>RvCmq Subscriber</b></li> </ul> <p>This option is selected by default.</p>
<b>Startup State</b>	<p>The state when starting the endpoint.</p> <p>Select a state from the list:</p> <ul style="list-style-type: none"> <li>• <b>None</b></li> <li>• <b>Active</b></li> </ul> <p>This option is selected by default.</p> <ul style="list-style-type: none"> <li>• <b>Inactive</b></li> </ul>
<b>Wire Format</b>	<p>The wire format in which messages are sent</p> <p>Select a wire format from the list:</p> <ul style="list-style-type: none"> <li>• <b>ActiveEnterprise Message</b></li> <li>• <b>XML Message</b></li> </ul> <p>For more details about wire formats, see <a href="#">Wire Formats</a>.</p>
<b>Subject</b>	The subject name on which the subscriber receives messages.
<b>Listen Timeout (ms)</b>	<p>The amount of time in milliseconds the subscriber cannot receive a message before the adapter configuration performs any actions specified in the program for that case.</p> <p>The default value is 0.</p>

The following table lists the fields in the EndPoint Configuration panel of the Client endpoint in a TIBCO Rendezvous session:

Field	Description
<b>Name</b>	The endpoint name.
<b>Description</b>	Enter a description for the endpoint.
<b>Endpoint Type</b>	<p>The endpoint type.</p> <p>Select an endpoint type from the list.</p> <p>The following type is available for the TIBCO Rendezvous Reliable Client endpoint:</p> <ul style="list-style-type: none"> <li>• <b>Rv RPC Client</b></li> </ul> <p>This option is selected by default.</p> <p>The following types are available for the TIBCO Rendezvous Certified Client endpoint:</p> <ul style="list-style-type: none"> <li>• <b>Rv RPC Client</b></li> <li>• <b>RvCm RPC Client</b></li> </ul> <p>This option is selected by default.</p>
<b>Subject</b>	The subject name on which the client communicate with servers.
<b>Invocation Timeout (ms)</b>	<p>The amount of time in milliseconds that the client cannot receive any reply before the application receives an error notification.</p> <p>The default value is 0.</p>
<b>Preregistered Listeners</b>	<p>The comma-separated list of listeners preregistered for the client.</p> <p>Refer to each listener using the CM name of the session.</p> <div>  <p>This field is displayed only for the Client endpoints in the TIBCO Rendezvous Certified sessions.</p> </div>

The following table lists the fields in the EndPoint Configuration panel of the Server endpoint in a TIBCO Rendezvous session:

Field	Description
<b>Name</b>	The endpoint name.
<b>Description</b>	Enter a description for the endpoint.
<b>Startup State</b>	<p>The state when starting the endpoint.</p> <p>Select a state from the list:</p> <ul style="list-style-type: none"> <li>• <b>None</b></li> <li>• <b>Active</b></li> </ul> <p>This option is selected by default.</p> <ul style="list-style-type: none"> <li>• <b>Inactive</b></li> </ul>

Field	Description
<b>Endpoint Type</b>	<p>The endpoint type.</p> <p>Select an endpoint type from the list.</p> <p>The following type is available for the TIBCO Rendezvous Reliable Server endpoint:</p> <ul style="list-style-type: none"> <li>• <b>Rv RPC Server</b></li> </ul> <p>This option is selected by default.</p> <p>The following types are available for the TIBCO Rendezvous Certified Server endpoint:</p> <ul style="list-style-type: none"> <li>• <b>Rv RPC Server</b></li> <li>• <b>Rvcm RPC Server</b></li> </ul> <p>This option is selected by default.</p> <p>The following types are available for the TIBCO Rendezvous Distributed Queue Server endpoint:</p> <ul style="list-style-type: none"> <li>• <b>Rv RPC Server</b></li> <li>• <b>Rvcmq RPC Server</b></li> </ul> <p>This option is selected by default.</p>
<b>Subject</b>	The subject name on which the server communicate with clients.

## Sessions and Endpoints

Both sessions and endpoints are concepts in TIBCO Adapter SDK, the fundamental class library used in the adapter implementation.

*Endpoints* send or receive data. They represent the service that an adapter configuration provides. Each endpoint is associated with a *session* that is used to communicate with the source or target application. A session encapsulates the transport information of an adapter service.

The primary function of an adapter configuration is to retrieve or send data. When you add an adapter service to an adapter configuration, the corresponding sessions and endpoints are created by default to encapsulate transport information necessary for data communication, depending on the transport protocol and delivery mode being used.

See *TIBCO Adapter SDK Programmer's Guide* for more details about these concepts.

### Supported Sessions

When using the TIBCO Rendezvous transport, TIBCO ActiveMatrix Adapter for SAP supports sessions of the following kinds of Quality of Service:

- Reliable (RV)

Reliable Message Delivery ensures that each multicast or broadcast message is received as long as the physical network and packet recipients are working. It also ensures that the loss of a message is detected.

Reliable Message Delivery can compensate for brief network failures, because it can retransmit a message on request if the first attempt fails. This option is appropriate when message delivery is

expected but some loss can be tolerated. When this Quality of Service is chosen, an RV session is used.

- Certified (RVCM)

Certified Message Delivery guarantees that every certified message reaches its intended recipient in the order sent. A message can be sent across network boundaries, and if a network fails, delivery attempts continue until delivery is successful or until the time limit of the message expires. This is often called guaranteed delivery. When this Quality of Service is chosen, an RVCM session is used.

- Distributed Queue (RVCMQ)

Distributed Queue delivers a message to one of many service listeners (workers). It contains features of both Certified Messaging and Fault Tolerance.



This session type is only supported by the Subscription Service and the Request-Response Service services.

For more details about the supported TIBCO Rendezvous types of Quality of Service, see *TIBCO Rendezvous Concepts*.

When using the JMS transport, TIBCO ActiveMatrix Adapter for SAP supports sessions of the following standard connection factory types:

- Topic

A message published to a topic is broadcast to one or more subscribers. All messages published to the topic are received by all services that have subscribed to the topic. This messaging model is known as publish-subscribe.

- Queue

A message sent to a queue is received by one and only one receiver. Each message has only one receiver, though multiple receivers may connect to the queue. The first receiver to access the queue receives the message. The other receivers do not. This messaging model is known as point-to-point.

For more details about connection factories, see *TIBCO Enterprise Message Service User's Guide*.

## Supported Endpoints

TIBCO ActiveMatrix Adapter for SAP supports the following four types of endpoints:

- Publisher

A Publisher endpoint is added to the default session automatically when you add a Publication Service service to the adapter configuration.

- Subscriber

A Subscriber endpoint is added to the default session automatically when you add a Subscription Service service to the adapter configuration.

- Client

A Client endpoint is added to the default session automatically when you add a Request-Response Invocation Service service to the adapter configuration.

- Server

A Server endpoint is added to the default session automatically when you add a Request-Response Service service to the adapter configuration.

## Wire Formats

A wire format defines the format in which messages are to be sent or received by endpoints.

TIBCO ActiveMatrix Adapter for SAP supports the following wire formats:

- ActiveEnterprise Message (TIBCO Rendezvous only)

ActiveEnterprise Message is an externally-described XML message format supported by TIBCO Adapter SDK. ActiveEnterprise standard wire format provides class information and packing rules for the TIBCO Adapter SDK set of data types. This format allows ActiveEnterprise components to perform extra validation on messages sent or received. Control information for validation is sent in the message. If no control information is included, an exception is returned to the subscriber.

For more details about the control information generated and sent with TIBCO ActiveEnterprise messages, see *TIBCO Adapter SDK Programmer's Guide*.

- XML Message

XML Message conforms to specifically constructed and fully compliant XML Schema (XSD) based on the existing definition of the ActiveEnterprise schema.

## Delivery Modes

A delivery mode defines how the endpoints deliver messages in the JMS transport.

TIBCO ActiveMatrix Adapter for SAP supports the following delivery modes:

- Publication Service and Request-Response Invocation Service

- Persistent

The message is available to a JMS client even if the JMS server goes down.

- Non-persistent

The message is not available to a JMS client if the JMS server goes down.

- Subscription Service and Request-Response Service

- Durable

The service is registered with the JMS server. The JMS server holds messages sent to a durable Subscription Service or Request-Response Service service until they are received by the service. If the service is down, and then restored, it receives the messages that were held at the JMS server while the service was down.

- Non-durable

The service is not registered with the JMS server. The JMS server does not hold messages sent to a non-durable Subscription Service or Request-Response Service service. If the service is down, and then restored, it cannot receive the messages that were held at the JMS server while the service was down.



These various delivery modes are available only when the connection factory Type is Topic

For more details about delivery modes, see *TIBCO Enterprise Message Service User's Guide*.

## Logging Tab

Use the **Logging** tab to manage and configure log sinks.

The adapter defines traces with different roles and sends them to log sinks with the corresponding role. You can either use the default standard I/O for logging or fine-tune where and when different types of information are sent by defining sinks and mapping each sink to one or more roles.

TIBCO ActiveMatrix Adapter for SAP supports the following log sinks at run time:

- File Sink

A file sink sends messages to a file.

- **Standard I/O Sink**  
A stdio sink sends messages to standard I/O.
- **Network Sink**  
A network sink sends messages over the network.
- **Hawk Sink**  
A Hawk sink sends messages to TIBCO Hawk®.

### All Log Sinks Panel

If you are using custom roles, use the All Log Sinks panel to manage log sinks and their roles. See [Adding Log Sinks](#) for details.

### Configuration Panel

In the Configuration panel of a sink, you can specify the logging options for the sink.

The following table lists the fields in the Configuration panel:

Field	Description
<b>Name</b>	The sink name.  The default name is <code>fileSink</code> , <code>stdioSink</code> , <code>networkSink</code> , or <code>hawkSink</code> , depending on the sink type.
<b>Description</b>	Enter a description for the sink.
The following fields are displayed for the file sink:	
<b>File Name</b>	The location and name of the trace file.
<b>File Limit (bytes)</b>	The maximum size of the file in bytes.  The default value is 30000.
<b>File Count</b>	The number of rollover files.  The default value is 3.
<b>Append Mode</b>	Select this check box to add traces to the existing file at startup.  Clear this check box to overwrite the existing file at startup if one of the same name exists.  This check box is selected by default.
The following fields are displayed for the stdio sink:	



Field	Description
<b>Output Stream</b>	<p>The information type. Select a information type from the list:</p> <ul style="list-style-type: none"> <li>• <b>stdout</b> General output information. The option is selected by default.</li> <li>• <b>stderr</b> Error information.</li> </ul>
The following fields are displayed for the network sink:	
<b>Subject</b>	The subject of TIBCO Rendezvous messages to be sent.
<b>Session Reference</b>	The transport session.
The following field is displayed for the Hawk sink:	
<b>MicroAgent Name</b>	The name of the microagent for traces from the Hawk sink.

### Log Level Panel

In the Log Level panel, you can specify a log level. Different log level defines different trace messages. The following table lists the fields in the Log Level panel:

Field	Description
<b>Log To Standard I/O</b>	<p>Select this check box to use the console window for logging when you start the adapter configuration.</p> <p>You can send the information to multiple locations, and you can choose to log one or more message types.</p> <p>This check box is selected by default</p>
<b>Log Info Messages</b>	<p>Select this check box to send all messages of type INFO to the specified locations.</p> <p>This check box is selected by default.</p>
<b>Log Debug Messages</b>	<p>Select this check box to send all messages of type DEBUG to the specified locations.</p> <p>This check box is cleared by default.</p>
<b>Log Warning Messages</b>	<p>Select this check box to send all messages of type WARNING to the specified locations.</p> <p>This check box is selected by default.</p>
<b>Log Error Messages</b>	<p>Select this check box to send all messages of type ERROR to the specified locations.</p> <p>This check box is selected by default.</p>



Turning on the log level can affect the performance of the adapter configuration. It is good practice to turn on the required levels only. Do not select the DEBUG level unless it is requested by the TIBCO Product Support Group. This option writes much debugging information to the log file and significantly reduces the speed of the adapter configuration.

## Monitoring Tab

Use the **Monitoring** tab to configure the TIBCO Hawk monitoring options of the adapter configuration. The following table lists the fields in the **Monitoring** tab:

Fields	Description
<b>Enable Standard MicroAgent</b>	Select this check box to enable the standard TIBCO Hawk microagent.  This check box is selected by default.
<b>Standard MicroAgent Name</b>	The standard TIBCO Hawk microagent name.  Do not specify the <i>InstanceId</i> property, because it is automatically set at run time by the runtime adapter.
<b>Standard MicroAgent Timeout (ms)</b>	The timeout value in milliseconds for the standard microagent. The default value is 10000.  Only when machines are under extreme stress where method invocations are timing out, can you use this option to increase the timeout value.
<b>Enable Class MicroAgent</b>	The value of 1 indicates that the instance-specific or class-specific standard TIBCO Hawk microagent is enabled.  The value of 0 indicates that the instance-specific or class-specific standard TIBCO Hawk microagent is disabled.
<b>Class MicroAgent Name</b>	The class microagent name that can be registered with the TIBCO Hawk system.  Do not specify the <i>InstanceId</i> property, because it is automatically set at run time by the runtime adapter.
<b>Class MicroAgent Timeout (ms)</b>	The timeout value in milliseconds for the class microagent. The default value is 10000.  Only when machines are under extreme stress where method invocations are timing out, can you use this option to increase the timeout value.
<b>Default MicroAgent Session</b>	TIBCO Rendezvous session to be used by the TIBCO Hawk microagents by default.

Fields	Description
<b>R/3 Adapter MicroAgent Name</b>	<p>The custom microagent name used to configure microagents specific to TIBCO ActiveMatrix Adapter for SAP.</p> <p>The default name is <code>SAPAdapterMicroAgent</code>.</p> <p>The name can be displayed in the TIBCO Hawk monitoring console and the methods associated with the microagent are made available.</p>

## Advisories Tab

Use the **Advisories** tab to manage and configure TIBCO Rendezvous and TIBCO Adapter SDK advisories.

### All Advisories Panel

In the All Advisories panel, you can click **Add** to add an advisory, or select a advisory and click **Remove** to remove it.

### Configuration Panel

The following table lists the fields in the Configuration panel:

Field	Description
<b>Name</b>	The advisory name.
<b>Description</b>	Enter a description for the advisory.
<b>Subject</b>	<p>The advisory message.</p> <p>TIBCO Rendezvous advisory messages have the following structure:</p> <p><code>_RV.&lt;class&gt;.&lt;source&gt;.&lt;category&gt;.&lt;role&gt;.&lt;condition&gt;.&lt;name&gt;</code></p> <p>For more details, see <i>TIBCO Rendezvous Concepts</i>.</p> <p>TIBCO Adapter SDK advisory messages have the following structure:</p> <p><code>_SDK.&lt;class&gt;.&lt;category&gt;.&lt;name&gt;</code> or <code>_SDK.&lt;class&gt;.&lt;category&gt;.&lt;subject suffix&gt;</code></p> <p>For more details, see <i>TIBCO Adapter SDK Programmer's Guide</i>.</p>

## Connection Pools Tab

Use the **Connection Pools** tab to manage and configure connection pools.

Only when you associate an adapter configuration with a connection pool referring to a client and server connection, the adapter configuration use the client or the server connection to communicate with the SAP system.

In the All ConnectionPool Configuration panel, you can add or remove connection pools.

In the Client Connection Pool configuration or the Server Connection Pool configuration panel, you can configure a connection pool.

For more details about connection pools, see [Working with Connections](#).

## Advanced Tab

Use the **Advanced** tab to specify the termination subject or topic name, the destinations of the Publication Service and the Subscription Service services to receive IDocs, and how an adapter configuration communicates with the TIDManager configuration.

### General Information

In the General Information panel, you can specify the termination subject (if Rendezvous is the transport) or topic (if JMS is the transport) name that the adapter configuration listens to in the **Termination Subject or Topic** field.

Once the adapter configuration receives the message labeled with the termination subject or topic name, the adapter stops.

### All Publication Services

In the All Publication Services panel, you can specify the destinations where the IDocs are sent in the **Valid Destination** field.

Typically, these destinations are logical SAP system names, but they can be a bank identifier, a customer identifier, or any partner type currently configured.

In a control record of an IDoc, if the RCVPRN field, which specifies the receiving partner for the IDoc, has a value is not configured as a valid destination, the IDoc cannot be published to the TIBCO environment. Then the IDoc is logged into an ASCII text file in a configured directory.





- Ensure that you have created Publication Service services before specify any valid destinations.
- Separate the destinations with commas.
- After you have specified and saved the valid destinations, they are automatically converted to uppercase to ensure consistency with the syntax of logical systems in the SAP system.

### Outbound TID Management

In the Outbound TID Management panel, you can select the outbound TID management mode for the Publication and the Request-Response Invocation Service (one-way only) services, and specify the associated information about how to connect to the TIDManager server, and so on.

The following table lists the fields in the Outbound TID Management panel:

Field	Description
<b>Outbound TID Management</b>	<p>The outbound TID management mode. Select a mode from the list:</p> <ul style="list-style-type: none"> <li>• <b>Local</b> Select local TID management mode when there is only one outbound adapter configuration receiving messages. This option is selected by default.</li> <li>• <b>Remote</b> Select remote TID management mode when there are more than one outbound adapter configurations receiving messages.</li> </ul>

Field	Description
The following field is displayed only when you select <b>Local</b> from the <b>Outbound TID Management</b> list:	
<b>TID File Name</b>	<p>The TID file name.</p> <p>A TID file is used by the TIDManager server to maintain state on the transaction IDocs sent from the SAP system.</p> <p>The default name is <code>tidFile.tid</code>.</p>
The following fields are displayed only when you select <b>Remote</b> from the <b>Outbound TID Management</b> list:	
<b>Enable Stop Retry Timeout</b>	<p>Select this check box to suspend the connection to the TIDManager server when a timeout exception occurs.</p> <p>By default, this check box is cleared.</p>
<b>TID Manager Client Retry Count</b>	<p>The number of retries from the adapter configuration to the TIDManager server.</p> <p>The default value is 3.</p>
<b>TID Manager Client Retry Interval</b>	<p>The time interval in milliseconds between any two ping attempts to the TIDManager server.</p> <p>The default value is 30000.</p>
<b>TID Manager Client</b>	<p>Click this link to configure the client endpoint used to communicate with the TIDManager server in the <b>Transports</b> tab.</p> <p>If you want to change the client endpoint, you can click  to select a client endpoint in the Select a Resource window.</p> <p>You can click  to clear this field.</p> <p>Ensure that the TIDManager client in all the adapter configurations matches the TIDManager server being used. Also ensure that the subject name of the TIDManager client is configured appropriately and that the TIDManager client and server are on the same transport.</p> <p>The default client is the <code>TID_JMS_RPC_CLIENT</code> or the <code>TID_RPC_CLIENT</code> client belonging to the TIDManager session that is added by default when you create the adapter configuration.</p>



When creating a client session manually in the TIDManager configuration, ensure that the value that you enter in the **Invocation Timeout (ms)** field is greater than zero. Otherwise, messages cannot be deleted from the destination.

### All Subscription Services

In the All Subscription Services panel, you can specify the destinations where the IDocs are sent in the **Vaild Destination** field.

Typically, these destinations are logical SAP system names, but they can be a bank identifier, a customer identifier, or any partner type currently configured.

In a control record of an IDoc, if the RCVPRN field, which specifies the receiving partner for the IDoc, has a value that is not configured as a valid destination, the IDoc cannot be published to the SAP system. Then the IDoc is logged into an ASCII text file in a configured directory.





- Ensure that you have created Subscription Service services before specify any valid destinations.
- Separate the destinations with commas.
- After you have specified and saved the valid destinations, they are automatically converted to uppercase to ensure consistency with the syntax of logical systems in the SAP system.

### Inbound TID Management

In the Inbound TID Management panel, you can select inbound TIDManagement mode for the Subscription Service and the Request-Response Service (one-way only) services, specify the associated information about how to connect to the TIDManager configuration, and so on.

The following table lists the fields in the Inbound TID Management panel:

Field	Description
<b>Inbound TID Management</b>	<p>The inbound TIDManagement mode.</p> <p>Select a mode from the list:</p> <ul style="list-style-type: none"> <li>• <b>None</b> Select <b>None</b> when inbound TID management is not required. This option is selected by default.</li> <li>• <b>Local</b> Select local TID management mode when there is only one inbound adapter configuration receiving messages.</li> <li>• <b>Remote</b> Select remote TID management mode when there are more than one inbound adapter configurations receiving messages.</li> </ul>
The following field is displayed only when you select <b>Local</b> from the <b>Inbound TID Management</b> list:	
<b>TID File Name</b>	<p>The TID file name.</p> <p>A TID file is used by the TIDManager configuration to maintain state on the transaction IDs sent from the SAP system.</p> <p>The default name is <code>tidFileInbound.tid</code>.</p>
The following fields are displayed only when you select <b>Remote</b> from the <b>Inbound TID Management</b> list:	
<b>TID Manager Client Retry Count</b>	<p>The number of retries from the adapter configuration to the TIDManager server.</p> <p>The default value is 3.</p>





Field	Description
<b>TID Manager Client Retry Interval</b>	<p>The time interval in milliseconds between any two ping attempts to the TIDManager server.</p> <p>The default value is 30000.</p>
<b>TID Manager Client</b>	<p>Click this link to configure the client endpoint used to communicate with the TIDManager configuration in the <b>Transports</b> tab.</p> <p>If you want to change the client endpoint, you can click  to select a client endpoint in the Select a Resource window.</p> <p>You can click  to clear this field.</p> <p>Ensure that the TIDManager client in all the adapter configurations matches the TIDManager server being used. Also ensure that the subject name of the TIDManager client is configured appropriately and that the client and the TIDManager server are on the same transport.</p> <p>The default client is the INBOUND_JMS_TID_RPC_CLIENT or the INBOUND_TID_RPC_CLIENT client belonging to the TIDManager session that is added by default when you create the adapter configuration.</p>

### Discovery Agent

In the Discovery Agent panel, you can select the **Enabled** check box to enable the plug-in for the Discovery Agent in the adapter configuration.

For details on how to configure Discovery Agent TRA properties, see [TIBCO ActiveMatrix Adapter for SAP Properties](#).

The following fields are available to configure the Discovery Agent when you enable the plug-in for the Discovery Agent:

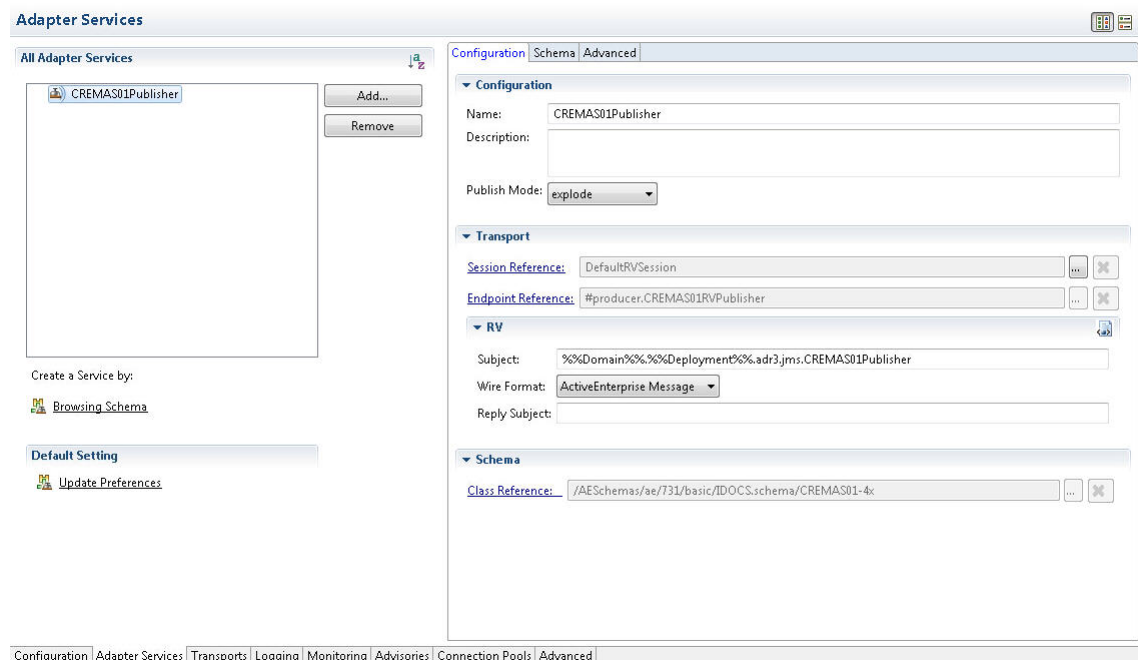
Field	Description
<b>Polling Client Reference</b>	<p>Click  to select a client endpoint that has been created for this transport in the Select a Resource window.</p> <p>You can click  to clear this field.</p>
<b>Polling Interval</b>	<p>The time interval in milliseconds for the Discovery Agent to poll the available list of SAP application servers.</p> <p>The default value is 6000.</p>
<b>Polling Publisher Reference</b>	<p>Click  to select a publisher endpoint that has been created for this transport in the Select a Resource window.</p> <p>You can click  to clear this field.</p>
<b>Application Server Domain Name</b>	<p>A unique name for the application server domain.</p>

# Adapter Service Reference

Adapter services are abstractions that describe how the adapter receives data available from the SAP system or sends data to a target TIBCO application.

TIDCO ActiveMatrix Adapter for SAP adapter provides the following four types of adapter services:

- **Publication**  
This service is used to publish IDocs from SAP system.
- **Subscription**  
This service is used to subscribe to IDocs from the TIBCO environment and post them into the SAP system.
- **Request-Response Invocation**  
This service is used to invoke RFC/BAPI requests in the TIBCO environment.
- **Request-Response**  
This service is used to execute RFC/BAPI requests in the SAP system.



In the Adapter Services tab, you can [add adapter services](#) in the All Adapter Services panel, and configure an adapter service in the [Configuration](#), the [Schema](#), and the [Advanced](#) tabs.




You can also click **Browsing Schema** to browse and manage schemas, and click **Update Preference** to configure the predefined settings for adapter services. See [Working with Schemas](#) and [Default Setting](#) for details.

## Configuration Tab

Use the **Configuration** tab to specify the service names, description, transport, and schemas.




The following table lists the fields in the Configuration panel:




Field	Description
<b>Name</b>	The service name.
<b>Description</b>	Enter a description for the service.
<b>Publish Mode</b>	<p>The publish mode.</p> <p>Select a publish mode from the list:</p> <ul style="list-style-type: none"> <li>• <b>explode</b> This option is selected by default.</li> <li>• <b>exploded batch</b></li> <li>• <b>IDocFormat</b></li> </ul> <p>For more details about publication modes, see <a href="#">Publication Modes</a>.</p> <div>  This field is displayed only when the service type is Publication. </div>
<b>Receive IDocs in Exploded Batch Mode</b>	<p>Select this check box to receive IDocs in exploded batch mode.</p> <p>This check box is cleared by default.</p> <p>For more details about exploded batch mode, see <a href="#">Exploded Batch Mode</a>.</p> <div>  This check box is displayed only when the service type is Subscription. </div>
<b>Receive IDocs in IDoc Format Mode</b>	<p>Select this check box to receive IDocs in IDocFormat mode.</p> <p>This check box is cleared by default.</p> <p>For more details about IDocFormat mode, see <a href="#">IDocFormat Mode</a>.</p> <div>  This check box is displayed only when the service type is Subscription. </div>

The following table lists the fields in the Transport panel. For details about adapter transport, see [Transports Tab](#).

Field	Description
<b>Session Reference</b>	Click <b>Session Reference</b> to manage and configure transport sessions in the <b>Transports</b> Tab.
<b>Endpoint Reference</b>	Click <b>Endpoint Reference</b> to manage and configure endpoints in the <b>Transports</b> Tab.
The following fields are displayed when the transport type of the adapter service is RV:	

Field	Description
<b>Subject</b>	<p>The subject name to be used by default when the adapter service publishes messages.</p> <div>  <p>Subject names are normally defined by the system. If you manually change a subject name, you must not use SAP.IDoc as a subject because this name is used by the system.</p> </div>
<b>Wire Format</b>	<p>The wire format.</p> <p>Select a wire format from the list:</p> <ul style="list-style-type: none"> <li>• <b>ActiveEnterprise Message</b> This option is selected by default.</li> <li>• <b>XML Message</b></li> </ul> <p>For more details about wire formats, see <a href="#">Wire Formats</a>.</p>
<b>Reply Subject</b>	<p>The reply subject name.</p> <div>  <p>This field is displayed only when the service type is Publication.</p> </div>
The following fields are displayed when the transport type of the adapter service is JMS:	
<b>Destination</b>	The destination on which the service publishes messages to a topic or sends messages to a queue.
<b>Wire Format</b>	<p>Messages are sent in the XML Message format.</p> <p>For more details about the XML Message format, see <a href="#">XML Message</a>.</p>
<b>Delivery Mode</b>	<p>The delivery mode.</p> <p>Select a delivery mode for the outbound adapter services from the list:</p> <ul style="list-style-type: none"> <li>• <b>Persistent</b> This option is selected by default.</li> <li>• <b>Non-Persistent</b></li> </ul> <p>Select a delivery mode for the inbound adapter services from the list:</p> <ul style="list-style-type: none"> <li>• <b>Durable</b> This option is selected by default.</li> <li>• <b>Non-Durable</b></li> </ul> <div>  <p>For the inbound adapter services, this field is displayed only when the transport session is Topic.</p> </div> <p>For more details about delivery modes, see <a href="#">Delivery Modes</a>.</p>

Field	Description
<b>Reply Destination</b>	The reply destination.  This field is displayed only when the service type is Publication.

The following table lists the field in the Schema panel:

Field	Description
<b>Class Reference</b>	Click <b>Class reference</b> to manage and configure schemas in the Classes editor.

## Publication Modes

A publication mode defines the format of IDocs to be published and recieved.

The adapter supports the following three types of publication mode:

- Explode Mode

IDocs are initially received in compressed form as RFC tables. The received IDoc is expanded and serialized into a hierarchical ActiveEnterprise message structure, namely the ActiveEnterprise Message format, using IDoc metadata. Metadata specifies the hierarchical structure, including contained records and fields, associations between different segments, and repetition information. The ActiveEnterprise Message format is described in the *TIBCO Adapter SDK Concepts*.

If multiple IDocs are received in a batch, then each IDoc in the batch is split from the other IDocs and sent individually.

The SAP system sends out data to the adapter with padded blanks wherever a field in the IDoc segment does not occupy the complete field length or a field is not populated at all.

By default, the adapter trims off the trailing spaces from blank padded fields, and cuts out blanks-only fields.



The data published for a particular IDoc segment field is based on the actual data sent by the SAP system. The adapter does not pad the value provided by the SAP system with trailing whitespace.

- Exploded Batch Mode

Using Exploded Batch mode, the adapter sends a batch of IDocs in Explode mode. Similarly on the subscriber side, the adapter receives the IDocs in a batch and processes them in the SAP system.

If the ALE outbound profile for an IDoc type is set up to Collect IDocs, IDocs are collected within the SAP system until the packet size value is reached, and then sent to the adapter at one time.

Exploded Batch mode ensures that individual IDocs are “exploded” to a self-describing format and also maintained as a batch. The batch of exploded IDocs is then published as one single message by the adapter.

- IDocFormat

In IDocFormat mode, no transformation is performed in the IDoc content. The IDoc is presented in a original string format. This format is useful in cases where systems and applications understand the SAP IDoc format.

For details about the usage of the IDocFormat publish mode, see “IDoc Format Publishing Mode” in *TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) Examples*.

Only IDocs of SAP System Release 4.x is supported. The IDoc contains the following attributes:

- EDI\_DC (one control record)

This attribute is populated using the IDoc control record fields for the Outbound IDoc but it is not required to be mapped for the Inbound IDoc.

- IDocMsg (multiple data records)

Similar to Expode mode, only one IDoc is exchanged per message. When you send multiple IDocs from SAP system or TIBCO environment in one call, each IDoc is sent individually.

If the Transport Type is JMS, the control fields are also passed as JMS properties. The property name consists of the prefix, SAPIDOC\_ and the IDoc control record field. For example, if the field is DOCNUM, the corresponding JMS property is SAPIDOC\_DOCNUM.

For Publication Service, except the above JMS properties, you can also use the SAPJCO\_JMS properties to route IDoc messages to a specific receiver. See “IDoc Format Publishing Mode” in *TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) Examples* for details about the usage of the JMS properties.

## Schema Tab

The **Schema** tab shows the schema of an adapter service.

For details about schemas, see [Working with Schemas](#).


The following table lists the fields in the **Schema** tab:





Column	Description
Schema Name	The name and structure of the AE schema.
Type	The data type of the element in the AE schema.










## Advanced Tab

Use the **Advanced** tab to specify the IDoc logging options for the Publication Service and Subscription Service services, connection options for the Request-Response services, and so on.

The following table lists the fields in the **Advanced** tab:

Field	Description
<b>Confirm Required</b>	<p>Select this check box to publish an IDoc confirmation message report when the SAP system receives an IDoc from the adapter service.</p> <p>This check box is cleared by default.</p> <p>An IDoc confirmation message report can include:</p> <ul style="list-style-type: none"> <li>• Track Information of the message received</li> <li>• Business Key of the message received</li> <li>• Transaction ID generated by SAP system when receiving the IDoc</li> <li>• IDoc number and status generated by the SAP system</li> </ul> <p>By default, the <code>adr3.idocNumAndStatusIncluded</code> property is set to ON, which indicates the IDoc number and status are included in the IDoc confirmation message report. And this configuration is only available to the tRFC protocol.</p> <p>Take note of the following when enabling IDoc message publishing:</p> <ul style="list-style-type: none"> <li>• If the Subscription Service service receives IDocs in exploded batch mode, the IDoc confirmation message report only includes the first IDoc received. The status of all the IDocs in a batch cannot reflect the actual status of the IDocs in the SAP system.</li> <li>• A message report is consistent with the report returned by the Subscription Service service.</li> <li>• If this check box is selected and the adapter works with a remote EMS server, you have to specify the following properties: <ul style="list-style-type: none"> <li>– <code>adr3.msgReportQueue.serverUrl</code></li> <li>– <code>adr3.msgReportQueue.userName</code></li> <li>– <code>adr3.msgReportQueue.password</code></li> </ul> </li> </ul> <p>Otherwise, the adapter tries to connect to the local EMS server when you start the adapter.</p> <ul style="list-style-type: none"> <li>• If the inbound partner profile of the IDoc is configured as immediate processing, depending on when the IDoc processing is completed in the SAP system, the IDoc status is different.</li> </ul> <div>  <p>This field is displayed only when the service type is Request-Response Service (one-way only) or Subscription Service.</p> </div>


Field	Description
<b>Confirm Publisher Reference</b>	<p>Click  to select a endpoint used to publish the IDoc confirmation message report.</p> <p>You can click  to clear this field.</p>
<b>Destination</b>	<p>The way used to log IDocs.</p> <p>Select a way from the list:</p> <ul style="list-style-type: none"> <li>• <b>Log to file</b> This option is selected by default.</li> <li>• <b>Publish message</b> IDocs have to be logged to files or be saved to a destination or a subject in the following situations: <ul style="list-style-type: none"> <li>• For Publication Service or Subscription Service services, the destinations of the received IDocs is not in the valid destination list in the <b>Advanced</b> tab.</li> <li>• For Subscription Service services, an exception occurs from an SAP application that is returned from the SAP system. In this case, the data might be manually changed in the file and replayed later using a TIBCO ActiveMatrix BusinessWorks process.</li> </ul> </li> </ul> <p> This field is displayed only when the service type is Publication Service or Subscription Service.</p>
<b>Format</b>	<p>The format of the IDoc written to the IDoc files.</p> <p>Select a format from the list:</p> <ul style="list-style-type: none"> <li>• <b>None</b> Only the actual IDoc data is written to the file. No metadata is provided.</li> <li>• <b>XML</b> The IDoc is written to the file in XML format and the metadata for the function module, the adapter instance, invoked is used when writing to the file. This option is selected by default.</li> </ul> <p> This field is displayed only when you select <b>Log to file</b> from the <b>Destination</b> list.</p>

Field	Description
<b>Log IDoc to Directory</b>	<p>The directory where the IDoc files are stored.</p> <p>If you leave this field blank, the IDoc files can either be logged to the current working directory or the directory specified in the <code>adr3.idocLogDirectory</code> property.</p> <p>The precedence of the directory is as follows:</p> <ol style="list-style-type: none"> <li>1. The <code>adr3.IDocLogDirectory</code> property</li> <li>2. The <b>Log IDoc to Directory</b> field</li> <li>3. Working directory</li> </ol> <p>The format of IDoc file name is <code>IDocType_DateTimeStamp_IDocCount.IDoc</code>.</p> <p> This field is displayed only when you select <b>Log to file</b> from the <b>Destination</b> list.</p>
<b>Endpoint Reference</b>	<p>Click  to select an endpoint used by log RFC.</p> <p>You can click  to clear this field.</p> <p> This field is displayed only when the service type is Request-Response Service (one-way only).</p>
<b>Client Connection Reference</b>	<p>Click this link to configure the client connection pool used by the adapter service in the <b>Connection Pools</b> tab.</p> <p>If you want to change the client connection pool for the adapter service, click  to select a client connection pool.</p> <p>You can click  to clear this field.</p> <p> This field is displayed only when the service type is Subscription Service or Request-Response Invocation Service.</p>
<b>Thread Count</b>	<p>The number of threads.</p> <p>The default value is 1, which is the minimum value.</p> <p> This field is displayed only when the service type is Subscription Service or Request-Response Service.</p>
<b>qRFC Queue Name</b>	<p>The name of the qRFC queue.</p> <p>If you leave this field blank, inbound IDocs are tRFC. The Subscription Service service can either be configured to use tRFC or qRFC, but not both.</p> <p> This field is displayed only when the service type is Subscription Service.</p>

## Default Setting

In the Default Setting panel, click **Update Preferences** to configure the predefined settings for adapter configurations in the Preferences(Filterd) window.

The following table lists the fields in **General** tab in the Preferences(Filterd) window:

Field	Description
<b>Default Configuration prefix</b>	<p>The name prefix for adapter configurations.</p> <p>For the first adapter configuration created for a project, the default adapter configuration name is <i>Prefix.adr3model</i>. For the subsequent adapter configurations created for the same project, the default name is <i>Prefix_n.adr3model</i> where <i>n</i> starts from 1.</p> <p>The default prefix is <i>R3AdapterConfiguration</i>.</p>
<b>Working Directory</b>	<p>Click  to select a directory to store the runtime information and support files created by the adapter launcher.</p> <p>The default directory is <i>Work_Space/.metadata/.plugins/com.tibco.adr3.ui</i>.</p>
<b>Default IDoc Service Type</b>	Click <b>Publication</b> or <b>Subscription</b> to select a default IDoc service type.
<b>Default RFC/BAPI Service Type</b>	Click <b>Request-Response Invocation</b> or <b>Request-Response</b> to select a default RFC/BAPI service type.

The following table lists the fields in the **Transport** tab in the Preferences(Filterd) window. For details about transports, see [Transports Tab](#).

Field	Description
The following fields are available when you click <b>RV</b> to select RV as the default transport type:	
<b>Quality of Service for Inbound</b>	<p>The default type of quality of service for inbound services.</p> <p>Select a type of quality of service from the list:</p> <ul style="list-style-type: none"> <li>• <b>Reliable</b></li> <li>• <b>Certified</b></li> <li>• <b>Distributed Queue</b></li> </ul>
<b>Quality of Service for Outbound</b>	<p>The default type of quality of service for outbound services.</p> <p>Select a type of quality of service from the list:</p> <ul style="list-style-type: none"> <li>• <b>Reliable</b></li> <li>• <b>Certified</b></li> </ul>
The following fields are available when you click <b>JMS</b> to select JMS as the default transport type:	

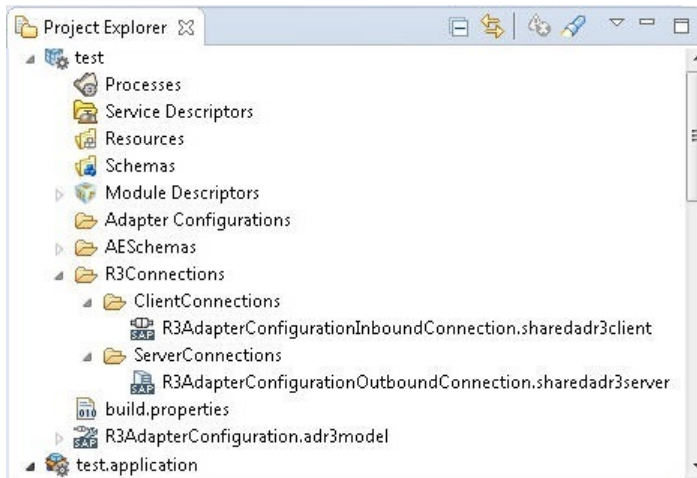


Field	Description
<b>Connection Factory</b>	<p>The default type of connection factory for all services.</p> <p>Select a type of connection factory from the list:</p> <ul style="list-style-type: none"> <li>• <b>Topic</b></li> <li>• <b>Queue</b></li> </ul>
<b>Delivery Mode for Inbound</b>	<p>The default delivery mode for inbound services.</p> <p>Select a delivery mode from the list:</p> <ul style="list-style-type: none"> <li>• <b>Durable</b></li> <li>• <b>Non Durable</b></li> </ul>
<b>Delivery Mode for Outbound</b>	<p>The default delivery mode for outbound services.</p> <p>Select a delivery mode from the list:</p> <ul style="list-style-type: none"> <li>• <b>Persistent</b></li> <li>• <b>Non Persistent</b></li> </ul>

## Working with Connections

When you associate an adapter service with a connection pool referring to a client or server connection, the adapter service can use the client or server connection to communicate with the SAP system.

Each time you create an adapter configuration, a client connection and a server connection are added automatically and used as the default connections. The client connection is stored in the `ClientConnections` folder, and the server connection is stored in the `ServerConnections` folder. If you do not want to use the default connections, you can [add a new connection](#) and [add a new connection pool](#).



Inbound adapter configurations use client connections to communicate with the SAP system, while outbound adapter configurations use server connections to communicate with the SAP system.

For the adapter configurations that have both inbound and outbound adapter services, the choice between client or the server connections depends on the adapter service.

After you have added adapter services for an adapter configuration, all inbound adapter services reference the default client connection pool, and all outbound adapter services reference the default server connection pool.

## Adding a Connection

Add connections for an adapter configuration if required.

### Procedure

1. In the Project Explorer view, expand the **project\_name > R3Connection** folder.
2. Right-click the connection folder that stores the type of connection you want to create, and then click **New > Other** to open the New wizard.
3. In the Select a wizard dialog, select **TIBCO Adapters > Adapter for SAP > Adapter for SAP Connection**, and then click **Next**.
4. In the Create new Adapter for SAP Connection dialog, select a connection type from the **Select Connection Type** list, and then select a connection kind from the **Select Connection Kind** list.
5. Click **Finish**.

### What to do next

If you want to configure a specific connection, double-click the connection in the Project Explorer view to open the [Client Connection Configuration Reference](#) or [Server Connection Configuration Reference](#).

## Adding a Connection Pool

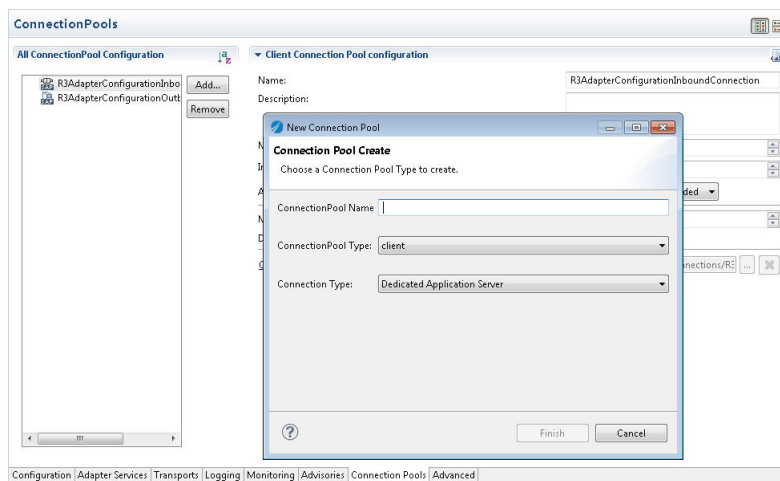
Add connection pools to an adapter configuration if required.

The following is the instruction for adding connection pool in TIBCO Business Studio.

When you add a connection pool, a new connection is also added by default and is referenced by the connection pool that is newly added. The adapter supports one or more server connection pools where each server connection pool points to a distinct combination of Program ID, Gateway Host, and Gateway Server.

### Procedure

1. Click the **Connection Pools** tab of the Adapter for SAP Configuration editor.
2. In the All ConnectionPool Configuration panel, click **Add** to open the Connection Pool Create window.



3. In the **ConnectionPool Name** field, specify a unique name for the connection to be created.
4. From the **ConnectionPool Type** list, select a connection pool type.
5. From the **Connection Type** list, select a connection type.
6. Click **Finish**.

## Client Connection Configuration Reference

Use the **Client Connection Configuration** tab to configure a client connection.

### Adapter for SAP Connection Panel

The Adapter for SAP Connection panel shows the connection name. You can enter a description in this panel.

### Run-Time Inbound Panel

The Run-Time Inbound panel shows the client connection settings.

For details about the fields in this panel, see [Client Connection Settings](#).

In the this panel, you can also specify the following configuration options:

- Select the displayed language from the **Language** list.



The default language is English.

- Specify the character sets used by the SAP system and database in the **Code Page** field.  
The field is blank by default.

### Client Panel

In the Client panel, you can specify the client that is created with the client connection.

The following table lists the fields in the Client panel:

Fields	Description
<b>Name</b>	<p>The client name.</p> <p>The default name is <code>ClientConnection_NameClient0</code>.</p>
<b>RFC Trace</b>	<p>The value of 1 indicates that the RFC trace is enabled.</p> <p>The value of 0 indicates that the RFC trace is disabled.</p> <p>The default value is 0.</p> <div>  <p>Even though you disable the RFC trace in the adapter configuration, a trace file can be generated due to the setting defined in the RFC destination in the SAP system or parameters defined on the SAP Gateway.</p> </div>
<b>USE SAP GUI</b>	<p>The value of 0 indicates that SAP GUI is disabled to carry out debugging of RFCs.</p> <p>The value of 1 indicates that SAP GUI is enabled to carry out debugging of RFCs.</p> <p>The value of 2 indicates that SAP GUI is enabled to carry out debugging of RFCs until used by an invocation of an RFC.</p> <p>The default value is 0.</p> <p>It is good practice to install the SAP GUI on the same machine as the adapter.</p> <p>If you enter other values, an error occurs.</p> <p>Trace files are generated in the working directory of the adapter. This is set in the TRA file by using the <code>application.start.dir</code> property.</p> <div>  <p>When attaching SAP GUI to the client connection, verify that the information documented in SAP OSS note 1258724 is valid for your SAP system. If the information mentioned is not available in your SAP system, an error occurs when starting the adapter configuration.</p> </div>

## Server Connection Configuration Reference

Use the **Server Connection Configuration** tab to configure a server connection.

### Adapter for SAP Connection Panel

The Adapter for SAP Connection panel shows the connection name. You can enter a description in this panel.

## Run-Time Outbound Panel

The Run-Time Outbound panel shows the client connection settings.

For more details about the fields in this panel, see [Server Connection Settings](#).

You can also enable RFC trace by setting the **RFC Trace** field to 1. By default, this field is set to 0, which indicates RFC trace is disabled.






Even though you disable the RFC trace in the adapter configuration, a trace file can be generated due to the setting defined in the RFC destination in the SAP system or parameters defined on the SAP Gateway.

## Client Connection Pool Configuration Reference

Use the Client Connection Pool configuration panel to specify the client connection name, description, and how to set up a connection between an adapter configuration and the SAP system by using the client connection.

The following table lists the fields in the Client Connection Pool configuration panel:

Field	Description
<b>Name</b>	<p>A unique name for the client connection pool.</p> <p>The default name is the one you have specified when creating the client connection pool.</p>
<b>Description</b>	Enter a description for the client connection pool.
<b>Maximum Number of Reconnect Attempts</b>	<p>The maximum number of times that the adapter retries to establish a connection to the SAP system.</p> <p>The default value is 3.</p> <p>When the value is set to -1, the adapter keeps retrying until the connection to the SAP system is established.</p>
<b>Interval between Reconnect Attempts (milliseconds)</b>	<p>The time interval in milliseconds between two successive reconnections.</p> <p>The default value is 30000.</p>
<b>Adapter Termination Criteria (after max number of reconnection attempts)</b>	<p>Select one option to decide when to stop the adapter configuration from the list:</p> <ul style="list-style-type: none"> <li>• <b>When All Pools Are Suspended</b> This option is selected by default.</li> <li>• <b>When Any Pool Is Suspended</b></li> </ul>




Field	Description
<b>Max Connections</b>	<p>The number of SAP connections in the client connection.</p> <p>The default value is 1. The maximum number is 99, subject to limitations in the SAP system.</p> <div>  <ul style="list-style-type: none"> <li>When you specify the number of SAP connections, which is contained in a client connection, you have to consider the number of threads configured in all the inbound adapter services using the client connection. To achieve maximum throughput from the adapter, the number of SAP connections must equal the number of required concurrent messages. These messages are processed across all the inbound adapter services.</li> <li>When you set the value to 0, you can start the adapter configuration without any errors.</li> </ul> </div>
<b>Disable Connection Pooling</b>	Select this check box to disable the connection to the SAP system after the call to the SAP system is completed for a certain time.
<b>Client Connection Reference</b>	<p>Click this link to configure the referenced client connection in the Adapter for SAP Connection editor.</p> <p>For details, see <a href="#">Client Connection Configuration Reference</a>.</p> <p>If you want to change the reference to a different client connection type, you can click  to select the connection of the required type in the Select Client Connection Reference window.</p> <p>You can click  to clear this field.</p>

## Server Connection Pool Configuration Reference

Use the Server Connection Pool configuration panel to specify the server connection name, description, and how to set up a connection between an adapter configuration and the SAP system by using a specific server connection.

The following table lists the fields in the Server Connection Pool configuration panel:

Field	Description
<b>Name</b>	<p>A unique name for the server connection pool.</p> <p>The default name is the one you have specified when creating the server connection pool.</p>
<b>Description</b>	Enter a description for the server connection pool.

Field	Description
<b>Maximum time between two startup attempts in case of failures(secs)</b>	<p>The maximum time interval that the adapter reconnect to the Gateway Host. When this interval is reached, the server connection pool is suspended.</p> <p>The default value is 60, and a connection attempt is made at the following times:</p> <ul style="list-style-type: none"> <li>• First startup at 1st second</li> <li>• Second startup at 2nd second</li> <li>• Third startup at 4th second</li> <li>• Fourth startup at 8th second</li> <li>• Fifth startup at 16th second</li> <li>• Sixth startup at 30th second</li> <li>• Seventh startup at 60th second</li> </ul> <p>After the seventh startup, the adapter suspends the server connection pool or stops the adapter.</p>
<b>Adapter Termination Criteria (after max number of reconnection attempts)</b>	<p>Select one option to decide when to stop the adapter configuration from the list:</p> <ul style="list-style-type: none"> <li>• <b>When All Pools Are Suspended</b> This option is selected by default.</li> <li>• <b>When Any Pool Is Suspended</b></li> </ul>
<b>Max Connections</b>	<p>The number of SAP connections in the client connection.</p> <p>The default value is 1. The maximum number is 99, subject to limitations in the SAP system.</p> <div>  <p>When you specify the number of SAP connections, which is contained in a server connection, you have to consider the number of connections defined in SAP transaction SMQS for the RFC Destination corresponding to the program ID. To achieve maximum throughput from the adapter, the number of SAP connections must equal the number of connections defined in SAP transaction SMQS.</p> </div>
<b>Server Connection Reference</b>	<p>Click this link to configure the referenced server connection in the Adapter for SAP Connection editor.</p> <p>For more details, see <a href="#">Server Connection Configuration Reference</a>.</p> <p>If you want to change the referenced connection to a different type, you can click  to select the connection of the required type in the Select Server Connection Reference window.</p> <p>You can click  to clear this field.</p>

# Working with TIDManager Configurations

The Transaction Identification Manager (TIDManager) is used to ensure exactly-once delivery for the transaction data between the SAP system and the adapter.

The TIDManager guarantees that no transactional data is duplicated in case of communication errors between the adapter and the SAP system.

In TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio), you have to configure the TIDManager configuration in the following scenarios:

- Outbound Configurations

Multiple Publication Service or Request-Response Invocation Service services (for tRFCs) use the same program ID and run in a load-balanced fashion.

Outbound configurations sharing the same program ID must refer to the same remote TIDManager configuration.

- Inbound Configurations

Multiple Subscription Service or Request-Response Service services (for tRFCs) run in a load-balanced fashion.

## Interactions between the Adapter Configuration and the TIDManager Server Configuration

After the adapter configuration is set for the remote TID Management mode, the adapter configuration invokes the TIDManagement operations on the remote TIDManager server in the TIBCO environment. The adapter configuration and the TIDManager server can interact on TIBCO Rendezvous, which is the default setting, or JMS transports.

The TIDManager server maintains the status of each Transaction Identifier (TID) associated with the transaction executed by the adapter. The TIDManager server creates and maintains a local file system of a TID file that maintains the TID status.

In the **Transports** tab of the Adapter for SAP Configuration editor, ensure that the TID\_RPC\_CLIENT or the TID\_JMS\_RPC\_CLIENT client of the TIDManager session is correctly configured for each adapter configuration. For more details, see the [Transports Tab](#) of the adapter configuration.

The subject of the TID\_RPC\_CLIENT or the TID\_JMS\_RPC\_CLIENT client in the adapter configuration has to match that of the TID\_RPC\_SERVER or the TID\_JMS\_RPC\_SERVER client in the TID Manager configuration. For more details, see the [Transports Tab](#) of TIDManager configuration.

## Recovering from Network Outages and TIDManager Server Downtimes

When an adapter configuration is configured in the remote TIDManagement mode, the TIDManager server must be running to perform TIDManagement operations. The adapter configuration cannot process any transaction if it is unable to communicate with the TIDManager server. Thus availability of the TIDManager server is critical for remote TIDManagement mode.

- Outbound TIDManagement

In case of the remote TIDManagement for outbound configurations, if the TIDManager server is not running or it cannot be reached because of the network outages, an error occurs upon receiving a transaction from the SAP system. The error message is

```
2014 Sep 10 07:37:59:423 GMT -0700 R3AdapterConfiguration Error [Adapter]
AER3-000102 TID operation timed out 6A785778253F540FC9030CDA.
```

The transaction itself is not lost and it is maintained in the tRFC queue of the SAP system. The SAP system periodically tries to push out the transaction and clear the queue. If communication with the TIDManager server is restored, normal processing continues.





Transactions maintained in the tRFC queue are retried as long as they are configured for the corresponding RFC destination and the transaction has not been retried manually. If the transaction is retried manually and there is still an issue with connecting to the outbound adapter configuration, the transaction cannot be retried by the SAP system.

- **Inbound TIDManagement**

In case of the remote TID Management for inbound configurations, if the TIDManager server is not running or it cannot be reached because of the network outages, an error occurs upon receiving an IDoc from the TIBCO environment. The error message is

```
2014 Sep 10 07:28:27:057 GMT -0700 R3AdapterConfiguration Error [Adapter]
AER3-000493 Remote TIDManager server unreachable.
```

The AER3-000493 error is also published as a Hawk Notification that can be subscribed to from TIBCO Hawk.

The value specified in the **TIDManager Client Retry Count** field in the **Advanced** tab of the Adapter for SAP Configuration editor determines the number of times the adapter configuration tries to invoke the TID operation on the TIDManager server before concluding that the TIDManager server is indeed unreachable.

Once the TIDManager server is found to be unreachable, the Subscriber adapter cannot proceed with posting the IDoc. The IDoc cannot be confirmed to the sending application in the TIBCO environment as it results in message losses.

Hence, upon detection of this situation, the adapter configuration suspends all its Subscription Service services, does not confirm received IDocs to the TIBCO environment, and goes into a silent retry mode to try and reconnect to the TIDManager server. This is achieved by pinging the TIDManager server periodically. The adapter continues to remain in this suspended state till it establishes communication with the TIDManager server again.

The value specified in the **TIDManager Client Retry Interval** field determines the time interval in milliseconds between any two ping attempts to the TIDManager server.

## Adding a TIDManager Configuration

Add TIDManager configurations to guarantee that no transactional data is duplicated in case of communication errors occurred between the adapter and the SAP system.

### Procedure

1. In the Project Explorer view, right-click the project that you have created and click **New > Other** to open the New wizard.
2. In the "Select a wizard" dialog, select **TIBCO Adapters > Adapter for SAP > Adapter for TIDManager Configuration**, and then click **Next**.
3. In the Create new Adapter for SAP TIDManager Configuration dialog, if you do not want to use the default file name for the TIDManager configuration, enter a new name in the **File name** field.
4. Click **Finish**.

### Result

A TIDManager configuration is created in the project.

## Configuring TIDManager Configurations for Fault Tolerance

Configure the TIDManager configurations in the Fault Tolerant mode by using the JMS exclusive queue feature.

### Procedure

1. Edit the `EMS_HOME\bin\queues.conf` file and specify the queue name using the exclusive property for the TIDManager configuration.

For example: `SAP.TIDMgr exclusive`

For how to edit the `queues.conf` file, see the TIBCO Enterprise Message Service documentation.

2. Ensure that the endpoint and session of the remote TIDManager configuration can match that of the TID Client defined in the outbound adapter configuration.
3. Start the TIDManager configurations with different service ID.

For examples, start the first TIDManager service as `./adr3TIDManager` and the second TIDManager service as `./adr3TIDManager-system:instanceID myTID`.

If the TIDManager configuration has been started on different machines, ensure that the TID file is in a location accessible by all TIDManager configurations.

4. Start the adapter configuration.

The primary TIDManager configuration processes IDocs while it is up and running. The secondary configuration takes over when the primary configuration goes down.

## TIDManager Configuration Reference

You can configure an TIDManager configuration in the **Configuration**, the **Transports**, the **Logging**, the **Monitoring**, and the **Advanced** tabs.



### Configuration Tab

In the **Configuration** tab, you can specify the basic information and the server endpoint used to communicate with the adapter configuration.

The following table lists the fields in the Adapter for SAP TIDManager Configuration panel:

Field	Description
<b>Adapter Name</b>	The adapter name.
<b>Instanced Id</b>	The TIDManager configuration name. The default name is the one specified when creating the TIDManager configuration.
<b>Description</b>	Enter a description for the TIDManager configuration.

The following table lists the fields in the TIDManager Service Configuration panel:

Field	Description
<b>TID Manager Server</b>	<p>Click this link to configure the server endpoint used to communicate with an adapter configuration.</p> <p>The default server endpoint is TID_JMS_RPC_SERVER or TID_RPC_SERVER.</p> <p>If you want to change the server endpoint, click  to select a endpoint in the Select a Resource window.</p> <p>You can click  to clear this field.</p>
<b>TID File Name</b>	The TID file name, <code>tidFile.tid</code> .

### Transports Tab

In the **Transports** tab, you can manage and configure transport sessions and endpoints for a TIDManager configuration.

When you create a TIDManager configuration, the adapter automatically creates the corresponding session and endpoint to encapsulate transport information necessary for data communication, depending on the transport protocol and delivery mode being used.

For more details about the **Transports** tab, see [Transports Tab](#) of the adapter configuration.

### Logging Tab

In the **Logging** tab, you can manage and configure log sinks.

TIBCO ActiveMatrix Adapter for SAP supports the following log sinks at run time:

- **File Sink**  
A file sink sends messages to a file.
- **Standard I/O Sink**  
A stdio sink sends messages to standard I/O.
- **Network Sink**  
A network sink sends messages over the network.
- **Hawk Sink**  
A Hawk sink sends messages to TIBCO Hawk.

For more details about the **Logging** tab, see the [Logging Tab](#) of the adapter configuration.

### Monitoring Tab

In the **Monitoring** tab, you can specify the TIBCO Hawk monitoring options of the TIDManager configuration.

For more details about the **Monitoring** tab, see the [Monitoring Tab](#) of the adapter configuration.

### Advanced Tab

In the **Advanced** tab, you can specify the termination subject (if Rendezvous is the transport) or topic (if JMS is the transport) name that the TIDManager configuration are listening to.

Once the TIDManager configuration receives the message that labeled with the termination subject or topic name, the configuration is stopped.



- Click **Add** from the action bar of the Schema Browser view.
3. In the Application Explorer wizard, select SAP from the **Application Type** list. Click **Next**.
  4. In the Basic Information dialog, specify the display name of the destination, and then provide a description if required. Click **Next**.
  5. Enter values in the following fields:
    - **Application Server**  
The network name of the SAP application server host machine
    - **System Number**  
The SAP system number
    - **Client**  
The SAP client number
    - **User name**  
The valid user name to log on to the SAP client specified
    - **Password**  
The valid password corresponding to the user name
  6. Click **Test Connection** to validate the connection.
  7. Click **Finish**.

## Maintaining a Destination

You can maintain the configuration options of destinations in the Schema Browser view.

### Prerequisites

Ensure that a destination has existed in the Schema Browser view.

### Procedure

1. In the Schema Browser view, right-click the top-level folder of the destination that you want to maintain, and then click **Properties** from the pop-up menu.
2. In the Properties for test window, select one of the following configuration options from the left panel and specify the fields in the right panel:
  - **Basic**  
Modify the display name and description.
  - **Connection**  
Modify the following connection options that are used as the default connection.
    - **Application Server**  
The network name of the SAP application server host machine
    - **System Number**  
The SAP system number
    - **Client**  
The SAP client number

- **User name**  
The valid user name to log on to the SAP client specified
  - **Password**  
The valid password corresponding to the user name
  - **Schema Filters**  
Define default filter strings for IDoc filter, RFC/BAPI filter, and RFC/BAPI group filter.
3. Click **OK**.

## Fetching Schemas from a Destination

You can fetch the required schemas from a destination.

### Prerequisites

Ensure that a destination has been added in the Schema Browser view.

### Procedure

1. In the Schema Browser view, expand the top-level folder of the destination, and then right-click the schema folder that you want to fetch schemas for.
2. From the pop-up menu, click **Fetch Schema**.
3. Depending on the business object type, one of the following windows opens for you to fetch the required schemas:
  - In the Search IDoc window, select the IDoc version and type, and specify the **IDoc Filter**. Click **Fetch IDocs**.  
The IDoc filter supports the wildcard search.
  - In the Search RFC/BAPI window, select an invocation protocol, and specify **RFC/BAPI Filter** or **RFC/BAPI Group Filter** options. Click **Fetch RFC/BAPIs**.  
Both the RFC/BAPI filter and the RFC/BAPI group filter support the wildcard search.
4. From the schema list, select the schemas you want to fetch. Click **OK**.

### Result

The schemas are fetched to your local machine. You can browse the schemas in the Schema Browser view.

# Working with Processes

You can configure a process to obtain and manage the flow of business information in an enterprise between different data sources and destinations.

After you have completed the tasks including creating a project, creating and configuring an adapter configuration, adding an adapter service, and starting an adapter configuration, you can start to configure a process. See [Getting Started](#) for details. If you have created an empty process when creating a project, you can directly complete the process development in this process, or you have to see *TIBCO ActiveMatrix BusinessWorks Application Development* for detailed information about how to creating a process.

In the empty process, complete the following tasks:

1. [Configuring a Process](#)
2. [Testing a Process](#)



- When the TIBCO ActiveMatrix BusinessWorks business process invokes an inbound adapter, the adapter does not initialize any parameter that is not specified on the actual call but exists in the SAP system.
- When the SAP system invokes an outbound adapter, the adapter does not initialize any parameter that is not specified on the actual call and directly publishes it to the TIBCO ActiveMatrix BusinessWorks business process.


## Configuring a Process

You can figure a BusinessWorks process with adapter activities to transfer data.

### Prerequisites

An empty process has been created in the project, and an adapter configuration has been created and configured correctly.

### Procedure

1. In the Project Explorer view, click the created project and open the empty process from the **Processes** folder.
2. Select required activities from the Palette view and drop them in the Process editor.  
For example, select and drop the Timer activity from the General Activities palette and the Publish to Adapter activity from the Adapter palette.
3. Drag the  icon to create a transition between the added activities.
4. Configure the added activities.

For the Publish to Adapter activity, depending on the protocol type, you have to configure the SEGNAME property of input data. See [Configuring the SEGNAME property of the Publish to Adapter Activity](#) for details.


For the Invoke an Adapter Request-Response Server activity, you have to specify a closure class as part of the input schema and specify the relevant properties for the invocation. See [Configuring the Invoke an Adapter Request-Response Server Activity](#) for details.

If you want to use the RFC properties for adapter activities, you have to configure the `__caret__userClosure__caret__` element with the RFC\_CLOSURE class. See [Configuring the \\_\\_caret\\_\\_userClosure\\_\\_caret\\_\\_ Element](#) for details.

The data type mapping between the SAP system and the adapter are also listed in [Data Type Mapping between the SAP System and the Adapter](#).

For detailed information about adapter activities, see *TIBCO ActiveMatrix Adapter Framework Reference*.



If the adapter service used by an adapter activity has been changed, you need to click  next to the **Adapter Service** field to update the changes.

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

## xData Type Mapping between the SAP System and the Adapter

The following table is the data type mapping between the SAP system and the adapter.

SAP Data Type	AE Custom Schema Type	Java Type
ACCP	CHAR.X	String
CHAR	CHAR.X	String
CLNT	CHAR.3	String
CUKY	CHAR.X	String
CURR	FIXED.X.Y	BigDecimal
DATS	CHAR.8	Date
DEC	FIXED.X.Y	BigDecimal
DF16_DEC	FIXED.X.Y	BigDecimal
DF16_RAW	FIXED.X.Y	BigDecimal
DF16_SCL	FIXED.X.Y	BigDecimal
DF34_DEC	FIXED.X.Y	BigDecimal
DF34_RAW	FIXED.X.Y	BigDecimal
DF34_SCL	FIXED.X.Y	BigDecimal
FLTP	R8	Double
INT1	I1	Int
INT2	I2	Int
INT4	I4	Int
LANG	CHAR.1	String
LCHR	CHAR.X	String
LRAW	BINARY.256	Byte[]
NUMC	CHAR.X	String



SAP Data Type	AE Custom Schema Type	Java Type
PREC	I2	Int
QUAN	FIXED.X.Y	BigDecimal
RAW	BINARY.256	Byte[]
RAWSTRING	BINARY	Byte[]
SSTRING	CHAR.X	String
STRING	STRING	String
TIMS	CHAR.6	Date
UNIT	CHAR.X	String

## Configuring the SEGNAME property of the Publish to Adapter Activity

To prevent the IDoc recognition error in the SAP system when invoking the Publish to Adapter activity, you have to configure the SEGNAME property in different ways based on the protocol types.

Depending on the protocol type, you have to configure the SEGNAME property by using one of the following ways:

- tRFC Protocol

Specify the property manually or leave it blank. If the property is left blank, the adapter automatically specifies the property by using the name from the AE Schema class and the format of the name is the segment definition.

- qRFC Protocol

Specify the property manually. The format of the name is the segment type.



If the property is left blank, the adapter automatically specifies it by using the segment definition. As a result, the syntax check of the sent IDoc fails in the SAP system and the IDoc remains in IDoc status 75.

## Configuring the \_\_caret\_\_userClosure\_\_caret\_\_ Element


Only after configuring the \_\_caret\_\_userClosure\_\_caret\_\_ element with the RFCCLOSURE class, you can use the properties of the RFCCLOSURE class.

### Prerequisites

In the Properties view, you have selected a reconfigured Request-Response Service service for the activity in the **General** tab.

### Procedure

1. In the Properties view, expand *AdapterService\_Name* > **aeRequestInputType** > **\_\_caret\_\_request\_\_caret\_\_Z RFC\_CUSTOMER\_GET\_\_caret\_\_** and select the **\_\_caret\_\_userClosure\_\_caret\_\_** element in the right editor of the **Input** tab.
2. Right-click the selected element and click **Substitution** from the pop-up menu.

3. In the Substitution window, click  to select a class.
4. In the Matching Resources panel, select the **class.xsd** file. In the In Container panel, select the / *Project\_Name/Schemas/ae/SAPAdapter40* folder. In the Type panel, select the **RFCCLOSURE** class. Click **OK**.
5. In the Substitution window, click **OK**.

## Result

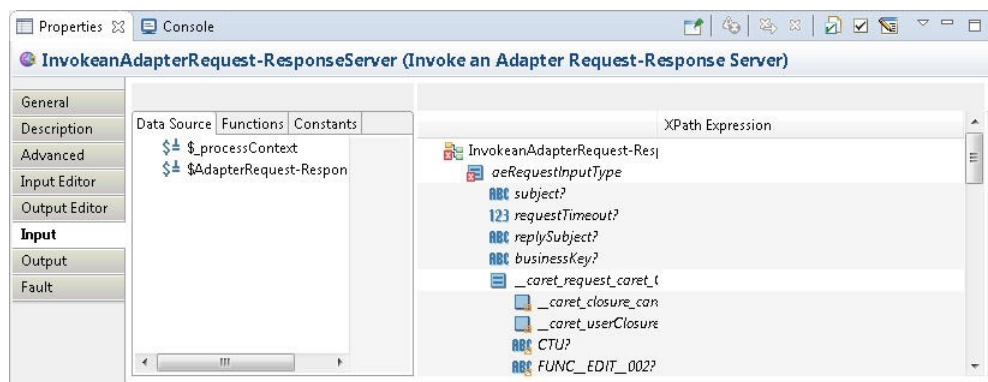
The `__caret__userClosure__caret_element` has been configured with the RFCCLOSURE class. You can specify the required RFCCLOSURE properties listed in [RFCCLOSURE Properties](#).

## Configuring the Invoke an Adapter Request-Response Server Activity

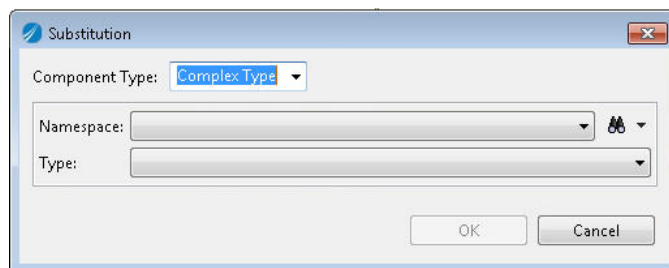
To configure the activity, you have to specify a closure class as part of the input schema and specify the relevant properties for the invocation.

### Procedure

1. In the Properties view, click the **Input** tab.
2. Expand the input data to select the `__caret__userClosure__caret_element`.



3. Configure the schema for the selected element by completing the following tasks:
  - a) Right-click the selected element, and then click **Substitution**.
  - b) In the Substitution window, click **Browse** to select a resource to open.

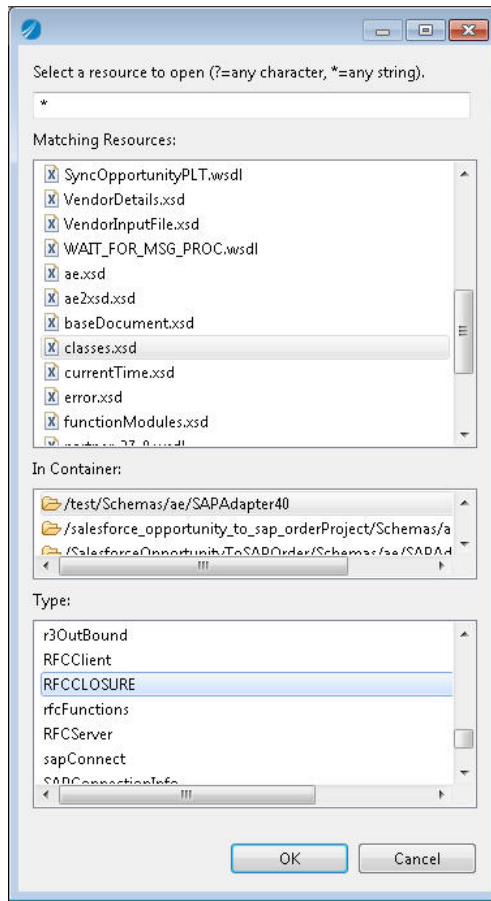


For example:

Select **classes.xsd** from the Matching Resources panel.

Select **/GettingStarted/Schemas/ae/SAPAdapter40** from the In Container panel.

Select **RFCCLOSURE** from the Type panel.




c) Click OK.

## RFCCLOSURE Properties

The following tables list the properties of the RFCCLOSURE class for inbound adapters, outbound adapters and the properties that are not applicable.

### RFCCLOSURE Properties for Inbound Adapters

The following table lists the RFCCLOSURE properties for inbound adapters.

Property	Description
bTransactional	<p>The value of 1 indicates that the tRFC protocol is enabled.</p> <p>The value of 0 indicates that the tRFC protocol is disabled.</p> <p> Do not specify both this property and the bQueue or qName property for the same activity.</p>
sessionID	<p>The session ID.</p> <p>Applicable for the dynamic logon and transactions features.</p> <p>For the transaction feature, this value is not mapped for the first Invoke an Adapter Request-Response Service activity of the transaction. The subsequent Invoke an Adapter Request-Response Service activities need to map the sessionID property with the session ID returned from the first Invoke an Adapter Request-Response Service activity.</p>

Property	Description
bQueue	<p>The value of 1 indicates that the qRFC protocol is enabled.</p> <p>The value of 0 indicates that the qRFC protocol is disabled.</p> <div>  <p>Do not specify the bTransactional property when using the qRFC protocol. Otherwise, the call from TIBCO ActiveMatrix BusinessWorks fails.</p> </div>
qName	<p>The qRFC queue name.</p> <p>Only applicable when using the qRFC protocol.</p>
DynamicConnection	<p>The value of 1 indicates that the dynamic logon feature is enabled.</p> <p>The value of 0 indicates that the dynamic logon feature is disabled.</p> <p>Only applicable for inbound adapters when the connection information is required.</p> <p>The associated properties of the Dynamic connection property are listed in the following table.</p>
bInTransactionContext	<p>The value of 1 indicates that a connection is reserved for the transaction.</p> <p>The value of 0 indicates that the reservation of a connection is cancelled.</p> <p>The connection is released only after the bContextEnd property is set to 1. Needed for all the Invoke an Adapter Request-Response Service activities in the same transaction.</p>
bContextEnd	<p>The value of 1 indicates that the transaction is closed and all resources including the connection are released after the current invocation of the Request-Response Service service.</p> <p>The value of 0 indicates that the transaction is not closed and all resources including the connection are not released after the current invocation of the Request-Response Service service.</p>
contextTimeout	<p>The timeout value of contexts.</p> <p>Only applicable for inbound adapters when the usage of transactions is required.</p> <p>You can override the property by using the <code>adr3.contextTimeout</code> TRA property.</p> <p>If the <code>contextTimeout</code> property is set to 0 and the <code>adr3.contextTimeout</code> TRA property is not specified in the TRA file, an error occurs.</p>
snc_SSOsend	<p>The SAP SSO log ticket that has been used to log on to the SAP system.</p>
bAutoCommit	<p>The value of 1 indicates that the automatic commit feature is enabled.</p> <p>The value of 0 indicates that the automatic commit feature is disabled.</p>


The following table lists the associated properties of the `DynamicConnection` property.

Property	Description
<code>useConnection</code>	<p>The value of 1 indicates that the dynamic connection feature is enabled.</p> <p>The value of 0 indicates that the dynamic connection feature is disabled.</p>
<code>connectionType</code>	The type of dynamic connection.
<code>appServer</code>	The network name of the machine that hosts SAP applications.
<code>systemNumber</code>	The SAP database instance number.
<code>Client</code>	The SAP client number.
<code>userName</code>	The valid user name used to log on to the specified SAP client.
<code>password</code>	The valid password corresponding to the user name.
<code>msgServer</code>	The message server used for load balancing.
<code>groupName</code>	The name of Logon Group in SAP system.
<code>snc_mode</code>	<p>The value of 1 indicates that the SNC mode is enabled.</p> <p>The value of 0 indicates that the SNC mode is disabled.</p>
<code>snc_partnername</code>	The SNC name of the communication partner, which is an application server.
<code>snc_qop</code>	<p>The quality of protection.</p> <ul style="list-style-type: none"> <li>• The value of 1 indicates that only the authentication is applied.</li> <li>• The value of 2 indicates that the integrity protection applied.</li> <li>• The value of 3 indicates that the privacy protection is applied.</li> <li>• The value of 8 indicates that the default protection is applied.</li> <li>• The value of 9 indicates that the maximum protection is applied.</li> </ul>
<code>snc_lib</code>	The library of external security product.
<code>snc_bSSO</code>	<p>The value of 1 indicates that a SSO logon ticket from the SAP system is requested.</p> <p>The value of 0 indicates that the request is cancelled.</p>
<code>snc_SS0recv</code>	The SAP SSO logon ticket.
<code>snc_x509</code>	The x.509 certificate.

Property	Description
codePage	The character sets used by SAP and database. The default value is 1100.
language	The language used to log on to the SAP system. The selected language is only used at design time.
rfcTrace	The value of 1 indicates that the RFC trace is enabled. The value of 0 indicates that the RFC trace is disabled.
useSAPGUI	The value of 0 indicates that SAP GUI is disabled to carry out debugging of RFCs. The value of 1 indicates that SAP GUI is enabled to carry out debugging of RFCs. The value of 2 indicates that SAP GUI is enabled to carry out debugging of RFCs until used by an invocation of an RFC.


### RFCCLOSURE Properties for Outbound Adapters

The following table lists the RFCCLOSURE properties for outbound adapters.

Property	Description
TID	The transactional ID. The property is populated when the message originates from a transaction call.
bTransactional	The value of 1 indicates that the tRFC protocol is enabled. The value of 0 indicates that the tRFC protocol is disabled.  Do not specify the bQueue or qName property when using the tRFC protocol.
For Request-Response Invocation Service that uses the RV or EMS transports, or for Publication Service that uses the EMS transport, the following SAPJCO_ JMS properties are available:	
SAPJCO_RFCDESTINATION	The RFC destination that connects from an ABAP system to an external system.
SAPJCO_CLIENT	The SAP client number.
SAPJCO_CPICCONVID	The low-level CPIC conversion ID for the SAP connection.
SAPJCO_HOST	The SAP application server used for dispatching the request from the SAP system.
SAPJCO_SYSID	The SAP system ID.
SAPJCO_USER	Valid user name to log into the SAP client specified.

## Not Applicable RFCCLOSURE Properties

The following table lists the RFCCLOSURE properties that are not applicable.

Property	
bLogoutAfterCall	
qCount	 For inbound adapter services, when using the qRFC protocol, the qCount property does not work. Since the qCount property is assigned by the SAP system when the message is received by the adapter, ensure that the messages are sent to the adapter in the required order and that the number of threads per adapter service is not greater than one.
rfcBapiTimeout	

## Testing a Process

After configuring a process, you can test the configured process during the process development stage.

### Prerequisites

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

### Procedure

1. On the toolbar, click **Run > Debug Configuration**.
2. Click **BusinessWorks Application > BWApplication** in the left panel.
3. Ensure only the application you want to debug is selected in the **Applications** tab in the right panel.
4. 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.
5. In the **Debug** tab, expand the running process and click an activity.
6. In the upper-right corner, click the **Job Data** tab, and then click the **Output** tab to check the activity output.

# Migrating a Project

You can migrate an adapter project created in TIBCO ActiveMatrix BusinessWorks 5 to TIBCO ActiveMatrix BusinessWorks 6 by using the migration tool in TIBCO Business Studio.



- You can migrate a TIBCO ActiveMatrix BusinessWorks 5 project to a TIBCO ActiveMatrix BusinessWorks 6 project, but not in reverse.
- TIBCO Business Studio does not support importing .dat files from TIBCO Designer. To migrate a project stored in a .dat file, first you have import the file to TIBCO Designer and save it as a multi-file project.
- The name of a project migrated to TIBCO Business Studio cannot contain any special characters such as: (space) ! \$ % & + . / @ \ ~

## Prerequisites

Before migrating a project to TIBCO ActiveMatrix BusinessWorks 6, complete the following steps:

1. Migrating the project to the latest version of the runtime adapter.
2. Validating the project in TIBCO Designer.

For more information, see "Validating Projects" in *TIBCO Designer User's Guide*.

## Procedure

1. In TIBCO Business Studio, choose one of the following two ways to open the BusinessWorks Migration Tool dialog:
  - From the menu, click **Project > Migrate BW Projects**.
  - From the menu, click **File > Import**. In the Import wizard, select **Migrate BW Projects > Migrate BW Projects**, and then click **Next**.
2. In the BusinessWorks Migration Tool dialog, click **Browse** next to the **BusinessWorks 5 Projects Folder** field to select the BusinessWorks 5 project folder containing the example project that you want to migrate.
3. In the BusinessWorks 5 Projects panel, click the project that you want to migrate.
4. Click **Browse** next to the **Migrated Projects Folder** field to select a directory to store the migrated project.
5. Click **Migrate** to start the migration process.
6. After the migration is finished, click **Close**.

## What to do next

After migrating the project to TIBCO Business Studio, you have to configure it. See [Configure the Migrated Project](#) for details.

# Configuring a Migrated Project


If the process in the migrated project contains a Start activity, you have to configure the process after migration.

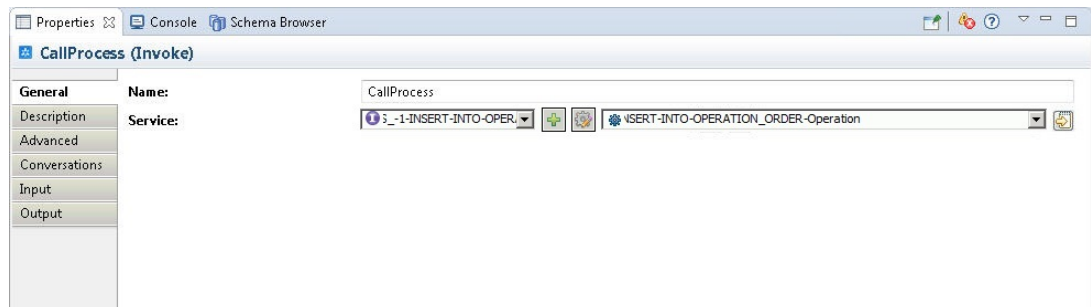
## Prerequisites


Ensure that you have migrated the project to TIBCO Business Studio. See [Migrating a Project](#) for details.



## Procedure

1. Create a new process in TIBCO Business Studio.
2. In the new process, add a Timer, File Poller or any activity of the process starter type.
3. In the new process, add a Call Process activity.
4. Add a transition between the process starter and the Call Process activity.
5. Select the Call Process activity, and then configure the activity by completing the following steps:
  - a) In the Properties view, click the **General** tab.
  - b) Click  next to the **Service** field to select the migrated process.



- c) Click **OK**.
6. Select the reference added to the new process, and then configure the reference by completing the following steps.
  - a) In the Properties view, click the **General** tab.
  - b) In the Wire to Process panel, click  to select a corresponding process from the **Process** list, and select a service from the **Service** list.
  - c) Click the blank area in the Process editor.
  - d) Click the **Advanced** tab, and select **Single AppNode** from the **Activation** list.
7. Save the project.

## Result

The configuration task has been completed and you can call the created process to invoke the migrated process.

## Advanced Topics

Advanced topics list the advanced configuration and deployment topics for TIBCO ActiveMatrix Adapter for SAP.

### Encrypting Passwords

Use the **obfuscate** utility installed with TIBCO Runtime Agent™ to encrypt passwords with an encryption key in properties files.

The **obfuscate** utility rewrites a Java property file by encrypting property values that start with a **#!** or **#!** prefix. The utility is located in the `TIBCO_HOME/adapter/adr3/version_number/bin` directory. For more detail on how to use the **obfuscate** utility, see “Obfuscate Utility” in *TIBCO Runtime Agent Installation*.

#### Procedure

1. Define a module property for the password to be obfuscated.



You must not specify a value for the module property.

2. Define the password as a client variable in the following format in the adapter TRA file:  
`tibco.clientVar.PasswordGLName=#!passwordValue`
3. On the command line, enter the following command to obfuscate the password by using the **obfuscate** utility:

```
TIBCO_HOME/adapter/adr3/version_number/bin/obfuscate TRAFilename
```

#### Result

The confidential password is obfuscated.

### Compressing JMS Messages

JMS compression ensures that JMS messages take less memory space in storage and are handled faster by the TIBCO EMS server.

With the JMS compression, an EMS client can compress JMS message bodies, before sending the messages to the EMS server. It can save space in storage when JMS message bodies are large. However, it also needs more time to publish or receive compressed messages between EMS clients.

It is good practice to enable the compression when the message bodies are large and the messages are to be stored on a server.

For more details about JMS messages, see *TIBCO Enterprise Message Service User's Guide*.

You can configure the JMS compression by using one of the following ways:

- In TIBCO Business Studio, select the **isCompressed** check box in the EndPoint Configuration panel of the JMS Publisher endpoint or JMS Rpc Client endpoint.



The **isCompressed** check box is only shown in TIBCO Runtime Agent 5.8.0 or later.

- In the adapter TRA file, enable the following properties:

```
- tibco.sdk.session.jmsCompressed session_name
```

*session\_name* specifies a list of JMS session names. All the JMS endpoints under the specified session, including Publisher, Client and Server, send compressed JMS messages to the EMS server.

- `tibco.sdk.endpoint.jmsCompressed endpoint_name`

*endpoint\_name* specifies a list of JMS endpoints. All the specified JMS endpoints, including Publisher, Client, and Server, send compressed JMS messages to the EMS server.



Separate multiple session names or endpoint names with vertical bars.

- In the adapter TRA file, add the property, `adr3.adapter_service_name.jmsProperties JMS_TIBCO_COMPRESS=ON`.

Specify the name of the Publication Service service. The value of `ON` indicates that the JMS compression for the Publication Service service is enabled.



This property is only available in the adapter TRA file. If the JMS property, `JMS_TIBCO_COMPRESS`, is added in the TRA file, it takes precedence over the `adr3.jmscompress` property. The `adr3.jmscompress` property is set to `ON` in TRA file by default, which indicates that the JMS compression for the Publication Service service enabled.

It is enough to use only one of these ways to set the JMS compression. For example, when a Publication endpoint is set to be compressed in TIBCO Business Studio, the messages are compressed even if it is not set in the TRA file, and vice versa.

The Request-Response Service server replies to JMS messages depending on whether the request messages are compressed. If the request messages are compressed, the Request-Response Service server replies to the compressed JMS messages. Otherwise, the Request-Response Service server replies to messages according to the configuration in the TRA properties.

## Fault Tolerance

Fault Tolerance allows multiple adapter configurations to substitute each other.

When the primary adapter configuration terminates unexpectedly, the token held by the primary configuration is taken over by an adapter configuration in the standby state. In the process of replacement, the standby adapter configuration becomes the primary adapter configuration.

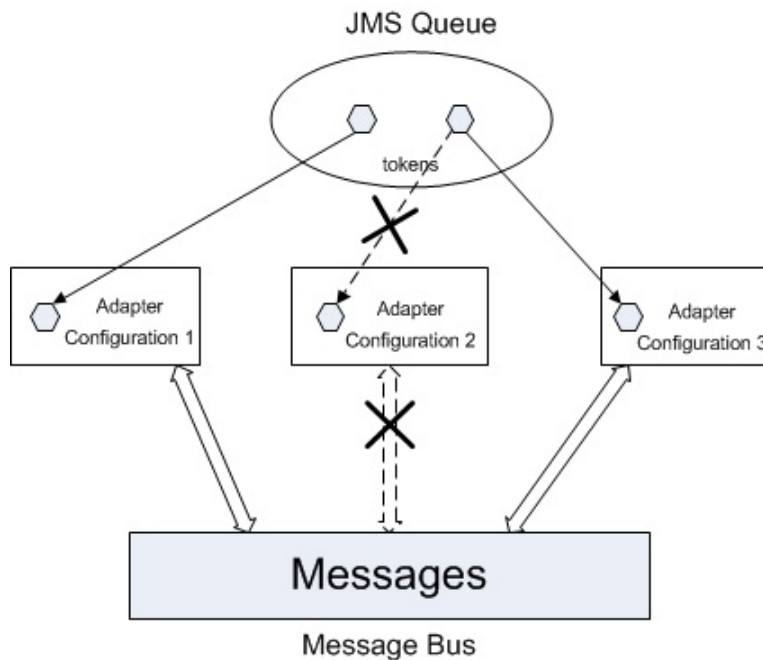
Fault Tolerance is based on the JMS queue. Before enabling the fault tolerance, you have to define a JMS queue and set the prefetch parameter of the JMS queue to none, and then put several JMS messages in the JMS queue as tokens. The number of tokens corresponds to the number of primary adapter instances.



When a standby adapter configuration becomes a primary adapter configuration, it does not take the instance ID of the original primary adapter configuration that terminated unexpectedly and still has its own instance ID.

When running JMS topic as durable, durable names exist on EMS server for each receiver, regardless if adapter configuration is primary or standby.

The following diagram shows how the fault tolerance works. At first, configuration 1 and configuration 2 fetch one of the two tokens in the JMS queue respectively. They hold the tokens and process messages as primary instances. Configuration 3 does not fetch tokens and runs in standby state. If configuration 2 terminates unexpectedly, it releases the fetched token. Configuration 3 fetches the token released by configuration 2 and continues to process messages as primary configuration.



### Enabling Fault Tolerance

To enable the fault tolerance, set the `tibco.sdk.faultTolerance.ems.enabled` property to ON, and set SDK fault tolerance properties accordingly.

For more details about the SDK fault tolerance properties, see "SDK Fault Tolerance Properties" in [TIBCO ActiveMatrix Adapter for SAP Properties](#).

You can also configure fault tolerance properties in TIBCO Business Studio and TIBCO Administrator.

When Fault Tolerance is enabled, the following two issues occur:

- If the number of tokens is more than 1, an exception is thrown in one of the following conditions:
  - The transport type is RVCN.
  - The transport type is JMS and the client ID is set value.
  - The delivery mode is Durable in the Subscription Service and Request-Response Service services.
- If a primary EMS server switches to the standby state, all primary adapter configurations that fetch tokens from the primary EMS server restart.

When Fault Tolerance is enabled, the following functionalities are not supported:

- Inbound transaction where the logical unit of work consisting of one or more RFC/BAPI calls.
- Inbound transaction where the logical unit of work consisting of one RFC/BAPI call and automatic commit is not enabled.
- Dynamic client connections to the SAP system from the inbound adapter configuration.

## Enabling and Configuring Log4j

Besides the basic and advanced logging features provided by TIBCO Adapter SDK, the adapter also supports logging through the **Log4J** utility.

The **Log4J** utility provides the following logging features:

- Dynamically change log levels without restarting or redeploying an adapter configuration.

- Maintain logging at the adapter configuration, adapter service and adapter service instance levels.



The trace messages controlled by the configuration are only relevant to the packages and classes that the specific adapter service is using. Other trace messages are still output to the adapter logs.

To using the **Log4j** utility for logging, enable and specify the following properties in TIBCO Enterprise Administrator or the adapter TRA file:

- `adr3.trace.extended` ON
- `adr3.trace.log4j.properties` *Log4jPropertiesFile\_Name*

The adapter provides a default Log4j properties file named as `adr3.log4j.properties`, and the corresponding template file. They are located in the `TIB_ADR3_HOME/bin` directory.



To filter out specific trace messages, specify the `log4j.appender.default.exclude` property in the adapter Log4j properties file. Wildcards are not supported and multiple error codes are specified using comma as the delimiter.

## Configuring Logging at the Adapter Configuration Level

You can change the log level at the adapter configuration level.

### Procedure

1. Set the `log4j.rootLogger` property to the required log level in the Log4j properties file.



To disable logging, set the log level to OFF.

2. Save the Log4j properties file.
3. Invoke the TIBCO Hawk method, [refreshExtendedLogging\(\)](#), available from the custom microagent of the adapter configuration.

## Configuring Logging at the Adapter Service Level

You can change the log level at the adapter service level.

If you want to set some adapter services of an adapter configuration to different log levels, you can add the following property for the adapter service that you want to set to different logging levels in the Log4j properties file:

```
log4j.logger.com.tibco.SAP.adapter.services.AdapterServiceClassName=loglevel
```

When the property is specified for an adapter service, the adapter service logs trace messages as how you have specified this property. The adapter service that you do not add and specify this property for still logs trace messages as how you have specified the `log4j.rootLogger` property.

The following table lists the corresponding classes for the adapter services:

Adapter Service	Package	Class
Publication Service	<code>com.tibco.SAP.adapter.services</code>	<code>SAPPublisherImpl</code>
Subscription Service	<code>com.tibco.SAP.adapter.services</code>	<code>SAPSubscriberImpl</code>
Request-Response Invocation Service	<code>com.tibco.SAP.adapter.services</code>	<code>SAPReqRespInvocImpl</code>
Request-Response Service	<code>com.tibco.SAP.adapter.services</code>	<code>SAPReqRespImpl</code>

## Configuring Logging at the Adapter Service Instance Level

You can change the log level at the adapter service instance level.

### Procedure

1. In the adapter TRA file, set the `adr3.trace.service` property to ON and save the file.
2. In the Log4j properties file, add the following property for the adapter service instance that you want to set to different logging levels and save the Log4j properties file:  
`log4j.logger.com.tibco.SAP.adapter.services.AdapterServiceClassName.InstanceName=loglevel`

## Adapter Connections

The adapter use connections to communicate with the SAP system. You have to configure the connections if required to ensure the effective and correct communication.

### Reconnecting to the SAP System

For outbound connections, the adapter automatically tries to connect to the SAP Gateway service if any connection errors occur. If connectivity is not re-established within the maximum interval configured in the project, the corresponding server connection pool can be suspended and the adapter is stopped if needed. See [Server Connection Pool Configuration Reference](#) for configuration details.

For inbound connections, the adapter automatically tries to connect to the SAP system if any connection errors occur. If connection is not re-established within the maximum number of attempts configured in the project, the corresponding client connection pool can be suspended and the adapter is stopped if needed. See [Client Connection Pool Configuration Reference](#) for configuration details.

### Connecting to Multiple Client Connection Pools

When configuring an inbound adapter service, adapter services reference the same client connection pool by default; however, this can be changed if needed.

An inbound adapter service can refer to one client or a client connection pool. The following are the scenarios when multiple client connections are required:

- Adapter service requires specific user credentials.  
For example, the service is creating financial documents in the SAP system and requires a specific user id when the documents are created.
- Adapter service is using a client connection pool based on Logon Groups and requires a specific group.  
For example, the SAP system maintains several Logon Groups and one of those groups is required for processing.
- If the SAP schemas are the same across the SAP system then the adapter service is using a client connection pool referencing a different SAP system.



For the third scenario, you can have various adapter services refer to multiple SAP systems but an adapter service can only refer to one SAP system.

## Configuring Multiple Connections for Inbound Services

You can add and configure more than one connections to an inbound service if required.

In an adapter configuration, all the newly added services use the default connections. For an inbound adapter service, the connections are specified at the service level. This means, each inbound service can have more client connections except the default one.

## Procedure

1. In the Project Explorer panel, select *Project\_Name* > **R3Connections** > **ClientConnections** > *client\_connection\_configuration* to view the default client connection.  
The name of the connection contains the adapter configuration name. This is the default connection and you can modify parameters of this connection when required.
2. Add a new client connection, and then configure this client connection. See [Adding a Connection](#) for details.
3. Add a new client connection pool, and then configure this client connection pool. See [Add a Connection Pool](#) for details.
4. Select the client connection created in [Step 2](#) as the client connection reference for the client connection pool created in [Step 3](#).
5. Click **Save**.

## Configuring Multiple Connections for Outbound Services

You can add and configure more than one connections to an outbound service if required.

In an adapter configuration, all the newly added services use the default connections. For an outbound adapter service, the connections are specified at the service level. This means, each outbound service can have more server connections except the default one.

## Procedure

1. In the Project Explorer panel, select *Project\_Name* > **R3Connections** > **ServerConnections** > *server\_connection\_configuration* to view the default server connection.  
The name of the connection contains the adapter configuration name. This is the default connection and you can modify parameters of this connection when required.
2. Add a new server connection, and then configure this server connection. See [Adding an Connection](#) for details.
3. Add a new server connection pool, and then configure this server connection pool. See [Add an Connection Pool](#) for details.
4. Select the server connection created in [Step 2](#) as the client connection reference for the server connection pool created in [Step 3](#).
5. Click **Save**.

## Configuring SAP System for bgRFC

The bgRFC transfer protocol provides a unified protocol between the SAP system and the adapter.

The adapter supports bgRFC protocol for an outbound adapter configuration and type T for transaction type only.

## Procedure

1. Configure the RFC Destination.
  - a) Log in to the SAP system and run transaction SM59.
  - b) Click **Create** on the Configuration of RFC Connections page.
  - c) Enter applicable values according to your requirements into the RFC Destination.
  - d) In the Warning about selection of protocol dialog, click **Yes**.
  - e) Click **Save**.



2. Configure the interface of the RFC/BAPI.
  - a) Run transaction SE37.
  - b) Enter a function module in the **Function Module** field on the Function Builder: Initial Screen page.
  - c) Click **Display**.
  - d) On the Function Builder page, select the **BasXML supported** check box.

## Inbound BAPI Transactional Support

TIBCO ActiveMatrix Adapter for SAP supports one or more RFC/BAPI calls to be executed as a transaction or logical unit of work in the SAP system. The last RFC/BAPI call is used to commit the transaction or logical unit of work in the SAP system.

For the case where the transaction or logical unit of work consists of only one RFC/BAPI call, the adapter supports the feature of automatic commit. If the RFC/BAPI call does not return any errors, the transaction or logical unit of work can be committed. See [Enabling Automatic Commit](#) for details.

An external system invoking a BAPI Request-Response Service service in the adapter configuration has the choice to explicitly commit or rollback the changes applied to one or more business objects by the BAPI transaction in the SAP system. The explicit commit or rollback is not a mandatory requirement for all BAPI transactions but is needed wherever the underlying BAPI transaction in the SAP system is implemented in this way.

For example, an invocation of BAPI\_SALESORDER\_CREATEFROMDAT1 function module in the SAP system from an adapter configuration does not result in permanent changes to the database until an explicit commit invocation is made with the BAPI\_TRANSACTION\_COMMIT function module.

To maintain the context for an individual BAPI invocation service, the Request-Response Service service for the BAPI transaction requires explicit commit which needs additional configuration in TIBCO Business Studio. Before configuring a BAPI Request-Response Service service for explicit committing, you need to run through the following checklist to ensure that the service really requires configuration for explicit commit.

Explicit configuration for this feature is required only when one or more of the following conditions are satisfied:

- The BAPI transaction requires explicit commit/rollback in the SAP system.
- Multiple connections (maxConnections > 1) are configured for the client, which invokes the BAPI transaction in the SAP system and can be used to scale the number of concurrent transactions.

The following table lists the two BAPI transactions within the context of the SAP system:

BAPI Transaction Name	Description
BAPI_TRANSACTION_COMMIT	<ul style="list-style-type: none"> <li>• Ends current transaction</li> <li>• Commits changes</li> </ul>
BAPI_TRANSACTION_ROLLBACK	<ul style="list-style-type: none"> <li>• Ends current transaction</li> <li>• Discards changes</li> </ul>

## Enabling Automatic Commit

The automatic commit feature executed by an adapter configuration is done by using the BAPI\_TRANSACTION\_COMMIT function module and cannot be configurable.

To execute the automatic commit feature, one of the following conditions must be met:



- An **EXPORT** or **TABLE** parameter exists where the corresponding type is like BAPIRET% and the corresponding TYPE field is either " S " or blank.
- No ABAP or system exceptions are returned by the call.

To enable the automatic commit feature, you have to expand the `_caret_userclosure_caret_` element in the **Input** tab of the activity where you want to enable the automatic commit feature, and then set the `bAutoCommit` property to 1.

By default, the `bAutoCommit` property is set to 0.

## Configuring Multiple Transactional RFC Calls

Configure multiple transaction calls within the same TIBCO ActiveMatrix BusinessWorks process.

### Procedure

1. Create the RFC/BAPI Request-Response service required for the transaction.
2. Create the RFC/BAPI Request-Response service commit transaction.
3. Create the RFC/BAPI rollback transaction.
4. Configure process definitions for the RFC/BAPI Request-Response service in the order required for a transaction.
5. [Configure the Invoke an Adapter Request-Response Server activity.](#)
6. Provide session ID from the first service output invocation to the input of the following service. Similarly, provide the session ID of the second service, `RFC_CLOSURE_DATA`, as the input of the next service. Repeat this for all subsequent services.
7. Enter the number of connections in the **Advanced** tab of the adapter connections.
8. In the **Advanced** tab of the adapter service, enter the number of threads for the service.
9. Click **Save**.

## Invoking Multiple RFC/BAPI Transactions as One Transaction in the SAP System

Invoke multiple RFC/BAPI transactions in the SAP system as one transaction.

When the transaction feature is in use, the load balancing functionality of the adapter configuration, RVCMQ and multiple services of the adapter configuration cannot be used.

### Procedure

1. Invoke the first RFC/BAPI transaction.
  - a) To start a transaction, in the `RFC_Closure` class, set the `bInTransactionContext` property to 1.
  - b) If the transaction requires a dynamic connection, you have to populate the properties in the `DynamicConnection` structure accordingly.
  - c) Specify the `contextTimeout` property accordingly.



If the next RFC/BAPI transaction is not made within the time specified by the `contextTimeout` property, the transaction held inside the adapter configuration can timeout and the resources tied up by the transaction are released.

2. Invoke the last RFC/BAPI transaction. the property `bInTransactionContext` is set to 1.
  - a) Set the `bInTransactionContext` property to 1.
  - b) To mark the end of the transaction, set the `bContextEnd` property to 1.

To invoke the next RFC/BAPI transaction, the session ID returned from the first RFC/BAPI transaction is passed on the `RFC_CLOSURE` class. If the session ID is not passed on the call, a new transaction is created.

## Invoking BAPI/RFCs Using Transactional Semantics in the SAP System

BAPI/RFCs can be invoked using transactional semantics in the SAP system.

In case of exceptions (network outages or system failures) in SAP while the call is being executed, the transactional semantics in SAP ensures data consistency and exactly-once execution.

Transactional RFCs (tRFCs) are always executed as one-way invocations and are best suited for transferring transactional data into SAP in real-time. To execute a BAPI/RFC in transactional mode, the BAPI/RFC transaction has to be downloaded and saved to the adapter configuration as a one-way operation.

Any one-way Request-Response Service service can be executed as a tRFC in SAP. To execute a one-way BAPI/RFC as a tRFC, each invocation of the BAPI/RFC have to be accompanied by userClosure information, as defined in the RFCCLOSURE class under `/tibco/public/classes/ae/SAPAdapter40/RFCCLOSURE`.

### Procedure

1. Click the activity which you want to specify with this feature, and then click the **Input** tab in the Properties view.
2. Expand the `_caret_userclosure_caret_` element and set the `bTransactional` property to 1.



When a BAPI/RFC is invoked as a tRFC, the TID is automatically generated by the adapter using the SAP system required.

The TID must be unique in the tRFC and qRFC invocations.

It is good practice to use the Certified Messages protocol for one-way BAPI/RFC invocations to handle any exceptions, like network outages, during the execution of the call in SAP.

## Invoking qRFCs

qRFC is an enhancement on tRFC. qRFC enables tRFC invocations to be handled sequentially in the target SAP system. External systems in the TIBCO environment can invoke tRFCs as qRFCs in SAP systems.

Any tRFC can be invoked as a qRFC in the inbound adapter. No design-time configuration is required. All parameters necessary to invoke a tRFC as a qRFC can be provided at run time as part of the RFCCLOSURE class discussed in the previous section.

To perform a qRFC invocation in the SAP system:

1. Click the activity which you want to specify with this feature.
2. Expand the `_caret_userclosure_caret_` element and set the `bQueue` property to 1.
3. Specify the `qName` property with the name of the qRFC queue, in which the qRFC call is to be inserted.



The boolean property, `bTransactional`, determines whether or not the call must be invoked as a tRFC in SAP. The boolean variable, `bQueue`, determines whether or not the call must be invoked as a qRFC in SAP. They must not be set to 1 at the same time, or an error is generated.

For inbound adapter services, when using the qRFC protocol, the `count` property is not supported. Since the `qCount` property is assigned by the SAP system when the message is received by adapter, you need to ensure that the messages are sent to the adapter in the required order and that the number of threads per adapter service is not greater than one.

Outbound qRFC calls can be invoked in the adapter from the SAP system. The adapter extracts the queue parameters for each qRFC invocation from the SAP system and appends them in the request's RFCCLOSURE class that is passed on to the TIBCO environment.

To perform a qRFC invocation in the TIBCO environment:

1. Click the activity which you want to specify with this feature.
2. Expand the `_caret_userclosure_caret_` element and set the `bQueue` property to 1.



For outbound qRFC calls, the properties, `qName` and `counter`, associated to the message are not available in the RFCCLOSURE class.

## Transferring IDoc through qRFC

An IDoc is transferred between the SAP system and TIBCO environment using qRFC invocation. Since the adapter sends the IDocs in a sequence, multiple threads and load balanced adapters cannot be used to enhance the performance of the adapter service.

For more details about IDoc monitoring in SAP system, see [IDoc Monitoring](#).



When configuring a Subscription Service service to use qRFC invocation service, if the Subscription Service service co-exists with other inbound adapter services then configure the Subscription Service service to use a different session to avoid multiple messages being processed in parallel.

When multiple IDocs are sent to the SAP system using qRFC, an IDoc cannot be processed fully. If the prior IDoc was not processed successfully then the current IDoc is updated with the IDoc status of 75.

## Multithreading

Multithreading of an application allows the application to simultaneously process multiple, independent events. Multithreading is supported in both inbound and outbound services.

### Multithreading in an Outbound Adapter Configuration

The scalability of the outbound adapter configuration is accommodated through the number of connections configured in the **ConnectionPools** tab. If you set the maximum connection number of a server connection pool to 3, three threads can be available to potentially receive messages from the SAP system. If the number of messages processed by the adapter configuration has to increase, adjust the thread count property property accordingly. You can configure this property in one of the following ways:

- Specify the **Max Connections** field in the **ConnectionPools** Tab of Adapter for SAP Configuration editor.
- Specify the `adr3.maxconnections` property in the `adr3.tra` file.
- Specify the `system:maxconnections` argument from the command line.

The number of threads should be equal to the number of connections required. The maximum limit is eight threads per server connection. The maximum limit is 99 threads per server connection pool. To configure the maximum number of connections allowed, modify the profile parameter `GW/MAX_CONN` for the SAP application server.

For more details about the number of threads, see [Server Connection Pool Configuration Reference](#).



To take advantage of the number of connections available in the server connection pool, it is good practice that you maintain the connection count available in SAP transaction `SMQS` for the corresponding RFC Destination.

## Multithreading in an Inbound Adapter Configuration

The scalability of the inbound adapter configuration is accommodated through the thread count configured in the **Connection Pools** tab of the adapter configuration. If you set the maximum connection number of a server connection pool to 3, three threads can be available to potentially receive messages from the JMS or RV destination. If the number of messages processed by the adapter service needs to increase, maintain the thread count property accordingly.

The maximum limit is 99 threads per adapter service.



When an adapter configuration is configured in TIBCO Business Studio, all adapter services having the same messaging transport configuration can share the same session configuration. For example, if there are two Subscription Service services and the message transport is set to JMS queue, both of these services share the same JMS session by default and all threads associated with that session. Even though the services each have their own respective thread count, if the services share the same session, the total number of threads is actually used.

When configuring the thread count for an adapter service, it is good practice that you configure accordingly based on the number of connections available and the number of concurrent messages.

In the case of Subscription Service services, to receive optimal performance, it is good practice that you set the inbound partner profile in the SAP system to “Trigger by background program”. If the inbound partner profile is set to “Trigger immediately”, the client connection used by the adapter service can be potentially blocked until the processing in the SAP system is completed and prevent the adapter service from processing and sending the next message to the SAP system.

## Multithreading with Distributed Queues

Request-Response Service and Subscription Service services can be run in load-balanced Distributed Queue (or RVDQ) mode. For multithreading to be enabled for such configurations, ensure that the worker tasks for worker instances are set to values greater than 1. The number of threads active in each service is equal to the adapter task set for that configuration, provided sufficient connections are created for the configuration.

## Multiple Connections

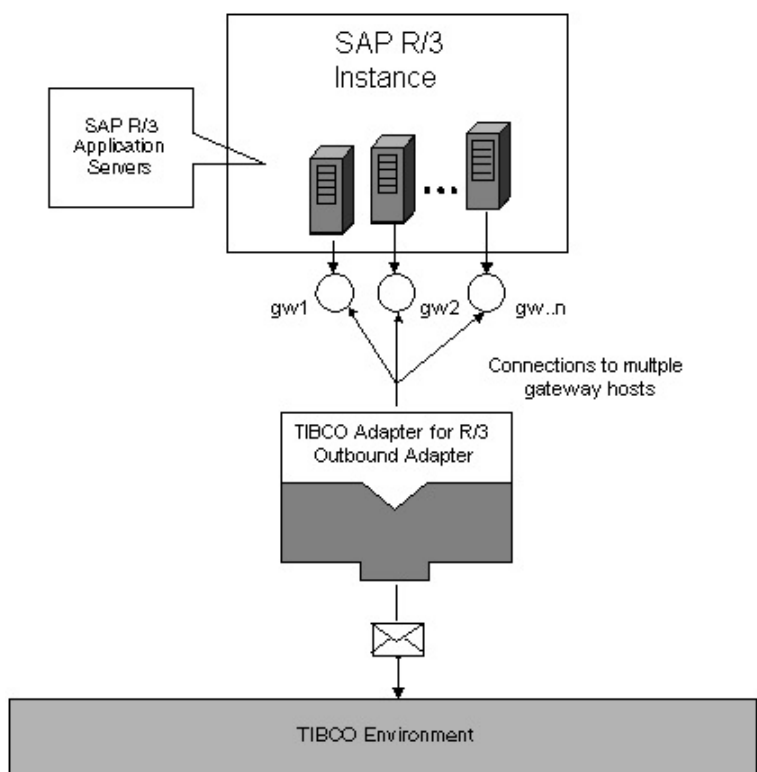
The adapter configuration can connect to multiple gateways/program IDs on the outbound side and multiple application servers on the inbound side.

## Posting BAPIs/RFCs/IDocs from Multiple Gateways in the Outbound Adapter Configuration

The SAP gateway enables communication between different SAP application servers or between an application server and an external program.

The host machine on which the SAP gateway resides is called the Gateway Host. Each SAP application server can communicate to external systems through its own gateway often residing on the same machine as the application server. Alternatively, the gateway process can also reside on a machine entirely different from the one where the application server runs. In such cases, multiple application servers can share the same gateway and the gateway host acts as a centralized gateway server.

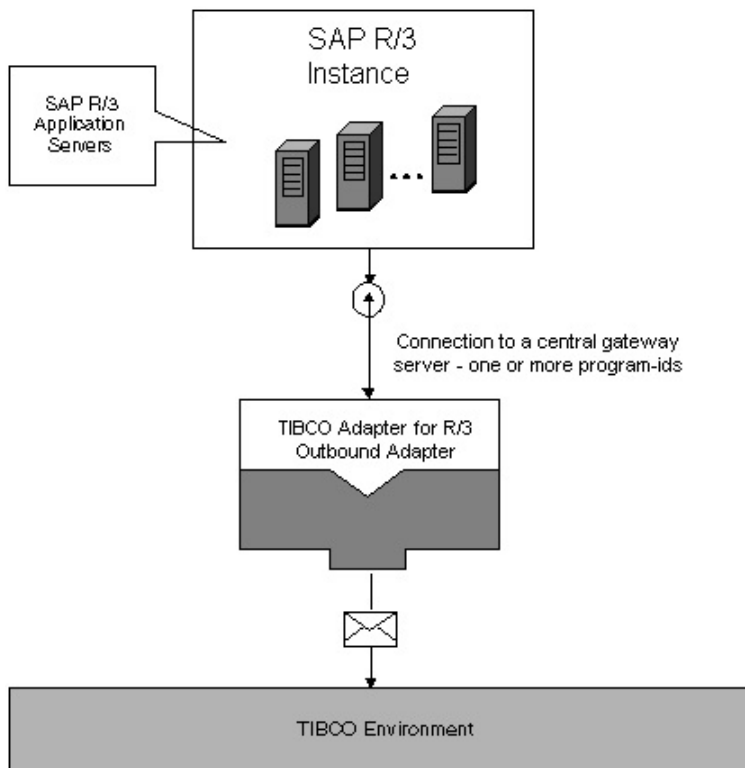
The outbound adapter configuration can service requests to invoke or post BAPIs/RFCs/IDocs in the TIBCO environment from one or multiple SAP gateways. This is achieved by configuring the adapter configuration for multiple outbound connections. See [Load Balancing Using Distributed Queue](#) for details.



## Posting BAPIs/RFCs/IDocs from Multiple RFC Destinations in the Outbound Adapter Configuration

From within a single SAP gateway, RFCs/BAPIs/IDocs are passed on to the outbound adapter configuration from RFC destinations. When an RFC/BAPI or an IDoc is executed on a specific RFC Destination, the SAP system passes on the request to the adapter registered on the Program ID that is mapped to the RFC Destination.

A single outbound adapter service can serve RFCs/BAPIs/IDocs from multiple RFC destinations. This is achieved by configuring the adapter for multiple outbound connections in TIBCO Business Studio palette. See [Load Balancing Using Distributed Queue](#) for details.

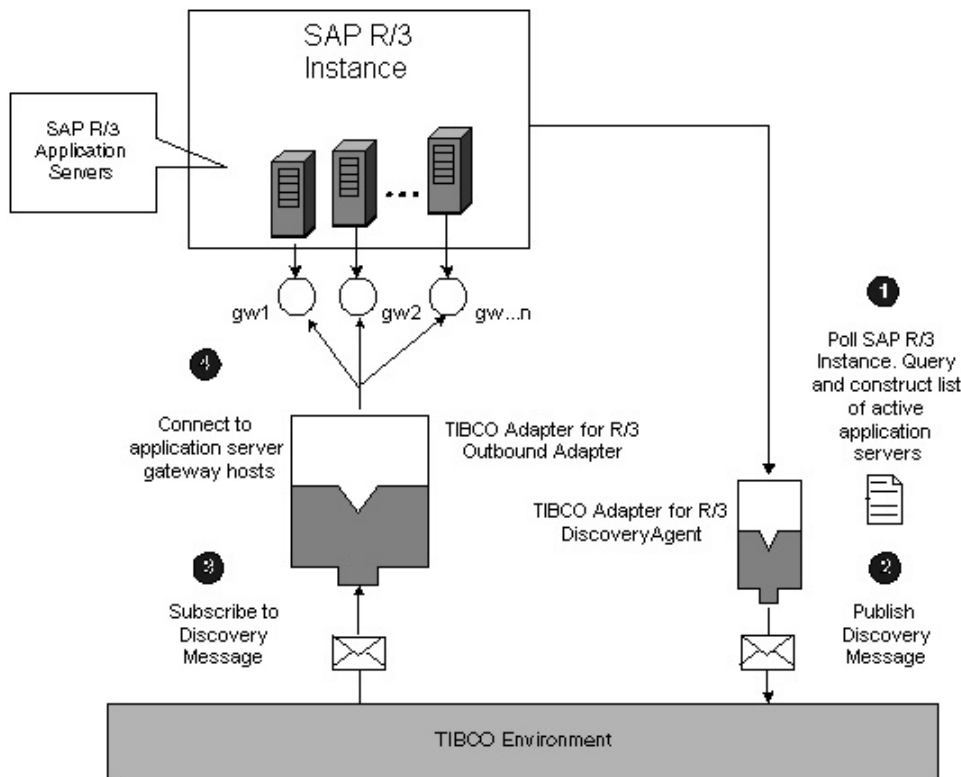


## Responding to Dynamic Changes in the Application Server Environment

Load-balancing outbound messaging on the SAP system is achieved by clustering multiple application servers under a central SAP Instance

The outbound adapter configuration can respond to dynamic changes to such clustered environments in terms of detecting addition or removal of application servers to or from the cluster. The outbound adapter configuration automatically registers itself with all active application servers in a cluster and receives and processes messages from the servers.

To achieve this, the outbound adapter configuration is to be run in conjunction with a Discovery Agent that is supplied with the adapter Run-time environment installation. The following figure explains the steps involved in this dynamic discovery scenario, for gw1 and gw2 are the gateway hosts through which the SAP application servers communicate to the outbound adapter configuration.



## Discovery Process

The Discovery Agent is a special pre-configured inbound adapter.

The discovery process involves the following steps:

1. Discovery agent polls the central SAP instance, retrieves the list of application servers connected to the central Instance.
2. The Discovery Agent publishes the list as a message to the TIBCO environment.
3. The outbound adapter configurations pick up the discovery message.
4. The outbound adapter configurations register on the gateway hosts of discovered application servers.



If the adapter and the Discovery Agent span different network subnets, use of Rendezvous Enterprise Daemon is required. You must obtain a separate license for the Rendezvous Enterprise Daemon that is appropriate for your usage.

The outbound adapter configuration automatically disconnects from application servers that have gone down and cleans up connections after all attempts to retry connecting to the application server are exhausted. The outbound adapter configuration does not create a new connection to a gateway host, if a connection is already connected to a gateway host.

## Configuring the Discovery Agent

Configure an inbound adapter configuration to be the Discovery Agent.



When you specify a list of program IDs by using the TRA property in the `adr3.discovery.pid` file, if the list of program IDs is not comma-delimited, only the first program ID can be taken into effect.

## Procedure

1. Create a project and add an adapter configuration.
2. Configure the necessary connection information for a client connection.
3. Create a Request-Response Service service using the function module, RFC\_GET\_LOCAL\_SERVERS. Once the module has been downloaded, configure the necessary transport protocol and destination.
4. Create a new session using the necessary transport protocol.
5. Use the new session that is created a Publisher endpoint and assign the required destination to it.



The destination entered must match the destination maintained in the TRA property, `adr3.discovery.listenerSubject`, in the outbound adapter service.

6. Start a new session, create a client, and assign the same destination entered as a Request-Response Service service for function module, RFC\_GET\_LOCAL\_SERVERS.
7. Maintain the Discovery Agent plugin properties in the **Advanced** tab of the adapter configuration in the TIBCO Business Studio project.
8. In the **Advanced** tab, select the **Enabled** check box.
9. In the **Polling Client Reference** field, enter the client that has been created for the session.
10. For the **Polling Interval** field, change the value accordingly. The default value is 60000 and it is maintained in milliseconds. This value is used by the Discovery Agent as the interval for polling the available list of SAP application servers. If the value is 6000, the Discovery Agent refreshes the list of SAP application servers every 60000 milliseconds or 60 seconds.
11. For the **Polling Publisher Reference** field, enter the publisher that has been created for the session.
12. For the **Application Server Domain Name** field, maintain the domain name accordingly. It is good practice to maintain this field so that Domain Name Services (DNS) is used for host name resolution.

## Running the Discovery Agent

After configuring the Discovery Agent, you can deploy the project.

You can start the Discovery Agent with the following command from the command line:

```
adr3Discoverer --propFile adr3Discoverer.tra
```

Then specify the following values:

```
- tibco.repour <repourl>
- tibco.configurl <configurl>
```

You also can deploy the Discovery Agent by using TIBCO Enterprise Administrator as any ordinary adapter.

## Configuring the Outbound Adapter Configuration

The outbound adapter configuration does not need additional configuration in TIBCO Business Studio to be able to respond to dynamic changes to the application server environment.

The following properties need to be set in the adapter launcher file to enable this feature for an outbound adapter configuration.

- `adr3.discovery`

Use this property to turn on or off the dynamic discovery feature.

The feature is commented by default. To turn it on, uncomment the property.



- `adr3.discovery.pid`

Use this property to specify program IDs on which to register the gateway of the discovered application server.

If the dynamic discovery feature is turned on, this is a mandatory property. The adapter configuration exit on starting up with an appropriate error if this property is not specified.

You can specify multiple program IDs as comma-separated values.

For example:

```
adr3.discovery.pid=tibcotest
```

```
adr3.discovery.pid=tibcotest,IDOctest
```



Discovery Agent: The outbound adapter log does not give any error when it establishes a connection to a program ID sent by the discovery message, and this program ID does not exist in the SAP System.

- `adr3.discovery.listenerSubject`

Use this property to specify the subject to listen on to subscribe to the discovery message published by the Discovery Agent. The discovery message contains the list of active application servers. Ensure that the `adr3.discovery.listenerSubject` property matches the publishing subject on the Discovery Agent side.

For example:

```
adr3.discovery.listenerSubject=APPSERVER.DISCOVERY.DYNAMIC
```

If not specified, this property defaults to `R3.APPSERVERS.ACTIVE`.

- `adr3.discovery.listenerSession`

Use this property to specify the TIBCO Rendezvous or JMS session to use for the discovery listener.

A valid session by this name should be available in the project.

For example:

```
adr3.discovery.listenerSession=MyDiscoverySession
```

If not specified, this property defaults to `R3RVSession`.

- `adr3.discovery.maxconnections`

Use this property to specify the maximum number of connections that can be established to the gateway of each discovered application server.

If not specified, it defaults to 1.

- `adr3.discovery.maxretryinterval`

Use this property to specify the maximum number for the retry interval.

This property defines the behavior of the outbound adapter in the event of connection to the SAP Gateway server. Connection loss can result from network glitches or a planned shutdown. Because the adapter cannot distinguish between the two causes, it can behave in exactly the same way in both situations.

If an SAP Gateway server has been brought down because of a planned shutdown, it will still continue to establish a valid connection until the maximum retry interval is reached.

For example:

```
adr3.discovery.maxretryinterval=120
```

Note that the maximum retry interval must be specified in seconds.

If not specified, `maxretryinterval` defaults to 60 seconds. If the value supplied is less than 1 second then `maxretryinterval` would default to 1 second.

- `adr3.discovery.appserver.suffix`

This property is appended with the server names returned back by the Discovery Agent.

For example, if the server name returned by the Discovery Agent is `tibdemo` and the value specified is `na.tibco.com`, then the server connection can use server name `tibdemo.na.tibco.com`.

It is good practice to use this property when DNS services are required for connectivity.

## Configuring the Inbound Adapter Configuration for Multiple Application Servers

Typically, an inbound adapter configuration is configured to connect to a messaging server belonging to a central SAP instance, which distributes the load across multiple application servers.

The inbound adapter configuration can also establish dedicated connections to multiple application servers that cannot be part of a messaging server configuration. To achieve this, the inbound adapter configuration have to be configured for multiple inbound connections in the TIBCO Business Studio palette. During configuration, ensure that each BAPI/RFC/IDoc service configuration points to that application server to which inbound messages for that service are posted. See [Load Balancing Using Distributed Queue](#) for details.

## Event Driven Inbound Connections

This feature allows users to dynamically establish connections to the SAP system in an inbound adapter configuration. This feature provides flexibility to external systems and the following advantages accrue:

- The inbound adapter configuration has to connect to the SAP system always, if the Request-Response Service or the Subscription Service services configured in the adapter configuration are not invoked frequently.
- External systems can login with specific authorizations in the SAP system after authentication and execute RFC/BAPIs in the SAP system through the inbound adapter configuration with these authorizations.
- The Request-Response Service and the Subscription Service services configured in the adapter make use of connections created dynamically.

A dynamic connection can be created in one of the following ways:

- Based on logon parameters defined at design time
- Based on logon parameters passed at run time when explicit logon occurs
- If the inbound adapter configuration has set up the connection with an SAP system, the user ID and password are not required each time when it connects to other SAP systems under single sign-on using SNC.



The SAP systems must establish a trust relationship in case of single sign-on using SNC.

### Disabled Connection Pooling Inbound Configuration

In order to use a dynamic connection, you have to configure connection pooling by using the login parameters provided at design time. Any inbound adapter configuration can be configured to startup where connection pooling is disabled. Such an inbound adapter configuration does not establish any connections to the SAP system unless a call is required.

Once the call is completed, the connection to the SAP system is closed automatically.

After enabling a dynamic connection based on logon parameters defined at design time, the adapter configuration opens and closes connections on a per-message basis. The connection parameters for

opening connections are picked up based on the connection references configured for the corresponding Request-Response or Subscription services.

To enable this feature, instruct the adapter configuration not to establish connections on startup by clicking the **ConnectionPools** tab of the Adapter for SAP Configuration editor for the specific configuration and selecting the **Disable Connection Pooling** check box in the Client Connection Pool Configuration panel for each of the configured Client connections. For more information about the **ConnectionPools** tab, see [Client Connection Pool Configuration Reference](#) for details.

### Performing Explicit Logon for RFC/BAPIs

A Request-Response service can be enabled for explicit logon by passing the SAP connection information at the time of the RFC/BAPI transaction. The SAP connection information is passed to the inbound adapter configuration by using the `DynamicConnection` property available in the `RFCCLOSURE` class.

The `RFCCLOSURE` class is found in the `Project_Name/AESchemas/ae/SAPAdapter40/classes/Classes` directory in the TIBCO Business Studio project. Depending on the information provided on the connection, the connection to the SAP system can either be a Dedicated connection, a Logon Group connection, or an SNC connection.



When the explicit logon feature is in use, the load balancing functionalities, `RVCMQ`, and multiple instances of the adapter cannot be used.

If the logon operation is successful and a valid client connection to the SAP system is obtained through the inbound adapter service, a session ID is sent back in the reply to the calling system. The reply contains the session ID in its `RFCCLOSURE` class.

The external system invokes the RFC/BAPI with this session ID to be serviced by the inbound adapter service. Unless the session ID is used as part of a transaction, the connection to the SAP system is closed automatically.

If the external system requires a separate connection for each invocation, each invocation should be accompanied by the SAP connection information so the connection is created.

### Enabling Single Sign-on Using SNC

You can set up connection with multiple SAP systems without providing the user ID and password by single sign-on, if the user ID already exists in those SAP systems and a trust relationship is established across the systems.



Single sign-on only supports the RPC server of the inbound adapter configuration in the SNC dynamic connection.

To enable single sign-on, in the **Input** tab of the activity where you want to enable this feature, expand the `_caret_userclosure_caret_element` and set the `bTransactional` property to 1.

## Using a Single Connection to Connect to Two SAP Systems

You can use a single connection to connect to two different SAP systems.

Assume a scenario that you are working on two SAP systems, one SAP system is named CER and the other SAP system is named LCM. Both SAP systems are assigned RFC destinations as `RFCTEST` and program ID as `RFCTEST`.

Assume you configured an outbound service running on the CER SAP system. Refer to the following procedure to configure the LCM SAP system to let it use the same SAP adapter configuration.

### Procedure

1. Log in to the second SAP system, LCM, run transaction `sm59`.

2. On the Configuration of RFC Connections page, select **RFC Connections > TCP/IP connections > RFCTEST**.
3. On the RFC Destination RFCTEST page, click the **Technical settings** tab.
4. Click **Display <-> Change (Ctrl + F1)**.
5. Enter the same values for the **Gateway host** and **Gateway service** field as the CER SAP system.



When assigning a specific gateway host to an RFC destination, ensure that this gateway host is available at all times. Regardless of whether or not you are able to make an RFC request from another host, if the specified gateway host is unavailable, the RFC request to the adapter cannot be successful.

6. Click **Save**.
7. Click **Connection Test** to test the connection.
8. Save the destination.

### Result

Now you are ready to run the adapter configuration from the second SAP system which is the LCM in this scenario.

However, the disadvantage in this scenario is that if the CER SAP system goes down, the adapter configuration cannot obtain messages from the LCM SAP system. In a scenario where one adapter services can connect to multiple program IDs of multiple SAP systems the problem does not arise.

## Using JMS Destination Bridges

A Destination bridge can be used to specify one or more destinations for services using JMS transport. The destination can be either a topic or a queue. Within the context of the adapter, the adapter service is one such destination.

The destination bridge is configured using the `bridges.conf` file. See the TIBCO Enterprise Message Service documentation for more information.

### Examples

In a scenario where you have an adapter subscriber configured with a JMS queue and the destination name is `SAP_Sub`, and a TIBCO ActiveMatrix BusinessWorks project with a publisher with a JMS topic and the destination name is `BW_Pub`. The `bridges.conf` file can be:

```
[topic:BW_Pub]
queue=SAP_Sub
```

The adapter subscriber on receiving the IDoc posts it to the SAP system.

In the above example, if the publisher is configured with a JMS queue, the `bridges.conf` file can be:

```
[queue:BW_Pub]
queue=SAP_Sub
```

## Load Balancing Using Distributed Queue

Load balancing allows message loading to be balanced or shared by multiple adapter services. Load balancing ensures no single service is over-loaded, and minimizes stress-failures.

It also allows fault-tolerance by avoiding a single point of failure. The adapter configuration can run in load-balanced configurations both on the inbound side as well as the outbound.

## Configuring an Inbound Load-Balanced Service

This section outlines the steps to configure inbound load-balanced services containing Subscription Services and Request-Response Services. During the configuration of the services, the quality of service must be configured as a distributed queue.

This section outlines the steps used to configure inbound load-balanced services containing Subscription Services and/or Request-Response Services.

During the configuration of the adapter services, the quality of service must be configured as type distributed queue.

Configuration of inbound load-balanced services can be done either by:

- Creating multiple inbound services where the CMQ names are the same across the services.
- Creating one inbound service that can be invoked multiple times.

### RVCMQ Session Attributes

The behavior of RVCMQ is complex and attributes for RVCMQ sessions must be set with care. For more detailed information, see the TIBCO Rendezvous Concepts manual and TIBCO Designer SDK Resource Guide for details on configuring an RVCM Session.

It is good practice that you have a good grasp of the following concepts and discussed in *TIBCO Rendezvous Concepts* before you finalize the configuration of any inbound service running in RVCMQ mode.

- Understanding Rank and Weight
- Weight Values
- Assigning Weight
- Rank among members with different weight
- Rank among members with equal weight
- Status quo among members with equal weight
- Adjusting Weight
- Understanding and setting heartbeats



Before changing the quality of service, make sure that no network sinks have a session reference, referring to the default sessions (DefaultRVSession, DefaultRVCMSession, DefaultRVCMQSession) created by the palette. To avoid this, have a custom session associated with the network sink. To avoid message loss after activation of a suspended RVCMQ service, assign CompleteTime to a value greater than Zero. When the completeTime is assigned Zero the scheduler does not set a timer and does not reassign tasks when the task completion confirmation is not received. So after activation of a suspended service the scheduler does not reassign the task to the worker member. For more information on RVCMQ parameters, refer to TIBCO Rendezvous documentation.

## Configuring Inbound Load-Balanced Services

Use the following steps to configure an inbound service as part of a group of load balanced services:

All the adapter services must have the same CMQ name to achieve load balancing using Distributed Queue.

### Procedure

1. Assign one of the services as the master or root.

2. Provide a unique RVCMQ session name for this service.
3. Obtain the RVCMQ session by completing the following tasks:
  - a) Click the **Transports** tab of one of the inbound services.
  - b) Click **Add** to add a new adapter transport.
  - c) In the New Transport window, enter a name in the **Transport Name** field, select **RV transport - Distributed Queue**, and click **Finish**.
  - d) Click **Add Endpoint** to add an endpoint.

## Configuring Outbound Load-Balanced Services

This section outlines the steps necessary to configure Outbound Load-Balanced Services containing the Publication Service and/or the Request-Response Invocation Service services.

Outbound Load-Balanced services can be configured either by:

- Create multiple outbound services using the same program ID for server connections.  
When creating multiple services, ensure that the TIDManager client references the same remote TIDManager configuration.
- Create one outbound service that can be invoked multiple times.

The subsequent section focuses on the second option where one outbound service is created using global variable substitution as the means for providing unique names for both the RVCM session name and file sink filename during each adapter invocation service.

### Procedure

1. In the **Transports** tab of Adapter for SAP Configuration editor, select your session and specify the **CM Name** field with `%%PASSED_CM_NAME%%`. The value of ledger file have to be changed to reflect the usage of the same module property. It is assumed that a value can be passed along with the TRA file for the adapter service.
2. In the **Advanced** tab of the adapter service in the **Adapter Services** tab, change the value of the file name for the file sink.
3. In the **Logging** tab, specify the **Log File** field with `%%LOG_FILENAME%%`.

This change can be then reflected in the **File Name** field for the file sink.

The propertiess are added to the TRA files for the adapter service as follows:

```
tibco.clientVar.LOG_FILENAME=Secondadapter.log
```

```
tibco.clientVar.PASSED_CM_NAME=Secondadapter.CM
```

The files are created in the `startDir` which is by default the installation directory, for example `c:\tibco\adapter\adr3\version_number`.

For information about module properties, see the TIBCO Repository Documentation.

## Frequently Asked Questions

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Frequently asked questions are listed questions and answers that are supposed to be commonly asked when you configure and deploy adapter projects.

**A partner profile in the SAP system is configured to 'collect IDocs' to publish IDocs in a batch. How can I configure an adapter to publish IDocs in batches?**

The exploded batch format of IDoc publication allows adapters to bunch and publish IDocs in completely self-describing format in one batch. The size of the batch is equal to the packet size configured in the SAP system for the partner profile.

**At times the CPIC error occurs in an adapter, but after some time, the adapter continues processing the message. Is this something to worry about?**

The CPIC error usually occurs when the adapter fails to connect to the SAP system because of the network overload, glitches, or some transient network problems. To verify this issue, you can set up the connection from the SAP GUI installed on the same machine where the error occurs.

**Can an adapter configuration connect to different SAP systems?**

If needed, the adapter can connect to different SAP systems from one adapter configuration. However, if the schemas across those SAP systems are different, it is good practice that you configure different adapter configurations for different SAP systems separately.

**For inbound processing of message, how can I take advantage of multiple application servers in the SAP landscape?**

For inbound processing of messages, to make maximum use of multiple application servers, you can configure the client connection to the Load Balancing type and select the **Disable Connection Pooling** check box.

**How can I debug my ABAP code when executing the program by using an adapter?**

To debug the ABAP code by using an adapter, you have to enable the usage of the SAP GUI. Then you can debug the ABAP code, when the ABAP program is called and the adapter starts the SAP GUI. You have to install the SAP GUI on the machine where you start the adapter. For how to start the SAP GUI, see.

**How can I update my repository, when there is a change in the schema of an IDoc in the SAP system, without losing my mappings?**

Whenever there is a change in an IDoc, you have to re-download the IDoc and recreate an adapter service for the re-downloaded IDoc. If the change in the IDoc does not disturb the mapped parameters, the mappings cannot be affected. For example, if you add additional fields to an existing segment. In your mappings, you can find the additional fields along with the other mappings. If you delete a field mapped from the schema, the mapping for that field is lost.

**How can I turn on RFC trace for outbound communications without making changes to the TRA properties file?**

You can use the SAP transaction SM59 to enable the RFC trace in the SAP system.

**How can I use the Load Balancing feature of adapters on the inbound side?**

To enable the inbound Load balancing feature, you have to use the Distributed Queue feature of the adapter. For the detailed information on configuration and its usage, see.

### **How can I use the Load Balancing feature of adapters on the Outbound side?**

To enable the outbound Load balancing feature, you have to use TIDManager. To set up TIDManager, during the adapter service configuration, configure the outbound TIDManagement options on the All Publication Services panel in the **Advanced** tab of an adapter configuration. For more information on this configuration, see. Ensure that you set up TIDManager before you add adapter services.

### **How do I know which version and patch level of the adapter and TIBCO Runtime Agent I am using?**

For the exact information about the TIBCO Runtime Agent build, you can check the `version.txt` file in the `TIBCO_HOME/TRA/Release` number directory. When you start an adapter, a banner shows the adapter version and patch level.

### **How many connections can an SAP ID have?**

Maximum connections for each SAP ID must not exceed 300. This limit is imposed by SAP systems. SAP licensing is based on user names, not the number of connections.

### **I am subscribing to an IDoc by using an inbound adapter service. What can happen to the IDoc if the connection to the SAP system goes down before the adapter receives the IDoc or while processing the IDoc?**

On receipt of an IDoc, a Subscription Service service can check for the validity of the connection to the SAP system before posting. If the connection is invalid, the adapter immediately starts a timer to check for connections to the SAP system periodically and suspends the IDoc subscriber so that no further messages are received. The sending system cannot receive confirmation whether the IDoc message is received.

When the SAP system comes up again, the adapter re-establishes connectivity and restarts itself automatically to receive the unconfirmed IDoc message.

The polling interval of the connection timer is configurable. This recovery mechanism is also available for the inbound one-way Request-Response messages.

### **I want to open Support Call. What information should I include in my request to avoid unnecessary delays?**

If you want to open Support Call just for information purposes, the request have to include the adapter version and patch level, the platform where you start the adapter, and the version of the SAP system.

If you open Support Call because problems or errors occur, the request also have to include the followings:

- TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) version and patch level.
- TIBCO Runtime Agent version and patch level.
- TIBCO Business Studio version and patch level.
- TIBCO ActiveMatrix BusinessWorks version and patch level.
- Platform where the adapter is been running.
- Fresh adapter log files if error occurs during adapter execution, and TIBCO Business Studio Console Output if errors occur during configuration.
- The repository where errors occur and the `adr3.tra` file.
- The SAP release and SAP Kernel version.
- The SAP JCo libraries version.



- Additional information about other components, such as TIBCOActiveMatrix BusinessWorks, if they are sources of messages to the adapter.
- Your contact information.

**An IDoc is created in the SAP system and is in status 03, but why does not the outbound adapter receive the IDoc?**

Check transactions currently in queue by using the SAP transaction SM58. If a transaction is in error, it can either be retried manually or retried automatically by the SAP system by using the configuration defined for the corresponding RFC destination. It is not good practice to retry manually unless the outbound adapter is been running. If the manual retry fails then the automated SAP retry ceases and the manual intervention is required.

**The number of server connections in an outbound adapter is increased, but there is no improvement in performance or inactivity of connections is observed.**

When changing the `maxConnections` property of a server connection pool in an outbound adapter service, change the connection value maintained for the corresponding the RFC destination by using the SAP transaction SMQS.

**What do I have to do if I do not want to have a permanent connection to the SAP system, but want the adapter to establish a connection if required?**

You can dynamically set up connection to the SAP system when the adapter receives a message. When using the Dynamic Logon feature, your user credentials can be passed at the time the request is sent to the adapter. For more information about its configuration, see [Event Driven Inbound Connections](#).

**When an error occurs in a Subscription Service service, where is it displayed?**

Errors that occur in the Request-Response Service service are sent to the client. Errors that occur in the Subscription Service service are logged to a log file. The log file path and name are set in the TRA file corresponding to the adapter service. All logs are sent to the `<install_path>\adapter\<adapter name>\<version>\logs` directory unless otherwise specified.

**When can I use the remote TIDManagement?**

You can use TIDManagement to avoid duplication on the outbound side when multiple adapter services publish the same IDoc or tRFC.

**When an adapter publish IDocs to the SAP system, why does the processing of IDocs is displayed to be slow in the adapter logs?**

If the inbound partner profile is set to `immediate processing`, processing in the SAP system can block the thread sending the IDoc from processing the next IDoc. It is good practice that the inbound partner profile be set to `trigger` by the background program and processing be managed by the SAP system.

**When saving an adapter configuration to a project, if an error occurs, where is it logged?**

TIBCO Business Studio error messages are logged to the `ProjectName.R3AdapterConfiguration` file in the `User_Home\workspace\.metadata\.log` directory.

**When the SAP system is sending IDocs to an adapter, the adapter does not receive the IDocs but the SAP system shows that the IDocs have been sent without any error. Why does not the adapter receive the IDocs?**

The reason can be that you have more than one adapters listening to the same program ID. Ensure that each adapter is configured for a separate program ID. Check you program ID is not used by another adapter at any given time. In the SAP system, execute the transaction SM59. Go to your program ID

under the TCP/IP connection folder, and then click **Test Connection**. The test connection fails if the adapter configuration is not been running, otherwise the other adapter listens to this program ID.

### **When starting an adapter, what if the repository is not found?**

Start the repository server before starting the adapter. If you are starting a remote repository, ensure that TIBCO Enterprise Administrator Repository is installed on the remote location, that a correctly configured TRA file is available in the path specified (local or remote), and that the RepoUrl has been specified accurately in the TRA file.

### **When an outbound adapter receives data from the SAP system, the data looks garbled or the call to the adapter fails.**

Check to ensure that the port type for the RFC destination is correct by using SAP Transaction SM59. When a new RFC destination is created, the SAP system defaults to Non-Unicode even though the database is Unicode. The port type has to reflect the same type as the database.

### **Why does the adapter fail to respond to a request?**

The subject name to which the adapter listens is different from the subject name of the client.

### **Why does the adapter fail to respond to a request after successfully receiving it?**

The followings are the reasons:

- Errors resulting from the class mismatch
- Records unavailable in the target application
- Connectivity problems with the target application

### **Why does the adapter startup fail?**

Ensure that the RepoUrl syntax has been specified accurately in the TRA file, and that the path specified for the TRA file is correct.

### **Why does the adapter startup fail, and the error, 'Failed to enable CM transport', occurs?**

The error occurs in one of the following situations:

- Another service is running under the same CM session.
- Permission to create the ledger file in the specified directory is denied.
- The ledger file to be created for the CM session is corrupted.

Check all these before you re-start the adapter. If you find a corrupted ledger file, and then delete the file, you can lost some messages.

### **What do the following console messages mean when I start an adapter?**

When you start an adapter, the followings are displayed in the Console view:

```
Processing
/tibco/private/adapter/R3AdapterConfiguration/SAPAdapter ...
```

This message is informational only.

```
80 [main] INFO com.tibco.security.impl.np.SecurityVendor - Initializing JSSE's
crypto provider class com.sun.net.ssl.internal.ssl.Provider in default mode
```

This message is informational only and its display based on the class path specified in the TRA file and the platform where you start the adapter.

These messages are displayed on all platforms when you start an adapter from the command line or the adapter launcher of TIBCO Business Studio. Because they are console messages, they cannot be displayed in the TIBCO Administrator logs.

## Predefined Module Properties

TIBCO ActiveMatrix Adapter for SAP has some module properties predefined in TIBCO ActiveMatrix BusinessWorks.

Some of those module properties are automatically used within the system when you create and configure an adapter configuration.

Module properties are called as global variables in TIBCO Adapter SDK. For global variables predefined in TIBCO Adapter SDK, see “Variable Substitution” in *TIBCO Adapter SDK Programmer’s Guide*.

Property	Description
SAPAppServer	The network name of the machine that hosts SAP applications.
SAPClient	The SAP client number.
SAPGatewayHost	The gateway host name, IP address or router string. If no machine is specified as a gateway host, the value of this variable is the same as the <i>AppServer</i> value.
SAPGatewayService	The SAP gateway service. The default value is <code>sapgw00</code> .
SAPPassword	The valid password corresponding to a user name.
SAPProgramID	The valid existing program ID that identifies the RFC Server program for the SAP system.
SAPSystemNumber	The SAP database instance number.
SAPUserName	The user name to log on to a specific SAP client.
SAPSystemName	The name of the SAP system. For example, DE2.1.
SAPMsgServer	The message server used for the load balancing feature. For example, SAPSVR or DE2.
SAPLogonGroup	The logon group name to log on to a set of SAP application servers.
SAPSncMode	The value of 1 indicates that the SNC connection type is enabled. The value of 0 indicates that the SNC connection type is disabled.
SAPSncPartnername	The SNC name for the SAP system.
SAPSncQop	The SAP SNC quality of protection.
SAPSncMyname	The SNC name for the SAP adapter.

Property	Description
SAPSnclib	The name and path for the SNC external library.

# Adapter Properties Files

The runtime adapter parses one or more properties files at startup. Properties files contain the properties to be used for the adapter.

The following default runtime adapter properties files are provided by TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio):

- `adr3.tra`
- `TIDManager.tra`
- `adr3Discoverer.tra`

These default properties files are located in the `TIBCO_HOME/adapter/adr3/version_number/bin` directory.

In this directory, the adapter also provides template TRA files for each properties file. When an properties file is corrupted or deleted by mistake, you can use the corresponding template file to recreate it.

Each line in a properties file is a single property. Each property consists of a key and a value. The key starts with the first non-whitespace character and ends at the first occurrence of one of the following characters:

(space) : =

The value starts at the first character after any of the previous three characters.

For example:

- `tibco.configurl=/tibco/private/adapter/test/config/config1`
- `tibco.repourl=tibcr://TEST_PROJECT`
- `tibco.username=admin`
- `tibco.password=samplePassword`
- `tibco.clientVar.service=7600`
- `tibco.clientVar.daemon=tcp:7600`

You also have to follow the format rules, when you define or specify a property in properties files. See [Properties File Format](#) for details.



If passwords in properties files are confidential, you can encrypt the passwords. See [Encrypting Passwords](#) for details.

Properties defined in the properties file of a deployed service override the same properties defined in the project. The properties file of a deployed service is located in the following directory:

`TIBCO_TRA_DOMAIN_HOME/Domain_Name/application/ApplicationDeployment_Name`.

## Properties File Format

When defining or specifying a property in the properties file, you have to follow the format rules to ensure that the property is valid.

The following rules are specific to properties defined in properties files:

- Use the number sign (#), rather than the exclamation point (!), as a comment line indicator.
- Define a property with an one-line value. Because properties files ignore the line continuation character, you cannot define a property with a multi-line value.

- Not include termination characters in a key.
- Use a forward slash (/) as a delimiter in all paths, including Microsoft Windows directory names.

## Adapter Properties

TIBCO ActiveMatrix Adapter for SAP provides two categories of properties, the required properties that predefined in TIBCO Adapter SDK and the properties defined in TIBCO ActiveMatrix Adapter for SAP.

## Required Properties

Most required properties are predefined by TIBCO Adapter SDK.

See “Properties Files” in *TIBCO Adapter SDK Programmer's Guide* for more details.

The following table lists the required properties:

Property	Description
<code>tibco.repourl</code>	<p>The absolute pathname of the local repository where you create an adapter configuration.</p> <p>For a remote project, the property value have to use the form: <code>tibcr@name</code>, where <i>name</i> is the repository name. For example: <code>tibco.repourl tibcr@AdapterRepoDefault</code>.</p> <p>For UNIX systems, the path separator have to include a single forward slash (/). For example: <code>/local/tibco/repo/repo.dat</code></p>
<code>tibco.configurl</code>	<p>The location of the adapter service in the project file.</p> <p>If a relative path is specified, the adapter service is assumed to be under the default area in the project file (<code>/tibco/private/adapter/</code>). For example, the following value connects to an adapter service named as <code>adapterpub</code> in the <code>/tibco/private/adapter/</code> directory:  <code>tibco.configurl adapterpub</code></p> <p>If an absolute path is specified, the adapter configuration is looked up in the repository as defined by the argument. For example:  <code>tibco.configurl /tibco/private/adapter/adapterpub</code></p>
<code>tibco.instanceid</code>	<p>The adapter configuration name.</p> <p>The length of the name cannot be larger than 80 characters.</p>
<code>application.args</code>	<p>The properties (TRA) file to be passed to the runtime adapter.</p> <p>For example, <code>application.args -system:propFile TIBCO_TRA_DOMAIN_HOME/domainName/application/applicationDeploymentName/applicationDeploymentName-ServiceName.tra</code>.</p>
<code>application.start.dir</code>	<p>The path name of the adapter to be started.</p> <p>For example, <code>application.start.dir TIBCO_HOME/bin</code>.</p>

## TIBCO ActiveMatrix Adapter for SAP Properties


TIBCO ActiveMatrix Adapter for SAP properties contains the adapter properties, the TIDManager properties, and the SDK fault tolerance properties.

### Adapter Properties



The following table lists the adapter properties:


Property	Commented out?	Description
<code>adr3.contextTimeout</code>	Yes	<p>The timeout value of the context in the inbound BAPI transactional support.</p> <p>If this property is specified, this property overrides the <code>contextTimeout</code> property defined in the closure class during an inbound transaction from TIBCO ActiveMatrix BusinessWorks.</p>
<code>adr3.discovery</code>	Yes	<p>The value of ON indicates the dynamic discovery feature is enabled.</p> <p>The value of OFF indicates the dynamic discovery feature is disabled.</p> <p>The default value is ON.</p>
<code>adr3.discovery.appserver.suffix</code>	Yes	<p>The suffix of the server name used by server connections.</p> <p>The property is appended with the server names returned by the Discovery Agent. For example, if the server name returned by the Discovery Agent is <code>tibdemo</code> and the value specified is <code>na.tibco.com</code>, then the server connection uses the server name as <code>tibdemo.na.tibco.com</code>.</p> <p>It is good practice to use this property when DNS services are required for connectivity.</p>
<code>adr3.discovery.listenerSession</code>	Yes	<p>The session used by the subscriber created internally in adapters.</p> <p>Required when using the dynamic discovery feature for outbound adapters.</p>
<code>adr3.discovery.listenerSubject</code>	Yes	<p>The destination used by the subscriber created internally in the adapter.</p> <p>The default value is <code>R3.APPSERVERS.ACTIVE</code>.</p> <p>Required when using the dynamic discovery feature for outbound adapters.</p>





Property	Commented out?	Description
<code>adr3.discovery.maxconnections</code>	Yes	<p>The maximum number of connections that can be established to the gateway of each discovered application server.</p> <p>The default value is 1.</p> <p>Required when using the dynamic discovery feature for the outbound adapter.</p> <div>  <p>The <code>adr3.discovery.maxconnections</code> property overwrites the <code>adr3.maxconnections</code> property when both of them are used.</p> </div>
<code>adr3.discovery.maxretryinterval</code>	Yes	<p>The maximum retry interval in seconds when re-establishing the connection with the discovered application server.</p> <p>Required when using the dynamic discovery feature for outbound adapters.</p>
<code>adr3.discovery.pid</code>	Yes	<p>The program IDs on which to register with the gateway of the discovered application server.</p> <p>You can specify multiple program IDs as comma-separated values.</p> <p>Required when using the dynamic discovery feature for the outbound adapter.</p>
<code>adr3.expiration_check_period</code>	Yes	<p>The interval in seconds for checking idled inbound connections to the SAP system.</p> <p>If not specified, connections can be checked every 60 seconds and the idled connection can be closed automatically based on the configuration of the <code>adr3.expiration_time</code> property.</p> <p>This property is not configurable by using TIBCO Administrator.</p> <p>This property is used to control the SAP JCo property, <code>jco.destination.expiration_check_period</code>. For more information on the usage of this property, see the SAP JCo documentation.</p> <p>The time observed when the connection is closed cannot exactly match the time configured.</p>

Property	Commented out?	Description
<code>adr3.expiration_time</code>	Yes	<p>The idle time allowed in seconds for inbound connections to the SAP system.</p> <p>If the property is not specified and the connection is idled for more than 60 seconds, the connection is closed automatically.</p> <p>This property is not configurable by using TIBCO Administrator.</p> <p>This property is used to control the SAP JCo property, <code>jco.destination.expiration_time</code>. For more information on the usage of this property, see the SAP JCo documentation.</p>
<code>adr3.idocNumAndStatusIncluded</code>	No	<p>The value of ON indicates that the IDoc number and its status are included in the IDoc confirmation message report.</p> <p>The value of OFF indicates that the IDoc number and its status are not included in the IDoc confirmation message report.</p> <p>For Request-Response Service services (one-way only), to include IDoc number and status, ensure RFC being invoked matches one of the following function modules:</p> <ul style="list-style-type: none"> <li>• INBOUND_IDOC_ASYNCHONOUS</li> <li>• INBOUND_IDOC_IN_QUEUE</li> <li>• IDOC_INBOUND_PROCESS</li> </ul>
<code>adr3.idocLogDirectory</code>	Yes	<p>The directory where the IDoc is logged to a file.</p> <p>The value overrides the directory specified in the project.</p>
<code>adr3.jmscompress</code>	No	<p>The value of ON indicates the JMS compression is enabled.</p> <p>The value of OFF indicates the JMS compression is disabled.</p> <p>The default value is ON.</p>
<code>adr3.MACHINE_NAME</code>	No	<p>The name of machine where you install adapters.</p> <p>TIBCO Universal Installer populates the machine name when you install TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio).</p>
<code>adr3.maxconnections</code>	Yes	<p>The maximum amount of connections of each type in adapter configurations.</p>

Property	Commented out?	Description
<code>adr3.msgReportOutboundThreadCount</code>	No	<p>The number of threads used to publish IDoc confirmation message report.</p> <p>The default value is 1.</p> <p>The maximum value is 10.</p>
<code>adr3.msgReportQueueNameSuffix Message.Confirmation</code>	No	The suffix used to identify the message queue.
<code>adr3.msgReportQueue.password</code>	No	<p>The valid password corresponding to the user name.</p> <p> You have to encrypt the password.</p>
<code>adr3.msgReportQueue.serverUrl</code>	No	The URL of the remote EMS server.
<code>adr3.msgReportQueue.userName</code>	No	The valid user name used to log on to the remote EMS server.
<code>adr3.Operation_Name.invocationTimeout</code>	Not specified by default.	<p>The invocation timeout value.</p> <p>This property is dynamic and based on the name of the RFC or BAPI that is used for the invocation. If the property exists for a given RFC or BAPI, it overrides the invocation timeout specified for the corresponding endpoint. If no timeout is specified for the endpoint and this property is not specified for the RFC or BAPI, the adapter defaults to 300000 ms, which is the default time allowed by the SAP system.</p> <p> This property is not configurable in TIBCO Administrator.</p>

Property	Commented out?	Description
<code>adr3.rfcBapiReplaceNullFieldsWithSpace</code>	Yes	<p>The value of ON indicates that the TIBCO ActiveMatrix BusinessWorks mappings is prevented from being changed when you migrate a project from a non-Unicode adapter version to a Unicode version.</p> <p>The value of OFF indicates that the TIBCO ActiveMatrix BusinessWorks mappings is not prevented from being changed when you migrate a project from a non-Unicode adapter version to a Unicode version.</p> <p>You have to specify this property only in one of the following situations:</p> <ul style="list-style-type: none"> <li>• Migrate from a earlier release of the adapter where use this property.</li> <li>• Migrate from a earlier release of the adapter where the adapter is non-Unicode and the TIBCO Designer project is configured to the ISO8859_1 message encoding.</li> </ul>
<code>adr3.saprepository</code>	Not specified by default.	<p>The value of ON indicates that an SAP client connection is used to generate the SAP JCo repository instead of using schemas already downloaded in the adapter instance.</p> <p>The value of OFF indicates that the schemas downloaded in the adapter instance are used.</p> <p>The default value is ON.</p> <div>  <p>Only the client connection of the Dedicated Application Server type is supported.</p> </div>
<code>adr3.saprepository.appserver</code>	Not specified by default.	The machine from which the adapter downloads schemas when the <code>adr3.saprepository</code> property is set to ON.
<code>adr3.saprepository.client</code>	Not specified by default.	The client number to access the SAP system when the <code>adr3.saprepository</code> property is set to ON.
<code>adr3.saprepository.language</code>	Not specified by default.	<p>The language used by the adapter to set up connection with the SAP system when the <code>adr3.saprepository</code> property is set to ON.</p> <p>The default value is E.</p>

Property	Commented out?	Description
<code>adr3.saprepository.password</code>	Not specified by default.	<p>The password corresponding to the user name when the <code>adr3.saprepository</code> property is set to ON.</p> <p> You have to obfuscate the password using the obfuscate utility installed with TIBCO Runtime Agent.</p>
<code>adr3.saprepository.sysnr</code>	Not specified by default.	The SAP system number when the <code>adr3.saprepository</code> property is set to ON.
<code>adr3.saprepository.username</code>	Not specified by default.	The user name to log on to the specific client when the <code>adr3.saprepository</code> property is set to ON.
<code>tibco.sdk.session.jmsCompressed</code>	Not specified by default.	<p>The list of JMS session names.</p> <p>All the JMS endpoints under the specified session, including Publisher, Client, and Server, send compressed JMS messages to the EMS server.</p>
<code>tibco.sdk.endpoint.jmsCompressed</code>	Not specified by default.	<p>The list of JMS endpoints.</p> <p>All the specified JMS endpoints, including Publisher, Client, and Server, send compressed JMS messages to the EMS server.</p>
<code>adr3.stopJMSEndpoint</code>	Yes	The JMS endpoint used as the stop subscriber for the adapter.
<code>adr3.stoponsubscribersaperror</code>	Yes	<p>The value of ON indicates that the adapter configuration is stopped when an adapter configuration sends an IDoc to the SAP system and receives an exception from the SAP system.</p> <p>The value of OFF indicates that the adapter configuration is not stopped when an adapter configuration sends an IDoc to the SAP system and receives an exception from the SAP system.</p>


Property	Commented out?	Description
<code>adr3.stopSubject</code>	Yes	<p>The destination of the stop subscriber in the adapter.</p> <p>If the stop subject is not specified in the <code>adr3.stopSubject</code> property, then the adapter dynamically builds the stop subject with this property. The convention for the stop subject when using this property is value of <code>(adr3.MACHINE_NAME) + "." + value of (instanceID) + "." STOPADAPTER</code>. The result is then converted to all uppercase.</p> <div>  <p>TIBCO Administrator relies on TIBCO Hawk and TIBCO Adapter SDK for the feature of using a stop subscriber to stop the adapter.</p> </div>
<code>adr3.trace.extended</code>	Yes	<p>The value of ON indicates that Log4j is used for logging.</p> <p>The value of OFF or that the property is commented out indicates that TIBCO Adapter SDK is used for logging.</p> <p>The default value is OFF.</p>
<code>adr3.trace.log4j.properties</code>	Yes	<p>The configuration information required by Log4j.</p> <p>This property is required when the <code>adr3.trace.extended</code> property is set to ON.</p> <p>The <code>adr3.log4j.properties</code> file in the <code>TIB_ADR3_HOME/bin</code> directory.</p>
<code>adr3.trace.service</code>	Yes	<p>The value of ON indicates that the logging is configured at the adapter service level.</p> <p>The value of OFF indicates that the logging is not configured at the adapter service level.</p> <p>Only when both the <code>adr3.trace.extended</code> property and this property are set to ON, you can configure logging at the adapter service level.</p>
<code>adr3.trace.thread</code>	Yes	<p>The value of ON indicates that the thread ID is displayed in the adapter logs.</p> <p>The value of OFF indicates that the thread ID is not displayed in the adapter logs.</p>

Property	Commented out?	Description
<code>adr3.&lt;Adapter_Service_Name&gt;.jmsProperties</code> <code>JMS_TIBCO_COMPRESS</code>	Not specified by default.	<p>The value of 1 indicates that the JMS compression feature is enabled when the Publication Service service is using JMS transport.</p> <p>The value of 0 indicates that the JMS compression feature is disabled when the Publication Service service is using JMS transport.</p> <p>This property is only available in the adapter TRA file.</p> <p>If you add this property in the TRA file, it takes precedence over the <code>adr3.jmscompress</code> property.</p>
<code>adr3.&lt;Adapter_Service_Name&gt;.jmsProperties&gt;</code> <code>property1=value1,</code> <code>property2=value2,</code> <code>property3=value3</code>	Yes	The customer JMS properties.

### TIDManager Properties

The following table lists the TIDManager properties:

Property	Commented out?	Description
<code>adr3TIDManager.MACHINE_NAME</code>	No	<p>The machine name where you create TIDManager configurations.</p> <p>If the stop subject is not specified in the <code>adr3TIDManager.stopSubject</code> property, the adapter dynamically builds the stop subject with this property. The convention for the stop subject when using this property is: value of <code>(adr3TIDManager.MACHINE_NAME) + "."</code> + value of <code>(instanceID) + "."</code> STOPADAPTER. Then the result is converted to all uppercase.</p> <p>TIBCO Universal Installer populates the machine name when you install TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio).</p>
<code>adr3TIDManager.stopJMSEndpoint</code>	Yes	The JMS endpoint used as the stop subscriber for the remote TIDManager configuration.

Property	Commented out?	Description
<code>adr3TIDManager.stopSubject</code>	Yes	<p>The destination of the stop subscriber in the remote TIDManager configuration.</p> <div>  <p>TIBCO Administrator relies on TIBCO Hawk and TIBCO Adapter SDK for the feature of using a stop subscriber to stop an adapter.</p> </div>
<code>adr3TIDManager.threadPool</code>	Yes	<p>The number of threads used by an TIDManager configuration for responding to requests.</p> <p>The default value is 1.</p>
<code>adr3TIDManager.tidFile</code>	Yes	The file name of the TID file of the remote TIDManager configuration.
<code>adr3TIDManager.trace.extended</code>	Yes	<p>The value of ON indicates that Log4j is used for logging.</p> <p>The value of OFF or that the property is commented out indicates that TIBCO Adapter SDK is used for logging.</p> <p>The default value is OFF.</p>
<code>adr3TIDManager.trace.log4j.properties</code>	Yes	<p>The configuration information required by Log4j.</p> <p>This property is required when the <code>adr3TIDManager.trace.extended</code> property is set to ON.</p> <p>The <code>adr3.log4j.properties</code> file in the <code>TIB_ADR3_HOME/bin</code> directory.</p>
<code>adr3TIDManager.trace.thread</code>	Yes	<p>The value of ON indicates that thread IDs are displayed in the TIDManager logs.</p> <p>The value of OFF indicates that thread IDs are not displayed in the TIDManager logs.</p> <p>The default value is OFF.</p>


### SDK Fault Tolerance Properties



All the SDK Fault Tolerance properties are applicable to TIBCO ActiveMatrix Adapter for SAP, Discovery Agent and TIDManager.

The following table lists the SDK Fault Tolerance properties:



Property	Commented out?	Description
<code>tibco.sdk.faultTolerance.ems.ackTokenOnStop</code>	Yes	<p>The value of ON indicates that the primary instance acknowledges its token when the adapter stops normally, which means a token in the specifies EMS queue is deleted.</p> <p>The value of OFF indicates that the primary instance does not acknowledge its token when the adapter stops normally.</p> <p>The default value is OFF.</p>
<code>tibco.sdk.faultTolerance.ems.enabled</code>	Yes	<p>The value of ON indicates that the Fault Tolerance feature is enabled.</p> <p>The value of OFF indicates that the Fault Tolerance feature is disabled.</p> <p>The default value is OFF.</p>
<code>tibco.sdk.faultTolerance.ems.isUsingJNDI</code>	Yes	<p>The value of ON indicates that the JNDI is used.</p> <p>The value of OFF indicates that the JNDI is not used.</p> <p>The default value is OFF.</p>
<code>tibco.sdk.faultTolerance.ems.isUsingSSL</code>	Yes	<p>The value of ON indicates that the adapter uses the SSL to connect to the JMS server.</p> <p>The value of OFF indicates that the adapter does not use SSL to connect to the JMS server.</p> <p>The default value is OFF.</p>
<code>tibco.sdk.faultTolerance.ems.jndi.providerContextFactory</code>	Yes	<p>The JNDI context factory.</p> <p>The default value is <code>com.tibco.tibjms.naming.TibjmsInitialContextFactory</code>.</p>
<code>tibco.sdk.faultTolerance.ems.providerUrl</code>	Yes	<p>The URL of the EMS provider that is used for the EMS, JNDI, or SSL server. If the EMS server communicates over SSL, the prefix of the URL is <code>ssl://</code>. Otherwise, the prefix is <code>tcp://</code>.</p>
<code>tibco.sdk.faultTolerance.ems.jndi.password</code>	Yes	<p>The password of the JNDI connection.</p>
<code>tibco.sdk.faultTolerance.ems.jndi.userName</code>	Yes	<p>The user name of the JNDI connection.</p>
<code>tibco.sdk.faultTolerance.ems.password</code>	Yes	<p>The password for the EMS connection.</p>

Property	Commented out?	Description
<code>tibco.sdk.faultTolerance.ems.queueName</code>	Yes	The queue name that stores the tokens in the EMS server.
<code>tibco.sdk.faultTolerance.ems.sessionName</code>	Yes	The session name that is used for Fault Tolerance. The specified session must be a JMS queue session.
<code>tibco.sdk.faultTolerance.ems.session.factoryName</code>	Yes	The factory name used when SDK creates the JMS connection factory for Fault Tolerance.
<code>tibco.sdk.faultTolerance.ems.ssl.enableDebugTrace</code>	Yes	<p>The value of ON indicates that the SSL enables the more SSL tracing.</p> <p>The value of OFF indicates that the SSL disables the more SSL tracing.</p> <p>The default value is OFF.</p>
<code>tibco.sdk.faultTolerance.ems.ssl.enableTrace</code>	Yes	<p>The value of ON indicates that the SSL enables tracing of the loaded certificates.</p> <p>The value of OFF indicates that the SSL disables tracing of the loaded certificates.</p> <p>The default value is OFF.</p>
<code>tibco.sdk.faultTolerance.ems.ssl.enableVerifyHost</code>	Yes	<p>The value of ON indicates that the SSL client verifies the server certificate.</p> <p>The value of OFF indicates that the SSL client does not verify the server certificate.</p> <p>The default value is OFF.</p>
<code>tibco.sdk.faultTolerance.ems.ssl.enableVerifyHostName</code>	Yes	<p>The value of ON indicates that the SSL client verifies the name in the server certificate.</p> <p>The value of OFF indicates that the SSL client does not verify the name in the server certificate.</p> <p>The default value is OFF.</p>
<code>tibco.sdk.faultTolerance.ems.ssl.expectedHostName</code>	Yes	<p>The name in the server certificate.</p> <div>  <p>Required when the <code>enableVerifyHostName</code> and <code>enableVerifyHost</code> are both set to ON.</p> </div>
<code>tibco.sdk.faultTolerance.ems.ssl.identity</code>	Yes	The path of the client identity.

Property	Commented out?	Description
<code>tibco.sdk.faultTolerance.ems.ssl.isStrongCipherSuites</code>	Yes	<p>The value of ON indicates that only the strong cipher suites are allowed.</p> <p>The value of OFF indicates that not only the strong cipher suites are allowed.</p> <p>The default value is OFF.</p>
<code>tibco.sdk.faultTolerance.ems.ssl.password</code>	Yes	<p>The client identity password.</p> <p> Required when the identity is specified.</p>
<code>tibco.sdk.faultTolerance.ems.ssl.trustedDir</code>	Yes	<p>The full path of the folder where the required certificates are located.</p> <p> Required when the connection between the EMS client and EMS server is over SSL.</p>
<code>tibco.sdk.faultTolerance.ems.userName</code>	Yes	The user name for the EMS connection.

## Trace Messages

Trace messages provide information about adapter activities.

Trace messages are logged to the console where you start the runtime adapter, and to a log file. They can also be redirected to the TIBCO Hawk Display application, or sent to other applications by using the TIBCO Rendezvous transport.

A trace message includes the following fields:

Field	Description
<b>Timestamp</b>	Timestamp of occurrence. For example, 2014 Feb 22 20:14:51:718 GMT -8.
<b>Adapter Identifier</b>	Name of the adapter that writes the trace message. This is a combination of the adapter acronym and adapter configuration name. For example, the application identifier, AER3.publisher1, identifies a TIBCO ActiveMatrix Adapter for SAP (TIBCO Business Studio) service named as publisher1.
<b>Role</b>	Trace message level. Trace messages are grouped into the following levels: <ul style="list-style-type: none"> <li>• Info Indicates normal adapter operation. No action is necessary. A trace message tagged with info indicates that a significant processing step was reached and has been logged for the tracking or auditing purpose. Only an Info messages before a tracking identifier are considered as a significant step.</li> <li>• Warn Indicates that an abnormal condition is found. Processing continues, but special attention from an administrator is good practice.</li> <li>• Error Indicates that an unrecoverable error occurs. Depending on the error severity, the adapter decides whether to continue with the next operation or stop altogether.</li> <li>• Debug Indicates trace messages defined by developers. In normal operating conditions, debug messages cannot be displayed.</li> </ul> <p>When configuring the adapter, you can define whether trace messages of a role can be logged or not. For example, you can decide not to log trace messages of the info role to increase performance.</p>

Field	Description
<b>Category</b>	<p>Category of trace messages.</p> <p>Trace messages can be grouped into the following categories:</p> <ul style="list-style-type: none"> <li>• Adapter The adapter is processing an event.</li> <li>• Application The adapter is interacting with an SAP system.</li> <li>• Configuration The adapter is reading configuration information.</li> <li>• Database The adapter is interacting with a database.</li> <li>• Schema The adapter is retrieving metadata from an SAP system.</li> <li>• Palette The adapter is interacting with the palette.</li> <li>• Publication The Publication Service service is reporting this trace message.</li> <li>• Request-Response Invocation The Request-Response Invocation Service service is reporting this trace message.</li> <li>• Request-Response The Request-Response Service service is reporting this trace message.</li> <li>• Shutdown The adapter is shutting down.</li> <li>• Startup The adapter is starting.</li> <li>• Subscription The Subscription Service service is reporting this trace message.</li> <li>• Connection This is an application connection related trace message.</li> <li>• System This category is not linked to any specific event process. The trace message can be related to a Windows Service related message, memory allocation, file system error, and so on.</li> <li>• TibRvComm The adapter is communicating with TIBCO Rendezvous.</li> <li>• XML The adapter is parsing XML documents.</li> </ul>

Field	Description
<b>Status Code</b>	<p>Unique code for the message and description.</p> <p>Status codes are identified by an unique number and description. If a trace message includes an error or warn role, the status code includes a resolution.</p>
<b>Tracking Identifier</b>	<p>Unique identifier that is “stamped” on each message by the originating adapter.</p> <p>The tracking identifier remains in effect from the beginning of a message to its completion as it is exchanged by TIBCO applications. If the adapter is the termination point of the message, the tracking identifier is not displayed in the trace message. You cannot modify the tracking identifier format or configure what information to be displayed.</p>
<b>Application Information</b>	<p>Application specific information added to the tracking info to trace the message back to its source.</p> <p>Set initially by the originating adapter and carried forward. It is augmented by each intermediate component.</p>

### Example of Trace Messages

The following trace messages are displayed during a session where the adapter receives a message from an SAP system:

```
2014 Jan 24 10:46:10:486 GMT 5 SAPAdapter.SALESORDER-OUT Info [Adapter] AER3-000082
Successful initialization of Adapter
2014 Jan 24 10:47:18:644 GMT 5 SAPAdapter.SALESORDER-OUT Info [Adapter] AER3-000114
Received invocation request for BAPI_SALESORDER_CREATEFROMDAT1 from SAP R/3 System
tracking=#-0Y--C--DX1ALUbc--4zzzw-TEzzw#
```

The first trace message indicates that the adapter has been started. The fields in this trace message are:

- **Timestamp:** 2014 Jan 24 10:46:10:486 GMT 5  
Indicates when the adapter has been started.
- **Adapter Identifier:** SAPAdapter.SALESORDER-OUT  
Indicates that the trace message is about the activity of
- **Role:** Info  
Indicates that the trace message is informational, that means the activity is normal for the adapter.
- **Category:** Adapter  
Indicates that the category of this trace message is Adapter.
- **Status code:** AER3-000082 Successful initialization of Adapter  
Indicates that the adapter has been started successfully.

The second trace message indicates the adapter received a message from the SAP system. The tracking identifier, #-0Y--C--DX1ALUbc--4zzzw-TEzzw#, uniquely identifies this trace message.

## Status Codes for Adapter Category

For the Adapter category, status codes have the Debug, Error, Info, and Warn roles.

### Debug Codes

The following table lists the status code of the Debug role and the corresponding resolution:

Status Code	Resolution
AER3-DEBUG-ADAPTER %1	A debug message. No action required.

## Error Codes

The following table lists the status codes of the Error role and the corresponding resolutions:

Status Code	Resolution
AER3-000001 Invalid closure data for operation %1	Create a correct instance of RFC_CLOSURE defined in the SAPAdapterSchema.xml file and set it as closure data in the request to be sent to the inbound adapter. To find out more about closure, refer to TIB Adapter SDK documentation and TIBCO 2.0 ActiveEnterprise wire format.
AER3-000031 Unsupported data type %	The data type is unsupported by the SDK, SAP or both adapters.
AER3-000033 Class name invalid for IDoc	Ensure that the IDoc you create to be sent to the adapter is correct.
AER3-000044 Unable to create function imply for %1	View earlier error messages in log files for the cause of this error.
AER3-000045 RFC function initialization failure: %1; function name: %2	View the error description for the cause of this error.
AER3-000046 Cannot create publisher proxy for %1	View earlier error messages in log files for the cause of this error.
AER3-000068 Cannot create IDoc data instance from received IDoc tree	Ensure that the MTree data that your application sends to the adapter subscriber is valid.
AER3-000072 Client connection %1 is invalid	Ensure that the login parameters used to log on to an SAP system are correct, and that the adapter can reach the SAP system.
AER3-000102 Operation timed out %1	Ensure that TIDManager is running and accessible from the adapter, and that subject names match.
AER3-000122 The IDoc %1 does not contain a control record	Ensure that the IDoc contains a control record.

Status Code	Resolution
AER3-000124 The received IDoc tree in exploded form is null	Ensure that the Tree (MTree in SDK) is created correctly and corresponds to the IDoc.
AER3-000131 Cannot get EDIDD header attribute from the fields for segment %1	Check the data. It must include the EDIDD header.
AER3-000136 The %1 record sequence does not contain a valid control record	Check the data first. Make any changes. Check the configuration for an appropriate definition.
AER3-000138 The %1 record does not contain attribute %2	Indicates a normal adapter operation. No action required.
AER3-000141 Subscriber: %1, the message could not be recovered	Indicates a normal adapter operation. No action required.
AER3-000200 Failed to update state for transaction %1	Ensure that the user has write permission to the tid file.
AER3-000207 The class %1 does not specify attribute %2	Check the repository and re-create the class definition if you suspect it has been incorrectly created or modify the class definition to include the named attribute.
AER3-000273 Invalid Connection for pool %1	Check whether the pool definitions are valid.
AER3-000282 Receive reply failed for: %1	View the accompanying error messages for additional details.
AER3-000310 Received Error Advisory Message: %1, Subject: %2	Report the error to TIBCO Support. This is an error advisory thrown by a TIBCO Infrastructure component. The message %1 is context-sensitive.
AER3-000431 Unable to create marshaller for operation %1	View error messages in log-files for the cause of the error.
AER3-000460 Failed to active service %1	SDK Error: %2



Status Code	Resolution
AER3-000461 Connection Error	Unable to create a connection with the target application %1 using connection parameters %2 and the target application error is %3.
AER3-000472 adr3	Maintain the property, adr3.discovery.pid, by using TIBCO Administrator if the adapter is deployed, or by using the TRA file if the adapter is being running in the adapter launcher or from command line.
AER3-000474 Error creating discovery listener with session %1 and listen-subject %2	View the error description for the cause of the error.
AER3-000483 Function is a queue RFC	Set the <b>bQueue</b> parameter to 0 if not using qRFC, or supply a queue name by using the <b>qName</b> parameter.
AER3-000486 Invalid Destination %1 specified	Specify a valid destination.
AER3-000493 Remote TIDManager server unreachable	Check the Remote TIDManager server.
AER3-000494 Failed to update TID store	Check the TID store file record. For example, the length of the record is not 101 characters.
AER3-000500 Unsupported datatype: class %1. Parameter: %2	None.
AER3-890006 Connection Error.	Adapter stopping due to persistent connection errors to the SAP R/3 system(s).
AER3-910005 Exception: %1	Check the repository settings.
AER3-950013 Marshaller exception at %1	View the error description for the cause of the error.
AER3-950014 Unmarshaller exception at %1	View the error description for the cause of the error.
AER3-970009 No publisher found for IDoc: %1	Check the Program ID and whether the configuration of the adapter is correct.

Status Code	Resolution
AER3-970010 Unable to set auto confirmation to OFF for service: %1	View earlier error messages in log files for the cause of the error.
AER3-970014 Error decrypting password for connection %1, message: %2	Check whether the password encrypted by the obfuscation tool is available from TRA.
AER3-970015 Error adding %1, message: %2	Adapter was unable to add adapter service due to the error message provided. Verify that the service refers to the correct schema and client connection in the case of inbound services.
AER3-970016 Cannot get server connection %1	Check the configuration of server connections.
AER3-970017 Cannot get client connection %1	Check the configuration of client connections.
AER3-970018 Cannot create Publisher %1, invalid connection %2	View the error description for the cause of the error.
AER3-970019 Cannot create Subscriber %1, %2	Check the configuration of server connections.
AER3-970021 Cannot create RPC Server %1, %2	View the error description for the cause of the error.
AER3-970031 Server connection pool: gatewayHost=%1 gatewayService=%2 programID=%3 update error: %4	View the error description for the cause of the error.
AER3-970033 Client connection pool name: %1 update error: %2	None.
AER3-970035 Log4j refresh error: %1	Check whether the Log4j configuration exists and is correct.
AER3-970036 Deactivation of subscriber for Discovery Agent failed due to error: %1	View the error description for the cause of the error.

Status Code	Resolution
AER3-970237 The function module is invalid for 4.x version of IDoc: %1	Use the valid function module for 4.x: IDOC_Inbound_ASYNCHRONOUS and IDOC_Inbound_IN_QUEUE.
AER3-970238 RFC error encountered and AutoCommit would be skipped for RFC function : %1 error: %2	Check if the return TYPE is "S" or " " in the case of associated TYPE starting with "BAPIRET" from EXPORT parameters and TABLE parameters in SAP server.
AER3-970241 The transaction committed failure for RFC function : %1 error: %2	Check the SAP server.
AER3-970243 Failed to initialize JMS Message Queue: %1	Check the message queue name specified in Global Variables.
AER3-970244 Failed to stop JMS Message Queue: %1	Check the EMS server.
AER3-970245 Failed to stop Message Report Thread Pool	Check the thread pool for message report.
AER3-970247 RFC function initialization failure : %1; function name : %2	Check the connection to the SAP server, for example, user ID and password.
AER3-970248 RFC function execution failure : %1; function name : %2	Check the SAP server.
AER3-970250 Subscriber not found for IDoc %1	Check the adapter configuration.
AER3-970251 Cannot read RFCClosure class: %1	Check whether the closure class used during the invocation is RFCCLOSURE.
AER3-970256 Error in Transaction with SessionID: %1	No response was provided within the configuration defined for context timeout. The context timeout can be modified accordingly during the invocation or defined using the TRA property adr3.contextTimeout.

Status Code	Resolution
AER3-970257 Transaction with SessionID: %1 timed out	View earlier error messages in the log files for the cause of the error.
AER3-970258 Cannot find transaction with SessionID: %1 to Continue	No activity within the timeframe of context timeout. Modify the context timeout accordingly.
AER3-970259 Encountered: %1, in transaction with SessionID: %2	View the error description for the cause of the error.
AER3-970260 Subscriber %1, received error: %2	View the error description for the cause of the error.
AER3-970261 Error encountered during on Event of Discovery Agent: %1	View the error description for the cause of the error.
AER3-970262 Unable to create additional servers: %1	View the error description for the cause of the error.
AER3-970267 Error invoking inbound RFC Request Response: %1	View the error description for the cause of the error.
AER3-970268 One way invocation error One way invocation service %1 listening on subject %2 failed to create reply Error: %3	View the error description for the cause of the error.
AER3-970269 Adapter Error: %1	View the error description for the cause of the error.
AER3-970271 Error occurred while changing dispatcher count for service name: %1 error: %2	The Hawk method, setInboundThreadPool, is invoked with error. View the error description for the cause of the error.
AER3-970272 Error creating GUID: %1	View the error description for the cause of the error.

Status Code	Resolution
AER3-970273 SDK error %1 : %2	View the error description for the cause of the error.
AER3-970277 Server connection %1 is invalid: %2	View the error description for the cause of the error.
AER3-970278 Serialization failed for publisher: %1 operation/class: %2	View the error description for the cause of the error.
AER3-970281 Error creating stop Subscriber, code: %1, Message: %2	View the error description for the cause of the error.
AER3-970285 One way invocation error One way invocation service %1 listening on subject %2 failed due to target application invocation error %3 Target application is %4 and inbound event is %5	View the error description for the cause of the error.
AER3-970288 Invalid Error Destination for service %1 Error: %2	View the error description for the cause of the error.
AER3-970292 Initialization of Discovery Agent failed, received error: %1 Attempting to stop the adapter	View the error description for the cause of the error.
AER3-970293 Context timeout is Zero, cannot continue RFC invoke in context	Specify a context timeout during the invocation of the Request-Response Service service or maintain the TRA property, ad3.contextTimeout.
AER3-970500 Unmarshall of table for parameter: %1 failed, error: %2	View the error description for the cause of the error.
AER3-970501 Unmarshall of table for parameter: %1 failed at row index: %2, error: %3	View the error description for the cause of the error.

Status Code	Resolution
AER3-970502 Unmarshall of instance: %1 for field: %2 failed, error: %3	View the error description for the cause of the error.
AER3-970503 Unmarshall for parameter: %1 of instance: %2: for field: %3 failed, error: %4	View the error description for the cause of the error.
AER3-970504 Set of instance: %1 for field: %2 failed, error: %3	View the error description for the cause of the error.
AER3-970505 Set of parameter: %1 on request failed, error: %2	View the error description for the cause of the error.
AER3-970506 Set of parameter: %1 on reply failed, error: %2	View the error description for the cause of the error.
AER3-970507 Unable to retrieve SDK value for field: %1: error: %2	View the error description for the cause of the error.
AER3-970508 Marshaling error for %1, value %2, exception: %3, message: %4	View the error description for the cause of the error.
AER3-970509 Unmarshaling error for %1, value %2, exception: %3, message: %4	View the error description for the cause of the error.
AER3-970510 Error unexpected Marshaling exception: %1 at %2, message: %3	View the error description for the cause of the error.
AER3-970511 Error unexpected Un-Marshaling exception: %1 at %2, message: %3	View the error description for the cause of the error.
AER3-970512 Error Parsing schema at %1 : %2	View the error description for the cause of the error.

Status Code	Resolution
AER3-970513 Data type conversion error, The supplied SDK data is null	Check whether the schema of the adapter service conforms to supported SAP data types.
AER3-970514 SDK Data %1 type conversion to SAP Type not supported, check metadata	Check whether the schema of the adapter service conforms to supported SAP data types.
AER3-970516 Error setting attribute %2 for class %1, message: %3	View the error description for the cause of the error.
AER3-970517 Error getting sequence data for class attribute %1, message: %2	View the error description for the cause of the error.
AER3-970518 Error constructing instance for class %1, message: %2	View the error description for the cause of the error.
AER3-970519 Error occurred while setting sequence data for class %1, message: %2	View the error description for the cause of the error.
AER3-970520 Error constructing sequence for class %1, message: %2	View the error description for the cause of the error.
AER3-970521 Unable to set field %1 in structure: %2 error: %3	View the error description for the cause of the error.
AER3-970522 No control records found in packet of IDocs	IDoc received contained no EDI_DC/EDI_DC40 records. Check the IDoc sent to the adapter.
AER3-970523 No data records found in packet of IDocs	IDoc received contained no EDI_DC/EDI_DC40 records. Check the IDoc sent to the adapter.
AER3-970524 Creation of MInstance failed for operation: %1 error: %2	View the error description for the cause of the error.

Status Code	Resolution
AER3-970528 Set of instance: %1 failed, error: %2	Publication Service configured using IDocFormat publish mode and adapter was unable to marshal IDoc to the IDocData-4x class. Verify that the project has been properly migrated to 7.2 release format.

### Info Codes

The following table lists the status codes of the Info role and the corresponding resolutions:

Status Code	Resolution
AER3-000000 The request does not contain closure data for operation %1	Indicates an normal adapter operation. No action required.
AER3-000040 Adding RFC function "%1"	Indicates that the adapter can serve as an RFC client for an inbound configuration, or serve as an RFC server for an outbound configuration. No action required.
AER3-000078 Successfully added RFC function %1	Indicates the adapter can function as an RFC client, RFC server, or both depending on the configuration.
AER3-000082 Successful initialization of Adapter	Indicates normal an adapter operation. No action required.
AER3-000085 IDoc sent in %1 mode	Indicates normal an adapter operation. No action required.
AER3-000086 IDoc received in %1 mode	Indicates normal an adapter operation. No action required.
AER3-000091 Total IDocs processed: %1	Indicates normal an adapter operation. No action required.
AER3-000093 IDoc Message confirmed to sender	Indicates normal an adapter operation. No action required.
AER3-000094 Posting IDoc to client %1	Indicates normal an adapter operation. No action required.
AER3-000095 IDoc posted to client %1 successfully	Indicates normal an adapter operation. No action required.



Status Code	Resolution
AER3-000103 Adding %1 parameter %2, Type %3	Indicates normal an adapter operation. No action required.
AER3-000106 Adapter", " %1 = { %2 }	Indicates normal an adapter operation. No action required.
AER3-000107 Adapter", "Number of records in table %1 = %2	Indicates normal an adapter operation. No action required.
AER3-000108 Invoking function: %1	Indicates normal an adapter operation. No action required.
AER3-000109 Successfully invoked function: %1	Indicates normal an adapter operation. No action required.
AER3-000110 Reply sent for function: %1	Indicates normal an adapter operation. No action required.
AER3-000111 Received reply for: %1	Indicates normal an adapter operation. No action required.
AER3-000112 Data sent back to SAP R/3 System	Indicates normal an adapter operation. No action required.
AER3-000113 Performing one way invocation on the server	Indicates normal an adapter operation. No action required.
AER3-000114 Received invocation request for %1 from SAP R/3 System	Indicates normal an adapter operation. No action required.
AER3-000115 Performing invocation on the server	Indicates normal an adapter operation. No action required.
AER3-000116 Function call is transactional, TID: %1	Indicates normal an adapter operation. No action required.
AER3-000117 Received invocation request for %1	Indicates normal an adapter operation. No action required.

Status Code	Resolution
AER3-000118 Invoking RFC function %1 in SAP System	Indicates normal an adapter operation. No action required.
AER3-000119 Received one way invocation request for %1	Indicates normal an adapter operation. No action required.
AER3-000120 Invoking transactional RFC function %1 in SAP R/3 System	Indicates normal an adapter operation. No action required.
AER3-000121 Cannot get class descriptions for control record of IDoc class %1	Indicates normal an adapter operation. No action required.
AER3-000133 The segment instance %1 does not contain attribute %2	Indicates normal an adapter operation. No action required.
AER3-000134 The default values will be used	Indicates normal an adapter operation. No action required.
AER3-000135 Segment name: %1 added	Indicates normal an adapter operation. No action required.
AER3-000139 trying to recover the received message	Indicates normal an adapter operation. No action required.
AER3-000140 Subscriber: %1, Exception occurred on receiving the message	Indicates normal an adapter operation. No action required.
AER3-000146 Function called transactionally but Transaction Identifier (TID) not supplied	Indicates normal an adapter operation. No action required.
AER3-000156 Writing IDoc %1, Number %2 to file: %3, ServiceName %4 SubjectName %5	Indicates normal an adapter operation. No action required.
AER3-000164 Connection disconnected	Indicates normal an adapter operation. No action required.

Status Code	Resolution
AER3-000165 Connection re-established	Indicates normal an adapter operation. No action required.
AER3-000166 Connection State: Available	Indicates normal an adapter operation. No action required.
AER3-000167 Connection State: Pending invocation	Indicates normal an adapter operation. No action required.
AER3-000172 Adapter stop method called	Indicates normal an adapter operation. No action required.
AER3-000173 Subscriber %1 suspended	Indicates normal an adapter operation. No action required.
AER3-000177 Stopping Adapter %1 instance on host %2	Indicates normal an adapter operation. No action required.
AER3-000178 Stop notification received via StopSubscriber	Indicates normal an adapter operation. No action required.
AER3-000186 Transaction %1 skipped	Indicates the adapter does not execute this transaction because it already has been executed.
AER3-000188 Failed to %1 Tid	Indicates normal an adapter operation. No action required.
AER3-000195 Transaction created %1	Indicates normal an adapter operation. No action required.
AER3-000196 Transaction skipped %1	Indicates normal an adapter operation. No action required.
AER3-000197 Transaction committed %1	Indicates normal an adapter operation. No action required.
AER3-000198 Transaction confirmed %1	Indicates normal an adapter operation. No action required.
AER3-000199 Transaction rolled back %1	Indicates normal an adapter operation. No action required.

Status Code	Resolution
AER3-000201 Starting inbound transaction %1	Indicates normal an adapter operation. No action required.
AER3-000202 Inbound transaction %1 completed	Indicates normal an adapter operation. No action required.
AER3-000240 Adapter received stop notification	View earlier log messages for any error.
AER3-000249 Checking TID store for TID %1 from RFCClosure	None.
AER3-000263 Using Logon Groups	Indicates normal an adapter operation. No action required.
AER3-000264 Using a dedicated connection	Indicates normal an adapter operation. No action required.
AER3-000265 Creating a Server connection	Indicates normal an adapter operation. No action required.
AER3-000312 Received Info Advisory Message: %1, Subject: %2	Indicates an informational advisory message. No action required.
AER3-000412 Obtaining connection for R/3 client %1 for %2	Indicates normal an adapter operation. No action required.
AER3-000430 Total requests processed for operation %1 : %2	Indicates normal an adapter operation. No action required.
AER3-000441 TID management is remote	View earlier error messages in the log-files for the cause of the error.
AER3-000448 Suspended service %1	None.
AER3-000450 Activated timer to check connectivity to R/3 for connection- pool %1	Indicates normal an adapter operation. No action required.

Status Code	Resolution
AER3-000458 Activated services associated to connection-pool %1	Indicates normal an adapter operation. No action required.
AER3-000459 Activated service %1	Indicates normal an adapter operation. No action required.
AER3-000463 Invoking queue RFC function %1 in SAP R/3 System	Indicates normal an adapter operation. No action required.
AER3-000464 Inserting the RFC function %1 to the queue %2	Indicates normal an adapter operation. No action required.
AER3-000465 Successfully inserted the RFC function %1 to the queue	Indicates normal an adapter operation. No action required.
AER3-000473 Dynamic appserver discovery turned on	Indicates normal an adapter operation. No action required.
AER3-000475 Received discovery message from discovery agent	Indicates normal an adapter operation. No action required.
AER3-000476 Attempting to create connection with ProgramID %1, GatewayHost %2, GatewayService %3	Indicates normal an adapter operation. No action required.
AER3-000477 Connection already exists: ProgramID %1, GatewayHost %2, GatewayService %3	Indicates normal an adapter operation. No action required.
AER3-000487 Checking TID store for tracking id %1	None.
AER3-000488 Found transaction %1 for tracking id %2 in CREATED state	None.

Status Code	Resolution
AER3-000489 Found transaction %1 for tracking id %2 in EXECUTED state	None.
AER3-000490 Transaction created %1	None.
AER3-000491 Transaction executed %1	None.
AER3-000492 Transaction confirmed %1	None.
AER3-000495 Pinging remote TIDManager...	None.
AER3-000496 Pinged remote TIDManager successfully...	None.
AER3-000497 Suspending subscription services	Indicates the inbound adapter cannot connect to the SAP system and all Subscription Service services related to the SAP system are suspended.  Resolve connectivity issues with the SAP system.
AER3-000498 Activating subscription services	Indicates the inbound adapter re-connects to the SAP system and all suspended Subscription Service services related to the SAP system are being activated. No action required.
AER3-890001 Reconnect attempt %1 for service %2	Indicates normal an adapter operation. No action required.
AER3-890002 Reconnect succeeded on attempt %1 for service %2	Indicates normal an adapter operation. No action required.
AER3-890007 Service %1 suspended due to reconnect failure	Refer to custom Hawk methods for re-establishing connectivity.
AER3-970001 Initialized SAP Repository: %1	Indicates the repository used for starting the adapter. No action required.

Status Code	Resolution
AER3-970002 Application : %1	Indicates the repository used for starting the adapter. No action required.
AER3-970003 RepoURL : %1	Indicates the repository used for starting the adapter. No action required.
AER3-970004 ConfigURL : %1	Indicates the repository used for starting the adapter. No action required.
AER3-970005 Version : %1	Indicates the repository used for starting the adapter. No action required.
AER3-970006 InstanceID : %1	Indicates the repository used for starting the adapter. No action required.
AER3-970007 AppInfo : %1	Indicates the repository used for starting the adapter. No action required.
AER3-970012 Number of connections: %1	Indicates the repository used for starting the adapter. No action required.
AER3-970013 No adapter services configured Stopping adapter	Create required adapter services and restart the adapter.
AER3-970022 Service Name: %1 Thread Count: %2	Indicates the repository used for starting the adapter. No action required.
AER3-970025 TID: %1	Indicates the TID associated to the IDoc or transaciton sent to the SAP system. No action required.
AER3-970026 Restarting Remote TID Manager services for gatewayHost: %1 gatewayService: %2 programID: %3	Indicates the connection to the remote TIDManager is disabled and the Hawk method, resumeTIDManager, is invoked. No action required.
AER3-970027 No server connection pools require restart	Indicates the repository used for starting the adapter. No action required.
AER3-970029 Connection Manager stopped	Indicates the repository used for starting the adapter. No action required.

Status Code	Resolution
AER3-970038 Suspending request/response services	Look at earlier error messages in the log file(s) for possible causes of loss of connectivity for client connection pool. All subscription and request-response (oneway invocation) are disable until connectivity is established. Verify the configuration of the client connection pool and network connectivity to the SAP system.
AER3-970039 Activating request/response services	Connectivity to client connection pool was re-established and all inbound services corresponding to the pool were activated again. No action required.
AER3-970040 Restarting services for gatewayHost: %1 gatewayService: %2 programID: %3	Restarting services for gatewayHost: %1 gatewayService: %2 programID: %3
AER3-970041 Received IDOC Name/TID/Receiving Partner: %1, Count: %	None.
AER3-970042 Received IDOC Number: %1, TID: %2	None.
AER3-970043 IDOC Number: %1, TID: %2 processed successfully	None.
AER3-970044 Error encountered processing multiple IDOCS using TID: %	Publication Service configured using Explode publish mode and adapter received a packet containing more one IDocs where not all IDocs were processed successfully. Since the mode is Explode, to avoid sending duplicate messages, the corresponding transaction in SAP need to be deleted and not retried.
AER3-970239 Invoking function: %1...	None.
AER3-970240 The transaction committed successfully for RFC function : %1	None.
AER3-970242 Writing IDOC %1, Number %2 to file: %3 in %4 format, ServiceName %5, SubjectName %6	None.



Status Code	Resolution
AER3-970249 Checking TID store for TID %1 from RFCClosure	None.
AER3-970252 Creating dynamic log-on connection	Dynamic connection created for a request-response adapter service. No action required.
AER3-970253 Starting new transaction with SessionID: %1	A new transaction was created using the session ID in the log file. No action required.
AER3-970254 Invoking RFC %1 in transaction for SessionID: %2	None
AER3-970255 Transaction context end for %1	Transaction in inbound adapter ended. No action required.
AER3-970266 Sending IDoc %1, Number %2 to destination: %3, ServiceName %4	In the case of Invalid Destination, adapter is logging IDoc to either file or an endpoint. No action required.
AER3-970270 Successfully changed dispatcher count for service name: %1 to count: %2	Hawk method setInboundThreadPool was invoked successfully. No action required.
AER3-970274 Using SNC connection	Server Connection or Client Connection pool of type SNC used by the adapter. No action required.
AER3-970280 StopSubscriber message is %1 and transport is %2	Indicates normal an adapter operation. No action required.
AER3-970289 Request sent to Error Destination: %1 for operation: %2	Indicates normal an adapter operation. No action required.
AER3-970290 IDocs being saved to file using format: %1	Indicates normal an adapter operation. No action required.
AER3-970294 Context timeout for transaction is %1 ms	Indicates normal an adapter operation. No action required.

Status Code	Resolution
AER3-970297 Restarting connection with ProgramID %1, GatewayHost %2, GatewayService %3	Indicates normal an adapter operation. No action required.

### Warn Codes

The following table lists the status codes of the Warn role and the corresponding resolutions:

Status Code	Resolution
AER3-000061 The IDoc %1 could not be exploded	See AER3-000059.
AER3-000067 Invalid MTree data received for subscriber	See earlier error messages in the log file(s) for possible causes.
AER3-000169 Subscriber %1 could not be suspended	The named subscriber could not be suspended. No action necessary.
AER3-000187 Invalid transaction state received from TID Manager for transaction %1	The Adapter received an invalid stated from Manager. Check the TIDManager display for possible causes.
AER3-000311 Received Warn Advisory Messages: %1, Subject: %2	Adapter received a warning advisory messages. Review prior log messages to determine if action is required.
AER3-890003 Reconnect failed on attempt %1 for service %2 will retry in %3 ms	Adapter failed to re-connect to the SAP system multiple times. Adapter will re-try in %3 ms. If issue persists, resolve connectivity issues with SAP system.
AER3-970011 Unable to deactivate service: %1 error: %2	Look at the error description for the cause of the error.
AER3-970020 Warning no user defined service is up and running	No adapter services are configured and adapter would stop. Verify the configuration of the adapter.

Status Code	Resolution
<p>AER3-970023</p> <p>Disabling remote TID manager for server connection: %1, Program ID: %2</p>	<p>Outbound adapter configured to use remote TID Management is unable to communicate with the Remote TID Manager. Adapter configured to disable connectivity to remote TID Manager to avoid timeouts. Verify that the Remote TID Manager is available. If available, invoke custom Hawk method resumeTIDManager to resume connectivity.</p>
<p>AER3-970024</p> <p>Remote TID Manager is disabled TID operation: %1 skipped for TID: %2</p>	<p>Remote TID Manager is unavailable the connectivity has been disabled. If Remote TID Manager is available, invoke custom Hawk method resumeTIDManager to resume connectivity.</p>
<p>AER3-970037</p> <p>Mismatch found for service: %1, thread count: %2, connection count: %3</p>	<p>The number of threads for inbound adapter service does not match the number of connections defined in the used client connection pool. Modify the number of connections and the thread count accordingly.</p>
<p>AER3-970263</p> <p>Dynamic connection warning: Given type is %1, Realized type is %2</p>	<p>Mismatch in connection type supplied in RFCCLOSURE class. Verify the connection type supplied.</p>
<p>AER3-970275</p> <p>Server Error: %1</p>	<p>Look at the error description for the cause of the error.</p>
<p>AER3-970276</p> <p>Server Exception: %1</p>	<p>Look at the error description for the cause of the error.</p>
<p>AER3-970279</p> <p>Server Exception: %1</p>	<p>The context timeout provided during the call of transaction is overridden by the context timeout provided by TRA property adr3.contextTimeout.</p>
<p>AER3-970282</p> <p>No connection Reference found for service %1</p>	<p>Inbound adapter service does not refer to a client connection pool. Verify the configuration of the adapter.</p>
<p>AER3-970283</p> <p>No Error Destination reference defined for service: %1, defaulting to log to file</p>	<p>The Publication Service or the Subscription Service service configured to publish messages to an endpoint reference in the case of invalid destination error but no valid destination exists. Validate configuration of the adapter.</p>
<p>AER3-970284</p> <p>No transaction properties defined during oneway invocation, defaulting to tRFC call for operation: %1</p>	<p>The Request-Response Service service was invoked with no transactional properties defined in the RFCCLOSURE class. Modify the RFCCLOSURE class on the invocation as needed.</p>

Status Code	Resolution
<p>AER3-970286</p> <p>Operation: %1 for inbound adapter service: %2 configured as one way and Error Destination not defined, error recovery is limited</p>	<p>The Request-Response Service service configured using invocation protocol oneway and no endpoint reference exists in the case of errors returned from SAP system. Modify configuration as needed.</p>
<p>AER3-970287</p> <p>Unable to send message to Error Destination: %1 Error: %2, saving message to file</p>	<p>Look at the error description for the cause of the error.</p>
<p>AER3-970291</p> <p>Directory specified for logging IDoc is invalid: %1</p>	<p>Directory specified in adapter configuration or in the TRA file is invalid. Current working directory would be used for logging the IDoc.</p>
<p>AER3-970295</p> <p>Initialization of Discovery Agent, received warning: %1</p>	<p>Look at the warning description to determine if further action is needed.</p>
<p>AER3-970296</p> <p>No services require restart for pool: %1</p>	<p>Custom Hawk method, resumeInboundServices, was invoked and no inbound services required restart.</p>
<p>AER3-970298</p> <p>Server connection pool: %1 suspended due to exceeded attempts to connect to SAP system</p>	<p>Server Connection pool is unable to connect to the SAP system and is being stopped. Verify connectivity to the SAP system.</p>
<p>AER3-970299</p> <p>Client connection pool: %1 suspended due to exceeded attempts to connect to SAP system</p>	<p>Client Connection pool is unable to connect to the SAP system and is being stopped. Verify connectivity to the SAP system.</p>
<p>AER3-970525</p> <p>Set of instance: %1 for field: %2 skipped</p>	<p>Look at the error description for the cause of the error.</p>
<p>AER3-970526</p> <p>Unable to convert string "%1" to %2 for %3 in %4, data suppressed</p>	<p>Look at the error description for the cause of the error.</p>
<p>AER3-970527</p> <p>Parameter %1 does not exist in reply of operation schema</p>	<p>Schema in adapter configuration does not match schema in SAP system. If parameter %1 is required, perform a refresh schema for the particular service.</p>

## Status Codes for Application Category

For the Application category, status codes only have the Info role.

### Info Codes

The following table lists the status codes of the Info role and the corresponding resolutions:

Status Code	Resolution
AER3-000084 Received IDoc Name/Number/Receiving Partner: %1, Count: %2	Indicates normal adapter operation. No action necessary.
AER3-000098 IDoc RFC Function invoked: %1	Indicates normal adapter operation. No action necessary.

## Status Codes for Configuration Category

For the Configuration category, status codes have the Debug, Error, Info, and Warn roles.

### Error Codes

The following table lists the status codes of the Error role and the corresponding resolutions:

Status Code	Resolution
AER3-000123 Cannot get class descriptions for data record of IDoc class %1	Ensure that you have downloaded the class descriptions.
AER3-000125 Class descriptions cannot be obtained for received IDoc tree	Ensure that you have downloaded the class descriptions.
AER3-000126 %1 is not of a sequence type	Check the configuration of the sequence type. The named sequence does not have a valid definition.
AER3-000127 Sequence %1 does not have a contained class description	A sequence is a sequence of objects of type T. The adapter could not determine T, probably because the definitions don't exist in the configuration.
AER3-000128 Sequence %1 for the segment holder could not be obtained	Check the configuration and ensure that a valid definition exists for the named sequence.

Status Code	Resolution
AER3-000129 Segment %1 does not have attribute: %2	The data mentioned contains the named attribute, but the class definition does not. Check the configuration and how the IDoc is being created.
AER3-000130 Cannot obtain field class description for IDoc Segment	Check configuration.
AER3-000132 Cannot obtain class description for segment %1 attribute %2	Check the segment name and the attribute, and ensure that a definition exists in the configuration.
AER3-000137 The %1 record of the IDoc does not have a valid class description	Check the data first. Make any changes. Check the configuration for an appropriate definition.
AER3-000145 The class descriptions for IDoc base classes cannot be obtained from the registry	Ensure that you have downloaded the class descriptions.
AER3-000203 No class definition exists for %1	Check whether a valid class exists with that name in the repository .
AEADR3-600007 Absolute Path not Found. Field %1, Palette error. Unable to find specified absolute path. Make sure that you have specified the absolute path correctly	Check the absolute path of the Plugin directory.
AEADR3-600011 Error copying Configuration information/Inbound Connection Type does not support copying of connection information from Configuration view	Change the default type of client connections to Dedicated. Then you can use Design-Time parameters as the runtime parameters.
AEADR3-600012 Illegal Adapter Instance Name. Adapter Configuration names must have only alphanumeric characters with no embedded spaces and can be up to 80 characters long. Type in a valid name	Ensure you follows the following naming rules of the adapter configurations when rename adapter configurations: <ul style="list-style-type: none"> <li>• Only alphanumeric characters</li> <li>• No more than 80 characters</li> <li>• No blank spaces</li> </ul>

Status Code	Resolution
AEADR3-600013  Subject Names. Do you wish to regenerate subjects set to previous defaults?	Click <b>YES</b> to regenerate.
AEADR3-600016  Illegal Operation/The new nested name is in conflict with the name of the resource you are editing. Rename the existing resource or choose a different name	Rename the existing resource with a name different from the new nested name.
AEADR3-600023  Invalid Value. Field %1, Palette error. This is not a valid value	Enter a valid value in the field.
AEADR3-600024  Invalid Value. Palette error. Endpoint Reference cannot have null value	Specify a valid endpoint reference.
AEADR3-600028  Illegal Operation. Selected Resource Can Not Be Moved	No resolution.
AEADR3-600044  Error while pasting. Deserialization of R3 Connections Failed	Copy and paste connections again.
AEADR3-600045  Error while writing the Meta Url	Rewrite the Meta Url again.
AEADR3-600050  Not Checked out. Failed to update Schema. The associated Schema files are not checked out from source control	Check out schema files from the source control.
AEADR3-600051  Illegal child error occurred while processing connection - %1	Try the failed configuration again.
AEADR3-600052  Name conflict error occurred while processing connection - %1	Try the failed configuration again.

Status Code	Resolution
<p>AEADR3-600053</p> <p>Error occurred while applying changes to connection - %1</p>	<p>Try the failed configuration again.</p>
<p>AEADR3-600054</p> <p>Not Checked out. Failed to update R3Connections. The connection file is not checked out from source control</p>	<p>Check out the connection file from source control.</p>
<p>AEADR3-600055</p> <p>Error Renaming Service. Service name must only have alphanumeric characters and must be at most 80 characters long</p>	<p>Ensure you follows the following naming rules of the adapter configurations when rename adapter services:</p> <ul style="list-style-type: none"> <li>• Only alphanumeric characters</li> <li>• No more than 80 characters</li> <li>• No blank spaces</li> </ul>
<p>AEADR3-600056</p> <p>Global Variables File:Read-Only. Global Variable files needs to be checked out in order to successfully create the adapter</p>	<p>Check out the Global Variables file from source control.</p>
<p>AEADR3-600057</p> <p>Error During Rename : Read-Only File. The resource %1 could not be renamed. Rename requires the %2 should be checked out. Check out the resource and try renaming again. You can select the resource to be checked out by clicking on the Go To Resource button</p>	<p>Check out the resource and try renaming it again.</p>
<p>AEADR3-600058</p> <p>Error During Delete : Read-Only File/The resource %1 could not be deleted. Delete requires the %2 should be checked out. Check out the resource and try deleting again. You can select the resource to be checked out by clicking on the Go To Resource button</p>	<p>Check out the resource and try deleting it again.</p>



Status Code	Resolution
AEADR3-600059  Error During Creation of Service : Read-Only File. The service can not be created. Creation requires the %1 should be checked out. Check out the resource and try creating the service again. You can select the resource to be checked out by clicking on the Go To Resource button	Check out the resource and try creating the service again.
AEADR3-600062  RFC/BAPI: %1: Invalid parameter: %2, (%3) data type not allowed. Remove selection	When downloading an RFC/BAPI containing parameters referring to a table, complex, or nested type remove the selection. If this RFC/BAPI is required, create a custom module and use the internal tables and flat structures.

### Debug Codes

The status code of the Debug role and the corresponding resolution are listed in the following table:

Status Code	Resolution
AER3-DEBUG-CONFIGURATION  %1	Debug messages generated during the loading of configuration by the adapter. No action required.

### Info Codes

The status codes of the Info role and the corresponding resolutions are listed in the following table:

Status Code	Resolution
AER3-000007  Management is local	It is good practice to use a remote Manager when multiple adapter services are running in a load- balanced fashion to ensure that the failed transactions are not executed twice among the load- balanced group. When multiple adapter services are running in a load-balanced fashion and TIDManagement is set to local, duplicate messages are transferred occasionally.
AER3-000090  The Destination %1 in not defined, IDoc is logged to file %2	Indicates normal adapter operation. No action required.
AER3-970032  Server connection pool: gatewayHost= %1 gatewayService=%2 programID=%3 updated successfully, connection count=%4	The Hawk method, setInboundThreadPool, is invoked successfully. No action required.

Status Code	Resolution
AER3-970034 Client connection pool name: %1 updated successfully, connection count=%2	The Hawk method, setInboundThreadPool, is invoked successfully. No action required.

### Warn Codes

The status codes of the Warn role and the corresponding resolutions are listed in the following table:

Status Code	Resolution
AER3-970028 Logging being defaulted to SDK due to error:%1	Check whether the Log4j file exists and is correct.  The adapter is configured to use the extended logging, but error occurs in the Log4j file specified by the TRA property, adr3.trace.log4j.properties.
AER3-970030 Log4j logging refreshed from properties file: %1	The adapter is configured to use the extended logging, and the Hawk method, refreshExtendedLogging, is invoked. No action required.

## Status Codes for Data Category

For the Data category, status codes only have the Debug role.

### Debug Codes

The following table lists the status code of the Debug role and the corresponding resolution:

Status Code	Resolution
AER3-DEBUG-DATA %1	A debug message generated during the marshaling of data by the adapter. No action required.

## Status Codes for Hawk Category

For the Hawk category, status codes only have the Debug role.

### Debug Codes

The following table lists the status code of the Debug role and the corresponding resolution:

Status Code	Resolution
AER3-DEBUG-HAWK %!	A debug message provided by the custom Hawk microagent of the adapter. No action required.

## Status Codes for Publication Category

For the Publication category, status codes only have the Error role.

### Error Codes

The following table lists the status code of the Error role and the corresponding resolution:

Status Code	Resolution
AER3-930014 Publication error	Publication service %1 with publication subject %2 received error while sending event over the wire.

## Status Codes for Request-Response Category

For the Request-Response category, status codes only have the Error role.

### Error Codes

The following table lists the status codes of the Error role and the corresponding resolutions:

Status Code	Resolution
AER3-940009 Request Response error	Request Response service %1 listening on subject %2 failed due to target application invocation error %3.
AER3-940010 Request Response error	Request-Response service %1 listening on subject %2 failed to create reply.
AER3-940020 Server Timeout	Check whether the end application is up and running.

## Status Codes for Request-Response Invocation Category

For the Request-Response Invocation category, status codes only have the Error role.

### Error Codes

The following table lists the status codes of the Error role and the corresponding resolutions:

Status Code	Resolution
AER3-950001 Request Response Invocation error	Request Response Invocation service %1 with subject as %2 received event from target application %3.
AER3-950003 Request Response Invocation error	Request Response Invocation service %1 with subject as %2 received event from target application %3.
AER3-950008 Request Response Invocation error	Request Response Invocation service %1 with subject %2 received error while requesting event over the wire.

Status Code	Resolution
AER3-950009 Oneway Invocation error	Oneway Invocation service %1 with subject %2 received error while requesting event over the wire.
AER3-950010 Request-Response Invocation	Request Response Invocation service %1 with subject %2 received null reply while requesting event over the wire.
AER3-950011 Request-Response Invocation	Request Response Invocation service %1 with subject %2 received timeout error while requesting event over the wire.
AER3-950012 Request-Response Invocation	Request Response Invocation service %1 with subject %2 received error while processing reply message.

## Status Codes for Subscription Category

For the Subscription category, status codes only have the Error roles.

### Error Codes

The following table lists the status codes of the Error role and the corresponding resolutions:

Status Code	Resolution
AER3-920001 Subscription error. Subscription service %1 listening on %2 received an unexpected event of type = %3, Expects event %4. The Repository URL is %5 and the Configuration URL is %6	The Subscription service, %1, listening on %2 received an unexpected event of type =%3 received an unexpected event of type = %3, Expects event %4.
AER3-920002 Subscription error.	Subscription service %1 failed to deserialize the event received on subject %2 and SDK exception thrown is %3.
AER3-920003 Subscription error.	Subscription service %1 listening on subject %2 received inbound event with null data.
AER3-920007 Subscription error.	Subscription service %1 listening on subject %2 could not get the class description of %3.
AER3-920008 Subscription error.	Subscription service %1 listening on subject %2 could not find the mandatory property %3 in class %4.
AER3-920015 Subscription error.	Subscription service %1 listening on subject %2 failed due to target application invocation error %3.

## Status Codes for System Category

For the System category, status codes have the Info and Error role.

### Info Codes

The following table lists the status codes of the Info role and the corresponding resolutions:

Status Code	Resolution
AER3-000004 Adapter application %1 is stopped	Indicates a normal adapter operation. No action necessary.
AER3-970246 Message Report Thread is stopped	None.

### Error Codes

The following table lists the status codes of the Error role and the corresponding resolutions:

Status Code	Resolution
AER3-000147 Could not open file %1 for writing	Check permissions and whether you have adequate space on your disk.
AER3-970264 Could not write to file: %1 error: %2	Check whether the adapter is writing file to directory with enough disk space.
AER3-970265 Could not close file: %1 error: %2	None.

## Status Codes Discontinued

The following status codes are discontinued in TIBCO ActiveMatrix Adapter for SAP.

Status Code	Role	Category	Resolution
AEADR3-600061 RFC/BAPI: %1: Import/Export parameters referencing String data type are ignored	Warn	Configuration	<p>The schema for the RFC/BAPI including import or export referencing String data types can be downloaded. But any references to String data types are ignored at runtime.</p> <p>If parameters referring to String data types are required, create a custom module and change any references of String data type to fixed character types.</p>

Status Code	Role	Category	Resolution
AER3-000002 Invalid value for attribute %1 for operation %2	Error	Adapter	Verify if you are using the correct class descriptions and value specified is valid and no mandatory values are omitted.
AER3-000003 Function call is transactional but no provided	Error	Adapter	When you set transactional in closure, you must also supply a value for.
AER3-000005 Could not find interface description element	Error	Configuration	This problem might also occur if the configuration file is edited manually and is invalidated in the process. After making any changes to the file make sure that the XML file is well formed. The SML file can be validated by opening it in an XML enabled browser.
AER3-000006 %1 not specified for %2	Error	Configuration	This problem might also occur if the configuration file is edited manually and is invalidated in the process. After making any changes to the file make sure that the XML file is well formed. The file can be validated by opening it in an XML enabled browser.
AER3-000008 file is not specified	Error	Configuration	Specify the file name, attribute "tidFileName" in the adapter instance level Adapter Services tab.
AER3-000009 Timer %1 does not exist	Error	Configuration	Provide a correct reference to the TIB Adapter SDK timer in the server connection section of the connection manager.
AER3-000010 The interface %1 does not specify attribute 'classRef'	Error	Configuration	Provide a correct reference to the TIBCO Adapter SDK timer in the server connection section of the connection manager.
AER3-000011 Invalid producer %1	Error	Configuration	Provide a correct reference to an TIBCO Adapter SDK producer (publisher).
AER3-000013 No RpcClient specified for operation %1	Error	Configuration	Provide a valid reference to an TIB Adapter SDK RPC Client through "mbRpcClientRef" element in Deployment Descriptions of IDocs.

Status Code	Role	Category	Resolution
AER3-0000014  Interface %1 does not contain deployment description for IDocs... continuing...	Warn	Configuration	Provide a valid reference to an MBOperation. Also add a reference to the XML document that contains the descriptions for this operation. This is done using the model document tag at the beginning of the configuration file in the document section.  The default class descriptions for MB operations, i.e. UserExitSchema.xml, can also be extended with class description for additional operations.
AER3-0000015  Invalid producer %1; using default producer %2	Info	Configuration	Indicates normal adapter operation. No action necessary.
AER3-0000016  Invalid consumer component %1	Error	Configuration	Modify your configuration by defining a consumer name as suggested by the error description.
AER3-0000017  No components defined in the configuration document	Error	Configuration	Modify your configuration so that it has at least one component under the 'components' section.
AER3-0000018  No connection manager defined in the configuration document	Error	Configuration	Modify your configuration so that it has a 'connectionManager' under the 'connectionManagers' section.
AER3-0000019  Invalid rpcServer %1 specified for interface %2	Error	Configuration	Modify your configuration so that it has a 'connectionManager' under the 'connectionManagers' section.
AER3-0000020  The Subscriber Description does not specify consumer reference, skipping...	Error	Configuration	Add consumerRef attribute in the configuration.

Status Code	Role	Category	Resolution
AER3-000021 Consumer %1 for deployment description %2 does not exist	Error	Configuration	ConsumerRef must point to a valid subscriber.
AER3-000022 No instance defined for %1; control fields will not be replaced	Warn	Configuration	You must have an instance defined under class instances.
AER3-000023 Invalid reference for attribute consumerRef	Warn	Configuration	ConsumerRef must point to a valid subscriber.
AER3-000024 Error while reading directory=%1, filename=%2; %3	Error	System	Determine the cause from the error description.
AER3-000025 directory=%1, filename=%2; No matching files found	Warn	System	There were no matching files. Check your filenames.
AER3-000026 Could not open %1 for reading	Error	System	The specific file could not be opened. Check permissions.
AER3-000027 %1 is unreadable	Error	System	Check whether the file can be opened using a text editor.
AER3-000028 %1 is empty	Warn	System	File is empty.
AER3-000029 %1 does not contain newline. Perhaps not a text file	Error	System	The file is not a text file, because it does not contain a new line.



Status Code	Role	Category	Resolution
AER3-000030 IDoc from file %1 sent in %2 mode	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000032 Cannot get control record for IDoc	Warn	Adapter	The IDoc does not have a control record. If it's not intentional, add a control record.
AER3-000034 False call to %1	Warn	Adapter	See the error description for more details.
AER3-000035 Could not generate GUID	Warn	Adapter	Even though a warning, this message is often indicative of a memory-low situation that could severely affect the adapter performance.
AER3-000036 No connection for %1	Error	Adapter	The named component does not have a valid connection Manager. Refer also to the description for 'R3-CORE-CFG-1014'.
AER3-000037 Could not create Manager	Error	Adapter	If the problem persists, repeat with remote Management.
AER3-000038 Could not find default client connection	Error	Configuration	Modify your configuration so that the login parameters that you specify for 'defaultClient' are valid and that the Adapter can establish a valid connection to the SAP System.
AER3-000039 No proxy defined to process request for RFC function %1	Error	Adapter	The Adapter could not create a proxy for the named RFC function. Look at the earlier error messages in the log file(s) for possible causes.
AER3-000041 Unable to create RFC server function %1	Error	Adapter	Look at earlier error messages in the log file(s) for possible causes.
AER3-000042 Unable to create request proxy for %1	Error	Adapter	Look at earlier error messages in the log file(s) for possible causes.

Status Code	Role	Category	Resolution
AER3-000043 Unable to create RFC client for %1	Error	Adapter	Look at earlier error messages in the log file(s) for possible causes.
AER3-000047 %1 is not a valid structure or table	Error	Adapter	If the name represents a valid SAP structure (or table), ensure that the repository contains the class definition for this structure (or table). If you are sending data from your custom program(s) to the SAP Adapter, make sure that you're constructing the data correctly and that you're using valid classes.
AER3-000048 Unpacking error: Invalid class type for structure %1	Error	Adapter	Data inappropriate for the named structure. See also R3-CORE-LIB-6014.
AER3-000049 Unpacking error: Invalid class type for table %1	Error	Adapter	Data inappropriate for the named table. See also R3-CORE-LIB-6014.
AER3-000050 UnpacUnpacking error: Invalid class type for structure %1 king error: Row of table %1 is not a structure	Error	Adapter	Data inappropriate for the named table. See also R3-CORE-LIB-6014.
AER3-000051 User-defined operation called successfully	Info	Adapter	The Adapter invoked the user-defined operation successfully.
AER3-000052 Invalid or no data received from user- defined operation	Error	Adapter	Check the program that implements the user-defined operation and make sure that it returns data.

Status Code	Role	Category	Resolution
AER3-000053 User-defined operation invocation exception; name: %1, data: %2	Error	Adapter	Ensure that your operation executes without any exception and that it returns valid data to the Adapter.
AER3-000054 User-defined operation invocation timeout	Error	Adapter	Ensure that the Rpc Server that implements your operation is running and that it is reachable from the Adapter.
AER3-000055 User-defined operation invocation: bad reply received	Error	Adapter	Ensure that your operation returns valid data to the Adapter.
AER3-000056 User-defined operation invocation exception; name: %1	Error	Adapter	Ensure that your operation executes without any exception and that it returns valid data to the Adapter.
AER3-000057 The request sent to user-defined operation contains invalid data	Error	Adapter	If you're constructing the data to be sent to the user-defined operation, ensure that it's being constructed correctly.
AER3-000058 Invalid operation name for IDoc %1	Error	Adapter	The Adapter found that the IDoc data is arriving from a function other than 'IDoc_INBOUND_ASYNCHRONOUS' or 'INBOUND_IDoc_PROCESS'.
AER3-000059 Cannot create IDoc parser instance	Error	Adapter	The error indicates that it could not create a parser, either because of a memory-low problem or because of an earlier error during Adapter initialization.
AER3-000060 Invalid RFC function %1	Error	Adapter	Look at earlier error messages in the log file(s) for possible causes.

Status Code	Role	Category	Resolution
AER3-000062 Unable to create reply listener for operation %1	Error	Adapter	See earlier messages in the log file(s) for possible causes.
AER3-000063 RFC invocation timeout for function %1; description: %2	Error	Adapter	The named RFC function invocation timed out. See error description for more details.
AER3-000064 RFC invocation bad reply for function %1; description: %2	Error	Adapter	The named RFC function returned a bad reply. See error description for more details.
AER3-000065 RFC invocation remote exception; name: %1, description: %2	Error	Adapter	The named RFC function caused a remote exception. See error description for more details.
AER3-000066 Cannot create IDoc parser instance for subscriber %1	Error	Adapter	The error indicates that it could not create a parser, either because of a memory-low problem or because of an earlier error during Adapter initialization.
AER3-000069 Cannot implode IDoc %1	Error	Adapter	Either the adapter encountered a low-memory condition or the received data is incorrect. If it is your application that is sending the offending data to the adapter subscriber, make sure that your data is valid.
AER3-000070 Cannot get RFC client function %1	Error	Adapter	Make sure that SAP login parameters are correct and that the subscriber adapter can reach the SAP system. Also check earlier error messages in the log file(s) for possible causes.
AER3-000071 Cannot get marshaller for RFC client function %1	Error	Adapter	The subscriber adapter could not get marshaller to convert between adapter data and SAP data, perhaps because of a low-memory problem or because of an error encountered earlier during initialization. Check the earlier error messages in the log file(s) for possible causes.

Status Code	Role	Category	Resolution
AER3-000073 Cannot get RFC connection for client %1	Error	Application	See R3-CORE-LIB-60.
AER3-000074 Operation %1 timed out	Error	Adapter	Make sure that the RPC Server that corresponds to the named operation is executing and is accessible from the Adapter.
AER3-000075 Operation %1 returned a bad reply %2	Warn	Adapter	The named operation returned a bad reply. Look at the error message description for more details.
AER3-000076 Initialization exception type: %1, operation: %2, description: %3	Error	Adapter	The named operation returned the named exception. Look at the error message description for more details.
AER3-000079 Unpacking error	Error	Adapter	The Adapter encountered an error either because of low-memory condition or because of an error earlier during the initialization. Check the earlier error messages in the log file(s) for possible causes.
AER3-000080 Could not create TIBCO RV advisory handlers; exception type: %1, description: %2	Warn	Adapter	The Adapter could not create the license expiry advisories. Look at the error description for more details.
AER3-000081 Could not create TIBCO Hawk implants; exception type: %1, description: %2	Warn	Adapter	The adapter could not create TIBCO Hawk implants. Look at the error description for more details.

Status Code	Role	Category	Resolution
AER3-000083 Unable to create operation request for function: %1, class: %2, rpcClient: %3	Warn	Adapter	The Adapter could not create Operation request for the named function. Look at the error description for more details.
AER3-000087 IDoc Sent to SAP System	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000088 IDoc sent as a Business Document	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000089 IDoc received as a Business Document	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000092 The subscriber for this IDoc message could not be determined	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000096 IDoc Message sequence number %1 could not be confirmed to %2, Use pre-registration of subscribers	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000097 IDoc Message could not be confirmed, validation must be turned off, if 10X Publishers used	Info	Configuration	Indicates normal adapter operation. No action necessary.

Status Code	Role	Category	Resolution
AER3-000099 RFC Function invoked: %1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000100 User-defined operation: operation not specified, assuming 'transform'	Warn	Configuration	If the default transfer is not desired, name your operation explicitly.
AER3-000101 User-defined operation reference: operationRpcClientRef not specified, operation will not be invoked	Warn	Configuration	The operation requires an rpcClient, specific through operationRpcClientRef. Specify this client.
AER3-000104 Setting up Imports and Exports for RFC function %1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000105 RFC function has %1 imports, %2 exports	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000142 Subscriber: %1. The 10x Opaque message type is not supported	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000143 The received message was recovered	Info	Adapter	Indicates normal adapter operation. No action necessary.

Status Code	Role	Category	Resolution
AER3-000144  The IDoc message received in 10x format does not contain %1field	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000148  CIDocIterator: The IDoc container does not contain any IDocs	Error	Adapter	Check the log file for any previous errors that may have led to this situation.
AER3-000149  The IDoc %1 does not contain %2	Error	Adapter	The IDoc does not contain a data record section. Check the IDoc data
AER3-000150  No control record instance for the %1 IDoc in the packet	Error	Adapter	The named IDoc does not have a control record. Check the data.
AER3-000151  No data record instance for the %1 IDoc in the packet	Error	Adapter	The IDoc does not contain a data record section. Check the data.
AER3-000152  %1 record of the data record instance does not contain mandatory attribute DOCNUM	Error	Adapter	DOCNUM is mandatory attribute for data record. Check the data and modify it to include DOCNUM.
AER3-000153  %1 row of the data record instance of the %2 IDoc instance of type %3 could not be obtained	Error	Adapter	Indicates normal adapter operation. No action necessary.



Status Code	Role	Category	Resolution
AER3-000154 The IDoc instance could not be written to file, the instance is invalid	Error	Subscription	The instance could not be written because it was empty. Check the IDoc data.
AER3-000155 The IDoc does not contain a data record	Error	Adapter	The IDoc does not contain a data record section. Check the IDoc data.
AER3-000157 Invocation for RFC function %1 still pending	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000158 Adapters initialization mode:%1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000159 Cannot find communication client for Manager, Management will be local	Warn	Adapter	The configuration does not specify the rpcClient for Manager, hence the management will be local.
AER3-000160 Connection: waiting for reply from server ...	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000161 No component for the RFC call; Exception=%1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000162 Active connection is null	Info	Adapter	Indicates normal adapter operation. No action necessary.

Status Code	Role	Category	Resolution
AER3-000163 Checking for connections	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000168 %1 connection could not be removed	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000170 Stop Adapter: Correct consumer reference could not be obtained from deployment description %1, skipping...	Warn	Adapter	The configuration did not specify consumerRef. No action necessary.
AER3-000171 Adapter is waiting for invocation response before shutdown can proceed...	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000174 Connection Manager %1 stopped	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000175 Component %1 stopped	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000176 Deactivating stop scheduler	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000179 Remote Exception: Exception Name: %1, Exception Data: %2	Error	Adapter	See the error description for details.

Status Code	Role	Category	Resolution
AER3-000180 ADV_CLASS/ ADV_SOURCE/ ADV_NAME: %1, ADV_DESC : %2 %3	Warn	Adapter	See the error description for more details.
AER3-000181 ADV_CLASS/ ADV_SOURCE/ ADV_NAME: %1, ADV_DESC : %2 %3	Error	Adapter	The adapter responds 'license expiry' warning from the daemon with this message.
AER3-000182 ADV_CLASS : %1, ADV_SOURCE : %2, ADV_NAME : %3	Error	Adapter	The adapter responds 'registration collision' error from the daemon with this message.
AER3-000183 RFC error; Group : %1, Key : %2, Message : %3	Error	Application	Look at the error description for details about the SAP Exception. Also check your connection parameters.
AER3-000184 RFC connection invalid for %1	Error	Application	The adapter could not get a valid connection to the SAP system. Check your login parameters. Also make sure that the adapter can reach the SAP system.
AER3-000185 CallReceive failed for operation %1; exception : %2, RFC error; Group/Key/ Message: %3	Error	Application	Look at the error description for details about the SAP Exception.
AER3-000189 RFC function initialization error for function %1; RFC Error; Group/Key/ Message : %2	Error	Application	Look at the error description for details about the SAP Exception.

Status Code	Role	Category	Resolution
AER3-000190 RFC remote function %1 implementation exception %2	Warn	Adapter	Look at the error description for details about the SAP Exception.
AER3-000191 Indirect call error while sending IDoc; RFC Error; Group : %1, Key : %2, Message : %3	Error	Application	Look at the error description for details about the SAP Exception.
AER3-000192 RFC error; Group : %1, Key : %2, Message : %3, Attempt to connect timed out	Error	Application	See the error description for details.
AER3-000193 Connection not available for client %1, retrying ...	Error	Application	See the error description for details.
AER3-000194 Invalid RFC client connection object for client %1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000204 %1 is not a modeled class	Error	Configuration	The named class is invalid, non-existent, or does not represent a modeled class. Check the repository to make sure that a valid class exists with that name.
AER3-000205 No operations defined in class %1	Error	Configuration	Modify the class definition to include operations.

Status Code	Role	Category	Resolution
AER3-000206 The operation %1 does not have any parameters	Error	Configuration	Modify the class definition to include parameters.
AER3-000208 Operation description not available for %1	Error	Configuration	The named operation is invalid or non-existent. Check the repository to make sure that an operation exists with the specified name.
AER3-000209 No IDoc operations defined in class %1	Error	Configuration	The named class does not have IDoc operations defined. Check the repository to make sure that the class definition is correct.
AER3-000210 Attribute %1 in class %2 is invalid	Error	Configuration	Check the configuration.
AER3-000211 Unsupported type %1 for attribute %2 in class %3	Error	Adapter	The named type is unsupported by SDK or SAP or both.
AER3-000212 Unexpected %1 : %2; inform technical support	Error	Adapter	Unexpected error. You cannot determine the cause from the description. Contact technical support: support@tibco.com.
AER3-000213 Control field replacements specify an attribute %1 which does not exist in the control record	Warn	Configuration	Control field replacements in classInstances specify an attribute that does not exist in control record. Check spelling.
AER3-000214 Cannot access class registry	Error	Adapter	You specified an attribute that does not exist in the control record. Either omit that attribute or replace it with an attribute that exists.

Status Code	Role	Category	Resolution
AER3-000215 Subscriber %1 received a message that has invalid wire format	Error	Adapter	There was an exception in the Adapter upon receive of this message. When you are using 10x style, follow the configuration requirements given in Creating Adapter Configurations on page 63.
AER3-000261 Using ini file %1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000262 No program ID defined in the ini file, using destination %1 as program ID	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000266 Initialized successfully	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000267 CREATED %1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000268 EXECUTED %1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000269 CONFIRMED %1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000270 Invalid client function specified in removeClient call	Error	Adapter	Because this message appears during shutdown, no action is necessary.
AER3-000271 Invalid poolRef name %1	Error	Configuration	poolRef must point to a valid pool definition.
AER3-000272 Pool reference not provided in Server Component	Error	Configuration	Provide a value that corresponds to a valid definition.

Status Code	Role	Category	Resolution
AER3-000274 Invalid default Connection for pool %1	Error	Adapter	Check the pool definitions to ensure that they are valid.
AER3-000275 No default session defined	Error	Configuration	The configuration must either specify a valid value for start up/default session or define at least one rvSession/rvCmSession.
AER3-000276 Duplicate DEST parameter defined in %1 : %2	Error	Adapter	Remove duplicate definition.
AER3-000277 Destination %1 not defined in %2	Error	Adapter	Define destination given in message.
AER3-000278 Received message is written to file %1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000279 Exception while initializing adapter; exception type : %1, description : %2	Error	Adapter	Refer to the description and take the required action.
AER3-000280 Error: Could not send reply for function: %1	Error	Adapter	Refer to the accompanying error messages for additional details.
AER3-000281 Error while invoking User- defined operation: %1	Error	Adapter	Refer to the accompanying error messages for additional details.

Status Code	Role	Category	Resolution
AER3-000283 Exception during one way invocation of function: %1, Type: %2, Description: %3	Error	Adapter	Refer to the accompanying error messages for additional details.
AER3-000284 Request written to file: %1 for operation: %2	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000285 Error code: %1, Message: %2	Error	Adapter	Refer to the description and take the required action.
AER3-000286 'userExit' class does not exist or it does not contain operation %1, operation will not be invoked	Info	Configuration	Indicates normal adapter operation. No action necessary.
AER3-000287 There is no RpcClient named: %1, operation will not be invoked	Info	Configuration	Indicates normal adapter operation. No action necessary.
AER3-000288 Untransformed IDoc data sent	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000289 Performing asynchronous invocation for User-defined function: %1	Info	Adapter	Indicates normal adapter operation. No action necessary.



Status Code	Role	Category	Resolution
AER3-000290 No R/3 client configured for %1, using default-client %2	Warn	Configuration	There is no deployment-description configured for the RFC. If not intentional, ensure that the client is specified in the deployment-descriptions for the RFC.
AER3-000291 Received request for logon to SAP R/3 System	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000292 Successfully logged-on to SAP R/3 System	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000293 Received request for logoff from SAP R/3 System	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000294 Successfully logged-off from SAP R/3 System	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000295 No session id exists in the logoff request	Error	Adapter	The sessionID obtained on logging-on to SAP system through design-time-adapter should be passed in the RFCCLOSURE along with the logoff request to successfully logoff from SAP system
AER3-000296 No logon session exists for the session ID	Error	Adapter	The sessionID obtained on logging-on to SAP system through design-time-adapter should be passed in the RFCCLOSURE along with the logoff request to successfully logoff from SAP system.
AER3-000300 Created discovery subscriber successfully using subject %1	Info	M	Indicates normal adapter operation. No action necessary.

Status Code	Role	Category	Resolution
AER3-000301 Attempting to create dynamic connection to SAP R/3 system	Info	M	Indicates normal adapter operation. No action necessary.
AER3-000302 Attempting to close dynamic connection from SAP R/3 system	Info	M	Indicates normal adapter operation. No action necessary.
AER3-000303 Retrieving list of function modules from SAP R/3 system	Info	M	Indicates normal adapter operation. No action necessary.
AER3-000304 Retrieving schema for IDoc %1 FROM SAP R/3 system	Info	M	Indicates normal adapter operation. No action necessary.
AER3-000305 Retrieving entries for table %1 FROM SAP R/3 system	Info	M	Indicates normal adapter operation. No action necessary.
AER3-000306 Retrieving schema for structure/table %1 FROM SAP R/3 system	Info	M	Indicates normal adapter operation. No action necessary.
AER3-000307 Received unknown operation %1	Info	M	TIBCO Designer sent an invalid request to the design-time adapter. If problem persists contact technical support: support@tibco.com
AER3-000308 Metadata adapter operation failure:%1; operation name : %2	Info	M	Refer to the surrounding error messages for additional details.

Status Code	Role	Category	Resolution
AER3-000309 Retrieving schema for RFC/ BAPI %1 from SAP R/3 system	Info	M	Indicates normal adapter operation. No action necessary.
AER3-000400 Invalid connection detected. Message : %	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000401 %1 RFCServers registered with SAP R/3 system with program-id %2 on GatewayHost %3	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000402 No session id in request for operation %1	Error	Adapter	If the request is for an RFC that requires an explicit logon to SAP system, then the sessionID obtained on logging-on to SAP /3 system has to be passed in the RFCCLOSURE along with the RFC request.
AER3-000403 Unable to obtain context for implementation of operation %1	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000405 Invalid session id passed in request for operation %1	Error	Adapter	The sessionID should be a valid string.

Status Code	Role	Category	Resolution
AER3-000406 Invalid session id passed for operation %1	Error	Adapter	If the sessionID was obtained after logging-on to the SAP system, ensure that the sessionID passed in the RFC_CLOSURE while invoking a request on the InboundRFC instance is the same as the one obtained. Instead, if the sessionID was obtained for a subsequent BAPI_TRANSACTION_COMMIT call, ensure that the same sessionID was passed with BAPI_TRANSACTION_COMMIT invocation. Also check if the session created for commit/rollback has already timed-out as specified by the 'commitExpiry' parameter.
AER3-000407 Invalid call received, connection closed for thread	Error	Adapter	The adapter received an invalid call from the SAP system that caused a connection to be closed. Ensure that the adapter connections to SAP system are alive.
AER3-000408 Server thread unable to dispatch call, call skipped. message : %1	Error	Adapter	The adapter entered an invalid state because of an invalid call from the SAP system. See message description for more details. Ensure that the adapter connections to SAP system are alive.
AER3-000409 Server thread unable to dispatch call, connection invalidated	Error	Adapter	The adapter entered an invalid state because of an invalid call from the SAP system. See message description for more details. Ensure that the adapter connections with SAP system are alive.
AER3-000410 Server thread exited, message : %1	Warn	Adapter	The adapter encountered an exception condition that caused the server thread to exit. Look at earlier messages in the log-file(s) for possible causes. No resolution necessary.
AER3-000411 No poolRef specified for operation %1	Error	Configuration	The RFC does not have a 'poolRef' attribute in its deployment description. Ensure that a valid 'poolRef' is specified for the RFC.

Status Code	Role	Category	Resolution
AER3-000413 The session for commit/rollback timed out for operation %1	Error	Adapter	Ensure that the BAPI_TRANSACTION_COMMIT call is triggered in the SAP system before the session for commit/rollback times out as specified by the 'commitExpiry' parameter.
AER3-000414 No session timeout specified for commit/rollback for operation %1, defaulting to %2 seconds...	Error	Configuration	The 'commitExpiry' parameter defaults to 60 seconds if it is not specified. If this value is insufficient, ensure that a higher value is specified for the parameter.
AER3-000415 Session timeout for commit/rollback for operation %1 set to %2 seconds	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000417 Connection pending commit for operation %1	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000418 Invalid client specified : %1	Error	Adapter	Ensure that a valid client is specified for the RFC/IDoc in their respective deployment descriptions, if any. Else ensure that the 'defaultClient' attribute specified in client connectionpool is a valid client.
AER3-000419 Created new thread for RFCServer	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000420 Server thread(s) stopped for Component %1	Info	Adapter	Indicates normal adapter operation. No action necessary.

Status Code	Role	Category	Resolution
AER3-000421 No valid connection handle available for server for operation %1	Error	Adapter	The outbound adapter could not get a valid connection handle to the SAP system. Look at earlier messages in the log-file(s) for possible causes.
AER3-000422 No client specified in deployment description for operation %1	Error	Configuration	Ensure that a client is configured for the operation.
AER3-000423 No poolRef specified for operation %1	Error	Configuration	Ensure that a poolRef is specified for the operation.
AER3-000424 No default client specified for operation %1	Error	Configuration	Ensure that a defaultClient is specified for the operation.
AER3-000425 Invalid poolRef specified in deployment : %1	Error	Configuration	Ensure that a valid poolRef is specified in the deployment description for the RFC/IDoc.
AER3-000426 Thread monitor started for %1 server thread(s)	Info	Adapter	Indicates normal adapter operation. No action necessary.
AER3-000427 No active connections available in configuration, exiting...	Error	Adapter	This indicates that all the SAP systems the adapter is connected to, are down and none of the connections established by the adapter with the SAP system are active. Ensure that the SAP systems are up and running.

Status Code	Role	Category	Resolution
AER3-000428  Interface %1 does not contain deployment description for RFCs... continuing...	Warn	Configuration	The adapter could not find deployment descriptions for any RFC. If it is not intentional, ensure that the RFC configuration is correct.
AER3-000429  No deployment description available for idoc %1...using default...	Warn	Configuration	The adapter could not find deployment descriptions for the specified IDoc. If it is not intentional, ensure that the IDoc configuration is correct.
AER3-000432  Unable to clone proxy for operation %1	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000433  Unable to clone RFC client for %1	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000434  Unable to clone function implementation for operation %1	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000435  Unable to create listener for call-operation	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000436  Unable to create reply listener for operation %1	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000437  Unable to clone subscriber implementation	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.

Status Code	Role	Category	Resolution
AER3-000438 Unable to generate transaction-id. message : %1	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000439 Unable to create implementation for thread	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000440 Unable to create server thread	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000442 Connection context lost. Operation %1 failed	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000443 Logon to SAP R/3 system failed. message : %1	Error	Adapter	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000444 Error writing to file for transaction %1	Error	Adapter	Ensure that the file has write permissions.
AER3-000445 No active connections in connection-pool %1. All retry attempts exhausted. Connections for this pool deactivated.	Error	Adapter	Ensure that the SAP system pointed to by the connection-pool %1 is up and running.



Status Code	Role	Category	Resolution
AER3-000447  No active connections in connection-pool %1. All retry attempts exhausted. Exiting...	Error	Adapter	This indicates that all the SAP systems the adapter is connected to, are down and none of the connections established by the adapter with the SAP system are active. Ensure that the SAP systems are up and running.
AER3-000449  The Application Manager has been flagged to restart on re-establishing connection to R/3.	Info	Adapter	None.
AER3-000451  Adapter application will restart now	Warn	Adapter	The adapter is recovering missed messages by performing an internal-restart. Ensure that the adapter has performed a restarted successfully by checking the adapter log files.
AER3-000452  Adapter application %1 is restarting on host %2.	Info	Adapter	None.
AER3-000453  Invalid control-field replacement attribute %1 skipped.	Warn	Configuration	A control-field name %1 not present in the IDoc's control record was specified for replacement. Ensure that the field name is one of those defined for the IDoc's control record.
AER3-000454  Performing oneway invocation for User-defined function: %1	Info	Adapter	None.

Status Code	Role	Category	Resolution
AER3-000455 No class description available for explode sequence %1	Error	Configuration	Check the repository under /tibco/public/adapter/SAPAdapter40/<sap version>/IDOCs/ for the class description for class %1.
AER3-000456 No attribute description for explode sequence %1	Error	Configuration	Check the repository for attribute description for explode sequence %1.
AER3-000457 Operation %1 requires external logon. The request does not contain sessionID in the closure data.	Error	Adapter	Supply the session-id parameter in the RFCCLOSURE data of the incoming request.
AER3-9100012 Startup Error. Unable to create a Custom Hawk Micro Agent Named %1 used for %2	Error	Startup	Verify your repository settings for validity of the stop-subscriber session parameters.
AER3-910003 Startup Error. The command-line parameter(s): configurl, repourl have not been specified	Error	Startup	Specify the command-line parameters configURL and repoURL.

Status Code	Role	Category	Resolution
AER3-910006  Startup Error. SDK Exception %1 occurred while creating a shutdown listener with parameters %2. The Repository URL is %3 and the Configuration URL is %4	Error	Startup	Verify your repository settings for validity of configuration for the shut down listener.
AER3-910007  Startup Error. Unable to create a connection with the target application %1 using connection parameters %2 and the target application error is %3	Error	Startup	Verify your repository settings for validity of connection parameters.
AER3-9300014  Publication error. Publication service %1 with publication subject %2 received error while sending event over the wire. Error: %3	Error	Publication	Check repository settings for valid configuration of the publish endpoint for this service.

Status Code	Role	Category	Resolution
<p>AER3-9200015</p> <p>Subscription error.</p> <p>Subscription Service %1 listening on subject %2 failed due to target application invocation error %3. Target application is %4</p>	Error	Subscription	<p>Verify the structure of the incoming message. Check in the SAP system for more detailed information on the cause of the error.</p>
<p>AER3-930003</p> <p>Publication error.</p> <p>Publication service %1 with publishing subject as %2 received event from target application %3. It failed while converting event to MInstance as it could not get the class description for %4. Repository URL is %5 and the Configuration URL is %6'</p>	Error	Publication	<p>Verify the configuration of the Publication Service service and check that the schema/class definitions are present in the repository. See <a href="#">Adapter Service Reference</a> for details.</p>

Status Code	Role	Category	Resolution
<p>AER3-930006</p> <p>Publication error.</p> <p>Publication service %1 with publishing subject %2 received the event from target application %3. It failed while converting event to MInstance attribute %4 of class %5 is missing.</p> <p>RepositoryURL is %6 and the ConfigurationURL is %'</p>	Error	Publication	<p>Verify the configuration of the Publication Service service and check that the schema definitions are present in the repository. See <a href="#">Adapter Service Reference</a> for details.</p>
<p>AER3-930015</p> <p>Property: adr3.preserveFieldBlanks must be set to ON when using message encoding UTF-8 for publisher: %1 in mode: %2</p>	Error	Request-Response	<p>Verify that the property <code>adr3.preserveFieldBlanks</code> is set to ON.</p>
<p>AER3-940001</p> <p>Request Response error. Request Response service %1 listening on %2 received unexpected null data in incoming request. Expects event %3. The Repository URL is %4 and the Configuration URL is %5</p>	Error	Request-Response	<p>Check the configuration of the application that is requesting the event and make sure that it matches the inbound event definition for the above Request-Response Service service. See <a href="#">Adapter Service Reference</a> for details.</p>

Status Code	Role	Category	Resolution
<p>AER3-940005</p> <p>Request Response error. Request Response service %1 failed to deserialize the received Request to MInstance: Received event on subject %2, event = %3, SDK exception = %4. The Repository URL is %5 and the Configuration URL is %6</p>	Error	Request-Response	Check the configuration of the application that is requesting the event and make sure that it matches the inbound event definition for the above Request-Response Service service. See <a href="#">Adapter Service Reference</a> for details.
<p>AER3-940008</p> <p>Request Response error. Connection error in invocation of Request Response service %1 listening on subject %2. Connection Parameters are %3</p>	Error	Request-Response	Check if the end application is up and running. Also verify the connection parameters are specified in the repository.
<p>AER3-9500010</p> <p>Request-Response Invocation error. Request-Response Invocation Service %1 with subject %2 received null reply while requesting event over the wire</p>	Error	Request-Response Invocation	Check the target application, if it is running or not. Check the configuration of the Request-Response Invocation Service service.

Status Code	Role	Category	Resolution
AER3-9500011 Request-Response Invocation error. Request- Response Invocation Service %1 with subject %2 received timeout error while requesting event over the wire	Error	Request- Response Invocation	Check repository settings for valid configuration of the Request-Response Invocation endpoint for this service. See <a href="#">Adapter Service Reference</a> for details.
AER3-9500012 Request-Response Invocation error. Request- Response Invocation Service %1 with subject %2 received error while processing reply message. Error %3	Error	Request- Response Invocation	Check repository settings for valid configuration of the Request-Response Invocation endpoint for this service. See <a href="#">Adapter Service Reference</a> for details.

## Adapter Microagents and Methods

You can use TIBCO Hawk microagents to supplement the monitoring information provided by the standard logging levels capability.

Examples of supplemental information that you can obtain with microagents include the repository URL, command line arguments used to start the adapter configuration, and so on.

Each adapter configuration has the following three microagents, with different capabilities and names. The same microagent follows different naming conventions, depending on how an adapter configuration is started from TIBCO Business Studio.

- **Standard Microagent**

Predefined in TIBCO Adapter SDK. You can use the microagent to perform queries on all running adapter configurations, regardless of their class or application.

Naming in TIBCO Business Studio

COM.TIBCO.ADAPTER.adr3.%%Deployment%%.%%InstanceId%%

- **Class Microagent**

Predefined in TIBCO Adapter SDK. You can use the microagent to perform queries on one class of the adapter configuration.

Naming in TIBCO Business Studio

COM.TIBCO.adr3.%%Deployment%%.%%InstanceId%%

- **Custom Microagent**

Predefined in TIBCO ActiveMatrix Adapter for SAP. You can use the microagent to perform the adapter specific queries.


Naming in TIBCO Business Studio

SAPAdapterMicroAgent



## Available TIBCO Hawk Methods

The following table lists the methods available in the custom microagent of TIBCO ActiveMatrix Adapter for SAP.

For details about the methods available in the standard and class microagents, see "TIBCO Adapter SDK Hawk Microagents and Methods" in *TIBCO Adapter SDK Programmer's Guide*.

Method	Decription
<a href="#">getActivityStatisticsByService()</a>	<p>Use the method to get the runtime statistics for an adapter configuration.</p> <div>  <p>This method replaces the following methods defined in the releases before 7.0:</p> <ul style="list-style-type: none"> <li>• <a href="#">getConfiguredRFCs()</a></li> <li>• <a href="#">getActivityStatisticsByOperation()</a></li> <li>• <a href="#">getActivityStatisticsBySchema()</a></li> </ul> </div>
<a href="#">getInboundConnectionData()</a>	Use the method to get the number of threads used in processing inbound adapter service at run time.



Method	Description
<a href="#">getInboundThreadData()</a>	<p>Use the method to get the number of threads used in processing inbound messages for an inbound adapter service at run time.</p> <div>  <p>This method replaces the following methods defined in the releases before 7.0:</p> <ul style="list-style-type: none"> <li>• <a href="#">getConnectionStatistics()</a></li> <li>• <a href="#">getThreadStatistics()</a></li> </ul> </div>
<a href="#">getOutboundThreadData()</a>	<p>Use the method to get the thread information for an outbound adapter service at run time.</p> <div>  <p>This method replaces the following methods defined in the releases before 7.0:</p> <ul style="list-style-type: none"> <li>• <a href="#">getConnectionStatistics()</a></li> <li>• <a href="#">getThreadStatistics()</a></li> </ul> </div>
<a href="#">refreshExtendedLogging()</a>	Use the method to refresh the extended logging when starting an adapter configuration by using extended logging along with Log4J and the Log4J properties file is changed.
<a href="#">resetActivityStatistic()</a>	Use the method to reset the runtime statistics for an adapter service.
<a href="#">resumeInboundServices()</a>	Use the method to resume suspended inbound adapter services tied to a particular client connection pool.
<a href="#">resumeOutboundServices()</a>	Use the method to resume the server connection pools currently suspended.
<a href="#">resumeRemoteTIDManager()</a>	Use the method to resume the communication between the adapter services and the remote TIDManager configuration.
<a href="#">setInboundConnectionPool()</a>	Use the method to set the maximum number of connections for a client connection pool.
<a href="#">setInboundThreadPool()</a>	Use the method to change the number of threads for an inbound adapter service.
<a href="#">setOutboundThreadPool()</a>	Use the method to modify the number of connections to the SAP gateway, which influences the number of threads available for processing outbound messages.
<a href="#">refreshABAPRepository()</a>	<p>Use the method to refresh the schema of the inbound service to reflect the changes of the schema in the SAP system.</p> <ul style="list-style-type: none"> <li>• For the client connection pool, all existing modules that are cached in the repository are removed.</li> <li>• For the dynamic connection pool, all existing modules that are cached in the repository are removed.</li> </ul>

## getActivityStatisticsByService()

Use the `getActivityStatisticsByService()` method to get the runtime statistics for an adapter service.

### Parameters

The method has no parameters.

### Returned Results

The following table lists the returned results:

Name	Type	Description
<b>SerialNo</b>	Integer	A unique row index.
<b>ServiceName</b>	String	The name of the adapter service.
<b>ServiceType</b>	String	The type of the adapter service. <ul style="list-style-type: none"> <li>For the Publication Service and the Subscription Service services, the value is <i>IDoc</i>.</li> <li>For the Request-Response Invocation Service and the Request-Response Service services, the value is <i>RFC</i>.</li> </ul>
<b>Schema</b>	String	The name of the schema. <ul style="list-style-type: none"> <li>For the Subscription Service services, the value is <i>IDoc_Type</i>.</li> <li>For the Request-Response Service services, the value is <i>RFC/BAPI_Type</i>.</li> </ul>
<b>NumberTotalMessages</b>	Integer	The number of total messages processed.
<b>NumberSuccessMessages</b>	Integer	The number of successfully processed messages.
<b>NumberErrorMessage</b>	Integer	The number of messages processed in error.



The returned statistics are tied specifically to the adapter service and not to the message received. If a Publication Service service sends an incorrect IDoc or the service causes an exception when processing a correct IDoc, the statistics cannot be accumulated.

If there is no activity for a particular adapter service, the service cannot appear in the results.

## getInboundConnectionData()

Use the `getInboundConnectionData()` method to get the number of the client connections to an inbound adapter service at run time.

### Parameters

The method has no parameters.

## Returned Results

The following table lists the returned results:

Name	Type	Description
<b>SerialNo</b>	Integer	A unique row index.
<b>ClientConnectionPool</b>	String	The name of the client connection pool.
<b>MaxConnections</b>	Integer	The maximum number of connections for the specified pool.

## getInboundThreadData()

Use the `getInboundThreadData()` method to get the number of threads used in processing Inbound messages for an inbound adapter service at run time.

### Parameters

The method has no parameters.

### Returned Results

The following table lists the returned results:

Name	Type	Description
<b>SerialNo</b>	Integer	A unique row index.
<b>ServiceName</b>	String	The name of the adapter service.
<b>ServiceType</b>	String	The type of the adapter service. <ul style="list-style-type: none"> <li>For the Subscription Service services, the value is <i>IDoc</i>.</li> <li>For the Request-Response Service services, the value is <i>RFC</i>.</li> </ul>
<b>Schema</b>	String	The name of the schema. <ul style="list-style-type: none"> <li>For the Subscription Service services, the value is <i>IDoc_Type</i>.</li> <li>For the Request-Response Service services: the value is <i>RFC/BAPI_Type</i>.</li> </ul>
<b>ClientConnReference</b>	String	The client connection reference.
<b>SessionReference</b>	String	The session reference.
<b>ThreadCount</b>	Integer	The number of threads.

## getOutboundThreadData()

Use the `getOutboundThreadData()` method to get the thread information for an outbound adapter service at run time.

### Parameters

The method has no parameters.

### Returned Results

The following table lists the returned results:

Name	Type	Description
<b>SerialNo</b>	Integer	A unique row index.
<b>ServerConnectionPool</b>	String	The name of the server connection pool.
<b>GatewayHost</b>	String	The gateway host.
<b>GatewayService</b>	String	The gateway service.
<b>ProgramID</b>	String	The program ID.
<b>ThreadCount</b>	Integer	The number of threads.

## refreshExtendedLogging()

Use the `refreshExtendedLogging()` method to refresh the extended logging along with Log4J. When running an adapter configuration by using the extended logging and the Log4j file is changed.

### Parameters

The method has no parameters.

### Returned Results

The method has no returned results.

## resetActivityStatistic()

Use the `resetActivityStatistic()` method to reset the runtime statistics for an adapter service.

### Parameters

The method has no parameters.

### Returned Results

The method has no returned results.



Resetting the statistics do not necessarily remove all prior information. Any adapter service that contains an activity can remain, but all accumulated values can be reset to 0.

This method also does not reset or change the statistics maintained in the adapter logs. Any statistics maintained in the adapter log can remain unaffected.

## resumeInboundServices()

Use the resumeInboundServices() method to resume suspended inbound adapter services tied to a particular client connection pool.

The adapter services to be resumed are the Request-Response Service services that are configured using one-way invocation and the Subscription Service services.

### Parameters

The following table lists the parameter:

Name	Type	Description
<b>ClientConnectionPool</b>	String	The name of the client connection pool.

### Returned Results

The method has no returned results.

## resumeOutboundServices()

Use the resumeOutboundServices() method to resume the server connection pools currently suspended.

When the server connection pools are restarted, messages can be exchanged between the SAP system and the outbound adapter configuration containing the Publication Service and the Request-Response Invocation Service services.

### Parameters

The method has no parameters.

### Returned Results

The method has no returned results.

## resumeRemoteTIDManager()

Use the resumeRemoteTIDManager() method to resume the remote TIDManager configuration when communication between the adapter services and the remote TIDManager configuration has been disabled, and the issues related to the remote TIDManager configuration have been fixed.

Before using this method, ensure the remote TIDManager configuration is started and running.

### Parameters

The method has no parameters.

### Returned Results

The method has no returned results.

## setInboundConnectionPool()

Use the setInboundConnectionPool() method to set the maximum number of connections for a client connection pool.

### Parameters

The following tables lists the parameters:

Name	Type	Description
<b>ClientConnectionPoolName</b>	String	The name of the client connection pool.
<b>MaxConnections</b>	Integer	The maximum number of connections for the specified pool.

### Returned Results

The method has no returned results.

## setInboundThreadPool()

Use the `setInboundThreadPool()` method to change the number of threads for an inbound adapter service.

### Parameters

The following table lists the parameters:

Name	Type	Description
<b>ServiceName</b>	String	The name of the inbound adapter service.
<b>ThreadCount</b>	Integer	The number of threads for the specified service.

### Returned Results

The method has no returned results.

## setOutboundThreadPool()

Use the `setOutboundThreadPool()` method to modify the number of connections to the SAP gateway, which influences the number of threads available for processing outbound messages.

### Parameters

Name	Type	Description
<b>GatewayHost</b>	String	The gateway host.
<b>GatewayService</b>	String	The gateway service.
<b>ProgramID</b>	String	The program ID.
<b>ThreadCount</b>	Integer	The number of threads.

### Returned Results

The method has no returned results.



When changing the thread count, you can increase the thread count, but you cannot decrease the thread count afterwards. If the thread count has to be decreased, then you must stop and restart the adapter configuration.

**refreshABAPRepository()**

Use the refreshABAPRepository() method to refresh the schema of the inbound service to reflect the change in the SAP system.

**Parameters**

The method has no parameters.

**Returned Results**

The method has no returned results.