TIBCO ActiveMatrix® Adapter Service Engine for SAP

Configuration and Deployment

Software Release 6.0
February 2009

Important Information

Contents

Preface

This document describes how to create, configure and deploy adapter configurations using TIBCO ActiveMatrix Adapter Service Engine for SAP.

Topics

Related Documents

This section lists documentation resources you may find useful.

TIBCO ActiveMatrix Adapter Service Engine for SAP Documentation

The following documents form the TIBCO ActiveMatrix Adapter Service Engine for SAP documentation set:

- *TIBCO ActiveMatrix Adapter Service Engine for SAP Installation* Read this manual to learn how to install TIBCO ActiveMatrix Adapter Service Engine for SAP.
- *TIBCO ActiveMatrix Adapter Service Engine for SAP Configuration and Deployment* This manual explains how to create and configure adapter projects. Information on deploying adapter projects is also included.
- *TIBCO ActiveMatrix Adapter Service Engine for SAP Release Notes* Read this document for information about new features, deprecated features, and open and closed issues.

Before TIBCO ActiveMatrix Adapter Service Engine for SAP can be installed and used, you have to install TIBCO ActiveMatrix Adapter for SAP. The following documents form the TIBCO ActiveMatrix Adapter for SAP documentation set:

- *TIBCO ActiveMatrix Adapter for SAP Concepts* Read this manual before reading any other book in the documentation set. This book describes the adapter, adapter features, and the applications that the adapter interacts with.
- *TIBCO ActiveMatrix Adapter for SAP Installation* Read this manual to learn how to install TIBCO ActiveMatrix Adapter for SAP.
- *TIBCO ActiveMatrix Adapter for SAP Configuration and Deployment* This manual explains how to create and configure standalone adapter projects. Information on deploying adapter projects is also included.
- *TIBCO ActiveMatrix Adapter for SAP Examples* This manual provides instructions to run the examples that demonstrate use of the adapter.
- *TIBCO ActiveMatrix Adapter for SAP Release Notes* Read this document for information about new features, deprecated features, and open and closed issues.

Other TIBCO Product Documentation

You may find it useful to read the documentation for the following TIBCO products.

- TIBCO ActiveMatrix BusinessWorks Service Engine
- TIBCO Runtime Agent™
- TIBCO ActiveMatrix® Service Grid
- TIBCO ActiveMatrix® Service Bus
- TIBCO Business Studio™

Third Party Documentation

- *SAP R/3: Implementation Guide* by Bradley D. Hiquet, available from Kelly-Lacey & Associates Inc. This is "A Manager's Guide to Understanding SAP" that emphasizes the user's point of view. Printed in 1998 by Macmillan Technological Publishing.
- *SAP R/3 Business Blueprint* by Thomas Curran and Gerhard Keller. Printed in 1998 by Prentice Hall PTR.
- *SAP R/3 System, A Client/Server Technology* by Rudiger Buck-Emden. This is a general technical overview that is easy to read. Printed in 1996 by Addison-Wesley.

Typographical Conventions

The following typographical conventions are used in this manual

Table 1 General Typographical Conventions

Convention	Use
TIBCO_HOME *ENV_HOME* *AMX_HOME*	Many TIBCO products must be installed within the same home directory. This directory is referenced in documentation as *TIBCO_HOME*. The value of *TIBCO_HOME* depends on the operating system. For example, on Windows systems, the default value is `C:\tibco`. Other TIBCO products are installed into an installation environment. Incompatible products and multiple instances of the same product are installed into different installation environments. The directory into which such products are installed is referenced in documentation as *ENV_HOME*. The value of *ENV_HOME* depends on the operating system. For example, on Windows systems the default value is `C:\tibco`. Other TIBCO products are installed into an installation environment. Products installed into different installation environments do not share components. Incompatible products and multiple instances of the same product must be installed into different installation environments. An installation environment consists of the following properties: • **Name** Identifies the installation environment. The name is appended to the name of Windows services created by the installer and is a component of the path to the product in the Windows Start > All Programs menu. This directory is referenced in documentation as *ENV_NAME*. • **Description** Provides information about what the environment contains or is used for. • **Path** The directory into which the product is installed. This directory is referenced in documentation as *ENV_HOME*. The value of *ENV_HOME* depends on the operating system. For example, on Windows systems the default value is `C:\tibco`. TIBCO ActiveMatrix installs into a directory inside *ENV_HOME*. This directory is referenced in documentation as *AMX_HOME*. The value of *AMX_HOME* depends on the operating system. For example, on Windows systems the default value is `C:\tibco\amx\`. TIBCO ActiveMatrix Adapter Service Engine for SAP is installed in a directory inside AMX_HOME.

Table 1 General Typographical Conventions (Cont'd)

Convention	Use
`code font`	Code font identifies commands, code examples, filenames, pathnames, and output displayed in a command window. For example: Use `MyCommand` to start the foo process.
`bold code font`	Bold code font is used in the following ways: • In procedures, to indicate what a user types. For example: Type **`admin`**. • In large code samples, to indicate the parts of the sample that are of particular interest. • In command syntax, to indicate the default parameter for a command. For example, if no parameter is specified, `MyCommand` is enabled: MyCommand [**`enable`** | disable]
italic font	Italic font is used in the following ways: • To indicate a document title. For example: See *TIBCO BusinessWorks Concepts*. • To introduce new terms For example: A portal page may contain several portlets. *Portlets* are mini-applications that run in a portal. • To indicate a variable in a command or code syntax that you must replace. For example: `MyCommand` *pathname*
Key combinations	Key name separated by a plus sign indicate keys pressed simultaneously. For example: Ctrl+C. Key names separated by a comma and space indicate keys pressed one after the other. For example: Esc, Ctrl+Q.
	The note icon indicates information that is of special interest or importance, for example, an additional action required only in certain circumstances.
	The tip icon indicates an idea that could be useful, for example, a way to apply the information provided in the current section to achieve a specific result.
	The warning icon indicates the potential for a damaging situation, for example, data loss or corruption if certain steps are taken or not taken.

Terminology and Acronyms

Term	Definition
ABAP	Advanced Business Application Programming is a language in SAP used to write SAP specific code.
ALE/IDoc	Application Link Enabling/Intermediate Documents.
API	Application Program Interface.
Application Server	The server on which the SAP processes run.
BAPI	Business API (Functionally equivalent to RFC).
CIF	Certified Intermediate Format.
Component	A self-contained replaceable functional unit of the adapter that provides a set of interfaces. TIBCO ActiveMatrix Adapter Service Engine for SAP has two kinds of components; r3Outbound and r3Inbound. r3Outbound encapsulates functionality for outbound communication with the SAP system while r3Inbound encapsulates the functionality for inbound communication with the SAP system.
CPIC	Common Programming Interface for Communications. Rarely used directly, it forms the basic communications interface of SAP.
EDI	Electronic Data Interchange.
EMS	Enterprise Message Service
Gateway Server	A server used to exchange data with the SAP system.
Inbound Instance	An adapter configuration listening for messages inbound to the SAP system. Inbound instances transfer messages from the TIBCO environment to SAP.
Interface	A functional sub-unit of the adapter that exposes one or more adapter services. For example, the RFCServer interface exposes RFC/BAPI Request-Response Invocation services.
JMS	JAVA Messaging Service
MBCS	Multi-byte character string.
One Way Invocation protocol	One way invocation protocol allows you to invoke the BAPI/RFC in the SAP system without waiting for a reply from the system.

Term	Definition
Outbound Instance	An adapter configuration listening for messages outbound from SAP. Outbound instances transfer messages from SAP to the TIBCO environment.
RV	TIBCO Rendezvous™ protocol; also in certain contexts refers to reliable message quality of service, as opposed to certified message.
RFC	The SAP Remote Function Call Interface.
RFC Client	A SAP term for any program that can post RFCs/BAPIs/IDocs from an external system into the SAP system.
RFC Server	A SAP term for any external program that can accept and process RFCs/BAPIs/IDocs from the SAP system.
SAP Native data	All SAP data that the adapter interacts with. It consists of RFC data types. This includes IDocs received as RFC tables in an RFC function call.
SSL	Secure Sockets Layer.
TID	Transaction ID. A globally unique identifier used by transactional RFCs to ensure exactly-once execution of a transaction.
TIDManager	Transaction Identifier Manager.

How to Contact TIBCO Support

For comments or problems with this manual or the software it addresses, please contact TIBCO Support as follows.

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

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

- If you already have a valid maintenance or support contract, visit this site:

  https://support.tibco.com

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

Chapter 1 Introduction

This chapter provides an introduction to TIBCO ActiveMatrix Adapter Service Engine for SAP.

Topics

Overview

TIBCO ActiveMatrix Adapter Service Engine for SAP is a gateway for TIBCO ActiveMatrix Adapter for SAP to the Service Oriented Architecture (SOA) world. The TIBCO ActiveMatrix Adapter Service Engine for SAP provides an ActiveMatrix container to deploy adapter projects using the TIBCO ActiveMatrix Administrator.

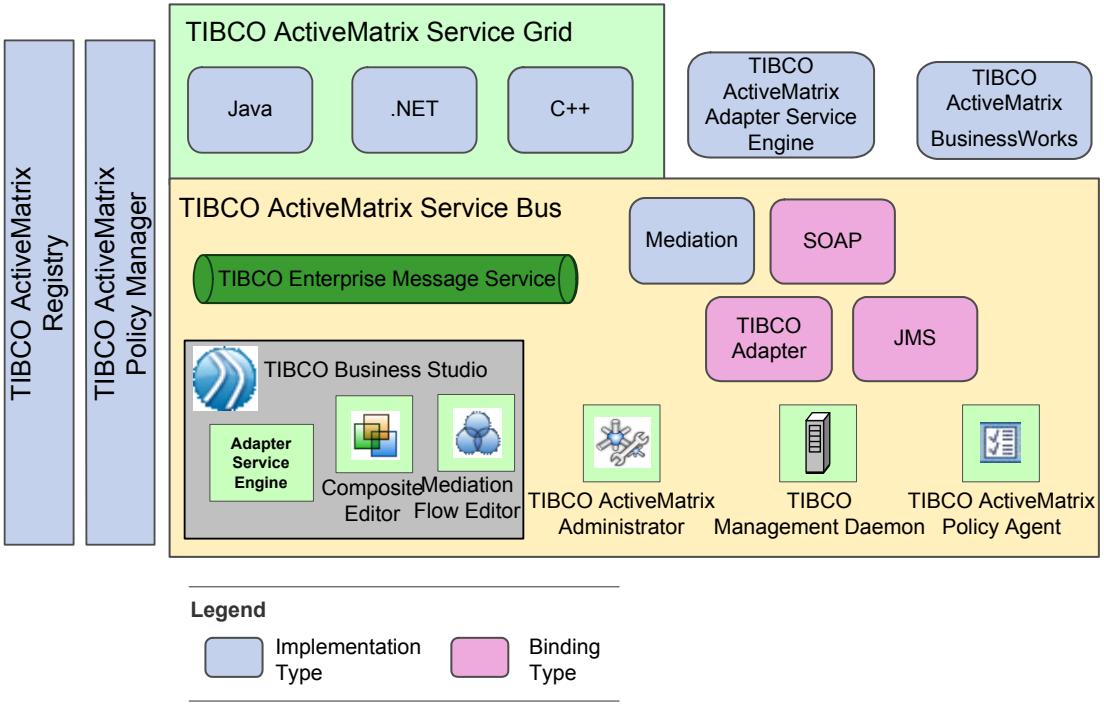
This manual describes the process of creating and configuring an adapter instance, packaging it into a service assembly and then deploying the services.

The design time tool used is TIBCO Business Studio and the services are deployed using TIBCO ActiveMatrix Administrator.

Before proceeding you should familiarise yourself with the concepts and the terminology used by TIBCO ActiveMatrix Adapter for SAP and TIBCO ActiveMatrix platform

The folliwing figure shows the TIBCO ActiveMatrix product family

Figure 1 TIBCO ActiveMatrix Product Family



Adapter Projects

Adapter projects contain adapter service engine configurations, related shared resources and business functionality that needs to be enabled for the functioning of the adapter service engines. Adapter projects are created using TIBCO Business Studio. See Creating Adapter Projects on page 11 for more information.

Adapter projects created using TIBCO Designer for the standalone component of the adapter, TIBCO ActiveMatrix Adapter for SAP can also be used by importing them into the TIBCO Business Studio environment. Importing Adapter Projects on page 13 provides more information on importing adapter projects.

Adapter Service Engine Project Lifecycle

This section describes the high-level steps required to configure and deploy an adapter. Each of these steps are described in details in subsequent chapters. Adapter projects are configured using TIBCO Business Studio.

Configuration

Task A Create an Adapter Project

The adapter project at this point contains the basic structure to which you later add adapter service engine configurations and configure connections to the SAP system

Task B Add an Adapter Service Engine Configuration

The adapter service engine configuration instance contains information about basic adapter configuration, adapter services, log sinks, and other settings.

See Configuring an Adapter Service Engine Instance, page 38 for more information.

Task C Configure Adapter Connections

One inbound connectionis created by default. The adapter communicates with the SAP system using this connection.

See Connection Resources, page 64 for more information.

Task A Configure the Vendor Application to work with the Adapter

This task is completed after installing the adapter and before configuring an adapter instance for the first time. The Business Object Importer is used to import schema from the SAP system into your project. The schemas are used by the adapter project.

See Using the SAP Business Object Importer, page 31 for more information.

Task D Add and Configure Adapter Services

For each adapter service that you create refers to a previously configured adapter connection and the schema to use.

See Adapter Services, page 42 for more information.

Task E Create the Service Assembly

A service assembly is an unit of packaging in the ActiveMatrix world. Before you can deploy the adapter project it has to be packaged into a service assembly.

See Creating the Service Assembly and the Service Assembly Archive, page 144 for more information.

Deployment

Task F Deploy and Start the Service Assembly

The service assembly is deployed using TIBCO ActiveMatrix Administrator.

See Deploying a Service Assembly Archive, page 151 for more information.

Chapter 2 Working with TIBCO Business Studio

Topics

Working with TIBCO Business Studio

The TIBCO ActiveMatrix development tools consist of TIBCO Business Studio Workbench and a set of TIBCO ActiveMatrix plug-ins. This section describes how to start TIBCO Business Studio, create a new adapter Project, and import projects and files into the project. For information on TIBCO Business Studio, refer to the *Workbench User Guide* in the Workbench online help. To view the online help, select **Help > Help Contents**.

Starting TIBCO Business Studio

To start TIBCO Business Studio:

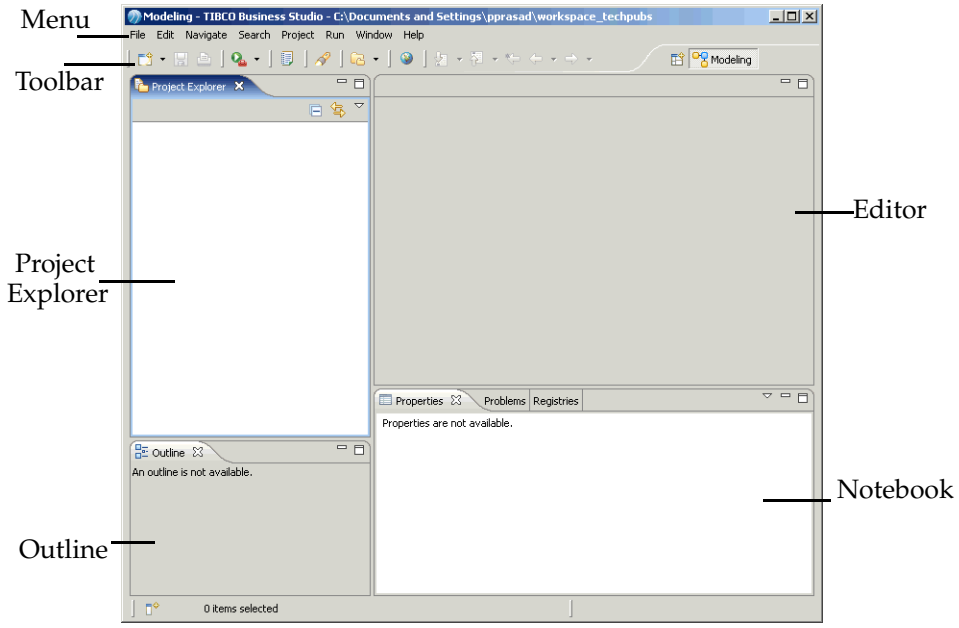
1. Execute one of the following platform-specific commands:

   Microsoft Windows From the Start menu, follow the path **All Programs > TIBCO >** *ENV_NAME* **> TIBCO Business Studio <***version number***> > TIBCO Business Studio**.

   From the command line, run *ENV_HOME*`/BusinessStudio/TIBCOBusinessStudio.exe`.

   UNIX Run *TIBCO_HOME*`\BusinessStudio\TIBCOBusinessStudio.sh`.

2. The Workspace Launcher appears. Accept the default workspace or browse to a new workspace.
3. Click **OK**.
4. TIBCO Business Studio displays a Welcome screen each time a new workspace is selected. Dismiss the screen by clicking the **X** next to Welcome. the following screen will be displayed:



The screen contains the following area and views:

- **Menu** See Help > Help Contents > *Workbench User Guide*.
- **Toolbar** See Help > Help Contents > *Workbench User Guide*.
- **Project Explorer** Displays a tree containing all the project resources such as project folders, shared resource definition files, WSDL files, composite files, service assembly files, and so on.
- **Editor** Displays editors for the objects currently being edited. You switch between editors by clicking tabs at the top of the Editor area. The Composite Editor contains a canvas on which you can drop elements and a palette that organizes the elements that you can add to the composite. Other editors allow you to configure shared resources and service assemblies.
- **Outline** Provides a overview of the Composite Editor canvas. You can easily navigate from one part of a composite to another.

  The Outline view also displays a content tree structure that contains the composite element inside the composite. In this view you can delete the contents of the composite. When you select a composite element in the Outline tree, the corresponding artifact in the composite becomes selected.

- **Views** Displays under the Editor Area. Contains the following views:
  - **Properties** Displays property sheets for editing composites and composite elements. When you select a composite or composite element in the Composite Editor canvas, this view shows the properties of the selected object in a vertical tabbed notebook.
  - **Problems** Displays validation and other errors.
  - **Registries** Lists UDDI registries and the WSDL files returned from searching a registry.

You open a view by selecting **Window > Show View > View**.

Creating Adapter Projects

To begin the configuration process, you must first create a project for the adapter.

To create a Adapter project:

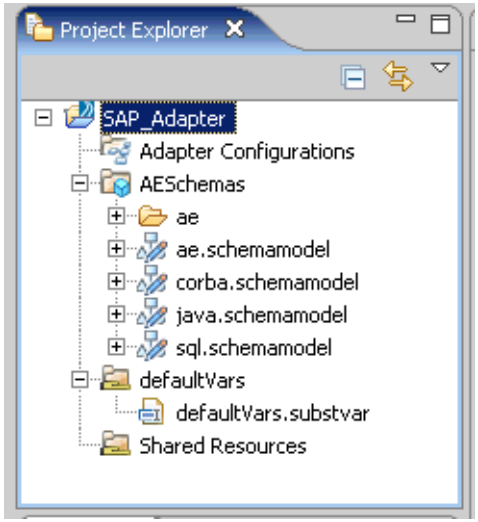
1. Start TIBCO BusinessStudio.
2. Select **File > New > Project> TIBCO ActiveMatrix Adapters > Adapter Project**.
3. Click **Next**.
4. Type *AdapterProjectName* in the Project name field and click **Next**.
5. To specify custom names for Adapter Configurations and Shared Resources folders click **Next**.

   To accept default values for the folder names, proceed to step 8
6. Specify a name for the Shared Resources folder and click **Next**.
7. Specify a name for the Adapter Configurations folder and click **Next**.
8. Click **Finish**.

A new project is created with the following TIBCO Business Studio aspect folders:

- Adapter Configurations
- AESchemas
- defaultVars
- Shared Resources

The following figure shows the structure of a project created using default values



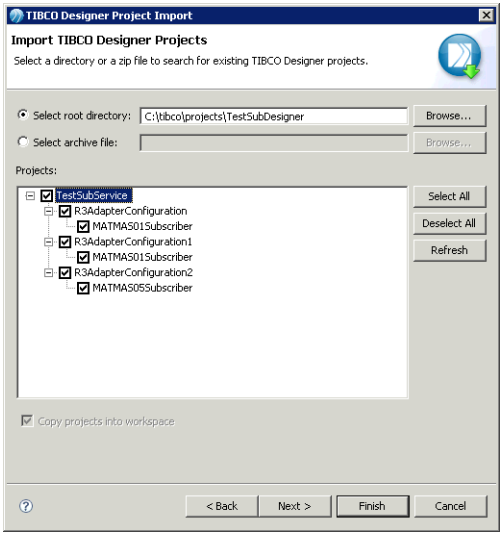
Global variables are referred to as substitution variables.

Importing Adapter Projects

Adapter projects created using TIBCO Designer can be imported into the TIBCO Business Studio environment.

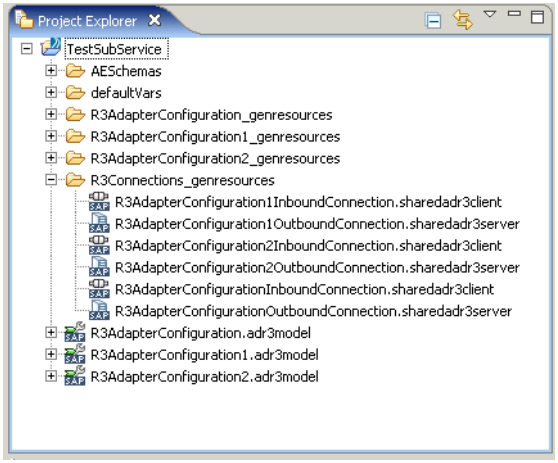
To import a Designer adapter project:

1. Select **File>Import...**.
2. Select **TIBCO ActiveMatrix Adapter > Import TIBCO Designer Projects**.
3. Click **Next**
4. Choose between **Select root directory** and **Select archive file.**
   a. Click **Browse**...
   b. Navigate to the folder where the Adapter project is located.
   c. Click **OK**.
5. In the Projects pane, check the checkbox for the project you want to import as well as the services contained in the project.



The checkbox for the **Copy projects into workspace** checked by default and the projects are copied to the current workspace.

6. Click **Finish**.

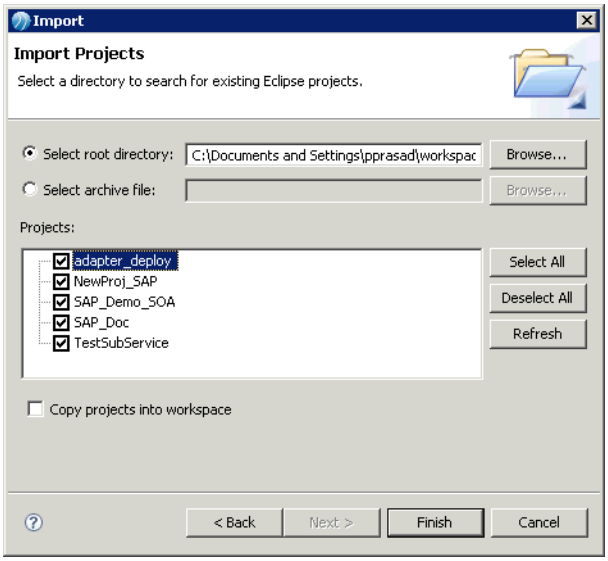


For information on the differences observed in the imported projects refer to Differences in Projects on page 160.

Importing Projects into Workspace

Follow these steps to import projects created in another workspace to the current workspace:

1. Select **File > Import...**.
2. Select **General > Existing Projects into Workspace**.
3. Click **Next**.
4. Choose between **Select root directory** and **Select archive file.**
   a. Click **Browse**...
   b. Navigate to the folder where the Adapter project is located.
   c. Click **OK**..



5. In the Projects area, check the checkboxes next to the projects you want to import.
6. Check the **Copy projects into workspace** checkbox if you want to copy files belonging to the project into the current workspace..
7. Click **Finish**.

Chapter 3 Getting Started

This chapter describes the pre-configured example that is packaged with the adapter.

Topics

Working with the Example

The GettingStarted example is available at: ENV_HOME\extensions\adsapse\samples.

This example contains two adapter configurations which between them contain all four adapter service configurations. The example helps show the interaction between the adapter and the SAP system.

The following sections describe the projects and the steps that were involved in creating them before providing information on how to run the example.

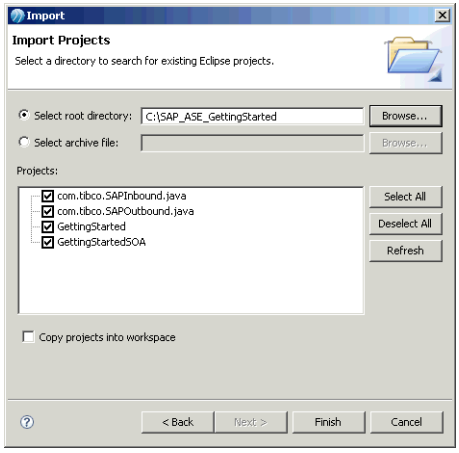
Import the example

1. Unzip the file.

   In addition to the project files, the zip contains a folder `SampleDataFiles`. This folder contains files that are used when running the example.

2. Start TIBCO Business Studio.

3. Click **Import > General > Existing Projects into Workspace**.



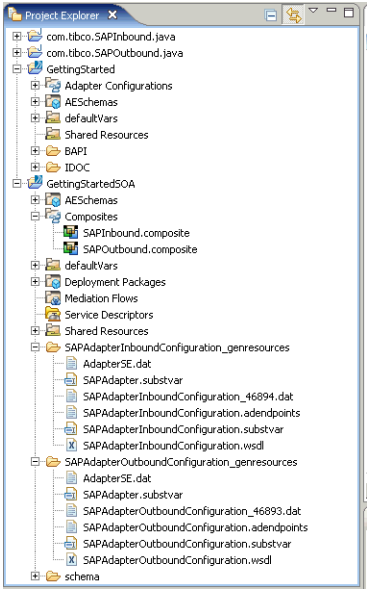
The following projects are imported:

GettingStarted This contains the adapter service engine configurations and services.

GettingStartedSOA This contains the SOA artifacts for the adapter service engine project and the composites. This example references the following Java projects:

- com.tibco.SAPInbound.java
- com.tibco.SAPOutbound.java

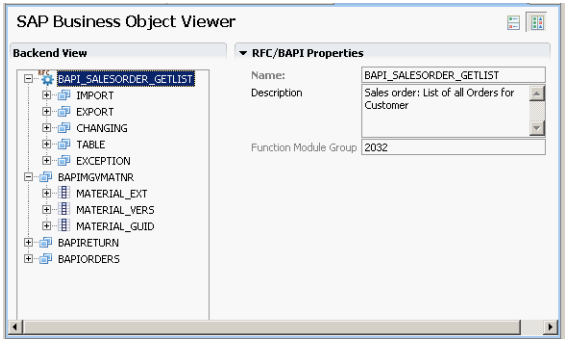
The following figure shows the projects as seen in the Project Explorer view in TIBCO Business Studio.



View the business objects

The SAP schema, business objects, have been downloaded in the folder BAPI and IDOC. Open these folders and click on the `.bo` files to view the BOs (business objects).

The following figure shows the BOs contained in the BAPI_SALESORDER_GETLIST.bo.



Adapter configurations

The GettingStarted project contains the following configurations:

- SAPAdapterInboundConfiguration

  This configuration has two adapter services defined one RPC Server and one Subscriber.

- SAPAdapterOutboundConfiguration

  This configuration has two adapter services defined one RPC Client and one Publisher.

Go through the configuration tabs for each configuration instance to see how they have been configured.

Configuring composites

The ActiveMatrix SOA project, GettingStartedSOA, has also been configured. The WSDL files generated for each of the adapter configurations refer to this SOA project.

For each WSDL, one composite is created. For each composite, add services. This is done by selecting the composite and selecting the Services tab.

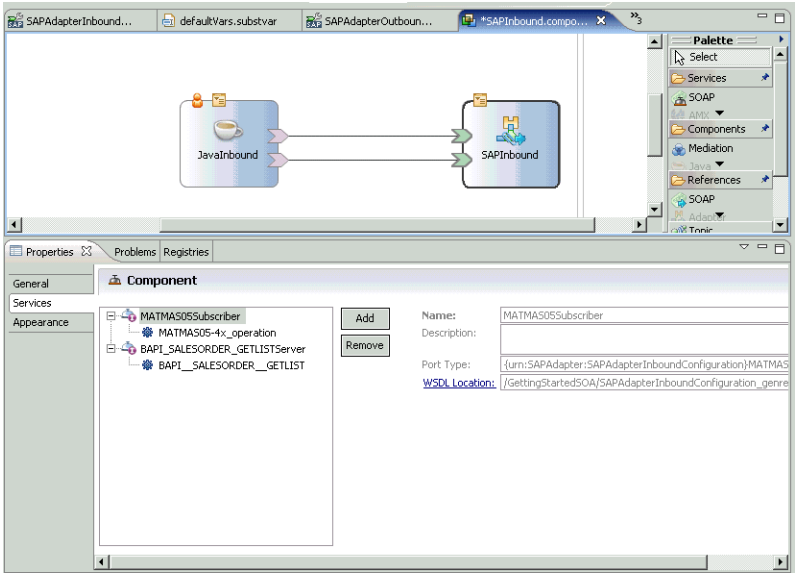
Adding service elements

A Java component is added from the available Palette. There is one Java component for each composite.

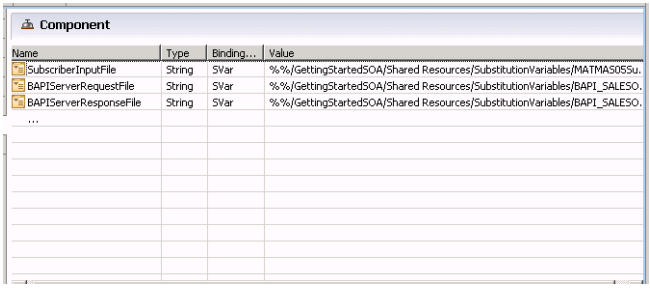
References to the adapter services are added and configured using the **References** tab.

References are made to the Java project by clicking on the **Implementation** tab and choosing the **Class**.

The following figure shows the composite for the Inbound configuration and the associated Java component.



Each Java component has properties defined which can be seen by clicking on the **Properties** tab that appears below the Editor pane. The following figure shows the properties defined for the Java component for the Inbound configuration.



For the Inbound Java component, the following properties are created

- SubscriberInputFile
- BAPIServerRequestFile
- BAPIServerResponseFile

For the Outbound Java component, the following properties are created

- PublisherOutputFile
- BAPIClientRequestFile

- BAPIClientResponseFile

Values for these properties should be specified at the time of deployment.

After the configuration is complete, the service assemblies for each composite are created by right- clicking the composite and selecting **Service Assembly**.

Deploying the example

Each of the service assembly archives can be deployed using TIBCO ActiveMatrix Administrator.

Before you can deploy the service assembly archive make sure the nodes and containers that the service unit will deploy into are up and running.

Upload the service assembly archives.

Specify values for the properties that were defined during the design phase. These properties specify the locations of the files used by the example and the locations where the response files will be written.

If the absolute path is not specified, the `bin` folder for the node is considered as the root folder.

For example, if you configure the `PublisherOutputFile` variable as `/ex/pubout.xml`, the file is created in the `/node/bin/ex/pubout.xml`.

Deploy the service assembly archives.

Refer to the TIBCO ActiveMatrix Administrator documentation for detailed information on the deployment process.

Running the Example

The following sections describe how to run each of the configured services.

RPC Server

The SampleDatFiles folder contains a file, ServerReq.xml which is used by this example.

Edit this file and for the CUSTOMER_NUMBER and SALES_ORGANIZATION fields provide values that are available for your system.

When you save the file, the Java component reads the input file and sends the contained information to the SAP system.

The response from the SAP system is written to the response file. The following is a part of the response file:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:__caret_reply_caret_BAPI__SALESORDER__GETLIST_caret_BAPI__SALE
SORDER__GETLIST
xsi:type="ns:__caret_reply_caret_BAPI__SALESORDER__GETLIST_caret_B
API__SALESORDER__GETLIST"
xmlns:ae="http://www.tibco.com/xmlns/ae2xsd/2002/05"
xmlns:ns="http://www.tibco.com/xmlns/ae2xsd/2002/05/ae/sap/basic/f
unctionModules"
xmlns:ns1="http://www.tibco.com/xmlns/ae2xsd/2002/05/ae/SAPAdapter
40/classes"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"><__caret_use
rClosure_caret_
xsi:type="ns1:RFCCLOSURE"><GUID/><bMore>0</bMore><maxRowCount>0</m
axRowCount><currentRowCount>0</currentRowCount></__caret_userClosu
re_caret_><RETURN><TYPE xsi:nil="true"/><CODE
xsi:nil="true"/><MESSAGE xsi:nil="true"/><LOG__NO
xsi:nil="true"/><LOG__MSG__NO>000000</LOG__MSG__NO><MESSAGE__V1
xsi:nil="true"/><MESSAGE__V2 xsi:nil="true"/><MESSAGE__V3
xsi:nil="true"/><MESSAGE__V4
xsi:nil="true"/></RETURN><SALES__ORDERS><item><SD__DOC>0000000042<
/SD__DOC><ITM__NUMBER>000010</ITM__NUMBER><MATERIAL>DORITO</MATERI
AL><SHORT__TEXT>Doritos</SHORT__TEXT><DOC__TYPE>TA</DOC__TYPE><DOC
__DATE>20070322</DOC__DATE><REQ__QTY>20.000</REQ__QTY><REQ__DATE>2
0070322</REQ__DATE><PURCH__NO>po06</PURCH__NO><BATCH
xsi:nil="true"/><VALID__FROM>00000000</VALID__FROM><VALID__TO>9999
1231</VALID__TO><BILL__BLOCK xsi:nil="true"/><DLV__BLOCK
xsi:nil="true"/><SOLD__TO>CUST01</SOLD__TO><NAME>customer 01 -
test</NAME><EXCHG__RATE>1.00000</EXCHG__RATE><DLV__QTY>0.000</DLV_
_QTY><BASE__UOM>EA</BASE__UOM><NET__PRICE>2.00</NET__PRICE><COND__
P__UNT>1</COND__P__UNT><COND__UNIT>EA</COND__UNIT><NET__VAL__HD>40
.00</NET__VAL__HD><NET__VALUE>40.00</NET__VALUE><DIVISION>01</DIVI
SION><DOC__STATUS>Not delivered</DOC__STATUS><SALES__GRP
xsi:nil="true"/><SALES__OFF
xsi:nil="true"/><SALES__ORG>0001</SALES__ORG><SALES__UNIT>EA</SALE
S__UNIT><SHIP__POINT>0001</SHIP__POINT><DISTR__CHAN>01</DISTR__CHA
```

```
N><GI__DATE>20070322</GI__DATE><CURRENCY>USD</CURRENCY><PLANT>0001
</PLANT><STORE__LOC xsi:nil="true"/><ORD__REASON xsi:nil="true"/>
```

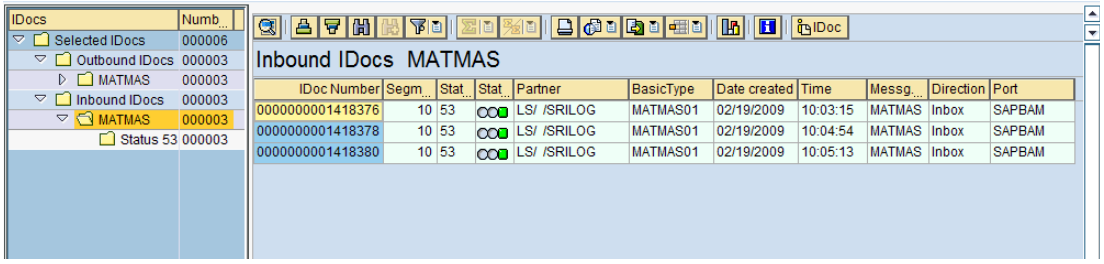
Subscriber

The SampleDatFiles folder contains a file, SubIn.xml which is used by this example.

Edit this file and for the SNDPRN, SNDPRT, RCVPRN, RCVPRT fields provide values that are appropriate for your system.

When you save the file, the Java component reads the input file and sends the IDoc to the SAP system.

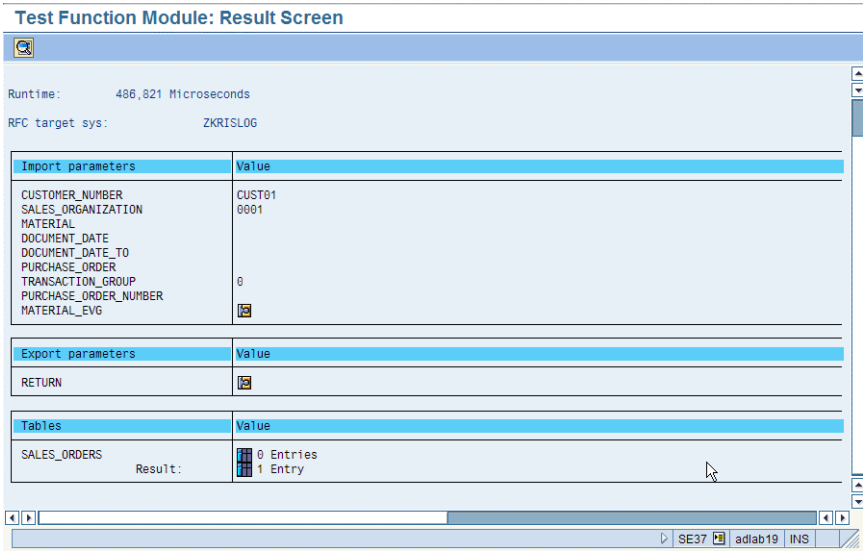
You can verify that the IDoc was received in the SAP system by executing the `we02` command. The following screen shows the result of executing the `we02` command.



RPC Client

From the SAP system, execute the se37 command and then select the BAPI for BAPI_SALESORDER_GETLIST.

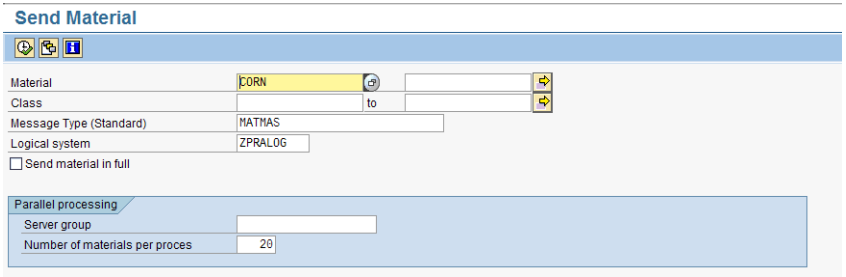
The request is received by the adapter which send a fixed response back to the SAP system.



Publisher

From the SAP system, execute the bd10 command.

Specify values for the Material and Logical System fields, and send the IDoc.



On receiving the IDoc the adapter sends it to the Java component that writes it to the specified file.

The following is a part of the file that contains the IDoc received from the SAP system:

```
<?xml version="1.0" encoding="UTF-8"?>
<ns:MATMAS05-4x xsi:type="ns:MATMAS05-4x"
xmlns:ae="http://www.tibco.com/xmlns/ae2xsd/2002/05"
xmlns:ns="http://www.tibco.com/xmlns/ae2xsd/2002/05/ae/sap/basic/I
DOCS"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"><EDI__DC><TA
BNAM>EDI_DC40</TABNAM><MANDT>500</MANDT><DOCNUM>0000000001411350</
DOCNUM><DOCREL>700</DOCREL><STATUS>30</STATUS><DIRECT>1</DIRECT><O
UTMOD>2</OUTMOD><EXPRSS xsi:nil="true"/><TEST
xsi:nil="true"/><IDOCTYP>MATMAS05</IDOCTYP><CIMTYP
xsi:nil="true"/><MESTYP>MATMAS</MESTYP><MESCOD
xsi:nil="true"/><MESFCT xsi:nil="true"/><STD
xsi:nil="true"/><STDVRS
xsi:nil="true"/><STDMES>MATMAS</STDMES><SNDPOR>SAPBAM</SNDPOR><SND
PRT>LS</SNDPRT><SNDPFC
xsi:nil="true"/><SNDPRN>SRILOG</SNDPRN><SNDSAD
xsi:nil="true"/><SNDLAD
xsi:nil="true"/><RCVPOR>A000000029</RCVPOR><RCVPRT>LS</RCVPRT><RCV
PFC xsi:nil="true"/><RCVPRN>ZKRISLOG</RCVPRN><RCVSAD
xsi:nil="true"/><RCVLAD
xsi:nil="true"/><CREDAT>20090212</CREDAT><CRETIM>170751</CRETIM><R
EFINT xsi:nil="true"/><REFGRP xsi:nil="true"/><REFMES
xsi:nil="true"/><ARCKEY
xsi:nil="true"/><SERIAL>20090212170245</SERIAL></EDI__DC><CHILDREN
><E1MARAM><item><FIELDS><EDI__DD><SEGNAM>E2MARAM006</SEGNAM><MANDT
>500</MANDT><DOCNUM>0000000001411350</DOCNUM><SEGNUM>000001</SEGNU
M><PSGNUM>000000</PSGNUM><HLEVEL>02</HLEVEL></EDI__DD><MSGFN>005</
MSGFN><MATNR>CORN</MATNR><ERSDA>20070321</ERSDA><ERNAM>SUNDAR</ERN
AM><LAEDA>20080602</LAEDA><AENAM>NIVEDITA</AENAM><PSTAT>KEDLBS</PS
TAT><MTART>ROH</MTART><MBRSH>1</MBRSH><MATKL>01</MATKL><MEINS>LBR<
/MEINS><BLANZ>000</BLANZ><BRGEW>0.000</BRGEW><NTGEW>0.000</NTGEW><
VOLUM>0.000</VOLUM><WESCH>0.000</WESCH><LAENG>0.000</LAENG><BREIT>
0.000</BREIT><HOEHE>0.000</HOEHE><ERGEW>0.000</ERGEW><ERVOL>0.000<
/ERVOL><GEWTO>0.0</GEWTO><VOLTO>0.0</VOLTO><FUELG>0</FUELG><STFAK>
0</STFAK><MHDRZ>0</MHDRZ><MHDHB>0</MHDHB><MHDLP>0</MHDLP><VPSTA>KE
DLBZXS</VPSTA><MSTDE>00000000</MSTDE><MSTDV>00000000</MSTDV><COMPL
>00</COMPL><GEWTO__NEW>0.0</GEWTO__NEW><VOLTO__NEW>0.0</VOLTO__NEW
><SLED__BBD>B</SLED__BBD></FIELDS><CHILDREN><E1MAKTM><item><FIELDS
><EDI__DD><SEGNAM>E2MAKTM001</SEGNAM><MANDT>500</MANDT><DOCNUM>000
0000001411350</DOCNUM><SEGNUM>000002</SEGNUM><PSGNUM>000001</PSGNU
M><HLEVEL>03</HLEVEL></EDI__DD><MSGFN>005</MSGFN><SPRAS>E</SPRAS><
MAKTX>Corn</MAKTX><SPRAS__ISO>EN</SPRAS__ISO></FIELDS></item></E1M
AKTM><E1MARCM><item><FIELDS><EDI__DD><SEGNAM>E2MARCM004</SEGNAM><M
ANDT>500</MANDT><DOCNUM>0000000001411350</DOCNUM><SEGNUM>000003</S
EGNUM><PSGNUM>000001</PSGNUM><HLEVEL>03</HLEVEL></EDI__DD><MSGFN>0
05</MSGFN><WERKS>0001</WERKS><PSTAT>EDLBS</PSTAT><EKGRP>001</EKGRP
><DISMM>ND</DISMM><PLIFZ>0</PLIFZ><WEBAZ>0</WEBAZ><PERKZ>M</PERKZ>
<AUSSS>0.00</AUSSS><BESKZ>F</BESKZ><MINBE>0.000</MINBE><EISBE>0.00
0</EISBE><BSTMI>0.000</BSTMI><BSTMA>0.000</BSTMA><BSTFE>0.000</BST
FE><BSTRF>0.000</BSTRF><MABST>0.000</MABST><LOSFX>0</LOSFX><AUSDT>
00000000</AUSDT><BEARZ>0.00</BEARZ><RUEZT>0.00</RUEZT><TRANZ>0.00<
/TRANZ><BASMG>0.000</BASMG><DZEIT>0</DZEIT><MAXLZ>0</MAXLZ><UEETO>
0.0</UEETO><UNETO>0.0</UNETO><WZEIT>0</WZEIT><VZUSL>0.00</VZUSL><U
```

MLMC>0.000</UMLMC><LGRAD>0.0</LGRAD><OBJID>00000000</OBJID><MTVFP>
01</MTVFP><VRVEZ>0.00</VRVEZ><VBAMG>0.000</VBAMG><VBEAZ>0.00</VBEA
Z><TRAME>0.000</TRAME><FXHOR>000</FXHOR><VINT1>000</VINT1><VINT2>0
00</VINT2><LOSGR>0.000</LOSGR><KAUSF>0.00</KAUSF><TAKZT>0</TAKZT><
VRBDT>00000000</VRBDT><VRBFK>0.00</VRBFK><PREND>00000000</PREND><P
RENG>00000000</PRENG>

Chapter 4 Configuring An Adapter Instance

Topics

Overview

Each adapter instance contains one or more instances of the adapter service engine configuration. This configuration is accessed whenever an adapter application is started.

Configuration Tasks

A typical sequence of creating and configuring an adapter instance is as follows:

1. Using TIBCO Business Studio, create a new adapter project.

   Alternatively you can work with an imported project.
2. Add an SAP adapter service engine configuration.
3. Configure the InboundConnection.
4. Download business objects (schema) from the SAP system.
5. Configure adapter service engine instance.
6. Create and configure services
7. Create an TIBCO ActiveMatrix SOA project.
8. Generate the WSDL into the SOA project.
9. Create composites.
10. Generate the service assembly.

The project is now ready for deployment.

Using the SAP Business Object Importer

TIBCO ActiveMatrix Adapter Service Engine for SAP introduces the concept of a *business object*. In the simplest sense a business object (BO) is the representation of the data model of the entities business entities like invoice, orders, customers, vendors.

For example, when the adapter connects to a SAP system, the business objects are the schema belonging to the IDocs and RFCs.

The business object also encapsulates the data, its attributes, types, functions and the operations as well as the relationships between other business objects.The schema that is downloaded can be used by adapter services in an adapter project.

If using extended or custom IDocs, make sure you have released the IDoc segment before importing the schema.

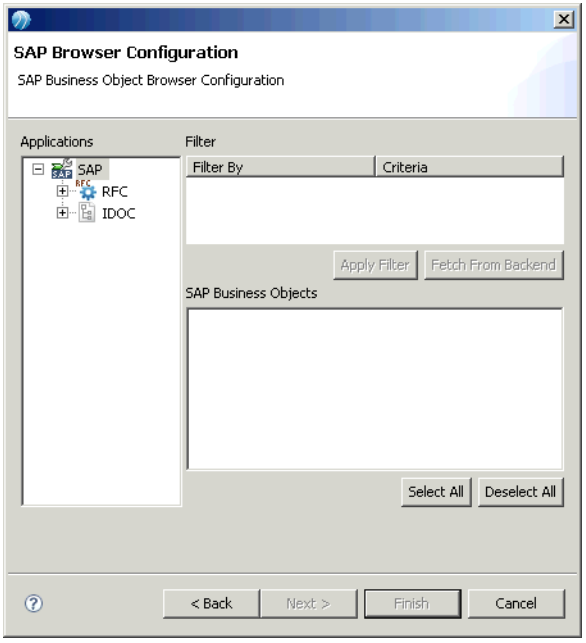
The Business Object (BO) importer is used to download IDocs, RFCs, and BAPIs from the SAP system.

1. Select **File > Import > TIBCO ActiveMatrix Adapter> Metadata> SAP Objects**.
2. Click **Next**.
3. Enter a Name for the business object schema.
4. Click **Browse** button to choose the location where you want to save the schema.
5. Click **OK**.
6. Click Browse button to choose the Adapter Connection which is a previously configured client connection resource.
7. Click **OK**.
8. Click **Test Connection** to verify the connection parameters.

   If you are able to successfully connect to the SAP system, proceed to the next step by clicking **Next**.

   If you are not able to successfully connect to the SAP system, you will have to exit out of the BO import.
9. In the SAP Browser Configuration dialog box, choose either RFC or IDOC in the Applications pane.

Figure 2 SAP Browser Configuration



If you choose RFC, specify values for the **Name** or the **Group**.

The RFC Filter used to restrict the number of RFCs or BAPIs returned from the SAP system. The RFC Filter can be used to restrict the number based on the actual name of the RFC or BAPI. There is no restriction on the usage of *. Values like BAPI*ORDER are allowed.

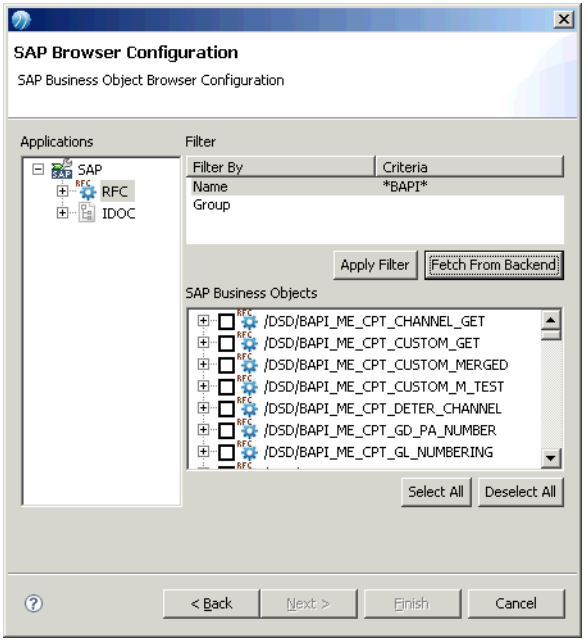
If you choose IDOC, specify a value for the Filter.

The IDoc filter used to restrict the number of IDocs returned from the SAP system. Values like CRE*01* cannot be used, the * can appear only at the beginning or the end of the expression. Example: MAT*

10. Click **Fetch from Backend**.

    The SAP Business Objects pane lists the business objects that match the filter criteria as shown in the following figure:

Figure 3 SAP Browser Configuration: Choosing Business Objects



Narrow your filter criteria by adding characters to the filter name and then click **Apply Filter**. The filter is now applied to the fetched objects.

For example, if your initial filter criteria was '*BAPI*, you could modify it to *BAPI_* to restrict the number of objects.

To specify a new filter name, enter the filter value and click **Fetch from Backend**.

11. Check the checkboxes for the SAP business objects that you want to choose and click **Finish**.

The selected SAP business objects are stored in the specified location in a named file with a `.bo` extension.

Using Filters

To download the list of BAPIs/RFCs with namespaces, you can enter the entire name of the RFC or give a partial filter in the RFC Filter. Ensure that the RFC Group Filter is blank.

To download a list of all BAPIs/RFCs with namespaces give RFC Filter as "/*" and leave the RFC Group Filter blank.

The default RFC Filter expression "*' does not download BAPI/RFCs with

namespaces.

The character '/' is a reserved character in the TIBCO environment. To support namespaces, the adapter performs a literal translation and replaces '/' with '__SLASH__'

The "/" in a BAPI or a RFC name in a namespace will be replaced with "__SLASH__" at design-time and saved to project with this name.

At run-time, the adapter replaces the "__SLASH__" with the "/" character in all its interactions with the SAP system.

Example: The `RFC /tibco/MY_CUSTOM_RFC` will be visible in the TIBCO environment as `__SLASH__tibco__SLASH__MY_CUSTOM_RFC`.

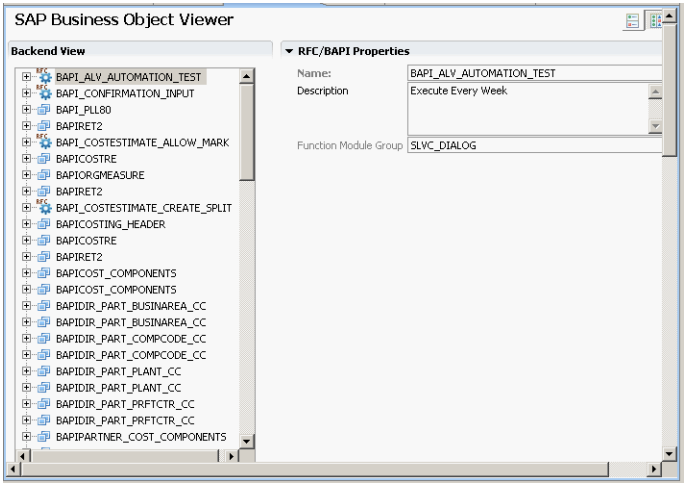
This applies to parameters referred to by the BAPI/RFC as well.

SAP Business Object Viewer

Objects imported using the SAP Object Importer can be viewed using the SAP Business Object Viewer. The imported SAP business objects are stored in files with a `.bo` extension.

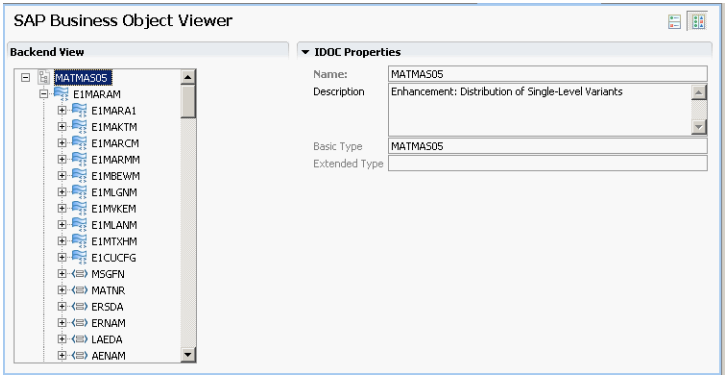
Double-click any `.bo` file from the Project Explorer view to display the contained SAP business objects. The following figure shows a sample screen of the SAP Business Object Viewer.

Figure 4 SAP Business Object Viewer: BAPI



The following figure shows a sample SAP Business Object Viewer screen displaying IDocs.

Figure 5 SAP Business Object Viewer: IDocs



Creating an Adapter Service Engine Configuration

To create an adapter service engine configuration:

1. Right click the Adapter Configurations folder and select **New>Other>TIBCO ActiveMatrix Adapters>Configurations> SAP Adapter**.
2. In the File name field type the adapter configuration name or accept the default name.
3. Click **Finish**.

The following folders are created:

- SAPAdapterConfiguration_connections
- SAPAdapterConfiguration_genresources

Additionally the adapter configuration, *ConfigName*.adr3model is created, where *ConfigName* is the name of the adapter configuration. The configuration contains the following tabs:

- Configuration
- Log Sinks
- Adapter Services
- TIDManagement
- Valid Destinations
- SAP ConnectionPool Configuration

Configuring an Adapter Service Engine Instance on page 38 describes in detail the configuration process.

SAPAdapterConfiguration_connections

This folder contains the SAP Application Server Client Shared Resource which is created by default. This folder contains one inbound connection and one outbound connection created by default.

SAPAdapterConfiguration_genresources

This folder contains the following shared resources that are created by default:

- R3HawkDefault
- TIDManagerSession
- DefaultRVCMQSession

- DefaultRVCMSession
- R3RVSession

Configuring an Adapter Service Engine Instance

This section describes how to configure an instance of the adapter service engine:

Mandatory fields are indicated with an asterisk * and are marked in bold.

Configuration

In this tab you provide basic information for the adapter. You can accept all defaults or specify new values.

Table 2 Adapter Configuration Tab

Field	Description
SAP Adapter Configuration	
Adapter Name	(Read only) The value of this fields is set to SAPAdapter.
Instance Name	(Read only) This is the name that was specified when creating the adapter configuration. See Guidelines for Choosing an Adapter Configuration Name on page 40 for more information.
Description	A short description of the adapter configuration.
Adapter Encoding	Choose between ASCII, ISO8859-1, ISO8859-2, ISO8859-5, ISO8859-7, ISO8859-8, ISO8859-9, UTF-8, Shift_JIS (CP943), Shift_JIS (TIBCO), Shift_JIS (932), KSC-5601, Big5.
Startup	
Show Startup Banner	This field is enabled by default and indicates that the startup banner will be displayed at run time. The startup banner contains information about the runtime adapter version, the infrastructure version and the copyright information. Clear this check box if you do not want the startup banner to be displayed.
Monitoring	
Enable Standard MicroAgent	Check this checkbox to enable the standard TIBCO Hawk microagent. Allows you to turn on or off the standard TIBCO Hawk Microagent.
Standard MicroAgent Name	The name for the standard microagent that will be registered with the TIBCO Hawk system. In most cases the default value is used.
Standard MicroAgent Timeout (ms)	The timeout for the standard microagent.
Enable Class MicroAgent	Check this checkbox to enable instance or class specific standard TIBCO Hawk Microagent.

Table 2 Adapter Configuration Tab

Field	Description
Class MicroAgent Name	The name for the class microagent that will be registered with the TIBCO Hawk system. In most cases the default value is used.
Class MicroAgent Timeout (ms)	The time out for the class microagent.
Default MicroAgent Session	(Read only) The value of this field is set to R3HawkDefault.
SAP Adapter Micro Agent Name	The name of the adapter microagent used to configure microagents specific to the adapter. The name specified appears in the TIBCO Hawk monitoring console and the methods associated with the microagent are made available. By default, the name is SAPAdapterMicroAgent.

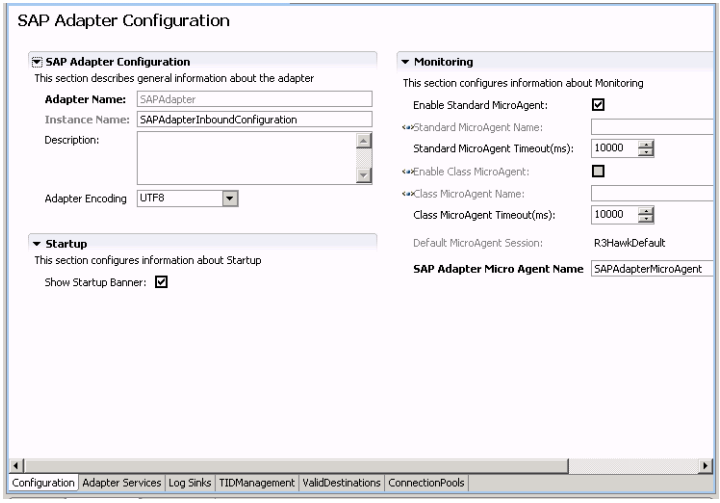
Guidelines for Choosing an Adapter Configuration Name

- An adapter configuration name must use alphanumeric characters. An underscore (_) character can be used. The entire instance name must be less than 80 characters. The space character cannot be used in an instance name.
- An adapter configuration name must be unique with respect to other adapter instances for the same adapter in the project. The same instance name can be used to name an adapter instance for a different adapter in the same project. For example, an SAP adapter instance named `TEST` and a Siebel adapter instance named `TEST` can coexist in the same project.
- Each adapter configuration name must be unique per adapter within a project even if each instance is defined in a different folder. That is, configuring same-named adapter instances in different folders will not make their names unique.

For more information on monitoring the adapter using TIBCO Hawk and the available microagent methods, see Monitoring the Adapter Using TIBCO Hawk on page 101.

The following figure shows an example of Configuration tab.

Figure 6 Adapter Configuration Tab



Adapter Services

This page is used to create and configure the adapter services. The adapter provides the following services:

- Publisher, page 42
- Subscriber, page 45
- RPC Server, page 47
- RPC Client, page 49

Adding a Publisher

A publisher is used to publish an IDoc from an SAP system.

A publisher is required for every IDoc that needs to be published. If the same IDoc must be published in different modes, a separate publisher is required for each mode. In cases where the mode is not explode, the service still needs to be associated with an IDoc although the IDoc schema will not be used.

An Outbound Connection and a ConnectionPool configuration is required for a Publisher and can be used by multiple Publishers.

To add a publisher, click **Add Publisher** and specify values for:

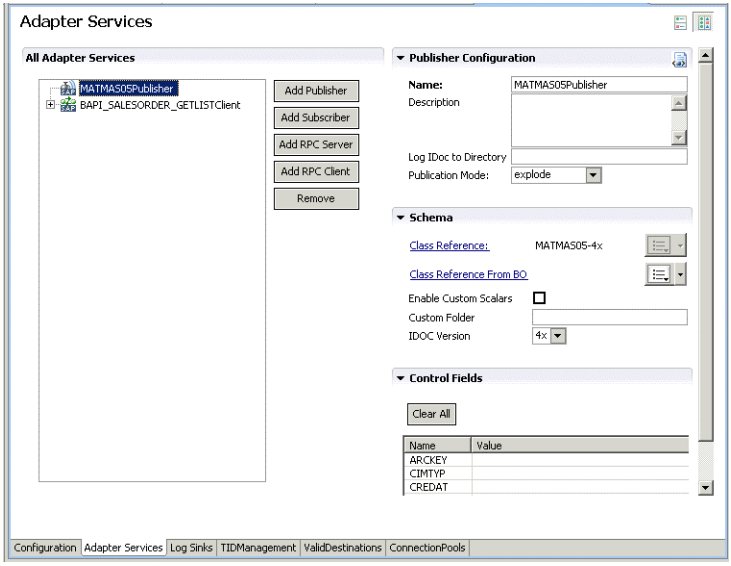
Table 3 Adapter Services: Publisher

Field	Description
Publisher Configuration	
Name	Name and Description for the publisher.
Description	
Log IDoc to Directory	This is the directory where the IDoc files will be saved.
Publication Mode	Choose between explode and explodedbatch.
Schema	
Class Reference	The schema of the BO referenced in the Class Reference from BO field.
Class Reference from BO	Select **Browse** from the menu t that appears on the right side of the **Class Reference from BO** field and choose from any of the previously imported BOs.

Table 3 Adapter Services: Publisher

Field	Description
Enable Custom Scalars	Check this checkbox to enable custom scalars.
Custom Folder	The location of the custom folder.
IDOC Version	This is the IDoc packaging format. From the drop-down list, choose whether the Idoc version is 4x or 3x.
Control Fields	
See Using Control Fields on page 85 for more information.	

The following figure show an example of a Publisher configuration.



Publication Modes

You can select from the publication modes available by using the drop-down box in the `Publish Mode` field.

The **Mode** options include:

- **Explode** means that the message is expanded and self-describing because it includes IDoc metadata. IDocs are initially received in compressed form as

RFC tables. 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.

To override this behavior and allow the adapter to pass on all fields received from the SAP system as is to the TIBCO environment, you can specify the following parameter in the adapter properties file.

```
adr3.preserveFieldBlanks=ON
```

This flag causes the adapter not to trim any of the blank-padded fields or filter out empty fields coming from the SAP system.

- **Exploded Batch** means the message contains a batch of self-describing IDoc data, each IDoc in an exploded format. Using the Batched Explode mode, the adapter sends a batch of IDocs in the explode mode. Similarly on the subscriber side, the adapter receives the IDocs in a batch and processes them in SAP. This improves the performance of the adapter.

  If the ALE outbound profile for an IDoc-type is set up to `Collect IDocs`, IDocs are collected within the SAP system till the `packet size` value is reached and then sent to the adapter in one shot.

  The Exploded Batch publication 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.

Adding a Subscriber

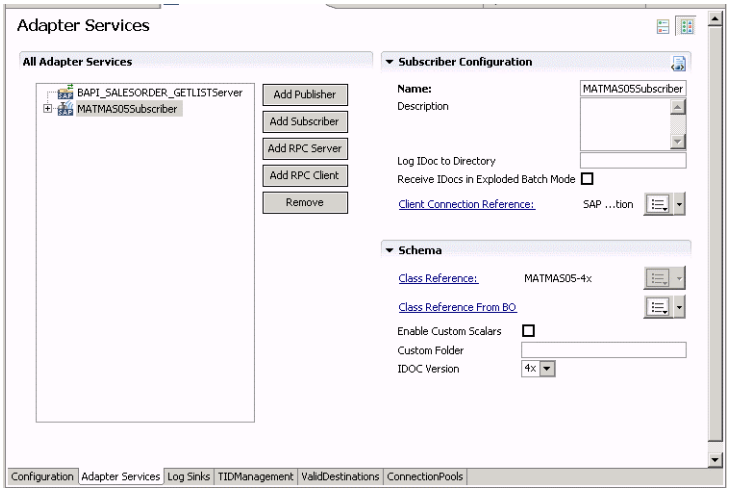
A subscriber is used to receive IDocs from the TIBCO environment and then send it to the SAP system. A separate subscriber is required for every IDoc to be sent to the SAP system.

To add a subscriber, click **Add Subscriber** and specify values for:

Table 4 Adapter Services: Subscriber

Field	Description
Subscriber Configuration	
Name	Name and Description for the subscriber.
Description	
Log IDoc to Directory	This is the directory where the IDoc files will be saved.
Receive IDocs in Exploded Batch Mode	Check this checkbox to receive IDocs in the exploded batch mode. The default mode is **explode**.
Schema	
Class Reference	The schema of the BO referenced in the Class Reference from BO field.
Class Reference from BO	Select **Browse** from the menu t that appears on the right side of the **Class Reference from BO** field and choose from any of the previously imported BOs
Enable Custom Scalars	Check this checkbox to enable custom scalars.
Custom Folder	The location of the custom folder.
IDOC Version	From the drop-down list, choose whether the Idoc version is 4x or 3x.

The following figure show an example of a Subscriber configuration:



Adding a RPC Server

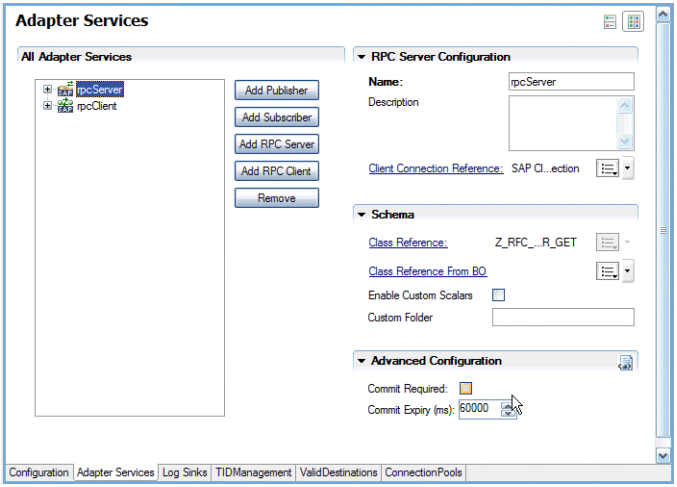
An RPC server is used to invoke a RFC or BAPI, in the SAP system from the adapter. A separate RPC Server configuration is required for every RFC or BAPI.

To add a request response invocation service, click **Add RPC Server** and specify values for:

Table 5 Adapter Services: RFC Server

Field	Description
RFC Server Configuration	
Name	The name and description of the RPC server.
Description	
Client Connection Reference	The Client Connection Pool reference to use for the service. Click the that appears on the tight side of the field and choose Browse to select a previously defined client connection.
Schema	
Class Reference	The schema of the BO referenced in the Class Reference from BO field.
Class Reference from BO	Select **Browse** from the menu t that appears on the right side of the **Class Reference from BO** field and choose from any of the previously imported BOs
Enable Custom Scalars	Check this checkbox to enable custom scalars.
Custom Folder	The location of the custom folder.
Advanced Configuration	
Commit Required	Check this checkbox if an external commit is required.
Commit Expiry (ms)	The maximum time (in milliseconds) for the adapter to hold the transaction context for each invocation. Upon expiry of this time interval, the transaction context for an invocation is released. A commit/ rollback request for this invocation sent to the adapter after the commit expiry time will not be executed. The default value is 6000ms.

The following figure show an example of a RPC Server configuration:



Adding a RPC Client

An RPC Client is used to invoke an RFC or BAPI from the SAP system to the adapter. A separate RPC Client is required for every RFC or BAPI to be invoked.

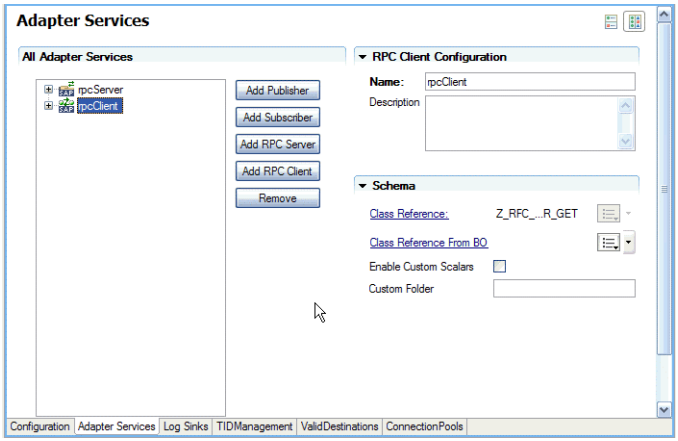
An Outbound Connection and a ConnectionPool configuration is required for a RPC Client and it can be used by multiple RPC Clients.

To add a RPC Client, click Add **RPC Client** and specify values for:

Table 6 Adapter Services: RPC Client

Field	Description
RFC Client Configuration	
Name	The name and description of the RPC Client.
Description	
Schema	
Class Reference	The schema of the BO referenced in the Class Reference from BO field.
Class Reference from BO	Select **Browse** from the menu t that appears on the right side of the **Class Reference from BO** field and choose from any of the previously imported BOs
Enable Custom Scalars	Check this checkbox to enable custom scalars.
Custom Folder	The location of the custom folder.

The following figure show an example of a RPC Client configuration:



TIDManagement

This page is used to configure information for connecting to the TID Manager. For information on setting up a TIDManager see TIDManager on page 76. The TIDManager uses RV or JMS for communication.

The setting in this pane can be modified only if a publisher has been defined.

Select local TID Management if there is only one adapter instance and is run in a single threaded mode using only one outbound connection.

The TIDManager uses the Program IDs defined in any server connections defined in the instance. If there are multiple instances sharing the same Program ID they must share the same TIDManager. Else, it is not possible to ensure that data is being sent only once from the SAP system.

Select Remote TIDManagement under the following scenarios:

- if the adapter is multi threaded,
- if more than one adapter instance is used,
- if the adapter has multiple connections,
- if the adapter is load balanced.

Publisher TID Configuration

Specify values for the following fields:

Table 7 TIDManagement: Publisher TID Configuration

Field	Description
Publisher TID Configuration	
TID Management Type	Choose between `local` and `remote`.
Local TID Configuration (displayed only when the TID Management Type is set to Local)	
TID File Name	The TID file used by the TIDManager to maintain state information on the transaction IDs (TID) sent from the SAP system. By default, the name of the TID file is **tidFile.tid**.

Table 7 TIDManagement: Publisher TID Configuration

Field	Description
Remote TID Configuration (displayed only when the TID Management Type is set to Remote)	
Subject	The subject used by the TIDManager Server Session. The default value is `SAP.TIDMANAGER.INBOUND`
Wire Format	(read only)
Invocation Timeout (ms)	

Subscriber TID Configuration

Specify values for the following fields:

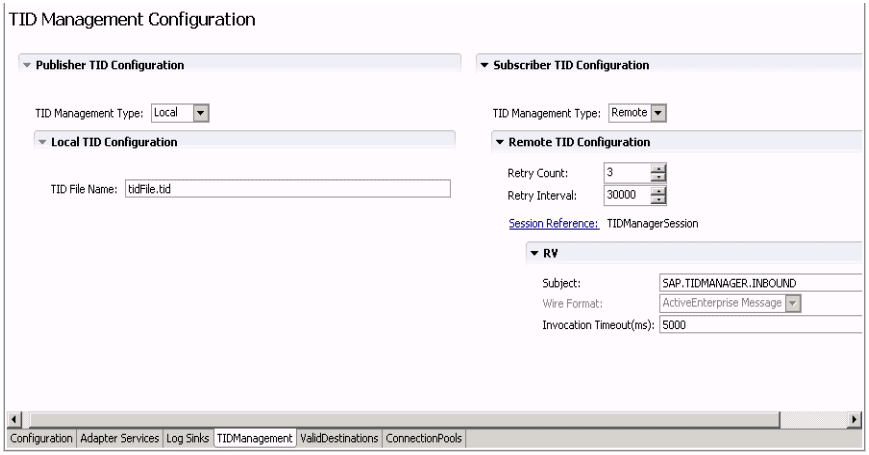
Table 8 TIDManagement: Subscriber TID Configuration

Field	Description
Subscriber TID Configuration	
TID Management Type	Choose between `none`, `local`, and `remote`.
Local TID Configuration (displayed only when the TID Management Type is set to Local)	
TID File Name	The TID file used by the TIDManager to maintain state information on the transaction IDs (TID) sent from the SAP system. By default, the name of the TID file is **tidFileInbound.tid**.
Remote TID Configuration (displayed only when the TID Management Type is set to Remote)	
Retry Count	The number of retries from the Adapter to the TIDManager server after which the adapter should conclude that the TIDServer is down.
Retry Interval	The time interval in milliseconds between any two ping attempts to the TIDManager server. This will be used when the TIDManager server is unreachable.
Session Reference	The session reference to use for the remote TID configuration.

Table 8 TIDManagement: Subscriber TID Configuration

Field	Description
Subject	The subject used by the TIDManager Server Session. The default value is `SAP.TIDMANAGER.INBOUND`
Wire Format	(read only) Set to ActiveEnterprise.
Invocation Timeout (ms)	
RV (displayed only when the Session Reference uses RV transport.	
Subject	The subject used by the RV reference.
Wire Format	(Read only) The wire format is set to **ActiveEnterprise Message.**
JMS (displayed only when the Session Reference uses JMS transport.	
Destination	The destination used by the JMS reference.
Delivery Mode	Choose between: Non-Persistent Messages are not stored and may be lost due to failure. Persistent Messages are stored and forwarded. TIBCO EMS Reliable The server never sends the producer a receipt confirmation or access denial and the producer does not wait for it. Reliable mode decreases the volume of message traffic, allowing higher message rates. The default value is Non-Persistent.
Wire Format	(Read only) The wire format is set to **XML Message.**

The following screen show the Publisher TID Configuration with the TID Management Type set to `Local` and the Subscriber TID Configuration with the TID Management Type set to `Remote`.



Valid Destinations

Using this page you can configure the a list of destinations to which the IDocs will be sent. This list of destinations applies globally to all IDoc types that are sent from the SAP system or to the SAP system. Typically, these destinations are SAP logical system names, but they can be a bank identifier, a customer identifier, or any Partner Type currently configured.

The RCVPRN field of an IDoc's control record specifies the receiving partner (destination) for the IDoc. If an IDoc's RCVPRN field has a value that is not configured as a valid destination, the IDoc is not published to the TIBCO environment. The IDoc will be logged (saved) into an ASCII text file under the configured directory.

As entries get saved, they are automatically converted to uppercase. This is done to ensure consistency with the syntax of logical systems in SAP.

Follow these steps to configure a valid destination:

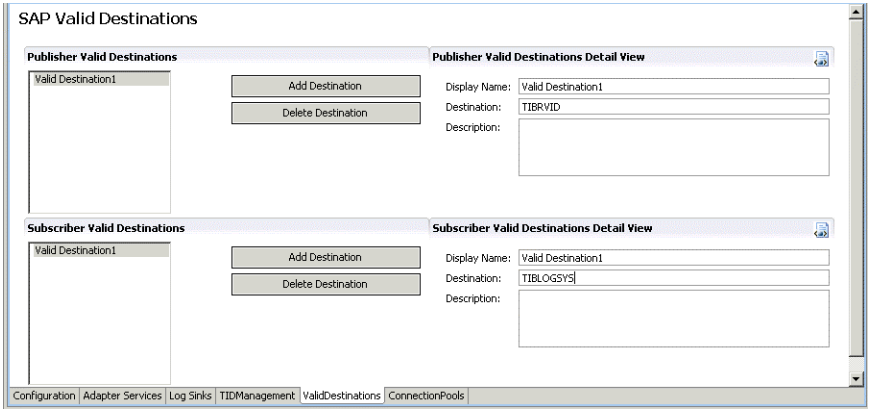
1. Click **Add Destination** in either the Publisher Valid Destinations section or the Subscriber Valid Destination section.
2. Specify values for the following parameters.

Table 9 Valid Destinations Configuration Parameters

Field	Description
Display Name	The name
Destination	A valid destination for an IDoc. Example `TIBRVID`.
Description	Description of the configured destination.

You can delete a valid destination by highlighting it and clicking **Delete Destination**.

The following figure shows a sample configuration screen for valid destinations



ConnectionPools

Adapter connections can be specified by configuring connection pools. A connection pool enables an adapter to efficiently share connection resources between different adapter threads. More than one connection pool may be specified. A connection pool may create, recycle or close a connection based on its frequency of use. Multiple adapter threads on the other hand may share the same connection between them. Connection pools allow optimal usage of available resource like memory, processor and threads.

For an inbound instance the connections are specified at the service level. This means, you can have different connections for different services. When the adapter instance is configured all the services have a default connection. You can add new connections to the adapter and then for each service specify one of the newly added connections.

For an outbound instance, the server connections are specified at the instance level. The configured services can use all the connections created for the instance.

By default one client connection pool configuration, DefaultInboundConnection, is created. This configurations refer to the default shared connection references.

InboundConnection

This connection is created along with an adapter instance. It references the default inbound connection under SAPConnection_connections.

Click **DefaultInboundConnection** in the All ConnectionPool Configurations section to view the default values. You can modify any of the following parameters.

Table 10 Client ConnectionPool Configuration Parameters:

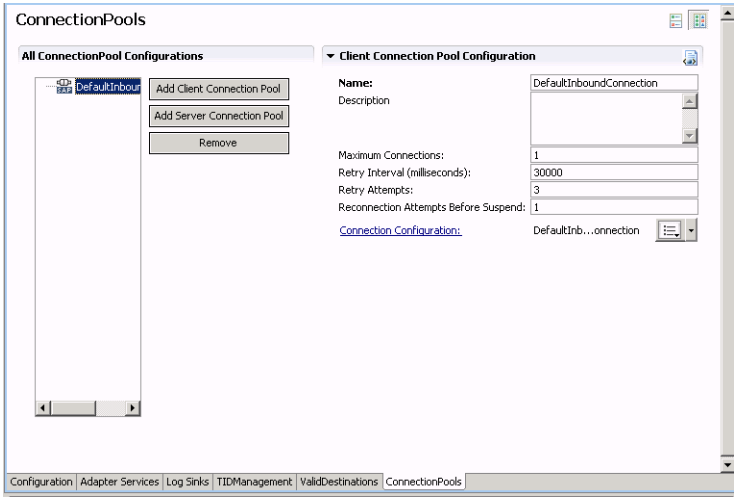
Field	Description
Name	The default value is DefaultInboundConnection.
Description	A short description of the connection.
Maximum Connections	The number of SAP connections in the client connection. By default, it is set to 1. A maximum of 99 connections is allowed. The Max Connections option is used to configure the maximum number of threads in the adapter instance.

Field	Description
Retry Interval (ms)	The time interval between two successive retries, in milliseconds. The default value is `30000ms`.
Retry Attempts	The maximum number of times the adapter will retry to establish a connection to the SAP system. By default, it is set to `3`. This has to be greater than or equal to the value in the `Number of retries before suspend` field.
Reconnection Attempts Before Suspend	The number of times the connection management process tries to connect to the application before the listener for a subscription or a one-way Request-Response invoke service is suspended. The default value for this field is 1.
Connection Configuration	The connection reference to use for the inbound connection.

Adding a Client ConnectionPool

To add a new client connectionpool configuration, click **Add Client Connection Pool** in the All ConnectionPool Configuration section and specify values for parameters listed in Table 10.

Figure 7 Connection Pool tab: Default Inbound Connection (Client Connection)



OutboundConnection

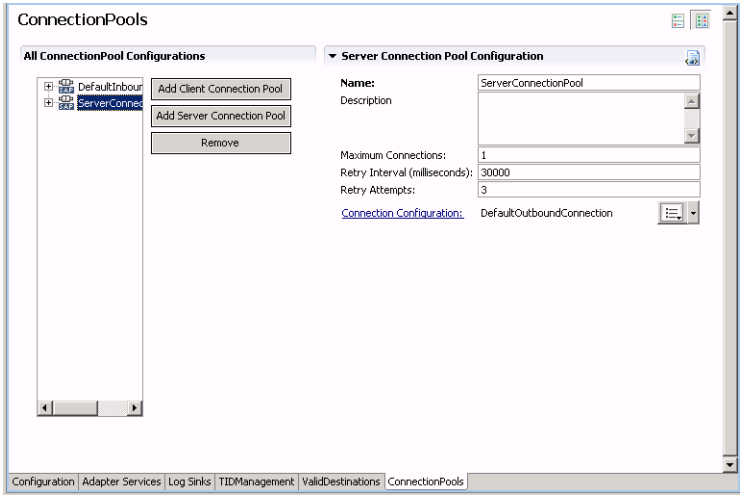
To add a new server connectionpool configuration, click **Add Server Connection Pool** in the All ConnectionPool Configuration section and specify values for parameters listed in Table 11.

Table 11 Server ConnectionPool Configuration Parameters:

Field	Description
Name	The default value is DefaultOutboundConnection.
Description	The description of the connection.
Maximum Connections	The number of SAP connections in the client connection. By default, it is set to 1. A maximum of 99 connections is allowed. The Max Connections option is used to configure the maximum number of threads in the adapter instance.
Retry Interval (ms)	The time interval between two successive retries, in milliseconds. The default value is `30000ms`.
Retry Attempts	The maximum number of times the adapter will retry to establish a connection to the SAP system. By default, it is set to `3`. This has to be greater than or equal to the value in the `Number of retries before suspend` field. For retry to continue forever, set the value to `-1`.
Connection Configuration	The connection reference to use for the outbound connection.

The following figure shows a sample Server ConnectionPool configuration.

Figure 8 Connection Pools tab: Server Connection Pool



Log Sinks

In this tab specify the output destination (sinks) for the trace messages and set the tracing level for the roles selected

Table 12 Log Sink Configuration Parameters

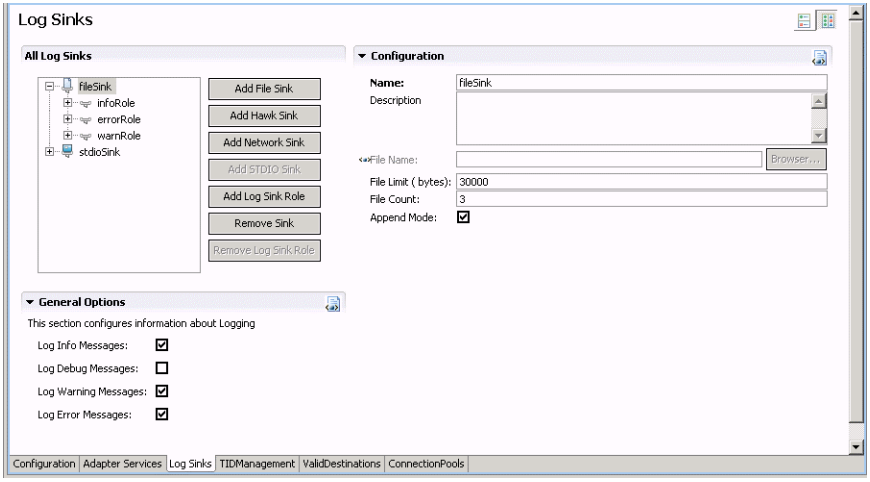
Field	Description
File Sink	
Name	The name and description for the File sink.
Description	
File Name	The path and name of the trace file.
File Limit (bytes)	Maximum size of the file, in bytes. The default value is 3000.
File Count	The number of rollover files.The default value is 3.
Append Mode	If checked, traces are added to the existing file at startup. If unchecked, the existing file is overwritten at startup if one of the same name exists. Only true and false are legal values.
STDIO Sink	
Name	The name and description for the STDIO sink.
Description	
Output Stream	Choose between `out` and `error`.
Hawk Sink The Hawk sink uses the hawk session, created and used by the adapter for monitoring purposes, to send tracing messages to the TIBCO Hawk monitor or Display.	
Name	The name and description for the Hawk sink.
Description	
Microagent Name	Name of the microagent for traces from this Hawk sink.

Table 12 Log Sink Configuration Parameters

Field	Description
Network Sink The Network sink is used to publish tracing message.	
Name	The name and description for the Network sink.
Description	
Subject	Subject of TIBCO Rendezvous messages to be sent.
Session Reference	Click the **Browse** icon and select one of the previously defined sessions.
General Options Trace messages of the selected level(s) will be collected in the configured log sinks. You can configure what levels of trace messages you want logged.	
Log Info Messages	Check this checkbox to log Informational messages.
Log Debug Messages	Check this checkbox to log Debug messages. This trace level is reserved and should not be enabled unless requested by the TIBCO Support. This trace level writes a lot of information to the log file and significantly reduces the speed of the adapter.
Log Warning Messages	Check this checkbox to log Warning messages.
Log Error Messages	Check this checkbox to log Error messages.

Adding Roles to Sinks

Click the **Add Log Sink Role** button to add additional roles. You can add debug, error, warning, or informational roles to sinks by selecting the corresponding roles from the **Role** drop-down list.


Log Sinks
All Log Sinks
fileSink
infoRole
errorRole
warnRole
stdioSink
Add File Sink
Add Hawk Sink
Add Network Sink
Add STDIO Sink
Add Log Sink Role
Remove Sink
Remove Log Sink Role
Configuration
Name:
fileSink
Description
File Name:
Browser...
File Limit (bytes):
30000
File Count:
3
Append Mode:
General Options
This section configures information about Logging
Log Info Messages:
Log Debug Messages:
Log Warning Messages:
Log Error Messages:
Configuration
Adapter Services
Log Sinks
TIDManagement
ValidDestinations
ConnectionPools

Connection Resources

A connection resource represents a connection to an SAP Client or an SAP RFC Server. Connection references are stored in the SAPConnection_resources folder.

SAP Client Connections

The SAP client connections represent connections between the adapter and the SAP system where the adapter act as a client and the SAP system act as a server. These connections are used during design time and runtime. The subscriber service and the RPC Server service use client connections to communicate with the SAP system using RFC protocol.

- Dedicated Client Connection on page 65
- SAP Client INI File Connection on page 66
- SAP Adapter Message Server Connection on page 67

SAP Server Connections

These represent connections between the SAP system and the adapter where the adapter acts as server and the SAP System act as a client This connection reference is only used by the run time adapter. The publisher service and the RPC client service refer to the RFCServer connections. The SAP systems communicates to the adapter using this connection using the RFC protocol.

- SAP Server Connection on page 69
- SAP Server INI File Connection on page 69

Multiple server connections are required in those cases where an outbound adapter instance needs to connect to multiple Gateway Host servers or connect to SAP system using multiple Program IDs.

See ConnectionPools for more information.

Default Connection References

When an adapter instance is created, the following connection references are created by default:

- DefaultInboundConnection

  This represents the connection between the adapter and the SAP system.

See InboundConnection on page 57 for more information.

- DefaultOutboundConnection

  This represents the connection between the adapter and the SAP system.

  See OutboundConnection on page 59 for more information.

Dedicated Client Connection

This connection is created by default and represents a direct connection to the SAP system. This connection is used during design time by the BO importer.

Table 13 SAP Dedicated Client Connection.

Field	Description
Configuration	
Name	The name and description for the dedicated client connection.
Description	
SAP Dedicated Client Connection	
Application Server	The network name of the host SAP application server machine. If the SAP system is behind a firewall, the SAP router string should be mentioned along with the application server name.
System Number	The SAP database instance number.
Client	The SAP client number
User Name	The valid user name and password to log into the SAP client specified.
Password	
Language	Select the language to be used when logging into the SAP system. The selected value is only used during design time.
Code Page	(read only) Value set to 1100 SAP application server code page. Set this to view IDoc/RFC /BAPI schema descriptions in non LATIN-1 character sets. The selected value is only used by the non-unicode adapter at runtime.
Is Unicode	Check the checkbox if this connection is to an Unicode SAP system.
Debug Settings	
ABAP Debug	Check the checkbox to turn on the ABAP Debug

Field	Description
RFC Trace	Check the checkbox to turn on the RFC Debug
Use SAPGUI	Valid values are 0, 1, or 2. The SAP GUI is launched only during the invocation of an RFC.

SAP Client INI File Connection

This connection uses the saprfc.ini file which contains information needed to connect to a SAP system.

- The file must exist in the current working directory of the process making the connection request.

  or

- An environment variable named `RFC_INI` must be defined that points to the directory and filename.

The filename does not have to be `saprfc.ini`. Assuming that the file was named `tibco.txt` and it was located under the temp directory on the C drive, the environment variable would be defined with the value `C:\temp\tibco.txt`.

Appendix A on page 155 lists sample saprfc.ini files.

To add a SAP Client INI File Connection, click **File > New> Other> TIBCO ActiveMatrix Adapters> Shared Resources> SAP Client (INI File)**.

Provide values for the parameters listed in the following table:

Table 14 SAP Client Connection (using INI File)

Field	Description
Configuration	
Name	Name and Description for the connection.
Description	
SAP INI File Client Connection	
Destination	The destination application server name. Used in conjunction with the saprfc.ini file, the name defines the set of attributes to be retrieved from the INI file during the registration of the connection to SAP.
Client	The SAP client number.

Field	Description
User Name	The user name and password to log into the specified SAP client.
Password	
Language	The language to be used when logging into the SAP system. The selected value is only used during design time. Set this to view IDoc/RFC /BAPI schema descriptions in non LATIN-1 character sets.
Code Page	Value set to 1100 SAP application server code page. The selected value is only used by the non-unicode adapter at runtime.
Is Unicode	Check the checbox if this connection is to an Unicode SAP system.
Debug Settings	
ABAP Debug	Check the checkbox to turn on ABAP Debug
RFC Trace	Check the checkbox to turn on the RFC Debug
Use SAPGUI	Valid values are 0, 1, or 2. The SAP GUI is launched only during the invocation of an RFC.

SAP Adapter Message Server Connection

To use load balancing, the client machine initiating the request must have a service named `sapmsXXX` defined on the system, where `XXX` is the value of `systemName`. The default service value is **3600/tcp**, and can be changed.

To add a SAP Adapter message Server connection, click **File > New> Other> TIBCO ActiveMatrix Adapters> Shared Resources> SAP Message Server**.

Provide values for the parameters listed in the following table:

Table 15 SAP Client (Message Server)

Field	Description
Configuration	
Name	Name and Description for the connection.
Description	

Field	Description
SAP Message Server Client Connection	
Message Server	The message server used in conjunction with load balancing. For example, SAPSVR.
System Name	The SAP R/3 system ID used in conjunction with load balancing. For example, TIB.
Logon Group	The SAP logon group that is used in conjunction with load balancing. For example, PUBLIC.
Client	The SAP client number.
User Name	The user name and password to log into the specified SAP client.
Password	
Language	The language to be used when logging into the SAP system The selected value is only used during design time.
Code Page	(read only) Value set to 1100 SAP application server code page. Set this to view IDoc/RFC /BAPI schema descriptions in non LATIN-1 character sets. The selected value is only used by the non-unicode adapter at runtime.
Is Unicode	Check the checkbox if this connection is to an Unicode SAP system.
Debug Settings	
ABAP Debug	Check the checkbox to turn on ABAP Debug.
RFC Trace	Check the checkbox to turn on RFC Debug.
Use SAPGUI	Valid values are 0, 1, or 2. The SAP GUI is launched only during the invocation of an RFC.

SAP Server Connection

To add a SAP RFC Server connection, click **File > New> Other> TIBCO ActiveMatrix Adapters> Shared Resources> SAP Server**.

Provide values for the parameters listed in the following table:

Table 16 SAP Server Connection

Field	Description
Configuration	
Name	Name and Description for the connection.
Description	
SAP RFC Server Connection	
Program ID	A valid existing program ID defined in the RFC destination inside the SAP system (sm59). The program ID identifies the RFC server program for the SAP system.
Gateway Service	The SAP gateway service. The default value is `sapgw00`
Gateway Host	The gatewayHost name, IP address or router string. If there is no machine acting as a gateway host, it is the same as the application server
RFC Trace	Check the checkbox to turn on RFC Debug

SAP Server INI File Connection

To add a SAP RFC Server connection, click **File > New> Other> TIBCO ActiveMatrix Adapters> Shared Resources> SAP Server (INI File)**.

Provide values for the parameters listed in the following table:

Table 17 SAP RFC Server Connection (using INI File)

Field	Description
Configuration	
Name	Name and Description for the connection.
Description	

Field	Description
SAP RFC Server INI File Connection	
Destination	The destination application server name. Used in conjunction with the saprfc.ini file, it defines the set of attributes to be retrieved from the INI file during registration of the connection to SAP.

Working with Substitution Variables

Substitution variables provide an easy way to set defaults for use throughout your project. You can override these values at runtime using TIBCO ActiveMatrix Administrator.

When an adapter project is created, a file named `defaultvars.substvar` is automatically added to the project in the defaultVars folder. Table 18 lists and explains the predefined global variables.

To assign values to the predefined default variables:

1. From the Project Explorer view, double click **defaultVars > defaultVars.substvars**

   The list of predefined variables is listed.

2. Click on a variable.

   The Details pane lists properties of the selected variables.

3. Specify the **Value** for the variable.

4. **Save** the project.

Table 18 Predefined Variables

Variable	Description
AppServer	The network name of the SAP application server host machine. If the SAP system is behind a firewall, then the SAP router string should be mentioned along with the application server name.
Client	SAP client number.
CodePage	SAP application server code page. Set this to view IDoc/RFC /BAPI schema descriptions in non LATIN-1 character sets in TIBCO Designer.
Deployment	This maps to adapter project name in TIBCO Business Studio for new projects. But the name takes effect first time you add an SAP adapter configuration.
DirLedger	Specifies the path name of the TIBCO Rendezvous certified messaging ledger file. The default is the root installation directory.
DirTrace	Specifies the path name for log file used by the adapter. The default is the root installation directory.

Table 18 Predefined Variables

Variable	Description
Domain	The default value for file-based local projects is `MyDomain`. The value for server-based projects is the domain to which the project was saved.
GatewayHost	The gatewayHost name or IP address or router string. If there is no specified machine acting as a gateway host, this is the same as the Appserver.
GatewayService	The SAP gateway service. The default value is `sapgw00`.
HawkEnabled	Indicates whether TIBCO Hawk is used to monitor the adapter. True indicates that a TIBCO Hawk microagent is defined for the adapter. False indicates the microagent is not to be used.
JmsProviderUrl	Tells applications where the JMS daemon is located. Setting this value mostly makes sense in early stages of a project, when only one JMS daemon is used.
JmsSslProviderUrl	Specifies applications where the JMS SSL daemon is located.
Password	Valid password corresponding to the user name.
ProgramID	Valid existing program ID that identifies the RFC Server program for the SAP system.
RemoteRvDaemon	TIBCO Rendezvous routing daemon (`rvrd`) to be used. See *TIBCO Administrator Server Configuration Guide* for details about setting up a domain using `rvrd`.
RvaHost	Computer on which the TIBCO Rendezvous agent runs. This variable is only relevant if you are using the TIBCO Rendezvous Agent (`rva`) instead of the TIBCO Rendezvous daemon, and if you have configured a non-default setup. See *TIBCO Rendezvous Administration* for details about specifying the rva parameters.
RvaPort	TCP port where the TIBCO Rendezvous agent (rva) listens for client connection requests. See *TIBCO Rendezvous Administration* for details about specifying the rva parameters. Defaults to 7501.
RvDaemon	TIBCO Rendezvous daemon. Sessions use this daemon to establish communication. The default value is `7500`.

Table 18 Predefined Variables

Variable	Description
RvNetwork	TIBCO Rendezvous network. This variable need only be set on computers with more than one network interface. If specified, the TIBCO Rendezvous daemon uses that network for all outbound messages. In most cases, you can leave the default.
RvService	TIBCO Rendezvous service. The Rendezvous daemon divides the network into logical partitions. Each transport communicates on a single service. A transport can communicate only on the same service with other transports. Unless you are using a non-default TIBCO Rendezvous configuration, you should leave the default (7500).
SystemNumber	SAP database instance number.
TIBHawkDaemon	TIBCO Rendezvous daemon used in the TIBCO Hawk session. See the *TIBCO Hawk Installation and Configuration* manual for details about this parameter.
TIBHawkNetwork	TIBCO Rendezvous network used by the TIBCO Hawk session. See the *TIBCO Hawk Installation and Configuration* manual for details about this parameter.
TIBHawkService	TIBCO Rendezvous service used by the TIBCO Hawk session. See the *TIBCO Hawk Installation and Configuration* manual for details about this parameter.
UserName	Valid user name to log into the SAP client specified.

Chapter 5 Advanced Features

This chapter describes advanced features for TIBCO ActiveMatrix Adapter Service Engine for SAP.

Topics

TIDManager

The Transaction Identity Manager (TIDManager) is used to ensure *exactly-once* delivery when tRFCs or IDocs are exchanged with the SAP system. The TIDManager component ensures that no transactional data is lost or duplicated in case of communication errors between the adapter and the SAP system.

The TIDManager server configuration is required in one of the following two scenarios:

- Outbound Configurations — Scenario where multiple publication service configurations (for IDocs) or Request-Response Invocation service configurations (for tRFCs) use the same program IDs and running in a load balanced fashion.
- Inbound Configurations — Scenarios where multiple Subscription service configurations (for IDocs) or Request-Response service configurations (for tRFCs) run in a load-balanced fashion.

Outbound configurations sharing the same program ID should reference the same remote TIDManager server configuration.

If more than one TIDManager is maintained for the same Program ID, once-only delivery from SAP cannot be guaranteed.

The TIDManager is configured using the standalone adapter. The standalone adapter project that includes a TIDManager instance is deployed using TIBCO Administrator.

Refer to *TIBCO ActiveMatrix Adapter for SAP Configuration and Deployment* for information on configuring and deploying an instance of the TIDManager.

The TIDManagement tab of the adapter service engine configuration contains parameters used to communicate with the TIDManager.

Handling Large Internal Tables from SAP

Certain BAPIs/RFCs configured as Request-Response services query the SAP system based on specific search criteria. Depending on the queries executed in the SAP system, the records retrieved by the adapter could vary between a few to many hundreds. Example: `BAPI_SALESORDER_GETLIST` returns the list of sales orders for a given customer within specific dates for a sales organization to the TIBCO environment.

The adapter allows you to retrieve controlled number of records for convenience and easy processing and handling at the speed of requesting client-side in the TIBCO environment. The BAPI itself is executed only once in the SAP system. The adapter caches the entire result set retrieved from the SAP system, say 1000 sales orders, and splits the 1000 sales orders into multiple chunks.

The client can make multiple requests to the adapter to retrieve each chunk. The cache maintained by the adapter can be browsed in the forward and backward directions. The adapter also indicates to the client by means of a return variable whether all chunks have been returned or not. The adapter also allows you to clear the maintained cache from the client.

A typical usage would be displaying of Salesorders from the SAP system to multiple users on Web-browsers over the internet. Each user specifies the number of salesorders to be displayed on each screen and navigates using **Previous** and **Next** buttons. The client-side only converts the user actions into suitable requests to the adapter and formats the data chunks. This feature is called data chunking.

Enabling Data-Chunking

To enable data-chunking, you must set appropriate attributes in the closure argument in the `userClosure` attribute of the request class. The `userClosure` class is a packet that is associated with the actual application request from the client and defines the nature of the actual request to the adapter.

The adapter provides a `userClosure` class, `RFCCLOSURE`. This class contains attributes for defining data-chunking requests.

The `RFCCLOSURE` class is included by default in every Repository project containing a TIBCO ActiveMatrix Adapter Service Engine for SAP configuration and is available under in the adapter project tree in `/AESchemas/ae/SAPAdapter40/classes.schemamodel`.

The following table lists the input and output parameters for the `RFCCLOSURE` class. The input parameters should be set by the client for every data-chunking request and the output parameters are returned to the client based on which the client takes necessary action.

Table 19 Input Parameters for RFCCLOSURE

Name	Description	Valid Values
`GUID`	A globally unique identifier. This associates the client request with adapter-side cache. Each cache is identified solely by the GUID passed by the client.	Unique String
`bUseCache`	Identifies if the request from the client is a data-chunking request. When this is set, caching is turned on in the adapter.	Boolean (0/1)
`packetSize`	The number of records the adapter should send back to the client in the reply. If multiple tables are returned from the SAP system with different number of records, then every table in the reply will contain those many rows specified by the packetSize. If the number of remaining rows is less than the packetSize for a table, that table returns all the remaining rows. If there are multiple tables in the reply and if all the records for a table have been sent, the next invocation would not contain any records for that table.	An integer number
`cacheDirection`	Indicates to the adapter which direction to browse the cache in. A "forward" direction returns the next set of records in the cache. A "backward" direction returns the previous set of records from the cache. Defaults to "+" if not set.	Forward '+'Backward '-'
`bClearCache`	Indicates to the adapter whether to clear the cache or not. This attribute is meaningful only for caches already created in the adapter. The GUID specifies which cache to clear. A separate request has to be made for each cache for the BAPI/RFC concerned. On receipt of the clear-cache request, the adapter simply clears the cache and returns a success message to the client.	Boolean (0/1)

Table 20 Output Parameters for RFCCLOSURE

Name	Description
`bMore`	Indicates the status of the cache. If there are more chunks to be return to the client from the adapter cache, this returns true else false. The client can take necessary action based on this flag.
`CurrentRowCount`	Maintains the current count of the rows returned to the client in a cache. For example, if there are 1000 records totally and packetSize is 100, and the adapter returns records 801-900 in the course of the chunking requests, currentRowCount is set to 900. In case records from multiple tables are returned, this attribute always indicates the row count of the table with the maximum records.
`maxRowCount`	Maintains the total size of the cache in terms of records. For example, if there are 1000 records totally, maxRowCount is always set to 1000. In case records from multiple tables are returned, this attribute always indicates the size of the table with the maximum records.

Also, note the following while enabling the client to make use of the data-chunking feature:

- Since browsing in the negative direction is possible at anytime during a chunking call sequence, the adapter does not automatically clear the cache after sending back all retrieved records. The cache is automatically cleared if a new chunking request is issued with cacheDirection attribute not set.
- The client has to explicitly clear the cache by setting the `bClearCache` attribute to true. A separate cache-clearing request has to be made for the same RFC/BAPI for which caching is enabled. The GUID associated with the cache should also be set to identify the cache to be cleared.

If the cache is not cleared, the adapter memory usage will go up with each caching call.

Program Internalization

This section describes Unicode and how to apply it using the adapter.

SAP Language Support

Single and Multi-byte Codepages

SAP provides multi-lingual support through simple single-byte codepage (ISO8859-1,ISO8859-2) and multi-byte codepage (like ShiftJIS, Big5 etc.) installations.

Simple codepage installations of SAP cannot support characters outside of the codepage with which the system is installed.

Blended Code Pages

In order to support more languages from unrelated code pages, SAP introduced the notion of blended code pages. A SAP blended code page comprises characters from the intersection of two or more code pages and from a disjoint set of these code pages. Creating a code page in such a way allows users to use some characters from any of the code pages.

Unicode

SAP Enterprise and higher versions of SAP support Unicode. A single Unicode installation of SAP can support all the characters defined by the Unicode character set.

The adapter supports single-byte, multi-byte and blended codepage installations of SAP. The adapter communicates to the Unicode and Non-Unicode SAP systems through the Unicode interface of the SAP RFC C++ libraries.

Support for Non-Unicode SAP Systems

The Outbound adapter receives multi-byte character data from Non-Unicode SAP systems, converts it to Unicode, and passes on the data to the TIBCO environment. The conversion from multi-byte to Unicode is based on the logon-language and code page of the SAP user invoking the adapter from the SAP system.

The Inbound adapter receives character data in Unicode from the TIBCO environment, converts them to multi-byte character data based on the logon language and code page chosen for the adapter connection and passes on the data to the SAP system.

Support for Unicode SAP Systems

The Outbound and the Inbound adapters operate in a homogenous mode. They receive character data in Unicode from the SAP system or the TIBCO environment, and pass on the data to the target environment without any conversions for character data in the adapter.

Repo encoding is always `UTF-8` in the TIBCO ActiveMatrix environment.

Getting Ready to Run Unicode

Complete the following steps prior to running the adapter so that it can handle Character data correctly.

1. Configure inter-communication encoding

   The wire format encoding used for communication between adapters and TIBCO applications is determined by the encoding property set in the project.

   If an adapter configuration is saved in a local project, the inter-communication encoding is determined by the encoding property of the project file. The adapter requires the project encoding is set to `UTF-8`. This is irrespective of the character set being processed in the adapter and the SAP system the adapter connects to.

To communicate with other TIBCO components using the same encoding, the project file encoding property setting for all TIBCO components must be identical.

At runtime, a set of Non-Unicode adapter binaries (adr3 and adr3u shared libraries .exe and adr3.tra) exists in the adapter which is compatible with the earlier 5.x releases of the adapter. This set of binaries can exchange data with Non-Unicode SAP systems only. To communicate with Unicode SAP systems and exchange data, you must use the Unicode executable adr3u.exe and adr3u.tra files. The Unicode binaries can communicate with Non-Unicode SAP systems as well.

2. Configure adapter encoding for explosion of IDoc data in Publication services.

   The adapter publication service receives IDoc data from the SAP system in Native RFC format. The Native format is then exploded into a self-describing

IDoc structure. The explosion is performed by chopping down the Native RFC table data into individual segments and individual fields under segments. To ensure correct explosion, perform the following configuration.

This configuration step for publishing IDocs in exploded mode is required for IDoc data posted from Non-Unicode SAP systems only:

Configure the adapter for the appropriate encoding. To specify the encoding for the adapter configuration, navigate to the General tab, and choose an encoding from the drop-down.

In the figure below, the adapter is configured for processing Shift-JIS character data, Shift JIS(932). The equivalent SAP code page value is "8000".

The setting maybe overridden from the adapter properties file by setting the `adr3.encoding` parameter.

Example: `adr3.locale=ibm-943`

Refer to Table 21, "Encoding/Locale Table," on page 82 for possible values.

The adapter does not perform any validation for the encoding value upon startup. Appropriate errors are thrown at run-time incase of conversion errors.

Character data-types in SAP IDoc/RFC/BAPI schema are single-byte representations.

A field, say `KUNNR` in `RFC_CUSTOMER_GET`, of type char.10 means that the `KUNNR` field can hold 10 *bytes* of data.

International characters belonging to multi-byte character sets can be accommodated only to the extent of the total number of bytes as specified in the schema description.

As an illustration, consider the field `KUNNR` in `RFC_CUSTOMER_GET`. The field can hold 10 characters of English data (single-byte), but can hold only 5 characters of a double-byte character set. When more than 5 double-byte characters are set to the `KUNNR` field, the field is not guaranteed to be processed completely.

Table 21 Encoding/Locale Table

Encoding/Locale	Encoding Value
ASCII	ascii
ISO8859-1	LATIN_1
ISO8859-2	ibm-912
ISO8859-5	ibm-915

Encoding/Locale	Encoding Value
ISO8859-7	ibm-813
ISO8859-8	ibm-916
ISO8859-9	ibm-920
UTF-8	UTF8
Shift_JIS (CP943)	ibm-943
Shift_JIS (TIBCO)	tibx-943
Shift_JIS (932)	tibx-932
KSC_5601	ibm-949
Big5	ibm-1370
GBK	ibm-1386

Managing Logging

Trace messages are used to trace and troubleshoot an exception condition when an exception occurs at runtime.

You can configure the logging of trace messages using the TIBCO Common Logging framework by leveraging on the availability of Common Logging libraries in the ActiveMatrix environment. The Common Logging framework provides common messages and error codes that can be used across TIBCO products to log messages in a uniform manner.

To enable the common logging feature, the following properties are used:

- `application.ase.consoleoutput`
- `tibco.env.ADAPTER_ENABLE_CL`

The following table describes the usage of these properties.

Property Values	Behavior
`application.ase.consoleoutput = false` `tibco.env.ADAPTER_ENABLE_CL = false`	The common logging feature is disabled and the trace messages are written to the adapter log files.
`application.ase.consoleoutput = true` `tibco.env.ADAPTER_ENABLE_CL = false`	The common logging feature is disabled and the trace messages are displayed on the console. When the `application.ase.consoleoutput` property is set to `true`, any value assigned to the `tibco.env.ADAPTER_ENABLE_CL` property is ignored.
`application.ase.consoleoutput = false` `tibco.env.ADAPTER_ENABLE_CL = true`	The common logging feature is enabled.

Using Control Fields

The following table lists, in alphabetical order, the available control fields.

Table 22 IDoc Control Record Fields

Control Fields				
ARCKEY	CIMTYP	CREDAT	CRETIM	STD
DIRECT	DOCNUM	DOCREL	DOCTYP	STDMES
EXPRSS	IDocTYP	MANDT	MESCOD	STDVRS
MESFCT	MESTYP	OUTMOD	RCVLAD	TEST
RCVPFC	RCVPOR	RCVPRN	RCVPRT	TABNAM
RCVSAD	REFGRP	REFINT	REFMES	
SERIAL	SNDLAD	SNDPFC	SNDPOR	
SNDPRN	SNDPRT	SNDSAD	STATUS	

The control fields are listed in the Control Fields pane of a publication service. The default values for the control fields are null.

To specify an new value,

1. Select the control field name.
2. Type a value in the corresponding **Value** field.

Inbound BAPI Transactional Support

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

For example, an invocation of `BAPI_SALESORDER_CREATEFROMDAT2` in the SAP system from the adapter does not effect permanent changes to database till an explicit commit invocation is made with `BAPI_TRANSACTION_COMMIT`.

Before configuring a BAPI Request-Response service for explicit commit, run through the checklist given below 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 requires explicit commit/ rollback in the SAP system.
- Multiple connections are configured for the client, which invokes the BAPI in the SAP system.
- The adapter configuration is to be run in a load-balanced fashion.

To configure a BAPI RPC server for explicit commit, select the service and expand the Advanced Configuration pane.

1. Check the checkbox for the **Commit Required** field.
2. Select a value for the **Commit Expiry** field.

   This field defines the maximum time, in milliseconds, for the adapter to hold the transaction context for each invocation of the BAPI. It starts from the moment the BAPI invocation in SAP is complete. Upon expiry of this time-interval, the transaction context for an invocation is released. A Commit/rollback request for this invocation sent to the adapter after commitExpiry will not be executed in the SAP system.
3. Configure the RPC server in the same configuration for the standard SAP commit/rollback BAPIs, `API_TRANSACTION_COMMIT` and `BAPI_TRANSACTION_ROLLBACK`.

See the table given below for descriptions of these BAPIs.

BAPI	Task
BAPI_TRANSACTION_COMMIT	• Ends current transaction • Commits changes • Initiates new transaction
BAPI_TRANSACTION_ROLLBACK	• Ends current transaction • Discards changes • Initiates new transaction

Load-balanced configurations with BAPIs requiring explicit commit

The commit/rollback BAPI is required to be executed in the same adapter instance as the one that executes the BAPI requiring the commit/rollback.

In load-balanced Inbound adapter configurations, it is not guaranteed that the commit/rollback BAPI invocation will be performed on the same adapter instance that received the invocation of the BAPI requiring commit.

Exactly-once execution of commit/rollback in the SAP system from the correct adapter instance in a load-balanced setup is achieved as follows:

1. Configure the RPC Server for `BAPI_TRANSACTION_COMMIT` and `BAPI_TRANSACTION_ROLLBACK`.
2. Startup each instance of the adapter in the load-balanced configuration, setting the following parameter in the properties file `adr3.commitid` to a unique value for each instance.

   The parameter value can be any unique string, and should not contain spaces.

   Example: `adr3.commitid=InstID001`

   `adr3.commitid=InstID002`

If BAPI Commit is being used with multithreading feature of the adapter, then it is recommended that you use a separate session for servicing the BAPI Commit request.

Sample Scenario

Assume a scenario where a sales order is to be created. Depending on the result the sales order will either be committed or rolled back using the appropriate external BAPI. When the sales order creation BAPI is sent to the adapter with the `Commit Required` flag enabled, the adapter instance generates a session ID, which is passed in the user closure (`RFCclosure`) argument of the reply schema. This session ID needs to be mapped to the request event of `BAPI_TRANSACTION_COMMIT` or `BAPI_TRANSACTION_ROLLBACK` and sent to the SAP system.

Invoking BAPIs/RFCs Using Transactional Semantics in SAP

The BAPIs and RFCs can be invoked using transactional semantics in the SAP system.

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

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

Any one-way Request-Response 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 should be accompanied by `userClosure` information, as defined in the class `RFCCLOSURE` under `/AESchemas/ae/SAPAdapter40/classes.schemamodel`.

The parameters that need to be set in the `RFCCLOSURE` class and sent along with each tRFC request are:

- `bTransactional` — This boolean variable determines whether the call must be invoked transactionally or not in SAP. Set this to `true` for a tRFC invocation.
- `TID` — Each tRFC invocation has to be carried out with a globally unique transaction identifier (TID) that uniquely identifies each tRFC invocation. Based on this parameter SAP internally ensures exactly-once invocation for the transaction associated with this TID. The sending system is responsible for generating and setting this parameter for each tRFC call.

Ensure that the TID parameter is a non-null unique identifier for each tRFC invocation.

With valid values for `bTransactional` and `TID`, a one-way Request-Response invocation is recognized as a tRFC call by the adapter and the call is invoked with transactional semantics in the SAP system.

Support for qRFCs

qRFC is an enhancement on tRFC. qRFC allows tRFC invocations to be handled sequentially in the target SAP system. The adapter allows external systems in the TIBCO environment to invoke tRFCs as qRFCs in the SAP system.

Inbound qRFC

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.

The qRFC parameters that have to be set in the `RFCCLOSURE` for performing a qRFC invocation in the SAP system are discussed below:

- `bQueue`

This boolean variable determines whether the call must be invoked as a qRFC or not in SAP. Set this to true for a qRFC invocation. This value is applicable only if the bTransactional attribute is also set to true.

- `qName`

Every qRFC invocation is made in the SAP system for a specific queue defined in the system. Set this field to indicate which queue the qRFC call is to be inserted into.

- `qCount`

This is the counter for the receiving queue in the SAP system. Specify unique integer values for each qRFC invocation inserting into a specific queue.

Outbound qRFC

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.

The queue-name and queue-count values are extracted from the SAP system for each qRFC invocation. They are set to the `qName` and `qCount` attributes of the `RFCCLOSURE` class respectively. The attribute `bQueue` is set to `true`.

This allows receiving systems in the TIBCO environment to recognize tRFC/qRFC invocations made by the outbound adapter.

Multithreading

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

The number of threads required can be configured for each Client Connection (Inbound) and Server Connection (Outbound) by setting the value for the Maximum Connections field for each defined connection pool configuration. The number of threads can also be set through the `adr3.maxconnections` property in the `adr3.tra` file.

The number of threads should be equal to the number of connections required. The maximum limit is eight threads per client connection or server connection.

For details on setting up number of threads ConnectionPools on page 57 for more information.

By default, every additional thread created is assigned a stacksize of 1.25MB. To avoid stack overflows at runtime, ensure that this stack limit is sufficient for the largest message that you would expect by sending out a single message of this size to the adapter.

The stack size for an adapter configuration can be increased by specifying it as a parameter from the command-line during startup or in the adapter TRA file.

For example, to set the stacksize to 2MB, specify the following parameter in the TRA file, `adr3.stacksize 2097152` or provide the following command line argument while starting up

Note that the stacksize value must be specified in bytes.

To use the adapter in the multi threaded mode, the value specified for the Max Connections parameter for the RFC destination should match the value for the Max Connections parameter set in the adapter configuration file (`.dat` file).

This configuration change can be done using the transaction code SMQS.

Multiple Connections

The adapter can connect to multiple gateways or 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

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 may 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 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 for multiple Outbound connections. See ConnectionPools on page 57 for details.

Posting BAPIs/RFCs/IDocs from multiple RFC Destinations in the Outbound Adapter

From within a single SAP gateway, RFCs/BAPIs/IDocs are passed on to the Outbound adapter 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 instance of the Outbound adapter can service RFCs/BAPIs/IDocs from multiple RFC destinations. This is achieved by configuring the adapter for multiple Outbound connections. Outbound Adapter Registering on Multiple Program IDs on One Gateway

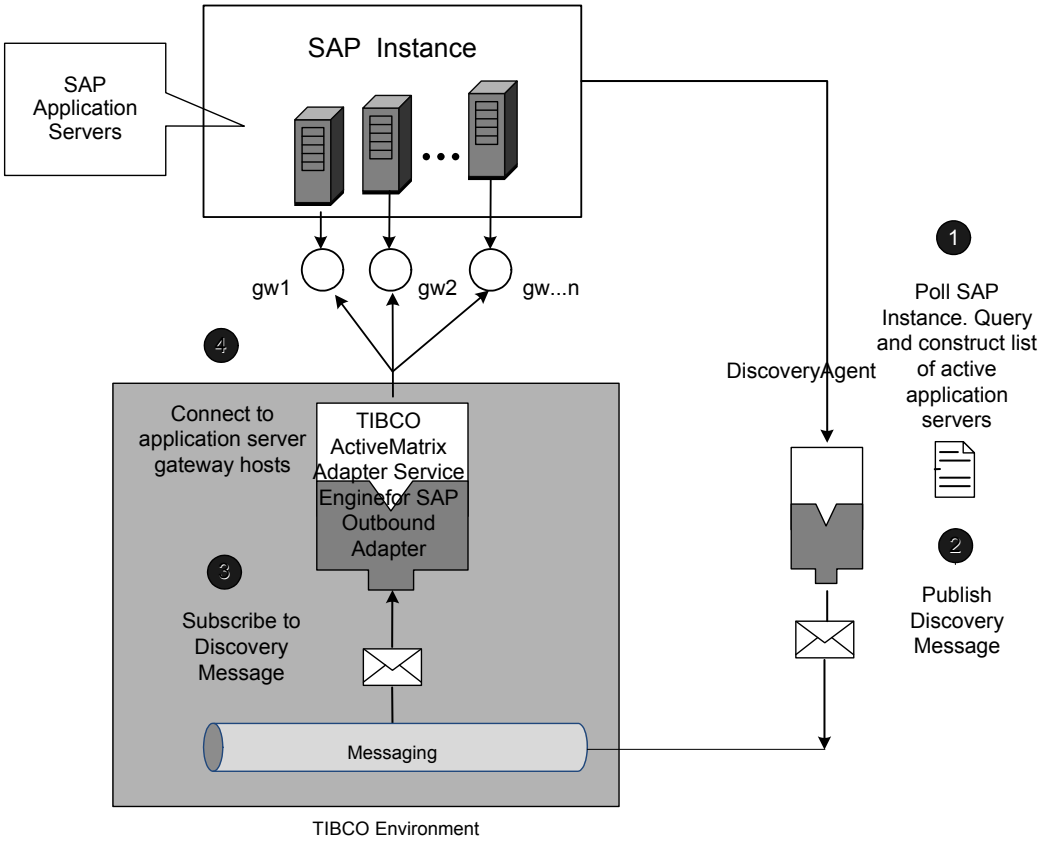
Responding to dynamic changes in the Application Server environment

Load balancing Outbound messaging on the SAP side is achieved by clustering multiple application servers under a central SAP Instance.

The Outbound adapter 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 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 is to be run in conjunction with a discovery agent that is supplied with the adapter Run-time environment installation. The figure given next explains the steps involved in this dynamic discovery scenario. gw1, gw2 in the figure are the gateway hosts through which the SAP application servers communicate to the Outbound adapter.

Figure 9 Discovery Agent



The Discovery Process

The discovery agent is a special pre-configured Inbound adapter. The discovery agent is configured using the standalone adapter.

The discovery process involves the following steps, also schematically presented in the above figure.

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 configuration(s) pick up the discovery message.
4. The Outbound adapter configurations(s) register on the gateway hosts of discovered application servers.

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

Configuring the Outbound Adapter

The Outbound adapter does not need additional configuration 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` — This property can be used to turn on/off the dynamic-discovery feature. The feature is commented by default. To turn it on, it needs to be uncommented.
- `adr3.discovery.pid`— This property allows you to specify the program-ids on which to register with the discovered application server's gateway. Multiple program-ids can be specified as comma-separated values.

  Example:

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

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

  If the dynamic-discovery feature is turned on, this is a mandatory property. The adapter will exit on starting up with an appropriate error if this property is not specified.
- `adr3.discovery.listenerSubject` — This specifies 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. If not specified, this property defaults to `R3.APPSERVERS.ACTIVE`

  Ensure that the `discovery-listener` subject matches the publish subject on the discovery agent side.

Example:

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

- `adr3.discovery.listenerSession` — This specifies the TIBCO Rendezvous or JMS session to be used by the discovery listener.

  Example:

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

  A valid session by this name should be available in the project. If not specified, this property defaults to the default adapter session `R3RVSession`

- `adr3.discovery.maxconnections` —This property specifies 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.maxattempts`

  `adr3.discovery.retryinterval`

  These parameters together define the behavior of the outbound adapter in the event of connection loss to a gateway. Connection loss could be due to network glitches or because of a planned shutdown. Because the adapter cannot distinguish between the two causes, it will behave in exactly the same way in both situations.

  If an application server has been brought down because of a planned shutdown, it will still continue to establish a valid connection till all attempts are exhausted.

  Example:

  ```
  adr3.discovery.maxattempts=10
  ```

  ```
  adr3.discovery.retryinterval=30000
  ```

  Note that the retry interval must be specified in milliseconds.

  If not specified, `maxattempts` defaults to `3`, and `retryinterval` to `30000` milliseconds.

Configuring the Discovery Agent

The discovery agent is a preconfigured Inbound adapter. The configured repository is available in the adapter `bin` directory as `adr3Discoverer.dat`.

Do not open this configuration in TIBCO Designer. All parameters that may need to be customized are exposed in the launcher file, `adr3Discoverer.tra`.

Bring up the discovery-agent with the following command from command line

```
adr3 --propFile adr3Discoverer.tra
```

Configuring the Inbound Adapter for multiple application servers

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

The Inbound adapter can also establish dedicated connections to multiple application servers that may not be part of a messaging server configuration. To achieve this, the Inbound adapter should be configured for multiple Inbound Connections in the TIBCO Designer palette. During configuration, ensure that each BAPI/RFC/IDoc Service configured points to that application server to which Inbound messages for that service are posted.

Connecting an Adapter Instance to Two SAP Systems Using a Single Connection

This section describes how to configure an adapter instance to connect to two SAP systems with a single connection.

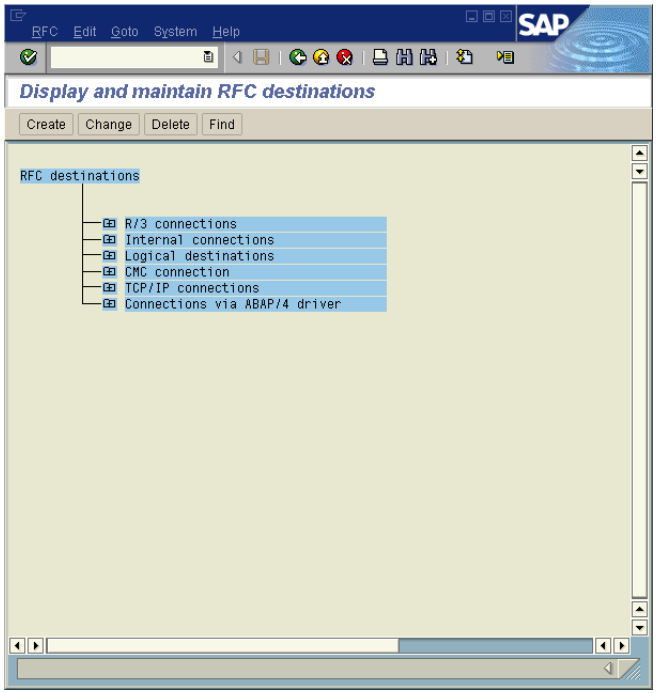
Sample Scenario

Assume a sample scenario with two SAP systems, one named CER and the other, LCM. Each has RFC destinations named RFCTEST with program id = RFCTEST (sm59 transaction). Assume also that you have configured an adapter instance (Outbound) to run on CER (for example). Refer to the following procedure to configure the other system (LCM) so that it can use the same SAP adapter instance.

Procedure

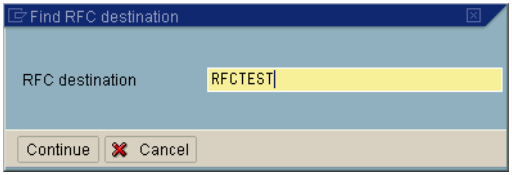
1. Log in to the second system, LCM, and invoke `sm59` transaction.

Figure 10 RFC Destinations



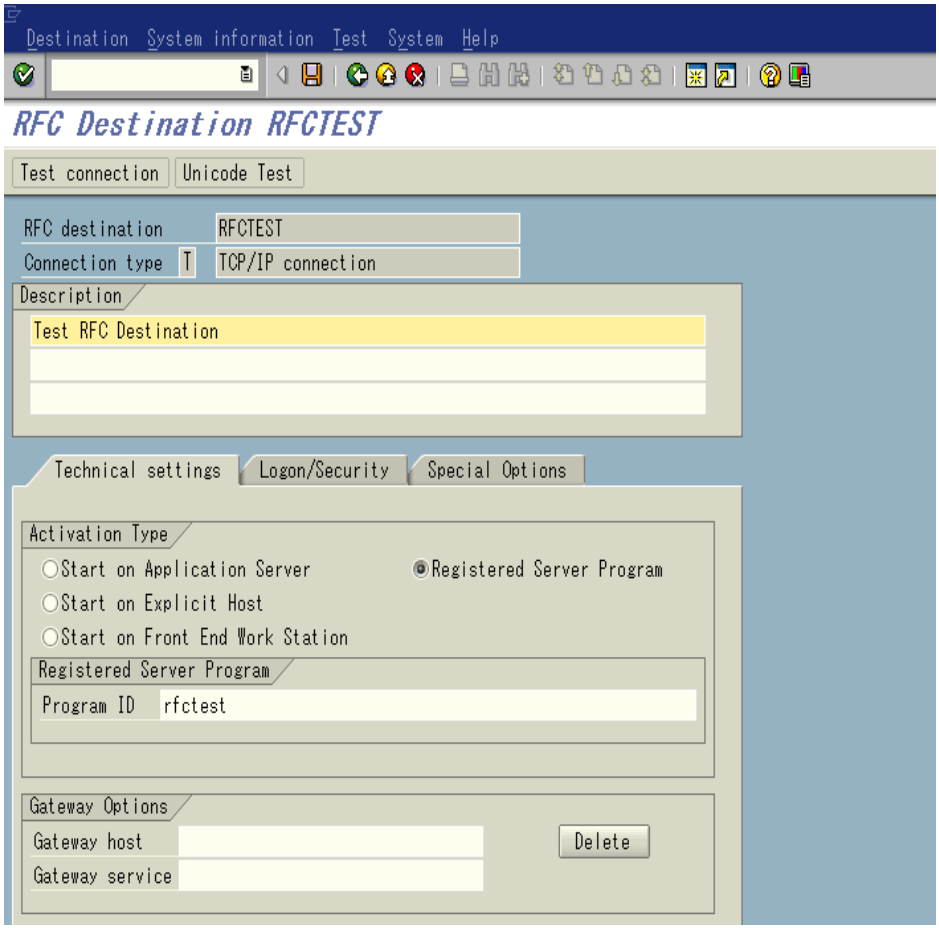
2. Click on **Find**, and enter the name of your RFC Destination as shown in Figure 11. (This example assumes the name RFCTEST.)

Figure 11 Find RFC Destinations Screen

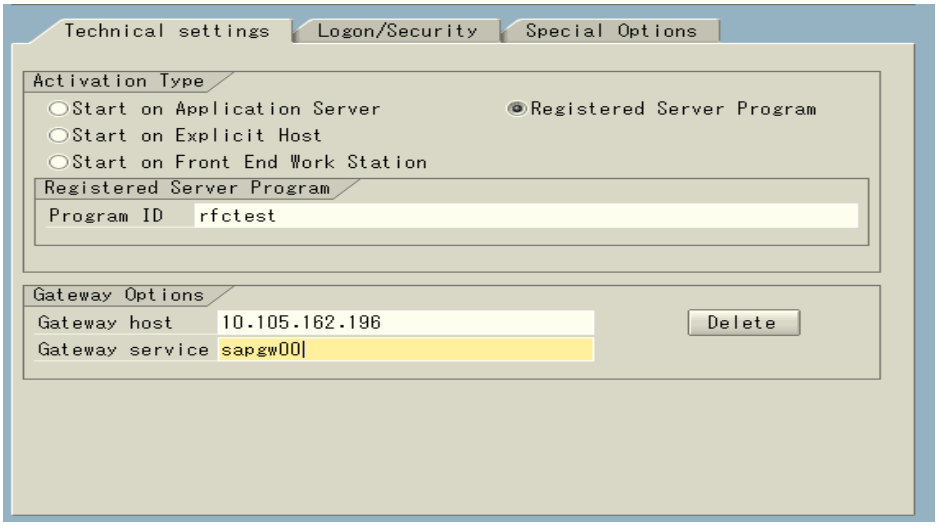


3. Click on **Continue** and the following screen appears:

Figure 12 RFC Destination RFCTEST Screen



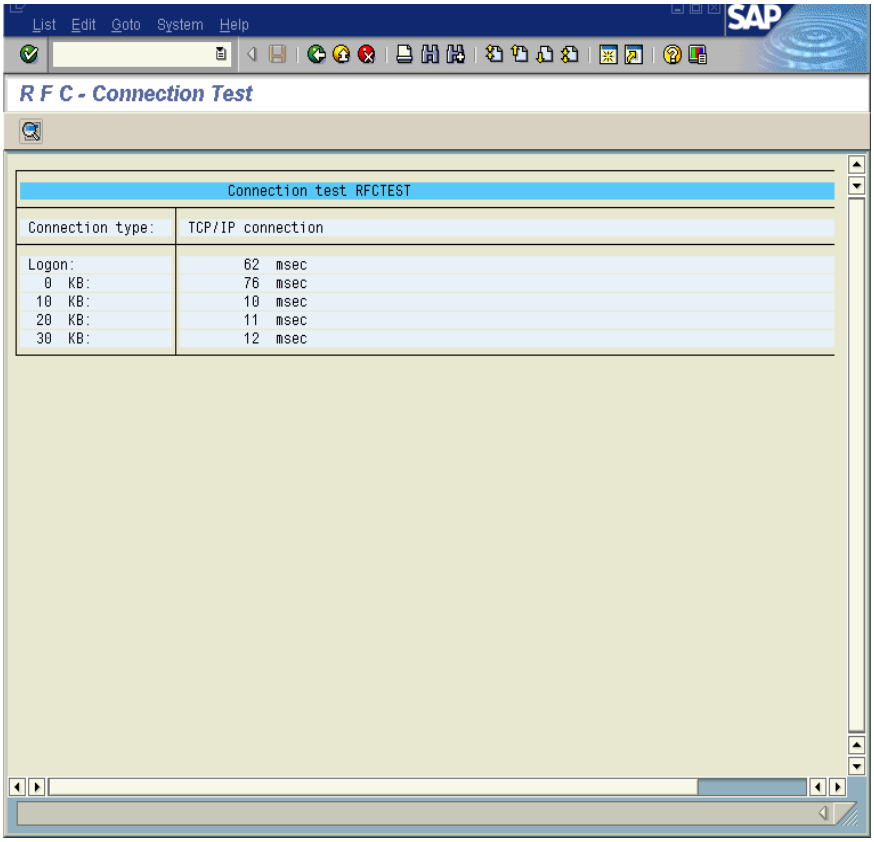
4. Enter the values for **Gateway host** and **Gateway Service** that corresponds to the system against which the adapter is already running (recall in this scenario, it is CER).



When assigning a specific gateway host to an RFC destination, you must 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, then the RFC request to the adapter will not be successful.

5. Save the destination.
6. Test the connection using the **Test Connection** button on the button bar. It should show **OK**.

Figure 13 Test Connection Button



Now, you're ready to run the adapter from the other system (LCM in our scenario).

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

Monitoring the Adapter Using TIBCO Hawk

TIBCO Hawk is a sophisticated tool for enterprise-wide monitoring and managing of all distributed applications and systems. System administrators can use it to monitor adapters in a wide area network of any size. TIBCO Hawk can be configured to monitor system and adapter parameters and to take actions when predefined conditions occur. These actions include: sending alarms that are graphically displayed in the TIBCO Hawk display, sending email, paging, running executables, or modifying the behavior of a managed adapter.

TIBCO Hawk is a purely event-based system that uses alerts. The agents are configured with rules that instruct them on everything from what and how to monitor to what actions to take when problems are discovered. Thus the workload is fully distributed throughout the enterprise. Every agent is autonomous in that it does not depend on other components to perform its functions.

The TIBCO Hawk Enterprise Monitor consists of these components:

- **Display**—GUI front end that displays alarms and provides editors to create rule bases, create tests, view messages, and invoke microagents to request information or initiate an action.
- **Agents**—Intelligent processes that perform monitoring and take actions as defined in rules.
- **Rulebases**—Rules that are loaded by agents to determine agent behavior.
- **Application Management Interface (AMI)**—Manages network applications via TIBCO Rendezvous and supports communication between a network application and monitoring TIBCO Hawk agents, including the ability to examine application variables, invoke methods, and monitor system performance.
- **Microagents**—Feed information back to TIBCO Hawk and expose action methods to rulebases.

For more information on starting TIBCO Hawk, using the Display, invoking microagent methods, see the TIBCO Hawk documentation.

Available Microagents

A set of default microagents is loaded when a TIBCO Hawk Agent is started. When you install and start the adapter, its microagents are dynamically added to the local agent.

Each adapter has three microagents, a standard TIBCO Hawk microagent named `COM.TIBCO.ADAPTER.`*xyz* where *xyz* is the adapter configuration name, a custom microagent and a class microagent. The microagents provide:

- Business level statistics—statistics that report the progress of the adapter as it interacts with the vendor application. For example, in a database adapter such statistics might indicate whether objects were successfully or unsuccessfully inserted, updated, or deleted in the database.
- Queries that return information about the state of the adapter. This can be an important tool for seeing the internals of an adapter and debugging it if something appears wrong. For example, methods can return information about threads, internal queues, or connections to the target system. Using these methods, one might be able to identify certain bottlenecks or gauge how successfully an adapter is scaling with respect to the current environment.
- Updates of the adapter runtime parameters. This includes retrieving the current runtime parameters and setting new runtime parameters without restarting the adapter. An example of this is getting and setting the polling interval. Updating a runtime parameter through the Hawk microagent only affects the setting of the instance that is running. It does not make a permanent change of the setting in either the repository or the .tra file.

By default all microagents, custom, standard and class microagents are available at runtime.

Custom microagents are deprecated in this release. All business statistics related methods which were part of the custom microagent are now available in the class microagent.

The `perfMon` property value set in the adapter's property file affects the business statistics related methods. If this property is set to `on`, the adapter does all the performance related calculations. When you invoke the methods, if the `perfMon` property is set to `off`, default values are displayed and not the valid values.

You can disallow adding custom methods to the class microagent when deploying the adapter by changing the `addCustomHawkMethodstoClassMAgent` property value in the adapter's property file. If this property is set to `on`, custom methods are added to the class microagents. If set to `off`, these methods are not visible.

The following table lists each method available for the adapter and page on which the method is explained.

Table 23 TIBCO Hawk Microagent Methods

Method	Description	Page
activateTraceRole()	Activates a mapping of a role to a sink at runtime.	106
deactivateTraceRole()	Deactivates a mapping of a roles to sinks at runtime.	107
getActivityStatisticsByOperation(Operation)	Returns statistics about one operation.	108
getActivityStatisticsBySchema(SchemaName)	Returns statistics about any activities on a particular object or schema.	109
getActivityStatisticsByService(ServiceName)	Returns statistics about the data handled by a particular adapter service since it was started.	110
getAdapterServiceInformation()	Returns information about the services implemented by this adapter.	111
getComponents()	Returns information about the publisher, subscriber and IODescriptor.	112
getConfig()	Returns basic configuration information. More specific information is accessed by the more specific methods.	113
getConfigProperties()	Returns a list of publishers and subscribers.	114
getConfiguredRFCs()	Returns a list of all configured RFC functions.	115
getConnectionStatistics()	Returns the state and statistics for all the current connections used by the adapter.	116
getHostInformation()	Returns standard and extended application information.	117

Table 23 TIBCO Hawk Microagent Methods (Cont'd)

Method	Description	Page
getPerfMonSetting()	Returns the setting of the perfMon option.	118
getQueueStatistics()	Returns the current count of elements in any internal queue used by the adapter.	119
getRvConfig()	Returns information about all TIBCO Rendezvous sessions defined.	120
getStatus()	Returns general status information, such as the number of TIBCO Rendezvous messages received and published, the number of errors since the last call, the PID of the application, and more.	121
getThreadStatistics()	Returns the operation counts of the current threads.	122
getTraceSinks()	Returns information about sinks to which traces currently go.	123
getVersion()	Returns the instance ID, application name, version, and date for this adapter instance.	124
_onUnsolictedMsg()	Displays alert messages sent to the current adapter.	125
preRegisterListener()	Preregisters an anticipated listener.	126
refreshABAPContext()	Refreshes the ABAP context held by the adapter connections.	127
resetActivityStatistics()	Resets all the counts for the activity statistics.	128
resetConnectionStatistics()	Resets all the counts for the connection statistics.	129
resetThreadStatistics()	Resets all the counts for the thread statistics.	130

Table 23 TIBCO Hawk Microagent Methods (Cont'd)

Method	Description	Page
reviewLedger()	Returns information retrieved from the ledger file of a certified messaging session for a publisher adapter.	131
setTraceSinks()	Adds a role or changes the file limit of a previously specified sink.	133
stopApplicationInstance()	Stops the running adapter instance.	134
unRegisterListener()	Unregisters a currently preregistered listener.	135

activateTraceRole()

Activates a mapping of a role to a sink at runtime. This replaces the now-deprecated `setTraceSink()` TIBCO Hawk method.

Parameters	Type	Description
Role Name	string	Name of the role to activate.
Sink Name	string	Name of the sink for which to activate the role.

deactivateTraceRole()

Deactivates a mapping of a roles to sinks at runtime.

Parameters	Type	Description
Role Name	string	Name of the role to activate.
Sink Name	string	Name of the sink for which to activate the role.

getActivityStatisticsByOperation(Operation)

Returns the total number of objects processed for all the schemas by each service that is associated with a specified operation. Also, returns the number of success and error objects.

Parameter	Type	Description
Operation	string	Type of operation - read or write.

Returns	Type	Description
Service Name	string	Name of the service that is associated with the specified operation.
Total	string	Total number of objects processed for this schema for a publication service. Total number of objects received for this schema for a subscription service.
Success	string	The number of objects that were successfully identified for this schema which will be published or written to a file.
Error	string	The number of objects that were identified for this schema but were not published because the header of the schema failed validation for the publication service, or was written to a file because the schema was not associated with the subscriber for a subscription service.

getActivityStatisticsBySchema(SchemaName)

Returns the total number of objects processed for the given schema by each service that uses the schema. Also, returns the number of success and error objects.

Parameter	Type	Description
Schema Name	string	Name of the schema.

Returns	Type	Description
Service Name	string	Name of the service that is associated with the specified schema.
Total	string	Total number of objects processed for this schema for a publication service. Total number of objects received for this schema for a subscription service.
Success	string	The number of objects that were successfully identified for this schema which will be published or written to a file.
Error	string	The number of objects that were identified for this schema but were not published because the header of the schema failed validation for the publication service, or was written to a file because the schema was not associated with the subscriber for a subscription service.

getActivityStatisticsByService(ServiceName)

Returns the total number of objects processed for each of the schemas associated with the specified service. Also, returns the number of success and error objects.

Parameter	Type	Description
Service Name	string	Name of the service.

Returns	Type	Description
Operation	string	Type of operation that the service performs.
Schema Name	string	Name of the schema that is associated with the service.
Total	string	Number of objects processed for this schema for a publication service. Number of objects received for this schema for a subscription service.
Success	string	The number of objects that were successfully identified for this schema which will be published or written to a file.
Error	string	The number of objects that were identified for this schema but were not published because the header of the schema failed validation for the publication service, or was written to a file because the schema was not associated with the subscriber for a subscription service.

getAdapterServicesInformation()

Returns information about the services implemented by this adapter. The information is a summary of available adapter services.

Parameter	Type	Description
Service Name	string	Name of the service from which to get information. Default is ALL.

Returns	Type	Description
Line	integer	Sequential row number.
Service Name	string	Name of the service as defined at design-time.
Endpoint Name	string	Name of the endpoint used for this service.
Type	string	Type of the endpoint, for example, publisher or subscriber.
Quality of Service	string	Quality of service for the endpoint. For example RVCM or JMS Persistent.
Subject	string	Subject defined for this endpoint.
Class	string	Class associated with the endpoint.
Number of Messages	integer	Number of messages processed for this endpoint.

getComponents()

Returns information about the currently active TIBCO Hawk components such as publishers, subscribers, or timers.

Parameters	Type	Description
Component Name	string	Name of the component. If no value is entered, all components display.
Component Type	string	Any of `Publisher`, `Subscriber`, `Timer`, or `IODescriptor`. The default value is `All`.

Returns	Type	Description
Instance ID	string	Name of this adapter instance as defined at design-time.
Adapter Name	string	Name of the adapter.
Component Name	string	Name of the component.
Component Type	string	The name of the TIBCO Adapter SDK class for this component, such as `MPublisher`, `MSubscriber`, or `MIODescriptorSource`. For more information about the class, see your TIBCO Adapter SDK documentation.
Session Name	string	Name of the session.
Description	string	Information about this component, for example, time interval, signal type, validating publisher (or subscriber) etc.

getConfig()

Retrieves generic configuration information. More specific configuration information is accessed through separate methods.

Returns	Type	Description
Instance ID	string	Configuration ID of this adapter.
Adapter Name	string	Name of the adapter.
Repository Connection	string	URL of the repository used for adapter instance.
Configuration URL	string	Location of the adapter project; either a file name or configuration URL.
Command	string	Command line arguments used to start the adapter.

getConfigProperties()

Returns all attributes and elements for the given repository object.

Parameter	Type	Description
Property	string	Name of the property for which elements (tags) and attributes are desired. For example, `agentone/startup`. If no value is given, all properties are returned.

Returns	Type	Description
Element Name	string	Repository directory for the property.
Attribute Name	string	Name of the repository object attribute.
Attribute Value	string	Value of the repository object attribute.
Line	integer	Line number in which this property is defined in the project file.

getConfiguredRFCs()

Returns a list of all configured RFC functions.

getConnectionStatistics()

Returns runtime statistics for the specified SAP connection pool.

Parameter	Type	Description
Pool Name	string	Name of the SAP connection pool. You can use the connection pool name that is returned by the getHostInformation() method.

Returns	Type	Description
SerialNo	integer	The sequence number of the connection pool.
Connection Name	string	The name of the connection pool.
Connection Type	string	A type or key that will match this connection to a thread or queue.
Connection Status	string	Current state: CONNECTED or DISCONNECTED. Returns UNKNOWN when perfMon property is set to off.
CurrentNumOperations	integer	Total number of operations processed by this connection since the last reconnection.
TotalNumOperations	integer	Total number of operations processed by this connection since the adapter started.
NumRetries	integer	Total number of times this connection had to be reestablished.

getHostInformation()

Returns standard and extended application information set. It returns the following information.

Returns	Type	Description
Name	string	Name of the property.
Value	string	Value of the property.

getPerfMonSetting()

Returns the setting of the perfMon option. It returns the following information.

Returns	Type	Description
Setting	string	Value of the perfMon option.

getQueueStatistics()

Returns the current count of elements in any internal queue used by the adapter. This includes the TIBCO Rendezvous event queues automatically spawned by Rendezvous for each adapter.

Returns	Type	Description
QueueID	string	A unique identification of a particular queue.
QueueType	string	A type or key that will match this queue to a thread or connection.
QueueCount	integer	Current number of elements in the queue.
MaxQueueSize	integer	Maximum number of elements in the queue.

getRvConfig()

Returns information about the TIBCO Rendezvous session defined by this adapter. Information about all currently defined sessions is returned if no `sessionName` is provided.

Parameter	Type	Description
Session Name	string	Name of the TIBCO Rendezvous session for which configuration is required (default is all).

Returns	Type	Description
Instance ID	string	The configuration ID of this adapter.
Adapter Name	string	Name of the adapter.
Session Name	string	Name of the session.
Service	string	Service parameter for this session.
Daemon	string	Daemon parameter for this session.
Network	string	Network parameter for this session.
Synchronous?	boolean	Returns `1` if this is a synchronous session, `0` otherwise.
Session Type	string	Type of session; one of `M_RV`, `M_RVCM`, or `M_RVCMQ`.
Certified Name	string	Name of this certified session.
Ledger File	string	Ledger file for this certified messaging session. Returns the empty string for sessions that are not certified messaging sessions.
CM Timeout	string	Timeout for this certified messaging session. Returns the empty string for sessions that are not certified messaging sessions.

getStatus()

Retrieves basic status information about the adapter.

This information is fairly limited. For more detail, additional methods are provided in getConfig() on page 113 and getRvConfig() on page 120.

Returns	Type	Description
Instance ID	string	Configuration ID for this adapter instance.
Adapter Name	string	Name of the adapter.
Uptime	integer	Number of seconds since startup.
Messages Received	integer	Number of TIBCO Rendezvous messages received.
Messages Sent	integer	Number of TIBCO Rendezvous messages published.
New Errors	integer	Number of errors since the last call to this method.
Total Errors	integer	Total number of errors since startup.
Process ID	integer	Process ID of the application.
Host	string	Name of host machine on which this adapter is running.

getThreadStatistics()

Returns the operation counts of the current threads.

Returns	Type	Description
ThreadID	string	A unique identification of a particular thread.
ThreadType	string	Type that tells what part of the adapter this thread belongs to. Valid types include "Publisher", "Subscriber", "RPC", or "Connection".
TaskType	string	Short description of the tasks this thread processes.
TaskCount	integer	Number of tasks processed by this thread.

getTraceSinks()

Returns information about sinks to which traces currently go.

Parameters	Type	Description
Sink Name	string	Name of the sink for which you need information. If no name is specified, information about all sinks is returned. Default is all.
Role Name	string	Name of the role for which you need information for the specified sink or sinks. Default is all.

Returns	Type	Description
Instance ID	string	Name of this adapter instance as a string.
Adapter Name	string	Name of the application for this sink.
Sink Name	string	Name of the sink
Sink Type	string	Type of this sink. One of fileSink, rvSink, hawkSink, stderrSink.
Roles	string	Roles this sink supports, as a string. For example “warning, error, debug”.

getVersion()

Retrieves version information for the current application. Two lines may be returned, one for the TIBCO Adapter SDK, one for the adapter.

Returns	Description
Instance ID	The configuration ID as a string, for example `SDK`.
Adapter Name	Name of the adapter as a string, for example `agentone`.
Version	Version number as a string, for example `1.1`.

_onUnsolictedMsg()

Displays all alert messages sent from the adapter or an error if not successful.

preRegisterListener()

Preregisters an anticipated listener. Some sending applications can anticipate requests for certified delivery even before the listening applications start running. In such situations, the sender can preregister listeners, so TIBCO Rendezvous software begins storing outbound messages in the sender's ledger. If the listening correspondent requires old messages, it receives the backlogged messages when it requests certified delivery.

Parameters	Type	Description
Session Name	string	Name of the session that anticipates the listener.
Publisher Name	string	Name of the component for which the listener should be preregistered.
Listener Session Name	string	Name of the listener to preregister.

Returns OK if the listener was preregistered successfully, false otherwise.

refreshABAPContext()

Refreshes the ABAP context held by the adapter connections.

Parameters

None

Returns

None

resetActivityStatistics()

Resets all the counts for the activity statistics.

resetConnectionStatistics()

Resets all the counts for the connection statistics.

resetThreadStatistics()

Resets all the counts for the thread statistics.

reviewLedger()

Returns information retrieved from the ledger file of a TIBCO Rendezvous certified messaging session.

Before invoking this method, ensure that the certified messaging publisher adapter has established a certified delivery agreement with its subscriber agents.

Parameters	Type	Description
Session Name	string	Name of the TIBCO Rendezvous session for which ledger information is desired (default is all).
Subject	string	Name of the subject for which ledger information is desired.

Returns	Type	Description
Session Name	string	Name of the TIBCO Rendezvous CM session to which this information applies.
Subject	string	Subject name for this session.
Last Sent Message	integer	Sequence number of the most recently sent message with this subject name.
Total Messages	string	Total number of pending messages with this subject name.
Total Size	integer	Total storage (in bytes) occupied by all pending messages with this subject name. If the ledger contains ten messages with this subject name, then this field sums the storage space over all of them.
Listener Session Name	string	Within each listener submessage, the Listener Session Name field contains the name of the delivery-tracking listener session.

Returns (Cont'd)	Type	Description
Last Confirmed	string	Within each listener submessage, the Last Confirmed field contains the sequence number of the last message for which this listener session confirmed delivery.
Line	integer	Row number in ledger file.
Unacknowledged Messages	integer	Number of RVCM messages pending for this listener. The value is computed by subtracting the last sent sequence number from the last acknowledged sequence number.

setTraceSinks()

Adds a role or changes the file limit of a previously specified sink.

Parameters	Type	Description
Sink Name	string	Name of the sink for which you want to add a role or change the file limit.
Role Name	string	Name of the role you want to add to this sink (warning, error, debug, or user defined). Default is all.
File Size	integer	Maximum file size for this sink. This parameter is ignored if the sink specified by sinkName is not a file sink.

Returns OK if successful or an error if not successful.

stopApplicationInstance()

Stops the specified adapter by calling the internal `stop()` method. This method returns OK if successful or an error if not successful.

unRegisterListener()

Unregisters a currently preregistered listener

Parameters	Type	Description
Session Name	string	Name of the session that anticipates the listener.
Publisher Name	string	Name of the component for which the listener should be preregistered.
Listener Session Name	string	Name of the listener to unregister.

This method returns true if the listener was unregistered successfully, false otherwise.

Chapter 6 Working with SOA Projects

Topics

Working with the Composite Editor

In the ActiveMatrix platform, a *composite* exports a cohesive set of business functions as services. A composite contains of one or more *components*. A component contains a configured implementation, where the implementation provides the business functions. The component configures the implementation with specific values for custom properties and by connecting component references to component services or composite references. The connections between references and services are represented by wires.

For more information refer to the TIBCO ActiveMatrix Service Grid documentation.

Previous chapters described how to create an adapter project and to configure an adapter instance. This chapter describes the process of creating an adapter component, adding services and references to the adapter component, and creating a service assembly.

If your project has the Custom Scalars property enabled, make sure you have the property added to the BusinessStudio.ini file before generating the WDSLs.

```
Dcom.tibco.xml.schema.parse.ae.AE_CUSTOM_SCALARS=true
```

Create a SOA Project

To create a new ActiveMatrix SOA project:

1. Click **File -> New > Project>TIBCO ActiveMatrix> ActiveMatrix SOA Project.**
2. Type a name for the project and click **Finish**.

Generate SOA Artifacts

The adapter WDSL file describes the adapter services. To generate an adapter wsdl:

1. Right click the adapter configuration in the adapter project and select **Generate Adapter WSDL**.
2. Choose the SOA project that you want to use. See Create a SOA Project, page 138 for information on creating a new SOA project.

The following folders are created:

- *adapter configuration filename*_genresources, and

  This following folders and files are created:

  adapter configuration filename_number`.dat` This file contains information used by the Adapter container.

  adapter configuration filename`SE.dat` This file is used by the adapter service engine.

  adapter configuration filename.`adendpoints` The adapter service endpoints file contains information about the service endpoints supported by the adapter. The file is used later to help in the selection of service types.

  adapter configuration filename.`wsdl` The generated WSDL file which references the schema and .dat files contains the service definition endpoints.

  adapter configuration filename.`substvar` The substitution variables are imported from the adapter configuration file.

  `SAPAdapter.substvar` This file contains properties belonging to the TRA.

  The shared resource that defines the transport used to communicate with the adapter is created. If the adapter project referenced global variables, the shared resource will reference substitution variables defined in *adapter configuration filename_number.*`substvar.`

- schema

  This folder contains the Adapter XSD schema.

After using a WSDL in a composite make sure you do not overwrite the WSDL.

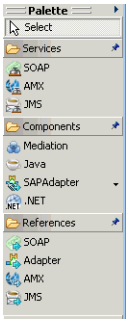
Add Composite Elements

The Composite folder contains the composite file, *SOA Project name.*`composite.`

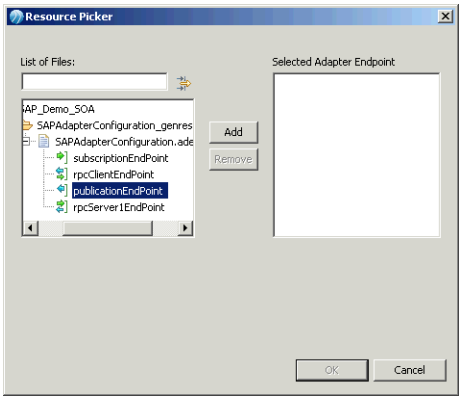
To add composite elements:

1. Double click the *SOA Project name*.`composite` file.

   The Palette displays the SAP adapter component as shown in the following figure.



2. Drag and drop the SAP adapter component into the canvas.
3. Type in a name for the component.
4. Select the **Services** tab and click **Add.**
5. Expand the tree displayed in the Resource Picker dialog box (see following figure) and choose a service and click **Add**.



6. Click **OK**.

The following table lists the fields displayed in the Component tab

Property Names	Description
Name	The adapter component name.
Description	The adapter component description.

Property Names	Description
Version	The adapter component version number.
Type	(Read-only) The adapter type.
SDK Application Name	(Read-only) The instance name of your adapter configuration.
Configuration URI	(Read-only) The adapter configuration that the service uses.
Repository URI	(Read-only) This file contains information used by the container to communicate with the adapter.
TRA File Name	For the unicode adapter specify `adr3u.tra` and for the non-unicode specify `adr3.tra`.

Add Service Elements

To add a service element:

1. Drag and drop a service, say SOAP, from the palette onto the canvas.
2. Give it a name.
3. **Save** the project.

Choosing a service

A message exchange pattern (MEP) defines the sequence and cardinality of messages sent between provider and the consumer. The MEPs contain both normal and fault messages. An adapter in the ActiveMatrix environment is always the provider of the service.

MEPs define the interaction pattern between the *consumer* and the *provider*, the direction and the number of messages that could be exchanged in one consumer-provider interaction. It also defines who, the consumer or the provider, initiates the message exchange by sending the first message. A provider can also initiate an exchange by sending the first message. On the composite however, you will see a consumer wired to a provider. The wiring of components in the composite is not indicative of the direction of the message flow. Even if an adapter RPC Client or a Subscriber appears to be consuming a service because it subscribes to a message or invokes a RPC call on the external application that is part of the SOA composite definition, it is in reality a provider of the service.

The mapping between various MEPs and adapter services are as follows:

- One-Way (In-Only) maps to a adapter Subscriber

- Request-Response (In-Out) maps to a adapter RPC Server
- Solicit-Response (Out-In) maps to a adapter RPC Client
- Notification (Out-Only) maps to a adapter Publisher

While the MEP defines the direction (sequence) and the cardinality, the WSDL defines the contract between the consumer and the provider who have agreed to be bound by the WSDL definitions. Therefore MEPs play an important role between the consumer and the provider. Under the contract a consumer can only bind with services provided by the provider that share the same MEP.

The MEPs are dictated in the WSDL by the WSDL PortType definitions. Refer to the mapping given above and see if you want the SOAP service to consume adapter's RPC Server (In-Out) service, you must use add a Reference that supports In-Out and wire it with the adapter's service.

Add Shared Resources

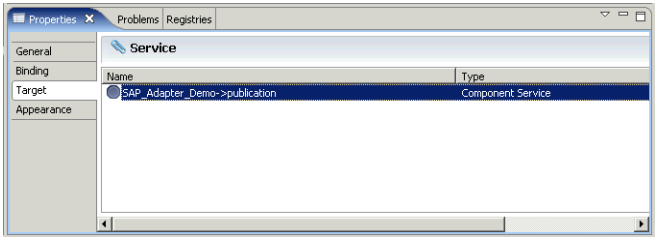
In order for the service elements created in the previous step to be accessible from external client, an HTTP connection resource has to be created.

1. In the Project Explorer panel, select **New> TIBCO Shared Resources> HTTP Server.**
2. Type in a name for the shared resource or accept the default.

To add this shared resource to the composite:

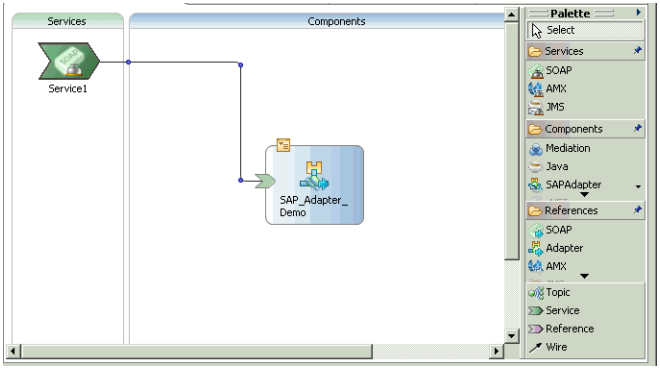
3. Open the composite by double clicking the composite in the Project Explorer.
4. Click the canvas.
5. Click the **Shared Resource Profiles** tab below the canvas.
6. Click on the  field. A row is created in the table.
7. Type in a name or accept the default.
8. In the type column, choose **HTTP**.
9. In the Target column, click  to bring up the Select Shared Resource dialog.
10. Choose the shared resource and click **OK**.

11. Open the service and from the Properties view click the **Target** tab.



12. In the table, click the radio button next to the component service.

A wire will be drawn between the service and the component service as shown in the following figure.



For each adapter configuration there is one component and one component per service unit.

Creating the Service Assembly and the Service Assembly Archive

In order to deploy the services and components that were created in the previous sections, they have to be packaged in a service assembly.

To create the service assembly archive, in the Project Explorer panel right click the composite and choose **Service Assembly.**

The deployment package, *projectname*.`saf` is created in the Deployment Packages folder.

To create the service assembly archive, in the Project Explorer panel, right click the deployment package and choose **Build Archive**.

The service assembly archive, *projectname*.`zip` is created in the Deployment Packages folder.

This service assembly archive can now be deployed and started using TIBCO ActiveMatrix Administrator.

Using Substitution Variables

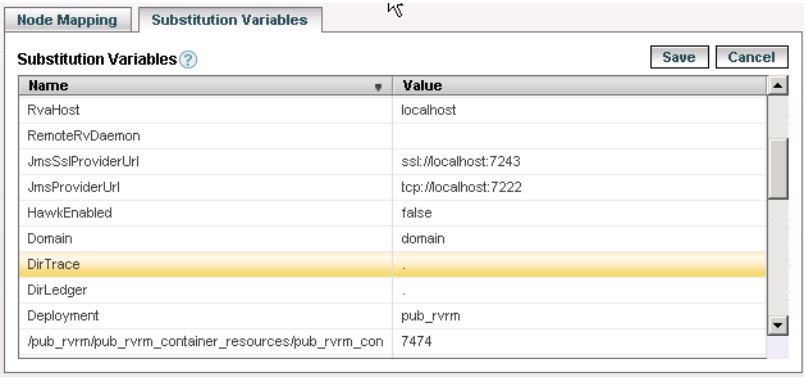
At design-time, you can assign default values to all the custom properties (substitution variables) from the `.tra` file using TIBCO Business Studio:

1. In **Project Explore panel**>*adapter configuration filename*_**genresources** folder, find the substitution variable file *adapter configuration filename*`.substvar`.
2. Double click the `.substvar` file to bring up the **Defined Substitution Variable** editor.
3. Modify the default properties for the substitution variables.

See *TIBCO ActiveMatrix Composite Editor User's Guide* for details on working with substitution variables.

At run-time, you can update the values of the substitution variables using TIBCO ActiveMatrix Administrator.

The following figure shows the Substitution Variables editor in TIBCO ActiveMatrix Administrator, where you can specify runtime values for substitution variables



Chapter 7 Deploying the Service Assembly

This section describes how you can deploy a service assembly archive using TIBCO ActiveMatrix Administrator.

Topics

Overview

The adapter service engine enables the adapter to run in the ActiveMatrix environment as a container and to provide services.

Adapter projects created using Designer can also be packaged for deployment in the ActiveMatrix environment. Adapter projects can be designed to run in the following modes

- Wired Mode

  The adapter component is wired with other composite elements in the ActiveMatrix SOA project. Projects running in this mode interact with other components in the ActiveMatrix environment.

  Projects created using TIBCO Business Studio always run in the wired mode.

- Unwired Mode

  The adapter component in the ActiveMatrix SOA project is not wired with other composite elements and does not participate in the ActiveMatrix environment. Projects running in the unwired mode do not provide services to or consume services from other ActiveMatrix components. The adapter configurations merely run in the ActiveMatrix node but the deployments can be life-cycled using TIBCO ActiveMatrix Administrator.

Preparing for Deployment

The adapter services that were created in the design phase have to be packaged into a service assembly before they can be deployed.

A service assembly contains service units and a descriptor that indicates the container into which each service unit is to be deployed into. The service assembly is then used to created a deployable archive, the service assembly archive.

Working with SOA Projects on page 137 describes in detail the steps involved in creating the service assembly archive. The service assembly runs in the wired mode.

To run in the unwired mode, use the EAR2SA tool. See Using the EAR2SA tool on page 150 for more information.

Once the service assembly archive is created, follow steps outlined in Deploying the Service Assembly on page 152 to deploy the adapter.

Using the EAR2SA tool

An adapter EAR file created using TIBCO Designer is first imported into TIBCO Business Studio. To create a service assembly archive from an EAR file:

1. Select **File > New > Project> New SOA Project**.
2. Type a name in the Project name field and click **Finish**.
3. In the Project Explorer view, right click the folder and select **Import...**.
4. Choose **General > File System**.
5. Click the Browse button to navigate to the directory where the `.ear` file is located.
6. Choose the .ear file and click **OK**.
7. In the Project Explorer view, right-click on the imported `.ear` file and select **Build Service Assembly Archive**.
8. The service assembly archive, *EAR_fileName*`.zip`, is created under the folder Deployment Packages.

Projects imported using the `.ear` file always run in the non-wired mode.

The service assembly archive that is created can now be deployed. See Deploying the Service Assembly on page 152 for more information.

The project will continue to use the encoding set in the Designer project.

For more information, refer to *TIBCO ActiveMatrix Adapter for SAP Configuration and Deployment*.

Deploying a Service Assembly Archive

This section describes the tasks to configure and deploy a service assembly. These tasks are performed using TIBCO ActiveMatrix Administrator. Deploying a service assembly archive involves the following activities:

- Uploading a Service Assembly Archive
- Configuring the Service Assembly
- Deploying the Service Assembly
- Starting the Service Assembly

Uploading a Service Assembly Archive

The following steps describe how to upload the service assembly archive:

1. Click **Upload Service Assembly**.
2. In the **Name** field, enter a name for the service assembly.
3. Click **Browse...** to choose a service assembly archive from the file system.
4. Check the **Import Shared Resource Definitions** check box to create shared resources definitions from the definitions in the service assembly archive.
5. Click **OK**.

The service assembly will appear in the Service Assemblies table.

Configuring the Service Assembly

The following activities need to be performed to configure a service assembly:

- Specify the nodes on which the service units in the service assembly will be deployed.
- Map the shared resource profiles to shared resources as appropriate for the service assembly.

Configuring the Service Unit

The following steps describe how to configure the adapter Service Unit in a service assembly:

1. In the Service Assemblies table, select the service assembly.
2. Click **Service Units** to view the service units in the selected service assembly.

3. Select the service unit listed in the Service Units table.

The service unit properties are displayed in the following tabs:

- **Node Mapping** - you can map the nodes to service units. See *TIBCO ActiveMatrix Administration* for details.
- **Substitution Variables** - you can specify the value of the service unit's substitution variables. See *TIBCO ActiveMatrix Administration* for details.

Setting Logging Configurations

Follow these steps to modify the logging options:

1. Select Logging Configuration.
2. Choose the service unit.
3. Choose the level from the Severity drop-down list.
4. Click Service Unit Logging.

Mapping the Shared Resource Profiles to Shared Resource

A shared resource profile specifies the kind of physical resource needed by services. The shared resource profiles are defined in ActiveMatrix design-time and are packaged in the service assembly. Before deploying the service assembly, you must map the shared resource profile to a shared resource available in the node that the service unit is mapped to. See *TIBCO ActiveMatrix Administration* for details.

Deploying the Service Assembly

A service assembly is ready to be deployed once the service assembly is uploaded and configured. Before actually deploying the service assembly, verify the following:

- All nodes required for deployment are running.
- All containers required for deployment are activated.
- All shared resources are installed on the node.

To deploy a service assembly, select the service assembly in the Service Assemblies table and click **Deploy**. Once the service assembly is deployed, the status changes to Deployed.

Starting the Service Assembly

After a service assembly has been successfully deployed, you can start it, and if required, stop it.

Following steps describe how to start and stop service assemblies.

1. In the Service Assemblies table, select one or more service assemblies.
2. To start the selected service assemblies, click **Start**. The status changes to Running.
3. To stop the selected service assemblies, click **Stop**. The status changes to Deployed.

Appendix A Sample saprfc.ini Files

Topics

Sample saprfc.ini Files

The following sample demonstrates using the `saprfc.ini` file for:

- Register RFC Server programs
- Connect RFC Client programs to SAP

Refer to the SAP Documentation accompanying your SAP installation for additional information.

Example: Registering an RFC Server Program Example

The following parameters register an RFC server program at an SAP gateway, in SAP using transaction SM59. To reference the block, the **destination** field in the server connection should be defined as **DEST-TIB-R**. See SAP Client INI File Connection on page 66 for details.

```
DEST=DEST-TIB-R
TYPE=R
PROGID=UseAUniqueProgramID
GWHOST=sapsvr
GWSERV=sapgw00
RFC_TRACE=0
```

It is important to note that if **PROGID** is not defined, the value of **DEST** is used instead.

The RFC server program is registered as follows:

- Program ID is `UseAUniqueProgramID`
- SAP gateway is `sapsvr`

In this example, there is no RFC tracing since RFC_TRACE is defined with a value of 0.

Using Logon Groups to Connect an RFC Client to SAP Example

The next parameter connects an RFC Client program to SAP using logon groups. In SAP using transaction **SMLG**, the logon group defined is **SPACE**

The SAP System ID (SID) is TIB and the message server is `sapsvr`.

In this example, there is no **RFC trace** and **ABAP** debugging since **RFC_TRACE** and **ABAP_DEBUG** are defined with a value of **0**.

To reference the parameters given below, the **destination** field in the client connection should be defined as **DEST-TIB-B**. See Configuring Client Connection with Load Balancing on page 122 for details.

Note that if **R3NAME** is not defined, the value of **DEST** is used instead.

```
DEST=DEST-TIB-B
TYPE=B
R3NAME=TIB
MSHOST=sapsvr
GROUP=SPACE
ABAP_DEBUG=0
USE_SAPGUI=0
```

Using a Dedicated Application Server to Connect an RFC Client Program to SAP

The parameters given below connect an RFC Client program to SAP using a dedicated application server.

The application server is **sapsvr** and the system number is **00**.

Similar to the load balancing example, there is no RFC trace and ABAP debugging.

To reference the parameters given below, the **destination** field in the client connection should be defined as **DEST-TIB-A**. See Configuring Dedicated Application Server Client Connection on page 120 for details.

In this example, it is assumed that running on the same machine as the application server is a gateway service. If this is not the case, you need to define the additional parameters `GWHOST` and `GWSERV`. These parameters are similar to the ones available under Registered RFC Server programs (see Using Logon Groups to Connect an RFC Client to SAP Example on page 52).

```
DEST=DEST-TIB-A
TYPE=A
ASHOST=sapsvr
SYSNR=00
RFC_TRACE=0
ABAP_DEBUG=0
USE_SAPGUI=0
```

Appendix B Differences in Adapter Projects

This section describes the differences observed in adapter projects created using TIBCO Designer and TIBCO Business Studio.

Topics

Differences in Projects

The following features are observed between projects created using TIBCO Business Studio and TIBCO Designer.

- The names of the adapter configuration and the folders for the connection references and the shared resouces are named as follows:
  - R3AdapterConfiguration.adr3model
  - R3AdapterConfiguration_genresources
  - R3Connections_genresources
- The value of the Class MicroAgentName field (located in the R3AdapterConfiguration->Monitoring tab in Designer) has been changed from `COM.TIBCO.adr3.%%Deployment%%.%%InstanceId%%` to `COM.TIBCO.adr3.%%Deployment%%.`<*AdapterConfigurationInstanceName*>.
- The value of the Standard MicroAgentName field (located in the R3AdapterConfiguration->Monitoring tab in Designer) has been changed from COM.TIBCO.ADAPTER.adr3.%%Deployment%%.%%InstanceId%% to `COM.TIBCO.ADAPTER.adr3.%%Deployment%%.`<*AdapterConfigurationInstanceName*>.
- The Enable Custom Scalar field which was configured using a property in the designer.tra file in not imported. This property is now configured at the service level.
- Projects with a TID Manager server configuration and Generic Adapter Configuration are not imported.
- The features associated with the following fields are not supported:
  - IDoc Acknowledgement
  - User Exit
  - Confirm
  - ReadIDocPlugin
- The following fields are not imported:
  - Startup Connectionless
  - Adapter Termination Criteria
  - Enable Connectionless
  - Advanced Logging

Appendix C Trace Messages

This appendix explains the trace messages that are logged to a location specified at configuration time.

Topics

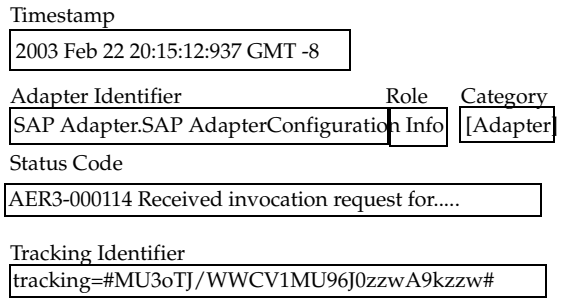
Overview

Trace messages provide information about adapter activities. The messages are logged to the console where the runtime adapter was started and to a log file. Trace messages can also be redirected to the TIBCO Hawk Display application, or sent to other applications using the TIBCO Rendezvous transport.

Each trace message can include the following fields:

```
<Timestamp> <Adapter Identifier> <Role> <Category> <Status Code>
<Tracking Identifier>
```

The above fields are explained in Trace Message Fields on page 164. The following diagram shows an example trace message and calls out the fields.



Example Trace Messages

The following trace messages were written during a session where the adapter received a message from the SAP system.

The first message indicates that the adapter has started. The timestamp indicates when the adapter started, and the role indicates that the trace message is informational, which means the activity is normal for the adapter. The category is identified, and the corresponding status code is displayed. The status code indicates that the adapter started successfully.

```
2003 Jan 24 10:46:10:486 GMT 5 SAPAdapter.SALESORDER-OUT Info
[Adapter] AER3-000082 Successful initialization of Adapter
```

The next set of trace messages indicates the adapter received a message from the SAP system. The `#-0Y--C--DX1ALUbc--4zzzw-TEzzw#` tracking identifier included in the trace message uniquely identifies the message.

```
2003 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#
```

Trace Message Fields

Each trace message includes the following fields:

Table 24 Tracing Fields

Field Name	Description
Timestamp	Timestamp of occurrence. For example, `2003 Feb 22 20:14:51:718 GMT -8`.
Adapter Identifier	Name of the adapter that wrote the trace message. This is a combination of the adapter acronym and adapter configuration name. For example, the application identifier, `ADB.publisher1` identifies a TIBCO ActiveMatrix Adapter for Database service named publisher1.
Role	A role can be: • Info. Indicates normal adapter operation. No action is necessary. A tracing message tagged with Info indicates that a significant processing step was reached and has been logged for tracking or auditing purposes. Only info messages preceding a tracking identifier are considered significant steps. • Warn. An abnormal condition was found. Processing will continue, but special attention from an administrator is recommended. • Error. An unrecoverable error occurred. Depending on the error severity, the adapter may continue with the next operation or may stop altogether. • Debug. A developer-defined tracing message. In normal operating conditions, debug messages should not display. When configuring the adapter you define what roles should or should not be logged. For example, you may decide not to log Info roles to increase performance.

Table 24 Tracing Fields

Field Name	Description
Category	One of the following: • Adapter. The adapter is processing an event. • Application. The adapter is interacting with the SAP system. • Configuration. The adapter is reading configuration information. • Database. The adapter is interacting with a database. • Schema. The adapter is retrieving metadata from the SAP system. • Publication. The publication service is reporting this trace message. • RequestResponseInvocation. The Request-Response invocation service is reporting this trace message. • RequestResponse. The Request-Response service is reporting this trace message. • Shutdown. The adapter is shutting down. • Startup. The adapter is starting. • Subscription. The subscription service is reporting this trace message. • Connection. This is an application connection related trace message. • System. This category is not linked to a specific event process. The trace message may be related to a Windows service related messages, memory allocation, file system error, and so on. • TibRvComm. The adapter is communicating with TIBCO Rendezvous. • XML. The adapter is parsing XML documents.
Status Code	Unique code for the message and description. Status codes are identified by a unique number and description. If a trace message includes an error or warn role, the status code documentation includes a resolution. See Status Messages on page 167 for details.
Tracking Identifier	A unique identifier that is "stamped" on each message by the originating adapter. The tracking identifier remains in effect from a message's beginning 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 is displayed.

Table 24 Tracing Fields

Field Name	Description
Application Information	Application-specific information added to the tracking info to trace the message back to its source. Set initially by the originating adapter and carried forward. It is augmented by each intermediate component.

Status Messages

The following table lists all the new error messages introduced in this release.

Status Code	Role	Category	Resolution
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.
AER3-910005	**Startup Error. SDK Error %1 received during initialization. The Repository URL is %2 and the Configuration URL is %3**		
	Error	Startup	Verify your repository settings.
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.
AER3-9100012	**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.
AER3-940001	**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**		
	Error	RequestResponse	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.

Status Code	Role	Category	Resolution
AER3-940005	**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**		
	Error	RequestResponse	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.
AER3-940008	**Request Response error. Connection error in invocation of Request Response service %1 listening on subject %2. Connection Parameters are %3**		
	Error	RequestResponse	Check if the end application is up and running. Also verify the connection parameters that are specified in the repository.
AER3-940009	**Request Response error. Request Response service %1 listening on subject %2 failed due to target application invocation error %3. Target application is %4 and inbound event is %5**		
	Error	RequestResponse	Check the validity of the incoming request-data to the Request-Response Service.
AER3-940010	**Request Response error. Request Response service %1 listening on subject %2 failed to create reply. Error : %3**		
	Error	RequestResponse	Verify the data received from the SAP system and make sure it matches the schema associated to the Request-Response Service.
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**		
	Error	Subscription	Check the configuration of the application that is publishing the event and make sure that it matches the inbound event definition for the above subscription service.

Status Code	Role	Category	Resolution
AER3-920002	**Subscription error. Subscription service %1 failed to deserialize the event received on subject %2 and SDK exception thrown is %3. The Repository URL is %4 and the Configuration URL is %5**		
	Error	Subscription	Check the configuration of the application that is publishing the event and make sure that it matches the inbound event definition for the above subscription service.
AER3-920003	**Subscription error. Subscription service %1 listening on subject %2 received inbound event with null data. The Repository URL is %3 and the Configuration URL is %4**		
	Error	Subscription	Check the configuration of the application that is publishing the event and make sure that it matches the inbound event definition for the above Subscription Service.
AER3-920007	**Subscription error. Subscription service %1 listening on subject %2 could not get the class description of %3. The Repository URL is %4 and the Configuration URL is %5**		
	Error	Subscription	Check the repository configuration for this service.
AER3-920008	**Subscription error. Subscription service %1 listening on subject %2 could not find the mandatory property %3 in class %4. The Repository URL is %5 and the Configuration URL is %6**		
	Error	Subscription	Check the configuration of the application that is publishing the event and make sure that it matches the inbound event definition for the above Subscription Service.
AER3-9200015	**Subscription error. Subscription service %1 listening on subject %2 failed due to target application invocation error %3. Target application is %4**		
	Error	Subscription	Verify the structure of the incoming message. Check in the SAP system for more detailed information on the cause of the error.

Status Code	Role	Category	Resolution
AER3-950001	**Request Response Invocation error. Request Response Invocation service %1 with subject as %2 received event from target application %3. It failed while converting event to request, as it could not get the class description for %4. Repository URL is %5 and the Configuration URL is %6**		
	Error	RequestResponse Invocation	Verify the configuration of the Request-Response Invocation Service and check that the schema/class definitions are present in the repository.
AER3-950003	**Request Response Invocation error. Request Response Invocation service %1 with subject as %2 received event from target application %3. It failed while converting event to request. Repository URL is %5 and the Configuration URL is %6**		
	Error	RequestResponse Invocation	Verify the configuration of the Request-Response Invocation Service and check that the schema/class definitions are present in the repository.
AER3-950008	**Request Response Invocation error. Request Response Invocation service %1 with subject %2 received error while requesting event over the wire. Error %3**		
	Error	RequestResponse Invocation	Check repository settings for valid configuration of the Request-Response Invocation endpoint for this service.
AER3-950009	**Request Response Invocation error. Request Response Invocation service %1 with subject %2 received error while requesting event over the wire. Error %3**		
	Error	RequestResponse Invocation	Check repository settings for valid configuration of the Request-Response Invocation endpoint for this service.
AER3-9500010	**Request Response Invocation error. Request Response Invocation service %1 with subject %2 received null reply while requesting event over the wire**		
	Error	RequestResponse Invocation	Check the target application, if it is running or not. Check the configuration of Request-Response Invocation 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	RequestResponse Invocation	Check repository settings for valid configuration of the Request-Response Invocation endpoint for this service.
AER3-9500012	**Request Response Invocation error. Request Response Invocation service %1 with subject %2 received error while processing reply message. Error %3**		
	Error	RequestResponse Invocation	Check repository settings for valid configuration of the Request-Response Invocation endpoint for this service.
AER3-930003	**Publication error. 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'**		
	Error	Publication	Verify the configuration of the publication service and check that the schema/class definitions are present in the repository.
AER3-930006	**Publication error. 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. RepositoryURL is %6 and the ConfigurationURL is %'**		
	Error	Publication	Verify the configuration of the publication service and check that the schema definitions are present in the repository.
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.
AER3-890006	**Connection Error. Adapter stopping due to persistent connection errors to the SAP system(s)**		
	Error	Connection	Check the SAP system(s) connected to, and restart the adapter.

Status Code	Role	Category	Resolution
AEADR3-600001	**JMS Service Configured. This adapter version does not support JMS services, but one was found. Use the Go To button to select it.**		
	Warning	Configuration	You have configured a service with transport type as JMS. But the AE Version of this adapter instance does not support JMS. You may change the AE Version or make sure that the runtime version is higher than this version.
AEADR3-600002	**XML Wire Format found. This adapter version does not support XML Wire Format.**		
	Warning	Configuration	You have configured a service with XML Wire Format. But the AE Version of this adapter instance does not support XML format. You may change the AE Version or make sure that the runtime version is higher than this version.
AEADR3-600003	**Subscriber in exploded batch mode found. This adapter version does not support Subscriber in Explode Batch Mode.**		
	Warning	Configuration	You have configured a Subscription service with Exploded Batch Mode. But the AE Version of this adapter instance does not support Subscriber in Exploded Batch Mode. You may change the AE Version or make sure that the runtime version is higher than this version.
AEADR3-600004	**Connection Retry Mechanism Warning. This adapter version does not suspend services on connection failure. The configured value 'Adapter Termination Criteria' will be ignored.**		
	Warning	Configuration	You have configured a service with Connection Retry. But the AE Version of this adapter instance does not suspend services on connection failure. You may change the AE Version or the value of 'Adapter Termination Criteria' will be ignored.

Status Code	Role	Category	Resolution
AEADR3-600005	**Connection Retry Mechanism Warning. This adapter version does not suspend services on connection failure. The configured values 'Number of Reconnect Attempts Before Suspending Impacted Service(s)' and 'Adapter Termination Criteria' will be ignored.**		
	Warning	Configuration	You have configured a service with Connection Retry. But the AE Version of this adapter instance does not suspend services on connection failure. You may change the AE Version or the value of 'Adapter Termination Criteria' will be ignored.
AEADR3-600006	**Empty Service Found. The Service is not Configured Or Class Reference or Endpoint Reference is Empty.**		
	Warning	Configuration	You have configured an adapter instance with a service which has no schema associated with it. Such an adapter instance cannot be used at run-time. Make sure that you do not have an empty service before deploying the adapter instance.
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.**		
	Error	Configuration	Absolute path of the Plugin Directory not found. Check the path.
AEADR3-600011	**Error copying Configuration information/Inbound Connection Type does not support copying of connection information from Configuration view.**		
	Error	Configuration	You are trying to copy Design-Time parameters to Run-Time Inbound Connection which is not of type 'Dedicated.' If you want to copy, make sure that the default inbound connection type is 'Dedicated'.

Status Code	Role	Category	Resolution
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.**		
	Error	Configuration	Cannot rename the adapter instance. Provide a valid name. Make sure you have entered alphanumeric characters, no blank spaces, and the name is not more than 80 characters.
AEADR3-600013	**Subject Names. Do you wish to regenerate subjects set to previous defaults?**		
	Error	Configuration	Click **YES** to regenerate.
AEADR3-600014	**Regenerate Names?. Do you wish to regenerate Subject Names, Connection Names and Session Parameters?**		
	Warning	Configuration	Click **YES** to regenerate.
AEADR3-600015	**Replace Resource. The resource %1 is already defined as a type. Do you want to replace it?**		
	Warning	Configuration	Click OK to continue.
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.**		
	Error	Configuration	Conflicting resource names. Try using a different name.
AEADR3-600021	**Reuse Schema Type. Schema for %1 already exists. Do you want to reuse existing schema?**		
	Warning	Schema	This is a Yes/No option. Select Yes if you want to use the existing schema. Select No if you want to re-download the schema for the SAP R3 system.
AEADR3-600022	**Deleting Operation Type. Do you want to delete %1 ?**		
	Warning	Configuration	Delete confirmation. Select Yes to delete.

Status Code	Role	Category	Resolution
AEADR3-600023	**Invalid Value. Field %1, Palette error. This is not a valid value.**		
	Error	Configuration	You tried to enter an invalid value in the connection parameters.
AEADR3-600024	**Invalid Value. Palette error. Endpoint Reference cannot have null value.**		
	Error	Configuration	Endpoint Reference is empty. Select a valid end-point reference.
AEADR3-600028	**Illegal Operation. Selected Resource Can Not Be Moved**		
	Error	Configuration	No resolution.
AEADR3-600029	**Filter Applied to mandatory segments. You have applied the filter on the following mandatory segment(s)**		
	Warning	Schema	You have applied a filter on mandatory segments. Uncheck the filter on these segments.
AEADR3-600035	**Error Occurred. Conflicting Services. A Publication Service, having the same Schema, is already configured.**		
	Error	Schema	You already have a Publication service with the same schema. You cannot configure another service in the same adapter instance.
AEADR3-600036	**Error Occurred. Conflicting Services. A Subscription Service, having the same Schema, is already configured.**		
	Error	Schema	You already have a Subscription service with the same schema. You cannot configure another service in the same adapter instance.
AEADR3-600037	**Error Occurred. Conflicting Services. A Request-Response Service, having the same Schema, is already configured.**		
	Error	Schema	You already have a Request-Response service with the same schema. You cannot configure another service in the same adapter instance.

Status Code	Role	Category	Resolution
AEADR3-600038	**Error Occurred. Conflicting Services. A Request-Response Invocation Service, having the same Schema, is already configured.**		
	Error	Schema	You already have a Request-Response Invocation service with the same schema. You cannot configure another service in the same adapter instance.
AEADR3-600039	**Download Operation Schema. Schema for operation %1 is already available, Use existing schema?**		
	Warning	Schema	Click **YES** to reuse existing schema. Click **NO** to re-download schema from SAP R3 system.
AEADR3-600040	**Regenerate Resources ? Do you want to regenerate endpoint and subject information?**		
	Warning	Configuration	Click **YES** to regenerate.
AEADR3-600041	**Regenerate Resources? Do You want to regenerate Subject Names and Session Parameters?**		
	Warning	Configuration	Click **YES** to regenerate.
AEADR3-600042	**Regenerate Connections. Do You want to regenerate Connection Names?**		
	Warning	Configuration	Click **YES** to regenerate Connection Names.
AEADR3-600043	**Error while pasting. Deserialization of Schema Failed.**		
	Error	Schema	Copy/Paste of schemas failed. Try configuring again.
AEADR3-600044	**Error while pasting. Deserialization of R3 Connections Failed.**		
	Error	Configuration	Copy/Paste of connections failed. Try configuring again.
AEADR3-600045	**Error while writing the Meta Url.**		
	Error	Configuration	Error in Meta URL. Try configuring again.

Status Code	Role	Category	Resolution
AEADR3-600046	**Inbound TID Management Warning. This adapter version does not support Inbound TID Management.**		
	Warning	Configuration	You have configured an adapter instance with Inbound TID Management. But the AE Version of this adapter instance does not support Inbound TID Management. You may change the AE Version or make sure that the runtime version is higher than this version.
AEADR3-600047	**Advanced Logging Warning. This adapter version does not support advanced logging to a file.**		
	Warning	Configuration	You have configured an adapter instance with advanced logging. But the AE Version of this adapter instance does not support advanced logging to a file. You may change the AE Version or make sure that the runtime version is higher than this version.
AEADR3-600048	**Confirm Publisher Warning. This adapter version does not support confirm publisher on the inbound side.**		
	Warning	Configuration	You have configured an adapter instance with advanced logging. But the AE Version of this adapter instance does not support advanced logging to a file. You may change the AE Version or make sure that the runtime version is higher than this version.
AEADR3-600049	**Valid destination Warning. This adapter version does not support Validating destination on the inbound side**		
	Warning	Configuration	You have configured an adapter instance to validate destination on the inbound side. But the AE Version of this adapter instance does not support validating destination on the inbound side. You may change the AE Version or make sure that the runtime version is higher than this version.

Status Code	Role	Category	Resolution
AEADR3-600050	**Not Checked out. Failed to update Schema. The associated Schema files are not checked out from source control.**		
	Error	Configuration	Check out schema files from the source control.
AEADR3-600051	**Illegal child error occurred while processing connection - %1**		
	Error	Configuration	Error while processing R3 Connection. Try configuring again.
AEADR3-600052	**Name conflict error occurred while processing connection - %1**		
	Error	Configuration	Error while processing R3 Connection. Try configuring again.
AEADR3-600053	**Error occurred while applying changes to connection - %1**		
	Error	Configuration	Error while applying changes to R3 Connection. Try configuring again.
AEADR3-600054	**Not Checked out. Failed to update R3Connections. The connection file is not checked out from source control**		
	Error	Configuration	Check out the connection file from source control.
AEADR3-600055	**Error Renaming Service. Service name must only have alphanumeric characters and must be at most 80 characters long.**		
	Error	Configuration	Cannot rename the service. Provide a valid name. Make sure you have entered alphanumeric characters, no blank spaces, and the name is not more than 80 characters.
AEADR3-600056	**Global Variables File:Read-Only. Global Variable files needs to be checked out in order to successfully create the adapter.**		
	Error	Configuration	Check out Global Variables file from source control.

Status Code	Role	Category	Resolution
AEADR3-600057	**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.**		
	Error	Configuration	Check out the resource and try renaming again.
AEADR3-600058	**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.**		
	Error	Configuration	Check out the resource and try deleting again.
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.**		
	Error	Configuration	Check out the resource and try creating the service again.
AEADR3-600060	**Need to Add File to RCS: %1 was created during schema generation. Ensure that this resource is added to RCS and checked in. Click on the Go To Resource button to select the resource.**		
	Warning	Configuration	Ensure that this resource is added to RCS and checked in.

The following table lists error messages for which codes have been changed.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000000	R3-CORE-APP-8000	INFO	AD	`The request does not contain closure data for operation %1`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000001	R3-CORE-APP-8001	Error	AD	`Invalid closure data for operation %1`	Create a correct instance of RFC_CLOSURE defined in `SAPAdapterSchema.xml` 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.
AER3-000002	R3-CORE-APP-8002	Error	AP	`Invalid value for attribute %1 for operation %2`	Verify if you are using the correct class descriptions and value specified is valid and no mandatory values are omitted.
AER3-000003	R3-CORE-APP-8003	Error	AD	`Function call is transactional but no TID provided`	When you set bTransactional in closure, you must also supply a value for TID.
AER3-000004	R3-CORE-APP-8004	INFO	S	`Adapter application %1 is stopped`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000005	R3-CORE-CFG-1000	Error	C	`Could not find interface description element`	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	R3-CORE-CFG-1001	Error	C	`%1 not specified for %2`	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.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000007	R3-CORE-CFG-1003	INFO	C	`TID management is local`	It is advisable to use a remote TIDManager if more than multiple adapters are running in a load balanced manner. This is to ensure that the failed transactions are not executed twice among the load balanced group. This means that it is possible to get duplicate messages if more than one adapters are being run in a load balanced configuration and are setup to do local TID management.
AER3-000008	R3-CORE-CFG-1004	Error	C	`TID file is not specified`	Specify the TID file name, attribute "tidFileName" in the adapter instance level `Adapter Services` tab.
AER3-000009	R3-CORE-CFG-1005	Error	C	`Timer %1 does not exist`	Provide a correct reference to the TIB Adapter SDK timer in the server connection section of the connection manager.
AER3-000010	R3-CORE-CFG-1006	Error	C	`The interface %1 does not specify attribute 'classRef'`	Provide a correct reference to the TIBCO Adapter SDK timer in the server connection section of the connection manager

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000011	R3-CORE-CFG-1007	Error	C	`Invalid producer %1`	Provide a correct reference to an TIBCO Adapter SDK producer (publisher).
AER3-000013	R3-CORE-CFG-1009	Error	C	`No RpcClient specified for operation %1`	Provide a valid reference to an TIB Adapter SDK RPC Client through "mbRpcClientRef" element in Deployment Descriptions of IDocs.
AER3-000014	R3-CORE-CFG-1010	WARN	C	`Interface %1 does not contain deployment description for IDocs... continuing...`	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.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000015	R3-CORE-CFG-1011	INFO	C	`Invalid producer %1; using default producer %2`	Indicates normal adapter operation. No action necessary.
AER3-000016	R3-CORE-CFG-1012	Error	C	`Invalid consumer component %1`	Modify your configuration by defining a consumer name as suggested by the error description.
AER3-000017	R3-CORE-CFG-1013	Error	C	`No components defined in the configuration document`	Modify your configuration so that it has at least one component under the 'components' section.
AER3-000018	R3-CORE-CFG-1014	Error	C	`No connection manager defined in the configuration document`	Modify your configuration so that it has a 'connectionManager' under the 'connectionManagers' section.
AER3-000019	R3-CORE-CFG-1015	Error	C	`Invalid rpcServer %1 specified for interface %2`	Modify your configuration so that it has a 'connectionManager' under the 'connectionManagers' section.
AER3-000020	R3-CORE-CFG-1016	Error	C	`The Subscriber Description does not specify consumer reference, skipping ...`	Add consumerRef attribute in the configuration.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000021	R3-CORE-CFG-1017	Error	C	`Consumer %1 for deployment description %2 does not exist`	ConsumerRef must point to a valid subscriber.
AER3-000022	R3-CORE-CFG-1018	WARN	C	`No instance defined for %1; control fields will not be replaced`	You must have an instance defined under class instances.
AER3-000023	R3-CORE-CFG-1019	WARN	C	`Invalid reference for attribute consumerRef`	ConsumerRef must point to a valid subscriber.
AER3-000024	R3-CORE-FIL-3000	Error	S	`Error while reading directory=%1, filename=%2; %3`	Determine the cause from the error description.
AER3-000025	R3-CORE-FIL-3001	WARN	S	`directory=%1, filename=%2; No matching files found`	There were no matching files. Check your filenames.
AER3-000026	R3-CORE-FIL-3002	Error	S	`Could not open %1 for reading`	The specific file could not be opened. Check permissions.
AER3-000027	R3-CORE-FIL-3003	Error	S	`%1 is unreadable`	Check whether the file can be opened using a text editor.
AER3-000028	R3-CORE-FIL-3004	WARN	S	`%1 is empty`	File is empty.
AER3-000029	R3-CORE-FIL-3005	Error	S	`%1 does not contain newline. Perhaps not a text file`	The file is not a text file, because it does not contain a new line.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000030	R3-CORE-FIL-3006	INFO	AD	`IDoc from file %1 sent in %2 mode`	Indicates normal adapter operation. No action necessary.
AER3-000031	R3-CORE-IDC-7000	Error	AD	`Unsupported datatype %1`	The datatype is unsupported by SDK or SAP or both.
AER3-000032	R3-CORE-IDC-7001	WARN	AD	`Cannot get control record for IDoc`	The IDoc does not have a control record. If it's not intentional, add a control record.
AER3-000033	R3-CORE-IDC-7002	Error	AD	`class name invalid for IDoc`	The adapter received an IDoc but could not determine its class. If you are creating the IDoc meant to be consumed by the adapter, ensure that you are creating it correctly.
AER3-000034	R3-CORE-LIB-6000	WARN	AD	`False call to %1`	See the error description for more details.
AER3-000035	R3-CORE-LIB-6001	WARN	AD	`Could not generate GUID`	Even though a warning, this message is often indicative of a memory-low situation that could severely affect the adapter performance.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000036	R3-CORE-LIB-6002	Error	AD	`No connection for %1`	The named component does not have a valid connection Manager. Refer also to the description for 'R3-CORE-CFG-1014'.
AER3-000037	R3-CORE-LIB-6003	Error	AD	`Could not create TIDManager`	If the problem persists, repeat with remote TID Management.
AER3-000038	R3-CORE-LIB-6004	Error	C	`Could not find default client connection`	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	R3-CORE-LIB-6005	Error	AD	`No proxy defined to process request for RFC function %1`	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.
AER3-000040	R3-CORE-LIB-6006	INFO	AD	`Adding RFC function %1`	For an inbound configuration, the message means that the Adapter can serve as an RFC Client; for an outbound configuration, the message means that the Adapter can serve as an RFC Server.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000041	R3-CORE-LIB-6007	Error	AD	`Unable to create RFC server function %1`	Look at earlier error messages in the log file(s) for possible causes.
AER3-000042	R3-CORE-LIB-6008	Error	AD	`Unable to create request proxy for %1`	Look at earlier error messages in the log file(s) for possible causes.
AER3-000043	R3-CORE-LIB-6009	Error	AD	`Unable to create RFC client for %1`	Look at earlier error messages in the log file(s) for possible causes.
AER3-000044	R3-CORE-LIB-6010	Error	AD	`Unable to create function impl for %1`	Look at earlier error messages in the log file(s) for possible causes.
AER3-000045	R3-CORE-LIB-6011	Error	AD	`RFC function initialization failure : %1; function name : %2`	Look at the error description for the cause of the failure.
AER3-000046	R3-CORE-LIB-6012	Error	AD	`Cannot create publisher proxy for %1`	Look at earlier error messages in the log file(s) for possible causes.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000047	R3-CORE-LIB-6014	Error	AP	`%1 is not a valid structure or table`	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	R3-CORE-LIB-6015	Error	AD	`Unpacking error: Invalid class type for structure %1`	Data inappropriate for the named structure. See also R3-CORE-LIB-6014.
AER3-000049	R3-CORE-LIB-6016	Error	AD	`Unpacking error: Invalid class type for table %1`	Data inappropriate for the named table. See also R3-CORE-LIB-6014.
AER3-000050	R3-CORE-LIB-6017	Error	AP	`Unpacking error: Row of table %1 is not a structure`	Data inappropriate for the named table. See also R3-CORE-LIB-6014.
AER3-000051	R3-CORE-LIB-6018	INFO	AD	`User-defined operation called successfully`	The Adapter invoked the user-defined operation successfully.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000052	R3-CORE-LIB-6019	Error	AD	`Invalid or no data received from user-defined operation`	Check the program that implements the user-defined operation and make sure that it returns data.
AER3-000053	R3-CORE-LIB-6020	Error	AD	`User-defined operation invocation exception; name : %1, data : %2`	Ensure that your operation executes without any exception and that it returns valid data to the Adapter.
AER3-000054	R3-CORE-LIB-6021	Error	AD	`User-defined operation invocation timeout`	Ensure that the Rpc Server that implements your operation is running and that it is reachable from the Adapter.
AER3-000055	R3-CORE-LIB-6022	Error	AD	`User-defined operation invocation : bad reply received`	Ensure that your operation returns valid data to the Adapter.
AER3-000056	R3-CORE-LIB-6023	Error	AD	`User-defined operation invocation exception; name : %1`	Ensure that your operation executes without any exception and that it returns valid data to the Adapter.
AER3-000057	R3-CORE-LIB-6024	Error	AD	`The request sent to user-defined operation contains invalid data`	If you're constructing the data to be sent to the user-defined operation, ensure that it's being constructed correctly.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000058	R3-CORE-LIB-6025	Error	AD	`Invalid operation name for IDoc %1`	The Adapter found that the IDoc data is arriving from a function other than 'IDOC_INBOUND_ASYNCHRONOUS' or 'INBOUND_IDOC_PROCESS'.
AER3-000059	R3-CORE-LIB-6026	Error	AD	`Cannot create IDoc parser instance`	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	R3-CORE-LIB-6027	Error	AP	`Invalid RFC function %1`	Look at earlier error messages in the log file(s) for possible causes.
AER3-000061	R3-CORE-LIB-6028	WARN	AD	`The IDoc %1 could not be exploded`	See R3-CORE-LIB-6026.
AER3-000062	R3-CORE-LIB-6029	Error	AD	`Unable to create reply listener for operation %1`	See earlier messages in the log file(s) for possible causes.
AER3-000063	R3-CORE-LIB-6030	Error	AD	`RFC invocation timeout for function %1; description : %2`	The named RFC function invocation timed out. See error description for more details.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000064	R3-CORE-LIB-6031	Error	AD	`RFC invocation bad reply for function %1; description : %2`	The named RFC function returned a bad reply. See error description for more details.
AER3-000065	R3-CORE-LIB-6032	Error	AD	`RFC invocation remote exception; name : %1, description : %2`	The named RFC function caused a remote exception. See error description for more details.
AER3-000066	R3-CORE-LIB-6033	Error	AD	`Cannot create IDoc parser instance for subscriber %1`	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.
AER3-000067	R3-CORE-LIB-6034	WARN	AD	`Invalid MTree data received for subscriber`	See earlier error messages in the log file(s) for possible causes.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000068	R3-CORE-LIB-6035	Error	AD	`Cannot create IDoc data instance from received IDoc tree`	The adapter subscriber received MTree data but the received data could not be converted to an MInstance. Because an MInstance is an MTree bounded by a class, the error implies that the received MTree is incorrect. If it is your application that is sending the offending data to the adapter subscriber, make sure that your data is valid.
AER3-000069	R3-CORE-LIB-6036	Error	AD	`Cannot implode IDoc %1`	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	R3-CORE-LIB-6037	Error	AD	`Cannot get RFC client function %1`	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.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000071	R3-CORE-LIB-6038	Error	AD	`Cannot get marshaller for RFC client function %1`	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.
AER3-000072	R3-CORE-LIB-6039	Error	AP	`Client connection %1 is invalid`	Ensure that the login parameters are correct and that the Adapter can reach the SAP system.
AER3-000073	R3-CORE-LIB-6040	Error	AP	`Cannot get RFC connection for client %1`	See R3-CORE-LIB-60.
AER3-000074	R3-CORE-LIB-6041	Error	AD	`Operation %1 timed out`	Make sure that the RPC Server that corresponds to the named operation is executing and is accessible from the Adapter.
AER3-000075	R3-CORE-LIB-6042	WARN	AD	`Operation %1 returned a bad reply %2`	The named operation returned a bad reply. Look at the error message description for more details.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000076	R3-CORE-LIB-6043	Error	AD	`Initialization exception type : %1, operation : %2, description : %3`	The named operation returned the named exception. Look at the error message description for more details.
AER3-000078	R3-CORE-LIB-6045	INFO	AD	`Successfully added RFC function %1`	The Adapter successfully added the named RFC function. Depending on the configuration, the adapter can function as an RFC client, RFC Server, or both.
AER3-000079	R3-CORE-LIB-6046	Error	AD	`Unpacking error`	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	R3-CORE-LIB-6047	WARN	AD	`Could not create TIBCO RV advisory handlers; exception type : %1, description : %2`	The Adapter could not create the license expiry advisories. Look at the error description for more details.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000081	R3-CORE-LIB-6048	WARN	AD	`Could not create TIBCO Hawk implants; exception type : %1, description : %2`	The adapter could not create TIBCO Hawk implants. Look at the error description for more details.
AER3-000082	R3-CORE-LIB-6049	INFO	AD	`Successful initialization of Adapter`	Indicates normal adapter operation. No action necessary.
AER3-000083	R3-CORE-LIB-6050	Error	AD	`Unable to create operation request for function : %1, class : %2, rpcClient : %3`	The Adapter could not create Operation request for the named function. Look at the error description for more details.
AER3-000084	R3-CORE-LIB-6051	INFO	AP	`Received IDoc Name/Number/Receiving Partner: %1, Count: %2`	Indicates normal adapter operation. No action necessary.
AER3-000085	R3-CORE-LIB-6052	INFO	AD	`IDoc sent in %1 mode`	Indicates normal adapter operation. No action necessary.
AER3-000086	R3-CORE-LIB-6053	INFO	AD	`IDoc received in %1 mode`	Indicates normal adapter operation. No action necessary.
AER3-000087	R3-CORE-LIB-6054	INFO	AD	`IDoc Sent to SAP System`	Indicates normal adapter operation. No action necessary.
AER3-000088	R3-CORE-LIB-6055	INFO	AD	`IDoc sent as a Business Document`	Indicates normal adapter operation. No action necessary.
AER3-000089	R3-CORE-LIB-6056	INFO	AD	`IDoc received as a Business Document`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000090	R3-CORE-LIB-6057	INFO	C	`The Destination %1 in not defined, IDoc is logged to file %2`	Indicates normal adapter operation. No action necessary.
AER3-000091	R3-CORE-LIB-6058	INFO	AD	`Total IDocs processed: %1`	Indicates normal adapter operation. No action necessary.
AER3-000092	R3-CORE-LIB-6059	INFO	AD	`The subscriber for this IDoc message could not be determined`	Indicates normal adapter operation. No action necessary.
AER3-000093	R3-CORE-LIB-6060	INFO	AD	`IDoc Message sequence number %1 confirmed to %2`	Indicates normal adapter operation. No action necessary.
AER3-000094	R3-CORE-LIB-6061	INFO	AD	`Preparing to send IDoc to client %1`	Indicates normal adapter operation. No action necessary.
AER3-000095	R3-CORE-LIB-6062	INFO	AD	`IDoc sent to client %1`	Indicates normal adapter operation. No action necessary.
AER3-000096	R3-CORE-LIB-6064	INFO	AD	`IDoc Message sequence number %1 could not be confirmed to %2, Use pre-registration of subscribers`	Indicates normal adapter operation. No action necessary.
AER3-000097	R3-CORE-LIB-6065	INFO	C	`IDoc Message could not be confirmed, validation must be turned off, if 10X Publishers used`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000098	R3-CORE-LIB-6066	INFO	AP	`IDoc RFC Function invoked: %1`	Indicates normal adapter operation. No action necessary.
AER3-000099	R3-CORE-LIB-6067	INFO	AD	`RFC Function invoked: %1`	Indicates normal adapter operation. No action necessary.
AER3-000100	R3-CORE-LIB-6068	WARN	C	`User-defined operation: operation not specified, assuming 'transform'`	If the default transfer is not desired, name your operation explicitly.
AER3-000101	R3-CORE-LIB-6069	WARN	C	`User-defined operation reference: operationRpcClient Ref not specified, operation will not be invoked`	The operation requires an rpcClient, specific through operationRpcClientRef . Specify this client.
AER3-000102	R3-CORE-LIB-6070	Error	AD	`TID operation timed out. Make sure that TIDManager is running`	Make sure TIDManager is running and is accessible from the Adapter. Also, ensure that subject names match.
AER3-000103	R3-CORE-LIB-6071	INFO	AD	`Adding %1 parameter %2, Type %3`	Indicates normal adapter operation. No action necessary.
AER3-000104	R3-CORE-LIB-6072	INFO	AD	`Setting up Imports and Exports for RFC function %1`	Indicates normal adapter operation. No action necessary.
AER3-000105	R3-CORE-LIB-6073	INFO	AD	`RFC function has %1 imports, %2 exports`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000106	R3-CORE-LIB-6074	INFO	AD	`%1 = { %2 }`	Indicates normal adapter operation. No action necessary.
AER3-000107	R3-CORE-LIB-6075	INFO	AD	`Number of records in table %1 = %2`	Indicates normal adapter operation. No action necessary.
AER3-000108	R3-CORE-LIB-6076	INFO	AD	`Invoking function: %1 ...`	Indicates normal adapter operation. No action necessary.
AER3-000109	R3-CORE-LIB-6077	INFO	AD	`Successfully invoked function: %1`	Indicates normal adapter operation. No action necessary.
AER3-000110	R3-CORE-LIB-6078	INFO	AD	`Reply sent for function: %1`	Indicates normal adapter operation. No action necessary.
AER3-000111	R3-CORE-LIB-6079	INFO	AD	`Received reply for: %1 ...`	Indicates normal adapter operation. No action necessary.
AER3-000112	R3-CORE-LIB-6080	INFO	AD	`Data sent back to SAP System`	Indicates normal adapter operation. No action necessary.
AER3-000113	R3-CORE-LIB-6081	INFO	AD	`Performing one way invocation on the server`	Indicates normal adapter operation. No action necessary.
AER3-000114	R3-CORE-LIB-6082	INFO	AD	`Received invocation request for %1 from SAP System`	Indicates normal adapter operation. No action necessary.
AER3-000115	R3-CORE-LIB-6083	INFO	AD	`Performing invocation on the server`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000116	R3-CORE-LIB-6084	INFO	AD	`Function call is transactional, TID: %1`	Indicates normal adapter operation. No action necessary.
AER3-000117	R3-CORE-LIB-6085	INFO	AD	`Received invocation request for %1`	Indicates normal adapter operation. No action necessary.
AER3-000118	R3-CORE-LIB-6086	INFO	AD	`Invoking RFC function %1 in SAP System`	Indicates normal adapter operation. No action necessary.
AER3-000119	R3-CORE-LIB-6087	INFO	AD	`Received one way invocation request for %1`	Indicates normal adapter operation. No action necessary.
AER3-000120	R3-CORE-LIB-6088	INFO	AD	`Invoking transactional RFC function %1 in SAP System`	Indicates normal adapter operation. No action necessary.
AER3-000121	R3-CORE-LIB-6089	INFO	C	`Cannot get class descriptions for control record of IDoc class %1`	Indicates normal adapter operation. No action necessary.
AER3-000122	R3-CORE-LIB-6090	Error	AP	`The IDoc %1 does not contain a control record`	Make sure that the IDoc contains a control record.
AER3-000123	R3-CORE-LIB-6091	Error	C	`Cannot get class descriptions for data record of IDoc class %1`	During configuration ensure that you are downloading the class descriptions.
AER3-000124	R3-CORE-LIB-6092	Error	AD	`The received IDoc tree in exploded form is null`	Make sure that the Tree (MTree in SDK) is created correctly and corresponds to an IDoc.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000125	R3-CORE-LIB-6093	Error	C	`Class descriptions cannot be obtained for received IDoc tree`	During configuration ensure that you are downloading the class descriptions.
AER3-000126	R3-CORE-LIB-6094	Error	C	`%1 is not of a sequence type`	The named sequence does not have a valid definition. Check the configuration.
AER3-000127	R3-CORE-LIB-6095	Error	C	`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	R3-CORE-LIB-6096	Error	C	`Sequence %1 for the segment holder could not be obtained`	Check configuration and make sure that a valid definition exists for the named sequence.
AER3-000129	R3-CORE-LIB-6097	Error	C	`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	R3-CORE-LIB-6098	Error	C	`Cannot obtain field class description for IDoc Segment`	Check configuration.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000131	R3-CORE-LIB-6099	Error	AD	`Cannot get EDIDD header attribute from the fields for segment %1`	Check the data. It must include the EDIDD header.
AER3-000132	R3-CORE-LIB-6100	Error	C	`Cannot obtain class description for segment %1 attribute %2`	Check the segment name as well as the attribute and make sure that a definition exists in the configuration.
AER3-000133	R3-CORE-LIB-6101	INFO	AD	`The segment instance %1 does not contain attribute %2`	Indicates normal adapter operation. No action necessary.
AER3-000134	R3-CORE-LIB-6102	INFO	AD	`The default values will be used`	Indicates normal adapter operation. No action necessary.
AER3-000135	R3-CORE-LIB-6103	INFO	AD	`Segment name: %1 added`	Indicates normal adapter operation. No action necessary.
AER3-000136	R3-CORE-LIB-6104	Error	AD	`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.
AER3-000137	R3-CORE-LIB-6105	Error	C	`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.
AER3-000138	R3-CORE-LIB-6106	INFO	AD	`The %1 record does not contain attribute %2`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000139	R3-CORE-LIB-6107	INFO	AD	`trying to recover the received message ...`	Indicates normal adapter operation. No action necessary.
AER3-000140	R3-CORE-LIB-6108	INFO	AD	`Subscriber: %1, Exception occurred on receiving the message`	Indicates normal adapter operation. No action necessary.
AER3-000141	R3-CORE-LIB-6109	Error	AD	`Subscriber: %1, the message could not be recovered`	Indicates normal adapter operation. No action necessary.
AER3-000142	R3-CORE-LIB-6110	INFO	AD	`Subscriber: %1, The 10X Opaque message type is not supported`	Indicates normal adapter operation. No action necessary.
AER3-000143	R3-CORE-LIB-6111	INFO	AD	`the received message was recovered`	Indicates normal adapter operation. No action necessary.
AER3-000144	R3-CORE-LIB-6112	INFO	AD	`The IDoc message received in 10X format does not contain %1field`	Indicates normal adapter operation. No action necessary.
AER3-000145	R3-CORE-LIB-6113	Error	C	`The class descriptions for IDoc base classes cannot be obtained from the registry`	During configuration ensure that you've downloaded the class definition.
AER3-000146	R3-CORE-LIB-6114	INFO	AD	`Function called transactionally but Transaction Identifier (TID) not supplied`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000147	R3-CORE-LIB-6115	Error	S	`Could not open file %1 for writing`	File could not be opened. Check permissions and whether you've adequate space on your disk.
AER3-000148	R3-CORE-LIB-6116	Error	AD	`CIDocIterator: The IDoc container does not contain any IDocs`	Check the log file for any previous errors that may have led to this situation.
AER3-000149	R3-CORE-LIB-6117	Error	AD	`The IDoc %1 does not contain %2`	The IDoc does not contain a data record section. Check the IDoc data.
AER3-000150	R3-CORE-LIB-6118	Error	AD	`No control record instance for the %1 IDoc in the packet`	The named IDoc does not have a control record. Check the data.
AER3-000151	R3-CORE-LIB-6119	Error	AD	`No data record instance for the %1 IDoc in the packet`	The IDoc does not contain a data record section. Check the data.
AER3-000152	R3-CORE-LIB-6120	Error	AD	`%1 record of the data record instance does not contain mandatory attribute DOCNUM`	DOCNUM is a mandatory attribute for data record. Check the data and modify it to include DOCNUM.
AER3-000153	R3-CORE-LIB-6121	INFO	AD	`%1 row of the data record instance of the %2 IDoc instance of type %3 could not be obtained`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000154	R3-CORE-LIB-6122	Error	S	`The IDoc instance could not be written to file, the instance is invalid`	The Instance could not be written because it was empty. Check the IDoc data.
AER3-000155	R3-CORE-LIB-6123	Error	AD	`The IDoc does not contain a data record`	The IDoc does not contain a data record section. Check the IDoc data.
AER3-000156	R3-CORE-LIB-6124	INFO	AD	`Writing IDoc %1, Number %2 to file: %3`	Indicates normal adapter operation. No action necessary.
AER3-000157	R3-CORE-LIB-6125	INFO	AD	`Invocation for RFC function %1 still pending`	Indicates normal adapter operation. No action necessary.
AER3-000158	R3-CORE-LIB-6126	INFO	AD	`Adapters initialization mode:%1`	Indicates normal adapter operation. No action necessary.
AER3-000159	R3-CORE-LIB-6127	WARN	AD	`Cannot find communication client for TIDManager, TID Management will be local`	The configuration does not specify the rpcClient for TIDManager, hence the TID management will be local.
AER3-000160	R3-CORE-LIB-6128	INFO	AD	`Connection: waiting for reply from server ...`	Indicates normal adapter operation. No action necessary.
AER3-000161	R3-CORE-LIB-6129	INFO	AD	`No component for the RFC call; Exception=%1`	Indicates normal adapter operation. No action necessary.
AER3-000162	R3-CORE-LIB-6130	INFO	AD	`Active connection is null`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000163	R3-CORE-LIB-6131	INFO	AD	`Checking for connections`	Indicates normal adapter operation. No action necessary.
AER3-000164	R3-CORE-LIB-6132	INFO	AD	`Connection disconnected`	Indicates normal adapter operation. No action necessary.
AER3-000165	R3-CORE-LIB-6133	INFO	AD	`Connection re-established`	Indicates normal adapter operation. No action necessary.
AER3-000166	R3-CORE-LIB-6134	INFO	AD	`Connection State: Available`	Indicates normal adapter operation. No action necessary.
AER3-000167	R3-CORE-LIB-6135	INFO	AD	`Connection State: Pending invocation`	Indicates normal adapter operation. No action necessary.
AER3-000168	--NEW--	INFO	AD	`%1 connection could not be removed`	Indicates normal adapter operation. No action necessary.
AER3-000169	R3-CORE-LIB-6136	WARN	AD	`Subscriber %1 could not be suspended`	The named subscriber could not be suspended. No action necessary.
AER3-000170	R3-CORE-LIB-6137	WARN	AD	`Stop Adapter: Correct consumer reference could not be obtained from deployment description %1, skipping...`	The configuration did not specify consumerRef. No action necessary.
AER3-000171	R3-CORE-LIB-6138	INFO	AD	`Adapter is waiting for invocation response before shutdown can proceed...`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000172	R3-CORE-LIB-6139	INFO	AD	`Adapter stop method called`	Indicates normal adapter operation. No action necessary.
AER3-000173	R3-CORE-LIB-6141	INFO	AD	`Subscriber %1 suspended`	Indicates normal adapter operation. No action necessary.
AER3-000174	R3-CORE-LIB-6142	INFO	AD	`Connection Manager %1 stopped`	Indicates normal adapter operation. No action necessary.
AER3-000175	R3-CORE-LIB-6143	INFO	AD	`Component %1 stopped`	Indicates normal adapter operation. No action necessary.
AER3-000176	R3-CORE-LIB-6144	INFO	AD	`Deactivating stop scheduler`	Indicates normal adapter operation. No action necessary.
AER3-000177	R3-CORE-LIB-6145	INFO	AD	`Stopping Adapter %1 instance on host %2`	Indicates normal adapter operation. No action necessary.
AER3-000178	R3-CORE-LIB-6146	INFO	AD	`Stop notification received via TIBCO RV`	Indicates normal adapter operation. No action necessary.
AER3-000179	R3-CORE-LIB-6147	Error	AD	`Remote Exception: Exception Name: %1, Exception Data: %2`	See the error description for details.
AER3-000180	R3-CORE-RVD-9000	WARN	AD	`ADV_CLASS/ADV_SOURCE/ADV_NAME: %1, ADV_DESC : %2 %3`	See the error description for more details.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000181	R3-CORE-RVD-9001	Error	AD	`ADV_CLASS/ADV_SOURCE/ADV_NAME: %1, ADV_DESC : %2 %3`	The adapter responds 'license expiry' warning from the daemon with this message.
AER3-000182	R3-CORE-RVD-9002	Error	AD	`ADV_CLASS : %1, ADV_SOURCE : %2, ADV_NAME : %3`	The adapter responds 'registration collision' error from the daemon with this message.
AER3-000183	R3-CORE-SAP-4000	Error	AP	`RFC error; Group : %1, Key : %2, Message : %3`	Look at the error description for details about the SAP Exception. Also check your connection parameters.
AER3-000184	R3-CORE-SAP-4001	Error	AP	`RFC connection invalid for %1`	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	R3-CORE-SAP-4002	Error	AP	`CallReceive failed for operation %1; exception : %2, RFC error; Group/Key/Message: %3`	Look at the error description for details about the SAP Exception.
AER3-000186	R3-CORE-SAP-4003	INFO	AP	`Transaction %1 skipped`	The Adapter did not execute this transaction because it was already executed.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000187	R3-CORE-SAP-4004	WARN	AP	`Invalid transaction state received from TIDManager for transaction %1`	The Adapter received an invalid stated from TIDManager. Check the tidmanager display for possible causes.
AER3-000188	R3-CORE-SAP-4005	WARN	AD	`Failed to %1 Tid`	The Adapter could not perform the named TID/Manager function. Check the TID/Manager display for possible causes.
AER3-000189	R3-CORE-SAP-4007	Error	AP	`RFC function initialization error for function %1; RFC Error; Group/Key/Message : %2`	Look at the error description for details about the SAP Exception.
AER3-000190	R3-CORE-SAP-4008	WARN	AD	`RFC remote function %1 implementation exception %2`	Look at the error description for details about the SAP Exception.
AER3-000191	R3-CORE-SAP-4009	Error	AP	`Indirect call error while sending IDoc; RFC Error; Group : %1, Key : %2, Message : %3`	Look at the error description for details about the SAP Exception.
AER3-000192	R3-CORE-SAP-4010	Error	AP	`RFC error; Group : %1, Key : %2, Message : %3, Attempt to connect timed out`	See the error description for details.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000193	R3-CORE-SAP-4011	Error	AD	`Connection not available for client %1, retrying ...`	See the error description for details.
AER3-000194	R3-CORE-SAP-4012	INFO	AD	`Invalid RFC client connection object for client %1`	Indicates normal adapter operation. No action necessary.
AER3-000195	R3-CORE-SAP-4013	INFO	AD	`Transaction created %1`	Indicates normal adapter operation. No action necessary.
AER3-000196	R3-CORE-SAP-4014	INFO	AD	`Transaction skipped %1`	Indicates normal adapter operation. No action necessary.
AER3-000197	R3-CORE-SAP-4015	INFO	AD	`Transaction committed %1`	Indicates normal adapter operation. No action necessary.
AER3-000198	R3-CORE-SAP-4016	INFO	AD	`Transaction confirmed %1`	Indicates normal adapter operation. No action necessary.
AER3-000199	R3-CORE-SAP-4017	INFO	AD	`Transaction rolled back %1`	Indicates normal adapter operation. No action necessary.
AER3-000200	R3-CORE-SAP-4018	Error	AD	`Failed to update state for transaction %1. Ensure that the user has write permissions for tidFile.tid`	Look at the earlier error messages in the log-file(s) for possible causes. One of the reasons for this error could be that, you do not have write permissions for the `tidFile.tid`.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000201	R3-CORE-SAP-4019	INFO	AD	`Starting Inbound transaction %1`	Indicates normal adapter operation. No action necessary.
AER3-000202	R3-CORE-SAP-4020	INFO	AD	`Inbound transaction %1 completed`	Indicates normal adapter operation. No action necessary.
AER3-000203	R3-CORE-SCH-5000	Error	C	`No class definition exists for %1`	The named class is invalid or does not exist. Check the repository to make sure that a valid class exists with that name.
AER3-000204	R3-CORE-SCH-5001	Error	C	`%1 is not a modeled class`	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	R3-CORE-SCH-5002	Error	C	`No operations defined in class %1`	Modify the class definition to include operations.
AER3-000206	R3-CORE-SCH-5003	Error	C	`The operation %1 does not have any parameters`	Modify the class definition to include parameters.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000207	R3-CORE-SCH-5004	Error	C	`The class %1 does not specify attribute %2`	The attribute is invalid for the named class. Check the repository. Re-create the class definition (if you suspect it has been incorrectly created) or modify the class definition to include the named attribute.
AER3-000208	R3-CORE-SCH-5005	Error	C	`Operation description not available for %1`	The named operation is invalid or non-existent. Check the repository to make sure that an operation exists with the specified name.
AER3-000209	R3-CORE-SCH-5006	Error	C	`No IDoc operations defined in class %1`	The named class does not have IDoc operations defined. Check the repository to make sure that the class definition is correct.
AER3-000210	R3-CORE-SCH-5008	Error	C	`Attribute %1 in class %2 is invalid`	Check the configuration.
AER3-000211	R3-CORE-SCH-5009	Error	AD	`Unsupported type %1 for attribute %2 in class %3`	The named type is unsupported by SDK or SAP or both.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000212	R3-CORE-SCH-5010	Error	AD	`Unexpected %1 : %2; inform technical support`	Unexpected error. You cannot determine the cause from the description. Contact technical support: support@tibco.com.
AER3-000213	R3-CORE-SCH-5011	WARN	C	`Control field replacements specify an attribute %1 which does not exist in the control record`	Control field replacements in classInstances specify an attribute that does not exist in control record. Check spelling.
AER3-000214	R3-CORE-SDK-2000	Error	AD	`Cannot access class registry`	You specified an attribute that does not exist in the control record. Either omit that attribute or replace it with an attribute that exists.
AER3-000215	R3-CORE-SDK-2001	Error	AD	`Subscriber %1 received a message that has invalid wire format`	There was an exception in the Adapter upon receive of this message.
AER3-000261	--NEW--	INFO	AD	`Using ini file %1`	Indicates normal adapter operation. No action necessary.
AER3-000262	--NEW--	INFO	AD	`No program ID defined in the ini file, using destination %1 as program ID`	Indicates normal adapter operation. No action necessary.
AER3-000263	--NEW--	INFO	AD	`Using Logon Groups`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000264	--NEW--	INFO	AD	`Using a dedicated connection`	Indicates normal adapter operation. No action necessary.
AER3-000265	--NEW--	INFO	AD	`Creating a Server connection`	Indicates normal adapter operation. No action necessary.
AER3-000266	--NEW--	INFO	AD	`Initialized successfully`	Indicates normal adapter operation. No action necessary.
AER3-000267	--NEW--	INFO	AD	`CREATED %1`	Indicates normal adapter operation. No action necessary.
AER3-000268	--NEW--	INFO	AD	`EXECUTED %1`	Indicates normal adapter operation. No action necessary.
AER3-000269	--NEW--	INFO	AD	`CONFIRMED %1`	Indicates normal adapter operation. No action necessary.
AER3-000270	--NEW--	Error	AD	`Invalid client function specified in removeClient call`	Because this message appears during shutdown, no action is necessary.
AER3-000271	--NEW--	Error	C	`Invalid poolRef name %1`	poolRef must point to a valid pool definition.
AER3-000272	--NEW--	Error	C	`Pool reference not provided in Server Component`	Provide a value that corresponds to a valid definition.
AER3-000273	--NEW--	Error	AD	`Invalid Connection for pool %1`	Check the pool definitions to ensure that they are valid.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000274	--NEW--	Error	AD	`Invalid default Connection for pool %1`	Check the pool definitions to ensure that they are valid.
AER3-000275	--NEW--	Error	C	`No default session defined`	The configuration must either specify a valid value for start up/default session or define at least one rvSession/rvCmSession.
AER3-000276	--NEW--	Error	AD	`Duplicate DEST parameter defined in %1 : %2`	Remove duplicate definition.
AER3-000277	--NEW--	Error	AD	`Destination %1 not defined in %2`	Define destination given in message.
AER3-000278	--NEW--	INFO	AD	`Received message is written to file %1`	Indicates normal adapter operation. No action necessary.
AER3-000279	--NEW--	Error	AD	`Exception while initializing adapter; exception type : %1, description : %2`	Refer to the description and take the required action.
AER3-000280	--NEW--	Error	AD	`Error: Could not send reply for function: %1`	Refer to the accompanying error messages for additional details.
AER3-000281	--NEW--	Error	AD	`Error while invoking User-defined operation: %1`	Refer to the accompanying error messages for additional details.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000282	--NEW--	Error	AD	`Receive reply failed for: %1`	Refer to the accompanying error messages for additional details.
AER3-000283	--NEW--	Error	AD	`Exception during one way invocation of function: %1, Type: %2, Description: %3`	Refer to the accompanying error messages for additional details.
AER3-000284	--NEW--	INFO	AD	`Request written to file: %1 for operation: %2`	Indicates normal adapter operation. No action necessary.
AER3-000285	--NEW--	Error	AD	`Error code: %1, Message: %2`	Refer to the description and take the required action.
AER3-000286	--NEW--	INFO	C	`'userExit' class does not exist or it does not contain operation %1, operation will not be invoked`	Indicates normal adapter operation. No action necessary.
AER3-000287	--NEW--	INFO	C	`There is no RpcClient named: %1, operation will not be invoked`	Indicates normal adapter operation. No action necessary.
AER3-000288	--NEW--	INFO	AD	`Untransformed IDoc data sent`	Indicates normal adapter operation. No action necessary.
AER3-000289	--NEW--	INFO	AD	`Performing asynchronous invocation for User-defined function: %1`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000290	--NEW--	WARN	C	`No R/3 client configured for %1, using default-client %2`	There is no deployment-descriptio n configured for the RFC. If not intentional, ensure that the client is specified in the deployment-descriptio ns for the RFC.
AER3-000291	--NEW--	INFO	AD	`Received request for logon to SAP R/3 System`	Indicates normal adapter operation. No action necessary.
AER3-000292	--NEW--	INFO	AD	`Successfully logged-on to SAP R/3 System`	Indicates normal adapter operation. No action necessary.
AER3-000293	--NEW--	INFO	AD	`Received request for logoff from SAP R/3 System`	Indicates normal adapter operation. No action necessary.
AER3-000294	--NEW--	INFO	AD	`Successfully logged-off from SAP R/3 System`	Indicates normal adapter operation. No action necessary.
AER3-000295	--NEW--	Error	AD	`No session id exists in the logoff request`	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

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000296	--NEW--	Error	AD	`No logon session exists for the session ID`	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	--NEW--	INFO	M	`Created discovery subscriber successfully using subject %1`	Indicates normal adapter operation. No action necessary.
AER3-000301	--NEW--	INFO	M	`Attempting to create dynamic connection to SAP R/3 system`	Indicates normal adapter operation. No action necessary.
AER3-000302	--NEW--	INFO	M	`Attempting to close dynamic connection from SAP R/3 system`	Indicates normal adapter operation. No action necessary.
AER3-000303	--NEW--	INFO	M	`Retrieving list of function modules from SAP R/3 system`	Indicates normal adapter operation. No action necessary.
AER3-000304	--NEW--	INFO	M	`Retrieving schema for IDoc %1 FROM SAP R/3 system`	Indicates normal adapter operation. No action necessary.
AER3-000305	--NEW--	INFO	M	`Retrieving entries for table %1 FROM SAP R/3 system`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000306	--NEW--	INFO	M	`Retrieving schema for structure/table %1 FROM SAP R/3 system`	Indicates normal adapter operation. No action necessary.
AER3-000307	-NEW--	INFO	M	`Received unknown operation %1`	TIBCO Designer sent an invalid request to the design-time adapter. If problem persists contact technical support: support@tibco.com
AER3-000308	-NEW--	INFO	M	`Metadata adapter operation failure:%1; operation name : %2`	Refer to the surrounding error messages for additional details.
AER3-000309	-NEW--	INFO	M	`Retrieving schema for RFC/BAPI %1 from SAP R/3 system`	Indicates normal adapter operation. No action necessary.
AER3-000310	-NEW--	ERROR	AD	`Received Error Advisory Message: %1, Subject: %2`	This is an error advisory thrown by a TIBCO Infrastructure component. The message %1 is context-sensitive. Report the error to TIBCO Support.
AER3-000400	--NEW--	INFO	AD	`Invalid connection detected. Message : %`	Indicates normal adapter operation. No action necessary.
AER3-000401	--NEW--	INFO	AD	`%1 RFCServers registered with SAP R/3 system with program-id %2 on GatewayHost %3`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000402	--NEW--	Error	AD	`No session id in request for operation %1`	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	--NEW--	Error	AD	`Unable to obtain context for implementation of operation %1`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000405	--NEW--	Error	AD	`Invalid session id passed in request for operation %1`	The `sessionID` should be a valid string.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000406	--NEW--	Error	AD	`Invalid session id passed for operation %1`	If the sessionID was obtained after logging-on to the SAP system, ensure that the sessionID passed in the RFCCLOSURE 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	--NEW--	Error	AD	`Invalid call received, connection closed for thread`	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.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000408	--NEW--	Error	AD	`Server thread unable to dispatch call, call skipped. message : %1`	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	--NEW--	Error	AD	`Server thread unable to dispatch call, connection invalidated`	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	--NEW--	WARN	AD	`Server thread exited, message : %1`	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	--NEW--	Error	C	`No poolRef specified for operation %1`	The RFC does not have a 'poolRef' attribute in its deployment description. Ensure that a valid 'poolRef' is specified for the RFC.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000412	--NEW--	INFO	AD	`Obtaining connection for R/3 client %1 for %2`	Indicates normal adapter operation. No action necessary.
AER3-000413	--NEW--	Error	AD	`The session for commit/rollback timed out for operation %1`	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	--NEW--	INFO	C	`No session timeout specified for commit/rollback for operation %1, defaulting to %2 seconds...`	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	--NEW--	INFO	AD	`Session timeout for commit/rollback for operation %1 set to %2 seconds`	Indicates normal adapter operation. No action necessary.
AER3-000417	--NEW--	INFO	AD	`Connection pending commit for operation %1`	Indicates normal adapter operation. No action necessary.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000418	--NEW--	Error	AD	`Invalid client specified : %1`	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	--NEW--	INFO	AD	`Created new thread for RFCServer`	Indicates normal adapter operation. No action necessary.
AER3-000420	--NEW--	INFO	AD	`Server thread(s) stopped for Component %1`	Indicates normal adapter operation. No action necessary.
AER3-000421	--NEW--	Error	AD	`No valid connection handle available for server for operation %1`	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	--NEW--	Error	C	`No client specified in deployment description for operation %1`	Ensure that a client is configured for the operation
AER3-000423	--NEW--	Error	C	`No poolRef specified for operation %1`	Ensure that a poolRef is specified for the operation
AER3-000424	--NEW--	Error	C	`No default client specified for operation %1`	Ensure that a defaultClient is specified for the operation

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000425	--NEW--	Error	C	`Invalid poolRef specified in deployment : %1`	Ensure that a valid poolRef is specified in the deployment description for the RFC/IDoc
AER3-000426	--NEW--	INFO	AD	`Thread monitor started for %1 server thread(s)`	Indicates normal adapter operation. No action necessary.
AER3-000427	--NEW--	Error	AD	`No active connections available in configuration, exiting...`	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.
AER3-000428	--NEW--	WARN	C	`Interface %1 does not contain deployment description for RFCs... continuing...`	The adapter could not find deployment descriptions for any RFC. If it is not intentional, ensure that the RFC configuration is correct.
AER3-000429	--NEW--	WARN	C	`No deployment description available for idoc %1...using default…`	The adapter could not find deployment descriptions for the specified IDoc. If it is not intentional, ensure that the IDoc configuration is correct.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000430	--NEW--	INFO	AD	`Total requests processed : %1`	Indicates normal adapter operation. No action necessary.
AER3-000431	--NEW--	Error	AD	`Unable to create marshaller for operation %1`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000432	--NEW--	Error	AD	`Unable to clone proxy for operation %1`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000433	--NEW--	Error	AD	`Unable to clone RFC client for %1`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000434	--NEW--	Error	AD	`Unable to clone function implementation for operation %1`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000435	--NEW--	Error	AD	`Unable to create listener for call-operation`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000436	--NEW--	Error	AD	`Unable to create reply listener for operation %1`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000437	--NEW--	Error	AD	`Unable to clone subscriber implementation`	Look at earlier error messages in the log-file(s) for possible causes.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000438	--NEW--	Error	AD	`Unable to generate transaction-id. message : %1`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000439	--NEW--	Error	AD	`Unable to create implementation for thread`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000440	--NEW--	Error	AD	`Unable to create server thread`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000441	--NEW--	INFO	C	`TID management is remote`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000442	--NEW--	Error	AD	`Connection context lost. Operation %1 failed`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000443	--NEW--	Error	AD	`Logon to SAP R/3 system failed. message : %1`	Look at earlier error messages in the log-file(s) for possible causes.
AER3-000444	--NEW--	Error	AD	`Error writing to TID file for transaction %1`	Ensure that the TID file has write permissions.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000446	--NEW--	Error	AD	`No active connections in connection-pool %1. All retry attempts exhausted. Connections for this pool deactivated.`	Ensure that the SAP system pointed to by the connection-pool %1 is up and running.
AER3-000447	--NEW--	Error	AD	`No active connections in connection-pool %1. All retry attempts exhausted. Exiting...`	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.
AER3-000448	--NEW--	INFO	AD	`Suspended endpoint component %1`	None.
AER3-000449	--NEW--	INFO	AD	`The Application Manager has been flagged to restart on re-establishing connection to R/3.`	None.
AER3-000450	--NEW--	INFO	AD	`Created timer to check connectivity to R/3.`	None.

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000451	--NEW--	WARN	AD	`Adapter application will restart now`	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	--NEW--	INFO	AD	`Adapter application %1 is restarting on host %2.`	None.
AER3-000453	--NEW--	WARN	C	`Invalid control-field replacement attribute %1 skipped.`	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	--NEW--	INFO	AD	`Performing oneway invocation for User-defined function: %1`	None.
AER3-000455	--NEW--	Error	C	`No class description available for explode sequence %1`	Check the repository under `/tibco/public/adapter/SAPAdapter40/<sap version>/IDOCS/` for the class description for class `%1.`

Table 25 Error Messages with Changed Codes

New Message Code	Old Message Code	Severity	Cat.	Description	Resolution
AER3-000456	--NEW--	Error	C	`No attribute description for explode sequence %1`	Check the repository for attribute description for explode sequence %1.
AER3-000457	--NEW--	Error	AD	`Operation %1 requires external logon. The request does not contain sessionID in the closure data.`	Supply the session-id parameter in the RFCCLOSURE data of the incoming request.
AER3-000500	--NEW--	WARN	AD	`Unsupported datatype: class %1. Parameter: %2`	This datatype is not supported.
AER3-000461	--NEW--	Error	AD	Connection Error. Unable to create a connection with the target application %1 using connection parameters %2 and the target application error is %3	Ensure that valid connection parameters have been specified and that the SAP server is not down.

Index

A

C

D

E

F

G

H

I

L

M

O

P

R

S

T

U