

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

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

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Product-Specific Documentation

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

`TIBCO_HOME/release_notes/TIB_bwpluginamqp_version_docinfo.html`

where `TIBCO_HOME` is the top-level directory in which TIBCO products are installed.

On Windows, the default `TIBCO_HOME` is `C:\Program Files\tibco\bw6`.

On UNIX systems, the default `TIBCO_HOME` is `/opt/tibco/bw6`.

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

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

The following documents provide additional information and can be found in the TIBCO Documentation Library:

- TIBCO ActiveMatrix BusinessWorks documentation
- *TIBCO Enterprise Administrator User's Guide*

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

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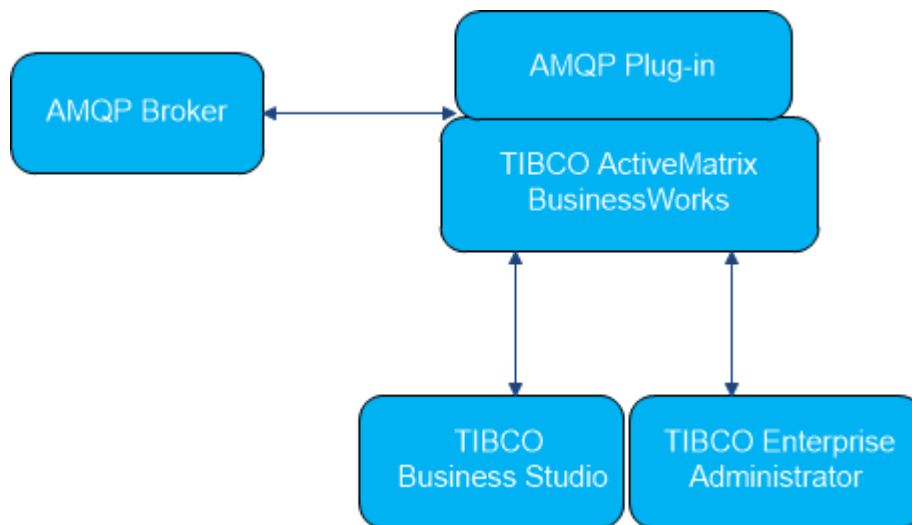
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Product Overview

Advanced Message Queuing Protocol (AMQP) is an open standard for passing business messages between applications or organizations. This protocol is used to connect systems, provide business processes with the information they require, and reliably transmit instructions to achieve the goals of applications.

By using this plug-in, you can send messages to or receive messages from an AMQP broker queue. In addition, you can also use this plug-in to subscribe to messages from an AMQP broker queue.

The following figure describes the relationship among an AMQP broker, TIBCO ActiveMatrix BusinessWorks™ Plug-in for AMQP, and TIBCO ActiveMatrix BusinessWorks™.



The following list describes each item and the relationship between them in the previous figure.

- The AMQP broker is a server. You can use TIBCO ActiveMatrix BusinessWorks Plug-in for AMQP to communicate with the AMQP broker.
- TIBCO ActiveMatrix BusinessWorks Plug-in for AMQP plugs into TIBCO ActiveMatrix BusinessWorks and is connected to an AMQP broker.
- TIBCO ActiveMatrix BusinessWorks is an easy-to-use integration product suite for enterprise applications.
- TIBCO Business Studio™ consists of a graphical user interface (GUI) used by TIBCO ActiveMatrix BusinessWorks with the plug-ins to design business processes, and the process engine used to execute those processes.
- TIBCO® Enterprise Administrator provides a centralized administrative interface to manage and monitor the plug-in applications deployed in an enterprise.

Getting Started

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

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

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

1. [Creating a Project](#)
2. [Creating an AMQP Connection](#)
3. [Configuring a Process](#)
4. [Testing a Process](#)
5. [Deploying an Application](#)

Creating a Project

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

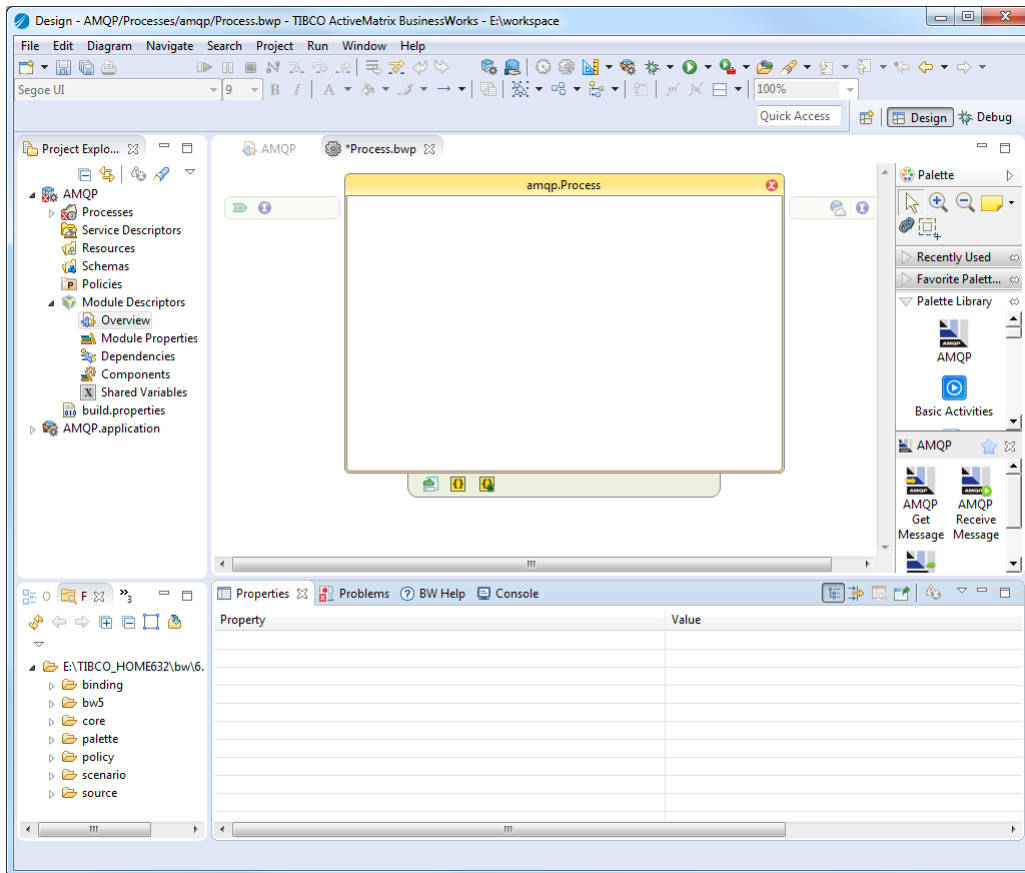
An Eclipse project is an application module configured for TIBCO ActiveMatrix BusinessWorks. An application module is the smallest unit of resources that is named, versioned, and packaged as part of an application.

Procedure

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

Result

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



Creating an AMQP Connection

After creating a project, you have to create an AMQP Connection shared resource to create a connection between the plug-in and the AMQP server. With this shared resource, you can share the AMQP connection at runtime between different AMQP activities within a process.

Prerequisites

The AMQP Connection shared resource is available at the **Resources** level. Ensure that you have created a project, as described in [Creating a Project](#).

Procedure

1. Expand the created project in the Project Explorer view.
2. Right-click the **Resources** folder and click **New > AMQP Connection** to open the AMQP Connection wizard.
3. The resource folder, package name, and resource name of the AMQP connection are provided by default. If you do not want to use the default configurations, change them accordingly. Click **Finish** to open the AMQP Connection editor.
4. Configure the AMQP Connection shared resource in the AMQP Connection editor.
See [AMQP Connection](#) regarding the configuration fields.
5. Click **Test Connection** to validate the connection.

Configuring a Process

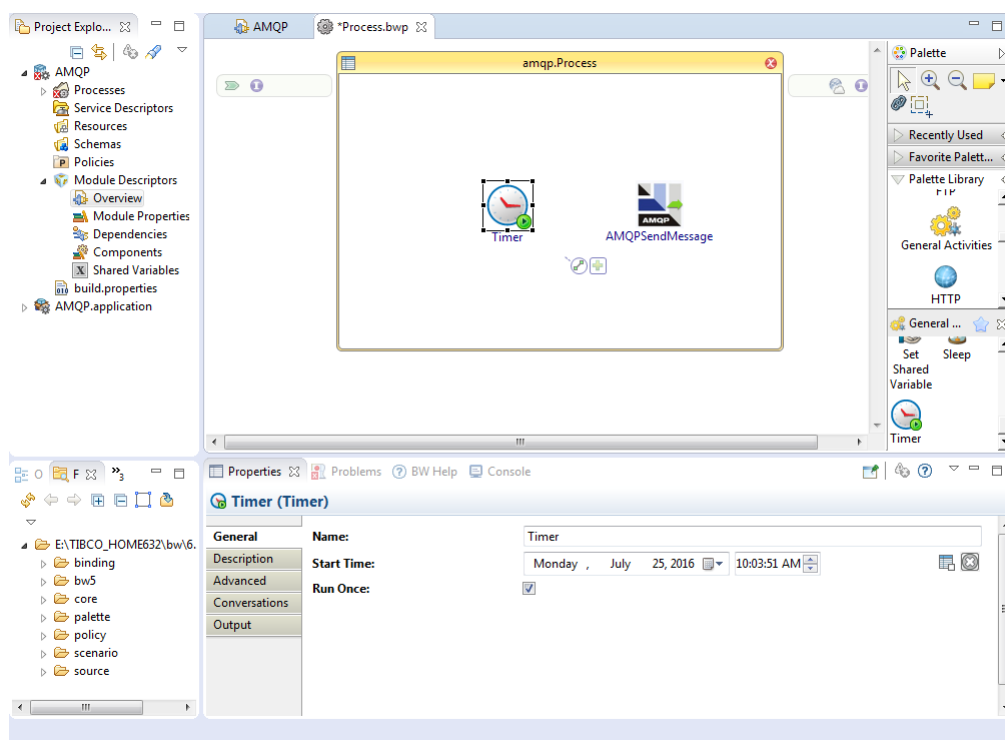
After creating a project, an empty process is created. You can add activities to the empty process to complete a task, such as sending a message.


Prerequisites

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

Procedure

1. In the Project Explorer view, click the created project and open the empty process from the **Processes** folder.
2. Select activities from the Palette view and drop them in the Process editor.
For example, select and drop the Timer activity from the General Activities palette, and the AMQPSendMessage activity from the AMQP palette.



3. Drag the  icon to create a transition between the added activities.
4. Configure the added AMQP activity, as described in [AMQP Palette](#).



An AMQP connection is required when configuring the AMQP activities. See [Creating an AMQP Connection](#) for more details on how to create an AMQP connection.

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


Testing a Process

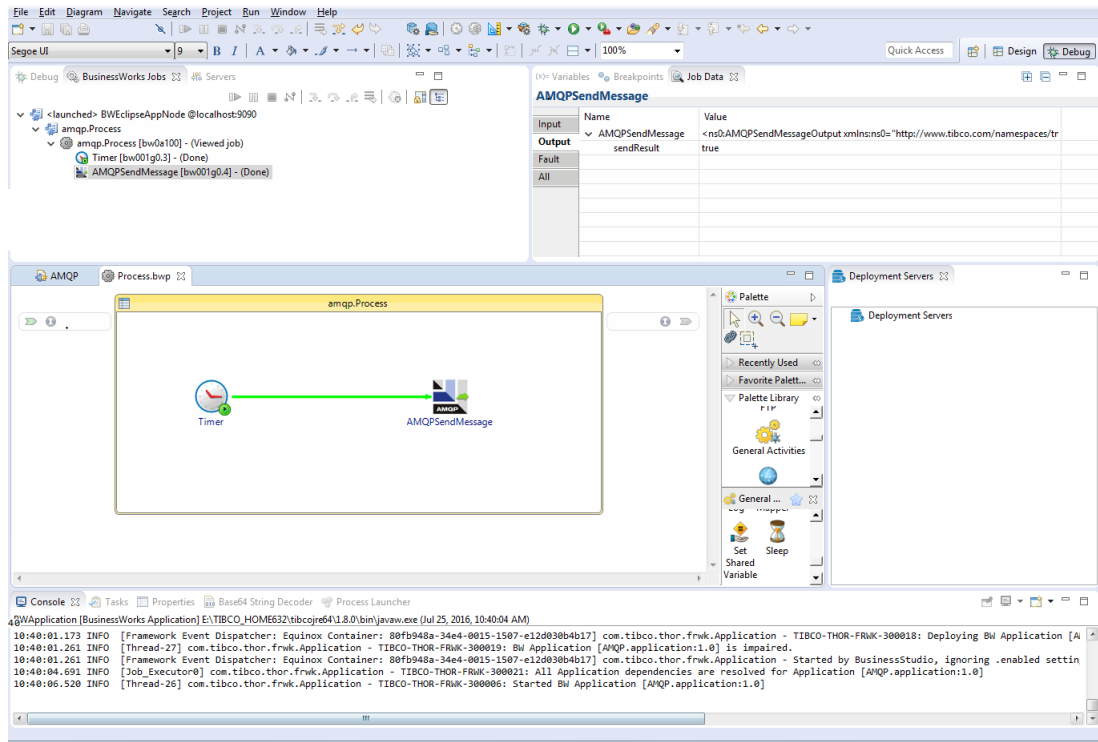
After configuring a process, you can test the process to check whether the process completes your task.

Prerequisites

Ensure that you have configured a process, as described in [Configuring a Process](#).

Procedure

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



Deploying an Application

After testing, if the configured process works as expected, you can deploy the application that contains the configured process into a runtime environment, and then use the **bwadmin** utility to manage the deployed application.

Before deploying an application, you must generate an application archive, which is an enterprise archive (EAR) file that is created in TIBCO Business Studio. See [TIBCO Business Studio Overview](#) to get familiar with TIBCO Business Studio.

Deploying an application involves the following tasks:

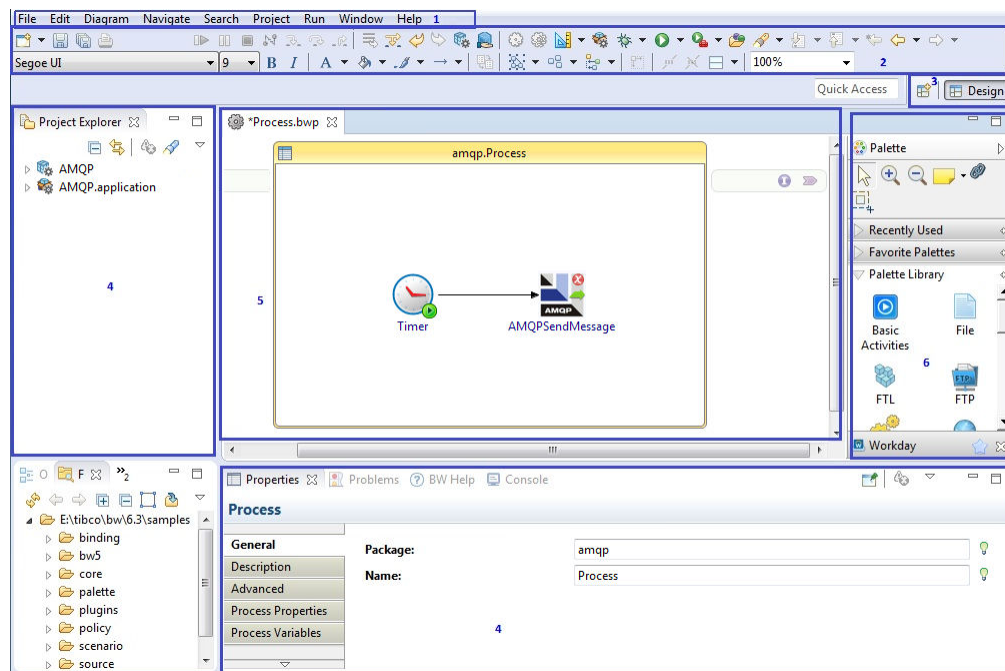
1. Uploading an application archive
2. Deploying an application archive
3. Starting an application

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








TIBCO Business Studio Overview

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

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



The workbench consists of:

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

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

AMQP Connection

The AMQP Connection shared resource contains all the necessary parameters that have to be configured when you use TIBCO ActiveMatrix BusinessWorks Plug-in for AMQP to connect to the AMQP server. The AMQP Connection shared resource is used by all the activities in the AMQP palette.


General




The following table lists the fields in the General panel:

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

AMQP Connection Resource Configuration

The following table lists the fields in the AMQP Connection Resource Configuration panel:

Field	Module Property?	Description
BrokerType	No	Specifies which broker is used for the connection. Available brokers are listed as follows: <ul style="list-style-type: none"> • Qpid-1-0 • RabbitMQ-0-9 • ActiveMQ-1-0 The default broker is Qpid-1-0 .
HostPort	Yes	The host name or IP address.
VirtualHost	Yes	The virtual host that specifies the namespace for entities, such as exchanges and queues. <div>  <p>This field is available only when Qpid-1-0 or RabbitMQ-0-9 is selected from the Broker Type list.</p> </div>
Username	Yes	The user name that you use to get access to the AMQP server.
Password	Yes	The password that you use to get access to the AMQP server.

Field	Module Property?	Description
ConnectionTimeout(msec)	Yes	Specifies how long in milliseconds the connection remains active if no action is performed. The default value is 3000.
Connection Recovery	No	If this check box is selected, the connection between the plug-in and the RabbitMQ server is automatically recovered after the connection is interrupted.
Retry Interval (msec)	Yes	Specifies the time period in milliseconds between successive attempts made to establish an interrupted connection again. The default value is 6000.  This field is available only when ActiveMQ-1-0 or Qpid-1-0 is selected from the Broker Type list and the Connection Recovery check box is selected.
Retry Attempts	Yes	Specifies the times to attempt to establish a connection after the connection was interrupted. The default value is 6000.  This field is available only when ActiveMQ-1-0 or Qpid-1-0 is selected from the Broker Type list and the Connection Recovery check box is selected.
NetworkRecoveryInterval(msec)	Yes	Specifies the time period in milliseconds between successive attempts made to establish an interrupted connection again. The default value is 6000.  This field is available only when RabbitMQ-0-9 is selected from the Broker Type list and the Connection Recovery check box is selected.
Test Connection	No	Click this button to validate the connection.

SSL

The following table lists the fields in the SSL panel:

Field	Module Property?	Description
Confidentiality	No	<p>If you want to choose an existing SSL Client shared resource or create one, select this check box. This shared resource contains specified SSL information for connection to an AMQP broker.</p> <p>See TIBCO ActiveMatrix BusinessWorks documentation for more details.</p>
SSL Client	No	Select an SSL Client shared resource to establish a connection between the plug-in and the specified AMQP broker.

AMQP Palette

A palette groups the activities that connect to the same external applications together. The AMQP palette is added to TIBCO Business Studio after installing TIBCO ActiveMatrix BusinessWorks Plug-in for AMQP.

The AMQP palette contains the following activities:


- [AMQPGetMessage](#)
- [AMQPReceiveMessage](#)
- [AMQPSendMessage](#)


AMQPGetMessage

You can use the AMQPGetMessage activity to retrieve messages from a specified queue.

General

The following table describes the configurations in the **General** tab of the AMQPGetMessage activity.

Field	Module Property?	Description
Name	No	Specifies a name of the activity displayed in the process. The default value is <code>AMQPGetMessage</code> .
Connection	Yes	<p>Click  to select an AMQP Connection shared resource. The AMQP Connection shared resource creates a connection between the plug-in and an AMQP server.</p> <p>If no matching AMQP Connection shared resources are found, click Create Shared Resource to create one. See Creating an AMQP Connection for more details.</p>
Queue Name	Yes	Enter the name for the queue from which the message is received.
Message Type	No	<p>Select one of the following message types:</p> <ul style="list-style-type: none"> • TextMessage: the message is in the String format. • BytesMessage: the message is in the Byte stream format. • Simple: the message does not have message body.


Field	Module Property?	Description
Acknowledge Mode	No	<p>Select one of the following acknowledge modes:</p> <ul style="list-style-type: none"> • Auto: the message is automatically acknowledged when being received. • Client: the message is acknowledged after being received by the Confirm activity. <div>  <p>Ensure that the message can be confirmed when you use the Client mode. If the message is not confirmed before the process instance ends, the message is kept as Unacked status and is still in the queue.</p> </div> <p>The default value is Auto.</p>



Description

In the **Description** tab, you can add a short description for the AMQPGetMessage activity.

Output

The following table describes the output elements in the **Output** tab of the AMQPGetMessage activity.

Output Item	Data Type	Description
UserProperties	Complex	<p>The message header consists of the following user properties:</p> <ul style="list-style-type: none"> • name (a String value): the name of the user property. • type: the property data type. The valid data types include String, Number, and Boolean. • value (a String value): the value of the user property. <div>  <p>If the property data type is Boolean, any other value except for <code>true</code> or <code>True</code> or <code>TRUE</code> is considered false.</p> </div>

Output Item	Data Type	Description
MessageProperties	Complex	<p>The message properties are listed as follows:</p> <ul style="list-style-type: none"> • deliveryMode (a Boolean value): the delivery mode of the messages. If the value is set to <code>true</code>, the messages are stored before forwarding. If the value is set to <code>false</code>, the messages are not stored before forwarding. In this case, if the transmission failed, the messages might be lost. • messageID (a String value): the message ID of the received message. • timestamp (an Integer value): the time when the message is sent to the queue. • expiration (an Integer value): the time of the message remains active (in milliseconds). <div>  <p>For Qpid-1-0 and ActiveMQ-1-0, displays the point in time of the expiration. For RabbitMQ, displays the active time length.</p> </div> <ul style="list-style-type: none"> • priority (an Integer value): the delivery priority of the message. • type (a String value): the event type or command type the message represents.
body	String/Byte	<p>The message body of the received message:</p> <ul style="list-style-type: none"> • If TextMessage is selected from the Message Type list of the General tab, the message is in the String format. • If BytesMessage is selected from the Message Type list of the General tab, the message is in the String format. <div>  <p>If Simple is selected from the Message Type list of the General tab, the body field is unavailable.</p> </div>

Fault

The following table describes the error schema elements in the **Fault** tab of the AMQPGetMessage activity.



Error Schema Element	Description
AMQPPluginException	This error message is displayed when the plug-in captures any exception related to the process of sending a message to an AMQP broker.
AMQPConnectionException	This error message is displayed when any exception about the connection problem occurs in the process of sending a message to an AMQP broker.

AMQPReceiveMessage

You can start a process with the AMQPReceiveMessage activity. The process is triggered when the plug-in receives a message from a specified AMQP broker queue.

General

The following table lists the configurations in the **General** tab of the AMQPReceiveMessage activity.

Field	Module Property?	Description
Name	No	The name of the activity displayed in the process. The default value is AMQPReceiveMessage.
Connection	Yes	<p>Click  to select an AMQP Connection shared resource. The AMQP Connection shared resource creates a connection between the plug-in and an AMQP server.</p> <p>If no matching AMQP Connection shared resources are found, click Create Shared Resource to create one. See Creating an AMQP Connection for more details.</p>
Queue Name	Yes	Enter the name for the queue from which the message is received.
Message Type	No	<p>Select one of the following message types:</p> <ul style="list-style-type: none"> • TextMessage: the message is in the string format. • BytesMessage: the message is in the byte stream format. • Simple: the message does not have message body.
Acknowledge Mode	No	<p>Select one of the following acknowledge modes:</p> <ul style="list-style-type: none"> • Auto: the message is automatically acknowledged when being received. • Client: the message is acknowledged after being received by the Confirm activity. <div>  <p>Ensure that the message can be confirmed when you use the Client mode. If the message is not confirmed before the process instance ends, the message is kept as Unacked status and is still in the queue.</p> </div> <p>The default value is Auto.</p>

Description

In the **Description** tab, you can add a short description for the AMQPReceiveMessage activity.

Advanced

The following table describes the configurations in the **Advanced** tab of the AMQPReceiveMessage activity.


Field	Module Property?	Description
Sequence Key	No	<p>This field contains an XPath expression that specifies the order in which the process runs. Process instances with sequencing keys that have the same value are executed sequentially in the order in which the process instances are created.</p> <p>See the TIBCO ActiveMatrix BusinessWorks documentation for more details.</p>
Custom Job Id	No	<p>This field contains an XPath expression that specifies a custom job ID for every job in the process instance.</p> <p>See the TIBCO ActiveMatrix BusinessWorks documentation for more details.</p>



Conversations

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

Output

The following table describes the output elements in the **Output** tab of the AMQPReceiveMessage activity.

Output Item	Data Type	Description
UserProperties	Complex	<p>The message header consists of the following user properties:</p> <ul style="list-style-type: none"> name (a String value): the name of the user property. type: the property data type. The valid data types include String, Number, Boolean. value (a String value): the value of the user property. <div>  <p>If the property data type is Boolean, any other value except for true or True or TRUE is considered false.</p> </div>

Output Item	Data Type	Description
MessageProperties	Complex	<p>The message properties are listed as follows:</p> <ul style="list-style-type: none"> • deliveryMode (a Boolean value): the delivery mode of the messages. If the value is set to <code>true</code>, the messages are stored before forwarding. If the value is set to <code>false</code>, the messages are not stored before forwarding. In this case, if the transmission failed, the messages might be lost. • messageID (a String value): the message ID of the received message. • timestamp (an Integer value): the time when the message is sent to the queue. • expiration (an Integer value): the time of the message remains active (in milliseconds). <div>  <p>For Qpid-1-0 and ActiveMQ-1-0, displays the point in time of the expiration. For RabbitMQ, displays the active time length.</p> </div> <ul style="list-style-type: none"> • priority (an Integer value): the delivery priority of the message. • type (a String value): the event type or command type the message represents.
body	String/Byte	<p>The message body of the received message:</p> <ul style="list-style-type: none"> • If TextMessage is selected from the Message Type list of the General tab, the message is in the String format. • If BytesMessage is selected from the Message Type list of the General tab, the message is in the String format. <div>  <p>If Simple is selected from the Message Type list of the General tab, the body field is unavailable.</p> </div>






AMQPSendMessage




You can use the AMQPSendMessage activity to send messages to a specified destination.

General

The following table describes the configurations in the **General** tab of the AMQPSendMessage activity.

Field	Module Property?	Description
Name	No	The name of the activity displayed in the process. The default value is AMQPSendMessage.

Field	Module Property?	Description
Connection	Yes	<p>Click  to select an AMQP Connection shared resource. The AMQP Connection shared resource creates a connection between the plug-in and an AMQP server.</p> <p>If no matching AMQP Connection shared resources are found, click Create Shared Resource to create one. See Creating an AMQP Connection for more details.</p>
Protocol Version	No	<p>Select the AMQP protocol version. For this release, AMQP protocol 1.0 (AMQP-1-0) is supported with Qpid-1-0 or ActiveMQ-1-0 broker; and AMQP protocol 0.9 (AMQP-0-9) is supported with RabbitMQ-0-9 broker.</p> <p>The default value is AMQP-1-0.</p>
Queue Name	Yes	<p>Enter the queue name to which the message is published.</p> <p> This field is unavailable when RabbitMQ-0-9 is selected from the BrokerType list of the used AMQP Connection shared resource.</p>
Exchange Type	No	<p>The type of the exchange. The valid types are listed as follows:</p> <ul style="list-style-type: none"> • direct • topic • fanout • headers <p> This field is only available when RabbitMQ-0-9 is selected from the BrokerType list of the used AMQP Connection shared resource.</p>
Exchange Name	Yes	<p>The name of the exchange.</p> <p> This field is only available when RabbitMQ-0-9 is selected from the BrokerType list of the used AMQP Connection shared resource.</p>
Routing Key	Yes	<p>The routing key of the exchange. This field is only required when direct or topic is selected as the exchange type.</p> <p> This field is only available when RabbitMQ-0-9 is selected from the BrokerType list of the used AMQP Connection shared resource.</p>

Field	Module Property?	Description
Message Type	No	<p>Select one of the following message types:</p> <ul style="list-style-type: none"> • TextMessage: the message is in the string format. • BytesMessage: the message is in the byte stream format. • Simple: the message does not have message body.
User Properties	No	<p>Right-click inside the User Properties text box and click the Add Parameter  icon to add a user property. To delete a user property, click the Delete  icon.</p> <p>Specify the following fields in this text box:</p> <ul style="list-style-type: none"> • name (a String value): the name of the user property. • type: the property data type. The valid data types include String, Number, Boolean. • value (a String value): the value of the user property. <div>  <p>If the property data type is Boolean, any other value except for <code>true</code> or <code>True</code> or <code>TRUE</code> is considered false.</p> </div>

Description

In the **Description** tab, you can add a short description for the AMQPSendMessage activity.

Advanced

The following table describes the configurations in the **Advanced** tab of the AMQPSendMessage activity.

Field	Module Property?	Description
Delivery Mode	No	<p>Select one of the following delivery modes:</p> <ul style="list-style-type: none"> • Persistent: the messages are stored before forwarding. • Non-Persistent: the messages are not stored before forwarding. If the transmission failed, the messages might be lost.
Expiration(msec)	No	<p>Corresponds to the Expiration property that specifies how long the message remains active (in milliseconds). The default value is 0, which means the message remains active permanently.</p>


Field	Module Property?	Description
Priority	No	Specifies the priority of the message. The value ranges from 0 to 9. The default value is 4.
Type	Yes	Specifies the event type or command type this message represents.


Input

The following table describes the input elements in the **Input** tab of the AMQPSendMessage activity.



The values entered in the following fields must be entered in single quotation marks (' '), or double quotation marks (" ").

Input Item	Data Type	Description
name	String	Enter the name of the user property.  The value entered in this field overwrites the value entered in the User Properties field of the General tab.
type	String	Enter one of the following types for the user property: <ul style="list-style-type: none"> Boolean Number String The value entered in this field overwrites the value entered in the User Properties field of the General tab.
value	String	Enter the value of the user property. The value entered in this field overwrites the value entered in the User Properties field of the General tab.
deliveryMode	String	Right-click this element and click Enumerations to select one of the following delivery modes for the message, or enter the value in this field: <ul style="list-style-type: none"> Persistent The message is stored and forwarded. Non-Persistent The message is not stored and might be lost due to transmission failure. The value entered in this field overwrites the item selected from the Delivery Mode list of the Advanced tab.

Input Item	Data Type	Description
messageID	String	Enter the message ID for the message, such as "ID: 1234567891A". If you leave this field blank, a random message ID is given.
expiration	Integer	Enter the expiration value of the message. The value entered in this field overwrites the value entered in the Expiration(msec) field of the Advanced tab.
priority	Integer	Enter the priority level for sending the message. The value entered in this field overwrites the value entered in the Priority field of the Advanced tab.
type	String	Enter the type for the message. The value entered in this field overwrites the value entered in the Type field of the Advanced tab.
body	String/Byte	The message body of the received message: <ul style="list-style-type: none"> • If TextMessage is selected from the Message Type list of the General tab, the message is in the String format. • If BytesMessage is selected from the Message Type list of the General tab, the message is in the String format. <div>  <p>If Simple is selected from the Message Type list of the General tab, the body field is unavailable.</p> </div>

Output

The following table describes the output elements in the **Output** tab of the AMQPSendMessage activity.

Output Item	Data Type	Description
sendResult	Boolean	The result after sending the message. If the message is successfully sent, the value is true .

Fault

The following table describes the error schema elements in the **Fault** tab of the AMQPSendMessage activity.

Error Schema Element	Description
AMQPPluginException	This error message is displayed when the plug-in captures any exception related to the process of sending a message to an AMQP broker.
AMQPConnectionException	This error message is displayed when any exception occurs about the connection problem that is in the process of sending a message to an AMQP broker.

Working with the Sample Project

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

After installing the plug-in, you can locate the sample file in the *TIBCO_HOME/bw/palettes/amqp/version_number/samples* directory. This sample file contains three projects:

- **ActiveMQ_1-0**
This project shows how to use the ActiveMQ_1-0 broker to get, receive, and send messages.
- **QPID_1-0**
This project shows how to use the QPID_1-0 broker to get, receive, and send messages.
- **RabbitMQ_0-9**
This project shows how to use the RabbitMQ_0-9 broker to get, receive, and send messages.

Importing the Sample Projects

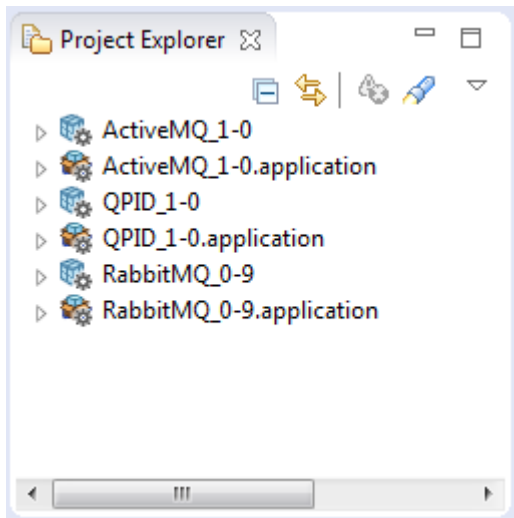
Before running the project, you must import the sample projects to TIBCO Business Studio.

Procedure

1. Start TIBCO Business Studio using one of the following ways:
 - Microsoft Windows: click **Start > All Programs > TIBCO > TIBCO_HOME > TIBCO Business Studio version_number > Studio for Designers**.
 - Mac OS and Linux: run the TIBCO Business Studio executable file located in the *TIBCO_HOME/studio/version_number/eclipse* directory.
2. From the menu, click **File > Import**.
3. In the Import window, expand the **General** folder and select the **Existing Studio Projects into Workspace** item. Click **Next**.
4. Click **Browse** next to the **Select archive file** field to select the `example.zip` file. Click **Finish**.
The `example.zip` file is located in the *TIBCO_HOME/bw/palettes/amqp/version_number/samples* directory.

Result

The sample projects are imported to TIBCO Business Studio.




Configuring the AMQP Connection

Configuring the AMQP Connection shared resource is essential for the plug-in to establish a connection to the AMQP server.

Prerequisites

Ensure that you have imported the sample projects, as described in [Importing the Sample Projects](#).

Procedure

1. In the Project Explorer view, expand *Project_name* > **Resources** > *bundle_name*.
2. Double-click **AMQPConnectionResource.amqpconnectionResource**.
3. In the AMQP Connection editor, configure each field accordingly.
See [AMQP Connection](#) for more details.
4. Click **Test Connection** to validate the connection.
5. On the toolbar, click the **Save**  icon to save your changes.


Running the Sample Project



The sample projects show how to use the plug-in to get, receive, and send messages by using ActiveMQ-1-0, Qpid-1-0 and RabbitMQ-0-9 brokers.

Prerequisites

Ensure that you have configured the AMQP Connection shared resource, as described in [Configuring the AMQP Connection](#).

Procedure

1. In the Project Explorer view, click *Project_name* > **Module Descriptors** resource, and then double-click **Components**.
2. By default, all the processes are listed in the Components editor. Select the process that you do not want to run and click the **remove selected component**  icon.

3. On the toolbar, click the **Save**  icon to save your changes.
4. From the menu, click **Run > Run Configurations** to run the selected process.
5. In the Run Configurations dialog, expand **BusinessWorks Application**, and then click **BWApplication**.
6. In the right panel, click the **Applications** tab, and select the check box next to *Exemple_name*.
7. Click **Run** to run the selected process.
8. Click the **Terminate**  icon to stop the process.

Managing Logs

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

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

Log Levels

Different log levels include different information.

The plug-in supports the following log levels.

Log Level	Description
Debug	Indicates a developer-defined tracing message.
Info	Indicates normal plug-in operations. No action is required. A tracing message tagged with Info indicates that a significant processing step is reached, and logged for tracking or auditing purposes. Only info messages preceding a tracking identifier are considered as significant steps.
Error	Indicates that an unrecoverable error occurred. Depending on the severity of the error, the plug-in might continue with the next operation or might stop.

Setting Up Log Levels

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

If you do not configure any log levels, the plug-in uses the default log level of TIBCO ActiveMatrix BusinessWorks. The default log level is Error.

Procedure

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

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

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



If you set the log level to Debug, the input and output for the plug-in activities are also displayed in the Console view. See [Log Levels](#) for more details regarding each log level.

3. Optional: Add different nodes in the **BusinessWorks Palette and Activity loggers** area to specify different log levels for the activities and shared resources.

For the AMQP Connection shared resource, add the following node:

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

For the AMQPReceiveMessage activity, add the following node:

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

For the AMQPSendMessage activity, add the following node:

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

For the AMQPGetMessage activity, add the following node:

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



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

4. Save the file.

Exporting Logs to a File

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

Procedure

1. Navigate to the `TIBCO_HOME/bw/version_number/config/design/logback` directory and open the `logback.xml` file.



After deploying an application in TIBCO Enterprise Administrator, navigate to the `TIBCO_HOME/bw/version_number/domains/domain_name/appnodes/space_name/node_name` directory to find the `logback.xml` file.

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

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

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

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

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

4. Save the file.

Error Codes

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

Error Code and Error Message	Role	Category	Description	Solution
ERROR_OCCURED_RETRIEVE_RESULT.errorCode=500002 IOException occurred while retrieving XML Output for activity [{0}].	errorRole	BW-Plug-in	Occurs when an activity retrieves an XML output.	None.
ERROR_OCCURED_INVOKE_EXECUTE_METHOD.errorCode=500003 Exception occurred while invoking execute method for activity [{0}].	errorRole	BW-Plug-in	Occurs when an activity invokes an execute method.	None.
ERROR_OCCURED_PRIORITY.errorCode=500004 The provided priority: {0} is invalid in AMQP, valid values are from 0 to 9.	errorRole	BW-Plug-in	The provided priority is invalid in AMQP.	Specify a valid priority value.
ERROR_OCCURED_GENERATE_URL.errorCode=500006 Error occurred while attempting to generate URL.	errorRole	BW-Plug-in	Occurs when the plug-in generates a URL.	None.
AMQP_SEND_ERROR.errorCode=500007 Error occurred while attempting to send a message {0}.	errorRole	BW-Plug-in	Occurs when an activity sends a message.	None.

Error Code and Error Message	Role	Category	Description	Solution
<p>AMQP_DEBUG_INFORMATION.errorCode=500008</p> <p>Error occurred while attempting to parse plain URL.</p>	errorRole	BW-Plug-in	Occurs when an activity parses a plain URL.	None.
<p>ERROR_OCCURED_GET_XML_FROM_SERIALIZED_OBJECT.errorCode=500009</p> <p>Error occurred while attempting to get XML Output from serialized object.</p>	errorRole	BW-Plug-in	Occurs when an activity gets an XML output from serialized object.	None.
<p>ERROR_OCCURED_GET_MESSAGE_CONTENT.errorCode=500010</p> <p>Error occurred while attempting to get message content: {0}.</p>	errorRole	BW-Plug-in	Occurs when an activity gets a message content.	None.
<p>ERROR_OCCURED_START_CONNECTION.errorCode=500011</p> <p>Error occurred while attempting to start javax.jms.Connection : {0}.</p>	errorRole	BW-Plug-in	Occurs when a javax.jms.connection is started.	None.
<p>ERROR_OCCURED_STOP_CONNECTION.errorCode=500012</p> <p>Error occurred while attempting to stop javax.jms.Connection : {0}.</p>	errorRole	BW-Plug-in	Occurs when a javax.jms.connection is stopped.	None.
<p>ERROR_OCCURED_CLOSE_CONNECTION.errorCode=500013</p> <p>Error occurred while attempting to close javax.jms.Connection : {0}.</p>	errorRole	BW-Plug-in	Occurs when a javax.jms.connection is closed.	None.

Error Code and Error Message	Role	Category	Description	Solution
ERROR_OCCURED_GENERATE_CONNECTION_FILE.errorCode=500014 Error occurred while attempting to generate connection file: {0}.	errorRole	BW-Plug-in	Occurs when the plug-in generates a connection file.	None.
ERROR_OCCURED_CREATE_CONNECTION.errorCode=500015 Error occurred while attempting to create connection: {0}.	errorRole	BW-Plug-in	Occurs when the plug-in creates a connection.	None.
ERROR_OCCURED_INITIALIZE_CONNECTION_FACTORY.errorCode=500016 Error occurred while attempting to initialize a connection factory: {0}.	errorRole	BW-Plug-in	Occurs when the plug-in initializes a connection factory.	None.
ERROR_OCCURED_CREATE_TEXT_MESSAGE.errorCode=500017 Error occurred while attempting to create text message from Session.	errorRole	BW-Plug-in	Occurs when the plug-in creates a text message from a session.	None.
ERROR_OCCURED_RECEIVE_MESSAGE.errorCode=500018 Error occurred while receive message: {0}.	errorRole	BW-Plug-in	Occurs when an activity receives a message.	None.
ERROR_OCCURED_INITIALIZE_CHANNEL.errorCode=500019 Error occurred while attempting to initialize channel : {0}.	errorRole	BW-Plug-in	Occurs when the plug-in initializes a channel.	None.

Error Code and Error Message	Role	Category	Description	Solution
ERROR_OCCURED_CLOSE_CHANNEL.errorCode=500020 Error occurred while attempting to close channel.	errorRole	BW-Plug-in	Occurs when the plug-in closes a channel.	None.
ERROR_OCCURED_FILE_NOT_FIND.errorCode=500021 Error occurred while attempting to find file {0}.	errorRole	BW-Plug-in	Occurs when the plug-in finds a file.	None.
ERROR_OCCURED_INITIALIZE_BROKER_TYPE.errorCode=500022 Error occurred while attempting to initialize Broker type.	errorRole	BW-Plug-in	Occurs when the plug-in initializes a broker type.	None.
ERROR_OCCURED_CLOSE_CHANNEL_TIMEOUT.errorCode=500023 Timeout error occurred while attempting to close channel.	errorRole	BW-Plug-in	A timeout error occurs when closing a channel.	None.
ERROR_OCCURED_CREATE_CONNECTION_TIMEOUT.errorCode=500024 Timeout error occurred while attempting to create new connection.	errorRole	BW-Plug-in	A timeout error occurs when creating a new connection.	None.
ERROR_OCCURED_USER_PROPERTY_INVALID.errorCode=500025 Data type and value mismatch error occurred for user property name: {0}.	errorRole	BW-Plug-in	The data type and value do not match the user property name.	None.

Error Code and Error Message	Role	Category	Description	Solution
ERROR_OCCURED_SE ND_MESSAGE_UNKN OWN.errorCode=500026 Error occurred while attempting to send message for unknown issues: {0}.	errorRole	BW-Plug-in	Occurs when an activity sends a message for unknown issues.	None.
ERROR_OCCURED_SE ND_MESSAGE_INVALID_DESTINATION.error Code=500027 Invalid Queue name: {0} detected. Please provide valid Queue name.	errorRole	BW-Plug-in	The provided queue name is invalid.	Specify a Provide a valid queue name.
ERROR_OCCURED_SE ND_MESSAGE_INVALID_DESTINATION.error Code=500028 Error occurred while attempting to create queue name: {0}.	errorRole	BW-Plug-in	Occurs when the plug-in creates a queue name.	None.
ERROR_OCCURED_SE ND_MESSAGE_INVALID_DESTINATION.error Code=500029 Error occurred while attempting to get queue name.	errorRole	BW-Plug-in	Occurs when the plug-in gets a queue name.	None.
ERROR_OCCURED_SE ND_MESSAGE_INVALID_DESTINATION.error Code=500030 The provided delivery mode: {0} is invalid in AMQP, valid values should be Persistent or Non-Persistent.	errorRole	BW-Plug-in	The provided delivery mode is invalid.	Specify a valid delivery mode.

Error Code and Error Message	Role	Category	Description	Solution
ERROR_OCCURED_SE ND_MESSAGE_INVALID_DESTINATION.error Code=500031 Error occurred while attempting to close session.	errorRole	BW-Plug-in	Occurs when the plug-in closes a session.	None.