

# TIBCO ActiveMatrix® Adapter Framework Reference

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# TIBCO Documentation and Support Services

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

<https://docs.tibco.com>

## Product-Specific Documentation

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

`TIBCO_HOME/release_notes/TIB_adapteruipack_version_docinfo.html`

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

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

- *TIBCO ActiveMatrix Adapter Framework Administration*
- *TIBCO ActiveMatrix Adapter Framework Reference*
- *TIBCO ActiveMatrix Adapter Framework Installation*
- *TIBCO ActiveMatrix Adapter Framework Release Notes*

## How to Contact TIBCO Support

For comments or problems with this manual or the software it addresses, contact TIBCO Support:

- 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 user name and password. If you do not have a user name, you can request one.

## How to Join TIBCOmmunity

TIBCOmmunity is an online destination for TIBCO customers, partners, and resident experts. It is a place to share and access the collective experience of the TIBCO community. TIBCOmmunity offers forums, blogs, and access to a variety of resources. To register, go to the following web address:

<https://www.tibcommunity.com>

## Adapter Palette Overview

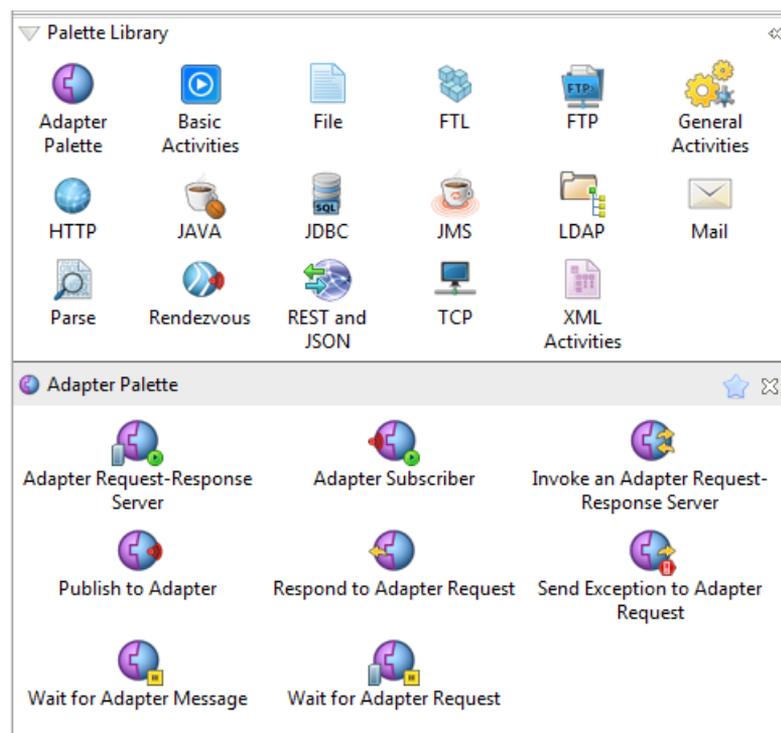
Adapter Palette contains activities for communicating with configured TIBCO adapters. You can publish messages to a specified adapter or invoke an operation of an adapter.

TIBCO adapters provide a bridge between an application and the TIBCO integration environment. With TIBCO adapters, packaged applications, databases, and other technologies can be used in the enterprise information flow, regardless of their data formats or communication protocols.

After installing TIBCO ActiveMatrix® Adapter Framework, the following activities from the Adapter palette are available in TIBCO Business Studio:

- [Adapter Request-Response Server](#): starts a process based on the receipt of a request from an adapter.
- [Adapter Subscriber](#): subscribes to incoming data published by an adapter.
- [Invoke an Adapter Request-Response Server](#): communicates (as a client) with Request-Response Service.
- [Publish to Adapter](#): publishes data from a business process to an adapter, which subscribes to data coming from the process and passes the data to the target application.
- [Respond to Adapter Request](#): sends a response to an adapter for a previously received request.
- [Send Exception to Adapter Request](#): sends an exception to an adapter for a previously received request.
- [Wait for Adapter Message](#): waits for the receipt of a message from Publication Service of a specified adapter.
- [Wait for Adapter Request](#): waits for the receipt of a request from Request-Response Invocation Service.

The following figure shows the Palette Library panel in TIBCO Business Studio and activities available in the Adapter Palette panel:

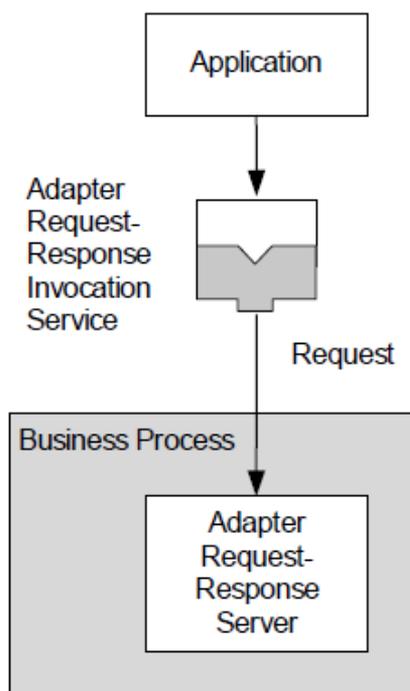


## Adapter Request-Response Server

The Adapter Request-Response Server activity is a process starter activity. It starts a process based on the request received from an adapter.

Adapter Request-Response Invocation Service is configured during adapter configuration, and the activity uses the information in the adapter configuration to configure this activity.

The following figure illustrates an Adapter Request-Response Server activity starting a business process to handle an incoming request from Request-Response Invocation Service. In the business process, the Respond to Adapter Request activity is used to perform the response at a later point.



### General

The **General** tab has the following fields:

Field	Module Property?	Description
<b>Name</b>	No	The name displayed as the label for the activity in the process definition.  The default value is AdapterRequest-ResponseServer.
<b>Adapter Service</b>	No	The preconfigured Request-Response Invocation Service. You must specify the adapter service when configuring the adapter.  Click  to locate the appropriate service for this activity.
<b>Operation</b>	No	Operations defined by the schema used in the selected adapter service.  Select the operation that the process implements from the list.

Field	Module Property?	Description
<b>Custom Schema</b>	No	<p>Select or clear the check box to specify whether you want to configure an output schema for this activity.</p> <p>If you select the check box, you can configure the output schema in the <b>Output Editor</b> tab.</p> <div style="display: flex; align-items: center;">  <div style="border-left: 1px solid #ccc; padding-left: 10px;"> <p>The feature of Custom Schema in TIBCO ActiveMatrix BusinessWorks™ 6 is the same as CustomAESchema in TIBCO ActiveMatrix BusinessWorks 5.</p> </div> </div>
<b>Transport Configuration</b>		Click the <b>Transport Configuration</b> link to configure a transport in the <b>Advanced</b> tab.

### Description

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

### Advanced

The **Advanced** tab has the following fields:

Field	Module Property?	Description
<b>Transport Type</b>	No	Select a transport type. See <a href="#">Transport Type</a> for more information.
<b>Sequence Key</b>	No	<p>This field contains an XPath expression that specifies how to run processes in order. Process instances with sequencing keys that evaluate to the same value are executed sequentially in the order the process instances were created.</p> <p>To edit the XPath expression, click .</p> <p>For more information about XPath expressions and how to control the execution of process instances in order, see <i>TIBCO ActiveMatrix BusinessWorks Application Development</i>.</p>
<b>Custom Job Id</b>	No	<p>This field contains an XPath expression that specifies a custom ID for the process instance. This ID is also available in the <code>\$_process</code> context process variable.</p> <p>To edit the XPath expression, click .</p>

### Output Editor

The **Output Editor** tab defines the schema used for messages: Map, Stream, or XML Text. Map messages are name or value pairs.

You can use the schema to define the structure of the retrieved messages. The schema defined in the **Output Editor** tab becomes the body of the message in the **Output** tab.

### Conversations

You can initiate the conversation. Click **Add New Conversation**  to initiate multiple conversations.

For details about conversations, see *TIBCO ActiveMatrix BusinessWorks Application Development*.

## Output

The following table lists the output items for this activity:

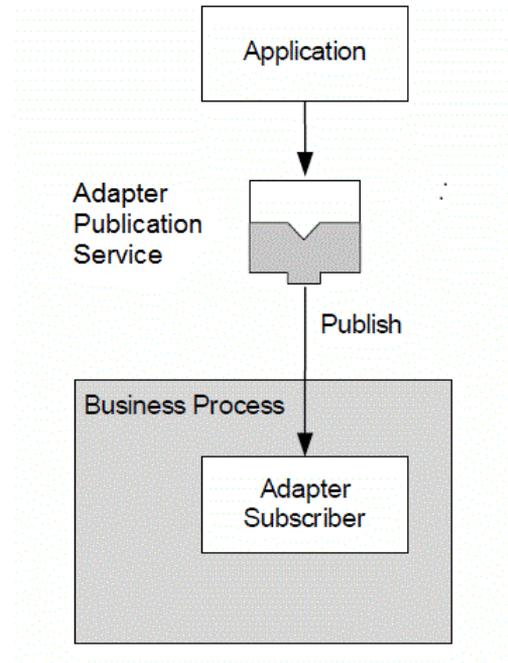
Output Item	Data Type	Description
<b>subject</b>	String	The subject of the message.
<b>replySubject</b>	String	The reply subject of the message.
<b>certifiedSequence Number</b>	String	This element contains the sequence number in which this message was received. It is available only when <b>Tibrv Certified</b> is the transport.
<b>certifiedSender</b>	String	This element contains the CM name of the message sender. It is available only when <b>Tibrv Certified</b> is the transport.
<b>MessageID</b>	String	The ID of the message. This element is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport.
<b>trackingInfo</b>	Complex	The AE tracking information of the sender. This element is a concatenation of "BW." + <i>Application_Name</i> + <i>Module_Name</i> + <i>Process_Name</i> + <i>Activity_Name</i> + <i>User_Part (Business_Key)</i> .
<b>JMSHeaders</b>	Complex	This element contains the message header fields for the message. Only properties applicable to this type of message are displayed. It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport. For more information about message header fields, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .
<b>OtherProperties</b>	Complex	This element contains the message properties for the message. Only properties applicable to this type of message are displayed. It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport and <b>JMS Application Properties</b> in the <a href="#">Transport Type</a> configuration are specified. For more information about message properties, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .
<b>body</b>	Complex	A complex schema type specified for the adapter service or a complex schema type designated by a user.

# Adapter Subscriber

The Adapter Subscriber activity is a process starter activity. It starts a process based on the receipt of a message from Publication Service of the specified adapter.

Publication Service is configured during adapter configuration, and the activity uses the information in the adapter configuration to configure this activity.

The following figure illustrates Publication Service publishing a message and Adapter Subscriber starting a business process.



## General

The **General** tab has the following fields:

Field	Module Property?	Description
<b>Name</b>	No	The name displayed as the label for the activity in the process definition. The default value is AdapterSubscriber.
<b>Adapter Service</b>	No	The preconfigured Publication Service. You must specify the adapter service when configuring the adapter. Click  to locate the appropriate service for this activity.

Field	Module Property?	Description
<b>Custom Schema</b>	No	<p>Select or clear the check box to specify whether you want to supply an output class for the activity.</p> <ul style="list-style-type: none"> <li>• Cleared (default): The <b>Output Editor</b> tab is read-only.</li> <li>• Selected: The <b>Output Editor</b> tab is editable.</li> </ul> <div style="display: flex; align-items: center;">  <div> <p>The feature of Custom Schema in TIBCO ActiveMatrix BusinessWorks 6 is the same as CustomAESchema in TIBCO ActiveMatrix BusinessWorks 5.</p> </div> </div>
<b>Transport Configuration</b>		Click the <b>Transport Configuration</b> link to configure a transport in the <b>Advanced</b> tab.

### Description

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

### Advanced

The **Advanced** tab has the following fields:

Field	Module Property?	Description
<b>Transport Type</b>	No	Select a transport type. See <a href="#">Transport Type</a> for more information.
<b>Sequence Key</b>	No	<p>This field contains an XPath expression that specifies how processes run in order. Process instances with sequencing keys that evaluate to the same value are executed sequentially in the order the process instances were created.</p> <p>To edit the XPath expression, click .</p> <p>For more information about XPath expressions and how to control the execution of process instances in order, see <i>TIBCO ActiveMatrix BusinessWorks Application Development</i>.</p>
<b>Custom Job Id</b>	No	<p>This field contains an XPath expression that specifies a custom ID for the process instance. This ID is also available in the <code>\$_process</code> context process variable.</p> <p>To edit the XPath expression, click .</p>

### Output Editor

The **Output Editor** tab defines the schema used for messages: Map, Stream, or XML Text. Map messages are name or value pairs.

You can use the schema to define the structure of the retrieved messages. The schema defined in the **Output Editor** tab becomes the body of the message in the **Output** tab.

## Conversations

You can initiate the conversation. Click **Add New Conversation**  to initiate multiple conversations. For details about conversations, see *TIBCO ActiveMatrix BusinessWorks Application Development*.

## Output

The following table lists the output items for this activity:

Output Item	Data Type	Description
<b>subject</b>	String	The subject of the message.
<b>replySubject</b>	String	The reply subject of the message.
<b>certifiedSequence Number</b>	String	This element contains the sequence number in which this message was received. It is available only when <b>Tibrv Certified</b> is the transport.
<b>certifiedSender</b>	String	This element contains the CM name of the message sender. It is available only when <b>Tibrv Certified</b> is the transport.
<b>MessageID</b>	String	The ID of the message. This element is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport.
<b>trackingInfo</b>	Complex	The AE tracking information of the sender. This element is a concatenation of "BW." + <i>Application_Name</i> + <i>Module_Name</i> + <i>Process_Name</i> + <i>Activity_Name</i> + <i>User_Part (Business_Key)</i> .
<b>JMSHeaders</b>	Complex	This element contains the message header fields for the message. Only properties applicable to this type of message are displayed. It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport. For more information about message header fields, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .
<b>OtherProperties</b>	Complex	This element contains the message properties for the message. Only properties applicable to this type of message are displayed. It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport and <b>JMS Application Properties</b> in the <a href="#">Transport Type</a> configuration are specified. For more information about message properties, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .

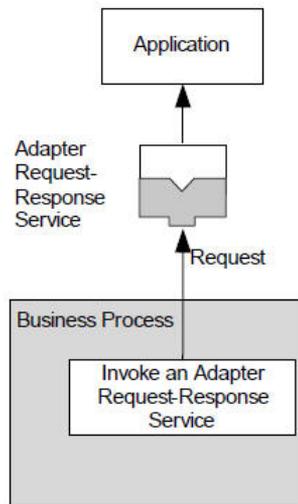
Output Item	Data Type	Description
<b>body</b>	Complex	A complex schema type specified for the adapter service or a complex schema type designated by a user.

## Invoke an Adapter Request-Response Server

The Invoke an Adapter Request-Response Server activity is used to communicate with Request-Response Service. This service invokes an operation with input and output of the adapter.

Invoke an Adapter Request-Response Service is configured based on adapter configuration, and the activity uses the information in the adapter configuration to configure this activity.

The following figure illustrates an Invoke an Adapter Request-Response Server activity sending a request to Request-Response Service.



### General

The **General** tab has the following fields:

Field	Module Property?	Description
<b>Name</b>	No	The name displayed as the label for the activity in the process definition.  The default value is <code>InvokeanAdapterRequest-ResponseServer</code> .
<b>Adapter Service</b>	No	The preconfigured Request-Response Service. You must specify the adapter service when configuring the adapter.  Click  to locate the appropriate service for this activity.
<b>Operation</b>	No	Operations defined by the schema used in the selected adapter service.  Select the operation that the process definition implements from the list.
<b>One Way</b>	No	A read-only field that displays whether the selected operation is one-way.

Field	Module Property?	Description
<b>Custom Schema</b>	No	<p>Select or clear the check box to specify whether you want to supply an output class for this activity.</p> <ul style="list-style-type: none"> <li>Cleared (default): The <b>Input Editor</b> tab and the <b>Output Editor</b> tab are read-only.</li> <li>Selected: The <b>Input Editor</b> tab and the <b>Output Editor</b> tab are editable.</li> </ul> <div style="display: flex; align-items: center; margin-top: 10px;">  <div style="border-left: 1px solid #ccc; padding-left: 10px;"> <p>The feature of Custom Schema in TIBCO ActiveMatrix BusinessWorks 6 is the same as CustomAESchema in TIBCO ActiveMatrix BusinessWorks 5.</p> </div> </div>
<b>Transport Configuration</b>		Click the <b>Transport Configuration</b> link to configure a transport in the <b>Advanced</b> tab.

### Description

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

### Advanced

The **Advanced** tab contains the **Transport Type** field. You can select a transport type in the **Transport Type** list. For more information, see [Transport Type](#).

### Input Editor

The **Input Editor** tab defines the schema used for messages: Map, Stream, or XML Text. Map messages are name or value pairs.

You can use the schema to define the structure of the outgoing request and the incoming reply. The schema defined in the **Input Editor** tab becomes the body of the message in the **Input** tab.

### Output Editor

The **Output Editor** tab defines the schema used for messages: Map, Stream, or XML Text. Map messages are name or value pairs.

You can use the schema to define the structure of the outgoing request and the incoming reply. The schema defined in the **Output Editor** tab becomes the body of the message in the **Output** tab.

### Input

The following table lists the input items for this activity:

Input Item	Data Type	Description
<b>subject</b>	String	The subject of the message.
<b>requestTimeout</b>	Integer	When publishing in request/reply mode, you can specify the timeout (in milliseconds) to wait for the reply.
<b>replySubject</b>	String	The reply subject of the message.

Input Item	Data Type	Description
<b>businessKey</b>	String	<p>This string is appended to the AE tracking specified in the <b>trackingInfo</b> field.</p> <p> It is good practice to have all publishers in a process use the same business key. Only the most recent business key of the publisher is used in the tracking info for the message.</p>
<b>OtherProperties</b>	Complex	<p>This element contains the message properties for the message. Only properties applicable to this type of message are displayed.</p> <p>It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport and <b>JMS Application Properties</b> in the <a href="#">Transport Type</a> configuration are specified.</p> <p>For more information about message properties, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i>.</p>

## Output

The following table lists the output items for this activity:

Output Item	Data Type	Description
<b>replyDestination</b>	String	<p>A reply message can have a reply destination, so that the two applications can communicate with incoming messages.</p> <p>This element contains the reply subject (RV) or destination (JMS) set on the reply message, if one is set. If no reply subject or destination is set on the reply message, this element is not populated.</p>
<b>trackingInfo</b>	Complex	<p>The AE tracking information of the sender.</p> <p>This element is a concatenation of "BW." + <i>Application_Name</i> + <i>Module_Name</i> + <i>Process_Name</i> + <i>Activity_Name</i> + <i>User_Part (Business_Key)</i>.</p>
<b>JMSHeaders</b>	Complex	<p>This element contains the message header fields for the message. Only properties applicable to this type of message are displayed.</p> <p>It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport.</p> <p>For more information about message header fields, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i>.</p>

Output Item	Data Type	Description
<b>OtherProperties</b>	Complex	<p>This element contains the message properties for the message. Only properties applicable to this type of message are displayed.</p> <p>It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport and <b>JMS Application Properties</b> in the <a href="#">Transport Type</a> configuration are specified.</p> <p>For more information about message properties, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i>.</p>
<b>body</b>	Complex	A complex schema type specified for the adapter service or a complex schema type designated by a user.

### Fault

The **Fault** tab lists the possible exceptions thrown by this activity.



This tab plays the same role as the **Error Output** tab in TIBCO ActiveMatrix BusinessWorks 5.x.

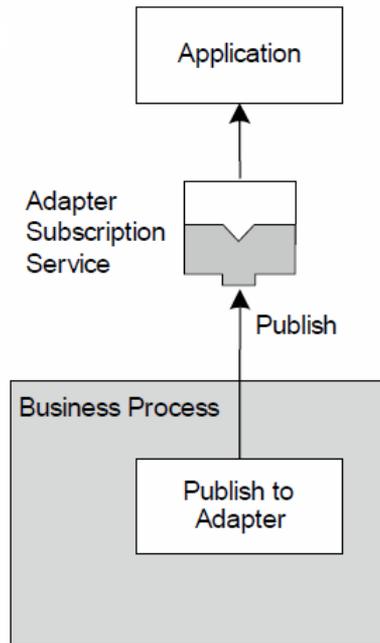
Fault	Thrown When...
<b>TransportException</b>	The transport cannot be created.
<b>SerializationException</b>	The outgoing message cannot be serialized.
<b>DeserializationException</b>	The incoming response message cannot be serialized.
<b>ConfirmationException</b>	The message cannot be confirmed.
<b>TimeoutException</b>	A timeout error occurs.
<b>OperationException</b>	<p>The adapter service returns an exception encountered while performing the operation. Any exception class defined on the schema can be returned.</p> <p>The potential exceptions are displayed as a choice element for activities after an error transition.</p>

## Publish to Adapter

The Publish to Adapter activity publishes messages, which are received by Subscription Service.

Subscription Service is configured during adapter configuration, and the activity uses the information in the adapter configuration to configure this activity.

The following figure illustrates a Publish to Adapter activity sending a message to a preconfigured Subscription Service.



### General

The **General** tab has the following fields:

Field	Module Property?	Description
<b>Name</b>	No	The name displayed as the label for the activity in the process definition.  The default value is <code>PublishToAdapter</code> .
<b>Adapter Service</b>	No	The preconfigured Subscription Service. You must specify the adapter service when configuring the adapter.  Click  to locate the appropriate service for this activity.
<b>RequestReply</b>	No	Select or clear the check box to specify whether the activity is sending a request message and expecting a response message.  When this check box is selected, the <b>Custom Schema</b> check box is selected automatically. The Publish to Adapter activity uses the RequestReply schema specified by a user, rather than the schema from the adapter service.

Field	Module Property?	Description
<b>Custom Schema</b>	No	<p>Select or clear the check box to specify whether you want to supply an output class for this activity.</p> <ul style="list-style-type: none"> <li>Cleared (default): The <b>Input Editor</b> tab and the <b>Output Editor</b> tab are read-only.</li> <li>Selected: The <b>Input Editor</b> tab and the <b>Output Editor</b> tab are editable.</li> </ul> <div style="display: flex; align-items: center; margin-top: 10px;">  <div style="border-left: 1px solid #ccc; padding-left: 10px;"> <p>The feature of Custom Schema in TIBCO ActiveMatrix BusinessWorks 6 is the same as CustomAESchema in TIBCO ActiveMatrix BusinessWorks 5.</p> </div> </div>
<b>Transport Configuration</b>		Click the <b>Transport Configuration</b> link to configure a transport in the <b>Advanced</b> tab.

### Description

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

### Advanced

The **Advanced** tab contains the **Transport Type** field. You can select a transport type in the **Transport Type** list. For more information, see [Transport Type](#).

### Input Editor

The **Input Editor** tab defines the schema used for messages: Map, Stream, or XML Text. Map messages are name or value pairs.

You can use the schema to define the structure of the outgoing request and the incoming reply. The schema defined in the **Input Editor** tab becomes the body of the message in the **Input** tab.

### Output Editor

The **Output Editor** tab defines the schema used for messages: Map, Stream, or XML Text. Map messages are name or value pairs.

You can use the schema to define the structure of the outgoing request and the incoming reply. The schema defined in the **Output Editor** tab becomes the body of the message in the **Output** tab.

### Input

The following table lists the input items for this activity:

Input Item	Data Type	Description
<b>subject</b>	String	The subject of the message.
<b>requestTimeout</b>	Integer	When publishing in request/reply mode, you can specify the timeout (in milliseconds) to wait for the reply.

Input Item	Data Type	Description
<b>preRegisterListener</b>	String	<p>When using TIBCO Rendezvous Certified Messaging (RVCM), you can specify the CM name(s) of the RVCM subscriber(s). With <code>preRegisterListener</code>, the publisher can preregister with any expected listeners.</p> <p>If multiple CM names are specified, separate each CM name with a comma.</p> <p>Any listener preregistered on the <b>Transport</b> tab is also preregistered with the listeners specified in this element.</p> <p>See the TIBCO Rendezvous documentation for more information about RVCM.</p>
<b>replySubject</b>	String	The reply subject of the message.
<b>businessKey</b>	String	<p>This string is appended to the AE tracking in the <b>trackingInfo</b> field.</p> <div style="border-left: 1px solid #ccc; padding-left: 10px; margin-left: 20px;">  It is good practice to have all publishers in a process use the same business key. Only the most recent business key of the publisher is used in the tracking info for the message. </div>
<b>OtherProperties</b>	Complex	<p>This element contains the message properties for the message. Only properties applicable to this type of message are displayed.</p> <p>It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport and <b>JMS Application Properties</b> in the <a href="#">Transport Type</a> configuration are specified.</p> <p>For more information about message properties, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i>.</p>
<b>body</b>	Complex	A complex schema type specified for the adapter service or a complex schema type designated by a user.

## Output

The following table lists the output items for this activity:

Output Item	Data Type	Description
<b>replyDestination</b>	String	<p>A reply message can optionally have a reply destination, so that the two applications can communicate with incoming messages.</p> <p>This element contains the reply subject (RV) or destination (JMS) set on the reply message, if one is set. If no reply subject or destination is set on the reply message, this element is not populated.</p>

Output Item	Data Type	Description
<b>trackingInfo</b>	Complex	The AE tracking information of the sender.  This element is a concatenation of "BW." + <i>Application_Name</i> + <i>Module_Name</i> + <i>Process_Name</i> + <i>Activity_Name</i> + <i>User_Part</i> ( <i>Business_Key</i> ).
<b>MessageID</b>	String	The ID of the message.  This element is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport.
<b>JMSHeaders</b>	Complex	This element contains the message header fields for the message. Only properties applicable to this type of message are displayed.  It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport.  For more information about message header fields, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .
<b>OtherProperties</b>	Complex	This element contains the message properties for the message. Only properties applicable to this type of message are displayed.  It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport and <b>JMS Application Properties</b> in the <a href="#">Transport Type</a> configuration are specified.  For more information about message properties, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .
<b>body</b>	Complex	A complex schema type specified for the adapter service or a complex schema type designated by a user.

## Fault

The **Fault** tab lists the possible exceptions thrown by this activity.



This tab plays the same role as the **Error Output** tab in TIBCO ActiveMatrix BusinessWorks 5.x.

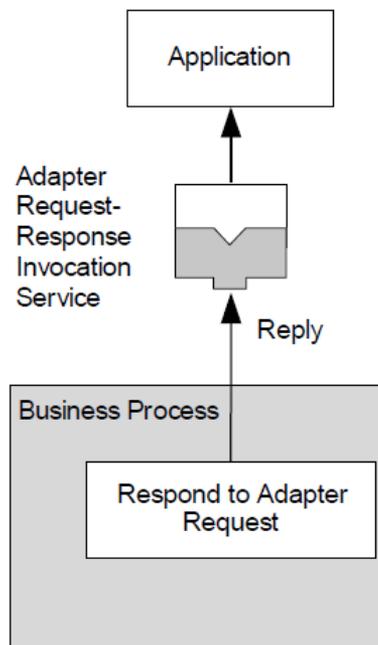
Fault	Thrown When...
<b>TransportException</b>	The transport cannot be created.
<b>SerializationException</b>	The outgoing message cannot be serialized.
<b>TimeoutException</b>	The specified timeout has been reached for the request/reply operation.

## Respond to Adapter Request

The Respond to Adapter Request activity is used to send a response to an adapter for a received request previously.

When the incoming adapter request requires a response from your process, the Respond to Adapter Request activity is used to send that response.

The following figure illustrates how a Respond to Adapter Request activity sends a response to a specified adapter for a request. The request is received from Request-Response Invocation Service.



### General

The **General** tab has the following fields:

Field	Module Property?	Description
<b>Name</b>	No	The name displayed as the label for the activity in the process definition. The default value is <code>RespondtoAdapterRequest</code> .
<b>Reply For</b>	No	Select an activity from the list. The Respond to Adapter Request activity sends a response to the selected activity. The following are available options: <ul style="list-style-type: none"> <li>• <b>AdapterRequest-ResponseServer</b></li> <li>• <b>WaitforAdapterRequest</b></li> </ul>

Field	Module Property?	Description
<b>Custom Schema</b>	No	<p>Select or clear the check box to specify whether you want to supply an output class for this activity.</p> <ul style="list-style-type: none"> <li>• Cleared (default): The <b>Input Editor</b> tab is read-only.</li> <li>• Selected: The <b>Input Editor</b> tab is editable.</li> </ul> <div style="display: flex; align-items: center;">  <div style="border-left: 1px solid #ccc; padding-left: 10px;"> <p>The feature of Custom Schema in TIBCO ActiveMatrix BusinessWorks 6 is the same as CustomAESchema in TIBCO ActiveMatrix BusinessWorks 5.</p> </div> </div>

### Description

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

### Input Editor

The **Input Editor** tab defines the schema used for messages: Map, Stream, or XML Text. Map messages are name or value pairs.

You can use the schema to define the structure of the outgoing request and the incoming reply. The schema defined in the **Input Editor** tab becomes the body of the message in the **Input** tab.

### Input

The following table lists the input items for this activity:

Input Item	Data Type	Description
<b>businessKey</b>	String	<p>This string is appended to the AE tracking specified in the <b>trackingInfo</b> field.</p> <div style="display: flex; align-items: center;">  <div style="border-left: 1px solid #ccc; padding-left: 10px;"> <p>It is good practice that all publishers in a process use the same business key. Only the most recent business key of the publisher is used in the tracking info for the message.</p> </div> </div>
<b>body</b>	Complex	The schema definition for the response. The structure of this element is retrieved from the adapter service of the activity.

### Fault

The **Fault** tab lists the possible exceptions thrown by this activity.



This tab plays the same role as the **Error Output** tab in TIBCO ActiveMatrix BusinessWorks 5.x.

Fault	Thrown When...
<b>TransportException</b>	The transport cannot be created.
<b>SerializationException</b>	The outgoing message cannot be serialized.

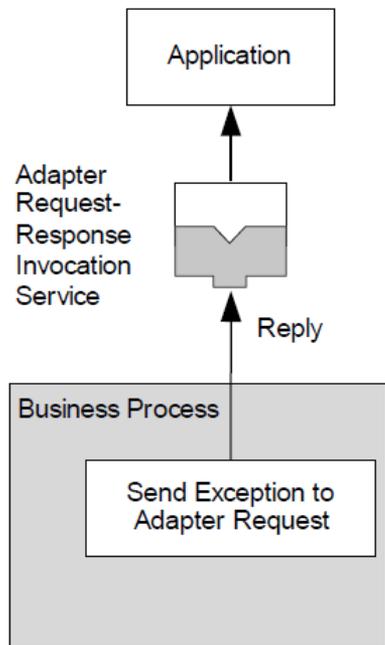
Fault	Thrown When...
<b>ReplyException</b>	The reply cannot be sent.

## Send Exception to Adapter Request

The Send Exception to Adapter Request activity is used to send an exception to an adapter for a received request previously.

The Adapter Request-Response Server activity works as a process starter in a process. When you perform the requested operation, an error might occur. With the Send Exception to Adapter Request activity, you can return an exception to the adapter service with information about the exception.

The following figure illustrates a Send Exception to Adapter Request activity sending an exception to a previously received request from an adapter.



### General

The **General** tab has the following fields:

Field	Module Property?	Description
<b>Name</b>	No	The name displayed as the label for the activity in the process definition. The default value is <code>SendExceptionToAdapterRequest</code> .
<b>Reply For</b>	No	Select the activity for which this activity sends a response from the list: <ul style="list-style-type: none"> <li>• <b>AdapterRequest-ResponseServer</b></li> <li>• <b>WaitforAdapterRequest</b></li> </ul>

Field	Module Property?	Description
<b>Custom Schema</b>	No	<p>Select or clear the check box to specify whether you want to supply an output class for this activity.</p> <ul style="list-style-type: none"> <li>• Cleared (default): The <b>Input Editor</b> tab is read-only.</li> <li>• Selected: The <b>Input Editor</b> tab is editable.</li> </ul> <div style="display: flex; align-items: center;">  <div style="border-left: 1px solid #ccc; padding-left: 10px;"> <p>The feature of Custom Schema in TIBCO ActiveMatrix BusinessWorks 6 is the same as CustomAESchema in TIBCO ActiveMatrix BusinessWorks 5.</p> </div> </div>

### Description

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

### Input Editor

The **Input Editor** tab defines the schema used for messages: Map, Stream, or XML Text. Map messages are name or value pairs.

You can use the schema to define the structure of the outgoing request and the incoming reply. The schema defined in the **Input Editor** tab becomes the body of the message in the **Input** tab.

### Input

The following table lists the input items for this activity:

Input Item	Data Type	Description
<b>businessKey</b>	String	<p>This string is appended to the AE tracking specified in the <b>trackingInfo</b> field.</p> <div style="display: flex; align-items: center;">  <div style="border-left: 1px solid #ccc; padding-left: 10px;"> <p>It is good practice that all publishers in a process use the same business key. Only the most recent business key of the publisher is used in the tracking info for the message.</p> </div> </div>
<b>body</b>	Complex	The schema definition for the response. The structure of this element is retrieved from the adapter service of the activity.

### Fault

The **Fault** tab lists the possible exceptions thrown by this activity.



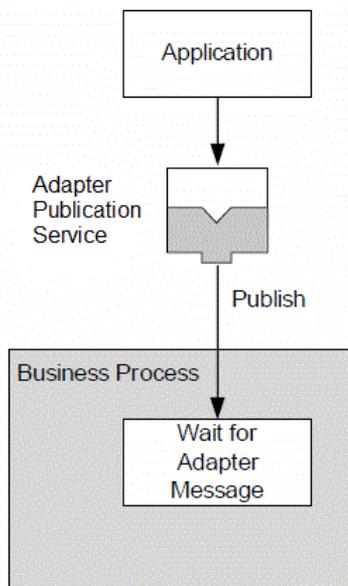
This tab plays the same role as the **Error Output** tab in TIBCO ActiveMatrix BusinessWorks 5.x.

Fault	Thrown When...
<b>TransportException</b>	The transport cannot be created.
<b>SerializationException</b>	The outgoing message cannot be serialized.
<b>ReplyException</b>	The reply cannot be sent.

## Wait for Adapter Message

The Wait for Adapter Message activity waits for the receipt of a message from Publication Service of the specified adapter.

The Wait for Adapter Message activity is used to listen to messages sent by publishers, and the messages must conform to the custom schema specified by a user. The following figure illustrates when Publication Service publishes a message and the Wait for Adapter Message activity receives the message in a business process.



### General

The **General** tab has the following fields:

Field	Module Property?	Description
<b>Name</b>	No	The name displayed as the label for the activity in the process definition. The default value is <code>WaitforAdapterMessage</code> .
<b>Adapter Service</b>	No	The preconfigured Publication Service. You must specify the adapter service when configuring the adapter. Click  to locate the appropriate service for this activity.

Field	Module Property?	Description
<b>Custom Schema</b>	No	<p>Select or clear the check box to specify whether you want to supply an output class for this activity.</p> <ul style="list-style-type: none"> <li>• Cleared (default): The <b>Output Editor</b> tab is read-only.</li> <li>• Selected: The <b>Output Editor</b> tab is editable.</li> </ul> <div style="display: flex; align-items: center;">  <div style="border-left: 1px solid #ccc; padding-left: 10px;"> <p>The feature of Custom Schema in TIBCO ActiveMatrix BusinessWorks 6 is the same as CustomAESchema in TIBCO ActiveMatrix BusinessWorks 5.</p> </div> </div>
<b>Transport Configuration</b>		Click the <b>Transport Configuration</b> link to configure a transport in the <b>Advanced</b> tab.

### Description

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

### Event

The **Event** tab has the following fields:

Field	Module Property?	Description
<b>Event Timeout (seconds)</b>	No	<p>A timeout specified in seconds. The default value is 60.</p> <p>If no value is specified in this field, the message waits indefinitely.</p> <p>If zero(0) is specified, the event is discarded immediately, unless this activity has already been executed.</p>
<b>Activity Timeout (msec)</b>	No	<p>The amount of time (in milliseconds) to wait if the message arrives before this activity is executed in the process instance. If the event times out, an error is logged and the event is discarded.</p> <p>This field contains an XPath expression that specifies the timeout value for the activity.</p> <p>To edit the XPath expression, click .</p>

### Advanced

The **Advanced** tab contains the **Transport Type** field. You can select a transport type in the **Transport Type** list. For more information, see [Transport Type](#).

### Output Editor

The **Output Editor** tab defines the schema used for messages: Map, Stream, or XML Text. Map messages are name or value pairs.

You can use the schema to define the structure of the outgoing request and the incoming reply. The schema defined in the **Output Editor** tab becomes the body of the message in the **Output** tab.

## Conversations

You can initiate the conversation. Click **Add New Conversation**  to initiate multiple conversations. For details about conversations, see *TIBCO ActiveMatrix BusinessWorks Application Development*.

## Output

The following table lists the output items for this activity:

Output Item	Data Type	Description
<b>subject</b>	String	The subject of the message.
<b>replySubject</b>	String	The reply subject of the message.
<b>certifiedSequence Number</b>	String	This element contains the sequence number in which this message was received. It is available only when <b>Tibrv Certified</b> is the transport.
<b>certifiedSender</b>	String	This element contains the CM name of the message sender. It is available only when <b>Tibrv Certified</b> is the transport.
<b>MessageID</b>	String	The ID of the message. This element is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport.
<b>trackingInfo</b>	Complex	The AE tracking information of the sender. This element is a concatenation of "BW." + <i>Application_Name</i> + <i>Module_Name</i> + <i>Process_Name</i> + <i>Activity_Name</i> + <i>User_Part (Business_Key)</i> .
<b>body</b>	Complex	A complex schema type specified for the adapter service or a complex schema type designated by a user.

## Fault

The **Fault** tab lists the possible exceptions thrown by this activity.



This tab plays the same role as the **Error Output** tab in TIBCO ActiveMatrix BusinessWorks 5.x.

Fault	Thrown When...
<b>TransportException</b>	The transport cannot be created.
<b>DeserializationException</b>	The outgoing message cannot be serialized.
<b>ConfirmationException</b>	The message cannot be confirmed.
<b>ActivityTimeoutException</b>	A timeout error occurs.

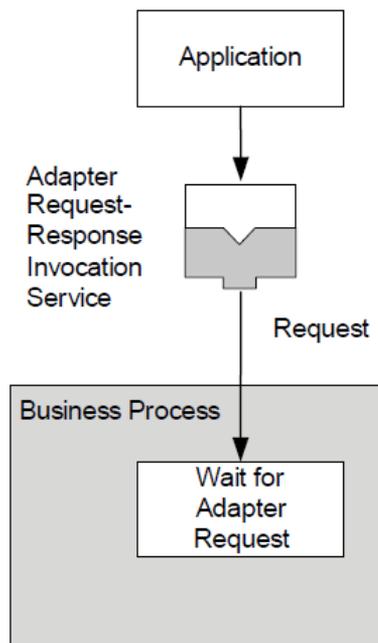
## Wait for Adapter Request

The Wait for Adapter Request activity waits for the receipt of a request from Request-Response Invocation Service.

The adapter sends a request using a preconfigured service, and the process implements the request. The process sends any required responses back to the adapter service by placing the Respond to Adapter Request activity at a later point in the process.

Adapter Request-Response Invocation Service is configured during adapter configuration, and the activity uses the information in the adapter configuration to configure this activity.

The following figure illustrates a Wait for Adapter Request activity waiting for a request from Request-Response Invocation Service. In the business process, a Respond to Adapter Request activity sends the response at a later point.



### General

The **General** tab has the following fields:

Field	Module Property?	Description
<b>Name</b>	No	The name displayed as the label for the activity in the process definition. The default value is <code>WaitforAdapterRequest</code> .
<b>Adapter Service</b>	No	The preconfigured Request-Response Invocation Service. You must specify the adapter service when configuring the adapter. Click  to locate the appropriate service for this activity.

Field	Module Property?	Description
<b>Operation</b>	No	Operations defined by the schema used in the selected adapter service.  Select the operation that this process definition implements from the list.
<b>Custom Schema</b>	No	Select or clear the check box to specify whether you want to supply an output class for this activity.  <ul style="list-style-type: none"> <li>• Cleared (default): The <b>Output Editor</b> tab is read-only.</li> <li>• Selected: The <b>Output Editor</b> tab is editable.</li> </ul> <div style="border-left: 1px solid #ccc; padding-left: 10px; margin-top: 10px;">  The feature of Custom Schema in TIBCO ActiveMatrix BusinessWorks 6 is the same as CustomAESchema in TIBCO ActiveMatrix BusinessWorks 5. </div>
<b>Transport Configuration</b>		Click the <b>Transport Configuration</b> link to configure a transport in the <b>Advanced</b> tab.

### Description

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

### Event

The **Event** tab has the following fields:

Field	Module Property?	Description
<b>Event Timeout (seconds)</b>	No	A Timeout specified in seconds. The default value is 60.  If no value is specified in this field, the message waits indefinitely.  If zero(0) is specified, the event is discarded immediately, unless this activity has already been executed.
<b>Activity Timeout (msec)</b>	No	The amount of time (in milliseconds) to wait if the message arrives before this activity is executed in the process instance. If the event times out, an error is logged and the event is discarded.  This field contains an XPath expression that specifies the timeout value for the activity.  To edit the XPath expression, click  .

### Advanced

The **Advanced** tab contains the **Transport Type** field. You can select a transport type in the **Transport Type** list. For more information, see [Transport Type](#).

## Output Editor

The Output Editor tab defines the schema used for messages: Map, Stream, or XML Text. Map messages are name or value pairs.

You can use the schema to define the structure of the outgoing request and the incoming reply. The schema defined in the **Output Editor** tab becomes the body of the message in the **Output** tab.

## Conversations

You can initiate the conversation here. Click **Add New Conversation**  to initiate multiple conversations.

For details about conversations, see *TIBCO ActiveMatrix BusinessWorks Application Development*.

## Output

The following table lists the output items for this activity:

Output Item	Data Type	Description
<b>subject</b>	String	The subject of the message.
<b>replySubject</b>	String	The reply subject of the message.
<b>certifiedSequence Number</b>	String	This element contains the sequence number in which this message was received. It is available only when <b>Tibrv Certified</b> is the transport.
<b>certifiedSender</b>	String	This element contains the CM name of the message sender. It is available only when <b>Tibrv Certified</b> is the transport.
<b>MessageID</b>	String	The ID of the message. This element is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport.
<b>trackingInfo</b>	Complex	The AE tracking information of the sender. This element is a concatenation of "BW." + <i>Application_Name</i> + <i>Module_Name</i> + <i>Process_Name</i> + <i>Activity_Name</i> + <i>User_Part (Business_Key)</i> .
<b>JMSHeaders</b>	Complex	This element contains the message header fields for the message. Only properties applicable to this type of message are displayed. It is available only when <b>JMS Queue</b> or <b>JMS Topic</b> is the transport. For more information about message header fields, see "JMS Properties" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .
<b>body</b>	Complex	A complex schema type specified for the adapter service or a complex schema type designated by user.

## Fault

The **Fault** tab lists the possible exceptions thrown by this activity.



This tab plays the same role as the **Error Output** tab in TIBCO ActiveMatrix BusinessWorks 5.x.

Fault	Thrown When...
<b>TransportException</b>	The transport cannot be created.
<b>DeserializationException</b>	The outgoing message cannot be serialized.
<b>ConfirmationException</b>	The message cannot be confirmed.
<b>ActivityTimeoutException</b>	A timeout error occurs.

## Transport Type

The transport configuration in the **Advanced** tab of an activity specifies the underlying communication characteristics for messages sent and received by the adapter services.

Normally, activities in the Adapter palette use the same transport configuration as the adapter service that they are communicating with; however, you can override the transport configuration of the adapter service by specifying different transport parameters.

You can select a transport type by which the incoming request is received. The transport is used by the adapter service. The following options are available in the **Transport Type** list: **Adapter Service default**, **Tibrv Reliable**, **Tibrv Certified**, **Tibrv Certified Message Queue**, **JMS Queue** and **JMS Topic**. The default transport is based on the associated adapter service. You do not have to specify any parameter.

The transport types are grouped into two categories:

- TIBCO Rendezvous Transport

The TIBCO Rendezvous transport includes Tibrv Reliable, Tibrv Certified, and Tibrv Certified Message Queue.

To use the TIBCO Rendezvous transport when configuring the adapter activities and running the ActiveMatrix BusinessWorks process on a UNIX platform, you can set the `LD_LIBRARY_PATH` and `RV_HOME` environment variables with the TIBCO Rendezvous library path in the Run Configuration dialog.

For more information, see the TIBCO Rendezvous documentation.

- JMS Transport

The JMS transport includes JMS Queue and JMS Topic.

For more information, see the TIBCO Enterprise Message Service documentation.



When referencing an adapter service that requires SSL support, you must specify the directory in which all the trusted certificates are stored in the `RuntimeCertificatesDirectory` module property during the configuration of the adapter service. However, if a user does not provide a trusted certificate folder, no error is reported in the project.

### Tibrv Reliable

The **Tibrv Reliable** transport has the following fields:

Field	Module Property?	Description
<b>RV Connection</b>	Yes	The TIBCO Rendezvous connection. For more information, see "Rendezvous Transport" in <i>TIBCO ActiveMatrix BusinessWorks™ Bindings and Palette Reference</i> .
<b>Message Format</b>	No	The format of the message. The format is <code>AE_message_format</code> or <code>AE_XML_format</code> .
<b>Subject</b>	No	The subject of the incoming request.

### Tibrv Certified

The **Tibrv Certified** transport has the following fields:

Field	Module Property?	Description
<b>RV Connection</b>	Yes	The TIBCO Rendezvous connection.  For more information, see "Rendezvous Transport" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .
<b>Message Format</b>	No	The format of the message. The format is <b>AE_message_format</b> or <b>AE_XML_format</b> .
<b>Subject</b>	No	The subject of the incoming request.
<b>PreRegister Listeners</b>	No	The CM names of the certified subscribers. With <code>preRegisterListener</code> , the publisher can preregister with any expected listeners. If multiple CM names are specified, separate each one with a comma.

### Tibrv Certified Message Queue

The **Tibrv Certified Message Queue** transport has the following fields:

Field	Module Property?	Description
<b>RV Connection</b>	Yes	The TIBCO Rendezvous connection.  For more information, see "Rendezvous Transport" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .
<b>Message Format</b>	No	The format of the message. The format is <b>AE_message_format</b> or <b>AE_XML_format</b> .
<b>Subject</b>	No	The subject of the incoming request.

### JMS Queue

The **JMS Queue** transport has the following fields:

Field	Module Property?	Description
<b>JMS Connection</b>	Yes	The JMS connection.  For more information, see "JMS Connection" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .
<b>Destination</b>	No	The destination object from which an incoming request is received.
<b>Delivery Mode</b>	No	The delivery mode of the published message. This can be <b>persistent</b> or <b>nonpersistent</b> .  This field is only available for the <a href="#">Publish to Adapter</a> and <a href="#">Invoke an Adapter Request-Response Server</a> activities.

Field	Module Property?	Description
<b>Time to Live</b>	Yes	The expiration time (in milliseconds) for the message. The value zero (0) means that the message never expires.  This field is only available for the <a href="#">Publish to Adapter</a> and <a href="#">Invoke an Adapter Request-Response Server</a> activities.
<b>Override Transaction</b>	No	If this check box is selected, the JMS message does not participate in the transaction.  Select this check box to exclude the JMS message from the transaction. Clear this check box to include the JMS message in the transaction  This check box is only available for the <a href="#">Publish to Adapter</a> and <a href="#">Invoke an Adapter Request-Response Server</a> activities.
<b>JMS Application Properties</b>	No	The message properties specific to the JMS application.

### JMS Topic

The **JMS Topic** transport has the following fields:

Field	Module Property?	Description
<b>JMS Connection</b>	Yes	The JMS connection.  For more information, see "JMS Connection" in <i>TIBCO ActiveMatrix BusinessWorks Bindings and Palette Reference</i> .
<b>Destination</b>	No	The destination object from which an incoming request is received.
<b>Durable</b>	No	Select or clear this check box to specify whether the request is a durable subscriber.  The check box is available only for the following activities: <ul style="list-style-type: none"> <li>• <a href="#">Adapter Request-Response Server</a></li> <li>• <a href="#">Adapter Subscriber</a></li> <li>• <a href="#">Wait for Adapter Message</a></li> <li>• <a href="#">Wait for Adapter Request</a></li> </ul>
<b>Durable Name</b>	No	The name of the durable subscription that is registered with the JMS server in this field.  This field is only available when the <b>Durable</b> check box is selected.

Field	Module Property?	Description
<b>Delivery Mode</b>	No	The delivery mode of the published message. This can be <b>persistent</b> or <b>nonpersistent</b> .  This field is only available for the <a href="#">Publish to Adapter</a> and <a href="#">Invoke an Adapter Request-Response Server</a> activities.
<b>Time To Live</b>	Yes	The expiration time (in milliseconds) for the message. The value zero (0) means that the message never expires.  This field is only available for the <a href="#">Publish to Adapter</a> and <a href="#">Invoke an Adapter Request-Response Server</a> activities.
<b>Override Transaction</b>	No	If this check box is selected, the JMS message does not participate in the transaction.  Select this check box to exclude the JMS message from the transaction. Clear this check box to include the JMS message in the transaction.  This check box is only available for the <a href="#">Publish to Adapter</a> and <a href="#">Invoke an Adapter Request-Response Server</a> activities.
<b>JMS Application Properties</b>	No	Any application-specific message property that is part of the message.

## Configure an SSL for JMS Transport Type on Adapter Service

SSL is only supported for the JMS transport type. You can configure an SSL for the JMS transport type on adapter service in TIBCO Business Studio™.

### Prerequisites

First, you should create an adapter service. The adapter service that is created gets listed under **Adapter Configuration** in the Project Explorer view.

### Procedure

1. In the Project Explorer view under **Adapter Configuration**, select the adapter service you have created.  
The adapter service is now displayed in the Editor.
2. In the Configuration view, click the **Transports** tab.  
The Transports dialog box is displayed under the selected adapter service in the Editor.
3. Under **Direct** in the **Provider URL**, change the provider from **jmsProviderUrl** to **jmsSslProviderUrl**.
4. Under **More Options**, select the **Use SSL** checkbox.
5. Click the Configuration icon.  
The SSL Configuration dialog box is displayed.
6. Click the **Basic** tab.

7.  Create a new folder to store the trusted certificates in the project and import your certificate file to the newly created folder. The certificate file must be a file with extension .cert.

In **Trusted Certificates Folder**, click the ... button. The Select Trusted Certificates Folder dialog box is displayed. In the Select Trusted Certificates Folder dialog box, select the created folder.

8. In **Client Identity**, select the keystore provider resource that is available. If you do not have a keystore provider, click **Create Shared Resource** and enter the details. For more information on the keystore provider resource, see *TIBCO ActiveMatrix BusinessWorks™* documentation.
9. In **Client key Alias**, enter the alias.
10. In **Client Key Password**, enter the key password.
11. Click **OK**.  
Then select the project and click **Test Connection**. The message "Test Connection Successfully!" is displayed.

## Supported Adapters

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Three native adapters and three non-native adapters are supported in the TIBCO Business Studio environment.

The following lists the supported adapters:

- Native adapters:
  - TIBCO ActiveMatrix® Adapter for Database
  - TIBCO ActiveMatrix® Adapter for Files for Unix/Win
  - TIBCO ActiveMatrix® Adapter for SAP
- Non-native adapters:
  - TIBCO ActiveMatrix® Adapter for PeopleSoft
  - TIBCO ActiveMatrix® Adapter for Siebel
  - TIBCO ActiveMatrix® Adapter for Tuxedo

For details about the supported versions, see the Readme file.

For details about the products, see each product documentation set.

Regarding the non-native adapters, you can create an adapter project in TIBCO Designer, validate the project and then migrate the project into TIBCO Business Studio. After migrating, the Eclipse GUI provided by TIBCO Business Studio is available for those non-native adapters. You can modify the process configuration, define new processes and add activities from the Adapter Palette panel. However, you cannot modify adapter configurations for the migrated project, add new adapter configurations or adapter services directly in TIBCO Business Studio.

If you want to modify an adapter configuration for the migrated project, you can modify the instance in TIBCO Designer, save it and migrate the project into TIBCO Business Studio again.



The concept of adapter configuration in TIBCO ActiveMatrix Adapter Framework is the same as adapter instance in the runtime adapters.