

# **TIBCO ActiveMatrix BusinessWorks™ Plug-in for Amazon S3 User's Guide**

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# TIBCO Documentation and Support Services

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

<https://docs.tibco.com>

## Product-Specific Documentation

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

- *TIBCO ActiveMatrix BusinessWorks Plug-in for AmazonS3 Installation*
- *TIBCO ActiveMatrix BusinessWorks Plug-in for Amazon S3 User's Guide*
- *TIBCO ActiveMatrix BusinessWorks Plug-in for Amazon S3 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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- If you already have a valid maintenance or support contract, visit this site:

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<https://community.tibco.com>

## Plug-in Overview

TIBCO ActiveMatrix BusinessWorks™ Plug-in for Amazon S3, provides secure, durable, and highly-scalable access to cloud storage. Amazon Simple Storage Service (Amazon S3) is an easy to use object storage service and comes with a simple web service interface for storing and retrieving data from anywhere on the web.

TIBCO ActiveMatrix BusinessWorks is an easy to use integration product suite for enterprise, web, and mobile applications. It uses the Eclipse graphical user interface (GUI) and the TIBCO Business Studio™, for defining business processes and the process engine to execute them.

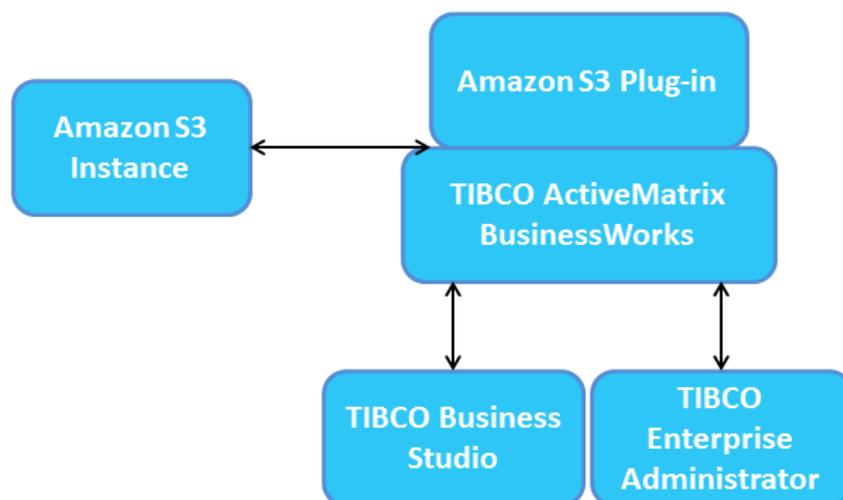
You can use the TIBCO ActiveMatrix BusinessWorks Plug-in for Amazon S3 to access Amazon S3 objects and buckets by using **Put**, **Get**, and **Delete** operations on objects and buckets. You can also use this plug-in to update other configurations such as policies, access control lists, and Amazon Web Services (AWS) console access for objects and buckets.

TIBCO ActiveMatrix BusinessWorks Plug-in for Amazon S3 integrates into TIBCO ActiveMatrix BusinessWorks™, adds an Amazon S3 Palette and an Amazon S3 Shared Resource to TIBCO Business Studio.

You can use the plug-in to:

- Set up a connection using the Amazon connection shared resource
- List details about objects or get objects
- Create new buckets and upload new objects to the buckets
- Delete existing buckets or objects inside buckets
- Update versioning, policies, access control lists, website access, cross-origin resource sharing for buckets, and access control lists for objects

The following figure describes the relationship between an Amazon S3 instance, TIBCO ActiveMatrix BusinessWorks Plug-in for Amazon S3, and TIBCO ActiveMatrix BusinessWorks.



The following list describes each item in the earlier figure and the relationship between them:

- Amazon S3 Instance with which TIBCO ActiveMatrix BusinessWorks Plug-in for Amazon S3 communicates.
- TIBCO ActiveMatrix BusinessWorks Plug-in for Amazon S3 plugs into TIBCO ActiveMatrix BusinessWorks and connects to Amazon S3 instance.
- TIBCO ActiveMatrix BusinessWorks is an easy-to-use integration product suite for enterprise applications.

- TIBCO Business Studio is the graphical user interface (GUI) used by TIBCO ActiveMatrix BusinessWorks and the plug-in to design business processes, and the process engine is used to execute them.
- TIBCO® Enterprise Administrator provides a centralized administrative interface to manage and monitor the plug-in applications deployed in an enterprise.

# Getting Started

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A typical workflow for using the plug-in to achieve different goals includes creating a process, testing it in the debugger, and deploying the application.

TIBCO ActiveMatrix BusinessWorks uses the Eclipse graphical user interface (GUI) provided by TIBCO Business Studio to define business processes and generate Enterprise Archives (EAR files). The EAR file is deployed and run in the ActiveMatrix BusinessWorks runtime, and also is managed by using TIBCO Enterprise Administrator (TEA).

The typical workflow for using the plug-in is:

1. [Creating a Project](#)
2. [Creating an Amazon S3 Shared Resource Connection](#)
3. [Configuring a Process](#)
4. [Debugging and Running a Process](#)
5. [Deploying Applications](#)

## Creating a Project

Projects are BusinessWorks application modules that are created in TIBCO Business Studio. A project contains various resources.

### Procedure

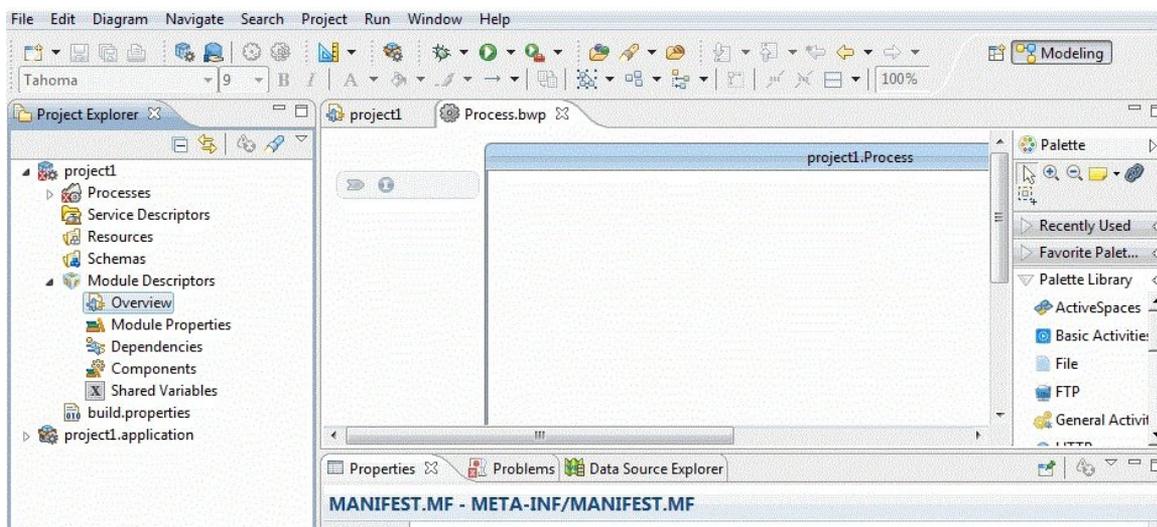
1. Start TIBCO Business Studio.
2. Click **File > New > BusinessWorks Resources**.
3. Click **BusinessWorks Application Module** in the BusinessWorks Resource dialog. Click **Next**.
 



There are several ways to open the New BusinessWorks Application Module dialog and create a new project in TIBCO Business Studio. See the TIBCO ActiveMatrix BusinessWorks documentation for more information.
4. Type a name for the project that you are creating in the **Project name** field.
5. Keep the **Use default location**, **Create empty process**, and **Create Application** check boxes selected. Click **Finish**.

### Result

A project and an application are created and displayed in the Project Explorer view. The Process editor opens automatically.



## Creating an Amazon S3 Shared Resource Connection

Introduces why the shared resource is needed or what is function of the shared resource.

### Procedure

1. Expand the created project in the Project Explorer view.
2. Right-click the **Resources** folder and select **New > Amazon Connection**.
3. Type a name in the **Resource Name** field in the Amazon Connection dialog. Click **Finish**.
4. Configure the Amazon Connection shared resource in the displayed editor, as described in [Amazon S3 Shared Connection Resource](#).

## Configuring a Process

Processes define the business logic. After a project is created, you must configure the process by adding activities, conditions, and services.

### Procedure

1. Select an activity from the Palette view and drop it in the Process editor.  
For example, select the Timer activity from the General Activities palette and drop it in the Process editor.
2. Click  to create links between the activities and configure the condition types.
3. Configure the added activities, as described in [Amazon S3 Palette](#).



An Amazon Connection shared resource is required when configuring the activities. See [Creating an Amazon S3 Shared Resource Connection](#) for more details on how to create the Amazon Connection shared resource.

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

## Debugging and Running a Process

Debug the application you have configured to ensure that the application configuration is correct.

### Procedure

1. Open the process you have configured in TIBCO Business Studio.
2. On the toolbar, click **Run > Debug Configurations**.
3. Click **BusinessWorks Application > BWApplication** in the left panel.
4. Ensure only the application you want to debug and run is selected in the **Applications** tab in the right panel.
5. Click the **Advanced** tab and click **Browse** to locate the logback file.  
By default, the log file resides in the `TIBCO_HOME/bw/version_number/config/design/logback` directory and error logs are captured. See [Managing Logs](#) for more details.
6. Click **Debug**.  
TIBCO Business Studio changes to the Debug perspective. Logs are displayed in the Console view.

## Checking Output of an Activity

After debugging the application, you can check the output of activities.

### Procedure

1. In the Debug perspective, expand **BWApplication** and click the activity in the upper left panel.
2. In the upper right panel, click the **Job Data** view and click **Output**.

### Result

The output of the activity is displayed.



You can also check the activity output in the plug-in logs. See [Managing Logs](#) for more information.

## Deploying Applications

After deploying applications, you can manage BusinessWorks applications by using TIBCO Enterprise Administrator.

### Prerequisites

The following tasks are required before deploying applications:

- [Creating a Project](#).
- [Generating an EAR File](#).

A typical workflow of deployment includes:

1. Upload an EAR file.
2. Deploy an application.
3. Configure an application.

4. Start an application.

You can deploy an application EAR file by using the command-line mode with the **bwadmin** utility. See *TIBCO ActiveMatrix BusinessWorks Administration* for more details about how to deploy an application.

## Generating an EAR File

Application archives are enterprise archive (EAR) files that are created in TIBCO Business Studio. An EAR file is required when deploying an application.

### Prerequisites

An application project has already been created, as described in [Creating a Project](#).



There are many ways to generate an EAR file, the following procedure is one of the many methods. See *TIBCO ActiveMatrix BusinessWorks Administration* for more information.

### Procedure

1. Go to the File Explorer view and click the  icon.
2. Select the folder where you want to generate the EAR file and click **OK**.  
The new folder is displayed in the File Explorer view.
3. Drag the application from the Project Explorer view to the new folder in the File Explorer view.  
The EAR file is generated with the name `<name>.<application>_<version>.ear`.

# Amazon S3 Shared Resource Connection

The Amazon connection is a shared resource that describes the Amazon connection. You can use the Amazon S3 shared connection resource to specify the configuration details that connects an Amazon S3 Client to an Amazon S3 instance.

## General

The **General** tab shows the package that stores the Amazon S3 shared resource and the shared resource name. You can also provide a description for the shared resource in this tab.

The following table describes the fields in the **General** tab of the Amazon S3 shared resource:

Field	Module Property?	Description
Package	No	Package to be added
Name	No	Name to be displayed as a label for the shared resource
Description	No	A short description for this shared resource

## Amazon Connection Configuration

You can provide information required to establish a connection with Amazon S3.

The following table describes the fields in the **Amazon Connection** tab of the Amazon S3 shared resource:

Field	Module Property ?	Description
<b>Access Key</b>	Yes	Access key to connect to the Amazon S3 API
<b>Secret Key</b>	Yes	Secret key to connect to the Amazon S3 API

## Amazon Connection Advanced Configuration

The following table describes the fields in the **Amazon Connection Advanced Configuration** tab of the Amazon S3 shared resource:

Field	Module Property ?	Description
<b>Client Type</b>	No	Select between the default or customized AWS client configuration Defaults to the default client type
<b>Connection Timeout</b>	Yes	Number of milliseconds that the attempt to create an AWS client connection waits before timing out Defaults to 10 seconds

Field	Module Property ?	Description
<b>ClientExecutionTimeout</b>	Yes	Default HTTP timeout for all requests made on this connection  Disabled by default: 0 seconds
<b>MaxErrorRetry</b>	Yes	Number of retries the AWS client attempts for HTTP error code 5xx before reporting an error
<b>RequestTimeout</b>	Yes	Number of milliseconds any request can take before being timed out.  A request may constitute several individual HTTP requests. This is the difference between this setting and the ClientExecutionTimeout setting.  Disabled by default: 0
<b>Use Gzip</b>	Yes	Uses Gzip communications  Defaults to false
<b>Use Proxy Settings</b>	No	Enables or disables the fields related to proxy settings  Disabled by default. If disabled no proxy server is used.
<b>NonProxy Hosts</b>	Yes	List of hosts that should be reached directly, bypassing the proxy.  This is a list of patterns separated by ' '. The patterns might start or ends with a '*' for wildcards. Any host matching one of these patterns is reached through a direct connection instead of through the proxy.
<b>Preemptive Basic Proxy Auth</b>	Yes	Sets whether to attempt to authenticate preemptively against proxy servers by using basic authentication
<b>Proxy Domain</b>	Yes	Sets the optional Windows domain name for configuring an NTLM proxy
<b>Proxy Workstation</b>	Yes	Sets the optional Windows workstation name for configuring NTLM proxy support
<b>Proxy Host</b>	Yes	Sets the proxy host the client connects through
<b>Proxy Port</b>	Yes	Sets the proxy port the client connects through
<b>Proxy Username</b>	Yes	Sets the proxy user name to use
<b>Proxy Password</b>	Yes	Sets the proxy password to use

## Amazon S3 Palette

The Amazon S3 palette contains activities that you can add to your business processes.

The palette contains the following shared connection:

- [Amazon S3 Shared Connection Resource](#)

The palette also contains the following activities:

- [GetObject](#)
- [Put](#)
- [Delete](#)
- [Update](#)

### GetObject

The GetObject activity is used to get an Amazon S3 object.

#### General

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

Field	Module Property?	Description
<b>Name</b>	No	Name to be displayed as a label for the activity in the process
<b>Amazon Connection</b>	Yes	Provides connection details to communicate with an Amazon S3 instance
<b>Operation Type</b>	No	<p>You can choose from the following options provided:</p> <ul style="list-style-type: none"> <li>• <b>All:</b> Get details of all objects in the selected bucket</li> <li>• <b>Single:</b> Retrieve an object from the selected bucket</li> <li>• <b>List Buckets:</b> Provide a list of all the buckets available to the user based on the client credentials in the client connection used by this activity.</li> </ul> <p>The input tab provides a prefix which can be used to trim the list.</p>
<b>Bucket</b>	No	Select the required bucket
<b>Output Type</b>	No	<p>Output type of the get single object operation</p> <p>You can use this operation only to get a single object operation. The default value is File.</p> <ul style="list-style-type: none"> <li>• <b>File:</b> Get the object and store it on the specified file path</li> <li>• <b>Text:</b> Get the object and show the object content as text</li> <li>• <b>Binary:</b> Get the object and show the object content as binary</li> </ul>

## Description

In the **Description** tab, you can provide a short description of the GetObject activity.

Field	Module Property?	Description
<b>Description</b>	No	Description of the GetObject activity

## Input

The input of the activity varies depending on the **Operation Type** and **Output Type** specified in the **General** tab.

### *Input for All operation Get Objects*

Input Item	Data Type	Description
bucketName	String	Name of the Amazon S3 bucket to be listed
prefix	String	Optional parameter It restricts the response to keys beginning with the specified prefix. Use prefixes to separate a bucket into different sets of keys.

### *Input for Single operation Get Objects*

Input Item	Data Type	Description
bucketName	String	Name of the bucket containing the desired object
key	String	Key under which the desired object is stored
versionId	String	Amazon S3 version ID specifying the version of the object to be downloaded
destinationFilePath	String	Local path with the file name when the value specified in the <b>Output Type</b> field in the <b>General</b> tab is File. The object is downloaded in the specified location.
range	Complex	Optional inclusive byte range within the desired object that is downloaded. The range consists of the following information: <ul style="list-style-type: none"> <li><b>start</b>: Start of the inclusive byte range to download</li> <li><b>end</b>: End of the inclusive byte range to download</li> </ul>

*Input for List Buckets operation*

Input Item	Data Type	Description
prefix	String	Prefix to be matched against the buckets list to filter the list provided on output

**Output**

The output of the activity varies depending on the **Operation Type** and **Output Type** specified in the **General** tab.

*Output for All operation Get Objects*

Output Item	Data Type	Description
bucketName	String	Name of the bucket containing the desired object
prefix	String	Prefix Use prefixes to separate a bucket into different sets of keys
objectList	Complex	List of objects in the bucket
objectSummary	Complex	Information about the object

The following information is provided in the **objectSummary**:

Output Item	Data Type	Description
bucketName	String	Name of the bucket specified as input to this activity
eTag	String	Hex-encoded 128 bit MD5 digest of this object according to RFC 1864
key	String	Key that identifies this object
lastModified	Date	Value of the Last Modified header indicating the date and time at which Amazon S3 last recorded a modification of this object
owner	String	ID and display name of the object's owner in separate fields labeled <b>id</b> and <b>displayName</b>
storageClass	String	Amazon S3 storage class for this object
size	Integer	Size of the object in bytes

*Output for Single operation Get Objects*

Output Item	Data Type	Description
bucketName	String	Name of the bucket containing the desired object

Output Item	Data Type	Description
key	String	Key under which the desired object is stored
destinationFilePath	String	Local path with file name when the value specified in the <b>Output Type</b> field in the <b>General</b> tab is <b>File</b> .
textContent	String	The text content of the file when the value specified in the <b>Output Type</b> field in the <b>General</b> tab is <b>Text</b> .
binaryContent	base64Binary	The binary content of the file when the value specified in the <b>Output Type</b> field in the <b>General</b> tab is <b>Binary</b> .
metadata	Complex	Information about the object

The following information is provided in the **metadata**:

Output Item	Data Type	Description
versionid	String	Version ID of the object
cacheControl	String	Optional cache control HTTP header You can specify caching behavior along the HTTP request/reply chain.
contentDisposition	String	Optional content disposition HTTP header It specifies the presentation information for the object such as the recommended file name when saving the object.
contentEncoding	String	Optional content encoding HTTP header It specifies the content encoding which has been applied to the object. It also specifies the decoding mechanisms that must be applied in order to obtain the media-type referenced by the <b>contentType</b> field.
contentLength	String	Content length HTTP header indicating the size of the object in bytes
contentMD5	String	Base64 encoded 128 bit MD5 digest of the associated object (excluding the headers) according to RFC 1864
contentType	String	Content type HTTP header It indicates the type of content stored in the associated object.
eTag	String	Hex-encoded 128 bit MD5 digest of the associated object according to RFC 1864
expirationTime	Date	Time this object expires and is completely removed from Amazon S3

Output Item	Data Type	Description
expirationTimeRuleId	String	BucketLifeCycleConfiguration rule ID for this object's expiration; null if it does not expire.
httpExpiresDate	Date	Date when the object can no longer be cached
instanceLength	Integer	Physical length of the object stored in Amazon S3
lastModified	Date	Value of the Last Modified header indicating the date and time at which Amazon S3 last recorded a modification to the associated object
ongoingRestore	String	Value which indicates whether there is ongoing restore request
restoreExpirationTime	Date	Time at which an object that is temporarily restored from Amazon Glacier, expires, and needs to be restored in order to be accessed again
serverSideEncryption	String	True if server side encryption has been enabled for this object
seeAlgorithm	String	Server side encryption algorithm when encrypting the object by using keys managed by Amazon Web Services
seeAwskmsKeyId	String	Amazon Web Services Key Management System key ID used for server side encryption of the Amazon S3 object
seeCustomerKeyMd5	String	Base64 encoded MD5 digest of the encryption key for server side encryption, if the object is encrypted by using keys provided by a customer
storageClass	String	Amazon Web Service S3 storage class for this object
userMetadata	String	Metadata <b>key</b> and metadata <b>value</b> are enumerated here if user metadata has been established for this object

*Output for List Buckets operation*

Input Item	Data Type	Description
bucketName	String	This repeating element describes all the buckets that satisfy the prefix filter (if the filter is provided)

**Fault**

The **Fault** tab lists exceptions that are thrown by the GetObject activity. It has the following fields:

Error Schema Element	Data Type	Description
Amazon S3 Plugin Exception	Complex	Any exception created by TIBCO BusinessWorks Plug-in for Amazon S3  <b>msg:</b> Error message description that is returned by the plug-in <b>msgCode:</b> Error code that is returned by the plug-in
Amazon S3 Client Exception	Complex	Any exception or error reported by Amazon S3 Client  <b>msg:</b> Error message description that is returned by the plug-in <b>msgCode:</b> Error code that is returned by the plug-in
Amazon S3 Service Exception	Complex	Any exception or error reported by Amazon S3 instance  <b>msg:</b> Error message description that is returned by the plug-in <b>msgCode:</b> Error code that is returned by the plug-in

## Put

The Put activity is used to upload Amazon S3 objects, copy objects between buckets, and create new buckets.

### General

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

Field	Module Property?	Description
<b>Name</b>	No	Name to be displayed as a label for the activity in the process
<b>Amazon Connection</b>	Yes	Provides connection details to communicate with an Amazon S3 instance
<b>Service Name</b>	No	You can choose from the two options provided: <ul style="list-style-type: none"> <li>• <b>Object:</b> Upload objects and copy objects between buckets</li> <li>• <b>Bucket:</b> Create a new bucket</li> </ul>
<b>Region</b>	No	Select a region to create a bucket  This field is available only if the value specified in the <b>Service Name</b> field is <b>Bucket</b> .
<b>Bucket</b>	No	Select a bucket  This field is available only if the value specified in the <b>Service Name</b> field is <b>Object</b> .

Field	Module Property?	Description
<b>Put Type</b>	No	Select Put type Upload or Copy  In Upload mode, the activity uploads the content provided on the input schema to the bucket using the specified key.  In Copy mode, the contents of the source bucket and key are copied to the destination bucket and key. The copy operation takes place entirely in AWS.  This field is available only if the value specified in the <b>Service Name</b> field is <b>Object</b> .
<b>Input Type</b>	No	Content of the type of object that must be uploaded  This field is available only if the value specified in the <b>Service Name</b> field is <b>Object</b> and the value specified in the <b>Put Type</b> field is <b>Upload</b> . The default value is File. <ul style="list-style-type: none"> <li>• <b>File</b>: Upload file from the specified file path</li> <li>• <b>Text</b>: Upload text content as the object content</li> <li>• <b>Binary</b>: Upload binary content as the object content</li> </ul>
<b>Target Bucket</b>	No	Select the destination bucket  This field is available only if the value specified in the <b>Service Name</b> field is <b>Object</b> and the value specified in the <b>Put Type</b> field is <b>Copy</b> .

### Description

In the **Description** tab, you can provide a short description of the Put activity.

Field	Module Property?	Description
<b>Description</b>	No	Description of the Put activity

### Input

The input of the activity varies depending on the **Service Name**, **Put Type**, and **Input Type** specified in the **General** tab.

#### *Input for Put Bucket*

Input Item	Data Type	Description
bucketName	String	Name of the bucket to be created
region	String	Amazon S3 region in which to create a new bucket

*Input for Put Object*

Input Item	Data Type	Description
bucketName	String	Name of an existing bucket, to which the user has Write permission
key	String	Key under which the desired object is stored
encoding	String	<p>Metadata that is carried with the object in and out of Amazon Web Services S3.</p> <p>This item is available to the application retrieving the object so that the application performs appropriate decoding operation if required. For example, gzip.</p> <p> Using this parameter does not modify the data.</p> <p>This item is available only when the value specified in the <b>Put Type</b> field in the <b>General</b> tab is <b>Upload</b>.</p>
storageClass	String	<p>Storage class to be used for the Put operation</p> <p>The class must be either <code>Standard</code> or <code>StandardInfrequentAccess</code>. See the AWS documentation for description of these storage classes.</p>
serverSideEncrypt	Boolean	Indicates that AWS should encrypt data when it is at rest (that is, on disk) if the value is true. In this mode, the keys are handled by AWS.
destinationBucketName	String	<p>Destination bucket name for the object to be copied</p> <p>This item is available only when the value specified in the <b>Put Type</b> field in the <b>General</b> tab is <b>Copy</b>.</p>
destinationKey	String	<p>Destination object name for the object to be copied</p> <p>This item is available only when the value specified in the <b>Put Type</b> field in the <b>General</b> tab is <b>Copy</b>.</p>
file	String	<p>File containing the data to be uploaded to Amazon S3</p> <p>This item is available only when the value specified in the <b>Put Type</b> field in the <b>General</b> tab is <b>Upload</b> and the value specified in the <b>Input Type</b> field is <b>File</b>.</p>
textContent	String	<p>Text content of the data to be uploaded to Amazon S3</p> <p>This item is available only when the value specified in the <b>Put Type</b> field in the <b>General</b> tab is <b>Upload</b> and the value specified in the <b>Input Type</b> field is <b>Text</b>.</p>
binaryContent	base64Binary	<p>Binary content of the data to be uploaded to Amazon S3</p> <p>This item is available only when the value specified in the <b>Put Type</b> field in the <b>General</b> tab is <b>Upload</b> and the value specified in the <b>Input Type</b> field is <b>Binary</b>.</p>

## Output

### *Output for Put Bucket*

Output Item	Data Type	Description
bucketName	String	Name of the bucket
creationDate	Date	Date when the bucket is created
owner	Complex	Owner details of the bucket: <ul style="list-style-type: none"> <li>• <b>Id</b>: User ID of the owner</li> <li>• <b>displayName</b>: Display name of the owner</li> </ul>

### **Output for Put Object-upload**

Output contains the information returned by Amazon S3 for the newly created object.

### **Output for Put Object-copy**

Output contains the information returned by Amazon S3 for the copied object.

## Fault

The **Fault** tab lists exceptions that are thrown by the Put activity. It has the following fields:

Error Schema Element	Data Type	Description
Amazon S3 Plugin Exception	Complex	Any exception created by TIBCO BusinessWorks Plug-in for Amazon S3 <b>msg</b> : Error message description that is returned by the plug-in <b>msgCode</b> : Error code that is returned by the plug-in
Amazon S3 Client Exception	Complex	Any exception or error reported by Amazon S3 Client <b>msg</b> : Error message description that is returned by the plug-in <b>msgCode</b> : Error code that is returned by the plug-in
Amazon S3 Service Exception	Complex	Any exception or error reported by Amazon S3 instance <b>msg</b> : Error message description that is returned by the plug-in <b>msgCode</b> : Error code that is returned by the plug-in

## Delete

The Delete activity is used to delete Amazon S3 objects and buckets. The Delete Bucket operation first deletes all objects in a bucket and then deletes the bucket.

### **General**

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

Field	Module Property?	Description
<b>Name</b>	No	Name to be displayed as a label for the activity in the process
<b>Amazon Connection</b>	Yes	Provides connection details to communicate with an Amazon S3 instance
<b>Service Name</b>	No	You can choose from the two options provided: <ul style="list-style-type: none"> <li>• <b>Object:</b> Delete an object from a bucket</li> <li>• <b>Bucket:</b> Delete a bucket</li> </ul>
<b>Bucket</b>	No	Select a bucket
<b>Delete When Empty</b>	No	Enable this option to prevent the delete activity from deleting a bucket that has objects stored in it.  If enabled and the bucket is not empty, the activity is successful but the bucket is not deleted.  This option is not relevant to the <b>Delete Object</b> operation.

### Description

In the **Description** tab, you can provide a short description of the Delete activity.

Field	Module Property?	Description
<b>Description</b>	No	Description of the Delete activity

### Input

The input of the activity varies depending on the **Service Name** specified in the **General** tab.

#### *Input for Delete Bucket*

Input Item	Data Type	Description
bucketName	String	Name of the bucket to be listed

#### *Input for Delete Object*

Input Item	Data Type	Description
bucketName	String	Name of a bucket containing the desired object
key	String	Key under which the desired object is stored
version	String	Amazon S3 version ID specifying a particular version of the object to be deleted

Input Item	Data Type	Description
quiet	boolean	Value to enable or disable the quiet mode for delete objects

### Output

The output activity varies depending on the **Service Name** specified in the **General** tab.

#### *Output for Delete Bucket*

Output Item	Data Type	Description
result	String	Result of the delete bucket operation

#### *Output for Delete Object*

Output Item	Data Type	Description
deleteMakerVersion	String	Name of the bucket containing the desired object
key	String	Key under which the object to be deleted is stored
versionId	String	Version of the object to be deleted
isDeleteMarker	Boolean	Indicates whether the deleted object was a delete marker

### Fault

The **Fault** tab lists exceptions that are thrown by the Delete activity. It has the following fields:

Error Schema Element	Data Type	Description
Amazon S3 Plugin Exception	Complex	Any exception created by TIBCO BusinessWorks Plug-in for Amazon S3 <b>msg</b> : Error message description that is returned by the plug-in <b>msgCode</b> : Error code that is returned by the plug-in
Amazon S3 Client Exception	Complex	Any exception or error reported by Amazon S3 Client <b>msg</b> : Error message description that is returned by the plug-in <b>msgCode</b> : Error code that is returned by the plug-in
Amazon S3 Service Exception	Complex	Any exception or error reported by Amazon S3 instance <b>msg</b> : Error message description that is returned by the plug-in <b>msgCode</b> : Error code that is returned by the plug-in

## Update

The Update activity is used to update properties of Amazon S3 objects and buckets. If you update the Access Control List of objects and buckets, a new access control rule is added to the original Access Control List. If you update any other properties, the properties are reset.

### General

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

Field	Module Property?	Description
<b>Name</b>	No	Name to be displayed as a label for the activity in the process
<b>Amazon Connection</b>	Yes	Provides connection details to communicate with an Amazon S3 instance
<b>Service Name</b>	No	You can choose from the two options provided: <ul style="list-style-type: none"> <li>• <b>Object:</b> Update properties of an object</li> <li>• <b>Bucket:</b> Update properties of a bucket</li> </ul>
<b>Operation Type</b>	No	You can choose one of the following options when service is <b>Bucket</b> : <ul style="list-style-type: none"> <li>• <b>Versioning:</b> Set versioning status for a bucket</li> <li>• <b>ACL:</b> Add Access Control List rule for a bucket</li> <li>• <b>Policy:</b> Set policy for a bucket</li> <li>• <b>Website:</b> Set website configuration for a bucket</li> <li>• <b>CORS:</b> Set CORS for a bucket</li> </ul> You can choose the following option when service is <b>Object</b> : <ul style="list-style-type: none"> <li>• <b>ACL:</b> Add an Access Control List rule for an object</li> </ul>
<b>Bucket</b>	No	Select a bucket

### Description

In the **Description** tab, you can provide a short description of the Update activity.

Field	Module Property?	Description
<b>Description</b>	No	Description of the Update activity

### Input

The input of the activity varies depending on the **Service Name** and **Operation Type** specified in the **General** tab.

*Input for Update Bucket Versioning*

Input Item	Data Type	Description
bucketName	String	Name of the bucket
status	String	Status of the Amazon S3 bucket versioning Valid values are <i>Enabled, Suspended</i> .

*Input for Update Bucket Access Control List*

Input Item	Data Type	Description
bucketName	String	Name of the bucket
acl	Complex	Access Control List You can set permissions to the bucket by Canonical type, Email Address type, and Group type.

*Input for Update Bucket Policy*

Input Item	Data Type	Description
bucketName	String	Name of the bucket
policy	String	Policy of the bucket You can input the JSON text of the policy. It is a good practice not to use any white space in the JSON text.

*Input for Update Bucket Website*

Input Item	Data Type	Description
bucketName	String	Name of the bucket
Configuration	Complex	Configuration of the website It has the following parameters: <ul style="list-style-type: none"> <li>• <b>indexDocumentSuffix:</b> Document to serve when a directory is specified. For example, index.html.</li> <li>• <b>errorDocument:</b> Complete path to the document to serve for 4xx errors</li> </ul>

*Input for Update Bucket Cross-Origin Resource Sharing (CORS)*

Input Item	Data Type	Description
bucketName	String	Name of the bucket

Input Item	Data Type	Description
corsRule	Complex	Rule for Cross-Origin Resource Sharing

You can set the following information in **corsRule**

Input Item	Data Type	Description
id	String	Arbitrary ID of this rule
allowedHeader	String	List of allowed headers Duplicate this node for each specified header.
allowedOrigin	String	Set the allowed origins of this rule Duplicate this node for each specified origin.
allowedMethod	String	HTTP methods GET, PUT, HEAD, POST, and DELETE
maxAgeSeconds	Integer	Set the maximum age of this rule in seconds

*Input for Update Object Access Control List*

Input Item	Data Type	Description
bucketName	String	Name of the object
key	String	Key of the object
acl	Complex	Access Control List You can set permissions to the bucket by ID, email address, or group. In each case, the permission is Read, Write, ReadAcp, or WriteAcp.

## Output

*Output for Update*

Output Item	Data Type	Description
result	String	Execution result of the update operation

## Fault

The **Fault** tab lists exceptions that are thrown by the Update activity. It has the following fields:

Error Schema Element	Data Type	Description
Amazon S3 Plugin Exception	Complex	Any exception created by TIBCO BusinessWorks Plug-in for Amazon S3 <b>msg:</b> Error message description that is returned by the plug-in <b>msgCode:</b> Error code that is returned by the plug-in
Amazon S3 Client Exception	Complex	Any exception or error reported by Amazon S3 Client <b>msg:</b> Error message description that is returned by the plug-in <b>msgCode:</b> Error code that is returned by the plug-in
Amazon S3 Service Exception	Complex	Any exception or error reported by Amazon S3 instance <b>msg:</b> Error message description that is returned by the plug-in <b>msgCode:</b> Error code that is returned by the plug-in

## Sample Project Overview

TIBCO ActiveMatrix BusinessWorks Plug-in for Amazon S3 is packaged with a sample project. You can find the sample project located in the `TIBCO_HOME\bw\palettes\amazons3\version\samples` directory.

### Importing Sample Projects

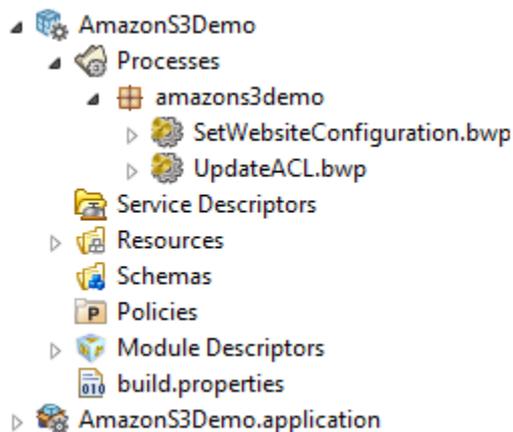
Before running the project, you must import the sample projects to TIBCO Business Studio.

#### Procedure

1. Start TIBCO Business Studio by using one of the following ways:
  - **Microsoft Windows:** Click **Start > All Programs > TIBCO > TIBCO\_HOME > TIBCO Business Studio *version\_number* > Studio for Designers.**
  - **Linux:** Run the TIBCO Business Studio executable file located in the `TIBCO_HOME/studio/version_number/eclipse` directory.
2. 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 locate the samples. Click **Finish.**  
The `AmazonS3Demo.zip` file is located in the `TIBCO_HOME\bw\palettes\amazons3\version\samples` directory.

#### Result

The sample project is imported to TIBCO Business Studio.



### Working with the Amazon S3 Demo Project

This demo project consists of two processes which demonstrate the use of Amazon S3 palette activities. The processes themselves are intended to show only basic functionality, not the design principles.

#### Prerequisites

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

## Configuring Module Properties

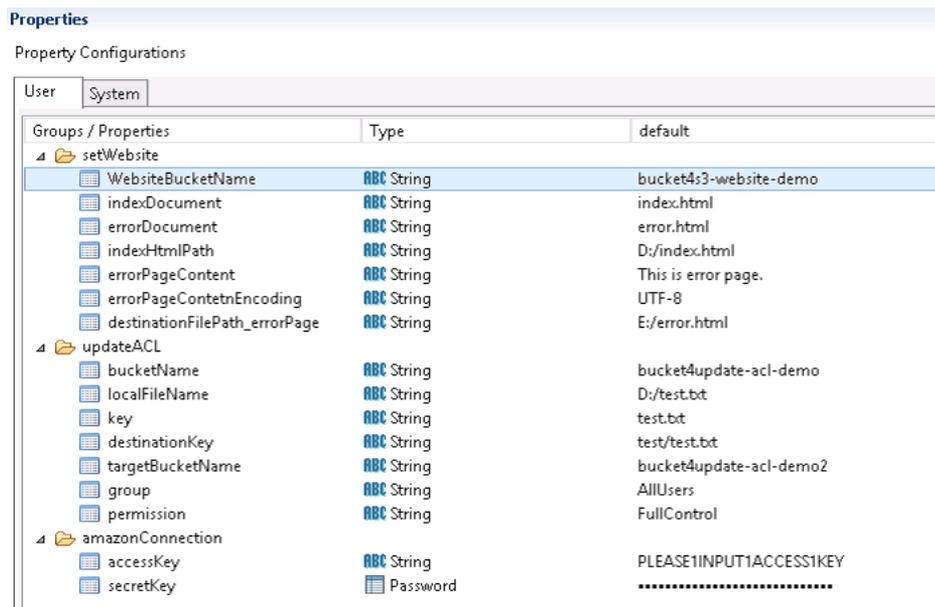
After importing the AmazonS3Demo.zip file, you must configure the module properties before running the processes.

### Prerequisites

- You must update the module properties `setWebsite/indexHtmlPath`, `setWebsite/destinationFilePath_errorPage`, `updateACL/localFileName` to a valid path.
- Update module property `amazonConnection/accessKey` to a valid access key and the module property `amazonConnection/secretKey` to the valid secret key.

### Procedure

- In the Project Explorer view, double-click **Module Descriptors** > **Module Properties**.
  - In the Module Properties panel, configure the module property values accordingly in the default column.



The screenshot shows the 'Properties' window with 'System' selected. It displays a table of property configurations for three groups: setWebsite, updateACL, and amazonConnection. The 'default' column shows the current values for each property.

Groups / Properties	Type	default
setWebsite		
WebsiteBucketName	ABC String	bucket4s3-website-demo
indexDocument	ABC String	index.html
errorDocument	ABC String	error.html
indexHtmlPath	ABC String	D:/index.html
errorPageContent	ABC String	This is error page.
errorPageContentEncoding	ABC String	UTF-8
destinationFilePath_errorPage	ABC String	E:/error.html
updateACL		
bucketName	ABC String	bucket4update-acl-demo
localFileName	ABC String	D:/test.txt
key	ABC String	test.txt
destinationKey	ABC String	test/test.txt
targetBucketName	ABC String	bucket4update-acl-demo2
group	ABC String	AllUsers
permission	ABC String	FullControl
amazonConnection		
accessKey	ABC String	PLEASEINPUT1ACCESS1KEY
secretKey	Password	.....

- On the toolbar, click the  icon to save your changes.



The 'index.html' and 'test.txt' files are packaged in `TIBCO_HOME\bw\palettes\amazons3\version\samples` directory.

## Running a Sample Project

You can run the process in the sample project to see how to perform different operations.

### Prerequisites

Ensure that you have imported the sample project to TIBCO Business Studio, as described in [Importing Sample Projects](#), and configured module properties, as described in [Configuring Module Properties](#).

### Procedure

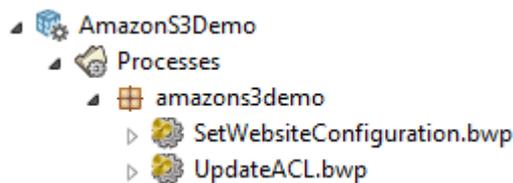
- In the Project Explorer view, double-click **Module Descriptors** > **Components**.

2. By default, all processes are selected in the Components editor. Select the processes you do not want to run, and click the  icon.
3. Click the  icon.
4. From the menu, click **Run > Run Configurations** to run the selected process.
5. In the Run Configurations window, expand **BusinessWorks Application** and click **BW Application**.
6. In the right panel, click the **Applications** tab and select the **AmazonS3Demo.application** check box.
7. Click **Run** to run the process.
8. Click the  icon to stop the process.

## Configuring Sample Processes

The sample project contains two processes. Each process in the project has different functions.

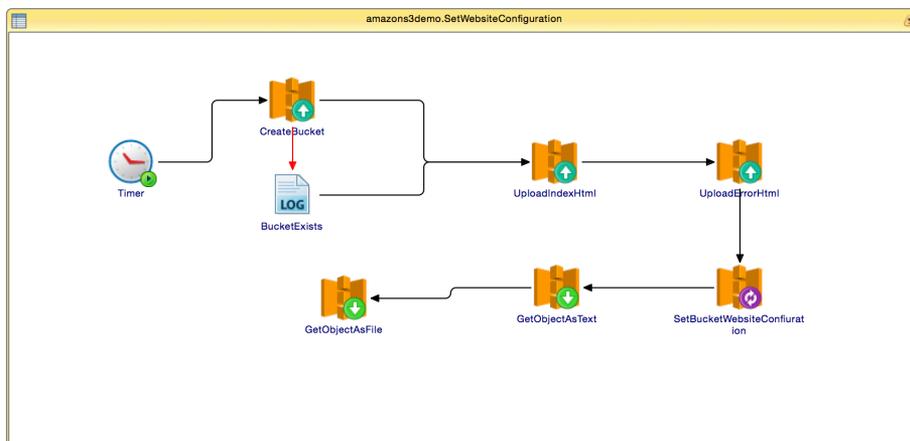
After importing a sample project, expand the Processes resource in the Project Explorer view. All the processes are displayed. See [Importing Sample Projects](#) for more information.



### SetWebsiteConfiguration.bwp

This subprocess demonstrates how to use the plug-in to set the website configuration for a bucket.

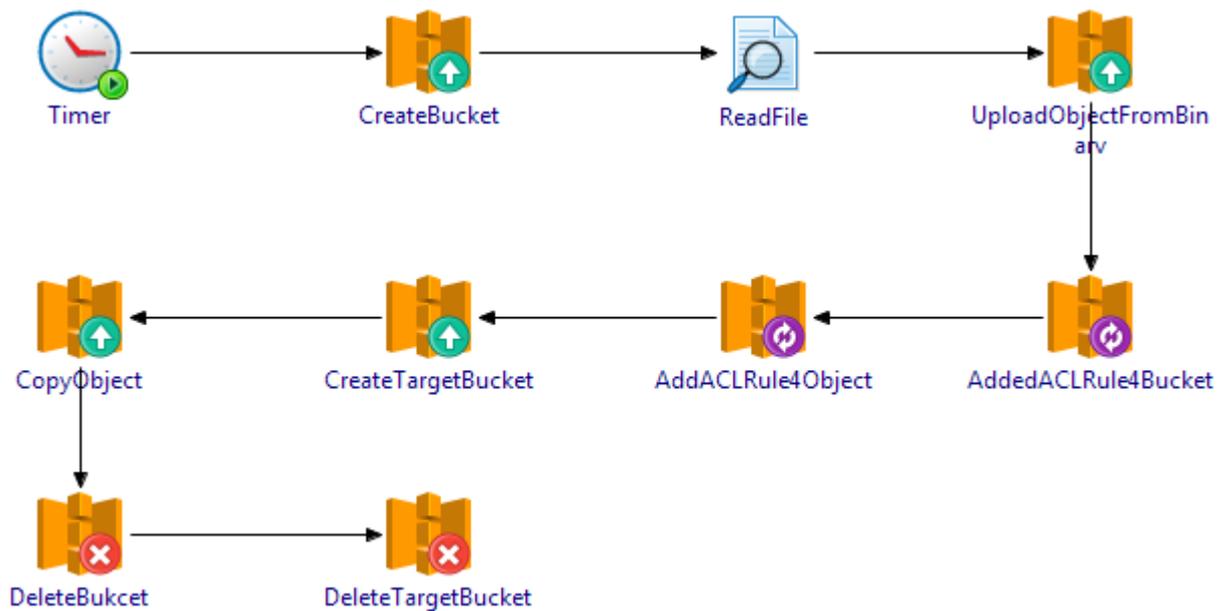
The operations in this process include creating a bucket with Put activity, uploading an object with Put activity, setting website configuration for a bucket with Update activity, and getting an object from Amazon S3 with GetObject activity.



### UpdateACL.bwp

This subprocess demonstrates how to use the plug-in to update Access Control List for a bucket and for an object.

The operations in this process include creating bucket with Put activity, uploading object with Put activity, adding Access Control List rule for a bucket and an object with Update activity, copying object with Put activity and deleting bucket with Delete activity.



# Log Management

Logs are used 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

The plug-in captures logs at different levels.

The following log levels are supported by this plug-in:

Log Level	Description
Debug	Indicates a developer-defined tracing message
Error	Indicates that an irrecoverable error has occurred. Depending on the error severity, the plug-in might continue with the next operation or might stop altogether.

## Setting Up Log Levels

By default, the log level is Error. You can use the plug-in to change the log level to trace different messages.



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.

### 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 the log level for the plug-in.

```
<logger name="com.tibco.bw.palette.amazons3.runtime">
  <level value="DEBUG"/>
</logger>
```

The `level` tag defines the log level and the value is Trace, Debug, Info, or Error.



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 the following node in **BusinessWorks Palette and Activity loggers** area to control the log level for an activity:

```
<logger
name="com.tibco.bw.palette.amazons3.runtime.GetObjectAsynchronousActivity">
  <level value="DEBUG"/>
</logger>
```

For example, if you want to set the log level of the Amazon S3 Put activity to Debug, set the following parameters:

```
<logger name="com.tibco.bw.palette.amazons3.runtime.PutAsynchronousActivity">
  <level value="DEBUG"/>
</logger>
```

For example, if you want to set the log level of the Amazon S3 Shared Resource to Debug, set the following parameters:

```
<logger name="com.tibco.bw.sharedresource.amazons3.runtime">
  <level value="TRACE"/>
</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

Modify 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.



When deploying an application in TIBCO Enterprise Administrator, you must 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 location where the log is exported:

```
<appender name="FILE" class="ch.qos.logback.core.FileAppender">
  <file>c:/bw6-AmazonS3.log</file>
  <encoder>
    <pattern>%d{HH:mm:ss.SSS} [%thread] %-5level %logger{36}-%msg%n</pattern>
  </encoder>
</appender>
```

The `file` tag defines the location to which the log is exported and is the absolute path of the file.

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

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

4. Save the file.

## Error Codes

The exceptions that are thrown by the plug-in are listed with corresponding descriptions and resolutions.

Error Code and Error Message	Role	Category	Description	Resolution
TIBCO-BW-PALETTE-AMAZONS3-500002  IOException occurred while retrieving XML Output for activity [{0}]	errorRole	BW-Plug-in	An unexpected error occurs	Ensure the activity is configured correctly
TIBCO-BW-PALETTE-AMAZONS3-500003  Exception occurred while invoke execute method for activity [{0}].{1}	errorRole	BW-Plug-in	An unexpected error occurs	Ensure the activity is configured correctly
TIBCO-BW-PALETTE-AMAZONS3-500005  AmazonS3ClientException occurred for activity [{0}].{1}	errorRole	BW-Plug-in	An unexpected error occurs	Ensure the activity is configured correctly
TIBCO-BW-PALETTE-AMAZONS3-500006  AmazonS3ServiceException occurred for activity [{0}].{1}	errorRole	BW-Plug-in	An unexpected error occurs	Ensure the activity is configured correctly
TIBCO-BW-PALETTE-AMAZONS3-500007  Bucket already exists	errorRole	BW-Plug-in	An unexpected error occurs	Change the bucket name