TIBCO BusinessEvents®

WebStudio User's Guide

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TIBCO®

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TIBCO Documentation and Support Services

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The TIBCO Product Documentation website is updated frequently and is more current than any other documentation included with the product. To access the latest documentation, visit https://docs.tibco.com.

Product-Specific Documentation

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TIBCO_HOME/release_notes/TIB_businessevents-enterprise_5.6.0_docinfo.html where *TIBCO_HOME* is the top-level directory in which TIBCO products are installed. On Windows, the default *TIBCO_HOME* is C:\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 BusinessEvents Release Notes*
- *TIBCO BusinessEvents Installation*
- *TIBCO BusinessEvents Getting Started*
- *TIBCO BusinessEvents Architect's Guide*
- *TIBCO BusinessEvents Administration*
- *TIBCO BusinessEvents Developer's Guide*
- *TIBCO BusinessEvents Cloud Deployment Guide*
- *TIBCO BusinessEvents Data Modeling Developer's Guide*
- *TIBCO BusinessEvents Event Stream Processing Pattern Matcher Developer's Guide*
- *TIBCO BusinessEvents Event Stream Processing Query Developer's Guide*
- *TIBCO BusinessEvents Configuration Guide*
- *TIBCO BusinessEvents WebStudio User's Guide*
- *TIBCO BusinessEvents Decision Manager User's Guide*
- Online References:

    - *TIBCO BusinessEvents Java API Reference*
    - *TIBCO BusinessEvents Functions Reference*

How to Contact TIBCO Support

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- For an overview of TIBCO Support, visit http://www.tibco.com/services/support.
- For accessing the Support Knowledge Base and getting personalized content about products you are interested in, visit the TIBCO Support portal at https://support.tibco.com.
- For creating a Support case, you must have a valid maintenance or support contract with TIBCO. You also need a user name and password to log in to https://support.tibco.com. If you do not have a user name, you can request one by clicking Register on the website.

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TIBCO BusinessEvents WebStudio Concepts

The TIBCO BusinessEvents WebStudio along with the Rule Management Server (RMS) provides an online tool to create and manage business rules and decision tables.

Rules Management Server (RMS)

Rules Management Server (RMS) is a server-based component that manages the repository of the TIBCO BusinessEvents projects, lifecycle of the WebStudio artifacts and WebStudio user access.

RMS provides an easy, secure, and scripted deployment lifecycle. RMS is supported on all platforms that support TIBCO BusinessEvents. Users can access RMS remotely. RMS does not have to be installed on users' machines.

Under certain circumstances, the use of RMS is optional. For details, see *TIBCO BusinessEvents Decision Manager User's Guide*.

You may require some basic configuration before you use RMS. You also set up the project resources required for business users to create decision tables or business rules for each TIBCO BusinessEvents project. See Configuring RMS Server Properties. Administrators can configure authentication and access control as needed, see ACL Preferences.

RMS enables you to check out projects from the repository. The necessary project resources are loaded into the cache and the artifacts are copied into the client's machine. After you are finished working with the projects, you check in the modified artifacts to RMS for approval. For more details about workflow, see WebStudio and RMS User Workflow.

RMS is implemented using TIBCO BusinessEvents. Knowledgeable TIBCO BusinessEvents users can customize it. The example projects are located in the *BE_HOME*/examples/standard/WebStudio directory, you can configure the RMS to take projects from SVN location as well. Note that documentation is provided for the product as it is shipped. If you customize RMS, some documentation might not apply.

TIBCO BusinessEvents WebStudio Overview

As the TIBCO BusinessEvents WebStudio software is an online component, business users can create or manage business rules in a web browser.

In the TIBCO BusinessEvents WebStudio software you can define an executable rule (business rule) based on the rule template and the rule template view defined by the developer in TIBCO BusinessEvents Studio. A decision table in TIBCO BusinessEvents WebStudio is defined using the virtual rule function. RMS also supports lifecycle of domain model, where developers creates the domain models in BusinessEvents Studio and can edit them in Studio as well as WebStudio. Rule templates, rule template views, and virtual functions are created in TIBCO BusinessEvents Studio by developers and are stored in the Rule Management Server (RMS) repositories.

Administrators can define access control settings and can approve or reject commit requests originating from TIBCO BusinessEvents Studio and TIBCO BusinessEvents WebStudio users, check on the status of all such requests, and keep track of all project versions. For more details, see Working with the Worklist Items.

As an administrator you can also deploy decision tables or business rules when they are ready for use, either in an enterprise archive (EAR) file, or as class files. You can deploy class files for use at startup, or perform hot deployment. For more details, see Generating Deployable Files (EAR and Class Files).

The updates made to a decision table from TIBCO BusinessEvents Studio are visible in TIBCO BusinessEvents WebStudio and vice-versa. If you have edited, saved, and committed a decision table in TIBCO BusinessEvents Studio, the changes are displayed in the WebStudio as well in the worklist for approval. Similarly, if you have edited, committed, and approved a decision table in WebStudio, the changes are displayed in TIBCO BusinessEvents Studio after you synchronize the artifacts of the

decision table. For details about synchronizing artifacts in TIBCO BusinessEvents Studio, see *TIBCO BusinessEvents Decision Manager User's Guide*. In case of addition or deletion of a domain model or decision table in TIBCO BusinessEvents Studio, commit the changes in TIBCO BusinessEvents Studio. To see those changes in WebStudio, click the **Refresh** icon in the **Group Contents** section for the project.

For a better UI experience, the recommended screen resolution/scale and the browser zoom should be at 100%.

RMS REST API

You can use RMS through a REST-based web service using the APIs provided with WebStudio. Using these APIs you can perform complete WebStudio functionalities:

- for creating, modifying, or deleting artifacts (business rule, decision table)
- for lifecycle operations, such as, to check out, commit, or approve
- for worklist operations, such as, approval, rejection, or delegation of a worklist item
- for validating artifacts or analyzing decision tables.

After starting the RMS server, you can access API documentation, using the following URL:

http://*<hostname>*:*<port>*/WebStudio/apidoc

For example, the default URL to access the WebStudio API documentation is:

http://localhost:8090/WebStudio/apidoc/

Virtual Rule Functions and Decision Tables

In TIBCO BusinessEvents WebStudio, business users add decision table resources to VRFs. The decision table provides the body to the VRF, also known as the VRF implementation.

In TIBCO BusinessEvents Studio, technical users add *virtual rule functions* (VRFs) to a TIBCO BusinessEvents project. A VRF has no body, similar to a Java interface. Its implementation is provided using decision tables authored in TIBCO BusinessEvents WebStudio. VRFs are used in the TIBCO BusinessEvents project like any other rule function; they can be called from rules or other rule functions.

For example:

```
/**
 * @description
 */
virtual void rulefunction Virtual_RF.Applicant_VirtualRuleFunction {
    attribute {
       validity = ACTION;
}
    scope {
       Concepts.Applicant     applicant;
       Events.ApplicationReceived     applicationreceived;
    }
    body {
    }
}
```

One VRF can have more than one decision table. If a VRF has more than one decision table, functions in TIBCO BusinessEvents determine how the tables are used.

Rule Building with Decision Tables

As a business user, you check out projects from RMS, build decision tables, and submit them for approval in TIBCO BusinessEvents WebStudio.

Decision tables are available in TIBCO BusinessEvents WebStudio in the edit mode, only if you have installed the Decision Manager component while installing the TIBCO BusinessEvents Enterprise Edition.

Decision tables provide a graphical way to build complex business rules. You create table columns by dragging and dropping predefined properties onto the decision table editor. The properties belong to ontology resources defined in the TIBCO BusinessEvents project. However, you can only use the properties specified in the VRF. Columns can be created in other ways too. You then define threshold values (conditions) and actions in the cells of the table. Each row can be thought of as one rule in a table made up of many rules. The individual rules are often straightforward, as in the following examples.

Three Rule Conditions:

```
Person.age < Max(20, Parent.age)
Person.creditscore >= Math.function(...)
Person.gender == "female"
```

Three Rule Actions:

```
Application.status = "ACCEPTED"
Application.credit = 4000
sendNotification()
```

However, one decision table can consist of hundreds, even thousands of rules each of which is executed only when its specific conditions are satisfied. In WebStudio a decision table could be displayed in multiple pages to make them easily manageable.

Exception Tables

Each decision table can optionally have another table known as an exception table. The purpose of the exception table is purely organizational: it enables you to separate the business logic of the main decision table (added by business users) from any non-business logic (generally added by technical users). For example, in the exception table, you could capture situations where fields are blank or contain invalid values, and define actions that send notifications or set return values. The rows of a decision table along with the rows of its exception table are considered in an RTC. If you prefer, you can put non-business logic in the main table instead of using an exception table.

Table Analyzer

The Table Analyzer feature analyzes decision tables and reports problems, such as uncovered ranges for conditions, uncovered domain entries, different set of actions for identical conditions.

Rule Template and Business Rule

A rule template is a specialized rule that contains a pre-conditions section which defines the pre-conditions that must be met in addition to the conditions defined by the business user in a business rule.

The Action Context section of a rule template defines all possible actions that can be taken by a business rule (after all conditions are met). Only the action context statements that the WebStudio user selects and defines as commands in the business rules are actually taken (depending on the rule evaluation at runtime). For a business rule execution to succeed, a business rule definition must include all Actions and the order should be maintained. Completing the definition of an action is a WebStudio user task. If bindings are used (and a view) then in WebStudio, the business rule writer has to enter only the binding values to complete the definition. Action context statements are of three types: create, modify, and call, plus arbitrary actions.

Rule Building with Business Rules

As a business user, you check out projects from RMS, build business rules, and submit them for approval in TIBCO BusinessEvents WebStudio.

Business rules provide builder or a user-friendly HTML form to build rules. In a builder you specify the conditions in the "when" section and the actions in the "then" section. You can use artifacts and supported operators for building conditions and actions. In the user-friendly HTML form, you fill up the values for the conditions and actions.

WebStudio and RMS User Workflow

The rules authored in TIBCO BusinessEvents WebStudio are made available to a TIBCO BusinessEvents application after following a complete approval workflow.

Step 1: RMS Project Setup

A TIBCO BusinessEvents user creates a TIBCO BusinessEvents project, adding the ontology, and writing rules that make use of virtual rule functions (VRFs) and Rule Templates.

The TIBCO BusinessEvents project for RMS is stored at the location defined by a property in the RMS server configuration. The RMS project requires an access control file for authorization.

The RMS server must be running so that the login and workflow actions are available in the TIBCO BusinessEvents WebStudio component.

Step 2: TIBCO BusinessEvents WebStudio

A business user starts the TIBCO BusinessEvents WebStudio component, logs on to RMS, and checks out the project. The business user creates one or more decision tables, business rules, or process and saves the modified project locally, then commits them for approval.

Step 3: Approval

An RMS user (with the "approval" access control rights) working in TIBCO BusinessEvents WebStudio receives the request and reviews the checked-in artifacts and then approves or rejects them. The approved artifacts are available for subsequent checkouts or updates.

Step 4: Generating Deployable Files

An RMS user generates deployable files for resources that are ready for deployment. You can generate EAR files or class files.

Step 5: Deployment

EAR files are deployed in the usual way, as explained in TIBCO BusinessEvents Administration. Class files for decision tables and rule template instance files for business rules are deployed by placing them in a configured location recognized by the TIBCO BusinessEvents engines at start. They can also be hot-deployed.

Display Models in WebStudio

Using display models, you can display text for the artifact and its properties in a simpler form and your preferred language. You can also hide some properties of the artifact using display models.

In the WebStudio run time, the display text for the properties, which are defined in the display model, are displayed instead of the element name. The display model for the artifact and its properties are created in the TIBCO BusinessEvents Studio. See the *TIBCO BusinessEvents Developer's Guide* for more details on how to create display models.

Business Rule Editor

In the Business Rule editor, the display text for the fields are displayed instead of their element name. If the property is left unspecified in the display model, the element name is displayed. Also, those properties are displayed for which the hidden check box was not selected.

Display Text in Business Rule Editor
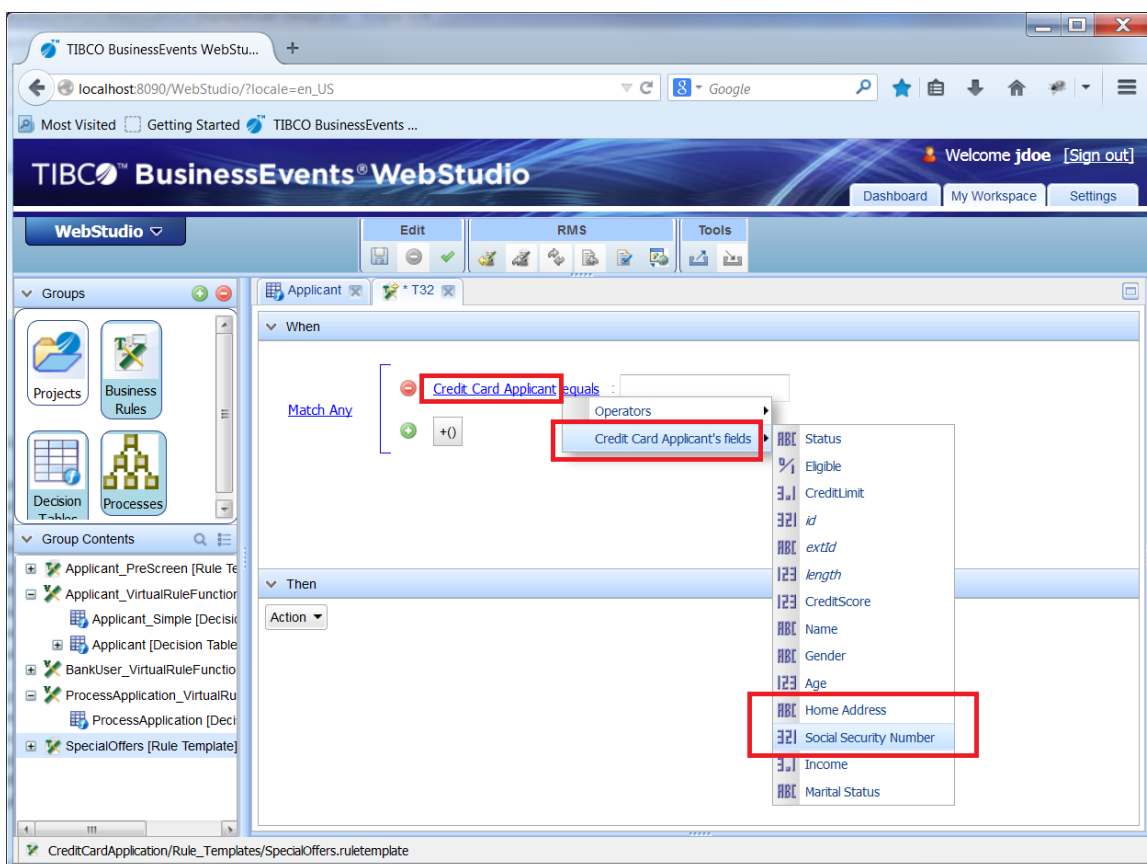
Decision Table Editor

In the Decision Table editor, the display text is displayed in the column heading and also for the arguments under the Decision Table in the Group Content section. All the arguments which are marked as hidden in the display model are not displayed.

Display Text in Decision Table Editor
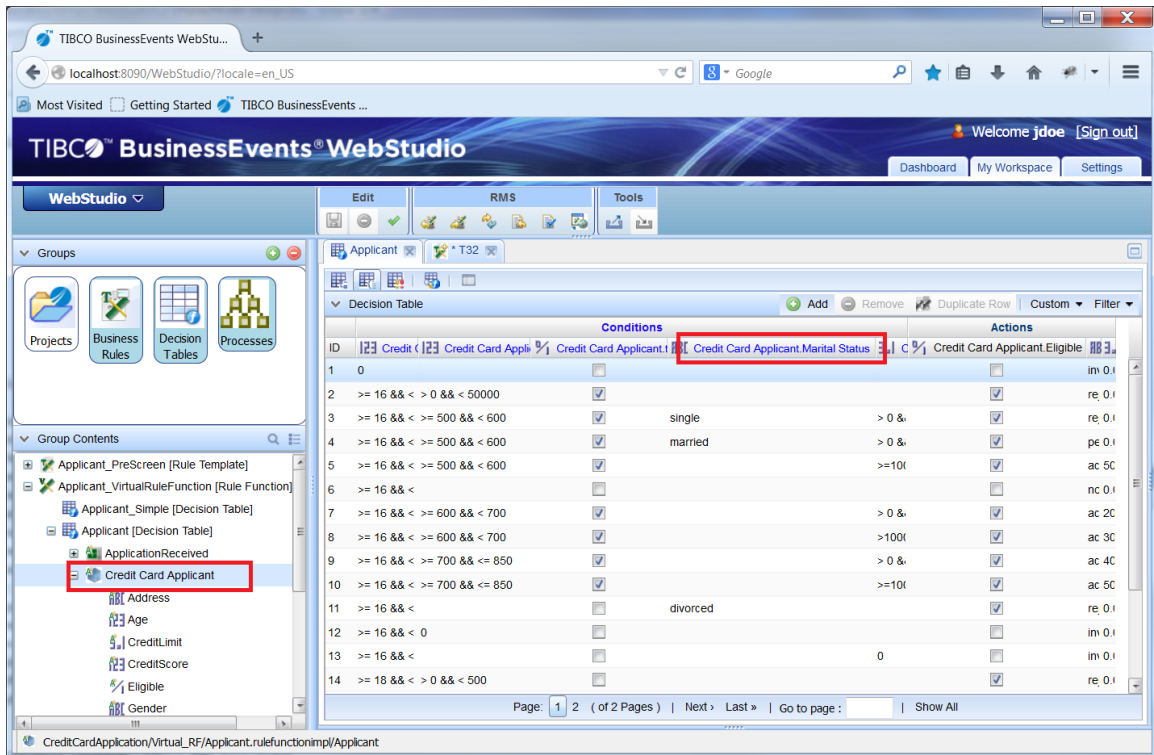
Group Contents

In the **Group Contents** section, all the base artifacts, which have display models defined, have their display text displayed instead of the artifact name.
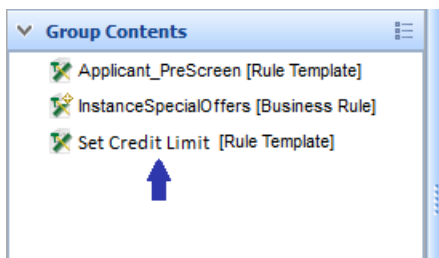
Other Language

When the locale for WebStudio is set to a non-default language in the URL, the display model for that language is loaded in the WebStudio. For example, if the locale is set for German in the WebStudio URL, such as, http://localhost:8090/WebStudio/?locale=de, the display model with the language defined as German is picked up and used.

German Display Model
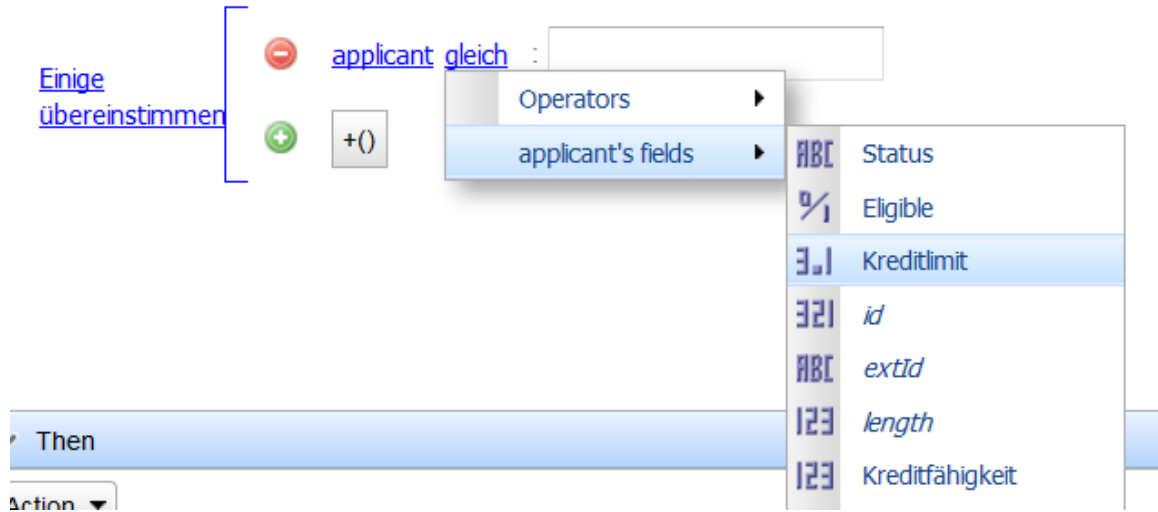
If the display model with the language and country does not match any language packs, only the display model for that language is loaded in the WebStudio. The default language 'en_US' will be picked up for WebStudio display.

Decision Table

A decision table row represents a business rule. It has one or more conditions and one or more actions.

Each condition cell is equivalent to one condition (one line) in the TIBCO BusinessEvents rule editor condition area. Similarly each action cell is equivalent to one action (one line) in the TIBCO BusinessEvents rule editor action area (that is, one rule). Decision table rules are like business rules. The rule that calls the virtual rule function that implements the decision table participates in inferencing in the usual way. When the virtual rule function is called, the decision table rules are applied.

Conditions and Actions

The columns of a decision table are made up of condition columns on the left, and action columns on the right. Each column represents one condition or one action.

A condition is a test that must evaluate to true before the action is executed. If a decision table rule uses multiple conditions, all the conditions for a row must evaluate to true for the action to execute.

In each row (rule) you define the specific conditions and actions. For example, if a condition column is Age (using a concept property of that name), then each row can define a different age range. The action for each row would define what action to take if a given concept instance contains an age property within the specified range.

If you add a second condition column called Income, then before the action is taken, a concept instance would be tested to see if both the age and the income are within the ranges specified in the rule's conditions.

Conditions that are blank, contain an asterisk, or are disabled are ignored, and are treated as if they evaluate to true.

Regular and Custom Conditions and Actions

Regular condition

It is the value of an entity specified in the virtual rule function scope, or a simple comparison with the value - is greater than, is less than, is greater than or equal to, is less than or equal to.

Custom condition

It can use the rule language, standard functions, and data in the scope of the function at runtime (for example, scorecards and global variables). It can contain complex formulas.

Regular action

It sets the value of an entity specified in the VRF scope.

Custom action

The action can use the rule language, standard functions, and data in the scope of the function at runtime to do whatever is desired. For example, the action could be to send an event out to a different system for follow-up.

Using non-literal values in a regular condition or regular action

Suppose event A and event B are in scope, and event A has property ZZ, and event B has property YY. Both properties belong to the same data type. Suppose you then drag property ZZ to a condition or action column. In the cell, you can then specify a value as b.YY. The effect is different depending on the type of column:

- In a condition column, this means: compare the value of property ZZ with the value of property YY.

- In an action column this means: set the property ZZ to the value of YY.

Decision tables are available in TIBCO BusinessEvents WebStudio in the view or edit mode only if you have the TIBCO BusinessEvents Decision Manager add-on installed on your system.

Configuring RMS

Artifacts needs to be added to RMS, so that they can be used by TIBCO BusinessEvents WebStudio. Advanced configuration might also be required to enable certain features, such as, SSL authentication.

Adding a Project to RMS

TIBCO BusinessEvents projects, with VRF and rule templates, need to be added to the RMS repository to make them accessible in the TIBCO BusinessEvents WebStudio.

All RMS projects exist in a repository under a *root location* directory and their access control list (ACL) file exist under a *RMS configuration* directory. The default *root location* directory (as shipped) is *BE_HOME*/examples/standard/WebStudio and the default *RMS configuration* directory (as shipped) is *BE_HOME*/rms/config/security . You can configure the root location by configuring the `ws.scs.rootURL` property and the RMS configuration directory location by configuring the `ws.projects.acl.location` property in the `RMS.cdd` file.

Prerequisites

A TIBCO BusinessEvents project created in TIBCO BusinessEvents Studio.

Procedure

1. Under the RMS project root location directory, create a directory with a name appropriate for the project.

   The root location is configurable. See Configuring RMS Server Properties.

2. Copy the TIBCO BusinessEvents Studio project contents that will be used in Decision Manager add-on or in TIBCO BusinessEvents WebStudio to the project directory.

3. If the project contains custom functions, create the *ProjectName* directory under the directory identified by the `ws.projects.customLib.location` property in the `RMS.cdd` file and then place the custom function jars under it. See RMS Server Configuration Property Reference for more information on the property.

4. Copy the access control file for the project (*RMSProjectName*.ac) to the RMS configuration directory. See *TIBCO BusinessEvents Administration* for authentication topics.

   The RMS configuration location is configurable. See Configuring RMS Server Properties.

5. Restart the RMS server.

What to do next

You can also add a project to the RMS repository while the RMS is running using the existing RMS configurations. During run time, to add a project to the RMS repository, copy the project files to the RMS project root location and its ACL file to the RMS configuration directory. The project is then available for check out from the RMS repository. For more information, see Importing a Project to TIBCO BusinessEvents WebStudio on page 40.

Configuring RMS Server Properties

RMS works out of the box on a local machine. Configuration is required to enable access by remote TIBCO BusinessEvents WebStudio and the Decision Manager clients.

You may need to make other changes to the server configuration. For example, if you change the server location or the location of the RMS project repository, you must update the RMS server properties accordingly.

To configure the RMS server properties, edit the `RMS.cdd` file. You cannot edit a CDD file in TIBCO BusinessEvents Studio outside of its project context. To edit the CDD in TIBCO BusinessEvents Studio, import the BRMS project into your workspace. After that, copy the `RMS.cdd` file to its installed locations, in the following way

> Whenever you change the `RMS.cdd` file you must restart the RMS server so that it uses the updated values.

See RMS Server Configuration Property Reference for information about each property.

> - As with any procedure that changes files, first backup any files that could be affected. The `RMS.cdd` file is located in two places, in the product as shipped:
>
>   – *BE_HOME*`/rms/project/BRMS/Deployment/RMS.cdd`
>
>   – *BE_HOME*`/rms/bin/RMS.cdd`
>
> - After you update the `RMS.cdd` file in your workspace, overwrite the existing files with the updated ones, in the above locations (or the ones currently in use, if different).
>
> - Ensure that the CDD files in the BRMS project and the RMS startup directory are kept in sync.

Procedure

1. In TIBCO BusinessEvents Studio, choose **File** > **Import** > **Existing Projects into Workspace.**

2. Ensure the **Copy the projects into workspace** check box is selected.

3. Select the following project:

   BE_HOME`/rms/project/BRMS`

4. In Studio Explorer, double-click **RMS.cdd** to open it in the CDD editor.

5. In the CDD editor Cluster tab, click **Properties**. In the Configuration panel on the right, expand groups to see the individual properties. Update the properties value, as per your requirement, as explained in RMS Server Configuration Property Reference.

6. When you have finished editing, save the `RMS.cdd` file.

7. In the file system, copy the `RMS.cdd` file from your workspace to the BRMS project and to the RMS server startup location.:

   The locations are:

   - *BE_HOME*`/rms/project/BRMS/Deployment/RMS.cdd`

   - *BE_HOME*`/rms/bin/RMS.cdd`

8. Restart the RMS server.

Enabling Remote Connection to RMS from WebStudio

For production settings, specify the RMS server hostname and port to ensure that TIBCO BusinessEvents WebStudio users can connect to RMS from remote machines.

As shipped, the `tibco.clientVar.Webstudio/hostname` property is set to `localhost`. This setting enables the product to be used on a single machine.

Procedure

1. Import the BRMS project into your workspace and open the `RMS.cdd` file for editing. See Configuring RMS Server Properties for details.

2. In the CDD editor Processing Units tab, click **WS-Inference**. In the Properties panel on the right, expand the WS property group.

3. Specify the TIBCO BusinessEvents WebStudio hostname and port using the following properties:

    • `tibco.clientVar.Webstudio/hostname`

    • `tibco.clientVar.Webstudio/port`

4. Save the `RMS.cdd` file.

5. In the file system, copy the `RMS.cdd` file from your workspace to the BRMS project and to the RMS server startup location. The locations are:

    • *BE_HOME*`/rms/project/BRMS/Deployment/RMS.cdd`

    • *BE_HOME*`/rms/bin/RMS.cdd`

6. Restart the RMS server.

Enabling SSL Authentication in RMS

The SSL authentication process uses certificates that are issued by a certificate authority. The same process applies if the certificates are issued by a certificate generation utility or if self-signed certificates are used.

To establish a SSL connection an application acting as an SSL client contacts an application acting as an SSL server. You can establish either a one-way SSL authentication or two-way SSL authentication for the application.

Enabling One-way SSL Authentication in RMS

One-way SSL authentication enables the application operating as the SSL client, which in this case is web browser, to verify the identity of the application operating as the SSL server (RMS). The SSL-client application is not verified by the SSL-server application.

Procedure

1. Import the BRMS project in the TIBCO BusinessEvents Studio and copy it into your workspace. Now open the `RMS.cdd` file for editing. See Configuring RMS Server Properties for details.

2. In the **CDD editor Processing Units** tab, click **default**.
   In the **Properties** panel on the right, you can see the `be.channel.deactivate` property.

3. Remove the `/WebStudio/Core/Channels/WS_CH_Secure_WebstudioChannel` value from the `be.channel.deactivate` property.

4. Save the `RMS.cdd` file.

5. In the file system, copy the `RMS.cdd` file from your workspace to the BRMS project and to the RMS server startup location.
    The locations are:

    • *BE_HOME*`/rms/project/BRMS/Deployment/RMS.cdd`

    • *BE_HOME*`/rms/bin/RMS.cdd`

6. Restart the RMS server.

Result

To verify, type the URL `https://localhost/WebStudio/` in a web browser and press **Enter**. No port is required as default SSL port is used. The web browser notifies you about the untrusted certificate from the SSL server.

Enabling Two-way SSL Authentication in RMS

In two-way SSL authentication, the SSL client application, which in this case is a web browser, verifies the identity of the SSL server application (RMS), and then the SSL server application verifies the identity of the SSL-client application.

Procedure

1. Follow the steps mentioned in the Enabling One-way SSL Authentication in RMS to enable the SSL server verification, but do not restart RMS server yet.

2. In Studio Explorer, double-click **BRMS** > **WebStudio** > **Core** > **Transports** > **WS_TR_Secure_WebstudioHTTPConnection.sharedhttp** to open it in the resource editor.

3. In the resource editor, click **Configure SSL**.
   The SSL Configuration for HTTPS Connections window is displayed.

4. In the SSL Configuration for HTTPS Connections window, select the **Requires Client Authentication** checkbox and click **OK**.

5. In the BusinessEvents Studio, regenerate the BRMS project EAR file (`RMS.ear`) and save it at *BE_HOME*`/rms/project/`. See *TIBCO BusinessEvents Developer's Guide* for more details.

6. Restart the RMS server.

7. Open your web browser and import the `WSClientStore.p12` certificate file in the web browser from the location *BE_HOME*`/rms/config/security/`. Refer to your web browser's help on how to import certificate in it.

Result

To verify, type the URL `https://localhost/WebStudio/`in the same web browser and press **Enter**. No port is required as default SSL port is used. The web browser displays a confirmation window to select your SSL client certificate and send it to the SSL server. After that the web browser notifies you about the untrusted certificate from the SSL server.

Updating Shared JDBC Connection in Runtime

Edit the `RMS.cdd` file to add the JDBC connection to the backing store from RMS at runtime.

Procedure

1. Import the BRMS project in the TIBCO BusinessEvents Studio and copy it into your workspace. Now open the `RMS.cdd` file for editing.
   See Configuring RMS Server Properties for details.

2. In the **CDD editor Cluster** tab, click the **Properties** in the Cluster pane and expand **node** under the Configuration pane.

3. Expand the **BackingStore** property group and edit the value for backing store properties as required.
   See Backing Store Property Group for more details on the properties.

4. Save the `RMS.cdd` file

5. In the file system, copy the `RMS.cdd` file from your workspace to the BRMS project and to the RMS server startup location.
    The locations are:

   - *BE_HOME*`/rms/project/BRMS/Deployment/RMS.cdd`

- *BE_HOME*/rms/bin/RMS.cdd

6. Restart the RMS server.

Enabling WebStudio Client Side Logging

You can enable the logs for the WebStudio client for logging messages that are submitted by the client. WebStudio client-side logging can be enabled by configuring the intended logging flags in the WebStudio.html file.

WebStudio client-side logging is different from RMS logging, which can be configured using the RMS.cdd file.

Procedure

1. Go to the *BE_HOME*/rms/bin/ folder and extract the WebStudio.war package in a separate folder.
2. From the extracted files, open the WebStudio.html file in the edit mode.
3. In the WebStudio.html file, set the JavaScript variable webstudio_logging_enabled to true. The WebStudio client-side logging is now available.
4. Save the WebStudio.html file and repackage all the extracted files to the WebStudio.war package.
5. Restart RMS.
   The WebStudio client log is created at *BE_HOME*/rms/bin/logs/webstudio_client.log.

Defining Temporary Files Storage Folder for RMS

Every time you restart RMS, a new httpRoot is created to store temporary data. You can modify this setting so that the temporary data is stored in the same location after every restart. To specify the location where temporary data must be stored, configure the com.tibco.be.http.root property.

Procedure

1. Open the RMS.cdd file or the be-rms.tra file for editing.
   These files are located at *BE_HOME*/rms/bin.
2. Add the com.tibco.be.http.root property and set the value to the temporary folder location. For example,

   ```
   com.tibco.be.http.root=C:/temp/RMSHTTPRootTmp
   ```

   Ensure that the specified folder is already present before restarting RMS.
3. Restart RMS.

Result

Now, RMS uses the specified folder (for example, RMSHTTPRootTmp) to store temporary data and does not create a new temporary folder on each restart.

RMS Server Configuration Property Reference

To configure the RMS server properties, edit the RMS.cdd file.

See Configuring RMS Server Properties for the related procedure.

Properties not documented in this table are either for internal use or are for other types of configuration explained elsewhere in the documentation.

Common Property Group

Property	Default Value	Description
rms.checkin.revisionId.initValue	10000	Initial value of the revision number to use for project check in.
ws.artifact.deploy.location	*BE_HOME*/rms/shared	Name of the directory for storing EAR files that are generated for deployment. Separate directory for each project is created, where EAR files for the project are stored. See also be.codegen.rootDirectory.
be.codegen.rootDirectory	Codegen	Name of the directory for storing class files generated by the Generate Deployable menu option. The directory location is relative to the ws.artifact.deploy.location directory. If this property is not present, then files are stored in the deployment directory. If this property is present but has no value, a directory is created with the default name Codegen.
be.codegen.useLegacyCompilation	False	Set the value to true, if you want to use the file-based legacy compiler to build the EAR file. By default, the value is false, that means EAR files are built in memory.
ws.projects.customLib.location	*BE_HOME*/rms/lib/ext	Path of the directory for storing custom function libraries for a WebStudio project. The custom function libraries are saved in a folder (with the same name as of the project name) inside the directory identified by the ws.projects.customLib.location property. For example, if the value of the ws.projects.customLib.location property is C:/Tibco/BE52/be/5.2/rms/lib/ext, then the custom function libraries for the MyTestProject project should be saved in the location C:/Tibco/BE52/be/5.2/rms/lib/ext/MyTestProject.

Property	Default Value	Description
`ws.projects.projectLib.location`	*BE_HOME*`/rms/project-lib`	Path of the directory for storing project libraries for a WebStudio project. The project libraries are saved in a folder (with the same name as of the project name) inside the directory identified by the `ws.projects.projectLib.location` property. For example, if the value of the `ws.projects.projectLib.location` property is `C:/Tibco/BE52/be/5.2/rms/project-lib`, then the project libraries for the MyTestProject project should be saved in the location `C:/Tibco/BE52/be/5.2/rms/project-lib/MyTestProject`.
`ws.validateDT.ignoreDeployableStatus`	`false`	Specifies whether to ignore the deployment status of the artifact at server restart and perform decision table validation without regenerating deployables. This property is required when persistence is not enabled for the system. When the persistence is enabled, this property is not needed as the deployment status is available across server restarts.

RMS Property Group

Property	Default Value	Description
`rms.project.workspace`	`workspace`	Not used in this release
`rms.project.decisiondata`	`decisiondata`	Not used in this release
`rms.project.deployment`	`deployment`	Not used in this release
`rms.workflowstages.config.file`	*BE_HOME*`/rms/config/RoleWorkflowStages.xml`	Not used in this release
`rms.lockworkflowstages.config.file`	*BE_HOME*`/rms/config/LockWorkflowStages.xml`	Not used in this release Default is BE_HOME`/rms/config/LockWorkflowStages.xmL`

Property	Default Value	Description
`rms.roleArtifactTypes .config.file`	*BE_HOME*/rms/config/ `RoleApplicableArtifactT ypesConfig.xml`	Not used in this release Default is BE_HOME/rms/config/ `RoleApplicableArtifactTypesConfi g.xml`
`rms.external.entities .autodetect`		Used internally. Do not change the value.

Authentication and Authorization (ACL) Properties

User authentication topics are common to TIBCO BusinessEvents and the add-on products that use authentication. Common options are fully documented in *TIBCO BusinessEvents Administration*. The relevant properties are also listed as follows for your convenience.

Property	Default Value	Description
`be.auth.type`		Specifies the authentication mechanism used. Additional configuration is required. The values are: • `file` • `ldap` • `openldap` **Note:** Authentication topics are documented in the *TIBCO BusinessEvents Administration* guide.
`be.auth.file.location`	*BE_HOME*/rms/config/ `security/users.pwd`	Location of the authentication file used for file-based authentication. **Note:** Authentication topics are documented in the *TIBCO BusinessEvents Administration* guide.
`java.security.auth.lo gin.config`	*BE_HOME*/rms/config/ `security/jaas- config.config`	Location of the JAAS login configuration file. You can substitute a different implementation of the JAAS login module than the one provided. **Note:** Authentication topics are documented in the *TIBCO BusinessEvents Administration* guide.
`ws.projects.acl.locat ion`	*BE_HOME*/rms/config/ `security`	Location of the directory used for all ACL (authorization) files. Files must be named using the format *RMSProjectName*.ac.

RMS-GVs Property Group

This group of properties override the values of global variables that are provided in the TIBCO BusinessEvents Studio BRMS project. These properties are made available as global variables so that the properties can be overridden at runtime, as needed.

You can override the default global variable values in the RMS.cdd file for command-line startup. For details on overriding global variable values when deploying with TIBCO BusinessEvents Monitoring and Management or with TIBCO Administrator, see *TIBCO BusinessEvents Administration*.

For defining and using global variables in TIBCO BusinessEvents Studio projects, see *TIBCO BusinessEvents Developer's Guide*.

Property	Default Value	Description
tibco.clientVar.RMS/ hostname	localhost	Specifies the host name or IP address of the machine where RMS is hosted. Remote clients can connect to the server at this location.
tibco.clientVar.RMS/ port	5000	Specifies the port number of the machine where RMS hosted. This port is used for listening to client requests. See notes for tibco.clientVar.RMS/ hostname.

Property	Default Value	Description
`tibco.clientVar.RMS/ Approval/adminRole`	`Administrator`	The multiple roles specified here have Administrator role permissions. When you change the default value, the Administrator role still has Administrator permissions.
		You can also specify project specific administrator roles. To specify project specific admin roles, append the role to the project name separated by a colon (:). Ensure that the role has the `approve` permission set for the project.
		For example, `tibco.clientVar.RMS/Approval/ adminRole = Administrator;CreditCardApplicat ion:Business-User`
		This shows the worklist items for the CreditCardApplication project, for users with the Business_User roles, while for all other projects, the worklist items show up for users under the Administrator role.
		Ensure that you replace the XML special character in the administrator role name value (if present) with the following characters:
		• "&" by "&"
		• " ' " by "'"

WebStudio Property Group

Property	Default Value	Description
tibco.clientVar.Webstudio/ warDir	`rms/bin/WebStudio.war`	Path to the Web archive for the client side representation of the TIBCO BusinessEvents WebStudio.
tibco.clientVar.Webstudio/ hostName	localhost	Specifies the host name or IP address of the machine where RMS server is hosted for WebStudio.
tibco.clientVar.Webstudio/ port	`8090`	Specifies the port number of the machine where RMS server is hosted for WebStudio. This port is used for listening to client requests. See notes for `tibco.clientVar.RMS/hostname`.
tibco.clientVar.Webstudio/ Connection/timeout	`60000`	Timeout interval for the HTTP channel. This value is in milliseconds.

Property	Default Value	Description
tibco.clientVar.Webstudio/sessionTimeOut	`30`	Time interval for which an inactive user session will be valid. This value is in minutes.
tibco.clientVar.Webstudio/DecisionTable/pageSize	`20`	Number of rows of the decision table to be displayed in a page.
ws.validateDT.temp.dir	`rms/temp-dir`	Directory which is used as an interim storage of decision table contents during the validation process.

Global Variable Properties for One-Way SSL Between RMS Server and Decision Manager Clients

Property	Default Value	Description
`tibco.clientVar.RMS/security/securePort`	`8443`	The port to be used for secure HTTP communication in BusinessEvents Studio.
`tibco.clientVar.RMS/security/sslCertificateStore`	`BE_HOME/rms/config/security/SSLKeyStore.ks`	Absolute path of the JKS KeyStore which contains the RMS server's public/private keys. If the certificate used is CA signed, include the CA's certificate.
`tibco.clientVar.RMS/security/sslCertificateStorePassword`	`changeit`	The password for the KeyStore.
`tibco.clientVar.RMS/security/secureWebPort`	`443`	The port to be used for secure HTTP communication in WebStudio.

Properties for One-Way SSL Between LDAP Server, RMS Server, and Decision Manager Clients

- For one-way SSL between LDAP server and RMS server, you must also change the value of `be.auth.ldap.port`.
- For one-way SSL between RMS server and Decision Manager clients, you must also set the value of `be.auth.ldap.port`.

Property	Default Value	Description
`be.auth.ldap.ssl`		If set to true, enables SSL between the RMS server and the LDAP server If set to false or not set, the LDAP authentication uses a non-secure channel.

Property	Default Value	Description
`javax.net.ssl.trustStore`		The absolute path of the KeyStore containing the LDAP server certificate chain.
`javax.net.ssl.trustStorePassword`		The password for the KeyStore.
`javax.net.ssl.trustStoreType`		The KeyStore type for KeyStores other than JKS type, for example, PKCS12.

Email Notification Property Group

Email notification properties are used to send email notification when an artifact undergoes a status change in approval workflow, such as, artifact commit and artifact review (Approve, Reject, BuildAndDeploy).

In addition to these properties, you can define any SMTP protocol specific properties depending on the mail server configuration. These properties should be defined with a prefix `ws.notify.prop`, for example, `ws.notify.prop.mail.smtps.auth`, `ws.notify.prop.mail.smtps.ssl.enable`.

Property	Default Value	Description
`ws.notify.enabled`	`False`	If set to true, send email notification. If set to false, do not send email notification.
`ws.notify.file.location`	*BE_HOME*/rms/config/ notify/UserNotify.Ids	Specifies the location of the `.IDS` file which contains the mapping of WebStudio user IDs to the email IDs. This field is used in the case of file-based authentication.
`ws.notify.ldap.userNotifyIdAttr`	userPrincipalName	Specifies the name of the LDAP attribute for the email ID. This field is used in the case of LDAP based authentication.
`ws.notify.impl.class`	com.tibco.be.ws.notification.impl.EmailNotification	Specifies the implementation class for email notification support.
`ws.notify.context.impl.class`	com.tibco.be.ws.notification.impl.EmailNotificationContext	Specifies the context implementation class for email notification support.
`ws.notify.message.template.file`	*BE_HOME*/rms/config/ notify/message.stg	Specifies the location of the message template file, which contains template (subject and content) for the commit, reject, and approve notification emails.

Property	Default Value	Description
`ws.notify.mail.domain`		Specifies the domain on the email. This is used with the RMS username to construct the email address to which the notification is to be sent. For example, if RMS username is "admin" and the property is set to "tibco.com", the email address for the notification is admin@tibco.com.
`ws.notify.mail.receiver.cc.emails`		Comma-separated list of email IDs or WebStudio user IDs to whom any commit, approve, or reject notifications need to be sent. In the case of CC notifications to the WebStudio users, specify their login IDs. The email IDs are picked up from the `.IDS` file identified by the **`ws.notify.file.location`** property, if present; otherwise, the email ID is evaluated as *<login-ID>@<mail-domain>*. In the case of LDAP based authentication, the email ID is picked up from the user's LDAP entry.
`ws.notify.prop.MAIL_PROTOCOL`	SMTPS	Specifies the email protocol to be used to send the email. SMTP and SMTPS are valid values.
`ws.notify.prop.MAIL_SERVER_HOST`		Specifies the host name of the email server.
`ws.notify.prop.MAIL_SERVER_PORT`		Specifies the port at which the mail server is listening.
`ws.notify.prop.SENDER_EMAIL`		Specifies the email address to be used for sending the notification email.
`ws.notify.prop.SENDER_USERNAME`		Specifies the sender's username for authentication to email server.
`ws.notify.prop.SENDER_PASSWORD`		Specifies the sender's email password for authentication to email server.
`ws.notify.prop.mail.smtps.auth`	true	This is a SMTP protocol-specific property. Specifies whether the authentication is checked or not for the email server.
`ws.notify.prop.mail.smtps.ssl.enable`	true	This is a SMTP protocol-specific property. Specifies whether the email server is SSL enabled.

Hot Deployment Property Group

Use the hot deployment property group to configure JMX connection details in the CDD file and hot deploy the business rule and the decision table directly from WebStudio. You can configure JMX connection details for each project for each environment. Using these properties you can deploy multiple projects in multiple environments. For example, for deploying the CreditCardApplication project in the "QA" environment, set the QA environment in the `CreditCardApplication.ws.applicableEnvironments` property and set the JMX connection details in the `CreditCardApplication.QA.ws.jmx.*` properties.

You can also edit these properties in the WebStudio new user interface under the **Deployment Preferences** tab in the **Settings** page. For more details, see Settings Page Reference on page 71.

Property	Default Value	Description
<ProjectName>`.ws.applicableEnvironments`	`QA,PROD`	Specifies the environment where the artifacts can be deployed.
		Add this property for each project you want to deploy. For example, if you want to deploy the CreditCardApplication project in the PROD and the QA environment, set the `CreditCardApplication.ws.applicableEnvironments` property value to "PROD,QA".
<ProjectName>`.`*<EnvironmentName>*`.ws.jmx.hotDeploy.enable`	`true`	Specifies whether to enable or disable hot-deployment (as part of BuildAndDeploy operation) for the specified project in the specified environment. This works only for cache based projects.
<ProjectName>`.`*<EnvironmentName>*`.ws.jmx.inMemory`	`false`	Specifies whether to enable hot deployment for the inMemory based projects.
		Do not specify for cache based projects.
<ProjectName>`.`*<EnvironmentName>*`.ws.jmx.host`	`localhost`	The name of the JMX host.
<ProjectName>`.`*<EnvironmentName>*`.ws.jmx.port`	`9990`	The unused port number, through which you want to enable the JMX connection.
<ProjectName>`.`*<EnvironmentName>*`.ws.jmx.user`		The username for the JMX connection.
<ProjectName>`.`*<EnvironmentName>*`.ws.jmx.password`		The password for the user name for *<ProjectName>*`.`*<EnvironmentName>*`.ws.jmx.user`.

Property	Default Value	Description
<ProjectName>.<Environmen tName>.ws.jmx.clusterName		The name of the cluster to be monitored.
<ProjectName>.<Environmen tName>.ws.jmx.agentName	inference-class	The name of the TIBCO BusinessEvents agent.

Backing Store Property Group

Use the backing store property group to add a shared JDBC connection without the need to build the new EAR file (RMS.ear) for the BRMS project.

Property	Default Value	Description
tibco.clientVar.Webstudio/ DB/driverName	oracle.jdbc.OracleDriver	The name of the JDBC driver class.
tibco.clientVar.Webstudio/ DB/url	jdbc:oracle:thin:@localhos t:1521:orcl	The URL to use to connect to the database. You must supply the portions of the URL, for example, the host, port number, and database instance name. .
tibco.clientVar.Webstudio/ DB/maxConnections	5	The maximum number of database connections to allocate. The minimum value that can be specified is 1.
tibco.clientVar.Webstudio/ DB/userName		User name to use when connecting to the database.
tibco.clientVar.Webstudio/ DB/password		Password to use when connecting to the database.
tibco.clientVar.Webstudio/ DB/timeout	zero	Time (in seconds) to wait for a successful database connection. Only JDBC drivers that support connection timeouts can use this configuration field. If the JDBC driver does not support connection timeouts, the value of this field is ignored. Most JDBC drivers support connection timeouts.

Source Control System (SCS) Property Group

SCS property group enables you to check out a WebStudio project resources from a SCS location and commit the updates.

Property	Default Value	Description
`ws.scs.rootURL`	*BE_HOME*`/examples/` `standard/WebStudio`	Specifies the RMS repository location. This is the root location for RMS project directories. If repository is present in source control, then provide the repository URL of RMS projects as the value of `ws.scs.rootURL` . If you want to configure multiple RMS project locations, you can specify them separated by commas.
`ws.scs.impl.type`	`file`	Identifies the type of repository being referred. The values that configured in the product out-of-the-box are: • `file` (default) • `svn`
`ws.scs.repo.dir`	*BE_HOME*`/rms/repo`	The local repository directory on your system. All checked out project resources are downloaded at this location.
`ws.scs.command.path`		Absolute path to the source control command line client. For example, if SVN is used then RMS server uses the SVN command line tool to connect to the SVN repository. Any SVN command line tool can be used, one commonly used one being Tortoise SVN CLI.
`ws.scs.default.userna` `me`		Default username to connect to the repository mentioned in the `ws.scs.rootURL property.`

Property	Default Value	Description
`ws.scs.default.password`		Default password, encoded into the Base64 format, to connect to the repository mentioned in the `ws.scs.rootURL property`. For example, `Password123` should be encoded with Base64 format and entered as `UGFzc3dvcmQxMjM=`. **Note:** WebStudio uses the default username and password (after decoding from Base64 format) to check out and check in the objects from the SVN repository. You also have the option to enter your SCS username and password (in the **Preference** portlet under the **Settings** tab) in the WebStudio UI which overrides the default username and password. Enter the actual password in the WebStudio UI and not a Base64 format encoded one. See Preferences Settings for more details.
`ws.scs.locking.enable`	false	You can lock the artifacts for the WebStudio. If the lock is applied on an artifact, the other users cannot modify or delete the artifacts until the lock is released.
`ws.scs.lock.timeout`	0	Time in seconds before the lock is automatically released. Set the property value greater than zero to apply timeout on locks.

Cross-Origin Resource Sharing (CORS) Property Group

Using the CORS property group, you can specify which external applications can use the WebStudio APIs.

Property	Default Value	Description
`be.http.filter.cors.class`	`org.apache.catalina.filters.CorsFilter`	The filter class name for the CORS filter.

Property	Default Value	Description
`be.http.filter.cors.param.cors.allowed.origins`	*	A list of **Origin** request header values that are allowed to access the resource..
		BusinessEvents matches the value of **Origin** header of the HTTP request with this list. If the **Origin** request header value is present in the list, then the **Access-Control-Allow-Origin** header in the HTTP response returns the **Origin** request header value.
		The default value is "*"
		which means all URLs are valid, and the **Access-Control-Allow-Origin** header in the HTTP response returns "*" for all requests.
`be.http.filter.cors.param.cors.allowed.methods`	`GET,POST,DELETE,PUT`	A list of HTTP methods that can be used to access the resource, using cross-origin requests. These are the methods which will also be included as part of **Access-Control-Allow-Methods** header in pre-flight response.
`be.http.filter.cors.urlpattern.1`	`/*`	The URL pattern that triggers the filter.

Integrating Custom Repository with RMS

TIBCO BusinessEvents provides API to integrate your repository with RMS. You can use this repository to store RMS projects.

You can use the `com.tibco.be.ws.scs.impl.repo` API to create implementation classes for your repository to integrate with RMS. TIBCO BusinessEvents provides a sample implementation (SVN repository) of this API at *BE_HOME*/examples/standard/WebStudio/CustomRepository.

For details about the `com.tibco.be.ws.scs.impl.repo` API and its classes, see *TIBCO BusinessEvents Java API Reference*.

Procedure

1. Create a Java class extending the base implementation class `com.tibco.be.ws.scs.impl.repo.AbstractRepositoryIntegration` and implement all its abstract methods.

   The `AbstractRepositoryIntegration` class is available in the `cep-rms.jar` file at *BE_HOME*/rms/lib. Add this JAR file to the classpath of the newly created Java class to resolve dependencies.

   For details about the `AbstractRepositoryIntegration` class and its methods, see *TIBCO BusinessEvents Java API Reference*.

   For better understanding of the implementation, refer to the sample implementation class created for the SVN repository at *BE_HOME*/examples/standard/WebStudio/CustomRepository/svn/src.

2. If your repository uses a CLI for interaction, install its command line executables.

   For details about the CLI installation for your repository, refer to your repository documentation.

3. After you have created the required implementation class, compile them using JDK and bundle the class in a JAR file.

4. Copy the JAR file to *BE_HOME*/`rms/lib`.

5. Edit the `RMS.cdd` file located at *BE_HOME*/`rms/bin` and set the `ws.scs.impl.type` property value to the fully qualified path of the custom implementation class.

   For example, for the provided sample SVN implementation, set `ws.scs.impl.type` as `com.tibco.be.ws.scs.impl.repo.svn.SVNIntegration`.

6. If your repository uses a CLI for interaction, in the `RMS.cdd` file, set `ws.scs.command.path` property value to the absolute path of the command line executable.

7. Save the `RMS.cdd` file and restart RMS.

WebStudio New User Interface

You can access all the RMS artifacts in a new refreshed user interface in WebStudio. In the new user interface you can perform the same operations as you can perform in the classic view with more intuitive controls.

Basic User Workflow in New UI of WebStudio

In the new UI of WebStudio you can perform all the tasks with ease.

The following is a list of basic tasks that you can perform on the new UI of WebStudio:

1. Start the rule management server and log in to WebStudio, see Signing-in to WebStudio on page 38.

2. After successful log in, check out a project from RMS repository to work on it, see Checking Out an RMS Project on page 41.

3. Generate the EAR file for the project, see Generating the Project EAR and Class Files in New UI on page 50.

4. Create a new decision table or business rule, or update an existing decision table or business rule.

   For details on how to create a new decision table, see Creating a Decision Table on page 56.

   For details on how to create a new business rule, see Creating a Business Rule on page 62.

   For details on decision table editor, see Decision Table Editor Reference on page 56.

5. Save and commit the updates to new or existing decision tables and business rules. You can use the **Commit** option in the context menu of the artifact (see Commit on page 45), or click the **Commit** button in the editor.

6. In the **Dashboard** tab, approve the commit request, see Approving or Rejecting a Commit Request from the Worklist in the New UI on page 51.

7. After the commit request is approved, on the **Dashboard** tab, deploy the approved request at runtime, see Deploying an Updated Artifact to the Application from the New UI on page 55.

Signing-in to WebStudio

In WebStudio, you have the option to sign-in either in the classic UI or in the new UI.

Procedure

1. Start the RMS server by using one of the following ways:

   - Run *BE_HOME*/rms/bin/be-rms.exe (or be-rms.sh, depending on your operating system), with valid arguments. For example, on Windows you would open a command window in *BE_HOME*/rms/bin and execute:

     ```
     be-rms.exe
     ```

   - (Windows only) Select **Start** > **All Programs** > **TIBCO** > *TIBCO_HOME* > **TIBCO BusinessEvents <version>** > **Start Rules Management Server**.

     The server is ready when you see a message in the command window such as:
     ```
     Info [HTTP-Channel-Startup] - [driver.http] Channel server for HTTP Channel
     [Port:5000] successfully started
     ```

2. Type the URL http://*host*:*port*/WebStudio/ in a web browser. Default host is localhost and default port is 8090. Host and port are configurable using properties in RMS.cdd. Ensure that the RMS is running before logging to TIBCO BusinessEvents WebStudio.

3. On the Sign In page of the new UI, enter user name and password and click **Sign In**.

TIBCO BusinessEvents WebStudio Sign In Page
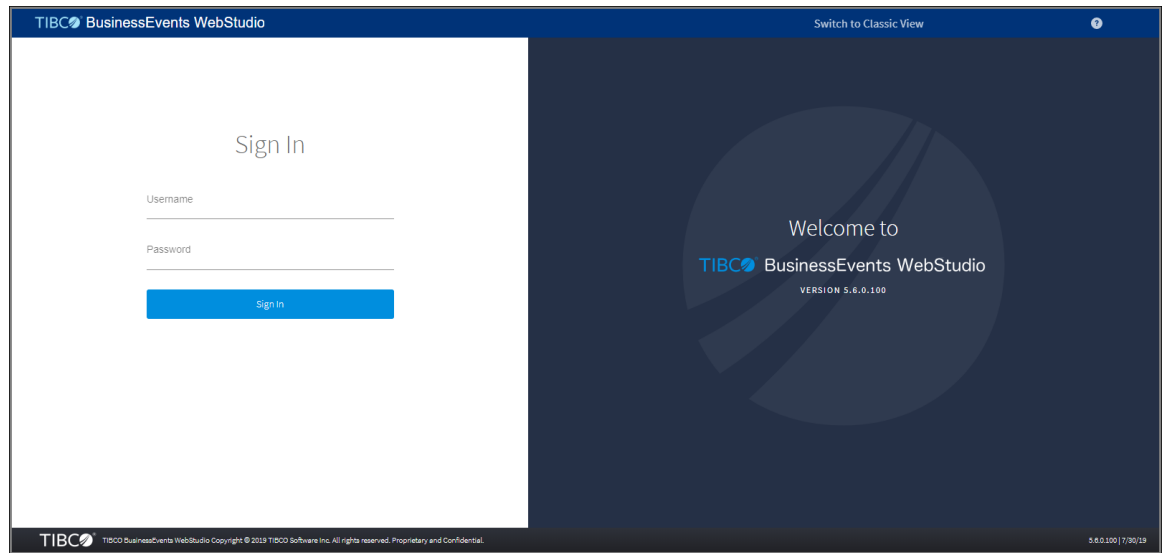
Result

After successful login, the WebStudio welcome page or the WebStudio Dashboard is displayed. This Welcome page is only displayed if no project is already checked out. WebStudio automatically ends any other session of the user and make this session as the active session. For details about the TIBCO BusinessEvents Dashboard, see TIBCO BusinessEvents WebStudio Dashboard Reference on page 39.

TIBCO BusinessEvents WebStudio Dashboard Reference

The BusinessEvents WebStudio welcome page displays your information as a user. You can then navigate to settings and management page, and also check out the projects from this screen.

WebStudio Welcome Page
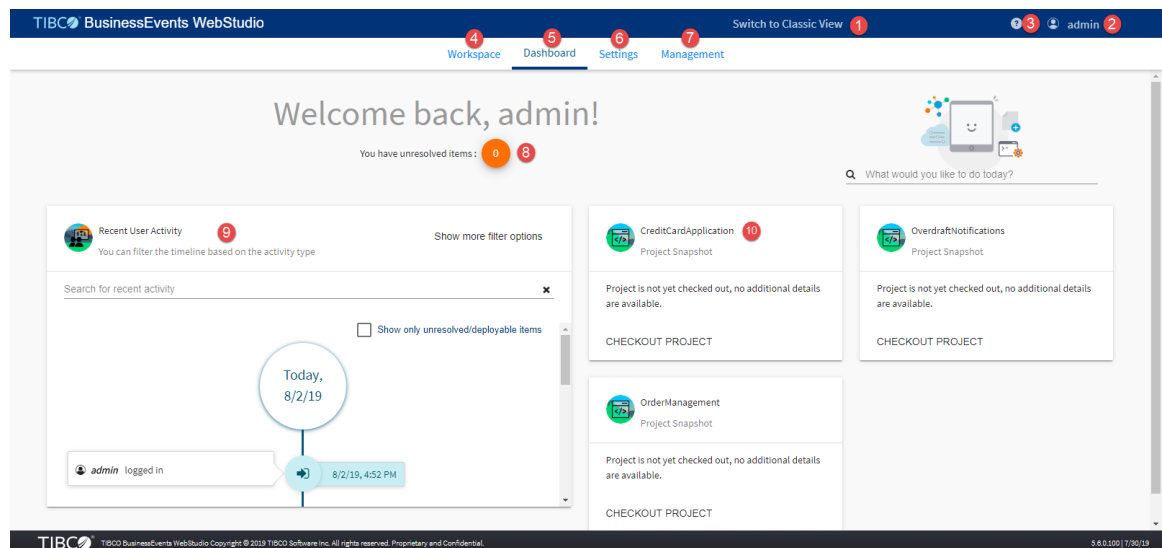
Element No.	Element	Description
1	Switch to Classic View	Click the **Switch to Classic View** button to switch to the classic UI of WebStudio. If any project is checked out in the new UI, the same project is checked out in the classic UI too.

Element No.	Element	Description
2	*<username>*	Displays the user name of the logged in user. You can also log out using this button. Click the button and select **Log Out**.
3	WebStudio Menu	Click the **Menu** icon to display list of options available in WebStudio. • **Help** - Link to the TIBCO BusinessEvents Online Documentation. • **API Documentation** - Link to the RMS REST API documentation.
4	Workspace Tab	Workspace where you can modify the manageable artifacts using their respective editors.
5	Dashboard Tab	Click on the **Dashboard** tab to display the worklist items that need approval or that can be deployed. This is the default tab.
6	Settings Tab	Set your preferences for users and application. For details, see Settings Page Reference on page 71
7	Management Tab	Use this tab for users, user roles, locks on artifacts and reports.
8	You have unresolved items	Displays the number of unresolved items that you can either approve, reject, or delegate.
9	Recent User Activity	You can view all the activities that you have performed in the user timeline. The recent user activity also provides a search option and advance filters to filter out activities on timeline.
10	Project Snapshot	You can checkout the project from the project snapshot.

Importing a Project to TIBCO BusinessEvents WebStudio

To work on artifacts like decision tables and business rules of a project, you must first import a project to TIBCO BusinessEvents WebStudio.

Prerequisites

• To import a project to TIBCO BusinessEvents WebStudio you need a ZIP file of the project.

• The name of the project file and the ZIP file must be the same.

• To be able to import a project, the user must have an administrator role permission.
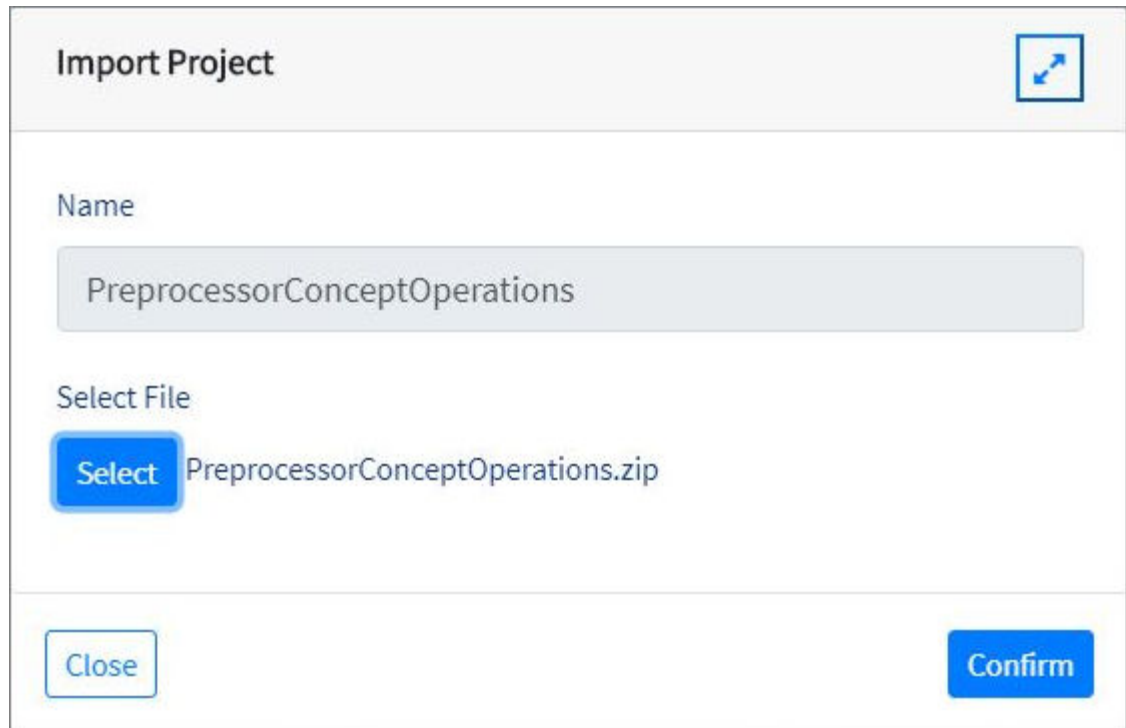
Procedure

1. You can import a project from the Welcome screen or from the **Workspace**.

   • On the Welcome page, click the Upload icon ( ).

   • (On the Workspace tab) Click on the **Checkout/Import Project** icon ( ) and click **Import Project**.

   The Import Project dialog opens.

Importing a Project to TIBCO BusinessEvents WebStudio

2. In the Import Project window, to select a file, click **Select**.

3. Navigate to the ZIP file location of the project file on your local computer and select that.

4. Click **Confirm**.

> 📝 An access control file is generated by default at the default location. You can change permissions in the access control file from the **Management** tab. For details, see Managing Roles on page 76.

What to do next

You can check out the imported project from the **Dashboard** tab. For more information, see Checking Out an RMS Project on page 41.

Checking Out an RMS Project

To work on any managed artifact of a RMS project in WebStudio, check out the project item in WebStudio.

Prerequisites

The project must be present in the RMS repository. For details on how to add project to RMS, see Adding a Project to RMS on page 19.

Procedure

1. Log in to the new user interface of WebStudio.

   For details on how to login, see Signing-in to WebStudio on page 38.

2. You can check out an RMS project from one of the following:

   • **Dashoard** tab - Click the **Check Out Artifacts** button on the Project Snapshot.

   • Project explorer panel on the **Workspace** tab - Click the **Checkout Artifacts** icon.

The Check Out Artifacts window is displayed.

3. On the Check Out Artifacts window, select the RMS project from the drop-down list. You can then select the artifacts that you want to check out in WebStudio. Click **Confirm** to check out the selected artifacts.

You can use the search bar to filter out the artifact that you want. You can also use the **Select All** toggle button for ease in selecting artifacts.

Check Out Artifacts Window

Result

The checked out projects and its artifacts are displayed in the project explorer panel under the **Workspace** tab. For more details on the options present on the project explorer panel, see

Project Explorer Panel Reference

After the successful check out, the entire checked out project artifacts are displayed in the project explorer panel. In the project explorer you can perform various operations on the artifacts and even check out other projects. You can also group or view artifacts according to your requirement.

WebStudio Project Explorer Panel
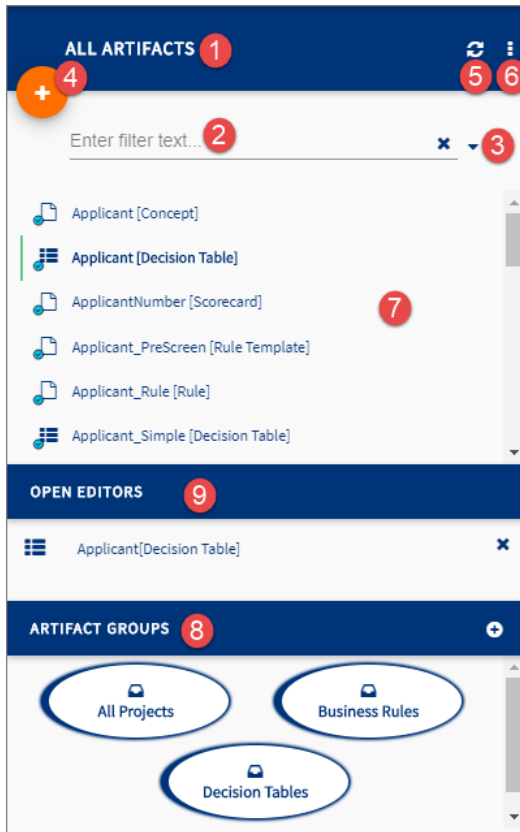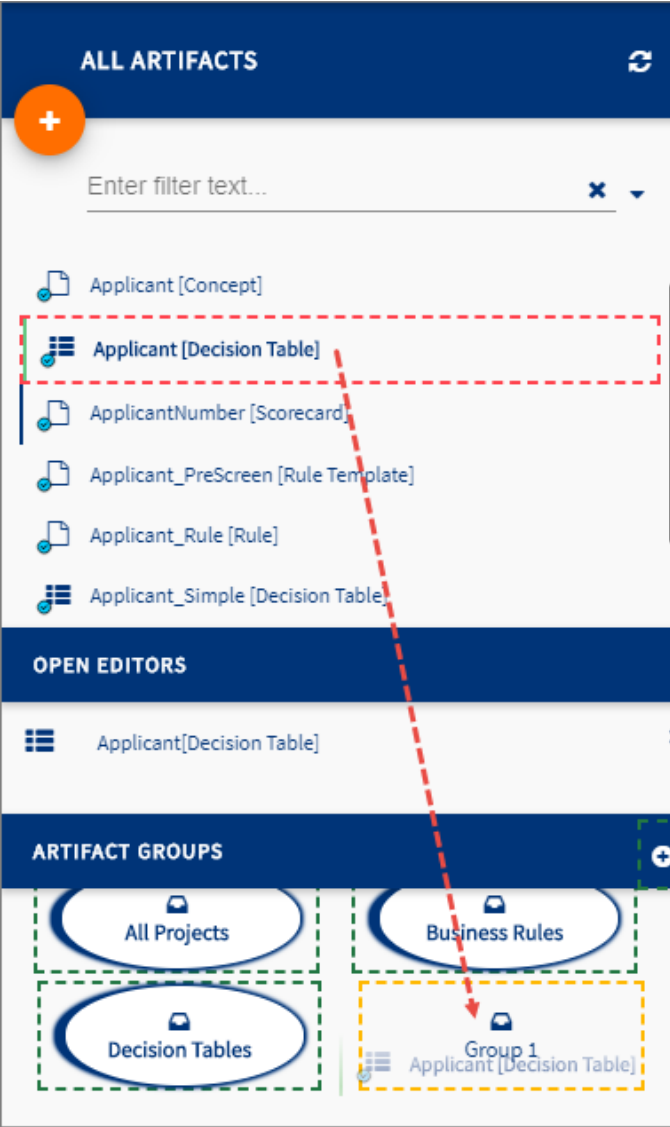
Eleme nt No.	Element Name	Description
1	Project Explorer Head	Displays the type of artifacts that are displayed on the Project Explorer. In case of the **Show Breadcrumbs** navigation style, this displays the breadcrumbs for the artifacts.
2	Filter	Enter the filter text to filter the artifacts in the project explorer.
3	Recently Opened Artifacts	You can view the list of recently opened artifacts by clicking the down arrow icon.
4	Checkout Artifacts/ Import Project	Click the **Plus** icon to import a project or check out artifacts of a project.
5	Refresh All Projects	Refresh the artifacts.

Element No.	Element Name	Description
6	Navigation Style	Click the **Menu** icon to select the navigation style for the project explorer. The following navigation styles are available in the new UI: • **Show resources as a tree** - Shows all the artifacts along with their folder structure in the tree view. • **Show resources as a flattened list** - Displays all the artifacts of the project in a single list. This is the default navigation style. • **Show breadcrumbs** - Shows all the artifacts in the folder structure, but it only displays the artifacts of the selected folder. You can use the breadcrumbs links displayed on the project explorer head to navigate through the project. • **Basic tree navigation (no groups)** - Shows all the artifacts in the folder structure. In this navigation style, the artifact groups are not present for filtering.

Eleme nt No.	Element Name	Description
7	Project Explorer	Displays list of artifacts of the checked out project. You can use the filter, navigation style, and artifact groups to filter the artifacts list on the project explorer. Click the managed artifacts (business rule and decision table) to open them in their respective editor.

Right-click the managed artifacts to open the list of available operations for them. The available options are as follows:

Delete

Deletes the artifact. Click **Confirm** on the confirmation screen to delete the artifact. After deletion commit the changes to the project using the tree view

Commit

Commits the changes to the artifact for approval. In the Commit Changes window, enter a comment for the changes in **Message** text box. Click the artifact name to review the changes for commit. Click **Confirm** to commit the changes to RMS repository.

Synchronize

Synchronizes the update from the server to your local copy of the artifact. For more details on the fields present on the Synchronize Artifact window, see Synchronize Artifact Details Window Reference.

Revert

Reverts the update (if not committed) done to an artifact. In the Revert window, click the artifact name to review the changes to revert. Click **Confirm** to revert the changes.

Lock

Locks the artifact for the user and other user cannot commit any changes to the table until it is unlocked. This option works only if the `ws.scs.locking.enable` property is set to true in `RMS.cdd`.

Rename

Provide a new name to the artifact. After changing the file name, commit the changes so the artifact is treated as a new artifact.

History

View list of the revisions of the artifact that were committed. For each revision, you can click **View Content** to view the revision that was committed or you can click **View Commit** to view the revision details.

Audit Trail

Displays the list of actions performed on the artifact by users. You can refine the results using the filters available in the Audit Trail window. For more information on the fields, see Management Page Reference.

Export

Exports the artifact to your system. Decision table is exported as an Microsoft Excel file (`.xls`) while business rule is exported as a `.ruletemplateinstance` file. For details, see Exporting Artifacts from TIBCO BusinessEvents WebStudio on page 48.

(Project only) Sync to Repository

Eleme nt No.	Element Name	Description
		Synchronize the (non-managed) project artifacts changes, that you have made externally after performing check out in WebStudio, into RMS. Select the option to open Sync To Repository screen, which displays the list of artifacts that are synced to the repository. Click **Confirm** to sync artifacts to RMS. **(Project only) Generate Deployable** Generates deployable files (EAR and class files) using the TIBCO BusinessEvents Studio project files, located in the RMS project folder. The deployables are generated in the location configured in the `RMS.cdd` file by the property `ws.artifact.deploy.location`, see Generated Files Location on page 120. Select this option to display the Generate Deployable screen. In the Generate Deployable screen enter the value of the following fields and click **Confirm** to generate deployables: • **Project Selected** - Select the project for which you want to generate EAR and class files. • **Generate Classes Only** - Toggle the switch to `ON` to generate only class files for decision tables and business rules. When set to `ON`, the EAR file for the project is not generated.

Eleme nt No.	Element Name	Description
8	Artifact Groups	Select the artifact group to display the respective artifact type in the project explorer. The values are: • **All Projects** - Displays all checked out artifacts. • **Business Rules** - Displays only checked out Business Rules. • **Decision Tables** - Displays only checked out Decision Tables. You can also create a custom group where you can add artifacts that you want. Click on the **Create a new artifact group** icon (⊕), enter the new group name and click **OK**. Drag and drop artifacts from the project explorer to the newly created artifact group to add the artifacts to the group.
9	Open Editors	Displays all the open artifact editors in the workspace

Exporting Artifacts from TIBCO BusinessEvents WebStudio

You can work on decision tables and business rules in TIBCO BusinessEvents WebStudio and export them to your local computer.

Prerequisites

The navigation style of the project explorer must be a tree structure. To change the navigation style, on

the project explorer, click the **Change the Navigation Style** icon (⋮) and select **Show resources as a tree**.

Procedure

1. In the project explorer, right-click the project name and in the available operations, and select **Export**.
   The Export Artifacts from window appears.

2. Search and select the artifacts that you want to export.

   > You can use the **Select All** toggle to select all artifacts at a time.

3. Click **Export**.
   The selected artifacts are exported in a ZIP file.

What to do next

Extract the ZIP file to obtain the decision tables as Microsoft Excel (`.xls`) files and the business rules as rule template instance (`.ruletemplateinstance`) files.

Synchronizing a Project from RMS Repository

After you log into the RMS server, synchronize your local copy of the project, with the most recent changes from the RMS server, before continuing to work on it.

Other users might have checked in changes, additions, and deletions that are now available for check out. There can be other changes too. You can select what updates to accept.

Procedure

1. In the Project Explorer, right-click any project and select **Synchronize**.
   The Synchronize Project window is displayed with all the artifacts for which the updated version is present on the server.

Synchronize Project Artifacts
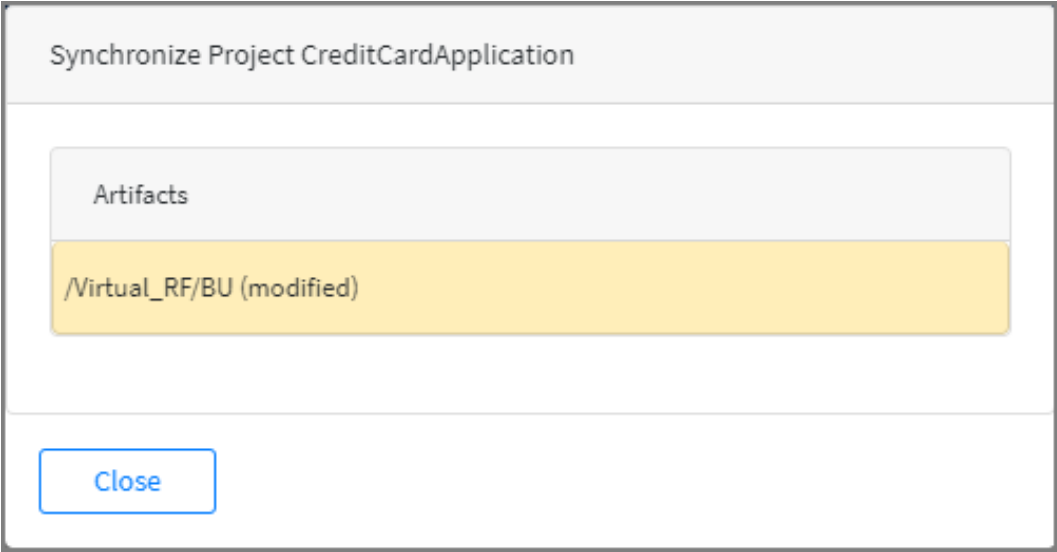
2. Click the artifact to view differences between the server and the local copy.
   The Synchronize artifact details window is displayed. For more details about the elements present on the window, see Synchronize Artifact Details Window Reference on page 49.

3. Click **Confirm** to apply the changes and click **Close**.

Result
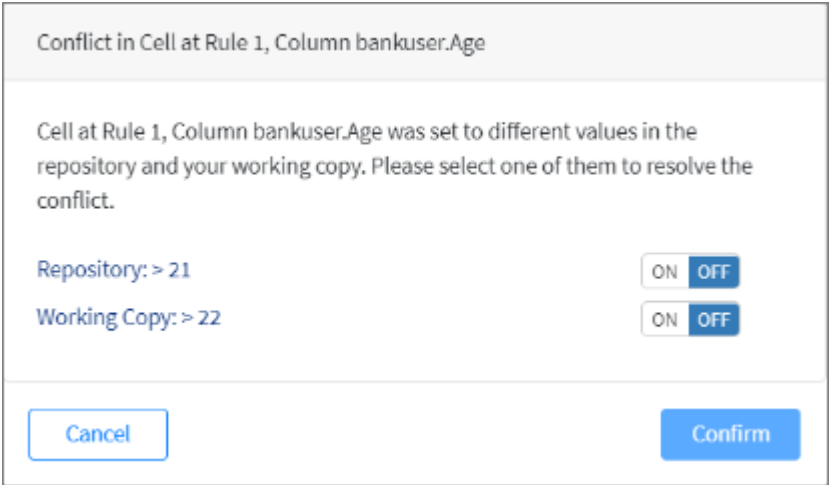
The synchronization for the artifact is complete and you can see the synchronized copy in the editor.

Synchronize Artifact Details Window Reference

The Synchronize Artifact Details windows helps you to view and synchronize the artifacts from the repository.

Synchronize Artifact Details Window

Elem ent No.	Element Name	Description
1	Strategy	Specifies the synchronizing strategy for the artifact. The values are: • **merge** - Merge your local copy of the artifact with the server copy and you have the option to choose to either keep the server changes or the local changes. • **latest()** - Discard the local copy and keep only the server copy.
2	Latest	Toggle to highlight the update from the server copy.
3	Working	Toggle to highlight the update from your local copy.
4	Reset	Resets all the toggles and changes that you have done on the Synchronize Artifact window.
5	Legends	The legends for the highlighting displayed on the artifact.
6	Conflict Resolution Section	Displays the artifact and then updates are highlighted based on the type of update. Conflicts are displayed when the same field is updated locally and in the server. In conflicts both the values are displayed, from which you can select the value that you want to keep and the value that you want to discard. Double-click the conflict to open the Conflict Resolution window. Select the toggle for the value that you want to keep and click **Confirm**.

Generating the Project EAR and Class Files in New UI

Deployable files are generated using the TIBCO BusinessEvents Studio project files, located in the RMS project's folder.

You can generate deployable EAR files only if you have the permission to check out all the required project resources (ACLs can limit what you can check out). The deployables are generated in the location configured in the RMS.cdd file by the property ws.artifact.deploy.location, see Generated Files Location on page 120.

Procedure

1. In the Project Explorer, click on the **Change the navigation style** icon and select any of these navigation style:

   - **Show resources as a tree**
   - **Show breadcrumbs**
   - **Basic tree navigation (no groups)**

   The project is displayed in the Project Explorer.

2. Right-click the project name and select **Generate Deployable**.

3. On the Generate Deployable screen, enter the value of the following fields and click **Confirm** to generate deployable files.

   - **Project Selected** - Select the project for which you want to generate EAR and class files.
   - **Generate Classes Only** - Toggle the switch to ON to generate only class files for decision tables and business rules. When set to ON, the EAR file for the project is not generated.

   The deployable files are generated at the configured deployable location.

Approving or Rejecting a Commit Request from the Worklist in the New UI

You can approve or reject requests after they are committed to the RMS.
The **Dashboard** tab displays unresolved artifacts that you can approve or reject. On the **Dashboard** tab, you can access the worklist containing the unresolved artifacts from multiple locations as shown in the following image:

Approving or Rejecting a Commit Request from the Worklist
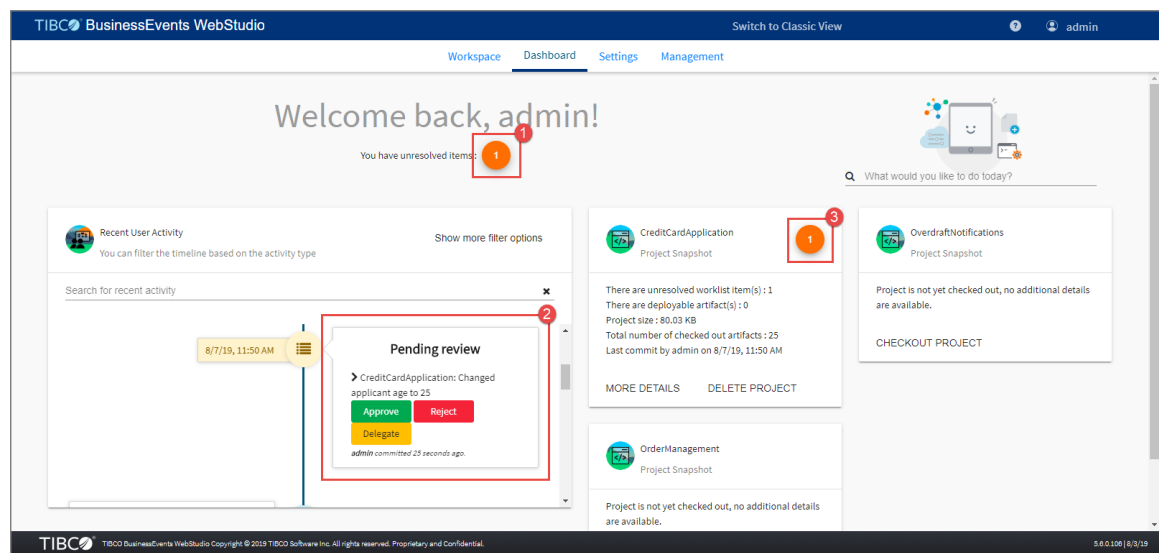
Item No.	Description
1	This icon displays the total number of unresolved items for all projects.
2	User activity timeline displays entry for each unresolved artifact.
3	This icon displays the number of unresolved worklist items for that project.

Prerequisites

You should have the permission for the approval action type in the project's access control file.

Procedure

1. In TIBCO BusinessEvents WebStudio, click the **Dashboard** tab.

2. On the **Dashboard** tab, open the worklist of unresolved items in one of the following ways:

   - Click the icon specifying the total number of unresolved items on the top of page.

   - In the user activities timeline, scroll down to the unresolved artifact entry.

   - Click the icon specifying the number of unresolved worklist items on the project card.

3. In the worklist, expand the entry for the commit that you want to approve or reject by clicking its name for example `/Virtual_RF/ProcessApplication (modified)` to see the modifications made to it. For details, see Comparing the Committed and Previous Version of Artifacts in the New UI on page 53.

4. Click **Approve** or **Reject**, depending on the action you want to take for the application changes.

5. Click **Finish**.

Delegating a Workitem from the Worklist in the New UI

A user with the Administrator role can delegate a workitem to one or more roles. Users belonging to any of these roles can see the workitem in their worklists.

The **Dashboard** tab displays unresolved artifacts that you can approve or reject. On the **Dashboard** tab, you can access the worklist containing the unresolved artifacts from multiple locations as shown in the following image:

Delegating a Workitem from the Worklist
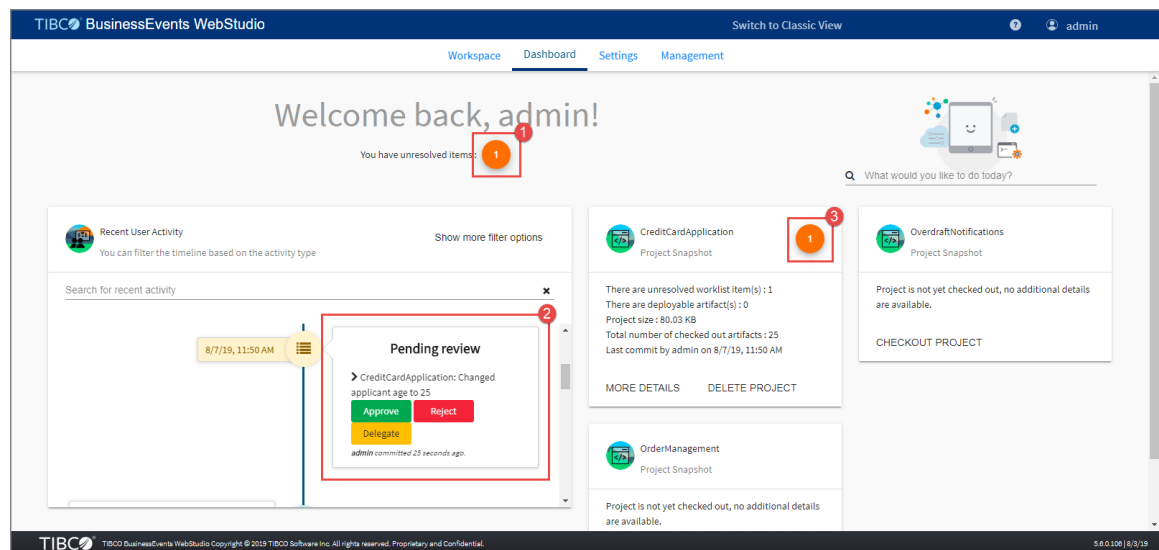
Item No.	Description
1	This icon displays the total number of unresolved items for all projects.
2	User activity timeline displays entry for each unresolved artifact.

Item No.	Description
3	This icon displays the number of unresolved worklist items for that project.

Prerequisites

Artifacts can be delegated to only those users who have the permission to approve or reject the committed artifacts.

Procedure

1. In TIBCO BusinessEvents WebStudio, click the **Dashboard** tab.

2. On the **Dashboard** tab, open the worklist of unresolved items in one of the following ways:

    *   Click the icon specifying the total number of unresolved items on the top of page.

    *   In the user activities timeline, scroll down to the unresolved artifact entry.

    *   Click the icon specifying the number of unresolved worklist items on the project card.

3. In the worklist, expand the entry for the commit that you want to delegate.

4. Click **Delegate**.
    The Delegate window opens.

5. From the **Select Role/s To Delegate To** list, select the users to whom you want to delegate the unresolved artifacts.

6. Confirm the selected roles.

Comparing the Committed and Previous Version of Artifacts in the New UI

Before approving or rejecting a commit request, you can view updates that are made to the committed version before approving or rejecting the commit request.

The **Dashboard** tab displays unresolved artifacts that you can approve or reject. On the **Dashboard** tab, you can access the worklist containing the unresolved artifacts from multiple locations as shown in the following image:

Comparing the Committed and Previous Version of Artifacts
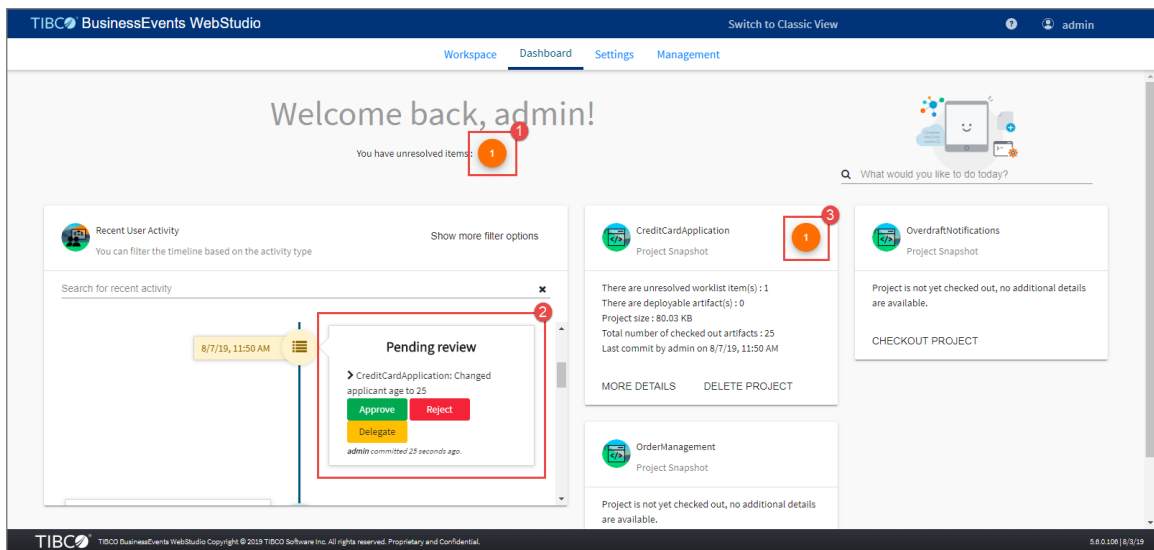
Item No.	Description
1	This icon displays the total number of unresolved items for all projects.
2	User activity timeline displays entry for each unresolved artifact.
3	This icon displays the number of unresolved worklist items for that project.

Procedure

1. In TIBCO BusinessEvents WebStudio, click the **Dashboard** tab.

2. On the **Dashboard** tab, open the worklist of unresolved items in one of the following ways:

   - Click the icon specifying the total number of unresolved items on the top of page.
   - In the user activities timeline, scroll down to the unresolved artifact entry.
   - Click the icon specifying the number of unresolved worklist items on the project card.

3. In the worklist, expand the entry for the commit that you want to compare.

4. Click the artifact name to view changes made to the artifact.
   The updated artifact displays color-coded updates for addition, deletion, and modification. Refer to the legends displayed on the editor for the significance of each highlighted color.

Deleting Workitems from the Worklist in the New UI

From your worklist, you can delete workitems that are either in the approved or rejected state. The **Recent User Activity** timeline shows the workitems that are eligible for deletion. The following figure shows an example:

Deleting Workitems from the Worklist
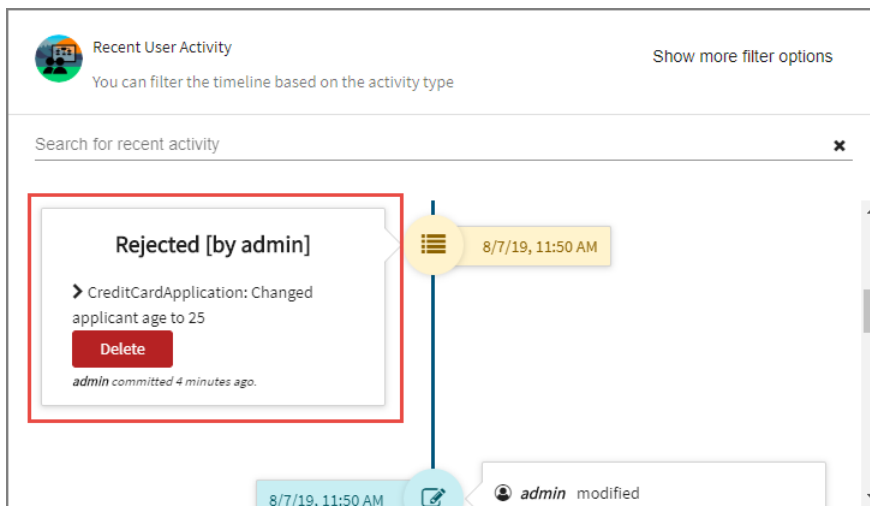
Prerequisites

The workitem that you want to delete should be in the approved or rejected status.

Procedure

1. Scroll down to the workitem that you want to delete in the **Recent User Activity** timeline. If you want to see its status, expand it.

> You can delete approved workitems also from the project snapshot by clicking the deployable artifacts icon.

.

2. Click **Delete** and in the confirmation window, confirm your action.

Deploying an Updated Artifact to the Application from the New UI

After committing edits to an artifact, you can deploy the update to the running application. On the **Dashboard** tab, you can access the worklist containing the deployable artifacts from multiple locations as shown in the following image:

Deploying an Artifact Update to the Application
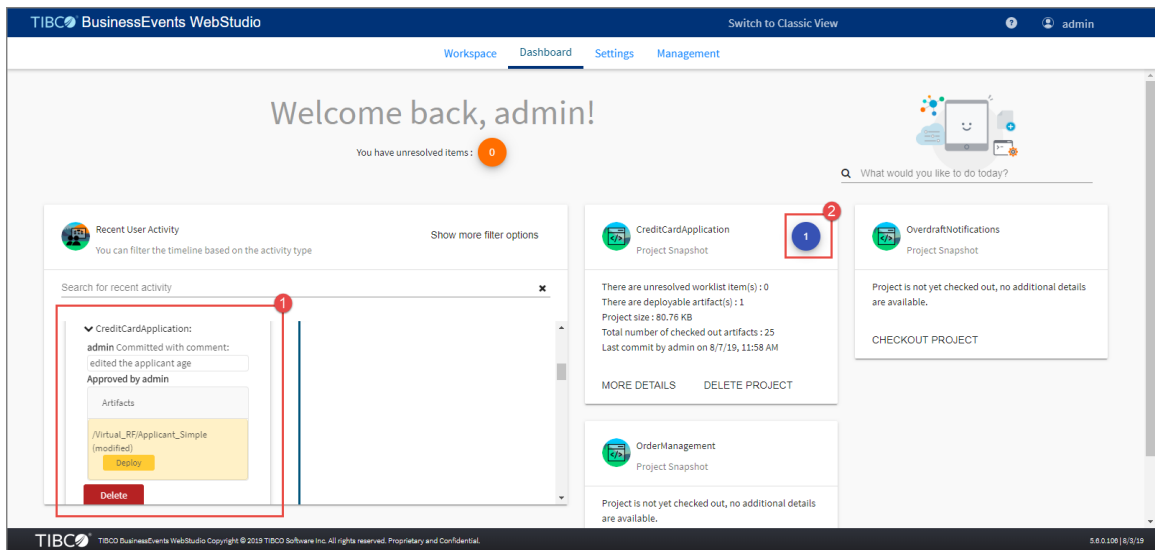
Item No.	Description
1	User activity timeline displays entry for each deployable artifact.
2	This icon displays the number of deployable artifacts for that project.

Prerequisites

Ensure that you have generated deployable files for the project. For details, see Generating the Project EAR and Class Files in New UI on page 50

Procedure

1. In WebStudio, click the **Dashboard** tab.

2. On the **Dashboard** tab, open worklist of deployable items in one of the following ways:

   • Click the icon specifying the number of deployable artifacts on the project card.

   • In the user activities timeline, scroll down to the deployable artifact entry.

3. In the worklist, expand the entry for the commit that you want to deploy.

4. Click **Deploy** for the artifact to deploy its changes to the application.

5. On the Deploy Artifact page, select the environment for deployment (for example, QA) and enter the comment.

6. Confirm your action.

Viewing Audit Trail of an Artifact or Project

You can view a list of all the actions that were performed on a selected artifact or project using the **Audit Trail** option.

Procedure

- You can display the list of actions performed for a project or artifact using either of the following ways:

  - In the Project Artifacts explorer, right-click the supported artifact (decision table and business rule) or project and select **Audit Trail**.

    The Audit Trail window is displayed. For more details on the fields on the window, see Managing Reports on page 77.

  - (*Artifacts Only*) Open the business rule or the decision table for editing. In the editor, click **More Options** icon and select **Audit Trail**.

    The Audit Trail window is displayed. For more details on the fields on the window, see Managing Reports on page 77.

  - You can view the audit trail of artifacts that you want on the **Management** tab under the **Report Management** section. For more details, see Managing Reports on page 77.

Managing Decision Tables

In WebStudio, you can manage existing decision tables of the project or create a new decision table using the virtual rule function.

Creating a Decision Table

A decision table can only be created using a virtual rule function.

For instructions on adding a VRF, see *TIBCO BusinessEvents Developer's Guide*.

Procedure

1. In the Project Explorer, right-click the VRF you want to use and click **New Decision Table**. The Create Artifact screen is displayed with the project name in the **Project Name** field and `Decision Table` in the **Artifact Type** field.

2. On the Create Artifact screen, enter the decision table name in the **Artifact Path** field and click **Finish**.

   The new empty decision table is displayed in the work area.

Decision Table Editor Reference

You can create and edit a decision table in WebStudio using the Decision Table editor.

The following sample screen displays a decision table editor in WebStudio and provides brief description of its elements.

Decision Table Editor Reference

Elem ent No.	Element	Description
1	Table Title	Displays the decision table name

Element No.	Element	Description
2	More Options	Lists more options for decision table. The options are: **Delete** Deletes the artifact. Click **Confirm** on the confirmation screen to delete the artifact. After deletion commit the changes to the project using the tree view **Commit** Commits the changes to the artifact for approval. In the Commit Changes window, enter a comment for the changes in **Message** text box. Click the artifact name to review the changes for commit. Click **Confirm** to commit the changes to RMS repository. **Synchronize** Synchronizes the update from the server to your local copy of the artifact. For more details on the fields present on the Synchronize Artifact window, see Synchronize Artifact Details Window Reference. **Revert** Reverts the update (if not committed) done to an artifact. In the Revert window, click the artifact name to review the changes to revert. Click **Confirm** to revert the changes. **Lock** Locks the artifact for the user and other user cannot commit any changes to the table until it is unlocked. This option works only if the `ws.scs.locking.enable` property is set to true in `RMS.cdd`. **Rename** Provide a new name to the artifact. After changing the file name, commit the changes so the artifact is treated as a new artifact. **History** View list of the revisions of the artifact that were committed. For each revision, you can click **View Content** to view the revision that was committed or you can click **View Commit** to view the revision details. **Audit Trail** Displays the list of actions performed on the artifact by users. You can refine the results using the filters available in the Audit Trail window. For more information on the fields, see Management Page Reference. **Export** Exports the artifact to your system. Decision table is exported as a Microsoft Excel (`.xls`) file.
3	Save	Saves the changes to the decision table locally, but does not commit to RMS for approval.
4	Commit	Commits the changes to the decision table for approval.

Element No.	Element	Description
5	Validate	Validates a decision table, for any access control violations or syntax errors in the table.
		EAR file for the project must be present in the deploy location; otherwise, the validate command fails.
		All the errors are displayed on the **Problems** tab at the bottom of the editor. New errors in syntax are added to these existing errors. Double-click errors to see the problematic view.
6	Undo	Reverts last edit done to the decision table.
7	Redo	Performs the action again that was reverted using the **Undo** command.
8	Analyze	Opens table analyzer for analyzing the table. For details on table analyzer, see Analyzing a Decision Table on page 90.
9	Effective Date/Time	Specifies the date and time on which the decision table becomes valid in the runtime application.
10	Expiration Date/Time	Specifies the date and time after which the decision table is no longer valid in the runtime application.
11	Priority	Sets a priority for the decision table as desired. When a VRF has multiple implementations (decision tables), the decision table's Priority setting determines the order in which the decision tables executes.
12	Single Row Execution	Set the toggle to ON, if you want the decision table to stop after one row (rule) passes the condition tests. Only the actions of that row are considered (until the next time the decision table's rule function is called).

Element No.	Element	Description
13	Add Column	Opens the Add Column window. The fields available in the Add Column window are: **Custom Type** Toggle the switch to ON to add a custom column or toggle the switch to OFF to add a regular column. **Select Columns** Select the properties to be added as regular column to the decision table. You can select multiple fields and they each of those fields is added as separate column. This field is available only when **Custom Type** is OFF. **Column Name** Enter the custom condition or action. The custom condition or action can use the rule language, standard functions, and data in the scope of the function at run time (for example, scorecards and global variables). It can also contain complex formulas. **Column Type** Select Condition or Action to add the selected column as condition or action column. **Property Type** (Read only) Specifies property type of the custom condition or action.
14	Add Row	Add an empty row at the end of the decision table. For your convenience, the newly added row is displayed at the bottom of the selected page of the decision table. Click **Save** to save the newly added row and its content.
15	Problems	Displays the errors and warnings after decision table validation.
16	Properties	Displays the properties for the decision table, cell, and the rule. • The **General** tab will contain information about fields like **Last Modified**, **Version**, and **Implementation Path**. • The **Cell** tab will contain information about whether a particular condition or action cell is enabled or not. You can also add a description about a cell in the **Comments** field. • The **Rule** tab will contain information about fields **Id** and **Priority**. You can also add a description about the rule in the **Comments** field.
17	TestData	Test data is used for validating decision table. Using test data you can verify if the decision table covers all the data that might be passed through the decision table. The test data is not managed in the decision table. The test data must be in the project in your repository.
18	Errors and Warning Icon	The icon displays the number of errors and warnings. Click on the icon to open the **Problems** tab.

Element No.	Element	Description
19	Properties Icon	Opens the **Properties** tab.
20	Lock Indicator	Indicates whether the artifact (decision table) is locked or unlocked.

Exporting a Decision Table

You can export decision tables from TIBCO BusinessEvents WebStudio to Microsoft Excel spreadsheets.

Procedure

1. You can run an export command in either of the following ways:

    • Right-click the decision table in the Project Explorer and select **Export**.

    • Open the decision table you want to export. Click the **More Options** icon in the toolbar and select **Export**.

    The Save As dialog box is displayed for the exported file.

2. Navigate to the directory in which you want to save the excel (.xls) file and provide a file name.

3. Click **Save**.

Importing a Decision Table

You can import correctly formatted Microsoft Excel file to create a decision table or to merge to an existing decision table in TIBCO BusinessEvents WebStudio.

• Only import from the Microsoft Excel files is supported. You cannot import from CSV (comma-separated values) files or tab-delimited text files. You can open such files in Excel and save as Excel format binary files.

• Before importing the Microsoft Excel file, ensure that cells are not protected (locked). The protected cells, after the import, appear disabled in WebStudio.

Procedure

1. Right-click a virtual rule function in the project explorer and select **Import**.
   The Import dialog box is displayed.

2. In the Import dialog box, click **Select Files** to browse and **Open** the excel file that you want.
   The **Name** field is automatically populated with the excel file name.

3. In the **Name** field, you can either provide an existing table name or a new name.

    • If table already exists - Select **Overwrite** or **Merge** based on your requirement and click **Confirm**. If you have selected **Overwrite**, the decision table with the same name is overwritten. However, if you have selected **Merge**, the Synchronize window is displayed where you can view the modified values for merging and click **Confirm**. For more details on the elements present in the window, see Synchronize Artifact Details Window Reference on page 49.

    • If table is new - Verify the **Parent Folder** and click **Confirm**.

Creating a Business Rule

A business rule can only be created using a rule template.

For instructions on adding a rule template, see *TIBCO BusinessEvents Developer's Guide*.

Prerequisites

Ensure that the **All Projects** option is selected under the Artifact Groups in the project explorer. Thus, rule templates are visible in the project explorer.

Procedure

1. In the Project Explorer, right-click the rule template you want to use and click **New Business Rule** option.
   The Create Artifact window is displayed with the **Project Name** and `Rule Template Instance` in the **Artifact Type**.

2. In the Create Artifact window, enter the business rule name in the **Artifact Path** and click **Finish**.
   The **Project Name** and **Artifact Type** fields are pre-filled with appropriate values.

Result

The new business rule is displayed in the work area for editing. The business rule editor depends on the rule template implementation in the application:

- If the rule template has a rule template view associated with it, an easy to use form is displayed to specify conditions and actions.

- If the rule template do not have a rule template view associated with it, a builder interface is displayed to add condition and actions. For details, see the following topics:

  - Adding a Conditional Clause by Using the Condition Builder
  - Adding an Action Using the Command Builder on page 67
  - Business Rule Editor Reference

Business Rule Example

In the bundled example CreditCardApplication, there are two rule templates: `SpecialOffers` and `Applicant_PreScreen`. The `Applicant_PreScreen` rule template has a rule template view (`PreScreenTemplateView`) associated with it. The `PreScreenTemplateView` artifact contains the HTML code for presenting the form based on fields defined in the `Applicant_PreScreen` rule template. Thus, when you create a new business rule from the `Applicant_PreScreen` rule template, a simple HTML form opens up based on the HTML code defined in `PreScreenTemplateView`. However, if you create a business rule from the `SpecialOffers` rule template, a builder interface opens up which helps to create more complex rules.

Adding a Conditional Clause by Using the Condition Builder

The When section lets the user define additional conditions that must be met, in addition to the precondition defined in the rule template.

The builder determines the scope of the rule template and allows you to define individual conditional clauses based on that scope. Each conditional clause has one or more sub-clause, and a match operator to determine whether the conditional clause is true based on the sub-clause values.

If you require to move any condition up or down the order then you can drag-and-drop the condition to move it. Move the mouse pointer over any condition till the pointer is converted to a drag icon. Now, you can drag that particular condition and drop it within the same or different filter.

Procedure

1. In the business rule editor, under the **When** section, click the artifact-name link and select the artifact you require.
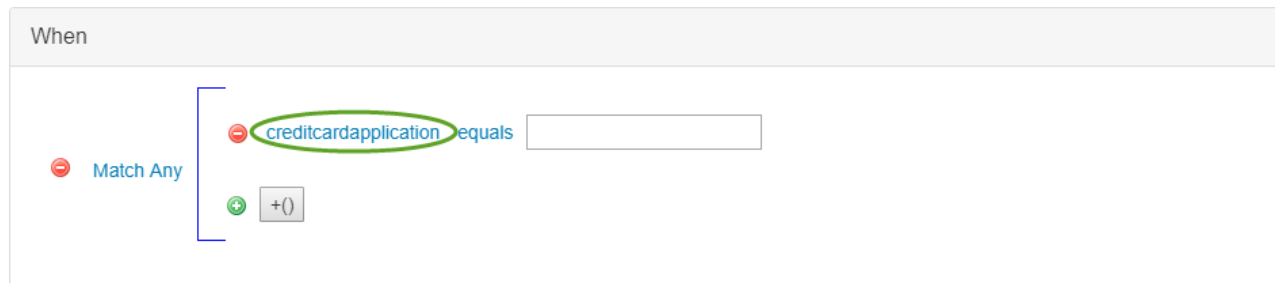
2. Click the operator-name link to select another operator, or a child artifact of the previously selected artifact, as you require. See Business Rule Operators on page 65 for a list of supported operators.

3. Enter the conditional value for the artifact in the empty box.

4. Click the **Add** icon to another condition to the conditional clause, or click the **Remove** icon to remove the existing condition from the conditional clause, if you want.

5. Click the **Add Sub-clause** icon to add a conditional sub-clause to the conditional clause if you want.

6. Click the match-operator link to select the matching condition for which the conditional clause evaluates to true. The values are:

Option	Description
Match Any	Conditional clause is true if any of the condition evaluates to true.
Match All	Conditional clause is true only if all of the conditions evaluates to true.
Match None	Conditional clause is true only if none of the conditions evaluates to true.

7. Click the **Save** icon to save updates to the business rule.

What to do next

Business Rule Operators

Business Rule builder operators consists of the conditional clause operators and the action builder operators. The operator list changes as per the parent entity type in the builder.

Condition Builder Operators

Operator Value on WebStudio Client	Parent Type	Operator Value on RMS Server
Matches Other Field	• Concept / Event • Data / Time / Datetime • Integer / Float • Text / String • Boolean	== *<field>*
Differs From Field	• Concept / Event • Date / Time / Datetime • Integer / Float • Text / String • Boolean	!= *<field>*

Operator Value on WebStudio Client	Parent Type	Operator Value on RMS Server
Is Null	• Concept / Event • Date / Time / Datetime • Integer / Float • Text / String	== null
Is not Null	• Concept / Event • Date / Time / Datetime • Integer / Float • Text / String	!= null
Greater Than	Integer / Float	>
Greater Than Field	Integer / Float	> *\<field\>*
Greater Than Equal To	Integer / Float	>=
Greater Than Equal To Field	Integer / Float	>= *\<field\>*
Less Than	Integer / Float	<
Less Than Field	Integer / Float	< *\<field\>*
Less Than Equal To	Integer / Float	<=
Less Than Equal To Field	Integer / Float	<= *\<field\>*
Equals	• Integer / Float • Text / String • Boolean	==
Not Equals	• Integer / Float • Text / String • Boolean	!=

Action Builder Operators

Operator Value on WebStudio Client	Parent Type	Operator Value on RMS Server
Set To	• Concept / Event • Date / Time / Datetime • Integer / Float • Text / String	=
Set To Field	• Concept / Event • Date / Time / Datetime • Integer / Float • Text / String • Boolean	= *<field>*
Set To Null	• Concept / Event • Integer / Float • Text / String	= null
Increment By	Integer / Float	+=
Increment By Field	Integer / Float	+= *<field>*
Decrement By	Integer / Float	-=
Decrement By Field	Integer / Float	-= *<field>*
Set To True	Boolean	= true
Set To False	Boolean	= false

Adding an Action Using the Command Builder

The **Then** section defines additional actions to be taken based on the conditions defined.

The builder lets the user define actions based on the statements defined in the `actionContext` section of the rule template.

Ensure that all the actions in the business rule are defined and the order should match that of the rule template. Otherwise, the business rule will be invalid.

Procedure

1. In the business rule editor, under the **Then** section, click the **Action** dropdown list to select the actions available for the rule template.

> Then
>
> Action ▾
> modify /Concepts/CreditCard.concept card

2. Click the artifact-name link and select the artifact you want modify.

> 🖫 Add parameters to /Concepts/CreditCard.concept
>
> ⊖ InterestRate set to [   ]
>
> ⊕

3. Click the operator-name link and select the command for the artifact. For list of available operators, see Business Rule Operators.

4. In the text box, enter the value that you want to set for the artifact.

5. Click the **Add** icon to add another parameter for the action, or click the **Remove** icon to remove the parameter for action, if you want.

6. Click **Save** to save updates to the business rule.

Changing Language of the TIBCO BusinessEvents WebStudio New UI

You can change the language of the new user interface in TIBCO BusinessEvents WebStudio from American English (en_US) to other supported languages.

The following languages are currently supported by TIBCO BusinessEvents new user interface:

- German
- French
- Italian
- Chinese

Procedure

1. Clear the cache for the browser in which you are running TIBCO BusinessEvents WebStudio.

2. Open the browser settings.

3. Choose your preferred language from the list of available languages supported by TIBCO BusinessEvents WebStudio.

4. Refresh the TIBCO BusinessEvents WebStudio URL.

Business Rule Editor Reference

You can create and edit a business rule in WebStudio using the business rule editor.

The following sample screen displays a business rule editor in WebStudio and the following table provides brief description of its elements.

Business Rule Editor Reference

Elem ent No.	Element	Description
1	Table title	Displays the business rule name
2	Save	Saves the changes to the business rule in cache, but does not commit to RMS.
3	Commit	Commits the business rule changes to RMS.
4	Validate	Validates a business rule, for any error. EAR file for the project must be present in the deploy location; otherwise, the validate command fails. All the errors are displayed on the **Problems** tab at the bottom of the editor. New errors in syntax are added to these existing errors. Double-click errors to see the problematic view.
5	Undo	Reverts last edit done to the business rule.
6	Redo	Performs the action again that was reverted using the **Undo** command.

Elem ent No.	Element	Description
7	More options	Lists more options for business rule . The options are:
		Delete
		Deletes the artifact. Click **Confirm** on the confirmation screen to delete the artifact. After deletion commit the changes to the project using the tree view
		Commit
		Commits the changes to the artifact for approval. In the Commit Changes window, enter a comment for the changes in **Message** text box. Click the artifact name to review the changes for commit. Click **Confirm** to commit the changes to RMS repository.
		Synchronize
		Synchronizes the update from the server to your local copy of the artifact. For more details on the fields present on the Synchronize Artifact window, see Synchronize Artifact Details Window Reference.
		Revert
		Reverts the update (if not committed) done to an artifact. In the Revert window, click the artifact name to review the changes to revert. Click **Confirm** to revert the changes.
		Lock
		Locks the artifact for the user and other user cannot commit any changes to the table until it is unlocked. This option works only if the `ws.scs.locking.enable` property is set to true in `RMS.cdd`.
		Rename
		Provide a new name to the artifact. After changing the file name, commit the changes so the artifact is treated as a new artifact.
		History
		View list of the revisions of the artifact that were committed. For each revision, you can click **View Content** to view the revision that was committed or you can click **View Commit** to view the revision details.
		Audit Trail
		Displays the list of actions performed on the artifact by users. You can refine the results using the filters available in the Audit Trail window. For more information on the fields, see Management Page Reference.
		Export
		Exports the artifact to your system. Business rule is exported as `a.ruletemplateinstance` file.
8	When section	The **When** section lets the user define additional conditions that must be met, in addition to the precondition defined in the rule template. For more information, see Adding a Conditional Clause by Using the Condition Builder.

Elem ent No.	Element	Description
9	Then section	The **Then** section defines additional actions to be taken based on the conditions defined. For more information, see Adding an Action Using the Command Builder
10	Problems tab	Displays the errors and warnings for the business rule after its validation.
11	Properties tab	Provides the options to set additional description and priority of the business rule. The **Priority** property defines the order in which the rules are executed. The value ranges from 1 to 10, where the lower number specifies higher priority, for example, the rule with the value 2 have higher priority than the rule with the value 6. The default value of the **Priority** field is 5.

Settings Page Reference

On the Settings page you can change **User Settings** and **Application Settings**.

User Settings

This section provides options for personal preferences that you can set for WebStudio. These preferences are the same as settings that are present on the **Preferences** tab of the Settings page in the classic user interface. For more details about these options, see Preferences Settings on page 72.

Applications Settings

Using the Application Settings, you can restrict the operators, and configure project-level email notifications for each project. This section further categorizes the settings in the following preferences:

- **Operator Preferences** - Using the Operator section, you can restrict the operators available for creating the Business Rule using the Builder interface in WebStudio. For more details on these options, see Operator Settings on page 73 in the WebStudio classic user interface.

- **Notification Preferences** - Using the notification section, you can configure email notifications based on the project action. For more details on these options, see Notification Settings on page 74 in the WebStudio classic user interface.

- **Deployment Preferences** - Using the Deployment Preferences, you can configure hot deployment settings for the projects without restarting RMS.

  > These configurations are not applied to the RMS.cdd file but are available only for that RMS session.

Click the **Add** icon to add a new hot deployment preferences for a project. Click the **Remove** icon to delete an existing deployment preference.

Hot Deployment Configuration Properties

Fields	Mapped RMS.cdd Property
Name	*<ProjectName>*.ws.applicableEnvironments
Project	Select the project for which hot deployment preferences are configured.

Fields	Mapped `RMS.cdd` Property
Enable	*\<ProjectName\>.\<EnvironmentName\>*`.ws.jmx.hotDeploy.enable`
Host	*\<ProjectName\>.\<EnvironmentName\>*`.ws.jmx.host`
Port	*\<ProjectName\>.\<EnvironmentName\>*`.ws.jmx.port`
User Name	*\<ProjectName\>.\<EnvironmentName\>*`.ws.jmx.user`
Password	*\<ProjectName\>.\<EnvironmentName\>*`.ws.jmx.password`
Cluster Name	*\<ProjectName\>.\<EnvironmentName\>*`.ws.jmx.clusterName`
Agent Name	*\<ProjectName\>.\<EnvironmentName\>*`.ws.jmx.agentName`
InMemory	*\<ProjectName\>.\<EnvironmentName\>*`.ws.jmx.inMemory`

For more information on the hot deployment settings present in the CDD file, see Hot Deployment Property Group on page 32.

Preferences Settings

Set preferences for TIBCO BusinessEvents WebStudio using the options available on the **Personal Preferences** tab.

After updating the values, click **Apply** to set new WebStudio preferences.

Field	Default Value	Description
Number of Recently Opened Items	`10`	The number of recently open items to be displayed in the Recently Opened dashboard portlet.
Default URL for Custom Webpage	`www.tibco.com`	*(Classic user interface only)* The default URL for the Web Page dashboard portlet
SCS User Name	`jdoe`	The username to connect to the SVN repository mentioned in the `ws.scs.rootURL` property of the `RMS.cdd` file. This user name overrides the default username provided in the `ws.scs.default.username` property of the `RMS.cdd` file. See Source Control System (SCS) Property Group for more details on the `RMS.cdd` properties.
SCS User Password	`jdoe`	The password for the **SCS User Name** field to connect to the SVN repository mentioned in the `ws.scs.rootURL` property of the `RMS.cdd` file. This password overrides the default password provided in the `ws.scs.default.password` property of the `RMS.cdd` file. See Source Control System (SCS) Property Group for more details on the `RMS.cdd` properties. Unlike the `ws.scs.default.password` property of the `RMS.cdd` file, this field takes the actual password and not the Base64 formatted password.

Field	Default Value	Description
View Project as	List	The structural view of the project artifacts under the Group Content in workspace and in Dashboard Portlets.
Decision Table Page Size	20	The number of rows of the decision table to be displayed in a page. Reopen the decision table, or disable and then again enable the page view, to reflect the updated page size for the decision table. The minimum page size is limited to 10.
Default Rule Template Instance Filter	Match Any	Specifies the default logical operator for new conditions in the condition builder of the business rule.
Select widget for string bindings in Rule Template Instance	TextArea	Choose between TextBox and TextArea for string bindings in rule template instances. To enter multiple-line values, select the TextArea option. The setting is applicable across all rule template instances in all the projects. You can use TIBCO BusinessEvents Studio to set the binding values in rule template instances of a particular project. For the string binding that you want, in the binding element, set an attribute with widgetType key and value TextBox or TextArea.
Auto UnLock on Approve/ Reject	selected	If selected, the property enables the artifact to be unlocked once they are either approved or rejected for the committed update.
Group Related Artifacts	selected	If selected the business rules are grouped under their parent rule templates, and decision tables are grouped under their parent virtual rule function. If the check box is clear, the decision table and rule templates are not grouped and are listed individually.
Allow Custom Domain Values	selected	If selected, the custom values can be entered for the attributes associated to the domain. If the check box is cleared, you can only select from the domain values list using the drop-down.
Show column alias if present	cleared	If selected then column alias are displayed for the decision table columns. Column alias can be defined using the column option **Field Settings**.
Columns Auto Fit Approach	Default	(Classic user interface only) Specifies the autofit approach for the columns of decision tables. Select the required value and click **Apply**. Refresh the decision table for the new autofit approach to take effect. • **Default** - Default column width • **Both** - Resizes all columns to autofit the column heading as well as the column values • **Title** - Resizes all columns to autofit the column heading • **Value** - Resizes all columns to autofit the column values

Operator Settings

Using the **Operator Preferences**, you can restrict the operators available for creating business rules using the Builder interface in the TIBCO BusinessEvents WebStudio.

The Operator Preferences section consists of three columns.

Preference	Description
Field Type	Lists the type of the fields available in the condition and command builder. Select the field type for which you want to restrict the available operators. The available field types are: • String • Integer • Long • Double • Boolean • DateTime • Concept/Event
Filter Operators	Lists the operators available for the selected **Field Type** in the condition (When) builder. Select the operators that you want to display in the condition builder for the selected Field Type and click **Apply**. The operator with a clear checkbox does not appear in the Builder interface while creating a conditional clause for the business rule.
Command Operators	Lists the operators available in the command (Then) builder for the selected **Field Type**. Select the operators that you want to display in the command builder for the selected Field Type and click **Apply**. The operator with the clear checkbox does not appear in the Builder interface while defining actions for the Business Rule.

Notification Settings

Using the **Notification Preferences**, you can configure email notifications based on the project action.

Projects

All the projects in the rule management server are listed under this column. You can configure email notifications for each project.

Actions

You can select the actions for which you want to send email notification for the selected project. The **Apply** button becomes active if there are any changes in the actions for the project. Click **Apply** to apply all the email notification configurations.

Email ID

You can add, edit, or delete email IDs to which you want to send notifications for the project actions. Click the **Add** or **Delete** icon to add or delete an email ID. The **Apply** button becomes active if there are any changes in the email list for the project. Click **Apply** to apply all the email notification configurations.

Managing Users

A user with an administrator role can add users, delete users, change passwords for users, and edit user roles.

Procedure

1. In the TIBCO BusinessEvents WebStudio, select the **Management** tab.
2. Select **Users** under the **Permission Management** menu.
3. To add users, delete users, change user passwords, and edit user roles, perform the relevant steps:

Purpose	Steps

Creating a user	1. Click the **Create User** icon.
	2. In the Add User window, fill in the following fields:
	  • Username
	  • Password
	  • Confirm password
	  • Assign Role to User
	3. Confirm your actions.

Deleting a user	1. Select the user you want to delete. 2. Click the **Delete User** icon.
Changing user password	1. Select the user whose password you want to change. 2. Click the **Change Password** icon. 3. In the Change Password window, enter the new password and confirm it. 4. Confirm your actions.
Editing user roles	1. Select the user whose roles you want to edit. 2. In the **Roles** section, based on your requirement, select or clear actions for the selected user.

4. Click **Apply**.

Managing Roles

Users with the administrator role can add, edit, or delete roles for the projects present in the TIBCO BusinessEvents WebStudio. They can also define the actions that a user with a particular role can perform on the different types of artifacts.

Procedure

1. In the TIBCO BusinessEvents WebStudio, select the **Management** tab.

2. Select **Roles** under the **Permission Management** menu.

3. Perform an action based on your requirement:

Purpose	Steps
Adding roles to a project	1. On the **Roles** section, click the **Add role to the project** icon. 2. Enter the name for the new role. 3. Confirm your action.
Removing roles from a project	1. Click the **Remove role from project** icon.
Defining actions that can be performed by user roles	You can change artifact-specific permissions for roles in specific projects. 1. From the **Projects** section, select the project for which you want to edit the role permissions. 2. From the **Roles** section, select the role for which you want to edit the permissions. 3. In the **Actions** section, based on your requirement, select or clear actions for a user role.

Managing Locks

Users with administrator roles can release artifacts locked by other users. For example, when the user who has locked the artifact is not available and the artifact needs to be updated, the administrator can make the artifact available for an update.

Prerequisites

Locking must be enabled by setting the `ws.scs.locking.enable` property to `true` in the CDD file.

Procedure

1. In the TIBCO BusinessEvents WebStudio, select the **Management** tab.

2. From the **Permission Management** pane, select **Locks**.

3. In the **Projects** section, select the project whose artifacts you want to release.

4. From the **List of Locked Artifacts** section, select the artifact you want to release.

5. From the **Artifact Details** section, clear the **Lock** checkbox and click **Apply**.

Managing Reports

Users with administrator roles can generate reports on user activities

Procedure

1. In the TIBCO BusinessEvents WebStudio, select the **Management** tab.
2. Select **Audit Trail** under the **Report Management** menu.
3. Apply filters that you want from the following:

Field	Description
Project	Select the project for which you want to see the actions performed
Artifact	Enter the full name of the artifact along with its path to view audit trail for that artifact. For example, enter `/Virtual_RF/Applicant` to display results for actions performed on the Applicant decision table.
Action Types	Select the type of actions for which you want to see the audit trail.
After Date	Select the date and time to display actions that were performed after the selected data and time.
Before Date	Select the date and time to display only those actions that were performed before the selected data and time.
LogFile	Select the **LogFile** check box to save the results in a log file instead of displaying the results on the screen.

4. To save the filters and generate a report, click **Apply**.

WebStudio Classic User Interface

The classic user interface provides complete WebStudio functionality in the old familiar user interface.

- TIBCO BusinessEvents WebStudio classic UI is deprecated in this release. You must use TIBCO WebStudio new UI, with enhanced user experience and features, for managing business rules.

- The WebStudio classic user interface supports Mozilla Firefox web browser till version 62.

RMS Projects and Artifacts

The projects and artifacts that were added to RMS can be used in WebStudio to create business rules.

Starting and Logging in to RMS

Before you can work on the RMS projects, you need to start and log in to the RMS.

Procedure

1. Start the RMS server by using one of the following ways:

   - Run *BE_HOME*/rms/bin/be-rms.exe (or be-rms.sh, depending on your operating system), with valid arguments. For example, on Windows you would open a command window in *BE_HOME*/rms/bin and execute:

     ```
     be-rms.exe
     ```

   - (Windows only) Select **Start** > **All Programs** > **TIBCO** > *TIBCO_HOME* > **TIBCO BusinessEvents** *<version>* > **Start Rules Management Server**.

     The server is ready when you see a message in the command window such as:
     ```
     Info [HTTP-Channel-Startup] - [driver.http] Channel server for HTTP Channel
     [Port:5000] successfully started
     ```

2. Type the URL http://*host:port*/WebStudio/ in a web browser. Default host is localhost and default port is 8090. Host and port are configurable using properties in RMS.cdd. Ensure that the RMS is running before logging to TIBCO BusinessEvents WebStudio.

3. To use the classic user interface, click **Switch to Classic View**.

4. Type the username and password for TIBCO BusinessEvents WebStudio.

5. Click **Login** to sign in to RMS.

Result

The application displays the TIBCO BusinessEvents WebStudio dashboard.

The system restricts multiple simultaneous login of the same user name. However, if you have previous unclosed sessions of the same username you can select the **Force Login** check box to close all the other sessions of the user. The check box is only visible if multiple login for the user is detected.

In TIBCO BusinessEvents WebStudio, click **Sign out** to log out. In the case of session timeout, the user is automatically logged out.

Status Check for RMS Connection

Once a TIBCO BusinessEvents Studio, a TIBCO BusinessEvents Decision Manager, or a TIBCO BusinessEvents WebStudio client logs in to RMS, a Dashboard background activity periodically polls the RMS server to refresh the worklist items in WebStudio and **rms.heartbeat.relay** property (in studio.tra) is used by Studio to configure the heartbeat time.

By default, the delay is of two seconds.

If the server goes down, the menu options for RMS are automatically disabled. However, if you are already performing an RMS operation and the server goes down, the operation fails. The login option is enabled when the server comes up again.

Checking Out a Project

If RMS is used in your environment, then you must log into RMS and check out a project from RMS before you can work with the project resources in the TIBCO BusinessEvents WebStudio UI.

When generating an EAR file using the Generate Deployable option, the project resources from the RMS repository and not from the workspace are used.

Depending on your role or roles, you may not have permission to check out all resources or to do all of the documented tasks. For instructions on updating a project you already checked out, see Updating (Synchronizing) a Project.

The checkout dialog does not list the imported 4.x release projects, if the project name contains a dot(.). These imported projects should be renamed inside TIBCO BusinessEvents Studio to remove the dot(.) from the project name.

Procedure

1. Open the checkout window using any of the following methods:

    - In the **Dashboard** tab, click the link in the **My Projects** section if no projects are checked out.

    - In the **My Workspace** tab, click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Checkout** .

    - In the **My Workspace** tab, right-click inside the **Group Contents** section and select **RMS** > **Checkout** .

    - In the **My Workspace** tab, click the checkout icon in the RMS toolbar.

2. In the checkout window, select the project you want to check out from the **Project List** drop-down.

3. Select the check boxes of the files you want to check out and click **OK**. Alternatively, select the header checkbox to select all the files for check out and click **OK**.

    You can perform partial checkouts as per your requirement, such as, check out some files in the start and then later on check out more files as required.

Result

In TIBCO BusinessEvents WebStudio the checked out project is displayed under Group Contents and the project files are loaded to your workspace. The Group Contents section displays the artifacts based on the groups (Projects/Business Rules/Decision Tables/Process) selected in the Groups section. The Business Rules, Processes and the Decision Tables group are selected by default after you check out a project. In the **Group Content** tab, business rules are displayed under their parent rule templates and decision tables are displayed under their parent virtual rule functions.

The TIBCO BusinessEvents WebStudio displays the project files in the Group Contents section either as a list or in a tree structure. In the Group Contents section click the project view icon to select the **Show items as tree** or **Show items as list** option to toggle between the tree view ( )and the list view ( ). The list view is the default view.

Updating (Synchronizing) a Project

After you log into the RMS server, and it is recommended that you update (synchronize) your local copy of the project, with the most recent changes from the RMS server, before continuing to work on it.

Other users may have checked in changes, additions, and deletions that are now available for check out. There may be other changes too. You can select what updates to accept. Changes and additions to individual decision tables and business rules are listed.

Procedure

1. In the **Group Contents** section, select the artifact you need to synchronize.

   > The synchronize command does not support multiple artifact selection using Shift or Ctrl key. Alternatively, select a folder/project to select all artifacts under that folder/project, when project files are displayed in a tree structure.

2. Open the synchronize window using any of the following methods:

   - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Synchronize** .

   - Right-click on the selected artifact and then select **RMS** > **Synchronize** .

   - Click the synchronize icon in the RMS toolbar.

3. If there are local changes as well as the server-side changes, then WebStudio highlights the conflicted artifacts. Double-click on the artifact to see the changes. Right-click on the artifact and select **Use Local** to use your copy of the artifact, or select **Use Base** to use the copy on the server.

4. Select the check boxes of the files you want to synchronize and click **OK**. Alternatively, select the header checkbox to synchronize all the listed project files and click **OK**.

   If there are some local changes for the artifact and then you can double-click the artifact to view the highlighted server-side change. Hover the mouse over the highlighted (conflicted) field to see the server-side value. Right-click on the conflict field and select **Use Local** to use your copy of the artifact, or select **Use Base** to use the copy on the server and discard the local changes.

   The selected artifacts are updated with the latest project files from RMS.

Synchronizing Artifacts Changes into RMS

In WebStudio you can synchronize the project artifacts changes, that you have made externally after performing check out in WebStudio, into RMS.
Using the **Sync To Repository** function, you can synchronize artifacts which cannot be managed in WebStudio. The project artifacts which can be synchronized are:

- Concepts
- Events
- Virtual rule function
- Rule template.

During synchronization, only additive changes are synchronized to existing WebStudio managed entities, which are referencing those changed artifacts. The changes related to deletion are not synchronized. After synchronization, you should use the **Validate** function to identify the entities which are affected by the deletion changes. The WebStudio managed entities are:

- Decision table
- Business rule

- Process.

Procedure

1. Open the synchronize window using any of the following methods:

   - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Sync To Repository**.

   - In the **Group Contents** section, right-click anywhere and select **RMS** > **Sync To Repository**.

   The Sync To Repository window is displayed.

2. In the Sync To Repository window, select the project that you want to synchronize from **Project List**. All the artifacts of the allowed types for the selected project are listed.

3. Select the artifacts that you want to sync to RMS and click **OK**.

Locking an Artifact

An exclusive lock ensures that while you are modifying the artifact, no other user is able to edit or delete it.
When other user tries to save the edit done to the locked artifact, or lock the locked artifact, WebStudio displays an error stating that the artifact is already locked by a user.

Prerequisites

Enable the artifact locking mechanism for WebStudio using the `ws.scs.locking.enable` property in the `RMS.cdd` file. See Source Control System (SCS) Property Group for more details.

Procedure

- In the **Group Contents** section, right-click on the artifact you need to lock, and select **RMS** > **Lock** .
  The artifact is locked and a lock is displayed on the artifact icon.

Unlocking a Locked Artifact

Release the locks on the artifact after completing work on the artifact, so that other users can also work on the artifact.
Alternatively, you can also select the **Auto UnLock on Approve/Reject** property check box to release the lock on the artifact as soon as the commit on the artifact is approved or rejected. The property can be set in the **Preference** portlet under the **Settings** tab in the WebStudio UI. See Preferences Settings for more details.

You can also set up a timeout for locks using the `ws.scs.lock.timeout` property in `RMS.cdd`, after which the locks are released. See Source Control System (SCS) Property Group for more details.

Procedure

- In the **Group Contents** section, right-click on the locked artifact you need to unlock, and select **RMS** > **UnLock** .
  The artifact is unlocked now and the lock disappears from the artifact icon.

Managing Locks on Artifacts

Administrators sometimes need to release locks, established by other users. For example, when other user is not available and the locked artifact is needed for some other updates.

Prerequisites

The user who is managing the lock should have the ALLOW permission set for the **manage_locks** action for the project in the RMS project's access control file. See the *TIBCO BusinessEvents® Administration* guide for more details on how to configure the access control file.

Procedure

1. Open the Manage Locks window using any of the following methods:

   - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Manage Locks** 🔒 .

   - In the **Group Contents** section, right-click any artifact and select **RMS** > **Manage Locks** 🔒 .

   The Manage Locks window is displayed.

2. Select the project from the **Project List** dropdown.
   The Manage Locks window displays all the locked artifacts by all users for the project.

3. Select the check boxes for the artifact for which you must release the lock and click **UnLock**.
   All the selected artifacts are now unlocked and can be updated by all users.

Committing Artifacts for Approval

After you complete the additions, changes, or deletions to a project you checked out of RMS, commit the artifacts for approval. You can make a commit request for a selection of artifacts, or all.

Copies of submitted artifacts are saved in cache, with the names of the users who submitted them, version numbers, and the status Committed. A task is created for the Approver role to review the check-in requests. (see Working with the Worklist Items).

A Revision ID is assigned to each commit request. This ID is used in other dialogs to allow you to view the details on the request.

If the project is checked out from the SCS repository, then, similar to the file mode, the committed artifacts are saved in the local cache, till the approval. After the approval, the committed artifacts from the cache are saved to the local repository, identified by the value of the **ws.scs.repo.dir** property in RMS.cdd (see Configuring RMS Server Properties), and checked in to the SVN repository as well. The comments entered for commit are used as check-in comments for the SVN repository, after approval.

Procedure

1. In the **Group Contents** section, select the artifact you need to commit.

   > 📝 Commit command does not support multiple artifact selection using the Shift or Ctrl key. Alternatively, select a folder/project to select all the artifacts under that folder/project, when the project files are displayed in a tree structure.

2. Open the commit window using any of the following methods:

   - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Commit** .

   - Right-click on the selected artifact and select **RMS** > **Commit** .

   - Click the commit icon 🖉 in the RMS toolbar.

3. In the Commit window enter the revision description in the **Comments** text box.

   Comments field is not a mandatory field but it is recommended to comments before committing. This helps the approver to understand the nature of changes.

4. Click the check boxes for the files you want to commit to the RMS project and click **OK**. Alternatively, click the header checkbox to select all the listed project files.

5. Click **Finish** after the system displays the check-in successful message with the revision ID.

Reverting Artifact's Update

The Revert command can revert the updates done to an artifact in the WebStudio and restore it to a previous version.

The Revert command also reverses the Delete command. It can reverse the update to the following artifacts:

- Decision Tables

- Business Rules

- Processes

- Domain Models

The Revert command restores the artifact to the last version that was committed in the repository. If multiple changes are made to the artifact and no commit is done to the repository, the Revert command reverses all the changes. This command does not work on the changes which are committed to the repository. Thus, ensure that the updates, which you are sure of, are committed to the repository on a regular basis. Also ensure that the Revert command is used only on the updates, of which you are unsure.

You can make a revert request for one or for a selection of artifacts.

Procedure

1. In BusinessEvents WebStudio, open the Revert window using one of the following ways:

   - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Revert** .

   - Right-click the selected artifact and select **RMS** > **Revert** .

   - Click the **Revert** icon in the RMS toolbar.

2. Select the check boxes for the artifacts for which you want to revert the updates and click **OK**. Alternatively, select the header check box to select all the listed artifacts.

3. Click **Finish** after the system displays the "revert successful" message with the revision ID.

Result

The artifact is reverted to its previous version, which was last committed to the repository.

Viewing History of an Artifact

You could view the update performed in earlier revisions of the artifact, and also view the update performed to other artifacts in the those revisions.

Procedure

1. In the **Group Contents** section, right-click the artifact, of which you want to view revision history, and select **RMS** > **Show History** .

2. The **History** window displays all the previous revisions of the artifact. Use the following search options and click **Go** to filter the results:

Option	Description
From	Select the **from** date using the date picker. Only revisions which are committed on or after this date are displayed.
To	Select the **to** date using the date picker. Only revisions which are committed on or before this date are displayed.
Search	Type the keyword to perform search in the user-name and comments **fields**.

3. In the **Revisions** panel, select the revision of which you want to view the details. See Revisions Panel Reference for more details on the Revisions panel columns.

   A detailed list of all updated artifacts for the selected revision is displayed in the Details panel with the artifact of interest in bold. See Details Panel Reference for more details on the Details panel columns.

4. In the **Details** panel, right-click the artifact and select **Diff with Previous Version** to view the update made to the artifact in the selected revision from the previous approved revision.

   The updates on the updated artifact are displayed highlighted in different colors for addition, deletion, and modification. Refer to the legend displayed on the editor for the significance of each highlighted color. Hover the mouse pointer over the highlighted (modified) part to see the previous value.

   The History window is minimized while the version difference for the artifact is displayed. Click the **Restore Window** icon of the minimized History window to restore it.

5. Finally, click **Close** to close the History window.

History Window Reference

The history window lists the revisions for the selected artifact in the Revision panel and details of the selected revision in the Details panel.

Revisions Panel Reference

The revision panel lists revisions associated with the selected artifact. The list can be filtered using the search options in the History window.

Column	Description
Revision	The unique ID assigned to each revision by WebStudio.
User Name	The user name of the user who had performed the commit.
Date	The RMS system date and time of the commit. Format of **Date** is *DD/MM/YYYY HH:MM*. For example, `06/08/2013 14:35`.
Comments	The comments provided by the user at the time of the commit.

Details Panel Reference

The Details panel displays the list of artifacts committed in the selected revision. The panel also lists various details about the artifacts update specific to that revision. You can also view the differences between the selected revision of the artifact and its previous approved version.

Column	Description
Action	The update action performed on the artifact. The values are: • Create • Modify • Delete
Type	The icon identifying the type of artifact, whether business rule or decision table.
Path	The location of the artifact with respect to the project's root directory.
File type	The file extension of the artifact. The values are: • ruletemplateinstance (for Business Rules) • rulefunctionimpl (for Decision Tables)
Approval Status	The approval status of the artifact for the revision. See Approval Status Values for more details on approval status values. The values are: • Committed • Approve • Reject • BuildAndDeploy

Removing a Project from Workspace

You can remove the project from the WebStudio workspace after completing work on the project.

The project could be removed either from the **My Workspace** tab, where all its artifacts are displayed, or from the **Dashboard** tab, where all open projects are listed under the My Projects dashboard portlet.

Removing a Project from Workspace Using the My Workspace Tab

The **My Workspace** tab displays the checked-out project resources.

Procedure

1. In the **My Workspace** tab, under the **Group Content** section, click the **Change View** icon and select **Show items as a tree** (if not already selected).

The project artifacts are now displayed in the tree structure.

2. Right-click the project name and select **Delete** or click on the **Delete** icon in the toolbar.

   The Confirm window is displayed to confirm project deletion.

3. Click **OK** to remove the project from the WebStudio workspace.

Removing a Project from Workspace Using the Dashboard Tab

You can remove the project from the workspace using the **Dashboard** tab.

Procedure

1. In the **Dashboard** tab, under the **My Projects** dashboard portlet, click the **Delete** icon in front of the project name.

   The Confirm window is displayed to confirm project deletion.

2. Click **OK** to remove the project from the WebStudio workspace.

Validating Multiple Artifacts of a Project

You can save time and effort by validating multiple decision tables and business rules of an RMS project at the project level.
In TIBCO BusinessEvents WebStudio, validate the artifacts, for any access control violations or syntax errors, using the validate command.

Procedure

1. In the **My Workspace** tab, under the **Group Content** section, click the **Change View** icon and select

   Show items as a tree 🔣 (if not already selected).
   The project artifacts are now displayed in the tree structure.

2. Select the project and click the **Validate** icon ✔ to validate multiple decision tables and business rules of the project.
   All the errors are displayed in the **Problems View** tab at the bottom of the application.

3. Double-click errors to see the problematic view.

   Take any needed corrective actions and then validate the artifacts again until all errors are resolved.

Deleting Errors and Warnings

After validation, when there are many errors and warnings in the **Problems View** tab, delete obsolete warnings and errors, so that you can browse the errors easily.

Procedure

● In the **Problems View** tab, right-click the obsolete warning or errors and select **Delete**.
   The selected error or warning is now deleted from the tab.

Keyboard Shortcuts

Keyboard shortcuts can make it easier to interact with TIBCO BusinessEvents WebStudio, saving you time and effort as you work with RMS projects in WebStudio.

Keyboard Shortcuts in WebStudio

Command	Keyboard Shortcut
Shift+Alt+K	Check out
Shift+Alt+P	Commit
Shift+Alt+R	Revert
Shift+Alt+W	WorkList
Shift+Alt+G	Generate Deployable
Shift+Alt+J	Validate
Shift+Alt+O	Export
Shift+Alt+U	Import
Shift+Alt+L	Sync

Managing Decision Tables

In WebStudio, you can manage existing decision tables of the project or create a new decision table using the virtual rule function.

Creating a Decision Table

A decision table can only be created using a virtual rule function (VRF).

For instructions on adding a VRF, see *TIBCO BusinessEvents Developer's Guide*.

Procedure

1. Select the **Projects** group.
2. In the **Group Contents** section, right click the virtual rule function (VRF) you want to use and click **New Decision Table**.
3. Enter the decision table name in the Decision Table pop-up window and click **OK**.

   If needed, you can enter a new folder name in the **Parent Folder** field and the new folder is created in the project.

   The new empty decision table is displayed in the work area.

Deleting a Decision Table

You can remove a newly added table as well as any existing table from the project.

If the table you want to delete has been checked into the RMS project, then you must submit the deletion for approval. After approval, the deleted table is removed from the RMS project.

Procedure

1. Do one of the following:

    - In **Group Contents**, right-click the decision table name and select **Delete**.

    - In **Group Contents**, select the decision table name. Then click the **Delete** icon ⊖ in the **Edit** toolbar.

2. If the table has been committed to the RMS project, select one of the following options as appropriate:

    - Commit the project or the parent folder so that the RMS master copy of the table is also deleted.

    - Synchronize the project to replace the deleted copy with the RMS project version of the table.

What to do next

In order to delete the decision table classes, after approving the deletion of decision table, select the `BuildAndDeploy` status of worklist for the deleted decision table. See Generating and Deploying the Decision Table's Class File for more details on how to generate decision table classes.

Renaming a Decision Table

You can rename a decision table in WebStudio to a more suited name, which identifies its functionality more appropriately.

Procedure

1. In **Group Contents**, right-click the decision table name and select **Rename**.

    > 📝 A decision table name can contain letters, numbers, and underscore only. It should start with a letter and be less than 64 characters.

    WebStudio displays the `Rename completely successful` message.

2. If the table has been committed to the RMS project, commit the project or the parent folder so that the RMS master copy of the table is also renamed.
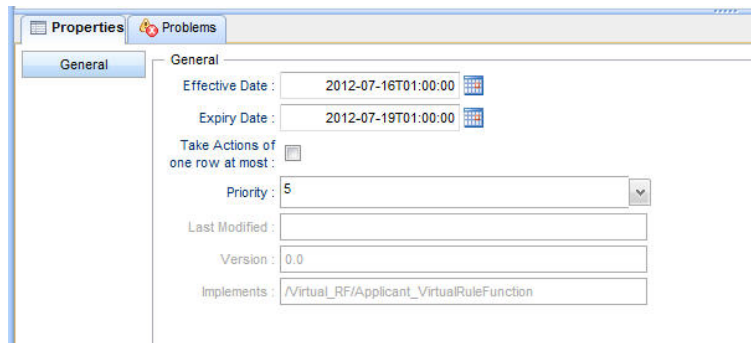
    The changes appear in two entries: one with the **Change Type** as `Added` and other with the **Change Type** as `Removed` in the Commit window and the Worklist window. Commit both the entries together as a single commit; otherwise WebStudio displays an error.

Setting the Decision Table Properties

In the **Group Contents** section, double-click the decision table you want to open. You can now edit, analyze, and export the open decision table.

Procedure

1. In the decision table work area, click the **Properties** icon ▦.
    The Properties view is displayed at the bottom of the work area.

2. Edit the following fields to set the Decision table properties.

Option	Description
Effective Date	Define the date and time on which the decision table becomes valid in the runtime application. Click the **Calendar** icon and use the Calendar dialog to set the date, and then edit the time as needed.
Expiry Date	Define the date and time after which the decision table is no longer valid in the runtime application.
Take Actions of One Row at Most	Select the check box, if you want the decision table to stop after one row (rule) passes the condition tests. Only the actions of that row are considered (until the next time the decision table's rule function is called).
Priority	Set a priority as desired. When a VRF has multiple implementations (decision tables), the decision table's **Priority** setting determines the order in which the decision tables executes.

3. Click the **Save** icon ⊞ in the Edit toolbar to save the changes to the decision table.

Result

The decision table is still open for you to edit and the changes are not applied to RMS unless you commit the changes to RMS.

Enabling or Disabling the Page View

When a large table is displayed in multiple pages, it improves the server response time as well as a better user experience.

A decision table is displayed in pages if the number of rows are more than the value specified for the page size (minimum is 10 and default is 20). The page size can be specified in the following locations:

• The tibco.clientVar.Webstudio/DecisionTable/pageSize property in the RMS.cdd file. See Configuring RMS Server Properties on how to configure the RMS properties.

• The **Decision Table Page Size** field in the Preference portlet under the **Settings** tab in the WebStudio UI. See Preferences Settings for more details.

Procedure

1. In the decision table editor, click **Show All** to disable the page view for the decision table and display all rows.

2. Click **Show Pages** to return to the page view for the decision table.

   The option appears in place of navigation options after clicking the **Show All** option.

Result

Navigate through the pages using navigation options present at the bottom of the decision table. Click on the specific page number to open that page or click **Previous** and **Next** options to navigate through pages sequentially.

Analyzing a Decision Table

In the Table Analyzer you can set example condition values and perform various validation checks on the currently displayed decision table.

Table analyzer supports the Not Equal To (`!=`) operator.

Procedure

1. In BusinessEvents WebStudio open the decision table you want to analyze.

2. Click the **Decision Table Analyzer** icon to view Table Analyzer.

3. In the Table Analyzer section, controls are created dynamically for setting values and ranges for each condition in the table. Enter or select the example values for which you want to analyze the table.
   For example, if the condition is a range, for instance "`< 40`" or "`> 10 && < 100`", then the corresponding control in the Table Analyzer section is a Slider that spans the range from the minimum value to the maximum value. You can then select a range of values within the range.

4. Click the **Analyze** icon to analyze the decision table based on the selected values.
   A pop-up window displays the count of any issues. The Problems section at the bottom displays more information on issues. Click the issue to highlight the row.

5. You can click the **Show Coverage** icon in the table analyzer section to highlight all rows that meet the criteria. In page view, browse through the pages to see the highlighted rows.
   For example, if you select `Male` for `Gender`; `true` for `Eligible`; and `50000-60000` for `Income`, clicking **Show Coverage** displays all rows that have `Male`, `true`, and an income between 50000 and 60000.

Validating a Decision Table

In TIBCO BusinessEvents WebStudio, validate a decision table, for any access control violations or syntax errors in the table, using the validate command.

The Validate icon is activated when the decision table is opened in the editor. EAR file for the project should be present in the deploy location; otherwise, the validate command fails. If the EAR file is not present at the deploy location, then you receive the following error while validating the decision table:
```
EAR for projects: <project_name> either not present or not in sync at deploy
location.
```

Procedure

1. Select the decision table and click the **Validate** icon to validate the table.
   All the errors are displayed in the **Problems View** tab at the bottom of the application. New errors in syntax are added to these existing errors.

2. Double-click errors to see the problematic view.

   Take any needed corrective actions and then validate the table again until all errors are resolved.

Validating a Decision Table Using Test Data

Using test data you can verify if the decision table covers all the data that might be passed through the decision table. This enables you to add more rules to the decision table, if the decision table is not able to cover the test data.

Prerequisites

Create the test data for at least one argument from BusinessEvents Studio. See *TIBCO BusinessEvents Developer's Guide* for more information on creation of test data. The test data must be in the project in your repository.

The test data are not managed in the RMS repository.

Procedure

1. In the **Table Analyzer**, click the **Check Test Data Coverage** icon .

   You can select the test data for only a single argument at a time.

   The Check Test Data Coverage window is displayed with the available test data.

2. Select the test data, for which you want to validate the decision table and click **OK**.
   The table analyzer validates the decision table based on the test data and displays the **Test Data Coverage** tab at the bottom pane. The Test Data Coverage pane highlights the rows of test data, which are covered in the decision table.

Exporting a Decision Table

You can export decision tables from TIBCO BusinessEvents WebStudio to Microsoft Excel spreadsheets.

Procedure

1. Open the decision table you want to export.

2. Execute the export command in either of the following ways:

   - Click the **Export** icon in the **Tools** toolbar. You see the Save As dialog box for the exported file.

   - Right-click the decision table in the Group Contents section and select **Export**.

3. Browse to the directory in which you want to save the excel file and provide a file name.

4. Click **Save**.

For example, a sample exported Microsoft Excel Sheet is given the following figure.

	A	B	C	D	E	F	G	H	I	J
	A1			f_x	Version					
1	Version	2								
2										
3	Declarations									
4										
5	Path	Alias	Property							
6	/Concepts	applicant	BOTH							
7	/Events/A	application	BOTH							
8										
9	DecisionTable									
10										
11	Id	Condition	Condition	CustomA	Action (5)	Action (11	Action (9)	Descriptio	Priority	
12		applicant.	applicant.	Custom A	applicant.	applicant.	applicant.	Status		
13	1	"John Doe'	>=20 && <	System.de	true	2500		"VISA Granted"		
14	2	"Sandra W	>=20 && <	System.de	false	0		"Loan Rejected"		
15	3	"Prakash \	>=20 && <	System.de	true	7500		"Pending"		
16	4	"Jane Doe'	> 30	System.de	true	25000		"Platinum Status"		
17										
18	ExceptionTable									
19										
20	Id	Descriptio	Priority							
21										
22										
	DecisionTable									

Importing a Decision Table

You can import correctly formatted Microsoft Excel file to create a decision table or to merge to an existing decision table in TIBCO BusinessEvents WebStudio.

- Only import from the Microsoft Excel files is supported. You cannot import from CSV (comma-separated values) files or tab-delimited text files. You can open such files in Excel and save as Excel format binary files.

- Before importing the Microsoft Excel file, ensure that cells are not protected (locked). The protected cells, after the import, appear disabled in WebStudio.

Importing a Decision Table Flowchart


```
                    ┌──────────┐
                    │  Start   │
                    └──────────┘
                         │
                  ┌──────────────┐
                  │Execute Import│
                  │  command     │
                  └──────────────┘
                         │
                  ┌──────────────┐
                  │Browse the    │
                  │Excel file    │
                  └──────────────┘
                         │
                  ┌──────────────┐
                  │Name the      │
                  │imported      │
                  │decision table│
                  └──────────────┘
                         │
                  ◇ DT Name ◇ ──────► New DT Created
                  ◇ already ◇
                  ◇ present?◇
                         │
                  ◇ Overwrite ◇
                  ◇ or Merge  ◇
               ┌─────────┴─────────┐
        Existing DT is      Accept or reject
        replaced           each automatic
                           merged data of DT
                                │
                            Save DT
                                │
                              End
```
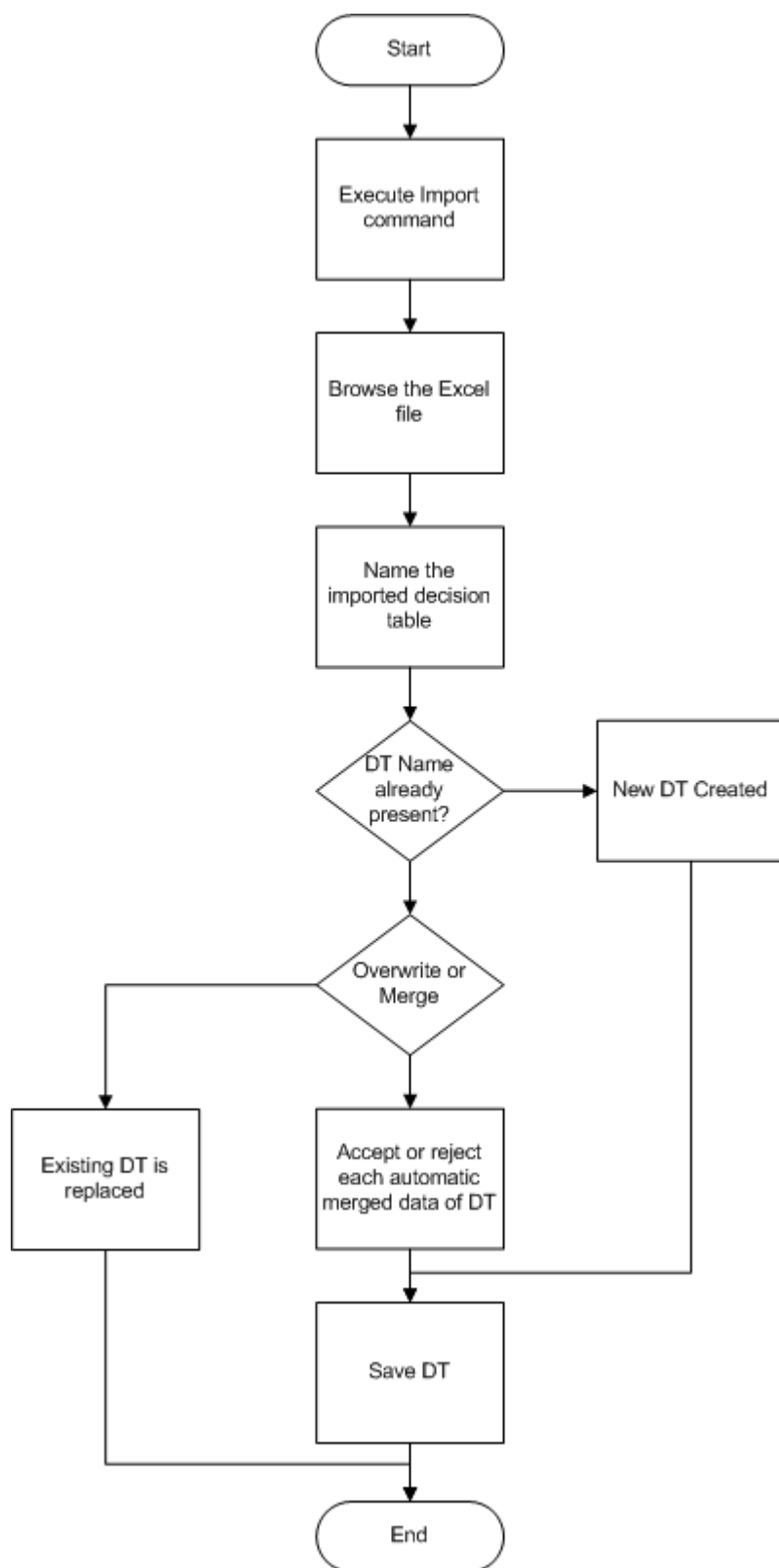
Procedure

1. Open the Import dialog box in either of the following ways:

- Select the virtual rule function and click the **Import** icon ⤓ in the **Tools** toolbar.

- Right-click the virtual rule function in the Group Contents section and select **Import**.

2. Click **Choose Files** in the Import Decision Table dialog box.

3. Browse the excel file you want to import and click **Open**.

4. In the **Name** field, do either of the following:

- Specify the new decision table name and click **OK**.

- Specify the name of an existing decision table name and click **OK**.

Depending on the decision table name, either a new decision table is created or a prompt is displayed that a decision table with the existing name already exists. The prompt provides the option to either overwrite existing table or merge the imported and the existing table.

5. If you have given an existing decision table name, in the prompt, select either of the following options and click **OK**.

Option	Description
Overwrite the existing decision table	The imported table overwrites the existing decision table with the same name.
Manually merge the imported decision table with the existing one, in a diff editor	WebStudio automatically merges both the decision tables and displays the merged decision table in the decision table editor. All the differences are highlighted using the following legends: • Green for added items • Red for deleted items • Yellow for modified items In the editor, to restore any data to the local value, click the modified item and select **Use Local**. Click the **Save** icon to save the changes to the decision table.

Adding Condition and Action Columns from Arguments

Add the condition and action columns using the arguments under the virtual rule function scope.

Procedure

1. Open the decision table you want to edit.

2. In the **Group Contents** section, right-click the decision table and select **Show Arguments**.

A plus icon is displayed in front of the decision table for argument list expansion.

3. Click the plus icon to expand the arguments list. If needed, click the plus icons for concepts and rules as well.

The decision table arguments are listed under the decision table.

4. Drag a property from the argument list to the decision table editor.

A Create Column pop-up window appears to create the condition or action column.
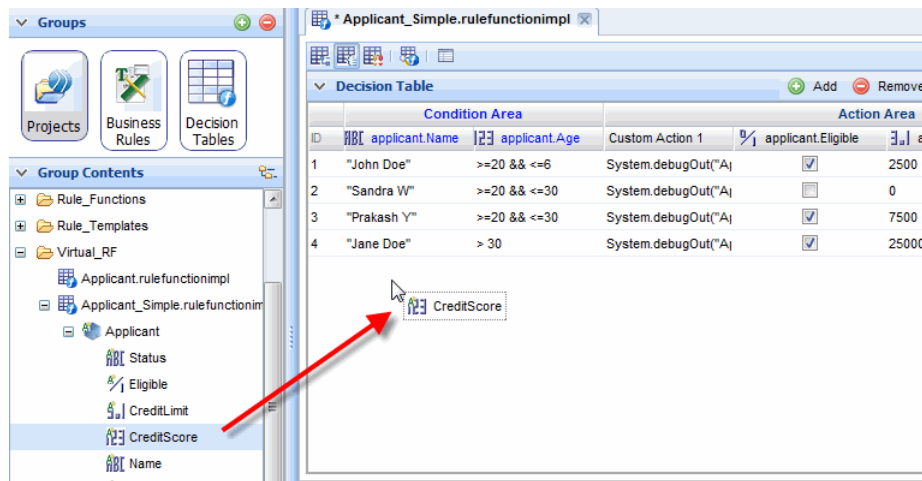
5. Click the **Condition** or **Action** radio button and click **OK** to create a Condition or Action column. A new Condition or Action column is added at the end of the Condition or Action column-sets respectively.

Adding Custom Condition and Action Columns

Add the condition and action columns using the rule language, standard functions, and data in the scope of the function at runtime (for example, scorecards and global variables).

Procedure

1. Open the decision table you want to edit.

2. Click **Custom** in the decision table editor menu and select either of the following options:

   - Select **Add a custom Condition** to insert a custom condition column at the end of condition column set.

   - Select **Add a custom Action** to insert a custom action column at the end of action column set.

Defining Custom Columns Using Substitution

You can specify complex entries in a column by using column substitution. This feature works where all the entries in a column follow a specific pattern.

As an example, suppose all entries in a column use a comparison such as this, but with different values in each case:

```
Math.maxInt(MyAlias.Value, MyAlias.MaxValue) < 50
```

Instead of typing such entries in each cell, you could use substitution.

Procedure

1. In the column header, specify (right-click the column and select **Field Settings**) the pattern:
   ```
   Math.maxInt({0}, {1}) < {2}
   ```

2. In each of the column cells, specify parameter values, using a semicolon delimiter:

   ```
   MyAlias.Value; MyAlias.MaxValue; 50
   ```

3. Press Enter so that the cell contents are substituted with the pattern of the column name.

Setting Default Value in Decision Table Column

Using the **Field Settings** option of the column, you can set a default expression for the column for all new rules.

Procedure

1. Open the column's options menu by either of the following ways:

   - Right-click any one of the column headers.

   - Hover the mouse pointer over any one of the column headers to view the down-pointing triangle and click the triangle.

2. Select the **Field Settings** option.
   The Field Settings dialog is displayed.

3. Enter the default value for the column in the **Default Expr** text box.

   This default value is used for the column, whenever you add a new row.

   The **Include existing rules** check box is activated.

4. Select the **Include existing rules** check box to fill all the blank cells for the column with the default value specified in the **Default Expr** text box.

5. Click **OK**.
   The Field Settings dialog closes.

Result

Now the value of the **Default Expr** field is used as the default value for the column for new rules. If you have selected the **Include existing rules** check box, all empty cells for the column in the decision table are replaced by the default value.

Viewing or Hiding Columns in the Decision Table

To avoid scrolling tables with large number of columns, you can view only the columns that you want in the decision table and hide all others.

Procedure

1. Open the column's options menu by either of the following ways:

   - Right-click any one of the column headers.

   - Hover the mouse pointer to any one of the column headers to view the down-pointing triangle and click the triangle.

2. Select the **Columns** option and select or clear the column that you want to hide or view.

   The check marks in front of the column names identify whether the column is visible or hidden. You can select or clear the entire condition and action columns by selecting or clearing the **Conditions** and **Actions** option in the menu.

Resizing a Column

To view the conditions and actions value better, you can resize the column of a decision table.

Procedure

- Perform any of the following actions to resize a column in the TIBCO BusinessEvents WebStudio:

- Drag the right boundary of a column to manually resize them.

- Right-click on the column header you want to resize and click **Auto Fit** to resize the column to fit to the content size.

- Hover the mouse pointer to the column header to view the down-pointing triangle. Click the triangle and click **Auto Fit** to resize the column to fit to the content size.

- Double-click the right boundary of a column to make it auto fit to the content size.

- Right-click on the column header you want to resize and click **Auto Fit All Columns** to resize all columns to fit their content size

- Hover the mouse pointer to the column header to view the down-pointing triangle. Click the triangle and click **Auto Fit All Columns** to resize all columns to fit their content size.

You now have the ability to expand and collapse columns. No more scrolling is required if you want to see selected columns from the decision table which has a large number of columns. Right-clicking the decision table columns will show you the "Columns" option to either hide or show these columns.

Removing a Column

Remove a column when you need to remove the condition or action for the entire decision table.

You cannot remove the last condition column because a minimum of one condition column must exist if you have any action columns.

Procedure

- Right-click the column header and click **Remove** to remove the column from the decision table.

Sorting the Decision Table

The rows of a decision table can be viewed in an ascending or descending order of the selected column.

In page view, the sorting is performed only for the page and not the entire decision table. If you wish to perform the sorting for the entire decision table, then first click **Show All** to disable the page view and then perform the sorting.

Sort options are not available for columns with Boolean entry values and for custom condition and action columns.

Procedure

- There are more than one way to sort the rows of a decision table in the BusinessEvents WebStudio.

  - Click once on the column header to sort the table in ascending order of the column and click again on the column header to re-sort the table in descending order of the column.

  - Hover the mouse pointer over the column header to view the down-pointing triangle. Click the triangle and select **Sort Ascending** or **Sort Descending** to sort the table in ascending or descending order of the column.

  - Right-click on the column header you want use for sorting and select **Sort Ascending** or **Sort Descending** to sort the table in ascending or descending order of the column.

Setting Row Priorities

Each row in a decision table represents a separate business rule. You can control the order in which sets of rows are executed using the row priority setting.

Rows with higher priorities are executed before those with lower priorities, as follows:

- First, all conditions are checked for all rows that have the highest priority. The checking order within a set of rows with the same priority is not determinate.

- Then the rule actions for all of those rows whose conditions evaluate to true are executed. The execution order is not determinate. The runtime engine optimizes rule execution.)

- The process is repeated for all rows with the next highest priority, and so on.

Ten is the lowest priority and one is the highest. Five is the default priority.

Procedure

1. Select the row whose priority you want to set.

2. Click the **Properties** icon ▢ to display the Properties view.

3. In the **Properties** view, and select the **Rule** side-tab.

4. In the **Priority** field, select the appropriate value.

5. Click the **Save** icon ▢ in the **Edit** toolbar to save the changes to the decision table.
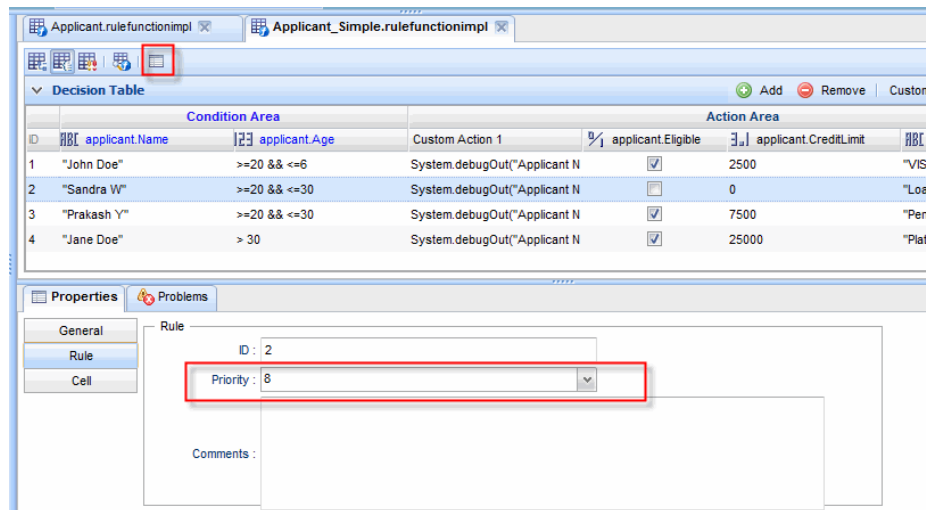
Filtering the Rows

Apply filters to focus on certain rows instead of entire table.

Apply filters on multiple columns for more refined results. In TIBCO BusinessEvents WebStudio decision table filter makes only textual comparison between the row values and filter values.

If you are viewing the decision table in page view, you can only filter values on the displayed page and not the complete decision table. If you wish to use the filter for the entire decision table, then first click **Show All** to disable the page view and then use the filter.

Procedure

1. To apply the filter, click **Filter** > **Decision Table** . Enter the values in filter cells (above column header) to filter the table.

2. To remove the filter, click **Filter** > **Remove** in the decision table editor.

Creating Duplicate Rows

You might want to create Duplicate rows, when you have only minor condition or action of the existing rows to create a new rule, instead of creating the entire row from start.

> When you duplicate rows in the page view, the duplicate rows are still added to the end of the decision table, but are shown on the same page as original rows. The table is reorganized when it is closed and reopened, thus the duplicate rows are then be displayed at the end of the decision table.

Procedure

1. In the Decision Table editor, select the Decision Table rows that you want to duplicate and click **Duplicate Row**.

   New rows are added, at the end of decision table, with the same conditions and actions of selected rows, but with a different ID.

2. Edit the rows as needed.

Removing a Row

Remove the row if you want to delete the rule entirely instead of editing it. You can remove only one row at time.

Procedure

1. In the decision table editor, select the rows you need to remove and click **Remove**.

2. In the Remove Decision Table Record window, click **OK** to confirm the removal of the row.

Supported Operators

TIBCO BusinessEvents WebStudio supports several operators for Decision Tables that you can use in the expressions.

Named or Scoped Conditions must Evaluate to Boolean

For logical operators, named conditions will have to use them explicitly from the second operand onwards.

For example, if the LHS of the condition is the column name, `bankuser.Age`, the following are valid entries:

```
50 || ==60 , 20 || >=80
```

Custom Conditions must evaluate to Boolean

Same as above, except that you must specify the entire Boolean expression in the cell, including LHS.

Actions or Custom Actions

Named actions perform assignment of the cell expression to the column name property.

Custom actions are treated as normal strings and can be anything that you would enter in the THEN section of rules (LHS included).

Supported Operators

Operator	Description
==	Equals to
!=	Does not equal to
>	Greater than
>=	Greater than or equals to
<	Less than
<=	Less than or equals to
||	Logical OR
&&	Logical AND
+	Addition or String concatenation (depending on context)
!	Logical NOT (only with boolean)
–	Subtraction
*	"Don't Care" (that is, ignore), or multiplication (depending on context)
/	Division
=	Assignment
.	Scope resolution
()	Operator precedence order or function call (depending on context)
[]	Array declaration or array indexing (depending on context)
{}	Block resolution or array Initialization (depending on context)
++	Increment (used only with custom actions)
––	Decrement (used only with custom actions)

Editing Domain Models

Using RMS, you can manage the lifecycle of domain models, and edit them in TIBCO BusinessEvents WebStudio.

You can create a domain model only in BusinessEvents Studio; however, you can edit them in Studio as well as WebStudio. See WebStudio Domain Model Editor Reference for more details on the domain model editor fields. The updates are committed in the RMS and are available to all user after the approval.

See *TIBCO BusinessEvents Developer's Guide* for more information on domain models.

Prerequisites

Ensure that **Project** is selected under the **Groups** section in WebStudio.

Procedure

1. Double-click the domain model you want to edit.
   The domain model editor is displayed.

2. Edit the domain model as required in the editor.

3. Click the **Save** icon to save the updates.

4. Click the **Commit** icon to commit the changes to RMS for approval.
   Once approved all users can see the updates after synchronization.

WebStudio Domain Model Editor Reference

In WebStudio, using the domain model editor you can edit the domain model entries. You can also configure the domain model to inherit entries from another domain model in the project.

Configuration

In the Configuration section, you can configure the basic domain model information.

WebStudio Domain Model Editor Configuration Properties

Field	Description
Description	Description of the domain model.
Domain Type	The data type of the domain model. The values are: • String • Int • Long • Double • Boolean • DateTime You can edit the **Domain Type** field only if there are no domain entries in the domain model.
Inherits From	Specifies the domain model from which the domain entries are inherited. Click Browse to select another domain model in the project from where you can inherit the domain entries.

Domain Entries

The Domain Entries section lists all the domain entries, that you can edit.

WebStudio Domain Model Editor Domain Entries Commands

Commands	Description
Add	Add a new domain entry to the domain model. The new entry is appended at the end of the domain entries list.
Remove	Remove the selected domain entry from the domain model.
Duplicate	Create a duplicate of the selected domain entry at the of the domain entries list.

WebStudio Domain Model Editor Domain Entries Columns

Column Name	Description
Description	Name of the domain entry.
Value	Displays the value of the domain entry. Value can be edited in the **Details** section.

Details

In the Details section you can enter the value of the domain entry based on the **Domain Type**.

WebStudio Domain Model Editor Details

Data Type	Description
`String`	String entries are simple text strings.
`Integer, Double, Long`	In a single domain model, you can enter single values, range values, or a mixture of both. Acceptable values for integer, long, and double domain entries are the same as for the equivalent Java datatypes.
`Boolean`	Boolean entry values are always `true` or `false`. The description can give the meaning of the pair of choices, such as male or female, supported or unsupported, eligible or ineligible and so on.
`DateTime`	In a single domain model, you can enter single values, range values, or a mixture of both. You specify a date and a time. Using the date picker you can select the date.

Business Rules

Business Rules artifact allows non-technical business users to build complex business rules in TIBCO BusinessEvents WebStudio.

Adding Business Rules

Business Rules are created using the Rule templates developed in TIBCO BusinessEvents Studio. If a rule template view is associated for the rule template, the business rule has an easy-to-use form based interface to specify conditions and actions; otherwise, conditions and actions are added using the builder.

See *TIBCO BusinessEvents Developer's Guide* for overview on rule template, and rule template view.

A business rule in a project is identified by the `.ruletemplateinstance` file extension. The rule template instance file is generated when the BuildAndDeploy option is selected for the business rule in approvals. See Generating and Deploying the Business Rule's Rule Template Instance for more details.

Adding a Business Rule Using the HTML Form

If a rule template view is defined for the rule template, then you can provide values for the bindings, defined in TIBCO BusinessEvents Studio, in a HTML form.

The form interface is the visual presentation of the rule template defined by rule template views. See *TIBCO BusinessEvents Developer's Guide* for more details on rule template views.

Procedure

1. In TIBCO BusinessEvent WebStudio, under the **Group Contents** section, right-click the rule template you want to use and select **Create Business Rule**.

2. Type the business rule name in the dialogue box and click **OK**.

   If needed, you can enter a new folder name in the **Parent Folder** field and the new folder is created in the project.

   If the rule template view is defined for the rule template, then the HTML form is presented in the business rule editor. Based on the data types in the rule template view, the HTML element are generated for the HTML form.

   Rule Template Data Type and HTML Field Type Mapping

Rule Template Data Type	HTML Field Type
Integer	Textbox
Double	Textbox
String	Text Area
Boolean	Check box
String (with associated domain model)	Dropdown list
Datetime	Datetime widget
Long	Textbox

3. Enter the threshold values in the input fields of the HTML form.

4. Click the **Save** icon to save updates to the business rule.

Adding a Business Rule Using the Builder Interface

If the rule template view is not defined for the rule template, then you can build conditions and actions using various operators in the builder style of user interface .

The builder for business rule in the TIBCO BusinessEvents WebStudio consists of two sections: When section (condition builder) and Then section (command builder).

Creating a New Business Rule

A new business rule needs to be created from the rule template, without the rule template view, to add conditions and actions to it.

Procedure

1. In TIBCO BusinessEvent WebStudio, under the **Group Contents** section, right-click the rule template you want to use and select **Create Business Rule**.

2. Type the business rule name in the dialogue box and click **OK**.

   If needed, you can enter a new folder name in the **Parent Folder** field and the new folder is created in the project.

   If the view is not associated with the rule template, a builder interface opens up in the editor.

### Adding a Conditional Clause Using the Condition Builder

The When section lets the user define additional conditions that must be met, in addition to the pre-condition defined in the Rule Template.

The builder determines the scope of the rule template, and allows the user to define individual conditional clauses based on that scope. Each conditional clause has one or more sub-clause, and a match operator determines whether the conditional clause is true when all sub-clause are true, or any one sub-clause is true, or none of the sub-clauses evaluate to true.
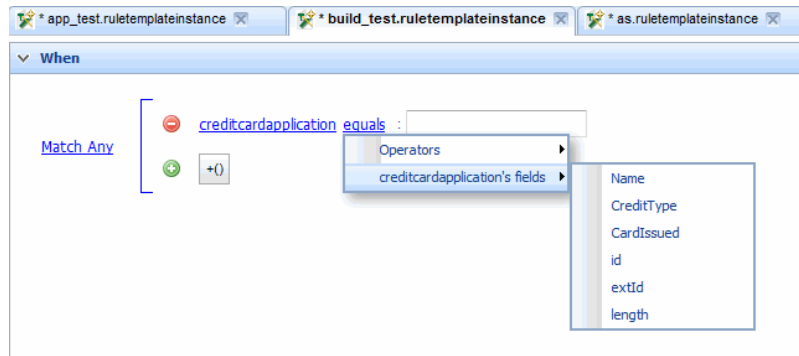
If you require to move any condition up or down the order then you can drag-and-drop the condition to move it. Move the mouse pointer over any condition till the pointer is converted to a drag icon. Now, you can drag that particular condition and drop it within same or different filter.

Procedure

1. In the business rule editor, under the When section, click the artifact-name link and select the artifact you require.
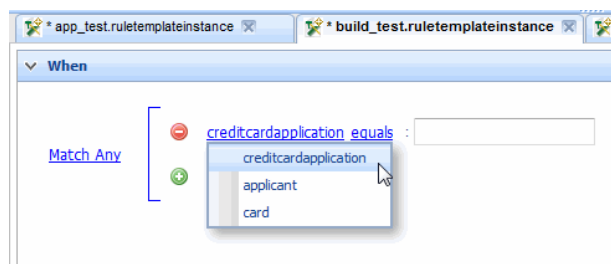
2. Click the operator-name link to select another operator, or a child artifact of the previously selected artifact, as you require. See Condition Builder Operators for list of supported operators.

3. Enter the conditional value for the artifact in the empty box.

4. Click the **Add** icon ⊕ to another condition to the conditional clause, or click the **Remove** icon ⊖ to remove the existing condition from the conditional clause, if you want.

5. Click the **Add Sub-clause** icon ⊡ to add a conditional sub-clause to the conditional clause, if you want.

6. Click the match-operator link to select the matching condition for which the conditional clause evaluates to true. The values are:

Option	Description
Match Any	Conditional clause is true if any of the condition evaluates to true.
Match All	Conditional clause is true only if all of the conditions evaluates to true.
Match None	Conditional clause is true only if none of the conditions evaluates to true.

7. Click the **Save** icon 🖫 to save updates to the business rule.

Adding an Action Using the Command Builder

The Then section defines additional actions to be taken based on the conditions defined.

The builder lets the user define actions based on the statements defined in the Action Context section of the rule template.

Ensure that all the actions in the business rule are defined and the order should match that of the rule template. Otherwise, the business rule will be invalid.

Procedure

1. In the business rule editor, under the Then section, click the **Action** dropdown list to select the actions available for the rule template.
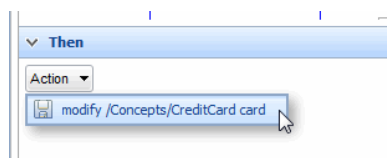
2. Click the artifact-name link and select the artifact you want modify.
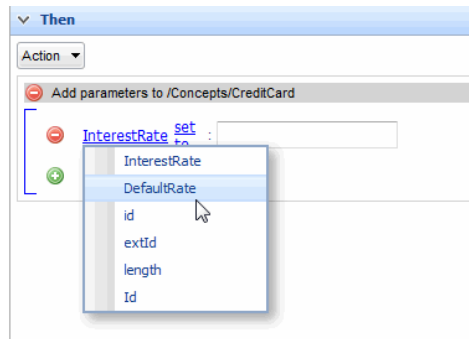
3. Click the operator-name link and select the command for the artifact. See Action Builder Operators for list of available on operators.

4. Type the value, you want to set for the artifact, in the empty box.

5. Click the **Add** icon ⊕ to add another parameter for the action, or click the **Remove** icon ⊖ to remove the parameter for action, if you want.

6. Click the **Save** icon 💾 to save updates to the business rule.

Business Rule Properties

You can set optional description and priority of the Business Rule using the General properties.

General Business Rule Properties

Property	Description
Name	Read only. Displays name of the business rule.
Priority	Specifies the business rule priority from 1 to 10. The order in which rules are executed can be defined using the **Priority** property. The default value is 5.
Description	Optional. Description of the business rule.

Exporting a Business Rule

You can export business rules from TIBCO BusinessEvents WebStudio to rule template instance file.

A business rule in a project is identified by the .ruletemplateinstance file extension. The rule template instance file is generated when the BuildAndDeploy option is selected for the business rule in approvals. See Generating and Deploying the Business Rule's Rule Template Instance for more details.

The sample file content of the exported rule template instance file is:

```xml
<?xml version="1.0" encoding="UTF-8"?>
<RuleTemplateInstance id="738cd4ea-8569-4744-aa86-fb88a89bf0a3" implementsPath="/
Rule_Templates/Applicant_PreScreen">
    <actions/>
    <binding id="minimumIncome" value="5000"/>
    <binding id="minimumAge" value="25"/>
    <binding id="creditType"/>
</RuleTemplateInstance>
```

Procedure

1. Open the Export dialog box in either of the following ways:

- Select the business rule and in the **Tools** tool bar, click the **Export** icon .

- Right-click the business rule in the Group Contents section and select **Export**.

2. Navigate to the directory in which you want to save the rule template instance file and provide a file name.

3. Click **Save**.

Deleting a Business Rule

If you want to delete a business rule that has been checked into the RMS project, then you must submit the deletion for approval.

After approval, the deleted business rule is removed from the RMS project, but it is not removed from the user's workspace.

If you are not sure whether the business rule you deleted was committed to the RMS project in a prior action, select **Project** > **Commit** . If the deleted business rule does not appear in the Changes Made panel, then it is a local business rule.

Procedure

1. Do one of the following:

   - In **Group Contents**, right-click the business rule name and select **Delete**.

   - In **Group Contents**, select the business rule name. Then click the **Delete** icon in the **Edit** toolbar.

2. If the business rule has been committed to the RMS project, select one of the following options as appropriate:

   - Commit the project or the parent folder so that the RMS master copy of the business rule can be deleted after the approval (see Committing Artifacts for Approval). OR

   - Synchronize the project to replace the deleted copy with the RMS project version of the business rule (see Updating (Synchronizing) a Project).

     Users who have already checked out the project must manually delete their local copy of the artifact.

Renaming a Business Rule

You can rename a business rule in WebStudio to a more suited name that identifies its functionality more appropriately.

Procedure

1. In **Group Contents**, right-click the business rule name and select **Rename**.

   A business rule name can contain letters, numbers, and underscore only. It should start with a letter and be less than 64 characters.

   WebStudio displays the `Rename completely successful` message.

2. If the business rule has been committed to the RMS project, commit the project or the parent folder so that the RMS master copy of the business rule is also renamed.

   The changes appear in two entries: one with the **Change Type** as `Added` and other with the **Change Type** as `Removed` in the Commit window and the Worklist window. Commit both the entries together as a single commit; otherwise WebStudio displays an error.

Business Rule Operators

Business Rule builder operators consists of the conditional clause operators and the action builder operators. The operator list changes as per the parent entity type in the builder.

Condition Builder Operators

Operator Value on WebStudio Client	Parent Type	Operator Value on RMS Server
Matches Other Field	• Concept / Event • Data / Time / Datetime • Integer / Float • Text / String • Boolean	== *<field>*
Differs From Field	• Concept / Event • Date / Time / Datetime • Integer / Float • Text / String • Boolean	!= *<field>*
Is Null	• Concept / Event • Date / Time / Datetime • Integer / Float • Text / String	== null
Is not Null	• Concept / Event • Date / Time / Datetime • Integer / Float • Text / String	!= null
Greater Than	Integer / Float	>
Greater Than Field	Integer / Float	> *<field>*

Operator Value on WebStudio Client	Parent Type	Operator Value on RMS Server
Greater Than Equal To	Integer / Float	>=
Greater Than Equal To Field	Integer / Float	>= *<field>*
Less Than	Integer / Float	<
Less Than Field	Integer / Float	< *<field>*
Less Than Equal To	Integer / Float	<=
Less Than Equal To Field	Integer / Float	<= *<field>*
Equals	• Integer / Float • Text / String • Boolean	==
Not Equals	• Integer / Float • Text / String • Boolean	!=

Action Builder Operators

Operator Value on WebStudio Client	Parent Type	Operator Value on RMS Server
Set To	• Concept / Event • Date / Time / Datetime • Integer / Float • Text / String	=
Set To Field	• Concept / Event • Date / Time / Datetime • Integer / Float • Text / String • Boolean	= *<field>*

Operator Value on WebStudio Client	Parent Type	Operator Value on RMS Server
Set To Null	• Concept / Event • Integer / Float • Text / String	= null
Increment By	Integer / Float	+=
Increment By Field	Integer / Float	+= *<field>*
Decrement By	Integer / Float	-=
Decrement By Field	Integer / Float	-= *<field>*
Set To True	Boolean	= true
Set To False	Boolean	= false

Process

You can use the WebStudio software to create and design a new process without opening the BusinessEvents Studio.

Using WebStudio, you can design the complete process and set the General and Documentation properties, which instructs the developers on what to implement for the process.

> Processes are available in TIBCO BusinessEvents WebStudio in the view mode and the edit mode only if you have the TIBCO BusinessEvents Process Orchestration add-on installed on your system.

The process editor contains three sections:

- **Diagram Editor** - You can design the process in the diagram editor by adding the component from the palette. It has a toolbar, using which you zoom in or zoom out, change how the components are arranged, undo the command, print the command, and so on. Hover you mouse over each tool to see the toolptip, which displays the tool's name.

- **Properties** - The Properties section contains two common tabs: **General** and **Documentation**. Using the **General** tab, you can specify the **Name**, **Label,** and **Resource** for the component. You can write instructions for the developers on what to implement for the process components, using the **Documentation** tab. After the process is committed in RMS and approved, the developers can see these documented instructions in the TIBCO BusinessEvents Studio after logging into RMS.

- **Palette** - All the components that you can use to design the process diagram are categorized in different palettes. See Process Palette Reference for a complete list of available components in WebStudio.

Process Editor in TIBCO BusinessEvents WebStudio
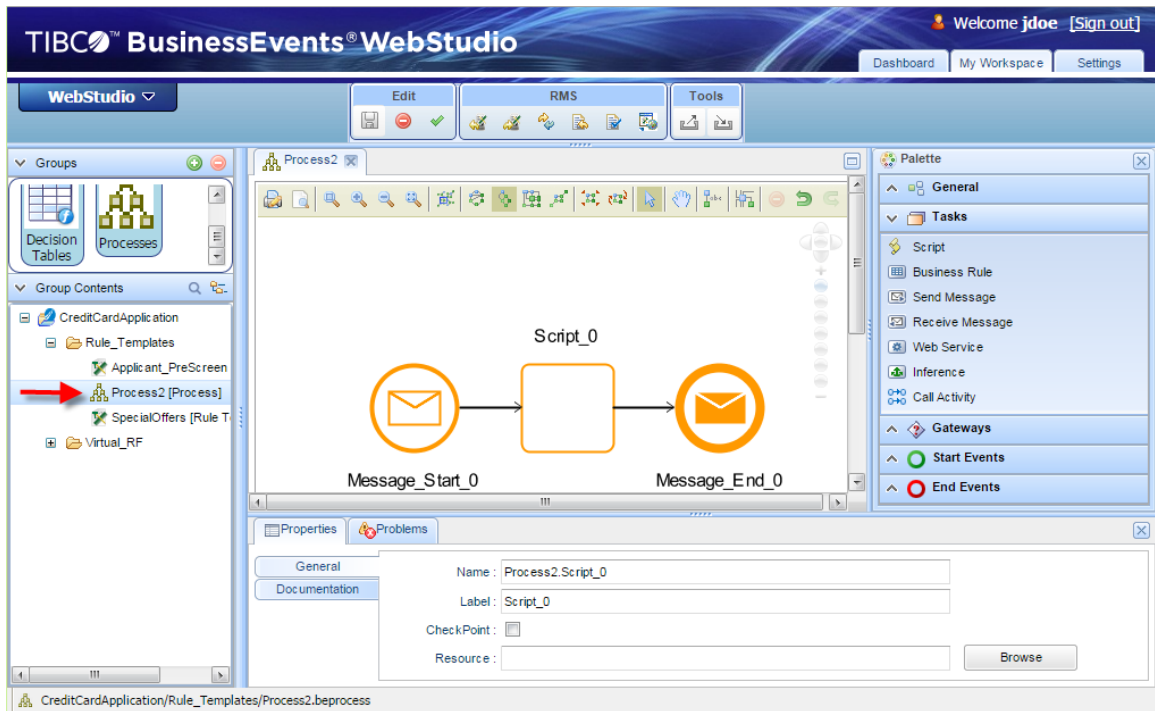
Adding a New Process

You can create a new process and design the complete process flow in WebStudio.

Procedure

1. In the **My Workspace** tab, under the **Group Content** section, click the **Change View** icon and select **Show items as a tree** (if not already selected).
   The project artifacts are now displayed in the tree structure.

2. Right-click the folder where you want to add the new process and select **New Process**.
   The New Process window is displayed.

3. Specify the process name in the **Process** field. If needed, you can change the parent folder name to an existing folder or a new folder in the **Parent Folder** field.
   The new process is added to the project and is displayed in the process editor for update.

Result

The new process contains three basic components by default: Message_Start_0, Message_End_0, and Script_0. You can add other components from the palettes. Click the component in the palette and click the editor to add the component.

Deleting a Process

If you want to delete a process that has been checked into the RMS project, you must submit the deletion for approval.

After approval, the deleted process is removed from the RMS project, but it is not removed from the user's workspace.

If you are not sure whether the process you deleted was committed to the RMS project in a prior action, select **Project** > **Commit** . If the deleted process does not appear in the Changes Made panel, it is a local process.

Procedure

1. Do one of the following:

   - In **Group Contents**, right-click the process name and select **Delete**.

   - In **Group Contents**, select the process name. Then click the **Delete** icon ⊖ in the **Edit** toolbar.

2. If the process has been committed to the RMS project, select one of the following options as appropriate:

   - Commit the project or the parent folder so that the RMS master copy of the process can be deleted after the approval (see Committing Artifacts for Approval). OR

   - Synchronize the project to replace the deleted copy with the RMS project version of the process (see Updating (Synchronizing) a Project).

   > Users who have already checked out the project must manually delete their local copy of the artifact.

Process Palette Reference

The Palette in WebStudio contains the components you can use to design a process diagram.

General

Name	Description
Note	A free-form text note.
Association	An association is a dotted line that links flow objects with non-flow objects such as text annotations.
Sequence Flow	A link or transition between two activities is called a sequence flow.

Tasks

Name	Description
Script	Executed using a TIBCO BusinessEvents rule function
Business Rule	Executed using a TIBCO BusinessEvents Decision Manager decision table
Send Message	Sends a TIBCO BusinessEvents event to its default destination
Receive Message	Receives a TIBCO BusinessEvents event
Web Service	Executed using a web service
Inference	Executed using a TIBCO BusinessEvents rule

Name	Description
Call Activity	Executed using a private process

Gateways

Name	Description
Exclusive	Used to execute one sequence flow of execution after evaluating multiple sequence flows in a process
Parallel	Used to execute concurrent multiple flows of execution

Start Events

Name	Description
Start	No trigger.
Message Start	Triggered by a simple event from a queue-based destination.
Timer Start	Triggered by a time event.
Signal Start	Triggered by a simple event from a topic-based destination. Multiple processes can be triggered by the same event.

End Events

Name	Description
End	No action occurs
Message End	Sends a simple event to a queue-based destination
Error End	Throws an appropriate error
Signal End	Sends a simple event to a topic-based destination

Renaming a Process

You can rename a process in WebStudio to a more suited name that identifies its functionality more appropriately.

Procedure

1. In **Group Contents**, right-click the process name and select **Rename**.

A process name can contain letters, numbers, and underscore only. It should start with a letter and be less than 64 characters.

WebStudio displays the `Rename completely successful` message.

2. If the process has been committed to the RMS project, commit the project or the parent folder so that the RMS master copy of the process is also renamed.
The changes appear in two entries: one with the **Change Type** as `Added` and other with the **Change Type** as `Removed` in the Commit window and the Worklist window. Commit both the entries together as a single commit; otherwise WebStudio displays an error.

Approval Workflow Overview

After updating the artifacts (decision tables or business rules), submit them for approval. All business user actions, such as committing or deleting artifacts are committed to the RMS project only after a approver approves those updates.

The approval permissions are set at the project level using the ACL file for the project. Allow the `approval` action type for the user role in the ACL file to the grant approval permission. See *TIBCO BusinessEvents Administration* for details on setting permission for a user role at the project level.

This manual documents the behavior of the product as shipped. The workflow, the roles used, and the permissions granted to the roles are all configurable. However, the general flow is likely to be similar to that described in this guide.

Use of RMS—and therefore the approval process—is required when TIBCO BusinessEvents WebStudio is used.

See Committing Artifacts for Approval for business user procedures.

See Working with the Worklist Items for approver procedures.

Who Can Approve or Reject Commit Requests

In TIBCO BusinessEvents WebStudio users with Administrator role permissions can approve or reject commit requests, or delegate approval. They can also delegate the task of approving or rejecting commit requests to any specified user role and not to a specific user. In this case, the approval or rejection requests will be sent to all the users in that role. See Delegating a Workitem from Worklist.

Approval Status Values

COMMITTED

When a user commits one or more resources for approval, the status of the request is set to Committed. The approver then sets the status as appropriate.

APPROVE

The request was approved. If the submission request was to add or change an artifact, that artifact is copied to the RMS project. If the submission request was to delete an approved artifact, that artifact is deleted from the RMS project.

REJECT

The change was rejected. If the submission request was to add or change an artifact, that artifact is not copied to the RMS project. If the submission request was to delete an approved artifact, that artifact is not deleted. It is up to the business user to make changes in their local project accordingly.

BUILDANDDEPLOY

The artifact is built and hot deployed. The artifact after approval is built and hot deployed at the location specified by a property in the `RMS.cdd` file. See the following sections on how to build the artifact and hot deploy it:

- Generating and Deploying the Decision Table's Class File

- Generating and Deploying the Business Rule's Rule Template Instance

- The **BUILDANDDEPLOY** status is not applicable for the Process artifacts.
- If the *<ProjectName>.<EnvironmentName>*.ws.jmx.hotDeploy.enable property is set to false then the **BUILDANDDEPLOY** option only compiles the classes but do not hot deploy them.

Worklist

Approval requests are handled in the Worklist window in TIBCO BusinessEvents WebStudio. You can take the appropriate approval action on single or multiple artifacts at a time in the Worklist window.

Worklist have multiple columns to provide more information about each request:

Revision ID
Unique ID assigned to each revision by WebStudio.

User name
Username of the user who had performed the commit.

Project
Project name of the artifact.

Commit comments
Comments provided by user at the time of the commit.

Commit time
RMS system time of the commit.

Viewing Differences between Committed and Previous Version of Artifact

View the updates that have been made in the committed version, from the previous approved version of the artifact in RMS, before approving or rejecting the request.

Procedure

1. Open the worklist window using any of the following methods:

   - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Show Worklist** .

   - Right-click any artifact and select **RMS** > **Show Worklist** .

   - Click the **Show Worklist** icon in the RMS toolbar.

   The worklist window displays all the requests submitted for approval.

2. To view the artifacts submitted for approval, click the triangle in front of the Revision ID.

3. Right-click the modified artifact and select **Diff with Previous Version**.
   The updated artifact is displayed with the updates highlighted in different colors for addition, deletion, and modification. Refer to the legends displayed on the editor for the significance of each highlighted color. Hover the mouse pointer over the highlighted (modified) part to see the previous value.

4. After viewing changes, open the worklist again to approve or reject the commit request (see Approving or Rejecting a Commit Request from Worklist).

Approving or Rejecting a Commit Request from Worklist

Approve or reject requests after they are committed to RMS. You should have allow permission for the approval action type in the project's access control file.

Procedure

1. Open the worklist window using any of the following methods:

    - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Show Worklist** .

    - Right-click any artifact and select **RMS** > **Show Worklist** .

    - Click the **Show Worklist** icon in the RMS toolbar.

    The worklist window displays all the requests submitted for approval.

2. To view the artifacts submitted for approval, click the triangle in front of the Revision ID. To examine the artifact before taking an action, double-click the artifact. The decision table or business rule displays in the editor.

3. To take action on an artifact, click the `Committed` status under the Status column, and select a value from the **Status** drop-down list:

    - Approve

    - Reject

    A message field displays the error messages in the event of a problem.

4. Click anywhere outside the drop-down menu and click **Ok**.

Delegating a Workitem from Worklist

A user in the Administrator role can delegate a workitem to one or more roles. Users belonging to any of those roles see the workitem in their worklist.

Users in the role specified by the RMS global variable property `tibco.clientVar.RMS/Approval/adminRole` have Administrator role privileges. See Configuring RMS Server Properties .

Procedure

1. Open the worklist window using any of the following methods:

    - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Show Worklist** .

    - Right-click any artifact and select **RMS** > **Show Worklist** .

    - Click the **Show Worklist** icon in the RMS toolbar.

    The worklist window displays all the requests submitted for approval.

2. Select the checkbox for one or more Revision IDs you need to delegate.

3. Select one or more user roles from the **DelegateTo** dropdown list and click **Apply**.

    You see all roles that you do not belong to, and that have permission to approve or reject the artifact.

    The workitem disappears from your worklist. It can be seen in the worklist of the users in the roles you selected.

Deleting Workitems from Worklist

You can delete the workitems from your worklist, which are either in the Approve or Reject status.

The WebStudio displays the following error message if you try to delete any workitem revision which has even a single artifact in the Commit status:

`Revisions having artifacts which are not yet approved cannot be deleted.`

> Individual artifacts entry could not be deleted from the worklist. Only complete revisions could be deleted, after all its artifacts are in the Approve or Reject status.

Prerequisites

Approve or reject the commit request before deleting the workitems from the worklist.

Procedure

1. Open the worklist window using any of the following methods:

   - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Show Worklist** .

   - Right-click any artifact and select **RMS** > **Show Worklist** .

   - Click the **Show Worklist** icon in the RMS toolbar.

   The worklist window displays all the requests submitted for approval.

2. Select the check box for one or more Revision IDs you need to delete.

3. Select **Delete** from the drop-down list and click **Apply**. All the selected revisions are now deleted from your worklist and WebStudio displays the `Revision(s) [Revision ID] successfully deleted` message.

Generating Deployable Files (EAR and Class Files)

Deployable files are generated using the TIBCO BusinessEvents Studio project files, located in the RMS project's folder.

The deployable files are of two types: EAR files and class files.

EAR files

EAR files are generated in Decision Manager and TIBCO BusinessEvents WebStudio UI.

Class files

You can generate class files using Decision Manager and TIBCO BusinessEvents WebStudio UI, or at the command line. You can generate an entire project's class files, one decision table's class file, or one business rule's rule template instance file. If you generate an entire project's class files, a property in the CDD file enables you to exclude unwanted packages.

> You can generate class file of one decision table and rule template instance file for business rule, only using TIBCO BusinessEvents WebStudio.

Generating the Project EAR or All Project Class Files

You can generate deployable EAR files only if you have the permission to check out all the required project resources (ACLs may limit what you can check out).

Procedure

1. Open the Generate Deployable window using any of the following methods:

    - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Generate Deployable** .

    - Right-click on any artifact and select **RMS** > **Generate Deployable** .

    - Click the **Generate Deployable** icon 🖼 in the RMS toolbar.

      The Generate Deployable window is displayed.

2. Do one of the following:

    - To generate class files, select the **Generate Classes Only** checkbox.

    - To generate EAR files, do not select the **Generate Classes Only** checkbox.

3. From the drop-down list, select the project for which you want to generate the deployable files.

4. (For EAR files only.) If you want to generate the debug information, select the **Generate Debug Info** checkbox.

5. (For EAR files only.) If you want to include all service-level global variables, select the **Include all service level global variables** checkbox.

6. Click **OK**.

Result

Files are saved to the preconfigured location (see Generated Files Location). Any existing files are overwritten.

Generating and Deploying the Decision Table's Class File

In TIBCO BusinessEvents WebStudio, using the BuildAndDeploy status menu option in the Worklist window you can generate the class file and hot deploy the decision table.

📝 You can generate one decision table's class file using TIBCO BusinessEvents WebStudio only.

Prerequisites

- For generation of class file and hot deployment of a decision table, you must have a generated EAR for the project. See Generating the Project EAR or All Project Class Files for more details.

- Ensure that JMX connection details for the environments where you must deploy are configured for the projects in the hot deploy properties group in the RMS.cdd file. See Hot Deploy Property Group Reference for more details on the hot deploy properties. Using these properties you can deploy multiple projects in a single environment or a single project in multiple environments.

- For hot deployment of the decision table, ensure that the project's CDD file (for which the decision table is hot deployed) have the *<ProjectName>.<EnvironmentName>*.ws.jmx.hotDeploy.enable property set to `true`. See Hot Deploy Property Group Reference for more details on the hot deploy properties.

- You can generate the class file and hot deploy a decision table only after it is approved. See Working with the Worklist Items on how to approve a committed request.

- For hot deployment of the decision table, ensure that the project's CDD file (for which the decision table is hot deployed) have the **be.engine.cluster.externalClasses.path** property under the appropriate processing unit, for example **default**. The property points to the location where artifacts are generated and also identified by the RMS property **ws.artifact.deploy.location**

(see Common Property Group for more details on the property). For example, the decision table class file for the CreditCardApplication project is stored at *BE_HOME*\rms\shared \CreditCardApplication.

Procedure

1. Open the worklist window using any of the following methods:

    - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Show Worklist** .

    - Right-click any artifact and select **RMS** > **Show Worklist** .

    - Click the **Show Worklist** icon ⬚ in the RMS toolbar.

      The worklist window displays all the requests submitted for approval as well as approved requests.

2. To view the approved decision tables, click the triangle in front of the **Revision ID**. To examine the decision table before taking an action, double-click the table.
   The decision table displays in the editor.

3. To generate classes and hot deploy the decision table, click the **Approved** status under the **Status** column, and select **BuildAndDeploy** from the status drop-down menu.

   > If the *<ProjectName>.<EnvironmentName>*.ws.jmx.hotDeploy.enable property is set to `false` then the **BuildAndDeploy** option only compiles the classes but do not hot deploy them.

   WebStudio performs auto-validation of the artifact to ensure that the update does not affect the runtime execution.
   A message field displays error messages in the event of a problem.

4. To start generating classes click anywhere outside the drop-down menu and click **Ok**.

Generating and Deploying Business Rules

In TIBCO BusinessEvents WebStudio, using the BuildAndDeploy status menu option in the Worklist window you can generate the rule template instance file and hot deploy the business rule.

Prerequisites

- For generation of rule template instance file and hot deployment of a business rule, you must have a generated EAR for the project. See Generating the Project EAR or All Project Class Files for more details.

- Ensure that JMX connection details for the environments where you must deploy are configured for the projects in the hot deploy properties group in the RMS.cdd file. See Hot Deploy Property Group Reference for more details on the hot deploy properties. Using these properties you can deploy multiple projects in a single environment or a single project in multiple environments.

- For hot deployment of the business rule, ensure that the project's CDD file (for which the business rule is hot deployed) have the *<ProjectName>.<EnvironmentName>*.ws.jmx.hotDeploy.enable property set to `true`. See Hot Deploy Property Group Reference for more details on the hot deploy properties.

- You can generate the class file and hot deploy a decision table only after it is approved. See Working with the Worklist Items on how to approve a committed request.

- For hot deployment of the business rule, ensure that the project's CDD file (for which the business rule is hot deployed) have the **be.cluster.ruletemplateinstances.deploy.dir** property under the appropriate processing unit, for example **default**. The property points to the location where artifacts are generated and also identified by the RMS property **ws.artifact.deploy.location**

(see Common Property Group for more details on the property). For example, the rule template instance file for the CreditCardApplication project is stored at *BE_HOME*\rms\shared \CreditCardApplication.

Procedure

1. Open the worklist window using any of the following methods:

   - Click **WebStudio**, with the down-pointing triangle in front of it, and select **RMS** > **Show Worklist** .

   - Right-click any artifact and select **RMS** > **Show Worklist** .

   - Click the **Show Worklist** icon 🖉 in the RMS toolbar.

     The worklist window displays all the requests submitted for approval as well as approved requests.

2. To view the approved business rules, click the triangle in front of the **Revision ID**. To examine the business rule before taking an action, double-click the rule.
   The business rule is displayed in the editor.

3. To generate rule template instance file and hot deploy the business rule, click the **Approved** status under the **Status** column, and select **BuildAndDeploy** from the status drop-down menu.

   > 📝 If the `<ProjectName>.<EnvironmentName>.ws.jmx.hotDeploy.enable` property is set to `false` then the **BuildAndDeploy** option only compiles the classes but do not hot deploy them.

   WebStudio performs auto-validation of the artifact to ensure that the update does not affect the runtime execution.

   A message field displays error messages in the event of a problem.

4. To start generating rule template instance file, click anywhere outside the drop-down menu and click **Ok**.

Generated Files Location

Location of generated files can be configured using deploy location properties in the `RMS.cdd` file.

See RMS Server Configuration Property Reference for more details on deploy location properties. Below are the locations of the generated files as per the preconfigured locations in the shipped product.

- EAR files are saved in the RMS project directory in the RMS's shared directory. For example, EAR file for CreditCardApplication project is stored at *BE_HOME*\rms\shared \CreditCardApplication.

- Project's class files are saved in the `codegen` subdirectory under the RMS project directory in the RMS's shared directory. For example, class files for CreditCardApplication project are stored at *BE_HOME*\rms\shared\CreditCardApplicatio\codegen

- Individual decision table's class file and business rule's rule template instance are saved in the RMS project directory in the RMS's shared directory.

Changing the TIBCO BusinessEvents WebStudio Language for the Classic UI

You can change the default language of TIBCO BusinessEvents WebStudio classic UI from American English (en_US) to other languages.

Prerequisites

Ensure that the language pack of the language, in which you want TIBCO BusinessEvents WebStudio to be displayed, is installed. See *TIBCO BusinessEvents Installation* for more details.

Procedure

1. Clear the web browser cache.

2. Open TIBCO BusinessEvents WebStudio URL in the web browser. Put the **locale=**<*language*> or **locale=**<*language_country*> as the query string of the URL and reload URL.

   > If you load the language that is not supported, the English language is picked up.

   Variable names for the supported languages are as follows:

Language	Variable name
German	de
French	fr
Italian	it
Korean	ko
Simplified Chinese	CN

For example, to load WebStudio with the German language, specify the following URL:

`http://localhost:8090/WebStudio/?locale=de`

> The URL is case sensitive.

WebStudio German Language Login Page

Settings Page for the Classic User Interface

User Settings

This section provides options for personal preferences that you can set for WebStudio. These preferences are same as settings that are present under the **Preferences** tab in the Settings page in the classic user interface. For more details on these options, see .

Applications Settings

Using the Application Settings, you can restrict the operators, and configure project-level email notifications for each project. This section further categorizes the settings in the following preferences:

- **Operator Preferences** - Using the Operator section, you can restrict the operators available for creating the Business Rule using the Builder interface in WebStudio. For more details on these options, see in the WebStudio classic user interface.

- **Notification Preferences** - Using the notification section, you can configure email notifications based on the project action. For more details on these options, see in the WebStudio classic user interface.

ACL Preferences

In ACL section, you can configure the access control file for each project. Also, you can configure the users with roles in the password file.

The projects, for which the access control file is already set up, are displayed. For setting up a new access control file for the project, refer to the *TIBCO BusinessEvents Administration guide*.

Using WebStudio, you can only configure an existing access control file but cannot create a new one for the project.

ACL Settings Reference

Callout Number	Section Name	Description
1	Roles	Displays the list of roles which can be assigned to users. The list is picked up from the access control file (.ac). You can add or remove roles using this section: • Click the **Add** icon ⊕ to add a new role. • Click the **Remove** icon ⊖ to remove the selected role. Click **Apply** to apply the updates to user roles and users to the password file (users.pwd).
2	User	Displays the list of users with the selected user role **(1)**. The list is picked up from the password file (users.pwd) This section is not displayed for the LDAP based authentication, as the users are defined in LDAP. You can add or remove a role for the users: • Click the **Add** icon ⊕ to assign the selected role to a user. • Click the **Remove** icon ⊖ to remove the selected user from the role. Click **Apply** to apply the updates to user roles and users to the password file (users.pwd).
3	Project List	Displays the list of projects for which the access control files (.ac) are present in RMS.
4	Resources	Displays the list of resource for the projects. These resources are defined in the access control file (.ac) for the selected project.
5	Actions	Displays the actions available for the selected resource **(4)**. Select the actions that are allowed for the selected resource **(4)**. Click **Apply** to assign the resource access permission updates for the user role to the access control file (.ac) of the project. Only those actions, which are applicable for the selected resources **(4)**, are active. See *TIBCO BusinessEvents Administration Guide* for more details on the access control file.

Management Page Reference

On the Management page, you can configure the permissions for project items and get audit trail reports.

The Management page has the following sections that you can configure:

Permission Management

Configures the permissions for the project items.

Permission Management Options

Option	Description
Users	Displays the list of users configured in the rule management server with their user role. The list is picked up from the password file (`users.pwd`) This section is not displayed for the LDAP based authentication, as the users are defined in LDAP. You can add or remove a role for the users: • Click the **Add** icon (+) to add a new user. Provide the **Name**, **Password**, and **Role** for the user. • Click the **Remove** icon (−) to remove the selected user. Click **Apply** to apply the updates to the password file (`users.pwd`).
Roles	Displays the configuration from the access control file for each project. This section provides the same configuration that are defined under the **ACL Preferences** in the WebStudio classic user interface. For more details on these configurations, see ACL Preferences on page 122.
Locks	Displays the list of locked artifacts for the projects. Select a project to view the list of its locked artifacts and their details. You can also unlock the artifacts that you have locked. Administrator can also unlock artifacts that are locked by other users. You can also unlock all locked artifacts in one step using **Unlock All**. Click **Apply** to apply the changes.

Report Management

Provides the option to get reports on the user activities.

The **Audit Trail** section displays the list of all actions performed in that session of rule management server. You can also refine the results using the following available filters and click **Apply**.

The Audit Trail Filters

Fields	Description
User	Select the user for which you want to see all the actions performed.
Project	Select the project to display actions for that project.
Artifact	Enter the full name of the artifact according to its path to view audit trail for only that artifact. For example, enter `/Virtual_RF/Applicant` to display results for actions performed on the Applicant decision table.
Action	Select the type of action for which you want to see the audit trail.
After Date	Select the date and time to display only those actions that were performed after the selected data and time.

Fields	Description
Before Date	Select the date and time to display only those actions that were performed before the selected data and time.
Log File	Set the value to ON to save the results in a log file instead of displaying the results on the screen.

In the results list, right-click on any item to see more options:

- **Copy** - Copy the row content.
- **Copy with Headers** - Copy the row content with headers.
- **Tool Panel** - Select the columns to display.
- **Export** - Export the list as a CSV or Microsoft Excel file.

Adding a New Custom Language Pack

You can manually translate TIBCO BusinessEvents WebStudio classic UI to a new language, if the language you need is not available in the language pack.
There are about seven properties inside the locale JAR corresponding to various areas of the application. The format is defined as `filename_<language>.properties` or `filename_<language_country>.properties`.

Procedure

1. Browse to the `BE_HOME/rms/lib/locales` directory, which contains the locale JAR files.

   Each JAR file correspond to a different language. The format of the locale JAR file is `<locale_name>.jar`.

2. Create temporary directory and un-package the English JAR (`en_US.jar`) files into the temporary directory.

3. Rename each of the property file with the corresponding language specific values.

   There are about seven properties inside the locale JAR corresponding to various areas of the application. The format is defined as `filename_<language>.properties` or `filename_<language_country>.properties`.

   For example, rename the property file from `DTMessages.properties` to `DTMessages_de.properties` for the German language.

4. Open each of renamed property file and replace the values in each of the property file with the corresponding language specific values.

5. Re-package the files back into the JAR file. Ensure the correct naming convention for the property file as well as the JAR file.

What to do next

Refresh the web browser to see the changes in TIBCO BusinessEvents WebStudio. If you don't see the changes, perform a browser cache cleanup (as sometimes the values are loaded from the cache) and reload the URL.

User Interface Customization

You can customize various aspects of BusinessEvents WebStudio classic user interface (UI) using the WAR file.

UI customization is available only for WebStudio classic UI.

In WebStudio you can change the CSS styles (colors, borders, and so on), images, background images, message strings, various titles and tooltips. Thus, you can create a new theme for WebStudio that is more in line with your corporate theme. All the updates are completely reversible to the default theme.

You can change the following UI elements in WebStudio:

- Company logo
- CSS
- Images
- Message or properties
- Language

Customizing the Company Logo

WebStudio can be configured to display your company logo on the login page and the banner page.

Procedure

1. Extract the `WebStudio.war` file located at the *BE_HOME*/rms/bin/ folder.
2. In the extracted folder, open the `WebStudio.html` file in edit mode.
3. In the `WebStudio.html` file, set the value of the **company_logo_url** variable to the URL of your logo image.

   The URL can be a hyperlink to the logo image which might be hosted on some web-server, for example, http://www.mycompany.com/images/logo.jpg. The URL can also point to an image on the file system within the WebStudio folder hierarchy, for example, `webstudio/images/logo.png`. Ensure that the image is present in the WAR file at the path specified.

   To remove the company logo, set the value of the **company_logo_url** property to the blank string (`company_logo_url = ""`).

4. Save the HTML file and compress the folder back to the `WebStudio.war` file.

Customizing CSS

You can create a new theme, in line with your corporate theme, for WebStudio by configuring the CSS of the WebStudio.

Procedure

1. Extract the `WebStudio.war` file located at the *BE_HOME*/rms/bin/ folder.
2. In the extracted folder, open the `styles/custom_styles.css` file in edit mode and populate it with CSS styles that you want to update (override).

   Refer to the instructions within the file. Save the file after the update.

3. In the extracted folder, open `styles/WebStudio.css` file in edit mode. Uncomment (remove #) the first line to import `custom_styles.css` and save it.

4. Compress the folder back to the `WebStudio.war` file.

Customizing Images

In WebStudio you can use your own customized images in place of the default images.
A typical example is a delete or add icon is represented through a very specific icon throughout all your corporate applications and you want the same to appear in WebStudio.

Procedure

1. Extract the `WebStudio.war` file located at the *BE_HOME*`/rms/bin/` folder.

2. In the extracted folder, back up the images folder by duplicating the folder at the same level with a name, such as, `my_images` or any name of your choice.

3. Update the images under the duplicate folder (`my_images`) as per your requirement without changing the file names.

4. Open the `WebStudio.html` file in edit mode.

5. In the `WebStudio.html` file, set the value of the **`images_dir`** variable to point to the `my_images` folder.

   For example,

   ```
   var images_dir = "webstudio/my_images/"
   ```

6. Save the HTML file and compress the folder back to the `WebStudio.war` file.

   > To revert to the WebStudio's default images, set the value of the **`images_dir`** variable to "webstudio/images/" in `WebStudio.html` file.

Customizing Messages and Properties

If needed, you can customize messages and labels in WebStudio user interface (UI) to explain the right meaning and context, or add a new language support.
See Adding a New Custom Language Pack for more details on customizing messages and properties for a new language pack.

Procedure

1. Browse to the *BE_HOME*`/rms/lib/locales` directory, which contains the locale JAR files.

   Each JAR (`<locale_name>.jar`) file correspond to a different language. Each JAR file (`filename_<locale_name>.properties`) consist of the different properties files corresponding to various areas of the application.

2. Extract the corresponding locale JAR file to edit one of the existing values of the properties.

3. Identify the files or properties that you need to change. Update the required files and properties and compress it back into the JAR file.

What to do next

Refresh the web browser to see the changes in WebStudio. If you don't see the changes, perform a browser cache cleanup (as sometimes the values are loaded from the cache) and reload the URL.

Changing the TIBCO BusinessEvents WebStudio Language for the Classic UI

You can change the default language of TIBCO BusinessEvents WebStudio classic UI from American English (en_US) to other languages.

Prerequisites

Ensure that the language pack of the language, in which you want TIBCO BusinessEvents WebStudio to be displayed, is installed. See *TIBCO BusinessEvents Installation* for more details.

Procedure

1. Clear the web browser cache.

2. Open TIBCO BusinessEvents WebStudio URL in the web browser. Put the **locale=**<*language*> or **locale=**<*language_country*> as the query string of the URL and reload URL.

   > If you load the language that is not supported, the English language is picked up.

   Variable names for the supported languages are as follows:

Language	Variable name
German	de
French	fr
Italian	it
Korean	ko
Simplified Chinese	CN

For example, to load WebStudio with the German language, specify the following URL:

`http://localhost:8090/WebStudio/?locale=de`

> The URL is case sensitive.

WebStudio German Language Login Page

Adding a New Custom Language Pack

You can manually translate TIBCO BusinessEvents WebStudio classic UI to a new language, if the language you need is not available in the language pack.

There are about seven properties inside the locale JAR corresponding to various areas of the application. The format is defined as `filename_<language>.properties` or `filename_<language_country>.properties`.

Procedure

1. Browse to the `BE_HOME/rms/lib/locales` directory, which contains the locale JAR files.

   Each JAR file correspond to a different language. The format of the locale JAR file is `<locale_name>.jar`.

2. Create temporary directory and un-package the English JAR (`en_US.jar`) files into the temporary directory.

3. Rename each of the property file with the corresponding language specific values.

   There are about seven properties inside the locale JAR corresponding to various areas of the application. The format is defined as `filename_<language>.properties` or `filename_<language_country>.properties`.

   For example, rename the property file from `DTMessages.properties` to `DTMessages_de.properties` for the German language.

4. Open each of renamed property file and replace the values in each of the property file with the corresponding language specific values.

5. Re-package the files back into the JAR file. Ensure the correct naming convention for the property file as well as the JAR file.

What to do next

Refresh the web browser to see the changes in TIBCO BusinessEvents WebStudio. If you don't see the changes, perform a browser cache cleanup (as sometimes the values are loaded from the cache) and reload the URL.